Technical Paper No. 368

Subsistence Harvests and Uses of Wild Resources in Aleknagik, Clark's Point, and Manokotak, Alaska, 2008

by

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and

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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 the reports by the Division of Subsistence. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Measures (fisheries)

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

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, et
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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SUBSISTENCE HARVESTS AND USES OF WILD RESOURCES IN ALEKNAGIK, CLARK'S POINT, AND MANOKOTAK, ALASKA, 2008

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January 2012

Final Report to Stephen R. Braund and Associates under ADF&G Agreement IHP-06-050.

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

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

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ABSTRACT

This report presents information about subsistence uses of fish, wildlife, and plant resources in 3 communities of Southwest Alaska: Aleknagik, Clark's Point, and Manokotak. The Alaska Department of Fish and Game Division of Subsistence conducted the project in collaboration with Stephen R. Braund & Associates as part of a multiyear, multiphase study in a region of Southwest Alaska being considered for the development of a large scale mine. The Pebble Project is a mineral deposit in an advanced exploration stage located near Frying Pan Lake, which is 125 miles northeast of the study community of Aleknagik. The Pebble Project required updated baseline information about subsistence harvests and uses. Information was collected through systematic household surveys and mapping interviews. Scoping meetings were held in each community to elicit ideas about research questions and to learn more about issues. After preliminary study findings were available, a second round of community meetings took place to review the results. In total, 104 households were interviewed, 60% of the year-round resident households. The study documented the continuing importance of subsistence hunting, fishing, and gathering to the study communities. In 2008, an estimated total of 80% of households in the study communities participated in subsistence activities and used wild resources. Subsistence harvests were large and diverse. Estimated wild resource harvests were 296 lb usable weight per capita in Aleknagik, 1,210 lb usable weight per capita in Clark's Point, and 298 lb usable weight per capita in Manokotak. Most participants in this study reported their subsistence uses and harvests have changed in their lifetimes and over the last 5 years, changes which they ascribed to reduced resource populations, shifts in the locations of moose and caribou, competition with nonlocal hunters, and a warming climate. Study community residents voiced concerns about the development of a mine and its impacts on water quality in and near their traditional subsistence harvest areas.

Key words: Harvest survey, subsistence uses, subsistence fishing, subsistence hunting, Aleknagik, Clark's Point, Manokotak, Pebble Project, Bristol Bay.

CHAPTER 1: INTRODUCTION

PROJECT BACKGROUND

This report provides updated information about the subsistence economies and uses of the fish, wildlife, and wild plant resources by the residents of Aleknagik, Clark's Point, and Manokotak, communities located in Bristol Bay in Southwest Alaska (Figure 1). Table 1-1 reports the population of each community in 2000 and 2008, based on federal (U. S. Census Bureau 2001) and state (ADLWD 2009b) estimates, as well as on the findings of this project. The salmon runs in Bristol Bay are among the world's largest, and the returns of Pacific salmon to the area support important commercial, subsistence, and sport fisheries. In the study year, the residents of all 3 communities relied on subsistence hunting, fishing, and gathering for nutrition and to support their way of life. They utilize a variety of resources, including salmon and other fish, large land mammals (caribou, moose, brown bears), small land mammals (small game and furbearers), birds and bird eggs, and wild plants (ADF&G Community Subsistence Information System [CSIS[1]]). Table 1-16 presents a list, including the Linnaean taxonomic names, of resources used in the project communities.

The Pebble Project is a mineral deposit in an advanced exploration phase located near Frying Pan Lake, which is 125 miles northeast of Aleknagik. The mineral deposit includes gold, copper, and molybdenum. Northern Dynasty Mines Inc. (NDM) of Vancouver, Canada, the project operator, began environmental baseline studies in 2004 to gather information needed for a feasibility study and applications for federal and state permits (NDM 2005). In 2008, NDM partnered with Anglo-American PLC to form the Pebble Limited Partnership[2].

Development applications for the Pebble Mine created the need for updated baseline information about subsistence harvests and uses in the nearby communities, as well as for demographic and other economic data. The Division of Subsistence has undertaken a multiyear, multiphase study to provide this information. Phase I examined the subsistence baseline information in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth in 2005 for the 2004 data year (Fall et al. 2006). Phase II expanded the study to 5 additional communities within the affected watersheds: Igiugig, Kokhanok, Koliganek, Levelock, and New Stuyahok for the 2005 data year (Krieg et al. 2009).

Phase III expanded the study to communities in Bristol Bay, including King Salmon, Naknek, and South Naknek in 2008 for the 2007 study year, as well as the interior community of Lime Village (Holen and Lemons 2010; Holen et al. 2011). The goal of the current phase of this study, Phase IV, is to complete subsistence baseline studies for Bristol Bay and includes the communities of Aleknagik, Clark's Point, and Manokotak. The final phase (V) of the study was completed in April 2011 in Dillingham.

ADF&G Division of Subsistence conducted this study under contract number IHP-06-050 in collaboration with Stephen R. Braund & Associates (SRB&A, a contractor for PLP) and the study communities. SRB&A was the sole source of funding for this study. SRB&A is an anthropological consulting firm based in Anchorage, Alaska that specializes in sociocultural research and analysis of subsistence uses, subsistence mapping, traditional knowledge, and cultural resources. As a whole, when complete, this significant study will have broad applicability in resource management and land planning, and will provide updated baseline information about demographics, economics, and subsistence activities in this area of Alaska.

1. ADF&G CSIS: http://www.adfg.alaska.gov/sb/CSIS//. Hereinafter cited as CSIS.
2. The Pebble Partnership, "Facts at a Glance," http://www.pebblepartnership.com/news/facts, accessed June 2009.

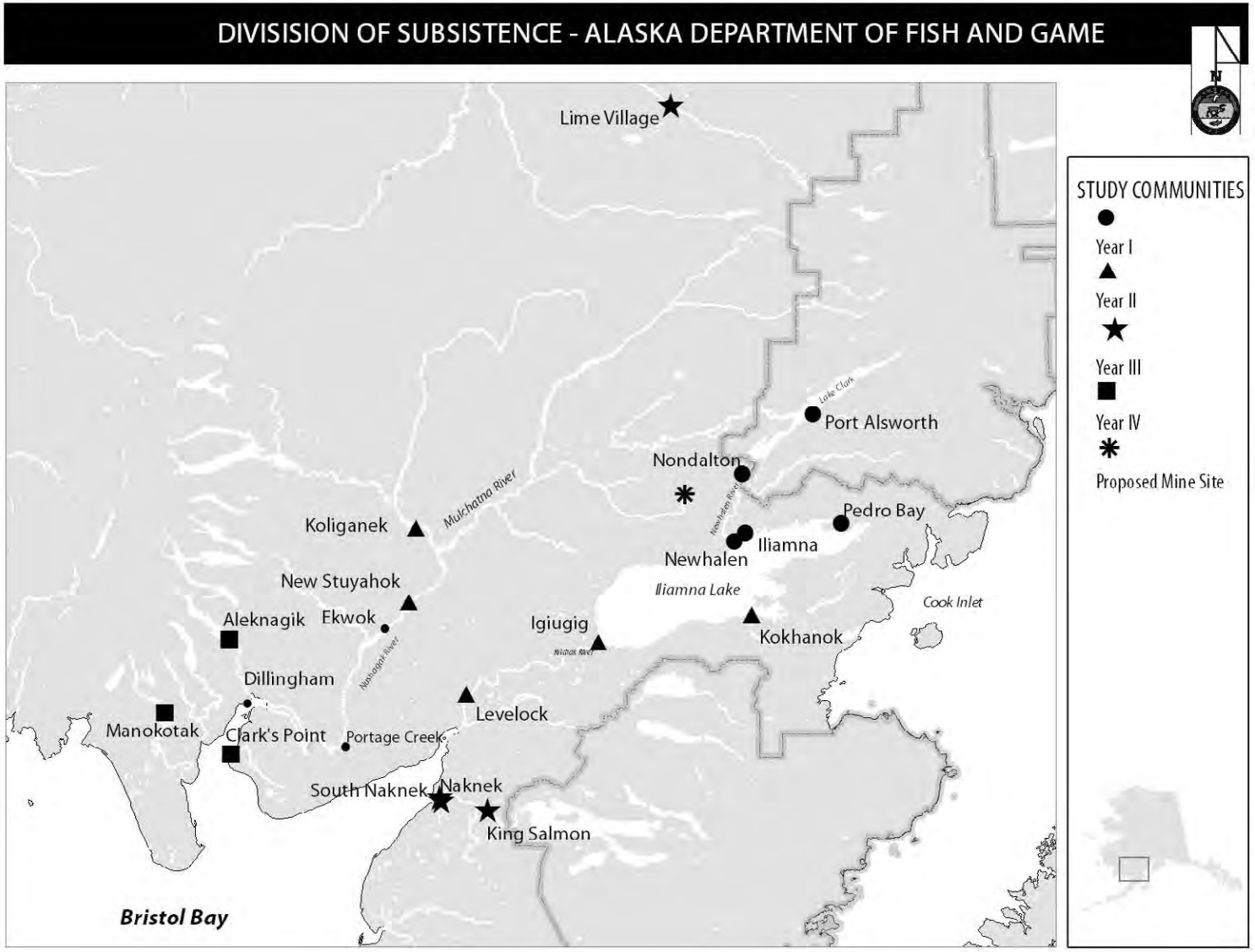

Figure 1-1.–Map of study communities, Bristol Bay, Alaska.

Table 1-1.–Population of the study communities, 2000 and 2008.

	Census Year 2000[a]				Study Findings for 2008[b]			
	Total population		Alaska Native population		Total population		Alaska native population	
Community	Households	Population	People	% of total	Households	Population	People	% of total
Aleknagik	70	221	187	85%	47	175	159	91%
Clark's Point	24	75	69	92%	18	38	34	91%
Manokotak	93	399	378	95%	96	379	378	100%

a. *Source* U.S. Census 2000

b. *Source* ADF&G Division of Subsistence household surveys, 2009.

Table 1-2.–Comprehensive and other subsistence harvest and use household survey projects.

Community	1973	1983	1984	1985	1989	1994	1995	1996	1997	1998	1999	2000	2001		2002	2003	2004	2005	2006	2007	2008
Aleknagik	ALL				ALL		MM	MM	MM	MM		MM	MM	LLM	MM	MM	MM	MM	MM	MM	MM
Clark's Point	ALL				ALL		MM	MM	MM	MM		MM	MM	LLM	MM	MM	MM	MM	MM	MM	MM
Manokotak	ALL			ALL		FWF	MM	MM	MM	MM	ALL	MM	MM	LLM	MM	MM	MM	MM	MM	MM	MM

KEY:

ALL = "comprehensive" baseline survey of all resources used for subsistence purposes. The 1973 study did not include wild plants.

LLM = "large land mammals" only = caribou, moose, black bear, brown bear, Dall sheep

FWF = nonsalmon freshwater fish only

MM= Marine mammals

Note All studies above were conducted by ADF&G Division of Subsistence (with project partners), except 1973 study, which was done by the University of Alaska Fairbanks (UAF) (Gasbarro and Utermohle 1974[3]). ADF&G is the only repository of the data collected in the UAF study.

[3] Gasbarro, A. F., and G. Utermohle, 1974, unpublished field data, Bristol Bay subsistence survey, Division of Subsistence, Alaska Department of Fish and Game, Anchorage.

STUDY OBJECTIVES

The project had the following objectives:

1. Design a survey instrument to produce updated baseline information about subsistence hunting, fishing, gathering, and other topics; and that is compatible with information collected in previous rounds of household interviews.
2. Train local residents in administration of the systematic household survey.
3. Conduct household surveys to record the following information:
    a. Demographic information.
    b. Involvement in use, harvest, and sharing of fish, wildlife, and wild plants in 2008.
    c. Estimates of amount of resources harvested in 2008.
    d. Information about jobs and cash income in 2008.
    e. Assessments of changes in subsistence harvest and use patterns.
    f. Location of hunting and harvests of subsistence resources in 2008.
4. Collaboratively review and interpret study findings with the study communities.
5. Produce a final report.
6. Communicate study findings to the project communities and the public.

RESEARCH METHODS

ETHICAL PRINCIPLES FOR THE CONDUCT OF RESEARCH

The project was guided by the research principles adopted by the Alaska Federation of Natives in 1993 and the Interagency Arctic Research Policy Committee, June 28, 1990 (see Miraglia 1998). These principles stress community approval of research designs, informed consent, anonymity 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

After approval of the contract, project staff from ADF&G and SRB&A met in January 2009 to refine project objectives, methods, schedules, and responsibilities. The researchers discussed what had been learned while administering the surveys during phases I–III of the project in order to apply these observations to the upcoming round of household interviews. To meet the information needs of the participating organizations, coordinate research, and minimize respondent burden, the group reached the following decisions:

1. SRB&A would continue to conduct research on respondent households' subsistence activities over the last 10 years using detailed mapping sessions which will appear in the final Environmental Impact Statement for the Pebble Project; however, they are not included in this report. The results of these interviews do not appear in this report.
2. The Division of Subsistence would use its standard household harvest survey instrument to meet needs for updated baseline data. The survey instrument would be the same as that used in phases I–III, with the exception that the study year would be updated to 2008.
3. The Division of Subsistence would also use the standard method of collecting subsistence map data, recording on a paper map the locations where members of participating households hunted, fished, and gathered subsistence resources during the 2008 study year.

SRB&A would also provide personnel to assist in ADF&G fieldwork in Aleknagik and Clark's Point. ADF&G staff would conduct the research in Manokotak.

ADF&G researchers sent letters to introduce the project to all 3 proposed study communities. Following this, ADF&G contacted tribal governments by phone to arrange project scoping meetings. The community scoping meetings in Aleknagik and Manokotak occurred December 11–12, 2008. The meeting in Clark's Point was postponed due to weather and occurred on January 26, 2009. The goal of these meetings was to introduce the project, solicit ideas on interview topics, and establish the background for community approvals for the research. Table 1-3 reports the attendance at each scoping meeting. Davin Holen and Ted Krieg from ADF&G presented at the meetings in Aleknagik and Manokotak, while Stephanie Schively from SRB&A took notes. Krieg, who lives in nearby Dillingham, was able to conduct a later meeting in Clark's Point. Issues raised during these meetings will be discussed in each community chapter.

Table 1-3.–Community scoping meetings, December 2008 and January 2009.

		Attendance	
Community	Date	Community residents	Total
Aleknagik	12/11/2008	5	8[a]
Clark's Point	1/26/2009	9	10[b]
Manokotak	12/12/2008	11	14[a]

a. Davin Holen (ADF&G), Ted Krieg (ADF&G), and Stephanie Schively (SRB&A) attended the meetings in Aleknagik and Manokotak.

b. Ted Krieg (ADF&G) attended the meeting in Clark's Point.

Following these meetings, each of the 3 participating tribal governments passed resolutions in support of the project. The hiring of local research assistants (LRAs) was negotiated between ADF&G and the tribal governments. Each of the LRAs was paid directly by ADF&G. On March 4–6, 2009, Holen traveled to Dillingham to facilitate the logistics for the project in the communities of Aleknagik and Clark's Point. On March 8, Holen returned to Dillingham with the project staff, who included Jory Stariwat, Tori Cicconne, and Terri Lemons of ADF&G, and Raena Schraer and Stephanie Schively from SRB&A. For the communities of Aleknagik and Clark's Point, a 1-day training occurred for the LRAs at the ADF&G office in Dillingham on March 9. Schively and Stariwat conducted the surveys in Clark's Point and Cicconne, Holen, Lemons, and Schraer conducted the surveys in the larger community of Aleknagik. The surveys occurred in the 2 study communities March 9–13, 2009.

For Manokotak, Krieg led the research and was assisted by Stariwat and Cicconne of ADF&G and Schraer from SRB&A. Krieg trained the local researchers on March 19 and the fieldwork lasted from March 20 to April 1. Krieg returned to Manokotak on April 13 and April 20 to assist one local researcher to conduct surveys.

In all 3 communities, surveys were checked by the project lead in each community on a daily basis so errors or omissions could be dealt with in the field. Table 1-4 lists all project staff. The list includes those individuals involved in project management, field research, data entry, data analysis, map production, and report writing.

Table 1-4.–Phase IV comprehensive subsistence baseline update study staff.

Task	Name	Organization
Project design and management	Davin Holen	ADF&G Division of Subsistence
SR Braund & Associates lead	Stephen R. Braund	Stephen R. Braund & Associates
Data management lead	David Koster	ADF&G Division of Subsistence
Field research leads	Davin Holen	ADF&G Division of Subsistence
	Theodore Krieg	ADF&G Division of Subsistence
Programmer	Terri Lemons	ADF&G Division of Subsistence
Data Entry	Jennifer Bond	ADF&G Division of Subsistence
Cartography	Iris A. Prophet	Stephen R. Braund & Associates
	Raena K. Schraer	Stephen R. Braund & Associates
	Stephen R. Braund	Stephen R. Braund & Associates
	Davin Holen	ADF&G Division of Subsistence
Field research staff	Davin Holen	ADF&G Division of Subsistence
	Theodore Krieg	ADF&G Division of Subsistence
	Tori Ciccone	ADF&G Division of Subsistence
	Terri Lemons	ADF&G Division of Subsistence
	Jory Stariwat	ADF&G Division of Subsistence
	Raena Schraer	Stephen R. Braund & Associates
	Stephanie Schively	Stephen R. Braund & Associates
	Russell Dyasuk	Aleknagik
	Nicholas Tinker	Aleknagik
	Gusty Iluksik, Jr.	Aleknagik
	Charlene Olsen	Clark's Point
	Richard Clark	Clark's Point
	Anuska Sears	Manokotak
	Roderick Andrew	Manokotak
	Vincent Nicketa	Manokotak

Systematic Household Surveys

The primary method for collecting subsistence harvest and use information in this project was a systematic household survey. Following receipt of comments at the scoping meetings, ADF&G finalized the survey instrument in February 2009. A key goal was to structure the survey instrument so as to collect demographic, resource harvest and use, and other economic data that were compatible with information collected in previous rounds of household surveys in the study communities and with data in the CSIS. Appendix A is an example of the survey instrument used in this project. The goal was to interview a representative of each year-round household in Aleknagik and Clark's Point, and a sample of 60 households in Manokotak. Participation was voluntary and all individual and household level responses were confidential.

As shown in Table 1-5, the study team interviewed 104 households in the 3 study communities, representing 60% of the final estimated year-round resident households. In Aleknagik, 32 out of a total of 47 households were interviewed (64% of total households), no contact could be made with 13 households, and 5 households declined to be interviewed. In Clark's Point, 11 out of a total of 18 households were interviewed (52% of total households), no contact could be made with 4 households, and 6 households declined to be interviewed. A random sample was conducted in Manokotak and 61 out of 96 households were interviewed (64% of total households). On average, interviews (including mapping) took approximately 1 hour to complete. The longest average for interviews was in Clark's Point, at about 1 hour 15 minutes, and the shortest average was about 45 minutes in Aleknagik (Table 1-6).

Mapping of Locations of Subsistence Hunting, Fishing, and Gathering, 2008

During household interviews, the researchers asked respondents to indicate the locations of their hunting, fishing, and gathering activities during the 2008 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 and SRB&A staff established a standard mapping method. Points were used for harvest locations and polygons (circled areas) were used for harvest effort areas. Some lines were also drawn in order to depict trap lines or courses taken during trolling for fish.

This information supplements and updates findings from earlier mapping studies, including a study of large land mammal hunting conducted by ADF&G and the Bristol Bay Native Association (BBNA) in 2001–2002 (Holen et al. 2005) and the mapping project conducted as part the ADF&G "Regional Habitat Management Guides" project in the early 1980s (Wright et al. 1985).

The maps used in each community consisted of a set of 3 paper maps: 1) a map covering the larger Bristol Bay region, including the Kvichak River and the upper Alaska Peninsula, at a scale of 1:750,000; 2) a map covering the general area around the communities, at 1:250,000; and 3) a map covering the immediate area around each community at a scale of 1:250,000. The maps were produced by Division of Subsistence staff using ArcGIS 9.3 software[4] on 11″ x 17″ paper. Each surveyed household recorded their subsistence activities for 2008 onto 2 sets of maps: subsistence fishing (water-based) activities were recorded on one set of maps, while hunting, trapping, and plant gathering (land-based) activities were recorded on the second set. Maps were organized by writing the community identification number, the household's identification number, the survey date, and the interviewer's initials on each map.

Some mapping procedures differed from researcher to researcher. Some researchers chose to do the mapping while conducting the survey; that is, mapping each resource as it came up in the interview. Others chose to map harvest areas immediately following the survey. For the most part, ADF&G and SRB&A researchers conducted all the mapping portions of the interviews. Division of Subsistence staff checked all maps for consistency by matching them to the survey forms at the end of each day.

Table 1-5.–Sample achievement for Phase IV comprehensive subsistence baseline update, 2008.

	Aleknagik	Clark's Point	Manokotak
Number of initial dwelling units	50	21	100
Interview goal	50	21	100
Households interviewed	32	11	61
Households failed to contact	13	4	9
Households declined to be interviewed	5	6	26
Moved/nonresident households[a]	3	3	4
Total households attempted to interview	47	18	101
Refusal rate	14%	35%	30%
Final estimate of permanent households	47	18	96
Percentage interviewed	68.1%	61.1%	63.5%
Interview weighting factor	1.47	1.64	1.57
Sampled population	119	23	241
Estimated population	175	38	379

a. Nonresident households had not lived in the community for at least 3 months during the study year.

4. 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 1-6.–Average length of interviews.

Community	Number of surveys	Length of interviews (hours) Mean	Maximum	Minimum
Aleknagik	32	0.84	1.72	0.23
Clark's Point	11	1.21	2.40	0.48
Manokotak	61	1.02	3.07	0.15
Total	**104**	**.99**	**3.07**	**0.15**

Household Survey Implementation

Aleknagik and Clark's Point

As noted above, Holen traveled to Dillingham March 4–6, 2009, to facilitate logistics. This included meeting with the Aleknagik tribal administrator Allen Ilutsik to find possible LRAs. In addition, Holen worked with Ilutsik to create a household list for Aleknagik. Holen was unable to travel to Clark's Point due to inclement weather. He was able to talk with village administrator Sharon Clark by phone to get a list of possible LRAs. Holen contacted all the LRAs and organized transportation for them so that the training could occur on March 9. The training on March 9 lasted 2 hours, and, at the end of the training, each LRA was paired with a researcher from ADF&G or SRB&A. Arrangements were then made to start the surveys the next day. Schively and Stariwat traveled the next morning to Clark's Point, where they stayed until March 13. This research team wrapped up their effort on March 13 in both communities, by which time 7 surveys had been completed in Clark's Point and 31 in Aleknagik. After the research team left the communities, LRA Charlene Olsen completed 4 more surveys in Clark's Point and Russell Dyasuk completed 1 more survey in Aleknagik, for a total of 11 surveys in Clark's Point and 32 surveys in Aleknagik (Table 1-5).

Manokotak

As noted above, researchers arrived in Manokotak the evening of March 18 and immediately started working with local researchers and staff from the tribal council to compile the household list. ADF&G conducted one day of training on March 19 and finalized the list that day. The fieldwork in Manokotak lasted from March 18 to April 1, 2009. Krieg returned to Manokotak on April 13 and April 20 to work with one of the local researchers to complete the final surveys. The survey ended on April 20 with 61 households interviewed.

DATA ANALYSIS AND REVIEW

SURVEY DATA ENTRY AND ANALYSIS

All data were coded for data entry by Division of Subsistence staff in Anchorage and Dillingham. Surveys were reviewed and coded by the project leads in each community for consistency. Responses were coded following standardized conventions used by 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 1 hour of data entry would be lost in the unlikely event of a

catastrophic failure. All survey data were entered twice and each set compared in order to minimize data entry errors.

Once data were entered and confirmed, information was processed with the use of Statistical Package for the Social Sciences (SPSS) software, version 19. 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. Analysis included review of raw data frequencies, cross tabulations, table generation, estimation of population parameters, and calculation of confidence intervals for the estimates. Missing information was dealt with on a case-by-case basis according to standardized practices, such as minimal value substitution or using an averaged response for similarly-characterized households. Typically, missing data are an uncommon, randomly-occurring phenomenon in household surveys conducted by the Division. In unusual cases where a substantial amount of survey information is missing, the household survey was treated as a "non-response" and not included in community estimates. ADF&G researchers documented all adjustments.

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

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

where:

$\bar{h}_i = \frac{h_i}{n_i}$ (mean harvest per returned survey)

H_i = the total harvest (numbers of resource or pounds) for the community *I*,

h_i = the total harvest reported in returned surveys,

n_i = the number of returned surveys, and

S_i = the number of households in a community.

As an interim step, the standard deviation (SD), or variance (V; which is the SD squared), was also calculated with the raw, unexpanded data. The standard error (SE), or SD, of the mean was also calculated for each community. This was used to estimate the relative precision of the mean, or the likelihood that an unknown value would fall within a certain distance from the mean. In this study, the relative precision of the mean is shown in the tables as a confidence limit (CL), expressed as a percentage. Once the standard error was calculated, the CL was determined by multiplying the SE by a constant that reflected the level of significance desired, based on a normal distribution. The constant for 95% confidence limits is 1.96. Though there are numerous ways to express the formula below, it contains the components of an SD, V, and SE.

Relative precision of the mean (CL%):

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

where:

s = sample standard deviation,

n = sample size,

N = population size, and

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

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

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

Population Estimates and Other Demographic Information

As noted above, a goal of the research was to collect demographic information for all year-round households in each study community. Because not all households were interviewed, population estimates for each community were calculated by multiplying the average household size of interviewed households by the total number of year-round households, as identified by Division of Subsistence researchers in consultation with community officials and other knowledgeable respondents. There may be several reasons for the differences between the population estimates for each community, as well as other demographic data, generated from the Division's household survey (as of December 31, 2008), and estimates developed by the federal census (April 2000), and by the Alaska Department of Commerce, Community, and Economic Development (CACD; July 1, 2009; see Table 1-1). The Division survey results may reflect changes in the population of each community since the 2000 federal census and the 2009 CACD. Also, the Division survey took place largely in March 2009, a month when seasonal residents of the community were likely to be absent. Some of these seasonal residents may have been part of the federal and CACD estimates. Differences in the composition of the sample upon which each population estimate was based may also account for some of the differences between the estimates.

MAP DATA ENTRY AND ANALYSIS

As noted, ADF&G staff checked maps for consistency with data recorded on the survey forms. They also removed extraneous marks from the maps to make sure the digitizing process would go as smoothly as possible. The maps were designed with tick marks marking geographical points that could be recorded for accuracy when digitizing occurred. Each map was registered by the GIS software using these points and then the SRB&A GIS team digitized the polygons, points, and lines that fieldworkers had hand-drawn on the paper maps during the interviews. SRB&A used the map template that has been used since the first phase of this project and which was provided earlier by ADF&G. Using the template, SRB&A produced the maps for this report.

Community Review Meetings

ADF&G staff presented preliminary survey findings at meetings in Manokotak on April 6, 2010, and Aleknagik and Clark's Point on April 7, 2010. The meetings were organized in collaboration with the village councils or the community leadership. In Aleknagik and Manokotak, the public meetings were held in the village council offices, and in Clark's Point the meeting was held in the gym at the school. The results of the community meetings appear in the community chapters under "Community Comments and Concerns." Table 1-7 reports attendance at each meeting.

Table 1-7.–Community meetings to review study findings.

		Attendance	
Community	Date	Community residents	Total
Aleknagik	4/7/2010	5	7
Clark's Point	4/7/2010	4	6
Manokotak	4/6/2010	15	17

Note Davin Holen and Ted Krieg (ADF&G) attended the meetings in Aleknagik, Clark's Point, and Manokotak.

Final Report Organization

ADF&G researchers prepared this final report. It summarizes the results of systematic household surveys and mapping interviews conducted by staff from ADF&G and SRB&A, as well as local research assistants, and community meetings. The findings are organized by study community. Several tables are missing economic and employment data for Clark's Point. Although households in Clark's Point participated in the subsistence harvest and use sections of the survey, many households chose not to participate in the employment and income section of the survey; therefore, these data have not been included for Clark's Point. Tables with data for all study communities are placed at the end of this chapter and are referenced in subsequent chapters. These include findings on demographic characteristics (Table 1-8), place of birth (Table 1-9), employment characteristics (Table 1-10), job site locations (Table 1-11), cost of food and amount of income spent on food (Table 1-12), individual participation in harvesting and processing of wild resources (Table 1-13), characteristics of resource harvests and uses (Table 1-14), percentage of households harvesting salmon by gear type and species (Table 1-15), and a list of resources used in the study communities, including both commonly used names and Linnaean taxonomic names (Table 1-16). Figure 1-2 shows estimated harvests of wild resources, in pounds usable weight per capita by study community, for years when comprehensive household surveys were conducted. Because of the large number of maps of hunting, fishing, and gathering areas used by each community in 2008, all maps are published as Appendix C, "Harvest Use Area Maps by Community" (included on a CD-ROM attached to the back cover of the printed reports). Each study community has received sets of paper copies of the maps. The final chapter of the report discusses harvest trends in the study communities for salmon, moose, caribou, and total resources.

ADF&G provided a draft report to SRB&A, local ADF&G area biologists, and to the study communities for their review and comment. After receipt of comments, the report was finalized. ADF&G mailed a short (4 page) summary of the study findings to every household in the 3 study communities (Appendix D).

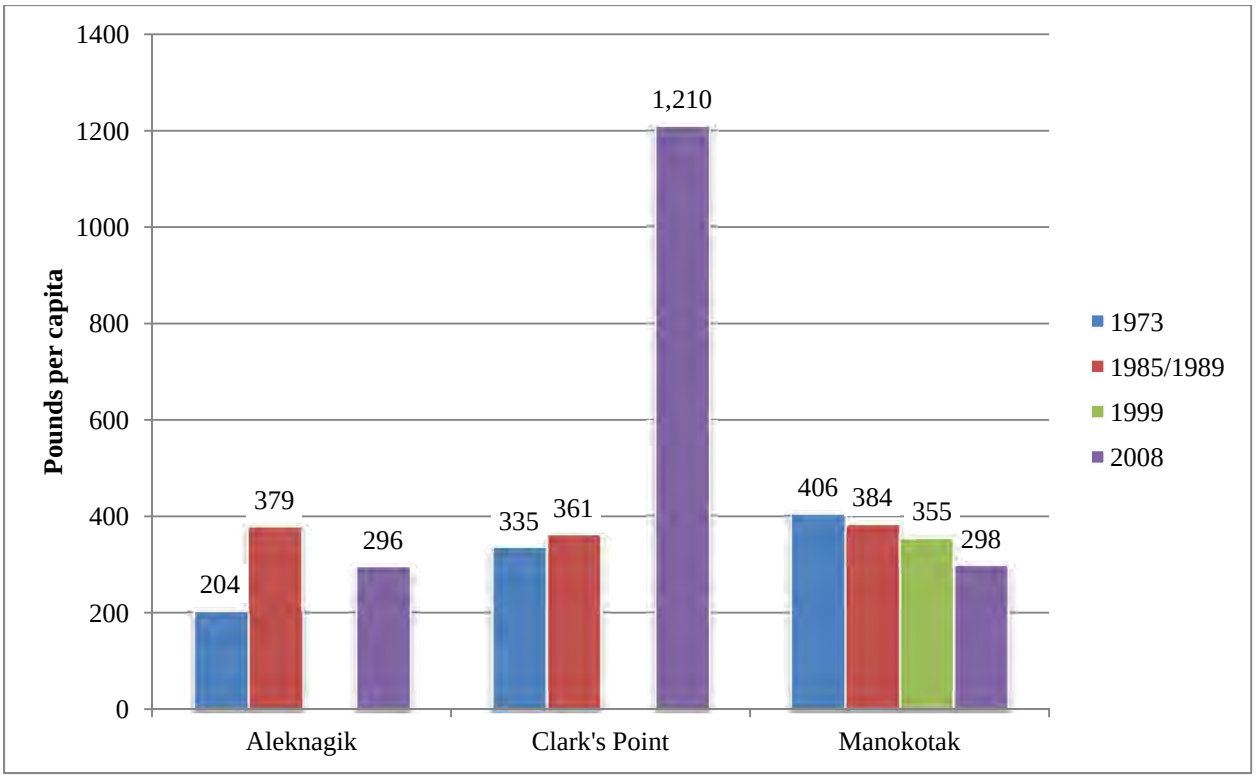

Figure 1-2.– Subsistence harvest, pounds usable weight per capita, study communities, all study years.

Table 1-8.–Demographic characteristics of study communities, 2008.

Characteristics	Aleknagik	Clark's Point	Manokotak
Sampled households	32	11	61
Number of households in the community	47	18	96
Percentage of households sampled	68.1%	61.1%	63.5%
Household size			
Mean	3.72	2.09	3.95
Minimum	1	1	1
Maximum	11	4	9
Sample population	119	23	241
Estimated community population	175	38	379
Age			
Mean	31	38	31
Minimum[a]	2	7	0
Maximum	79	82	87
Median	29	41	30
Length of residency—population			
Mean	22	29	25
Minimum	2	4	0
Maximum	70	70	87
Length of residency—household heads			
Mean	31	37	38
Minimum	2	4	1
Maximum	70	70	87
Sex			
Males			
Number	101	23	202
Percentage	58.0%	60.9%	53.4%
Females			
Number	74	15	177
Percentage	42.0%	39.1%	46.6%
Alaska Native			
Households (either head)			
Number	40	18	94
Percentage	84.4%	100.0%	98.4%
Estimated population			
Number	159	34	378
Percentage	90.8%	91.3%	99.6%

a. A minimum household age of 0 indicates newborn in 2008.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 1-9.–Place of birth of household heads, study communities, 2008.

Birthplace[a]	Percentage of household heads		
	Aleknagik	Clark's Point	Manokotak
Akiachak	0.0%	0.0%	4.1%
Aleknagik	48.3%	0.0%	3.1%
Anchor Point	0.0%	6.3%	0.0%
Anchorage	1.7%	0.0%	0.0%
Barrow	1.7%	0.0%	0.0%
Bethel	1.7%	0.0%	2.0%
Buckland	0.0%	6.3%	0.0%
Clark’s Point	0.0%	50.0%	0.0%
Dillingham	8.6%	12.5%	0.0%
Eek	0.0%	0.0%	1.0%
Ekuk	0.0%	0.0%	1.0%
Ekwok	1.7%	0.0%	0.0%
Igushik	0.0%	0.0%	1.0%
Kanakanak	0.0%	6.3%	0.0%
Koliganek	0.0%	0.0%	1.0%
Kongiganak	0.0%	0.0%	3.1%
Kukukak	0.0%	0.0%	1.0%
Kulukak	0.0%	0.0%	6.1%
Kuskokwim River	0.0%	6.3%	0.0%
Kwigak	1.7%	0.0%	0.0%
Kwigillingok	0.0%	0.0%	1.0%
Manokotak	1.7%	0.0%	56.1%
Mekoryuk	0.0%	0.0%	2.0%
Osviak	0.0%	0.0%	5.1%
Portage Creek	0.0%	6.3%	0.0%
Quinhagak	0.0%	0.0%	2.0%
Togiak	8.6%	0.0%	7.1%
Tuklung	1.7%	0.0%	0.0%
Twin Hills	0.0%	0.0%	2.0%
Unknown	1.7%	0.0%	0.0%
Other U.S.	20.7%	0.0%	1.0%
Foreign	0.0%	6.3%	0.0%

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

Source ADF&G Division of Subsistence household surveys, 2009.

Table 1-10.–Employment characteristics, study communities, 2008.

Characteristics	Aleknagik	Clark's Point[a]	Manokotak
All adults		–	
Number	126	–	277
Mean weeks employed	20.6		19.2
Employed adults			
Number	53	–	102
Percentage	42.0%	–	36.8%
Jobs			
Number	85	–	164
Mean	1.6	–	1.6
Minimum	1.0	–	1.0
Maximum	4.0	–	7.0
Months employed			
Mean	7.5	–	7.6
Minimum	0.0	–	0.0
Maximum	12.0	–	12.0
Percent employed year-round	32.1%	–	42.2%
Mean weeks employed	32.5	–	33.1
Households			
Number	47	–	96
Employed			
Number	38	–	86
Percentage	81.3%	–	90.2%
Jobs per employed household			
Mean	3.3	–	3.0
Minimum	1.0	–	1.0
Maximum	7.0	–	8.0
Employed adults			
Minimum	1.0	–	1.0
Maximum	6.0	–	5.0
Mean			
Employed households	2.0	–	1.9
Total households	1.7	–	1.7
Mean person-weeks of employment	66.2	–	61.3

a. There were not enough responses to provide summary information.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 1-11.–Location of jobs, study communities, 2008.

Location of job	Aleknagik (Estimated 85 jobs) Number	Aleknagik (Estimated 85 jobs) Percent	Clark's Point[a] (Unable to estimate jobs) Number	Clark's Point[a] (Unable to estimate jobs) Percent	Manokotak (Estimated 168 jobs) Number	Manokotak (Estimated 168 jobs) Percent
Aleknagik	42	48.8%	–	–	0	0.0%
Clark's Point	0	0.0%	–	–	0	0.0%
Manokotak	0	0.0%	–	–	108	63.9%
Study area subtotal	**42**	**49.4%**	–	–	**108**	**64.3%**
Anchorage	0	0.0%	–	–	2	1.2%
Dillingham	33	38.4%	–	–	4	2.4%
Iliamna	2	2.3%	–	–	0	0
Livengood	0	0.0%	–	–	1	0.6%
Naknek	1	1.2%	–	–	0	0.0%
Port Heiden	1	1.2%	–	–	0	0.0%
Togiak	1	1.2%	–	–	7	4.1%
Ugashik	1	1.2%	–	–	0	0.0%
Nushagak	0	0.0%	–	–	25	14.8%
Kulukak	0	0.0%	–	–	1	0.6%
Ekuk	3	3.5%	–	–	2	1.2%
Igushik	0	0.0%	–	–	11	6.5%
Bering Sea	0	0.0%	–	–	5	3.0%
Other U.S.	1	1.2%	–	–	2	1.2%
Total	**85**	**100.0%**	–	–	**168**	**100.0%**

a. There were not enough responses to provide summary information.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 1-12.–Estimated annual cost of purchasing food, study communities, 2008.

Community	Mean household cost of annual food purchase	Cost of food per capita	Percent of annual cash income spent on food[a]
Aleknagik	$7,666	$2,062	15.1%
Clark's Point	$8,940	$4,276	–
Manokotak	$9,249	$2,341	19.5%

a. There were not enough responses to provide summary information for Clark's Point.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 1-13.–Participation in the harvest and processing of wild resources, study communities, 2008.

	Aleknagik	Clark's Point	Manokotak
Total number of people	**175**	**38**	**379**
Birds / game			
Hunt			
Number	74.9	26.2	116.5
Percentage	42.9%	69.6%	30.7%
Missing	0	0	3.1
Missing percentage	0.0%	0.0%	0.8%
Process			
Number	72.0	32.7	165.2
Percentage	41.2%	87.0%	43.6%
Missing	0	0	3.1
Missing percentage	0.0%	0.0%	0.8%
Fish			
Fish			
Number	130.7	31.1	215.6
Percentage	74.8%	82.6%	56.8%
Missing	0	0	0
Missing percentage	0.0%	0.0%	0.0%
Process			
Number	95.5	34.4	190.4
Percentage	54.6%	91.3%	50.2%
Missing	0	0	7.9
Missing percentage	0.0%	0.0%	2.1%
Furbearers			
Hunt or trap			
Number	14.7	18.0	64.5
Percentage	8.4%	47.8%	17.0%
Missing	0	0	7.9
Missing percentage	0.0%	0.0%	2.1%
Process			
Number	13.2	18.0	88.1
Percentage	7.6%	47.8%	23.2%
Missing	0	0	11.0
Missing percentage	0.0%	0.0%	2.9%
Plants			
Gather			
Number	151.3	32.7	270.7
Percentage	86.6%	87.0%	71.4%
Missing	0	0	6.3
Missing percentage	0.0%	0.0%	1.7%
Process			
Number	101.3	31.1	245.5
Percentage	58.0%	82.6%	64.7%
Missing	0	0	7.9
Missing percentage	0.0%	0.0%	2.1%
Any resource			
Attempt			
Number	163.0	36.0	303.7
Percentage	93.3%	95.7%	80.1%
Process			
Number	124.8	34.4	267.5

Source ADF&G Division of Subsistence household surveys, 2009.

Table 1-14.–Resource harvest and use characteristics for study communities, 2008.

	Aleknagik	Clark's Point	Manokotak
Mean number of resources used per household	14.5	22.7	21.5
Minimum	4.0	10.0	3.0
Maximum	33.0	39.0	57.0
95 % confidence limit (±)	10.4%	13.8%	7.7%
Median	13.0	24.0	20.0
Mean number of resources attempted to harvest per household	11.0	18.1	13.5
Minimum	1.0	9.0	0.0
Maximum	24.0	41.0	45.0
95 % confidence limit (±)	12.5%	21.0%	11.1%
Median	9.5	16.0	12.0
Mean number of resources harvested per household	10.3	17.2	12.8
Minimum	1.0	9.0	0.0
Maximum	22.0	39.0	44.0
95 % confidence limit (±)	12.6%	20.7%	11.3%
Median	9.5	16.0	12.0
Mean number of resources received per household	6.2	9.5	12.5
Minimum	0.0	1.0	0.0
Maximum	23.0	20.0	41.0
95 % confidence limit (±)	18.3%	33.9%	12.8%
Median	4.5	10.0	8.0
Mean number of resources given away per household	6.3	11.6	9.0
Minimum	0.0	3.0	0.0
Maximum	20.0	32.0	42.0
95 % confidence limit (±)	20.4%	30.7%	15.7%
Median	4.0	10.0	7.0
Mean household harvest, pounds	755.1	2,530.1	758.7
Minimum	8.0	451.4	0.0
Maximum	3,912.3	10,622.9	6,496.8
Total pounds harvested	**35,491.2**	**28,801.0**	**72,835.3**
Community per capita harvest, pounds	296.0	1,210.1	298.4
Percent using any resource	100.0%	100.0%	100.0%
Percent attempting to harvest any resource	100.0%	100.0%	96.7%
Percent harvesting any resource	100.0%	100.0%	96.7%
Percent receiving any resource	96.9%	100.0%	93.4%
Percent giving away any resource	84.4%	100.0%	90.2%
Number of households in sample	32	11	61
Number of resources available	126	126	127

Source ADF&G Division of Subsistence household surveys, 2009.

Table 1-15.–Percentage of households harvesting salmon, by gear type and species, study communities, 2008.

Resource	Removed from commercial catch	Subsistence methods			Subsistence gear, any method	Rod and reel	Any method
		Setnet	Dip net	Other			
Aleknagik							
Salmon	15.6%	50.0%	0.0%	0.0%	50.0%	40.6%	78.1%
Chum salmon	6.3%	15.6%	0.0%	0.0%	15.6%	0.0%	18.8%
Coho salmon	6.3%	21.9%	0.0%	0.0%	21.9%	40.6%	56.3%
Chinook salmon	15.6%	50.0%	0.0%	0.0%	50.0%	6.3%	65.6%
Pink salmon	6.3%	0.0%	0.0%	0.0%	0.0%	3.1%	9.4%
Sockeye salmon	15.6%	50.0%	0.0%	0.0%	50.0%	15.6%	78.1%
Spawning sockeye	0.0%	21.9%	0.0%	0.0%	21.9%	15.6%	37.5%
Unknown salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clark's Point							
Salmon	54.5%	81.8%	0.0%	0.0%	81.8%	9.1%	90.9%
Chum salmon	27.3%	54.5%	0.0%	0.0%	54.5%	0.0%	63.6%
Coho salmon	45.5%	63.6%	0.0%	0.0%	63.6%	9.1%	90.9%
Chinook salmon	54.5%	72.7%	0.0%	0.0%	72.7%	0.0%	81.8%
Pink salmon	27.3%	63.6%	0.0%	0.0%	63.6%	0.0%	63.6%
Sockeye salmon	27.3%	81.8%	0.0%	0.0%	81.8%	9.1%	90.9%
Spawning sockeye	0.0%	27.3%	0.0%	0.0%	27.3%	9.1%	36.4%
Unknown salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Manokotak							
Salmon	32.8%	67.2%	18.0%	3.3%	68.9%	14.8%	77.0%
Chum salmon	4.9%	18.0%	0.0%	0.0%	18.0%	0.0%	18.0%
Coho salmon	11.5%	29.5%	0.0%	1.6%	29.5%	14.8%	44.3%
Chinook salmon	32.8%	44.3%	1.6%	1.6%	45.9%	1.6%	57.4%
Pink salmon	4.9%	11.5%	0.0%	0.0%	11.5%	0.0%	13.1%
Sockeye salmon	27.9%	67.2%	0.0%	1.6%	68.9%	1.6%	77.0%
Spawning sockeye	0.0%	23.0%	18.0%	3.3%	42.6%	14.8%	52.5%
Unknown salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2009.

Table 1-16.–Resources used in the study communities, 2008.

Common name(s)[a]	Linnaean taxonomic name
Fish	
Pacific salmon	
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Chinook salmon	*Oncorhynchus tshawytscha*
Pink salmon	*Oncorhynchus gorbuscha*
Sockeye salmon–fresh and spawning	*Oncorhynchus nerka*
Pacific herring–all life stages	*Clupea pallasi*
Rainbow smelt	*Osmerus mordax*
Cods	
Pacific (gray) cod	*Gadus macrocephalus*
Pacific tomcod	*Microgadus proximus*
Walleye pollock (whiting)	*Theragra chalcogramma*
Flounders /soles	
Starry flounder	*Platichthys stellatus*
Yellowfin sole	*Limanda aspera*
Greenlings	
Lingcod	*Ophiodon elongatus*
Pacific halibut	*Hippoglossus stenolepis*
Rockfish[b]	*Sebastes* spp.
Sablefish (black cod)	*Anoplopoma fimbria*
Slimy sculpin (bullhead)	*Cottus cognatus*
Salmon shark	*Lamna ditropis*
(Threespine) stickleback (needlefish)	*Gasterosteus aculeatus*
Bering wolffish	*Anarhichas orientalis*
Alaska blackfish	*Dallia pectoralis*
Burbot	*Lota lota*
Chars[c]	
Arctic char–resident and anadromous	*Salvelinus alpinus*
Dolly Varden–resident and anadromous	*Salvelinus malma*
Lake trout	*Salvelinus namaycush*
Arctic grayling	*Thymallus arcticus*
Northern pike	*Esox lucius*
Sturgeon	
White sturgeon	*Acipenser transmontanus*
Longnose sucker	*Catostomus catostomus*
Trout	
Rainbow trout (resident)/steelhead trout (anadromous)	*Oncorhynchus mykiss*
Whitefishes	
Broad whitefish	*Coregonus nasus*
Least cisco	*Coregonus sardinella*
Humpback whitefish	*Coregonus pidschian*

-continued-

Table 1-16.–Page 2 of 5.

Common name(s)[a]	Linnaean taxonomic name
Fish, continued	
Round whitefish	*Prosopium cylindraceum*
Sheefish	*Stenodus leucichthys*
Land mammals	
Large land mammals	
Black bear	*Ursus americanus*
Brown bear	*Ursus arctos*
Caribou	*Rangifer tarandus*
Moose	*Alces alces*
Dall sheep	*Ovis dalli*
Small land mammals/furbearers	
Beaver	*Castor canadensis*
Coyote	*Canis latrans*
Red fox	*Vulpes vulpes*
Alaska hare (jackrabbit)	*Lepus othus*
Snowshoe hare	*Lepus americanus*
River (land) otter	*Lontra canadensis*
Lynx	*Lynx canadensis*
Alaska marmot	*Marmota broweri*
Marten	*Martes americana*
Mink	*Mustela vison*
Muskrat	*Ondatra zibethicus*
Porcupine	*Erethizon dorsatum*
Arctic ground (parka) squirrel	*Spermophilus parryii*
Red (tree) squirrel	*Tamiasciurus hudsonicus*
Short-tailed weasel (ermine)	*Mustela erminea*
Gray wolf	*Canis lupus*
Wolverine	*Gulo gulo*
Marine mammals	
Bearded seal	*Erignathus barbatus*
Harbor seal–fresh water and salt water	*Phoca vitulina*
Ringed seal	*Phoca hispida*
Sea otter	*Enhydra lutris*
Steller sea lion	*Eumetopias jubatus*
Walrus	*Odobenus rosmarus*
Beluga whale	*Delphinapterus leucas*
Birds and eggs	
Migratory birds and eggs	
Ducks and eggs	
Bufflehead	*Bucephala albeola*
Common eider	*Somateria mollissima*
King eider	*Somateria spectabillis*

-continued-

Table 1-16.–Page 3 of 5.

Common name(s)[a]	Linnaean taxonomic name
Birds and eggs, continued	
Goldeneyes	*Bucephala* spp.
Mallard	*Anas platyrhynchos*
Common merganser	*Mergus merganser*
Red-breasted merganser	*Mergus serrator*
Northern pintail	*Anas acuta*
Black scoter	*Melanitta nigra*
White-winged scoter	*Melanitta fusca*
Northern shoveler	*Anas clypeata*
Green-winged teal	*Anas crecca*
American wigeon	*Anas americana*
Geese and eggs	
Brant	*Branta bernicla*
Canada geese	
Dusky Canada goose	*Branta canadensis occidentalis*
Cackling Canada goose	*Branta canadensis minima*
Lesser Canada goose	*Branta canadensis parvipes*; *B. canadensis taverner*
Snow goose	*Chen caerulescens*
White-fronted geese	*Anser* spp.
Swans	
Trumpeter swan	*Cygnus buccinator*
Tundra (whistling) swan	*Cygnus columbianus*
Sandhill crane	*Grus canadensis*
Shorebirds	
Common snipe	*Gallinago gallinago*
Snowy owl	*Bubo scandiaca*
Seabirds and loons and eggs	
Gulls	*Larus* spp.
Terns	*Sterna* and *Chlidonias* spp.
Loons	*Gavia* spp.
Upland game birds	
Ruffed grouse	*Bonasa umbellus*
Spruce grouse	*Dendragapus canadensis*
Ptarmigan	*Lagopus* spp.
Marine invertebrates	
Butter clam	*Saxidomus giganteus*
Freshwater clams	*Anodonta* spp.
Horse clam (gaper)	*Tresus capax*
Pacific littleneck (steamer) clam	*Protothaca staminea*
Pinkneck (surf) clam	*Mactromeris polynyma*
Pacific razor clam	*Siliqua patula*
Softshell clam	*Mya arenaria*

-continued-

Table 1-16.–Page 4 of 5.

Common name(s)[a]	Linnaean taxonomic name
Marine invertebrates, continued	
Nuttall cockle	*Clinocardium nuttallii*
Crabs	
Dungeness crab	*Cancer magister*
King crabs	*Paralithodes* spp.; *Lithodes* spp.
Tanner crabs	
Tanner crab, bairdi	*Chionoecetes bairdi*
Mussels	*Mytilus* spp.
Octopus	*Octopus vulgaris*
Weathervane scallop	*Patinopecten caurinus*
Shrimps	*Pandalus* spp.; *Penaeus* spp.
Plants and fungi	
Berries	
Crowberry (blackberry)	*Empetrum nigrum*
Alpine blueberry	*Vaccinium uliginosum*
Bog cranberry	*Oxycoccus microcarpus*
High bush cranberry	*Viburnum edule*
Cranberry (lingonberry)	*Vaccinium vitus-idaea*
Northern black currant	*Ribes hudsonianum*
Northern red currant	*Ribes triste*
Nagoonberry	*Rubus arcticus*
Raspberry	*Rubus idaeus*
Salmonberry, cloudberry	*Rubus chamaemorus*
Other plants	
Chickweeds	*Stellaria* spp.
Coltsfoot, wild spinach	*Petasites hyperboreus*
Ferns (fiddleheads)	Various spp.
Fireweed	*Epilobium angustifolium*
Grasses	*Graminea family*
Horsetails	*Equisetum* spp.
Labrador tea	*Ledum palustre*
Common mountain juniper	*Juniperus communis*
Pineapple weed	*Matricaria matricarioides*
Rose hips	*Rosa acicularis*
Roseroot	*Sedum rosea*
Sour dock, wild rhubarb	*Rumex fenestratus*
Cinquefoil (tundra rose)	*Potentilla fruticosa*
Cow parsnip (wild celery)	*Heracleum lanatum*
Flag (wild iris)	*Iris setosa*
Chive (wild onion)	*Allium schoenoprasm*
Wild pea	*Hedysarum mackenzii*
Wooly lousewort	*Pedicularis kanei*

-continued-

Table 1-16.–Page 5 of 5.

Common name(s)[a]	Linnaean taxonomic name
Plants and fungi, continued	
Wormwood	*Artemisia tilesii*
Yarrow	*Achillea borealis*
Fungi	Various spp.
Trees	
White spruce	*Picea glauca*
Paper birch	*Betula papyrifera*
Balsam poplar (cottonwood)	*Populus balsamifera*
Mountain ash	*Sorbus scopulina*
Alder	*Alnus incana*

a. This table lists species harvested and / or used by study community residents, but that may not be specifically discussed in this report.

b. The household survey specified black rockfish species as dark dusky, black, light dusky, silvergray, widow and yellowtail and gave their common name as "sea bass" or "black bass." The household survey specified red rockfish species as yelloweye (for which "red snapper" was given as a common name), rougheye, Pacific ocean perch, darkblotched, harlequin, northern, copper, quillback, rosethorn, redstripe, canary, shortraker, blackquill, red banded and tiger, as well as shortspine thornyhead (Sebastolobus alascanus), for which "idiotfish" was given as a common name.

c. The household survey specified Arctic char, Dolly Varden, and sea-run Dolly Varden.

Source ADF&G Division of Subsistence household surveys, 2009. See Appendix A.

CHAPTER 2: ALEKNAGIK

COMMUNITY BACKGROUND

The residents of Aleknagik were part of the larger nation of Yup'ik speaking peoples called the *Kiatagmiut* (Dumond and VanStone 1995:46). The Kiatagmiut territory included the Nushagak River drainage as well as the Wood River lakes, including Aleknagik Lake (VanStone 1967). The outlet of Aleknagik Lake, where it drains into the Wood River, was a productive area for harvesting salmon as well as nonsalmon fish. The river also provided access to Nushagak Bay for harvesting marine mammals, historically a major resource for Central Yup'ik peoples.

The community was known as "Wood River Village." In 1933, a school was built which attracted a number of families from Goodnews Bay, Togiak, and Kulukak. In 1959, the state constructed a 25 mile road to connect the south shore to Dillingham; the road was upgraded in the late 1980s and paved in the mid 2000s (AKCIS[5]).

The present community of Aleknagik is located on both the north and south shores of the Wood River. The north shore is accessible via boat during the summer and snowmachine in the winter, and the south shore is accessible by road from Dillingham. The south shore has facilities for access to the Wood-Tikchik State Park at the Aleknagik boat launch. The school, city, and tribal government building are located on the north shore. There is also a state-maintained airstrip and smaller private airstrip located on the north shore as well.

DEMOGRAPHY, CASH EMPLOYMENT, AND MONETARY INCOME

DEMOGRAPHY

According to the federal census, Aleknagik had 221 residents in 2000 (U. S. Census Bureau 2001; Table 1-1). However, the household survey conducted for this study in 2008 found a population of 175 residents, of which 91% (159 residents) were Alaska Native (Table 1-1). Because Aleknagik is a popular location for accessing the Wood-Tikchik State Park, there are homes that are only occupied seasonally on both shores of the Wood River.

The survey found an estimated 47 year-round households in Aleknagik in 2008 (tables 1-1 and 1-5). Of these, 32 households (68%) were interviewed. The mean number of years of residency in Aleknagik was 22 years, with the maximum length of residence at 70 years (Table 1-8). The largest age cohort for males was youths between 10 and 14 years of age; for females, youths between 5 and 9 years of age (Table 2-1 and Figure 2-1). Other age categories were fairly evenly distributed, especially between 20 and 64 years of age. People of age 65 or greater were not as well represented in the sample. At the time of the survey, 58% (101 residents) of Aleknagik residents were males and 42% (74 residents) were females (Table 1-8).

Of the Aleknagik household heads interviewed, 77% were born in Alaska (Table 1-9). Most were born in Aleknagik (48%), followed by the communities of Dillingham (9%) and Togiak (9%). In comparison, 21% were born outside the state of Alaska.

5. Alaska Community Database Community Information Summaries. http://www.commerce.state.ak.us/dca/commdb/CF_CIS.htm.

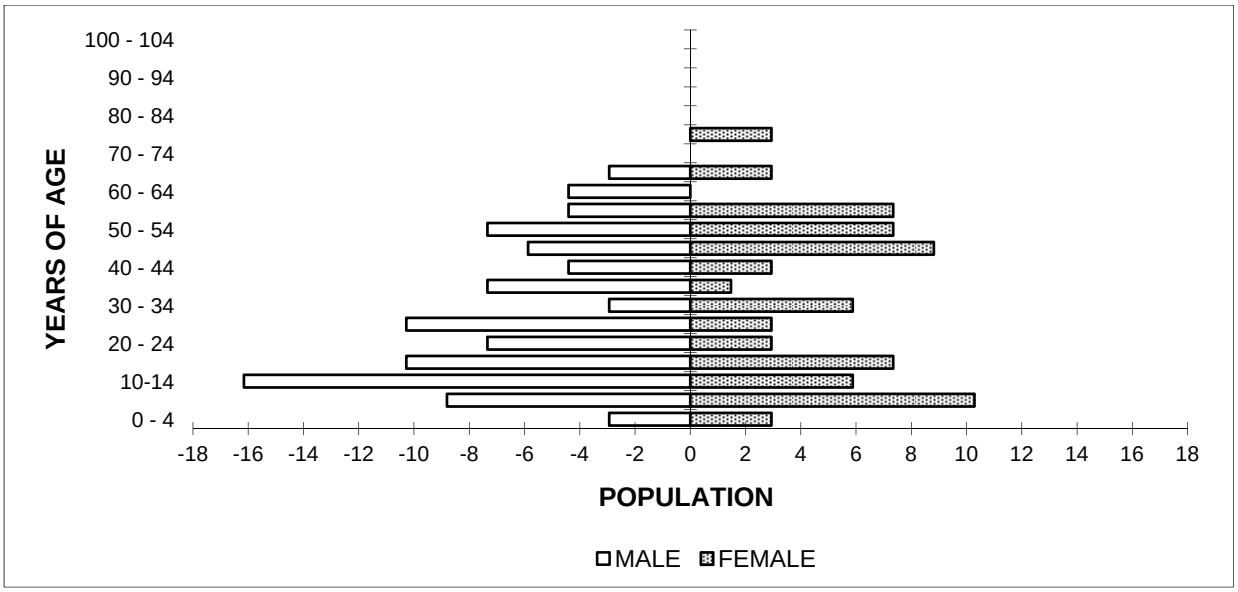

Figure 2-1.–Population profile, Aleknagik, 2008.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 2-1.–Population profile, Aleknagik, 2008.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	2.9	2.9%	2.9%	2.9	4.0%	4.0%	5.9	3.4%	3.4%
5–9	8.8	8.7%	11.6%	10.3	14.0%	18.0%	19.1	10.9%	14.3%
10–14	16.2	15.9%	27.5%	5.9	8.0%	26.0%	22.0	12.6%	26.9%
15–19	10.3	10.1%	37.7%	7.3	10.0%	36.0%	17.6	10.1%	37.0%
20–24	7.3	7.2%	44.9%	2.9	4.0%	40.0%	10.3	5.9%	42.9%
25–29	10.3	10.1%	55.1%	2.9	4.0%	44.0%	13.2	7.6%	50.4%
30–34	2.9	2.9%	58.0%	5.9	8.0%	52.0%	8.8	5.0%	55.5%
35–39	7.3	7.2%	65.2%	1.5	2.0%	54.0%	8.8	5.0%	60.5%
40–44	4.4	4.3%	69.6%	2.9	4.0%	58.0%	7.3	4.2%	64.7%
45–49	5.9	5.8%	75.4%	8.8	12.0%	70.0%	14.7	8.4%	73.1%
50–54	7.3	7.2%	82.6%	7.3	10.0%	80.0%	14.7	8.4%	81.5%
55–59	4.4	4.3%	87.0%	7.3	10.0%	90.0%	11.8	6.7%	88.2%
60–64	4.4	4.3%	91.3%	0.0	0.0%	90.0%	4.4	2.5%	90.8%
65–69	2.9	2.9%	94.2%	2.9	4.0%	94.0%	5.9	3.4%	94.1%
70–74	0.0	0.0%	94.2%	0.0	0.0%	94.0%	0.0	0.0%	94.1%
75–79	0.0	0.0%	94.2%	2.9	4.0%	98.0%	2.9	1.7%	95.8%
80–84	0.0	0.0%	94.2%	0.0	0.0%	98.0%	0.0	0.0%	95.8%
85–89	0.0	0.0%	94.2%	0.0	0.0%	98.0%	0.0	0.0%	95.8%
90–94	0.0	0.0%	94.2%	0.0	0.0%	98.0%	0.0	0.0%	95.8%
95–99	0.0	0.0%	94.2%	0.0	0.0%	98.0%	0.0	0.0%	95.8%
100–104	0.0	0.0%	94.2%	0.0	0.0%	98.0%	0.0	0.0%	95.8%
Missing	5.9	5.8%	100.0%	1.5	2.0%	100.0%	7.3	4.2%	100.0%
Total	**101.3**	**100.0%**		**73.4**	**100.0%**		**174.8**	**100.0%**	

Source ADF&G Division of Subsistence household surveys, 2009.

CASH EMPLOYMENT CHARACTERISTICS AND MONETARY INCOME

Aleknagik is the only community in the region with a road link to Dillingham and residents are able to travel on the state maintained road to Dillingham for work. In 2008, the largest category of earned income (38%) in the community came from jobs in local and tribal governments, with a comparable percentage of jobs in the community (36%; Table 2-2). The second highest percentage of jobs (30%) came from resource harvesting occupations, mainly fishing, although there was some trapping, both of which accounted for 19% of the income. Federal and state government jobs were also important, accounting for 14% and 6% of the community's income, respectively (Table 2-2). Most jobs were located in Aleknagik (49%) and Dillingham (38%; Table 1-11).

On the household level, Aleknagik has a high level of employment; about 81% of households have at least 1 working adult member and 42% of adults were employed. The mean number of months of employment for all adults in Aleknagik was about 7.5 months, with 32% of adults employed year round (Table 1-10). This low number of adults employed year round could be the result of having so many residents involved in seasonal employment, such as commercial fishing and trapping (Table 2-2).

Table 2-2.–Employment by industry, Aleknagik, 2008.

	Jobs	Households	Individuals	Percentage of income
Estimated total number	**126.3**	**38.2**	**79.3**	
Federal government	8.1%	18.8%	13.0%	13.7%
Executive, administrative, and managerial	2.3%	6.3%	3.7%	2.5%
Social scientists, social workers, religious workers and lawyers	1.2%	3.1%	1.9%	3.0%
Health technologists and technicians	1.2%	3.1%	1.9%	0.2%
Construction and extractive occupations	1.2%	3.1%	1.9%	3.5%
Transportation and material moving occupations	1.2%	3.1%	1.9%	3.7%
Handlers, equipment cleaners, helpers and laborers	1.2%	3.1%	1.9%	0.9%
State government	8.1%	18.8%	11.1%	6.2%
Teachers, librarians, and counselors	2.3%	3.1%	1.9%	1.2%
Administrative support occupations, including clerical	2.3%	6.3%	3.7%	3.3%
Service occupations	2.3%	6.3%	3.7%	0.7%
Handlers, equipment cleaners, helpers and laborers	1.2%	3.1%	1.9%	1.1%
Local and tribal governments	36.0%	50.0%	51.9%	38.1%
Executive, administrative and managerial	4.7%	12.5%	7.4%	6.0%
Teachers, librarians, and counselors	9.3%	21.9%	13.0%	15.1%
Registered nurses, pharmacists, dietitians, therapists and PAs	1.2%	3.1%	1.9%	1.1%
Health technologists and technicians	2.3%	6.3%	3.7%	2.1%
Administrative support occupations, including clerical	4.7%	9.4%	7.4%	2.2%
Service occupations	4.7%	12.5%	7.4%	6.4%
Construction and extractive occupations	1.2%	3.1%	1.9%	0.9%
Transportation and material moving occupations	2.3%	6.3%	3.7%	1.11%
Handlers, equipment cleaners, helpers and laborers	4.7%	12.5%	7.4%	2.3%
Agriculture, forestry and fishing	30.2%	62.5%	48.2%	18.6%
Agricultural, forestry and fishing occupations	30.2%	62.5%	48.2%	18.6%
Construction	1.2%	3.1%	1.9%	0.5%
Construction and extractive occupations	1.2%	3.1%	1.9%	0.5%
Manufacturing	0.0%	0.0%	0.0%	0.0%
Transportation, communication and utilities	2.3%	3.1%	1.9%	2.1%
Service occupations	2.3%	3.1%	1.9%	2.1%
Finance, insurance and real estate	0.0%	0.0%	0.0%	0.0%
Trade	2.3%	6.3%	3.7%	1.3%
Writers, artists, entertainers, and athletes	2.3%	6.3%	3.7%	1.3%
Services	9.3%	21.9%	14.8%	12.9%
Administrative support occupations, including clerical	3.5%	9.4%	5.6%	6.8%
Service occupations	4.7%	9.4%	7.4%	5.3%
Handlers, equipment cleaners, helpers and laborers	1.2%	3.1%	1.9%	0.8%

Source ADF&G Division of Subsistence household surveys, 2009.

LEVELS OF PARTICIPATION IN THE HARVESTS AND USES OF WILD RESOURCES

Table 1-13 reports levels of individual participation in the harvest and processing of wild resources by Aleknagik residents in 2008. An estimated 93% of residents attempted to harvest resources in 2008. Of these, 87% gathered plants and berries, 75% fished, and 43% hunted for birds or land mammals. Few residents were involved in furbearer hunting or trapping (8%), although, as noted above, trapping did provide some income in 2008 and researchers observed several residents traveling to and from their trap lines during the study.

RESOURCE HARVEST AND USE PATTERNS

Table 1-14 summarizes resource harvest and use characteristics for Aleknagik in 2008, at the household level. All households (100%) used, attempted to harvest, and harvested wild resources in 2008. The average household harvest was an estimated 755 lb usable weight; or 296 lb per capita. During the study year, Aleknagik households harvested an average of 10 different resources and used an average of 13 resources. The maximum number of resources used by any household was 33 and the maximum number of resources harvested by any one household was 22. In addition, households gave away an estimated average of 4 resources, 84% of households reported sharing resources with other households, and 97% of household reported receiving resources (Table 1-14).

Species Used and Seasonal Round

Residents of Aleknagik harvest a wide variety of species throughout the year and they often target specific species during certain periods of the year, following a cyclical harvest pattern that is regulated by season. Although residents did not relate that there was a beginning or end to a cycle, this report starts with salmon since this resource composes the highest percentage of the harvest in 2008, which is typical of communities of Southwest Alaska. In 2008, an estimated 88% of the households in Aleknagik harvested salmon (Table 2-3). In spring, community residents set gillnets along the lower part of the Wood River near Dillingham in order to harvest the early running Chinook salmon. Sockeye salmon, which arrive soon after, were harvested with setnets as well. Many residents also fished the Wood River just south of the community with rod and reel as well as in Lake Aleknagik, especially for coho salmon during mid to late summer. Spawning sockeye salmon, or “spawn-outs,” were harvested in the fall along the shores of Lake Aleknagik and Lake Nerka; an estimated 38% of households were involved in harvesting spawning sockeye salmon (Table 2-3). The berries on the low bushes of the surrounding tundra also ripen in late summer; 97% of households reported harvesting berries (Table 2-3).

Lake Aleknagik and Lake Nerka were popular locations for harvesting northern pike, Dolly Varden, rainbow trout and Arctic grayling. These nonsalmon fish were harvested during the summer and fall by boat with rod and reel gear or by jigging through the ice in the winter. Smelt were also harvested near the community in Lake Aleknagik, either by seine, gillnet, or rod and reel.

Caribou hunting is an opportunistic activity that lasts from fall into the winter, depending on caribou availability within reach of the community; however, in 2008, although 6% of residents reported hunting caribou, no harvests were made. In 2008, residents were more active in moose hunting, with 56% of households hunting moose, mainly along the shores of Lake Aleknagik and Lake Nerka via boat in the fall (see Table 2-4 for the top 10 resources harvested and used by Aleknagik residents). Residents also traveled up the Nushagak River by boat to hunt moose in the fall or by snowmachine in the winter; overall, an estimated 31% of households successfully harvested a moose.

Migratory birds travel through the area in fall and spring, stopping to rest on the marsh and tundra areas that surround the Wood River and Nushagak Bay. Residents also traveled to Bristol Bay to harvest eider ducks. In 2008, an estimated 44% of the households used migratory birds and 31% hunted and harvested them during the fall and spring hunts (Table 2-3). Nushagak Bay was also a common location for hunting

harbor seals. Seal meat was widely distributed, with 41% of households using harbor seals while 16% hunted and 13% harvested harbor seals. Residents of Aleknagik were active in trapping furbearers, including foxes and mink, during the winter; an estimated 34% of households reported harvesting small land mammals.

Harvest Quantities

Table 2-3 reports estimated wild resource harvests and uses by Aleknagik residents in 2008 and is organized first by general category and then by species. All resources are reported in pounds usable weight (see Appendix B for conversion factors). The use category includes all resources taken and given away by a household, and resources acquired from other harvesters, either as gifts, by barter or trade, through hunting partnerships, or as meat given to hunting guides by their clients. Purchased foods are not included. Differences between harvest and use percentages reflect sharing between households, which results in a wider distribution of wild foods.

The total estimated harvest for all subsistence resources during 2008 for Aleknagik was 51,738 lb, or 296 lb per capita (Table 2-3). Table 2-4 lists the top 10 resources harvested, in terms of pounds per capita, and the 10 resources used by the most Aleknagik households.

Table 2-3.–Estimated harvests and uses of fish, game, and plant resources, Aleknagik, 2008.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
All resources	**100.0%**	**100.0%**	**100.0%**	**96.9%**	**84.4%**	**51,738.1**	**1,100.8**	**296.0**	**13,525.4**		**287.8**	**24.0%**
Fish	100.0%	90.6%	90.6%	71.9%	65.6%	29,536.9	628.4	169.0	6,685.8		142.3	20.3%
Salmon	100.0%	87.5%	87.5%	59.4%	59.4%	25,057.1	533.1	143.4	4,382.8	ind	93.3	25.3%
Chum salmon	28.1%	21.9%	18.8%	12.5%	9.4%	967.6	20.6	5.5	198.3	ind	4.2	8.7%
Coho salmon	62.5%	56.3%	56.3%	21.9%	21.9%	3,498.1	74.4	20.0	685.9	ind	14.6	14.9%
Chinook salmon	90.6%	71.9%	65.6%	50.0%	40.6%	12,639.8	268.9	72.3	1,139.8	ind	24.3	21.5%
Pink salmon	12.5%	12.5%	9.4%	6.3%	3.1%	909.1	19.3	5.2	304.0	ind	6.5	12.2%
Sockeye salmon	100.0%	87.5%	87.5%	40.6%	46.9%	7,042.5	149.8	40.3	2,054.8	ind	43.7	17.0%
Fresh sockeye	93.8%	78.1%	78.1%	31.3%	31.3%	5,494.4	116.9	31.4	1,280.8	ind	27.3	20.8%
Spawning sockeye	46.9%	37.5%	37.5%	18.8%	28.1%	1,548.1	32.9	8.9	774.0	ind	16.5	12.1%
Unknown salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Nonsalmon fish	78.1%	68.8%	65.6%	50.0%	43.8%	4,479.8	95.3	25.6	2,303.0		49.0	17.7%
Herring	15.6%	0.0%	0.0%	15.6%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Herring roe	25.0%	3.1%	3.1%	25.0%	3.1%	30.8	0.7	0.2	4.4	gal	0.1	0.0%
Herring sac roe	6.3%	0.0%	0.0%	6.3%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Herring spawn on kelp	18.8%	3.1%	3.1%	18.8%	3.1%	30.8	0.7	0.2	4.4	gal	0.1	0.0%
Smelt	43.8%	15.6%	9.4%	34.4%	6.3%	305.5	6.5	1.7	94.0	gal	2.0	8.3%
Capelin (grunion)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Unknown smelt	43.8%	15.6%	9.4%	34.4%	6.3%	305.5	6.5	1.7	94.0	gal	2.0	8.3%
Cods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Pacific (gray) cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Pacific tomcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Flounders	3.1%	3.1%	3.1%	0.0%	0.0%	22.0	0.5	0.1	7.3	ind	0.2	0.0%
Starry flounder	3.1%	3.1%	3.1%	0.0%	0.0%	22.0	0.5	0.1	7.3	ind	0.2	0.0%
Halibut	9.4%	0.0%	0.0%	9.4%	0.0%	0.0	0.0	0.0	0.0	lb	0.0	0.0%
Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

-continued-

Table 2-3.–Page 2 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Fish, continued												
Salmon shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Yellowfin sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Alaska blackfish	6.3%	3.1%	3.1%	6.3%	3.1%	18.5	0.4	0.1	264.4	ind	5.6	0.0%
Burbot	0.0%	3.1%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Char	50.0%	43.8%	43.8%	12.5%	28.1%	1,161.8	24.7	6.6	829.8	ind	17.7	17.2%
Dolly Varden	37.5%	31.3%	28.1%	9.4%	18.8%	832.8	17.7	4.8	594.8	ind	12.7	17.5%
Dolly Varden–Freshwater	37.5%	31.3%	28.1%	9.4%	18.8%	801.9	17.1	4.6	572.8	ind	12.2	16.9%
Dolly Varden–Saltwater	3.1%	3.1%	3.1%	0.0%	0.0%	30.8	0.7	0.2	22.0	ind	0.5	0.0%
Dolly Varden–Togiak trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Lake trout	18.8%	18.8%	18.8%	6.3%	12.5%	329.0	7.0	1.9	235.0	ind	5.0	3.2%
Arctic grayling	9.4%	6.3%	6.3%	3.1%	0.0%	9.3	0.2	0.1	13.2	ind	0.3	2.9%
Northern pike	50.0%	46.9%	46.9%	12.5%	28.1%	2,813.0	59.9	16.1	1,004.6	ind	21.4	13.7%
Sheefish	3.1%	0.0%	0.0%	3.1%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Trout	18.8%	15.6%	15.6%	3.1%	3.1%	67.9	1.4	0.4	48.5	ind	1.0	2.6%
Rainbow trout	18.8%	15.6%	15.6%	3.1%	3.1%	67.9	1.4	0.4	48.5	ind	1.0	2.6%
Unknown trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Whitefishes	15.6%	12.5%	12.5%	6.3%	6.3%	51.0	1.1	0.3	36.7	ind	0.8	3.6%
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%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Humpback whitefish	12.5%	6.3%	6.3%	6.3%	3.1%	33.4	0.7	0.2	19.1	ind	0.4	1.2%
Round whitefish	6.3%	6.3%	6.3%	0.0%	3.1%	17.6	0.4	0.1	17.6	ind	0.4	3.5%
Land mammals	93.8%	59.4%	50.0%	75.0%	40.6%	11,550.6	245.8	66.1	373.1	ind	7.9	56.6%
Large land mammals	93.8%	59.4%	34.4%	75.0%	34.4%	11,100.8	236.2	63.5	23.5	ind	0.5	18.9%
Black bear	3.1%	3.1%	3.1%	0.0%	3.1%	85.2	1.8	0.5	1.5	ind	0.0	0.0%

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Table 2-3.–Page 3 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Land mammals, continued												
Brown bear	12.5%	9.4%	9.4%	3.1%	6.3%	1,498.1	31.9	8.6	4.4	ind	0.1	0.0%
Caribou	12.5%	6.3%	0.0%	12.5%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Moose	90.6%	56.3%	31.3%	68.8%	31.3%	9,517.5	202.5	54.5	17.6	ind	0.4	15.7%
Dall sheep	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Small land mammals	37.5%	34.4%	34.4%	6.3%	21.9%	449.8	9.6	2.6	349.6	ind	7.4	58.1%
Beaver	18.8%	12.5%	12.5%	6.3%	12.5%	347.0	7.4	2.0	39.7	ind	0.8	5.6%
Coyote	3.1%	3.1%	3.1%	0.0%	0.0%	0.0	0.0	0.0	1.5	ind	0.0	0.0%
Fox	15.6%	15.6%	15.6%	3.1%	6.3%	0.0	0.0	0.0	41.1	ind	0.9	7.8%
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	15.6%	15.6%	15.6%	3.1%	6.3%	0.0	0.0	0.0	41.1	ind	0.9	7.8%
Red fox–cross phase	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Hare	15.6%	12.5%	12.5%	3.1%	6.3%	44.1	0.9	0.3	22.0	ind	0.5	69.6%
Alaska hare (jackrabbit)	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	15.6%	12.5%	12.5%	3.1%	6.3%	44.1	0.9	0.3	22.0	ind	0.5	5.8%
Unknown hare	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
River (land) otter	6.3%	3.1%	3.1%	3.1%	3.1%	0.0	0.0	0.0	13.2	ind	0.3	0.0%
Lynx	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Marmot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Marten	9.4%	9.4%	9.4%	0.0%	3.1%	0.0	0.0	0.0	166.0	ind	3.5	4.9%
Mink	18.8%	18.8%	18.8%	3.1%	6.3%	0.0	0.0	0.0	35.3	ind	0.8	7.4%
Muskrat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Porcupine	3.1%	3.1%	3.1%	0.0%	3.1%	58.8	1.3	0.3	7.3	ind	0.2	0.0%
Squirrels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Arctic ground (parka) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Red (tree) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Weasel	6.3%	6.3%	6.3%	0.0%	0.0%	0.0	0.0	0.0	10.3	ind	0.2	3.7%

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Table 2-3.–Page 4 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Land mammals, continued												
Wolf	6.3%	6.3%	6.3%	0.0%	0.0%	0.0	0.0	0.0	4.4	ind	0.1	6.9%
Wolverine	9.4%	9.4%	9.4%	0.0%	3.1%	0.0	0.0	0.0	8.8	ind	0.2	2.6%
Marine mammals	56.3%	21.9%	18.8%	46.9%	34.4%	1,653.5	35.2	9.5	15.7	ind	0.3	9.3%
Porpoise	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Harbor porpoise	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Seal	46.9%	18.8%	15.6%	31.3%	25.0%	822.5	17.5	4.7	14.7	ind	0.3	8.9%
Bearded seal	6.3%	3.1%	0.0%	6.3%	3.1%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Harbor seal	40.6%	15.6%	12.5%	28.1%	21.9%	740.3	15.8	4.2	13.2	ind	0.3	8.4%
Harbor seal–saltwater	40.6%	15.6%	12.5%	28.1%	21.9%	740.3	15.8	4.2	13.2	ind	0.3	8.4%
Ringed seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown seal	3.1%	3.1%	3.1%	0.0%	3.1%	82.3	1.8	0.5	1.5	ind	0.0	0.0%
Steller sea lion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Walrus	15.6%	0.0%	0.0%	15.6%	6.3%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Whale	25.0%	3.1%	3.1%	21.9%	12.5%	831.0	17.7	4.8	1.0	ind	0.0	0.0%
Beluga whale	25.0%	3.1%	3.1%	21.9%	12.5%	831.0	17.7	4.8	1.0	ind	0.0	0.0%
Birds and eggs	87.5%	65.6%	65.6%	59.4%	46.9%	2,207.1	47.0	12.6	4,484.6	ind	95.4	46.0%
Migratory birds	43.8%	31.3%	31.3%	18.8%	25.0%	595.5	12.7	3.4	412.7	ind	8.8	40.2%
Ducks	31.3%	25.0%	28.1%	9.4%	18.8%	325.2	6.9	1.9	280.5	ind	6.0	42.6%
Bufflehead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Canvasback	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Eider	9.4%	9.4%	9.4%	0.0%	9.4%	149.0	3.2	0.9	58.8	ind	1.3	2.3%
Common eider	3.1%	3.1%	3.1%	0.0%	3.1%	11.8	0.3	0.1	7.3	ind	0.2	0.0%
King eider	9.4%	9.4%	9.4%	0.0%	9.4%	137.3	2.9	0.8	51.4	ind	1.1	3.4%
Gadwall	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Goldeneye	9.4%	9.4%	9.4%	0.0%	9.4%	16.5	0.4	0.1	20.6	ind	0.4	5.2%
Unknown goldeneye	9.4%	9.4%	9.4%	0.0%	9.4%	16.5	0.4	0.1	20.6	ind	0.4	5.2%

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Table 2-3.–Page 5 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Birds and eggs, continued												
Harlequin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Mallard	15.6%	15.6%	15.6%	0.0%	9.4%	52.9	1.1	0.3	52.9	ind	1.1	6.1%
Merganser	9.4%	9.4%	9.4%	0.0%	9.4%	37.0	0.8	0.2	54.3	ind	1.2	74.8%
Common merganser	9.4%	9.4%	9.4%	0.0%	9.4%	23.8	0.5	0.1	39.7	ind	0.8	3.8%
Red-breasted merganser	3.1%	3.1%	3.1%	0.0%	3.1%	13.2	0.3	0.1	14.7	ind	0.3	0.0%
Unknown merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Long-tailed duck (oldsquaw)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Northern pintail	9.4%	9.4%	9.4%	0.0%	6.3%	20.0	0.4	0.1	25.0	ind	0.5	3.7%
Scaup	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown scaup	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Black scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Northern shoveler	6.3%	6.3%	6.3%	0.0%	3.1%	6.2	0.1	0.0	10.3	ind	0.2	2.2%
Teal	3.1%	3.1%	3.1%	0.0%	3.1%	1.3	0.0	0.0	4.4	ind	0.1	0.0%
Green-winged teal	3.1%	3.1%	3.1%	0.0%	3.1%	1.3	0.0	0.0	4.4	ind	0.1	0.0%
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	15.6%	9.4%	12.5%	9.4%	6.3%	42.4	0.9	0.2	54.3	ind	1.2	7.5%
Geese	28.1%	25.0%	21.9%	9.4%	18.8%	214.2	4.6	1.2	124.8	ind	2.7	10.9%
Brant	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Canada geese	15.6%	15.6%	12.5%	3.1%	9.4%	94.4	2.0	0.5	74.9	ind	1.6	10.4%
Cacklers	9.4%	9.4%	6.3%	3.1%	6.3%	79.3	1.7	0.5	66.1	ind	1.4	6.3%
Lesser Canada geese	3.1%	3.1%	3.1%	0.0%	0.0%	3.5	0.1	0.0	2.9	ind	0.1	0.0%
Unknown Canada geese	6.3%	3.1%	3.1%	3.1%	3.1%	11.5	0.2	0.1	5.9	ind	0.1	0.0%
Emperor geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Snow geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

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Table 2-3.–Page 6 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Birds and eggs, continued												
White-fronted geese	6.3%	3.1%	3.1%	3.1%	3.1%	42.3	0.9	0.2	17.6	ind	0.4	0.0%
Unknown geese	6.3%	6.3%	6.3%	3.1%	6.3%	77.6	1.7	0.4	32.3	ind	0.7	4.3%
Swan	12.5%	9.4%	9.4%	3.1%	6.3%	56.1	1.2	0.3	7.3	ind	0.2	8.2%
Trumpeter swan	3.1%	3.1%	3.1%	0.0%	3.1%	29.7	0.6	0.2	2.9	ind	0.1	0.0%
Tundra (whistling) swan	9.4%	6.3%	6.3%	3.1%	3.1%	26.4	0.6	0.2	4.4	ind	0.1	6.9%
Unknown swan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Crane	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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Shorebirds	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Common snipe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Other birds	71.9%	56.3%	56.3%	37.5%	40.6%	693.0	14.7	4.0	989.9	ind	21.1	12.2%
Upland game birds	71.9%	56.3%	56.3%	37.5%	40.6%	693.0	14.7	4.0	989.9	ind	21.1	12.2%
Grouse	59.4%	53.1%	53.1%	25.0%	31.3%	321.8	6.8	1.8	459.7	ind	9.8	7.9%
Ptarmigan	46.9%	31.3%	31.3%	25.0%	28.1%	371.2	7.9	2.1	530.2	ind	11.3	6.7%
Unknown ptarmigan	46.9%	31.3%	31.3%	25.0%	28.1%	371.2	7.9	2.1	530.2	ind	11.3	6.7%
Bird eggs	59.4%	34.4%	34.4%	37.5%	25.0%	918.6	19.5	5.3	3,081.9	ind	65.6	19.9%
Duck eggs	12.5%	9.4%	9.4%	3.1%	9.4%	5.9	0.1	0.0	39.7	ind	0.8	3.0%
Mallard eggs	3.1%	3.1%	3.1%	0.0%	0.0%	0.7	0.0	0.0	4.4	ind	0.1	0.0%
Geese eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
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%
Shorebird eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Common snipe eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Seabird and loon eggs	59.4%	34.4%	34.4%	37.5%	25.0%	912.7	19.4	5.2	3,042.3	gal	64.7	20.2%
Cormorant eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Gull eggs	59.4%	34.4%	34.4%	37.5%	25.0%	912.7	19.4	5.2	3,042.3	gal	64.7	20.2%
Murre eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%

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Table 2-3.–Page 7 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Birds and eggs, continued												
Tern eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Unknown eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Marine invertebrates	15.6%	6.3%	6.3%	12.5%	6.3%	52.9	1.1	0.3	17.6	gal	0.4	0.9%
Clams	9.4%	0.0%	0.0%	9.4%	3.1%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Pacific littleneck (steamers) clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Razor clams	6.3%	0.0%	0.0%	6.3%	3.1%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Softshell clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown clams	3.1%	0.0%	0.0%	3.1%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Cockles	9.4%	6.3%	6.3%	3.1%	6.3%	52.9	1.1	0.3	17.6	ind	0.4	0.9%
Crabs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Dungeness crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
King crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Red king crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Unknown king crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Blue mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Octopus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Scallops	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Shrimp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Vegetation	100.0%	100.0%	100.0%	28.1%	56.3%	6,737.2	143.3	38.5	1,948.7		41.5	30.3%
Berries	96.9%	96.9%	96.9%	25.0%	50.0%	5,186.2	110.3	29.7	1,296.5	gal	27.6	26.2%
Other plants/mushrooms	31.3%	31.3%	31.3%	6.3%	18.8%	1,551.0	33.0	8.9	387.8	gal	8.3	24.9%
Wood	81.3%	81.3%	81.3%	12.5%	25.0%	0.0	0.0	0.0	264.4	crd	5.6	26.6%

a. Amount of resource harvested is individual units, unless otherwise specified.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 2-4.–Top 10 resources harvested and used, Aleknagik, 2008.

Harvest			Use		
Rank	Resource	Pounds per capita	Rank	Resource	Percentage of households using
1	Chinook salmon	72.3	1	Sockeye salmon	100%
2	Moose	54.5	2	Berries	97%
3	Sockeye salmon	40.3	3	Chinook salmon	91%
4	Berries	29.7	3	Moose	91%
5	Coho salmon	20.0	5	Coho salmon	63%
6	Northern pike	16.1	6	Seabird and loon eggs	59%
7	Plants/greens/mushrooms	8.9	7	Gull eggs	59%
8	Brown bear	8.6	8	Grouse	59%
9	Char	6.6	9	Northern pike	50%
10	Chum salmon	5.5	10	Char	50%

Source ADF&G Division of Subsistence household surveys, 2009.

Salmon constituted the largest portion of the subsistence harvest, which totaled an estimated 25,057 lb (48%), or 143 lb per capita (Table 2-3 and Figure 2-2). The most common single resource harvested was Chinook salmon, totaling 12,640 lb, or 72 lb per capita (tables 2-3 and 2-4). Chinook salmon are an important source of wild food because they arrive early in the spring when wild food supplies are running low, and because they provide a high caloric value per unit. As noted earlier, they are mainly harvested along the lower reaches of the Wood River. Other important salmon resources were fresh sockeye and coho salmon (see Figure 2-3 and Table 2-4). In 2008, Aleknagik residents harvested an estimated 5,494 lb of fresh sockeye salmon (31 lb per capita) and 3,498 lb of coho salmon (20 lb per capita).

Large land mammals, particularly moose, were the other major source of wild foods in Aleknagik in 2008, with an estimated 11,551 lb harvested, or 66 lb per capita (tables 2-3 and 2-4). Eighty-six percent of this was moose, with 9,518 lb harvested, or 55 lb per capita (Figure 2-4). Brown bears were secondarily important in terms of harvest by weight, with 1,498 lb harvested (9 lb per capita). However, brown bear meat was consumed only if the animals were harvested in early spring, after coming out of their dens, or in late fall after the berry season. At other times, brown bears were taken for their fat or hides. Marine mammals were also an important food source with an estimated harvest of 13 harbor seals (740 lb or 4 lb per capita) and 1 beluga whale (831 lb or 5 lb per capita).

Nonsalmon fishing was a major activity, and Aleknagik residents, who have access both to riverine and estuary waters (Figure 2-5), harvested a large variety of nonsalmon fish. The largest harvest in terms of weight was northern pike, with an estimated 61% (2,813 lb, 16 lb per capita) of the harvest. Northern pike were also number 6 in the list of the top 10 per capita harvest of resources (Table 2-4), with an estimated 1,005 northern pike harvested. Char, particularly Dolly Varden, were also highly harvested in terms of the number of fish, with an estimated 595 Dolly Varden harvested (832 lb or 5 lb per capita). Overall in 2008, Aleknagik residents harvested 4,480 lb of nonsalmon fish, or 27 lb per capita.

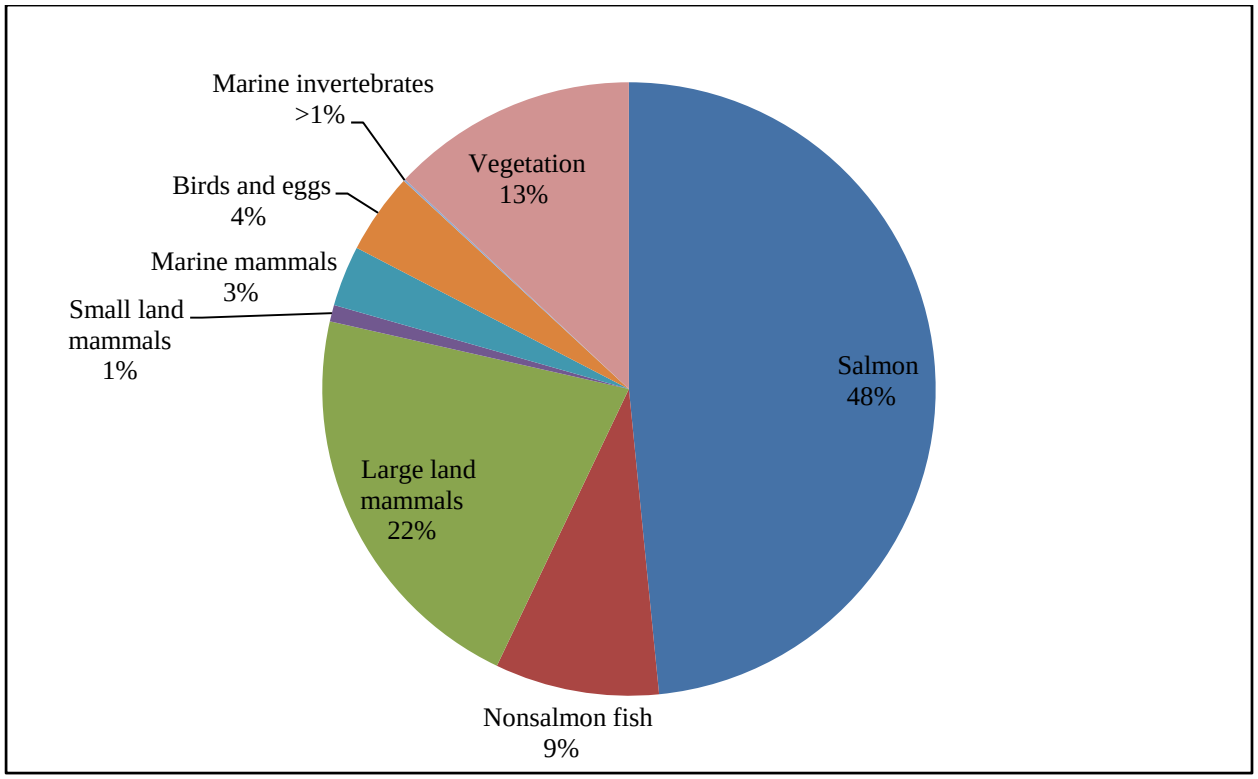

Figure 2-2.–Aleknagik composition of wild resource harvests, pounds usable weight, 2008.

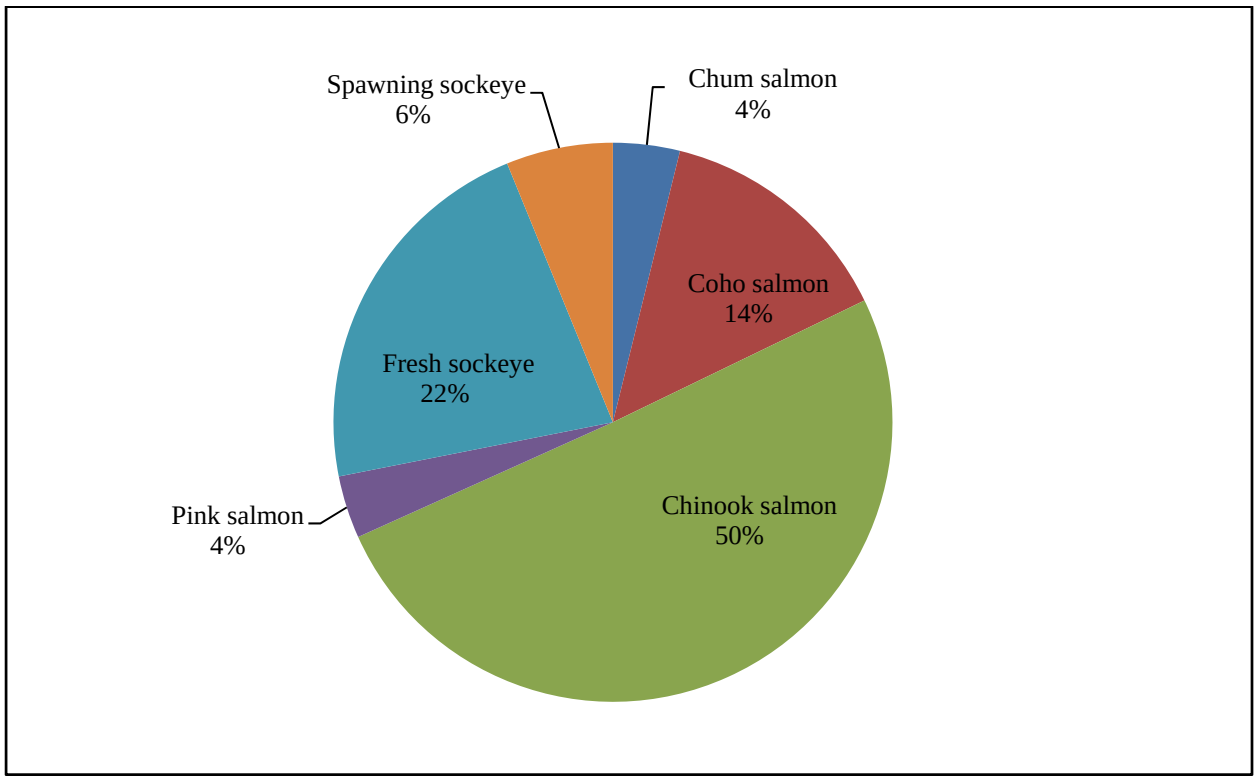

Figure 2-3.–Aleknagik composition of salmon harvests, pounds usable weight, 2008.

As mentioned above, residents of Aleknagik were also active in harvesting migratory waterfowl. They also harvested numerous bird eggs as well. In 2008, Aleknagik residents harvested an estimated 596 lb of migratory waterfowl (3 lb per capita) and 919 lb of bird eggs (5 lb per capita). The estimated number of bird eggs harvested was 3,082 (Table 2-3). Another important wild resource was berries, with 5,186 lb of berries harvested or 30 lb per capita (tables 2-3 and 2-4).

General Hunting, Fishing, and Gathering Areas

Like many rural communities in Alaska, Aleknagik residents are highly mobile, traveling throughout the Bristol Bay area to harvest wild resources. The Wood River and beaches near Dillingham were important locations for harvesting Chinook and sockeye salmon (figures 2-6 and 2-7) while Aleknagik Lake and Lake Nerka were important locations for harvesting spawning sockeye salmon. As mentioned earlier, these lakes were also important locations for residents who traveled by boat to harvest nonsalmon fish, such as rainbow/steelhead trout, as well as to hunt moose in the fall (figures 2-8 and 2-9). The marine waters of Nushagak Bay were important for harvesting seals and for hunting migratory waterfowl (figures 2-10 and 2-11). Residents also used the Wood River drainage to harvest waterfowl in the spring, and migratory waterfowl in the fall.[6]

SHARING AND RECEIVING WILD RESOURCES

In Aleknagik in 2008, estimates of sharing indicated that 97% of households received wild resources from other households and 84% of households gave resources away (tables 1-14 and 2-3). Households both received and gave away an average of 6 resources (Table 1-14). Fish was the most used resource, and was among the most commonly shared resources, with 66% of households giving away fish and 72% of households receiving fish (Table 2-3). Moose were also highly shared, with 31% of households giving away moose to 69% of households that received moose. Marine mammal hunting is a highly specialized activity undertaken by hunters that have been trained by elder hunters in the community. In 2008, 19% of households harvested marine mammals, 34% of households gave away marine mammals, and 47% of households received marine mammals (Table 2-3). This means that hunters shared their harvest with other households who then shared the harvest with more households. This was shared in the form of either meat or fat that had been rendered into oil. Another specialty resource category is bird eggs, which are often harvested in large quantities by Yup'ik and Inupiat peoples: an estimated 25% of households gave away bird eggs and 38% of households received bird eggs.

6. For the complete set of maps of Aleknagik residents' hunting, fishing, and gathering areas in 2008, see Appendix C, "Harvest Use Area Maps by Community" (published in hard copy on a CD-ROM attached to the back cover of this report).

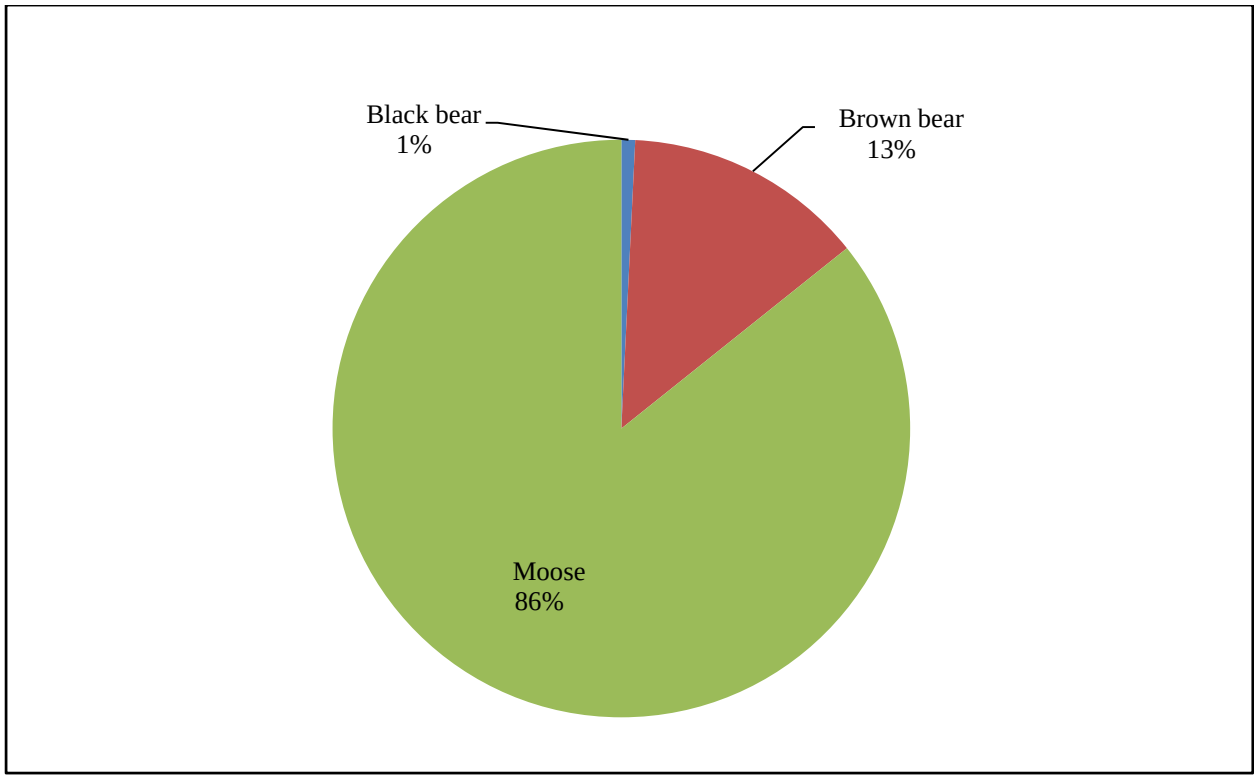

Figure 2-4.–Aleknagik composition of large land mammal harvests, pounds usable weight, 2008.

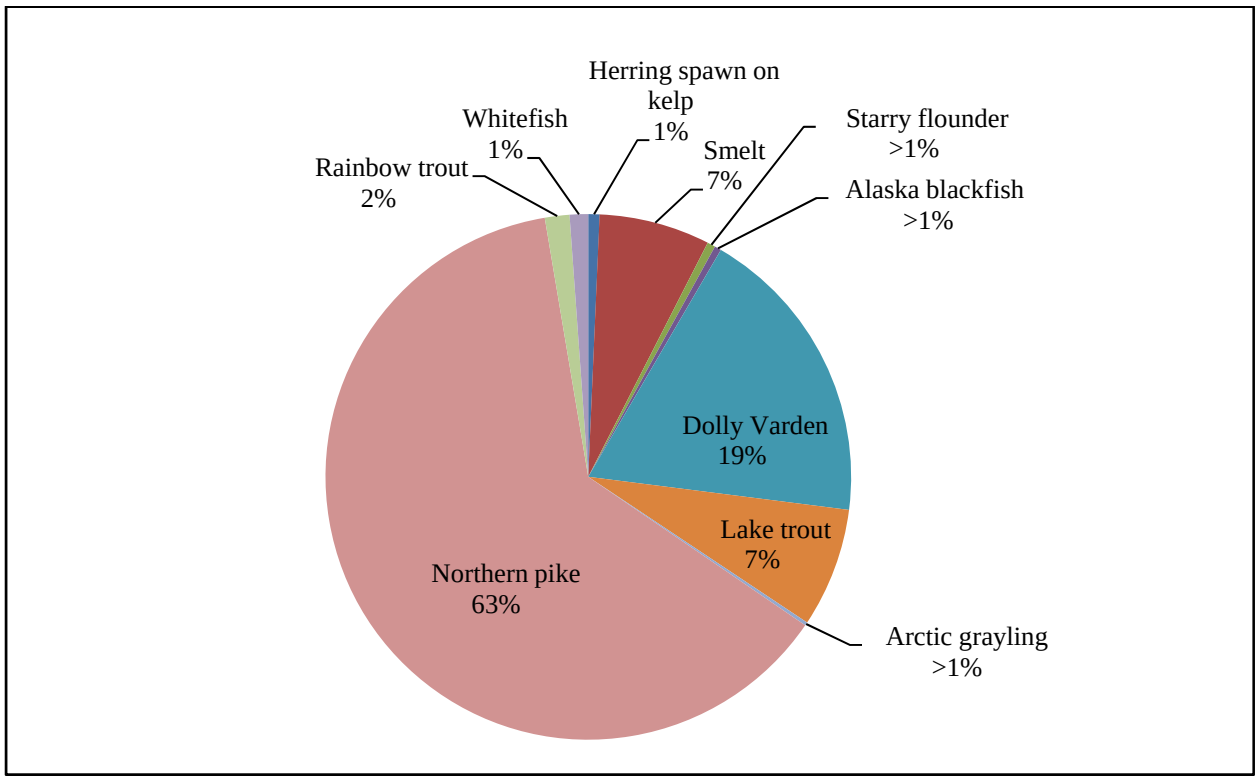

Figure 2-5.–Aleknagik composition of nonsalmon fish harvests, pounds usable weight, 2008.

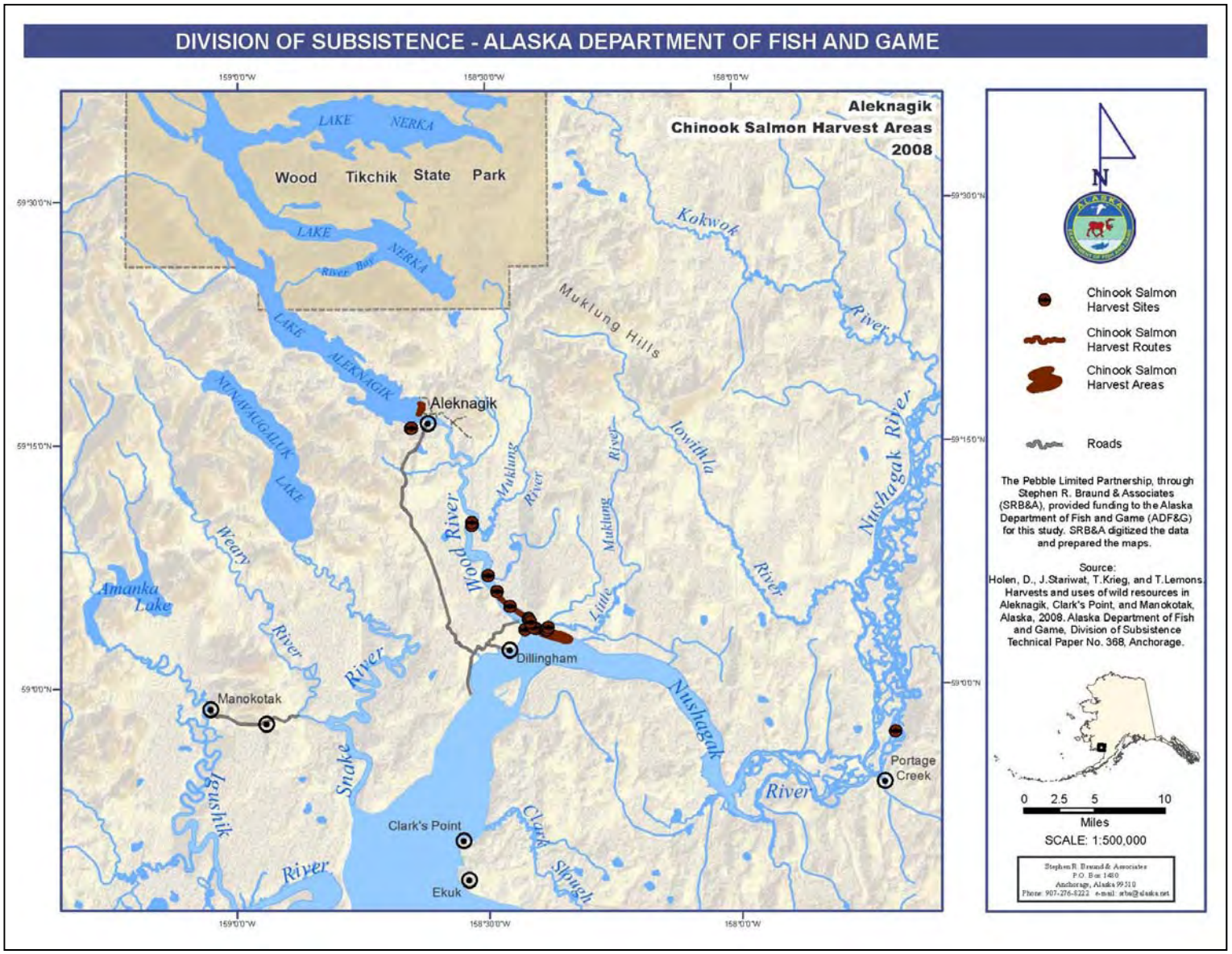

Figure 2-6.–Chinook salmon harvest locations, Aleknagik, 2008.

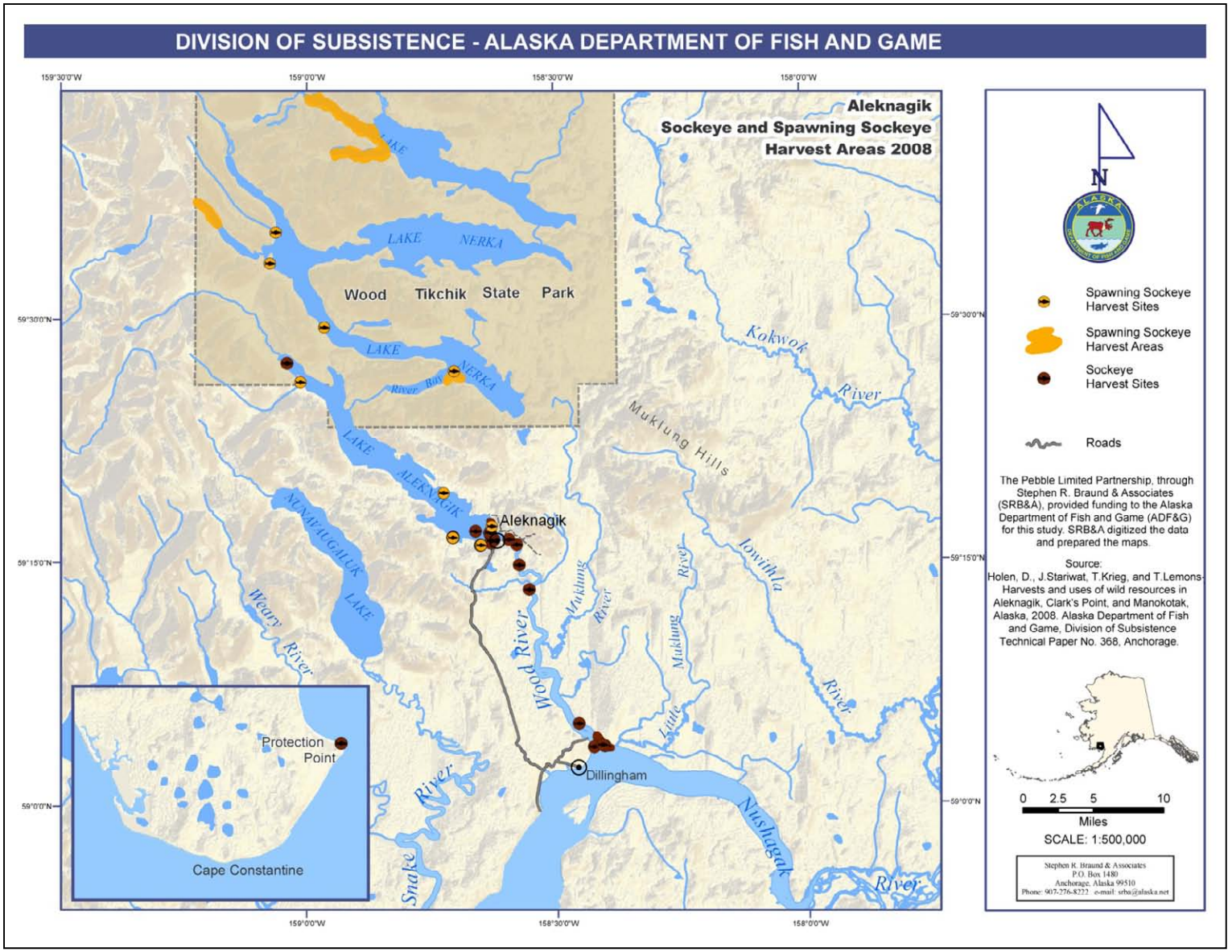

Figure 2-7.–Sockeye salmon harvest locations, Aleknagik, 2008.

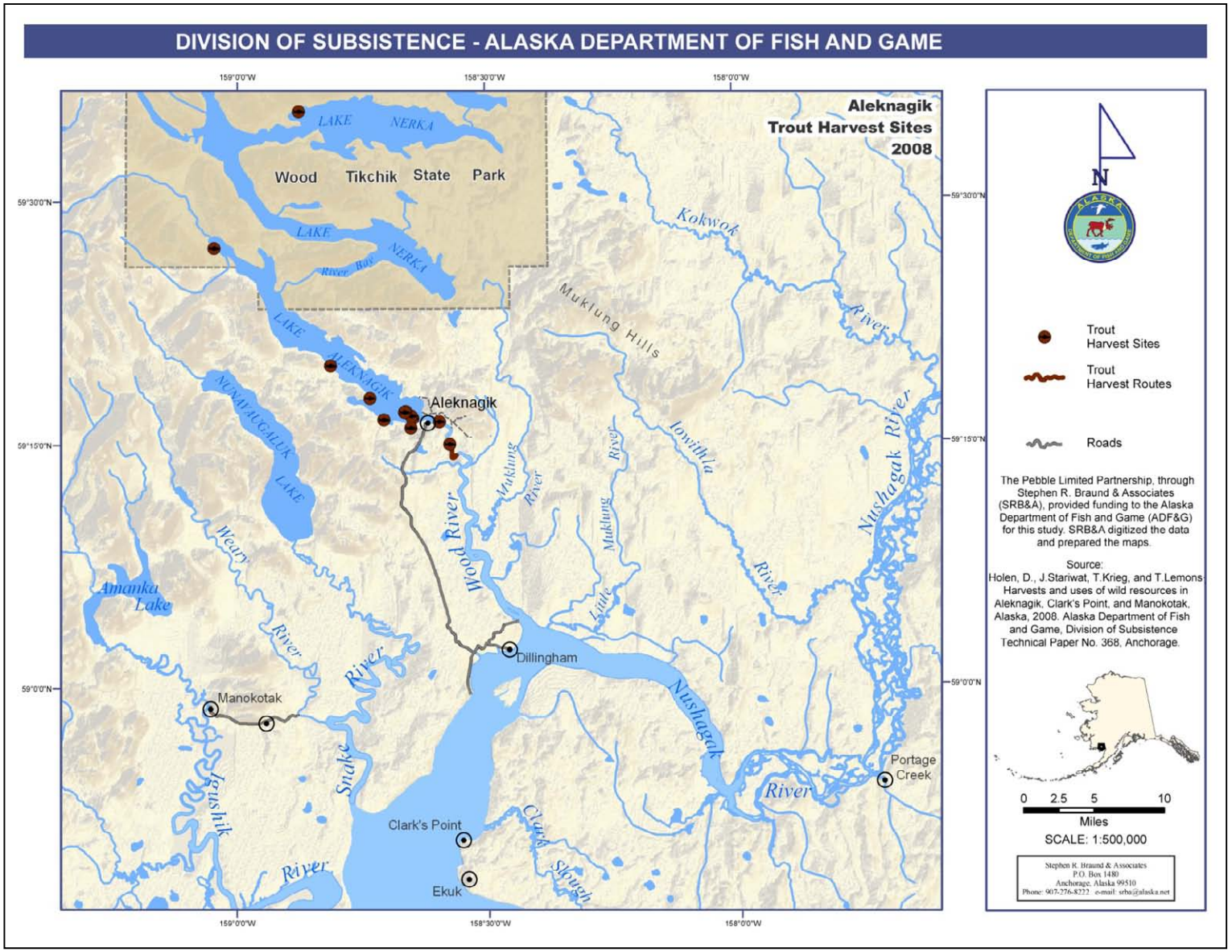

Figure 2-8.–Trout harvest locations, Aleknagik, 2008.

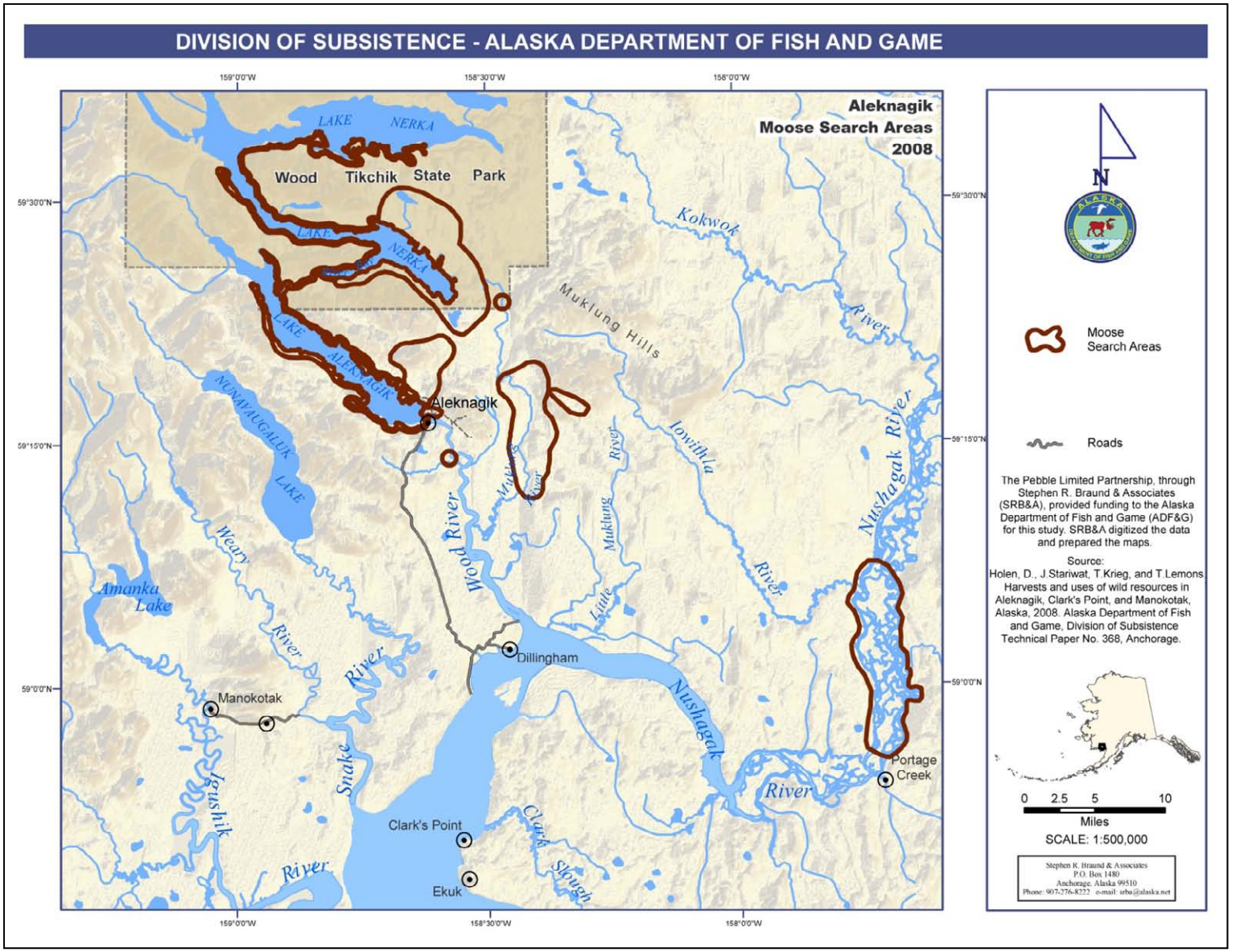

Figure 2-9.–Moose hunting areas, Aleknagik, 2008.

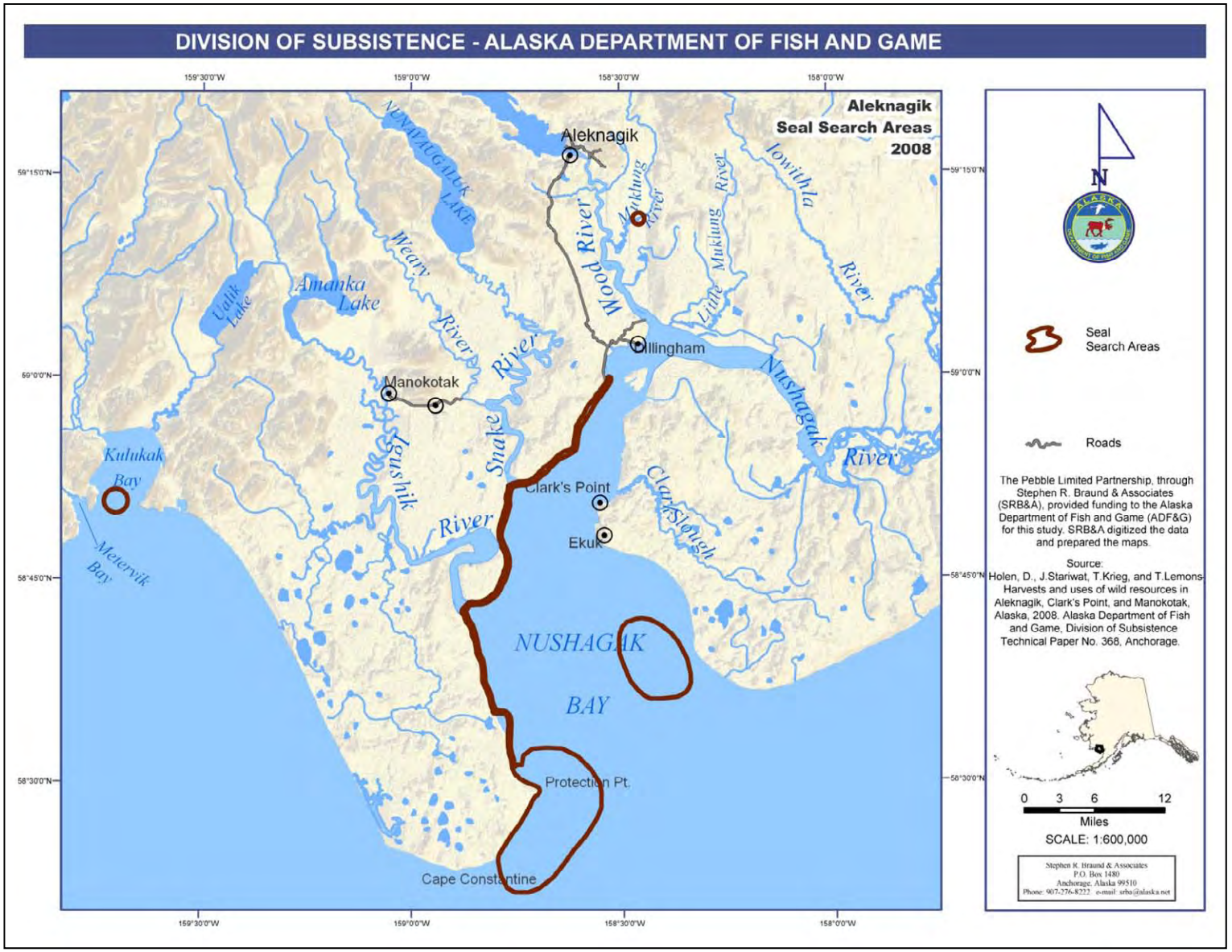

Figure 2-10.–Seal hunting areas, Aleknagik, 2008.

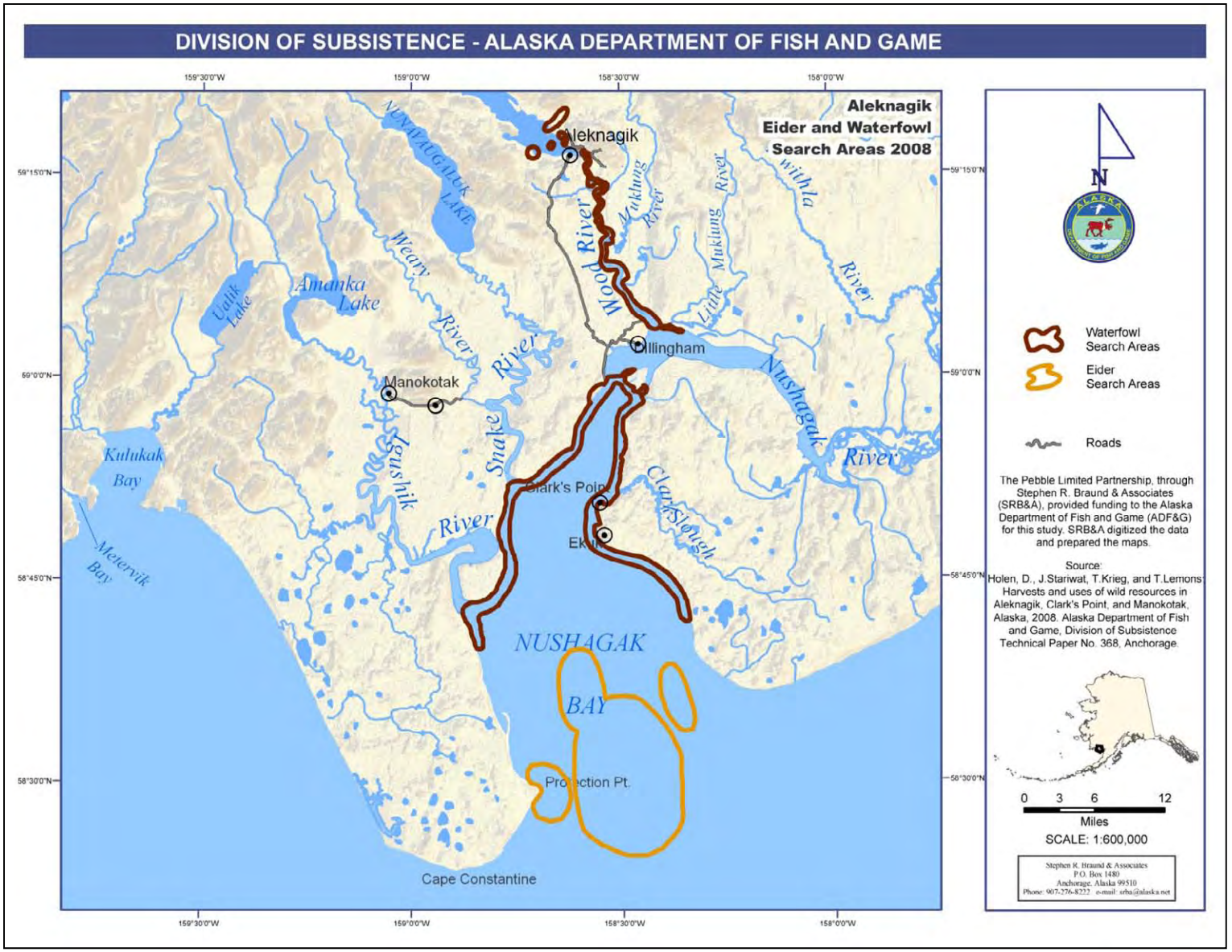

Figure 2-11.–Migratory waterfowl and eider hunting areas, Aleknagik, 2008.

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

SALMON

For Aleknagik residents, salmon comprised an estimated 48% of the wild resource harvest by pounds in 2008 (Figure 2-2). One-half of the harvest was Chinook salmon (50%), fresh or bright sockeye salmon made up 22% of the harvest, coho salmon 14% of the harvest, spawning sockeye salmon or "spawn-outs" were 6% of the harvest, and chum and pink salmon were each 4% of the harvest (Figure 2-3).

Aleknagik residents brought home an estimated one-fourth of their salmon harvest (25%) by removing it from their commercial harvests (Table 2-5). In terms of harvesting salmon using subsistence methods, 60% of the total estimated salmon harvest was from setnets along the Wood River, beaches near Dillingham, as well as beaches near the community (Table 2-5; figures 2-6 and 2-7). For example 85% of Chinook salmon were harvested using setnets in the subsistence fishery. Chinook are a species that returns early and participation in the subsistence fishery is important to bring in salmon for household consumption before the commercial fishery starts in earnest. Some salmon are more readily harvested by removing them from commercial catches, such as pink salmon (98%) and chum salmon (44%); however, these species did not comprise a large part of the overall harvest (Table 2-5 and Figure 2-3). Sockeye salmon were another important resource often caught using setnets. In 2008, Aleknagik residents harvested an estimated 61% of their sockeye salmon harvest with setnets and brought home another 29% from their commercial harvests (Table 2-5). Rod and reel gear was also important for some species, especially coho salmon: residents harvested 50% of their coho salmon by rod and reel gear.

Aleknagik respondents noted that the fishery was healthy in 2008 and they had harvested what they needed for subsistence. According to local respondents, recent high salmon prices have meant more residents were participating in the commercial fishery and this could be one reason why this survey showed an estimated 25% of residents' harvest originating from their commercial catches. However, Chinook salmon, which are usually caught prior to the opening of the commercial fishery, were also important to residents of Aleknagik, and, as noted, 85% were harvested using a setnet in the subsistence fishery.

NONSALMON FISH

Table 2-6 lists the estimated percentage of each nonsalmon fish species harvested by Aleknagik residents in 2008, by gear type. Over one-half of the harvest of nonsalmon fish, 53%, was harvested using a setnet (Table 2-6). This included 83% of round whitefish, 74% of northern pike, and 41% of lake trout. Dip nets were another important gear type: residents used them to harvest Alaska blackfish (100% of the resource) and humpback whitefish (62% of the resource). Residents also harvested nonsalmon fish through the ice. An estimated 53% of Dolly Varden were harvested through the ice, 22% of lake trout, and 15% of rainbow trout. Overall, 18% of the harvest of nonsalmon fish was harvested through the ice. Rod and reel was an important gear type for harvesting Arctic grayling (100% of the resource), rainbow trout (85% of the resource), and 48% of smelt. Overall, though, most nonsalmon fish (76%) were harvested in subsistence fisheries.

LARGE LAND MAMMALS

In 2008, large land mammals made up an estimated 22% of the total Aleknagik harvest (Figure 2-2). A majority of the harvest, in terms of pounds usable weight, was moose (86%), with brown bears contributing 13% of the harvest (Figure 2-4). Respondents reported considerable effort invested in hunting moose, mainly from boats and traveling along the shores of Lake Aleknagik and Lake Nerka, as well as along the Nushagak River (Figure 2-9). Caribou were hunted locally as well, near Portage Creek, but there were no harvests because, respondents said, the caribou herds were too far away to make the trip worth the effort. Table 2-7 lists the month and sex of moose harvests, as well as those of brown bears and

black bears. An estimated 13 moose were harvested during the fall hunt and 4 moose during the winter hunt. All were bulls.

Very few residents attempted to hunt caribou during 2008 (6%) and all households that used caribou as a resource (13%) received it from others. Respondents noted that this was mainly due to the absence of caribou in the area during the study year.

An estimated 5 brown bears were also harvested by residents of Aleknagik in 2008 (Table 2-7). Three of these were harvested in October and 2 in April. Early spring and fall are the optimal times for hunting brown bears for food and all harvests were made during these seasons. Many of the brown bears were harvested near the community, just northeast of Lake Aleknagik (see Appendix C, "Harvest Use Area Maps by Community").

SMALL LAND MAMMALS/FURBEARERS

As listed in Table 2-3, the total estimated harvest of small land mammals by Aleknagik residents in 2008 for wild food was 450 lb, or 3 lb per capita (Table 2-3). Small land mammals used for food included beavers (347 lb or 2 lb per capita) and hares (44 lb or 0.3 pound per capita). The harvest of small land mammals for wild foods comprised approximately 1% of the total harvest in 2008 (Figure 2-2). Residents of Aleknagik also trapped small land mammals for furs, including mink (19% harvested mink), martens, and wolverines (9% harvested each animal). For hunting and trapping areas for small land mammals and furbearers, see Appendix C.

MARINE MAMMALS

Aleknagik residents were fairly active marine mammal hunters in 2008; an estimated 22% attempted to harvest marine mammals, while 19% successfully harvested marine mammals (Table 2-3). Marine mammals comprised 3% of the overall harvest of wild foods in 2008 (Figure 2-2). This harvest was widely dispersed, with 56% of households reporting the use of marine mammals in 2008. The total estimated pound harvested in 2008 of marine mammals was 1,654 lb, or 10 lb per capita. This included 823 lb of seals (5 lb per capita) and 1 beluga whale (831 lb or 5 lb per capita). Aleknagik residents hunting for seals traveled to Bristol Bay, and focused their efforts along the shorelines of Nushagak Bay (Figure 2-10).

MARINE INVERTEBRATES

Only about 6% of Aleknagik residents harvested marine invertebrates in 2008, all of which were cockles (Table 2-3). The total estimated harvest was 53 lb, or 0.3 lb per person (see map in Appendix C for harvest locations).

BIRDS AND EGGS

In 2008, Aleknagik residents harvested migratory waterfowl along the shores of the Wood River and Nushagak Bay (Figure 2-11). Gathering of bird eggs also took place along the shores and islands of Lake Nerka as well as on an island at the mouth of the Wood River (see Appendix C). Aleknagik residents harvested an estimated 596 lb of migratory birds, or 3 lb per capita, and 694 lb of upland birds, or 4 lb per capita (Table 2-3). Residents were active hunters in both categories of birds, with 31% of households reporting hunting and harvesting migratory birds and 56% of households harvested upland birds. Residents also harvested 919 lb of bird eggs, or 5 lb per person, with 34% of households engaged in this activity. Although birds and eggs do not weigh as much as other subsistence foods, such as large land mammals and fish, they still comprised 4% of the overall harvest in terms of edible weight (Figure 2-2). Bird eggs were also widely shared, with 59% of households reported using bird eggs, 38% of households giving away eggs, and 25% of households receiving eggs (Table 2-3).

Table 2-5.–Estimated percentages of salmon harvest by gear type, resource, and total salmon harvest, Aleknagik, 2008.

Resource / Percent base	Removed from commercial catch		Subsistence methods: Setnet		Seine		Other		Subsistence gear, any method		Rod and reel		Any method	
	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon														
Gear type	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Resource	24.9%	22.1%	60.2%	66.5%	0.0%	0.0%	0.0%	0.0%	60.2%	66.5%	14.9%	11.5%	100.0%	100.0%
Total	24.9%	22.1%	60.2%	66.5%	0.0%	0.0%	0.0%	0.0%	60.2%	66.5%	14.9%	11.5%	100.0%	100.0%
Chum salmon														
Gear type	8.1%	7.8%	4.2%	3.2%	0.0%	0.0%	0.0%	0.0%	4.2%	3.2%	0.0%	0.0%	4.5%	3.9%
Resource	44.4%	44.4%	55.6%	55.6%	0.0%	0.0%	0.0%	0.0%	55.6%	55.6%	0.0%	0.0%	100.0%	100.0%
Total	2.0%	1.7%	2.5%	2.1%	0.0%	0.0%	0.0%	0.0%	2.5%	2.1%	0.0%	0.0%	4.5%	3.9%
Coho salmon														
Gear type	16.8%	16.9%	6.0%	4.9%	0.0%	0.0%	0.0%	0.0%	6.0%	4.9%	52.7%	61.0%	15.7%	14.0%
Resource	26.8%	26.8%	23.1%	23.1%	0.0%	0.0%	0.0%	0.0%	23.1%	23.1%	50.1%	50.1%	100.0%	100.0%
Total	4.2%	3.7%	3.6%	3.2%	0.0%	0.0%	0.0%	0.0%	3.6%	3.2%	7.8%	7.0%	15.7%	14.0%
Chinook salmon														
Gear type	14.0%	30.6%	36.6%	64.4%	0.0%	0.0%	0.0%	0.0%	36.6%	64.4%	3.2%	7.9%	26.0%	50.4%
Resource	13.4%	13.4%	84.8%	84.8%	0.0%	0.0%	0.0%	0.0%	84.8%	84.8%	1.8%	1.8%	100.0%	100.0%
Total	3.5%	6.8%	22.1%	42.8%	0.0%	0.0%	0.0%	0.0%	22.1%	42.8%	0.5%	0.9%	26.0%	50.4%
Pink salmon														
Gear type	27.3%	16.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.6%	6.9%	3.6%
Resource	98.1%	98.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	1.9%	100.0%	100.0%
Total	6.8%	3.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	6.9%	3.6%
Sockeye salmon														
Gear type	33.8%	28.6%	29.4%	20.0%	0.0%	0.0%	0.0%	0.0%	29.4%	20.0%	20.7%	20.2%	29.2%	21.9%
Resource	28.8%	28.8%	60.7%	60.7%	0.0%	0.0%	0.0%	0.0%	60.7%	60.7%	10.6%	10.6%	100.0%	100.0%
Total	8.4%	6.3%	17.7%	13.3%	0.0%	0.0%	0.0%	0.0%	17.7%	13.3%	3.1%	2.3%	29.2%	21.9%
Spawning sockeye														
Gear type	0.0%	0.0%	23.8%	7.5%	0.0%	0.0%	0.0%	0.0%	23.8%	7.5%	22.5%	10.2%	17.7%	6.2%
Resource	0.0%	0.0%	81.0%	81.0%	0.0%	0.0%	0.0%	0.0%	81.0%	81.0%	19.0%	19.0%	100.0%	100.0%
Total	0.0%	0.0%	14.3%	5.0%	0.0%	0.0%	0.0%	0.0%	14.3%	5.0%	3.4%	1.2%	17.7%	6.2%
Unknown salmon														
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2009.

WILD PLANTS

Most wild plants were harvested close to the community of Aleknagik in 2008 as well as on the shores of Nushagak Bay (see Appendix C, "Harvest Use Area Maps by Community"). The harvest of berries ranked fourth in terms pounds per capita harvest in 2008 for Aleknagik and second in terms of percentage of households using the resource (Table 2-4). An estimated 97% of households harvested and used berries, which totaled an estimated 5,186 lb, or 30 lb per capita. Households also harvested an additional 1,551 lb of plants, greens, and mushrooms, or 9 lb per capita. One interesting note is that although it is not included in the total of edible wild harvests, residents were also active in harvesting firewood in 2008. Due to the high cost of fuel, many households were receiving or purchasing high efficiency woods stoves. An estimated 81% of households reported using and harvesting firewood, which totaled 264 cords (Table 2-3).

COMPARING HARVESTS AND USES IN 2008 WITH PREVIOUS YEARS

All interviewed Aleknagik households reported that, overall, their harvests and uses of resources in 2008 were about the same as in the recent past (the last 5 years). Table 2-8 summarizes respondents' assessments for each major resource category (see also Figure 2-12). For example, 69% of households reported that their use of salmon in 2008 was the same in recent years, while 9% of households reported that they used more salmon in 2008, and 22% used fewer. Large land mammals, a resource category with high levels of use, had a somewhat similar pattern of responses: 63% of households said they used the same, 6% said they used more, and 31% said they used fewer.

Table 2-9 lists the reasons residents of Aleknagik gave for changes in harvests and uses by resource category. This was an open-ended question, and respondents could provide more than one reason for changes. Project staff grouped the responses into categories, such as competition for resources, regulations hindering or helping residents to harvest resources, sharing of harvests, effects of weather on animals and subsistence activities, changes in animal populations, personal reasons (such as work and health), and other outside effects on residents' opportunities to engage in subsistence activities. Personal reasons were a major reason given for a change in harvest activity (Table 2-9). During interviews, some residents noted that there were growing families and therefore more of a need for subsistence resources. Sharing was also noted as a reason for change, with respondents noting that although residents were sharing fewer marine mammals and birds and eggs, they were sharing more salmon.

Changes in resource harvest by Aleknagik residents can also be discerned through comparisons with comparable findings from other study years. ADF&G administered comprehensive household harvest surveys in Aleknagik for the data years of 1973[7], and 1989 (Seitz 1996), as well as for the 2008 data year for this study (tables 1-2, 2-10, and 2-11). Figure 2-11 summarizes the estimated per capita harvests in pounds usable weight for each major resource category from the 3 comprehensive studies in 1973, 1989, and 2008. In 1973, harvests of some resources, such as nonsalmon fish, small land mammals, and large land mammals, were higher in terms of the total percentage of the harvest than in 2008. In 1989, large land mammals comprised a large percentage of the total harvest, while salmon, although another important resource, was a lower percentage of the harvest. Vegetation, particularly berries, has become a larger portion of the total harvest, at around 13% of the 2008 harvest (figures 2-2 and 2-12).

In terms of pounds usable weight of major resource categories, this has varied over time. For example, the estimated harvest of salmon per capita has increased from 91 lb in 1973, to 95 lb in 1989, to 143 lb in 2008. The harvest of small land mammals has decreased over time, probably because fewer residents are

[7] Gasbarro, A. F., and G. Utermohle, 1974, unpublished field data, Bristol Bay subsistence survey, Division of Subsistence, Alaska Department of Fish and Game, Anchorage.

participating in trapping activities. The per capita harvest of small land mammals in 1973 was 17 lb but decreased to 12 lb per capita in 1989 and to 3 lb in 2008. Other resource categories, such as large land mammals and marine mammals, have also varied. Overall, the harvest of wild resources has increased since 1973, from 204 lb per capita to 296 lb in 2008. In 1989, there was a higher estimated per capita harvest of 379 lb. This one year of high per capita harvest may be due to the larger harvest of large land mammals that year.

LOCAL CONCERNS REGARDING RESOURCES

During household surveys and the community meetings organized for this project, respondents and attendees voiced their concerns related to the harvest of wild resources. One of the main concerns voiced by residents was the absence of the Nushagak Peninsula caribou herd. Although there were no harvests of caribou in 2008, residents were hopeful that they would be able to start hunting again in the future. Residents explained that they were communicating with ADF&G biologists in Dillingham and were hopeful that the hunt would gradually open as the herd grew. Residents also voiced concerns about the number of wolves in the area and whether they would have an impact on the survival rate of caribou calves. Residents reported that in Sunshine Valley, where they often hunt moose, they had observed that moose were forming herds. They attributed this behavior as a strategy to protect against wolves.

Residents also voiced concerns about invasive species in Aleknagik Lake and other large lakes in the area. They said they had noticed a growing number of northern pike. Residents said they would like to see more research conducted regarding northern pike.

Overall, residents who reviewed the results of the survey said it looked accurate. They especially noted the abundant harvest of berries. At the end of the presentation, a resident responded: “That’s what we live for is the berries! We pick gallons and gallons—but we share too!”

SUMMARY

The household survey findings demonstrate that residents of Aleknagik harvested a wide variety of resources in 2008. They invested a great deal of time and effort in harvesting fish, land mammals, bird eggs, and wild plants. The per capita harvest over time has varied. Residents noted that overall they were harvesting about the same amount of resources as in previous years.

Table 2-6.–Estimated percentages of fish other than salmon harvested by gear type, resource, and total harvest, Aleknagik, 2008.

Resource / Percent base	Removed from commercial gear	Subsistence gear							Rod and reel	Any method
		Setnet gear	Seine	Hand line gear	Dip net	Ice fishing	Other subsistence gear	Any subsistence gear		
Nonsalmon fish										
Gear type	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	100.0%	100.0%	100.0%
Resource	1.2%	53.1%	2.7%	0.9%	0.9%	18.3%	0.0%	75.8%	22.4%	100.0%
Total	1.2%	53.1%	53.1%	0.9%	0.9%	18.3%	0.0%	75.8%	22.4%	100.0%
Herring spawn on kelp										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%
Unknown smelt										
Gear type	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	4.6%	14.8%	6.8%
Resource	0.0%	0.0%	39.1%	12.5%	0.0%	0.0%	0.0%	51.6%	48.4%	100.0%
Total	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	3.5%	3.3%	6.8%
Starry flounder										
Gear type	41.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%
Resource	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%
Alasak blackfish										
Gear type	0.0%	0.0%	0.0%	0.0%	47.4%	0.0%	0.0%	0.5%	0.0%	0.4%
Resource	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.4%	0.0%	0.4%
Dolly Varden–freshwater										
Gear type	0.0%	6.1%	0.0%	0.0%	0.0%	51.4%	0.0%	16.7%	23.6%	17.9%
Resource	0.0%	17.9%	0.0%	0.0%	0.0%	52.6%	0.0%	70.5%	29.5%	100.0%
Total	0.0%	3.2%	3.2%	0.0%	0.0%	9.4%	0.0%	12.6%	5.3%	17.9%
Dolly Varden–saltwater										
Gear type	58.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%
Resource	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%

- continued -

Table 2-6.–Page 2 of 2

Resource / Percent base	Removed from commercial gear	Subsistence gear							Rod and reel	Any method
		Setnet gear	Seine	Hand line gear	Dip net	Ice fishing	Other subsistence gear	Any subsistence gear		
Lake trout										
Gear type	0.0%	5.6%	0.0%	0.0%	0.0%	8.8%	0.0%	6.1%	12.3%	7.3%
Resource	0.0%	40.6%	0.0%	0.0%	0.0%	21.9%	0.0%	62.5%	37.5%	100.0%
Total	0.0%	3.0%	3.0%	0.0%	0.0%	1.6%	0.0%	4.6%	2.8%	7.3%
Arctic grayling										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.2%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%
Northern pike										
Gear type	0.0%	87.7%	0.0%	0.0%	0.0%	38.6%	0.0%	70.8%	41.1%	62.8%
Resource	0.0%	74.1%	0.0%	0.0%	0.0%	11.3%	0.0%	85.4%	14.6%	100.0%
Total	0.0%	46.5%	46.5%	0.0%	0.0%	7.1%	0.0%	53.6%	9.2%	62.8%
Rainbow trout										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.3%	5.7%	1.5%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	15.2%	0.0%	15.2%	84.8%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.2%	1.3%	1.5%
Humpback whitefish										
Gear type	0.0%	0.0%	0.0%	0.0%	52.6%	0.0%	0.0%	0.6%	1.3%	0.7%
Resource	0.0%	0.0%	0.0%	0.0%	61.5%	0.0%	0.0%	61.5%	38.5%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.5%	0.3%	0.7%
Round whitefish										
Gear type	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.3%	0.4%
Resource	0.0%	83.3%	0.0%	0.0%	0.0%	0.0%	0.0%	83.3%	16.7%	100.0%
Total	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.4%

Source ADF&G Division of Subsistence household surveys, 2009.

Table 2-7.–Estimated large land mammal harvest by month and sex, Aleknagik, 2008.

	Black bear				Brown bear			
Harvest month	Unknown	Male	Female	Total	Unknown	Male	Female	Total
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	1.5	0.0	1.5
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	1.5	0.0	1.5	0.0	0.0	0.0	0.0
October	0.0	0.0	0.0	0.0	0.0	2.9	0.0	2.9
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**1.5**	**0.0**	**1.5**	**0.0**	**4.4**	**0.0**	**4.4**

	Caribou				Moose			
Harvest month	Unknown	Male	Female	Total	Unknown	Male	Female	Total
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	10.3	0.0	10.3
September	0.0	0.0	0.0	0.0	0.0	2.9	0.0	2.9
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	4.4	0.0	4.4
Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**17.6**	**0.0**	**17.6**

Source ADF&G Division of Subsistence household surveys, 2009.

Table 2-8.–Comparison of household harvests and uses in recent years, Aleknagik, 2008.

Resource	Estimated Households	Valid Responses		No Response		Less		Same		More	
		No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
Salmon	47	47.0	100.0%	0.0	0.0%	10.3	21.9%	32.3	68.8%	4.4	9.4%
Nonsalmon finfish	47	47.0	100.0%	0.0	0.0%	2.9	6.3%	38.2	81.3%	5.9	12.5%
Marine invertebrates	47	45.5	96.9%	1.5	3.1%	0.0	0.0%	41.1	90.3%	4.4	9.7%
Large land mammals	47	47.0	100.0%	0.0	0.0%	14.7	31.3%	29.4	62.5%	2.9	6.3%
Furbearers	47	45.5	96.9%	1.5	3.1%	5.9	12.9%	36.7	80.6%	2.9	6.5%
Marine mammals	47	47.0	100.0%	0.0	0.0%	4.4	9.4%	38.2	81.3%	4.4	9.4%
Birds and eggs	47	47.0	100.0%	0.0	0.0%	8.8	18.8%	32.3	68.8%	5.9	12.5%
Wild plants	47	47.0	100.0%	0.0	0.0%	8.8	18.8%	33.8	71.9%	4.4	9.4%
Overall	47	47.0	100.0%	0.0	0.0%	8.8	18.8%	35.3	75.0%	2.9	6.3%
Any resource	47	47.0	100.0%	0.0	0.0%	29.4	62.5%	47.0	100.0%	17.6	37.5%

Source ADF&G Division of Subsistence household surveys, 2009.

Table 2-9.–Aleknagik respondents' reasons for changes in harvests and uses in recent years, 2008.

Resource category	Use less or more	Estimated number of households[b]	Percentage of responses by category[a]							
			No reason given	Competition	Regulations	People are sharing less	Weather	Animal population changes[c]	Personal reasons (work/health)	Other outside effects
Salmon	Less	10	14.3%	0.0%	0.0%	28.6%	0.0%	42.9%	14.3%	0.0%
Salmon	More	4	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%	66.7%	0.0%
Nonsalmon finfish	Less	3	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%
Nonsalmon finfish	More	6	0.0%	0.0%	0.0%	25.0%	0.0%	25.0%	50.0%	0.0%
Marine invertebrates	More	4	0.0%	0.0%	0.0%	66.7%	33.3%	0.0%	0.0%	0.0%
Large land mammals	Less	15	0.0%	10.0%	0.0%	10.0%	0.0%	40.0%	40.0%	0.0%
Large land mammals	More	3	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	50.0%	0.0%
Furbearers	Less	6	25.0%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	50.0%
Furbearers	More	3	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%
Marine mammals	Less	4	33.3%	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	33.3%
Marine mammals	More	4	33.3%	0.0%	0.0%	66.7%	0.0%	0.0%	0.0%	0.0%
Birds and eggs	Less	9	0.0%	0.0%	0.0%	16.7%	16.7%	0.0%	50.0%	16.7%
Birds and eggs	More	6	0.0%	0.0%	0.0%	25.0%	25.0%	25.0%	25.0%	0.0%
Wild plants	Less	9	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%	50.0%	16.7%
Wild plants	More	4	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	66.7%
Overall	Less	9	0.0%	0.0%	0.0%	0.0%	16.7%	16.7%	33.3%	33.3%
Overall	More	3	0.0%	0.0%	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%
Any resource	Less	29	10.0%	5.0%	0.0%	15.0%	5.0%	45.0%	45.0%	20.0%
Any resource	More	18	8.3%	0.0%	0.0%	25.0%	8.3%	33.3%	50.0%	16.7%

a. Percentage of estimated number of households that reported less or more uses of the resource category who cited this reason.

b. Estimated number of households citing a change in uses. For number of valid responses, see Table 2-7. Estimated total households in community = 47.

c. Includes changes in size of population and/or changes in geographic distribution of animals during hunting seasons that affected harvest opportunities and success.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 2-10.–Aleknagik wild resource harvests by resource category, all study years.

	Pounds usable weight per capita harvest[a]		
Resource	1973	1989	2008
Salmon	91.0	95.08	143.4
Nonsalmon fish	27.8	61.36	25.6
Large land mammals	58.5	151.63	63.5
Small land mammals	16.5	11.71	2.6
Marine mammals	4.7	15.23	9.5
Birds and eggs	5.1	14.08	12.6
Marine invertebrates[b]		3.16	0.3
Vegetation[b]		27.07	38.5
All resources	**203.6**	**379.3**	**296.0**

a. Conversion factors have differed slightly over time. For more information, see CSIS.

b. Blank cells indicate data not collected for that study year.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 2-11.–Composition of wild resource harvests by category, Aleknagik, all study years.

	Percentage of total harvest[a]		
Resource	1973	1989	2008
Salmon	44.7%	25.1%	48.4%
Nonsalmon fish	13.7%	16.2%	8.7%
Large land mammals	28.7%	40.0%	21.5%
Small land mammals	8.1%	3.1%	0.9%
Marine mammals	2.3%	4.0%	3.2%
Birds and eggs	2.5%	3.7%	4.3%
Marine invertebrates[b]		0.8%	0.1%
Vegetation[b]		7.1%	13.0%
All resources	**100.0%**	**100.0%**	**100.0%**

a. Conversion factors have differed slightly over time. For more information, see CSIS.

b. Blank cells indicate data not collected for that study year.

Source ADF&G Division of Subsistence household surveys, 2009.

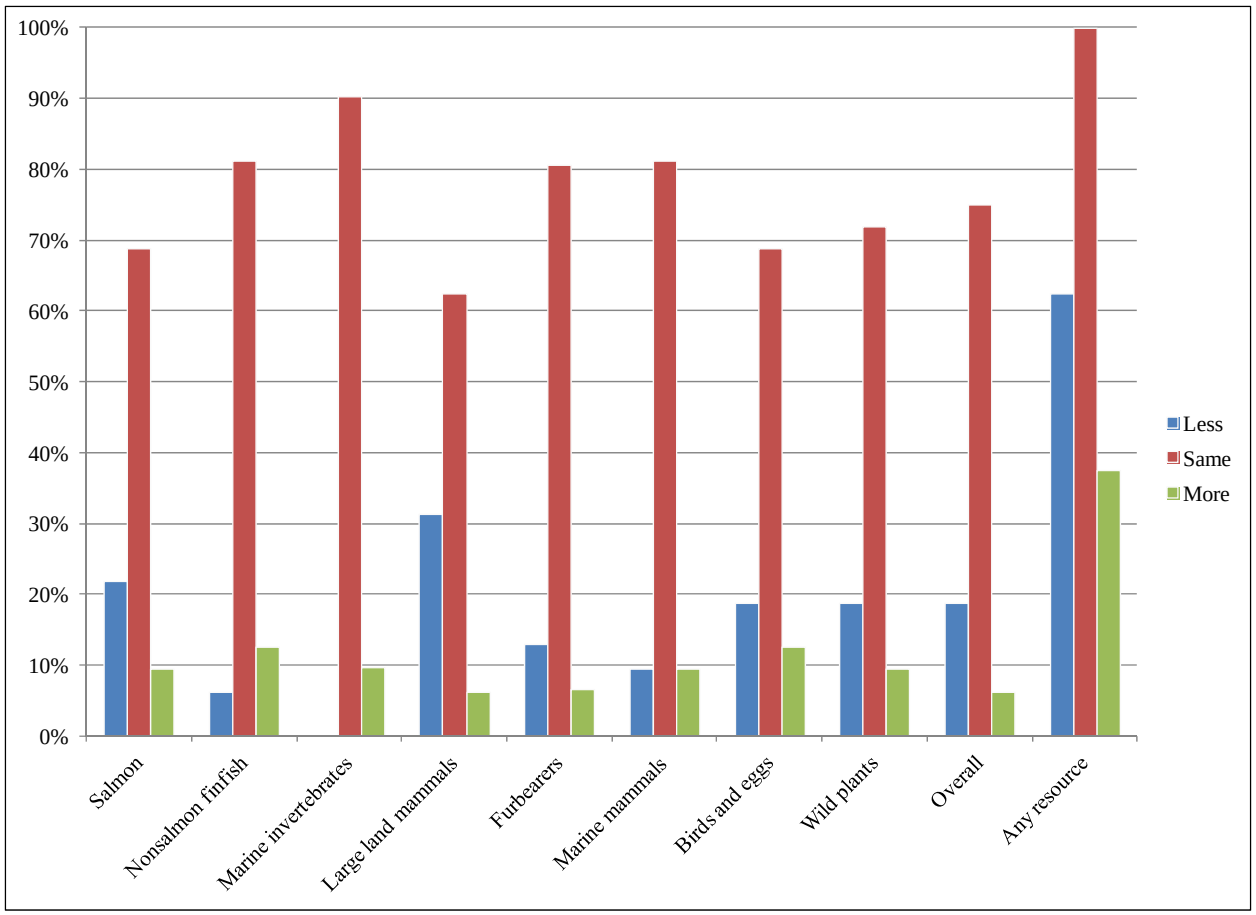

Figure 2-12.–Aleknagik wild resource harvests over time, 2008.

CHAPTER 3: CLARK'S POINT

COMMUNITY BACKGROUND

Clark's Point, located in Bristol Bay, was first used as a seasonal fish camp, and had the Yup'ik name of *Saguyak*. In 1888, when the Nushagak Packing Company established a salmon cannery at the location, the community was officially named Clark's Point after John W. Clark, the manager of the Alaska Commercial Company store and a prominent fur trader on the Nushagak River. Following the introduction of the cannery, the population of the community soared during the summer months as commercial fishers moved in; however, in 1952 the processing plant was permanently closed and the cannery became the headquarters for the Alaska Packers Association's fishing fleet (East et al. 2003:7). The population has fluctuated widely through time, and there are usually seasonal peaks in the summer months. This variation is illustrated by a low of only 7 people living in the community at one point in the early 1900s, and over 130 people during one 1960s summer (East et al. 2003:7). By 2003, the cannery facilities were no longer active, not even as bunkhouses or storage for the fishing fleets.

Clark's Point is currently situated on a bluff above the old cannery and village sites. A major flood occurred in 1929, and the Clark's Point Village Council began considering relocation to the bluff in 1966 above the community after continued flooding. Construction at the current site began in 1982, after recurring flooding eventually forced families to higher ground. Nearly everyone resettled at the higher location within 2 years after construction began, although some residents have continued to live in the lower section.

Clark's Point is not connected to a road system outside the community. Access is gained by plane, boat, or snowmachine. Dillingham, the regional hub, is located approximately 12 miles northeast of Clark's Point on the opposite side of the Nushagak River. There is no store in Clark's Point, although the "Saguyak building" was intended to be a store until a lack of funding brought the project to a halt. The community has a K–8 school but no high school, and the K–8 program is currently near the minimum number of students required for the school to remain open.

DEMOGRAPHY, CASH EMPLOYMENT, AND MONETARY INCOME

Demography

According to the federal census, Clark's Point had 75 residents in 2000 (U. S. Census Bureau 2001) of which 92% (69 residents) were Alaska Native (Table 1-1). In comparison, the household survey in 2008 found a population of 38 residents, of which 91% (34 residents) were Alaska Native (Table 1-1). The population of Clark's Point appears to have declined fairly substantially since the 2000 census. This may be related to an increase in the cost of living and the decline in the profitability of commercial salmon fishing in Bristol Bay in the early part of the 2000s. However, during the study year higher prices were being paid to commercial harvesters for salmon and there was also an increase in participation by local residents.

There were an estimated 18 year-round households in Clark's Point in 2008 (Table 1-5). Of these, 11 (61%) were interviewed. Identified households were randomly listed and contacted in the order they were listed. Interviewers failed to contact 4 households after 3 legitimate attempts and 6 households declined to be interviewed. When attempting to contact households and ascertain if residences were occupied, it was discovered that 3 households were no longer living in the community or had not been living there for at least 3 months during the study year; those households are not included in the household estimate of 18.

The mean number of years of residency in Clark's Point was 29 years, with a maximum residency of 70 years (Table 1-8). The largest age cohort for males was adults between 45 and 49 years of age, while for

females it was youths between ages 10 and 14, and adults between 55 and 59 years of age (Table 3-1 and Figure 3-1). Most of the remaining male population in Clark's Point was evenly distributed among age cohorts of youths between ages of 10 and 14, young adults between ages 20 and 24, and adults between ages of 50 and 54, and ages 55 and 59. Correspondingly, most of the remaining female population was evenly spread among age cohorts of adults between 25 and 29 years of age, adults between ages of 40 and 44, and 45 and 49, and 80 and 84. The distribution of males and females in the age cohorts varied significantly, with the exception that age cohorts of youths between ages of 10 and 14 and adults between 55 and 59 of age were evenly populated. At the time of the 2008 survey, 61% (23 residents) of Clark's Point population were males and 39% (15 residents) were females (Table 1-8). Of all household heads in Clark's Point, about 94% were born in the state of Alaska, with 50% of household heads born in the community. About 13% were born in Dillingham, and 6% each in the communities of Anchor Point, Buckland, Kanakanak, Kuskokwim River, and Portage Creek. About 6% of all the household heads were foreign-born (Table 1-9).

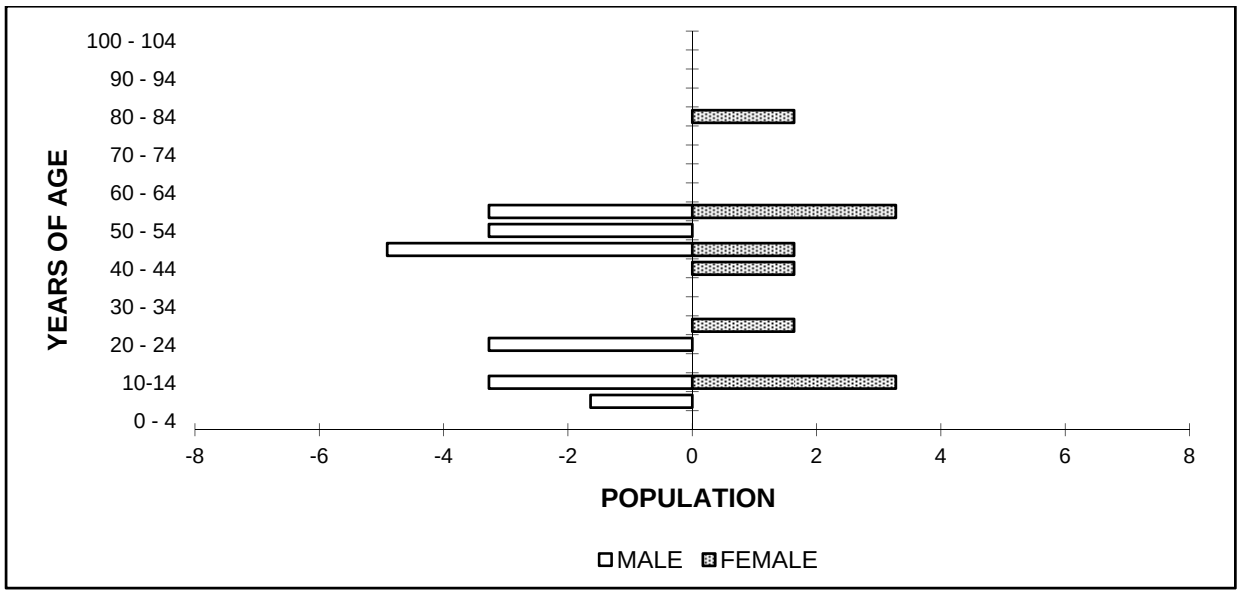

Figure 3-1.–Population profile, Clark's Point, 2008.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 3-1.–Population profile, Clark's Point, 2008.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	0.0	0.0%	0.0%	0.0	0.0%	0.0%	0.0	0.0%	0.0%
5–9	1.6	7.1%	7.1%	0.0	0.0%	0.0%	1.6	4.3%	4.3%
10–14	3.3	14.3%	21.4%	3.3	22.2%	22.2%	6.5	17.4%	21.7%
15–19	0.0	0.0%	21.4%	0.0	0.0%	22.2%	0.0	0.0%	21.7%
20–24	3.3	14.3%	35.7%	0.0	0.0%	22.2%	3.3	8.7%	30.4%
25–29	0.0	0.0%	35.7%	1.6	11.1%	33.3%	1.6	4.3%	34.8%
30–34	0.0	0.0%	35.7%	0.0	0.0%	33.3%	0.0	0.0%	34.8%
35–39	0.0	0.0%	35.7%	0.0	0.0%	33.3%	0.0	0.0%	34.8%
40–44	0.0	0.0%	35.7%	1.6	11.1%	44.4%	1.6	4.3%	39.1%
45–49	4.9	21.4%	57.1%	1.6	11.1%	55.6%	6.5	17.4%	56.5%
50–54	3.3	14.3%	71.4%	0.0	0.0%	55.6%	3.3	8.7%	65.2%
55–59	3.3	14.3%	85.7%	3.3	22.2%	77.8%	6.5	17.4%	82.6%
60–64	0.0	0.0%	85.7%	0.0	0.0%	77.8%	0.0	0.0%	82.6%
65–69	0.0	0.0%	85.7%	0.0	0.0%	77.8%	0.0	0.0%	82.6%
70–74	0.0	0.0%	85.7%	0.0	0.0%	77.8%	0.0	0.0%	82.6%
75–79	0.0	0.0%	85.7%	0.0	0.0%	77.8%	0.0	0.0%	82.6%
80–84	0.0	0.0%	85.7%	1.6	11.1%	88.9%	1.6	4.3%	87.0%
85–89	0.0	0.0%	85.7%	0.0	0.0%	88.9%	0.0	0.0%	87.0%
90–94	0.0	0.0%	85.7%	0.0	0.0%	88.9%	0.0	0.0%	87.0%
95–99	0.0	0.0%	85.7%	0.0	0.0%	88.9%	0.0	0.0%	87.0%
100–104	0.0	0.0%	85.7%	0.0	0.0%	88.9%	0.0	0.0%	87.0%
Missing	3.3	14.3%	100.0%	1.6	11.1%	100.0%	4.9	13.0%	100.0%
Total	**22.9**	**100.0%**		**14.7**	**100.0%**		**37.6**	**100.0%**	

Source ADF&G Division of Subsistence household surveys, 2009.

CASH EMPLOYMENT CHARACTERISTICS AND MONETARY INCOME

The number of survey responses was not adequate to provide estimates and summary information in this category. Of the 11 households (61%) that participated in the survey, 6 (55%) declined to answer questions pertaining to income and employment. The 5 households (24%) of the community that did provide income and employment information was not a large enough sample to produce a representative community summary.

LEVELS OF PARTICIPATION IN THE HARVESTS AND USES OF WILD RESOURCES

Table 1-13 reports estimated levels of individual participation in the harvest and processing of wild resources by Clark's Point residents in 2008. Seventy percent of Clark's Point respondents hunted birds and game, and 87% processed birds and game. Eighty-three percent fished and 91% processed fish. Forty-eight percent of Clark's Point residents hunted or trapped furbearers and 48% processed furbearers. Picking berries and other wild plants involved 87% of the community population. In total, 96% of Clark's Point residents attempted to harvest resources and 92% processed resources in 2008.

RESOURCE HARVEST AND USE PATTERNS

Table 1-14 summarizes the estimated resource harvest and use characteristics of Clark's Point in 2008 at the household level. All households in Clark's Point used at least one kind of resource. One hundred percent attempted to harvest, and all successfully harvested, at least 1 wild resource. The average household harvest was substantially high, at 2,530 lb, or 1,210 lb usable weight per capita. During the study year, Clark's Point households harvested an average of 17 kinds of resources and used an average of 23 kinds. The maximum number of resources used by any one household was 39. Households, on average, gave away 12 kinds of resources.

Species Used and Seasonal Round

Fish, birds, and eggs were the most commonly harvested resources in Clark's Point in 2008 (Table 3-2 and Figure 3-2), with 100% of Clark's Point households harvesting salmon, 100% harvesting other fish, and 100% harvesting birds and eggs. During summer, most of the respondents' salmon fishing effort occurred with set gillnets near or at Clark's Point, especially along the shore of Nushagak Bay from approximately 1 mile north of Ekuk to 1 mile north of Clark Slough. Coho salmon were also harvested upriver on the Nushagak River, from Portage Creek to Koliganek. The 5 Pacific salmon species found in Alaska were harvested in 2008. The largest portion of the harvest, in terms of pounds usable weight, was coho salmon (Figure 3-3). In addition, spawning sockeye salmon were harvested at Clark's Point, the Wood River, and Lake Aleknagik. All households in Clark's Point harvested at least 1 species of nonsalmon fish (Table 3-2). Smelt accounted for 50% of the total harvest of nonsalmon fish in 2008. Most smelt were harvested from the same locations that salmon were harvested: on the shores of Nushagak Bay near Clark's Point, between Ekuk and Clark's Slough.

Seventy-three percent of the households harvested berries, with most of this harvest occurring in late summer. Most of the berry picking effort occurred within 7 miles of Clark's Point, although some berries were harvested across the bay along the Snake River. Seventy-three percent of Clark's Point households used berries (Table 3-2).

Clark's Point residents who responded to the survey sought moose and caribou in the fall and throughout the winter. In 2008, harvests of moose, in terms of pounds usable weight (7,069 lb), ranked second only after coho salmon. Table 3-3 presents a list of the top 10 resources harvested and used by Clark's Point residents. Caribou was not one of the top 10 resources harvested or used; however, the search area for caribou was much larger than that for moose, and extended beyond Levelock and Ekwok. During the study year, 36% of households used caribou, 55% hunted caribou, but only 9% successfully harvested caribou (Table 3-2). One hundred percent of households used moose, 82% hunted moose, and 73%

harvested moose. In 2008, most survey respondents reported that in order to hunt for caribou in the areas open by regulation, they had to travel substantial distances from the community due to caribou distribution.

Migratory birds travel through the Nushagak Bay, Kvichak River, and Kvichak Bay area in the fall and spring, stopping to rest on the marsh and tundra areas along the waterways. Ninety-one percent of the community's households used migratory birds in 2008, with 82% of households harvesting them. The eggs of gulls, seabirds, and loons, and, to a lesser extent, terns, snipes, and shorebirds, were important subsistence resources; these resources were mainly harvested in the spring. Ninety-one percent of households used eggs in 2008 and 46% harvested them. Birds and eggs in some combination were harvested and used by 100% of the households in Clark's Point (Table 3-2).

Forty-six percent of Clark's Point residents used marine invertebrates and 27% harvested that resource, which included clams, cockles, and mussels. Twenty-seven percent of the households used clams and 9% harvested clams, 18% of the households harvested and used cockles, and 9% harvested and used mussels (Table 3-2). Clark's Point residents harvested these resources in Kulukak and Metervik bays west of Cape Constantine, as well as at Protection Point on the east shore of the cape.

Marine mammals were also an important subsistence food in Clark's Point during the study year. Seventy-three percent of households used marine mammals, and 36% of all households harvested them. Harbor and ringed seals that had been harvested by 36% of households were used by 73% of all households in Clark's Point. Fifty-five percent of households used beluga whales and 9% harvested them. Eighteen percent of households used walruses and 9% used Steller sea lions; however, no households in Clark's Point harvested either resource in 2008.

Harvest Quantities

Table 3-2 reports estimated wild resource harvests and uses by Clark's Point residents in 2008 and is organized by general category and by species. All resources are reported in pounds usable weight (see Appendix B for conversion factors). The use category includes resources harvested and used by a household, harvested and given away by a household, and resources acquired from other harvesters, either as gifts, by barter or trade, through hunting partnerships, or as meat given to hunting guides by their clients. Purchased foods are not included in the table. Differences between harvest and use percentages reflect sharing between households, which results in a wider distribution of wild foods.

The total estimated harvest for all subsistence resources during 2008 for Clark's Point was 45,543 lb, or 1,210 lb per capita (Table 3-2). Table 3-3 lists the top 10 resources harvested, in terms of pounds per capita, and the 10 resources used by the most Clark's Point households in 2008. Fish comprised the largest portion of the harvest, with an estimated 25,251 lb (55%), or 671 lb per capita. Most of the fish harvest was salmon, which constituted 53% of the total harvest of all resources (Figure 3-2).

In July and August, an estimated 7,870 lb, or 209 lb per capita, of coho salmon were harvested, mainly from the Nushagak River from Portage Creek to Koliganek, but also near Clark's Point on the shores of Nushagak Bay. Sockeye salmon were taken fresh in the early season, or when they were spawning, later in the season ("spawning reds"). A total of 5,272 lb, or 140 lb per capita, of fresh sockeye salmon was harvested from June to August, and a total of 628 lb, or 17 lb per capita, of spawning sockeye salmon was harvested in Lake Aleknagik, the Wood River, and near Clark's Point in August, September, and October (Table 3-2). Additionally 5,771 lb, or 153 lb per capita, of Chinook salmon were harvested, mainly in June and July. For pink salmon, 2,603 lb, or about 69 lb per capita, were harvested, and for chum salmon, 1,837 lb, or 49 lb per capita, were harvested.

Table 3-2.–Estimated harvest and uses of fish, game, and plant resources, Clark's Point, 2008.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
All resources	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**45,542.5**	**2,530.1**	**1,210.1**	**9,747.5**		**541.5**	**47.2%**
Fish	100.0%	100.0%	100.0%	72.7%	90.9%	25,251.2	1,402.8	670.9	5,420.0		301.1	42.4%
Salmon	100.0%	100.0%	100.0%	54.5%	81.8%	23,980.6	1,332.3	637.2	4,853.5	ind	269.6	45.1%
Chum salmon	63.6%	63.6%	63.6%	9.1%	27.3%	1,836.7	102.0	48.8	376.4	ind	20.9	36.9%
Coho salmon	90.9%	90.9%	90.9%	18.2%	54.5%	7,869.8	437.2	209.1	1,543.1	ind	85.7	51.9%
Chinook salmon	100.0%	81.8%	81.8%	54.5%	63.6%	5,770.8	320.6	153.3	520.4	ind	28.9	26.2%
Pink salmon	72.7%	63.6%	63.6%	18.2%	45.5%	2,602.9	144.6	69.2	870.5	ind	48.4	27.5%
Sockeye salmon	100.0%	90.9%	90.9%	45.5%	45.5%	5,900.4	327.8	156.8	1,543.1	ind	85.7	41.8%
Fresh sockeye	90.9%	90.9%	90.9%	27.3%	45.5%	5,272.0	292.9	140.1	1,228.9	ind	68.3	36.1%
Spawning sockeye	63.6%	36.4%	36.4%	36.4%	27.3%	628.4	34.9	16.7	314.2	ind	17.5	33.9%
Unknown salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Nonsalmon fish	100.0%	100.0%	100.0%	72.7%	72.7%	1,270.6	70.6	33.8	566.5		31.5	53.4%
Herring	18.2%	9.1%	9.1%	9.1%	0.0%	2.0	0.1	0.1	0.3	gal	0.0	0.0%
Herring roe	27.3%	0.0%	0.0%	27.3%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Herring sac roe	9.1%	0.0%	0.0%	9.1%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Herring spawn on kelp	18.2%	0.0%	0.0%	18.2%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Smelt	100.0%	100.0%	100.0%	36.4%	63.6%	627.5	34.9	16.7	193.1	gal	10.7	40.9%
Capelin (grunion)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Unknown smelt	100.0%	100.0%	100.0%	36.4%	63.6%	627.5	34.9	16.7	193.1	gal	10.7	40.9%
Cods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Pacific (gray) cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Pacific tomcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Flounders	27.3%	27.3%	27.3%	18.2%	9.1%	319.1	17.7	8.5	106.4	ind	5.9	12.8%
Starry flounder	27.3%	27.3%	27.3%	18.2%	9.1%	319.1	17.7	8.5	106.4	ind	5.9	12.8%
Halibut	18.2%	0.0%	0.0%	18.2%	0.0%	0.0	0.0	0.0	0.0	lb	0.0	0.0%
Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

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Table 3-2.–Page 2 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Fish, continued												
Salmon shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Yellowfin sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Alaska blackfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Burbot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Char	63.6%	45.5%	45.5%	18.2%	27.3%	169.5	9.4	4.5	121.1	ind	6.7	26.5%
Dolly Varden	63.6%	45.5%	45.5%	18.2%	27.3%	169.5	9.4	4.5	121.1	ind	6.7	26.5%
Dolly Varden–Freshwater	36.4%	27.3%	27.3%	9.1%	18.2%	82.5	4.6	2.2	58.9	ind	3.3	11.6%
Dolly Varden–Saltwater	45.5%	36.4%	36.4%	9.1%	18.2%	87.1	4.8	2.3	62.2	ind	3.5	17.9%
Dolly Varden–Togiak trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Lake trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Arctic grayling	45.5%	9.1%	9.1%	36.4%	0.0%	34.4	1.9	0.9	49.1	ind	2.7	0.0%
Northern pike	18.2%	9.1%	9.1%	9.1%	0.0%	18.3	1.0	0.5	6.5	ind	0.4	0.0%
Sheefish	18.2%	9.1%	9.1%	9.1%	9.1%	68.7	3.8	1.8	49.1	ind	2.7	0.0%
Trout	18.2%	9.1%	9.1%	9.1%	9.1%	68.7	3.8	1.8	49.1	ind	2.7	0.0%
Rainbow trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown trout	36.4%	18.2%	18.2%	18.2%	9.1%	31.1	1.7	0.8	40.9	ind	2.3	20.8%
Whitefishes	9.1%	0.0%	0.0%	9.1%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Cisco	9.1%	9.1%	9.1%	0.0%	0.0%	6.5	0.4	0.2	16.4	ind	0.9	0.0%
Least cisco	9.1%	9.1%	9.1%	0.0%	0.0%	6.5	0.4	0.2	16.4	ind	0.9	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	9.1%	9.1%	9.1%	0.0%	9.1%	24.5	1.4	0.7	24.5	ind	1.4	0.0%
Unknown whitefish	9.1%	0.0%	0.0%	9.1%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

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Table 3-2.–Page 3 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Land mammals	100.0%	90.9%	81.8%	72.7%	81.8%	8,450.6	469.5	224.5	117.8		6.5	56.1%
Large land mammals	100.0%	90.9%	72.7%	72.7%	63.6%	7,870.9	437.3	209.1	16.4		0.9	33.4%
Black bear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Brown bear	9.1%	9.1%	9.1%	0.0%	0.0%	556.4	30.9	14.8	1.6	ind	0.1	0.0%
Caribou	36.4%	54.5%	9.1%	18.2%	9.1%	245.5	13.6	6.5	1.6	ind	0.1	215.5%
Deer	9.1%	0.0%	0.0%	9.1%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Moose	100.0%	81.8%	72.7%	72.7%	63.6%	7,069.1	392.7	187.8	13.1	ind	0.7	43.1%
Dall sheep	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Small land mammals	81.8%	63.6%	63.6%	36.4%	63.6%	579.7	32.2	15.4	101.5		5.6	56.2%
Beaver	9.1%	9.1%	9.1%	0.0%	9.1%	43.0	2.4	1.1	4.9	ind	0.3	0.0%
Coyote	18.2%	18.2%	18.2%	9.1%	9.1%	0.0	0.0	0.0	9.8	ind	0.5	6.4%
Fox	9.1%	9.1%	9.1%	0.0%	0.0%	0.0	0.0	0.0	1.6	ind	0.1	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	9.1%	9.1%	9.1%	0.0%	0.0%	0.0	0.0	0.0	1.6	ind	0.1	0.0%
Red fox–cross phase	9.1%	9.1%	9.1%	0.0%	0.0%	0.0	0.0	0.0	1.6	ind	0.1	0.0%
Hare	9.1%	9.1%	9.1%	0.0%	9.1%	13.1	0.7	0.3	6.5	ind	0.4	136.3%
Alaska hare (jackrabbit)	9.1%	9.1%	9.1%	0.0%	9.1%	13.1	0.7	0.3	6.5	ind	0.4	0.0%
Snowshoe hare	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown hare	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
River (land) otter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Lynx	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Marmot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Marten	9.1%	9.1%	9.1%	0.0%	0.0%	0.0	0.0	0.0	1.6	ind	0.1	0.0%
Mink	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Muskrat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Porcupine	81.8%	63.6%	63.6%	27.3%	54.5%	523.6	29.1	13.9	65.5	ind	3.6	31.7%
Squirrels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Arctic ground (parka) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

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Table 3-2.–Page 4 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Land mammals, continued												
Red (tree) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Weasel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Wolf	9.1%	9.1%	9.1%	0.0%	9.1%	0.0	0.0	0.0	9.8	ind	0.5	0.0%
Wolverine	9.1%	9.1%	9.1%	0.0%	0.0%	0.0	0.0	0.0	1.6	ind	0.1	0.0%
Marine mammals	72.7%	45.5%	36.4%	54.5%	27.3%	4,783.9	265.8	127.1	43.9		2.4	45.2%
Porpoise	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Harbor porpoise	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Seal	72.7%	45.5%	36.4%	36.4%	27.3%	2,290.9	127.3	60.9	40.9	ind	2.3	43.5%
Bearded seal	0.0%	9.1%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Harbor seal	54.5%	36.4%	36.4%	18.2%	18.2%	916.4	50.9	24.3	16.4	ind	0.9	16.4%
Harbor seal–saltwater	54.5%	36.4%	36.4%	18.2%	18.2%	916.4	50.9	24.3	16.4	ind	0.9	16.4%
Ringed seal	27.3%	27.3%	9.1%	18.2%	18.2%	1,374.5	76.4	36.5	24.5	ind	1.4	33.4%
Unknown seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Steller sea lion	9.1%	0.0%	0.0%	9.1%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Walrus	18.2%	9.1%	0.0%	18.2%	9.1%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Whale	54.5%	9.1%	9.1%	45.5%	27.3%	2,493.0	138.5	66.2	3.0	ind	0.2	0.0%
Beluga whale	54.5%	9.1%	9.1%	45.5%	27.3%	2,493.0	138.5	66.2	3.0	ind	0.2	0.0%
Birds and eggs	100.0%	100.0%	100.0%	90.9%	90.9%	1,995.5	110.9	53.0	2,829.3		157.2	68.2%
Migratory birds	90.9%	81.8%	81.8%	63.6%	81.8%	1,136.2	63.1	30.2	993.3	ind	55.2	61.0%
Ducks	90.9%	72.7%	72.7%	45.5%	63.6%	344.3	19.1	9.1	468.0	ind	26.0	46.3%
Bufflehead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Canvasback	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Eider	9.1%	9.1%	9.1%	0.0%	9.1%	15.7	0.9	0.4	9.8	ind	0.5	0.0%
Common eider	9.1%	9.1%	9.1%	0.0%	9.1%	15.7	0.9	0.4	9.8	ind	0.5	0.0%
King eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Gadwall	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Goldeneye	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

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Table 3-2.–Page 5 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Birds and eggs, continued												
Unknown goldeneye	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Harlequin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Mallard	45.5%	45.5%	45.5%	9.1%	36.4%	90.0	5.0	2.4	90.0	ind	5.0	23.0%
Merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Common merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Red-breasted merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Long-tailed duck (oldsquaw)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Northern pintail	63.6%	63.6%	63.6%	18.2%	45.5%	197.7	11.0	5.3	247.1	ind	13.7	32.3%
Scaup	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown scaup	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Black scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
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%
Teal	45.5%	45.5%	45.5%	9.1%	36.4%	32.9	1.8	0.9	109.6	ind	6.1	13.8%
Green-winged teal	45.5%	45.5%	45.5%	9.1%	36.4%	32.9	1.8	0.9	109.6	ind	6.1	13.8%
Wigeon	9.1%	9.1%	9.1%	0.0%	0.0%	8.0	0.4	0.2	11.5	ind	0.6	0.0%
Unknown ducks	18.2%	0.0%	0.0%	18.2%	9.1%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Geese	90.9%	72.7%	72.7%	45.5%	72.7%	590.7	32.8	15.7	414.0	ind	23.0	45.2%
Brant	27.3%	27.3%	27.3%	0.0%	18.2%	76.6	4.3	2.0	63.8	ind	3.5	10.4%
Canada geese	81.8%	72.7%	72.7%	36.4%	63.6%	341.3	19.0	9.1	278.2	ind	15.5	52.2%
Cacklers	72.7%	63.6%	63.6%	36.4%	54.5%	286.7	15.9	7.6	238.9	ind	13.3	43.7%
Lesser Canada geese	27.3%	18.2%	18.2%	18.2%	18.2%	35.3	2.0	0.9	29.5	ind	1.6	12.9%
Unknown Canada geese	9.1%	9.1%	9.1%	0.0%	9.1%	19.2	1.1	0.5	9.8	ind	0.5	0.0%

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Table 3-2.–Page 6 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Birds and eggs, continued												
Emperor geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Snow geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
White-fronted geese	36.4%	36.4%	36.4%	18.2%	27.3%	172.8	9.6	4.6	72.0	ind	4.0	14.7%
Unknown geese	9.1%	0.0%	0.0%	9.1%	9.1%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Swan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Trumpeter swan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Tundra (whistling) swan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	6.9%
Unknown swan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Crane	54.5%	27.3%	27.3%	27.3%	18.2%	192.4	10.7	5.1	22.9	ind	1.3	19.1%
Sandhill crane	54.5%	27.3%	27.3%	27.3%	18.2%	192.4	10.7	5.1	22.9	ind	1.3	19.1%
Shorebirds	18.2%	18.2%	18.2%	0.0%	0.0%	8.8	0.5	0.2	88.4	ind	4.9	16.4%
Common snipe	18.2%	18.2%	18.2%	0.0%	0.0%	8.8	0.5	0.2	88.4	ind	4.9	16.4%
Other birds	100.0%	81.8%	81.8%	72.7%	72.7%	567.0	31.5	15.1	810.0	ind	45.0	48.2%
Upland game birds	100.0%	81.8%	81.8%	72.7%	72.7%	567.0	31.5	15.1	810.0	ind	45.0	48.2%
Grouse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Ptarmigan	100.0%	81.8%	81.8%	72.7%	72.7%	567.0	31.5	15.1	810.0	ind	45.0	48.2%
Unknown ptarmigan	100.0%	81.8%	81.8%	72.7%	72.7%	567.0	31.5	15.1	810.0	ind	45.0	48.2%
Bird eggs	90.9%	45.5%	45.5%	63.6%	27.3%	292.3	16.2	7.8	1,026.0	ind	57.0	35.3%
Duck eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Geese eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
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%
Shorebird eggs	9.1%	9.1%	9.1%	0.0%	0.0%	1.3	0.1	0.0	26.2	ind	1.5	0.0%
Common snipe eggs	9.1%	9.1%	9.1%	0.0%	0.0%	1.3	0.1	0.0	26.2	ind	1.5	0.0%
Seabird and loon eggs	90.9%	45.5%	45.5%	63.6%	27.3%	290.9	16.2	7.7	999.8	ind	55.5	36.8%
Cormorant eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Gull eggs	90.9%	45.5%	45.5%	63.6%	27.3%	289.1	16.1	7.7	963.8	ind	53.5	36.3%
Murre eggs	9.1%	0.0%	0.0%	9.1%	9.1%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

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Table 3-2.–Page 7 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Birds and eggs, continued												
Tern eggs	18.2%	18.2%	18.2%	0.0%	0.0%	1.8	0.1	0.0	36.0	ind	2.0	15.8%
Unknown eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Marine invertebrates	45.5%	27.3%	27.3%	18.2%	27.3%	88.4	4.9	2.3	32.7		1.8	10.2%
Clams	27.3%	9.1%	9.1%	18.2%	9.1%	24.5	1.4	0.7	8.2	gal	0.5	0.0%
Butter clams	9.1%	9.1%	9.1%	0.0%	9.1%	24.5	1.4	0.7	8.2	gal	0.5	0.0%
Pacific littleneck (steamers) clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Razor clams	9.1%	0.0%	0.0%	9.1%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Softshell clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Unknown clams	9.1%	0.0%	0.0%	9.1%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Cockles	18.2%	18.2%	18.2%	0.0%	18.2%	63.8	3.5	1.7	21.3	gal	1.2	10.4%
Crabs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Dungeness crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
King crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Red king crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown king crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Mussels	9.1%	9.1%	9.1%	0.0%	9.1%	4.9	0.0	0.0	3.3	gal	0.2	0.0%
Blue mussels	9.1%	9.1%	9.1%	0.0%	9.1%	4.9	0.0	0.0	3.3	gal	0.2	0.0%
Octopus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Scallops	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Shrimp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Vegetation	90.9%	90.9%	90.9%	18.2%	63.6%	4,972.9	276.3	132.1	1,303.8		72.4	71.1%
Berries	72.7%	72.7%	72.7%	9.1%	63.6%	3,946.9	219.3	104.9	986.7	gal	54.8	61.4%
Other plants/mushrooms	45.5%	45.5%	45.5%	0.0%	27.3%	1,026.0	57.0	27.3	281.0	gal	15.6	27.2%
Beach rye grass	9.1%	9.1%	9.1%	0.0%	0.0%	32.7	1.8	0.9	32.7	gal	1.8	0.0%
Wood	72.7%	72.7%	72.7%	9.1%	9.1%	0.0	0.0	0.0	36.0	crd	2.0	34.9%

a. Amount of resource harvested is individual units, unless otherwise specified.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 3-3.–Top 10 resources harvested and used, Clark's Point, 2008.

Harvest			Use		
Rank	Resource	Pounds per capita	Rank	Resource	Percentage of households using
1	Coho salmon	209.1	1	Chinook salmon	100%
2	Moose	187.8	2	Sockeye salmon	100%
3	Sockeye salmon	156.8	3	Smelt	100%
4	Chinook salmon	153.3	3	Moose	100%
5	Berries	104.9	5	Ptarmigan	100%
6	Pink salmon	69.2	6	Coho salmon	91%
7	Beluga whale	66.2	7	Seabird and loon eggs	91%
8	Chum salmon	48.8	8	Gull eggs	91%
9	Ringed seal	36.5	9	Porcupine	82%
10	Plants/greens/mushrooms	27.3	10	Canada geese	82%

Source ADF&G Division of Subsistence household surveys, 2009.

Nonsalmon fish consituted 3% of the total harvest of wild resources in 2008 (Table 3-2 and Figure 3-2). Clark's Point residents harvested an estimated 1,271 lb of nonsalmon fish, or 34 lb per capita. Figure 3-4 shows the harvest of nonsalmon fish at Clark's Point in 2008 by species. The major species harvested included smelt (628 lb, or 17 lb per capita) at 50% of the nonsalmon fish harvest, starry flounder at 25% (319 lb, or 9 lb per capita), and Dolly Varden at 14% (170 lb, or 5 lb per capita) of the nonsalmon fish harvest.

Large land mammals (Table 3-2) were another major source of wild foods at Clark's Point in 2008, with an estimated harvest of 7,871 lb (437 lb per household, or 209 lb per capita). By weight, 90% of the large land mammal harvest was moose (7,069 lb, or 188 lb per capita). Caribou contributed only 3% of the total large land mammal harvest (246 lb, or 7 lb per capita), while brown bears were 7% (556 lb, or 15 lb per capita). The 2008 harvest included 13 moose, 2 caribou, and 2 brown bears.

Porcupines were the most important small land mammal resource. In 2008, Clark's Point residents harvested an estimated 524 lb, or 14 lb per capita (Table 3-2). However, the harvest of small land mammals constituted only 1% of the overall harvest of wild resources in 2008.

In 2008, Clark's Point residents harvested an estimated 3,947 lb of berries, or 105 lb per capita (Table 3-2). Other plants, which totaled 1,026 lb or 27 lb person, were also harvested. Wild plants and berries made up 11% of the overall harvest of wild resources in 2008. Marine invertebrates, mainly cockles and clams, made up less than 1% of the overall harvest. Residents harvested 25 lb, or just under 1 lb per capita of clams, and 64 lb, or just under 2 lb per capita, of cockles in 2008 (Table 3-2). Residents also harvested ptarmigan, which totaled 567 lb, or 15 lb per capita. Migratory birds totaled 1,136 lb, or 30 lb per capita (Table 3-2).

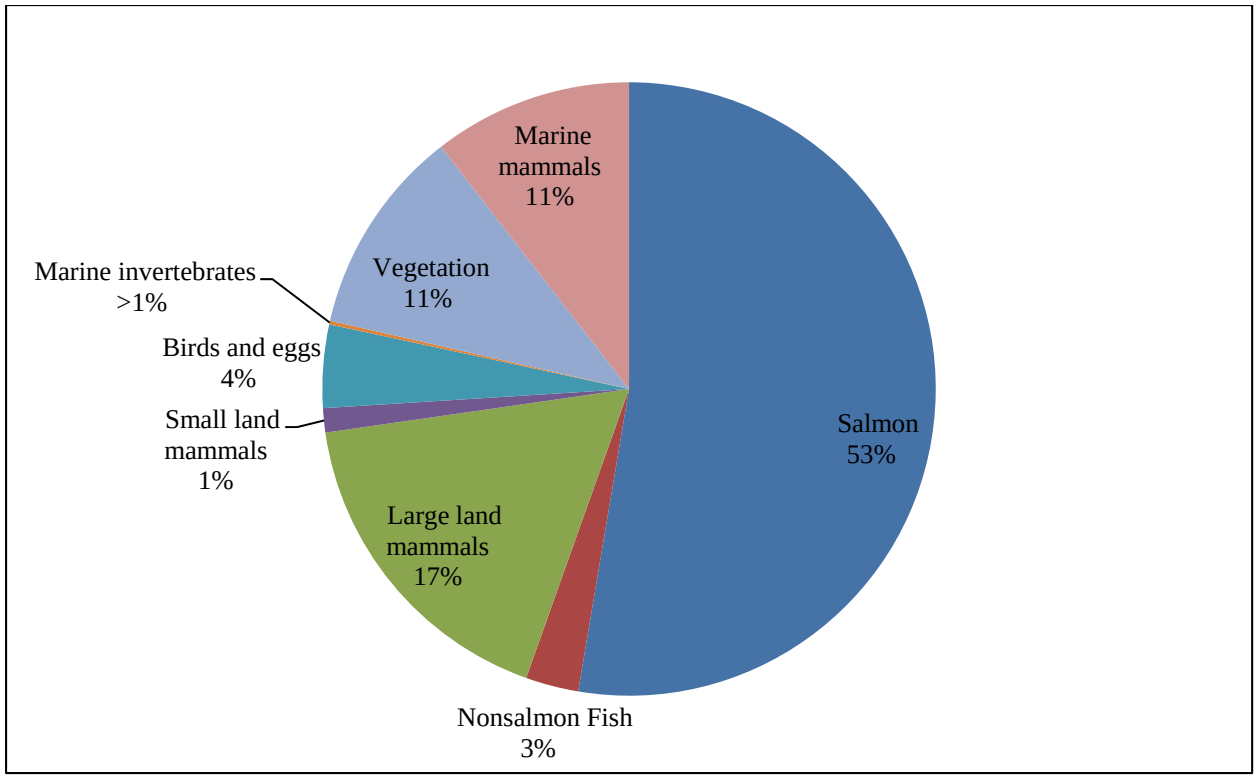

Figure 3-2.–Clark's Point composition of wild resource harvests, pounds usable weight, 2008.

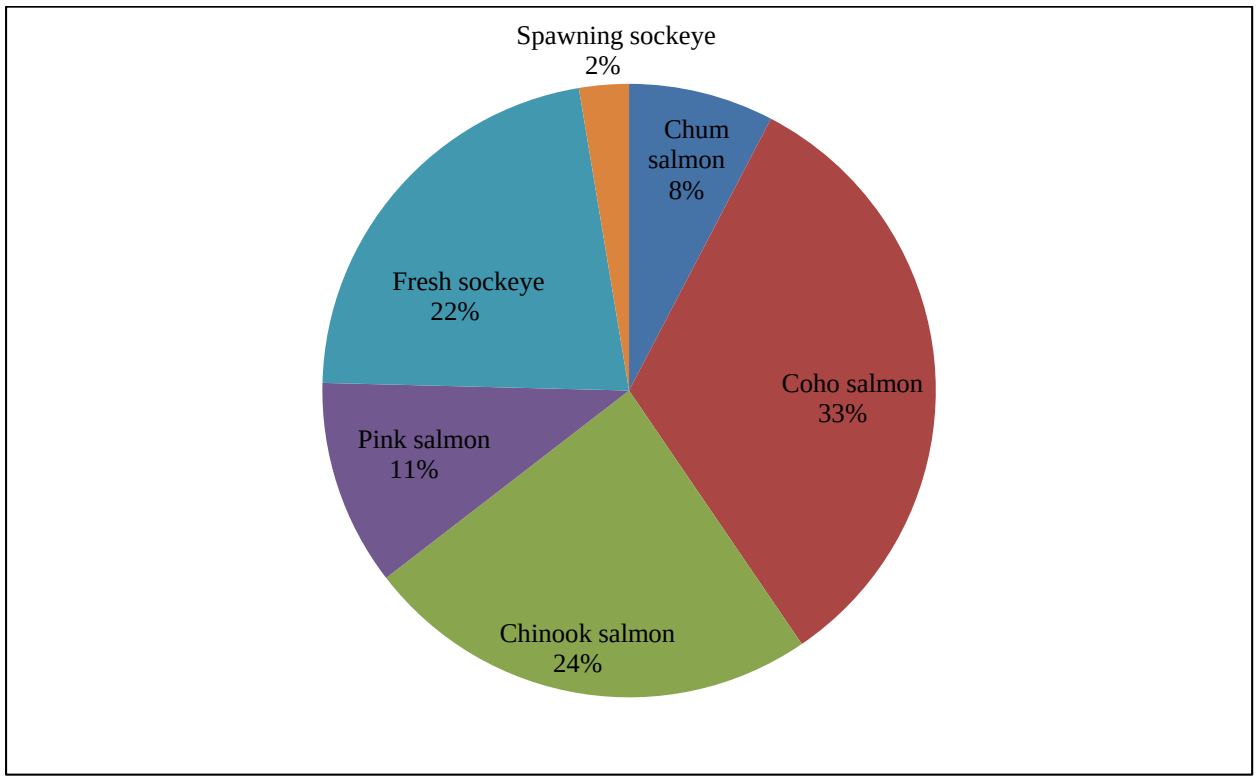

Figure 3-3.–Clark's Point composition of salmon harvests, pounds usable weight, 2008.

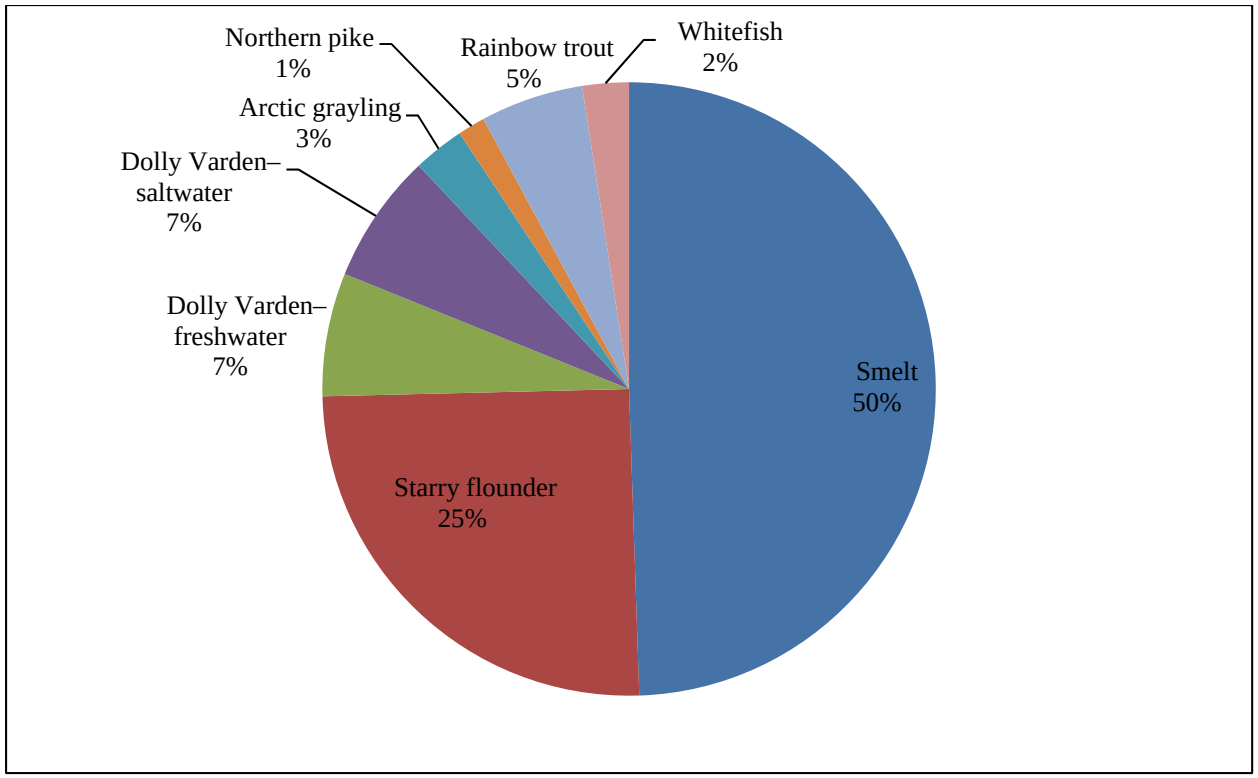

Figure 3-4.–Clark's Point composition of nonsalmon fish harvests, pounds usable weight, 2008.

General Hunting, Fishing, and Gathering Areas

Clark's Point residents' fish harvests in 2008 were concentrated along the shore surrounding Clark's Point, along the Nushagak River, and also in Lake Aleknagik and in the Wood River and its tributaries (figures 3-5 and 3-6). Caribou hunting effort was extensive and occurred in a large inland area from the shores of Nushagak Bay and Kvichak Bay to Levelock, Ekwok, and Dillingham (Figure 3-7). Moose hunting was more focused along waterways and a smaller inland area extending from the shores of the Nushagak and Kvichak bays. The main waterways hunted for moose were Clark Slough, the Nushagak River in the Black Point area, and the Muklung River near Aleknagik, including their tributaries (Figure 3-8). Seals and beluga whales were hunted throughout Nushagak Bay, and walruses were hunted in the waters of Bristol Bay just outside of Nushagak Bay (figures 3-9 and 3-10). Figure 3-9 shows the extent of the hunting area for seals, which is similar to that for beluga whales (see Appendix C for additional maps).

Clark's Point residents also traveled a considerable distance to hunt small land mammals, particularly porcupines, searching primarily inland from Clark's Point. Egg gathering and waterfowl hunting occurred along the shore of Nushagak Bay near Clark's Point and north of the community, ranging approximately 3 to 6 miles east from the shore. Eggs and waterfowl were also harvested near Ekuk.

SHARING AND RECEIVING WILD RESOURCES

The household surveys documented widespread sharing of wild resources in Clark's Point in 2008: 100% of households received wild resources from other households and 100% of households gave resources away (tables 1-14 and 3-2). Households received an average of 10 resources and gave away an average of 12 resources (Table 1-14). The maximum number of resources given away by any household was 32 and the maximum number received was 20 (Table 1-14). Fish, birds and eggs, and large land mammals were the most widely used resources, all being used by 100% of the households in Clark's Point. They were also among the most commonly shared resources, with 73% of households receiving and 91% giving fish,

91% of households both receiving and giving away birds and eggs, and 73% receiving and 64% giving away large land mammals (Table 3-2). Moose was the most widely shared wildlife resource, with 73% of households receiving moose and 64% giving moose (Table 3-2). Caribou were received by 18% of the households and given away by 9%.

More households received marine mammals (55%) than gave them away (27%), which likely reflects a specialization in the harvesting of marine mammals, since only 36% of all households in Clark's Point harvested the resource in 2008. Twenty-seven percent of households gave away beluga whales and 46% received a share of the whales; however, only 9% of households harvested beluga whales. The percentage of households that shared beluga whales is greater than the percentage that harvested because it is highly likely that some households shared portions of the whales that were given to them with additional households.

More households gave away berries (64%) than received them (9%), likely reflecting widespread sharing outside of the community (Table 3-2). The harvest and use data for the marine invertebrates resource, which includes clams, cockles, and mussels, displayed a similar, although less pronounced, pattern, with 27% of households giving away clams, and 18% receiving them. Forty-six percent of the households used marine invertebrates in 2008, while 27% harvested marine invertebrates.

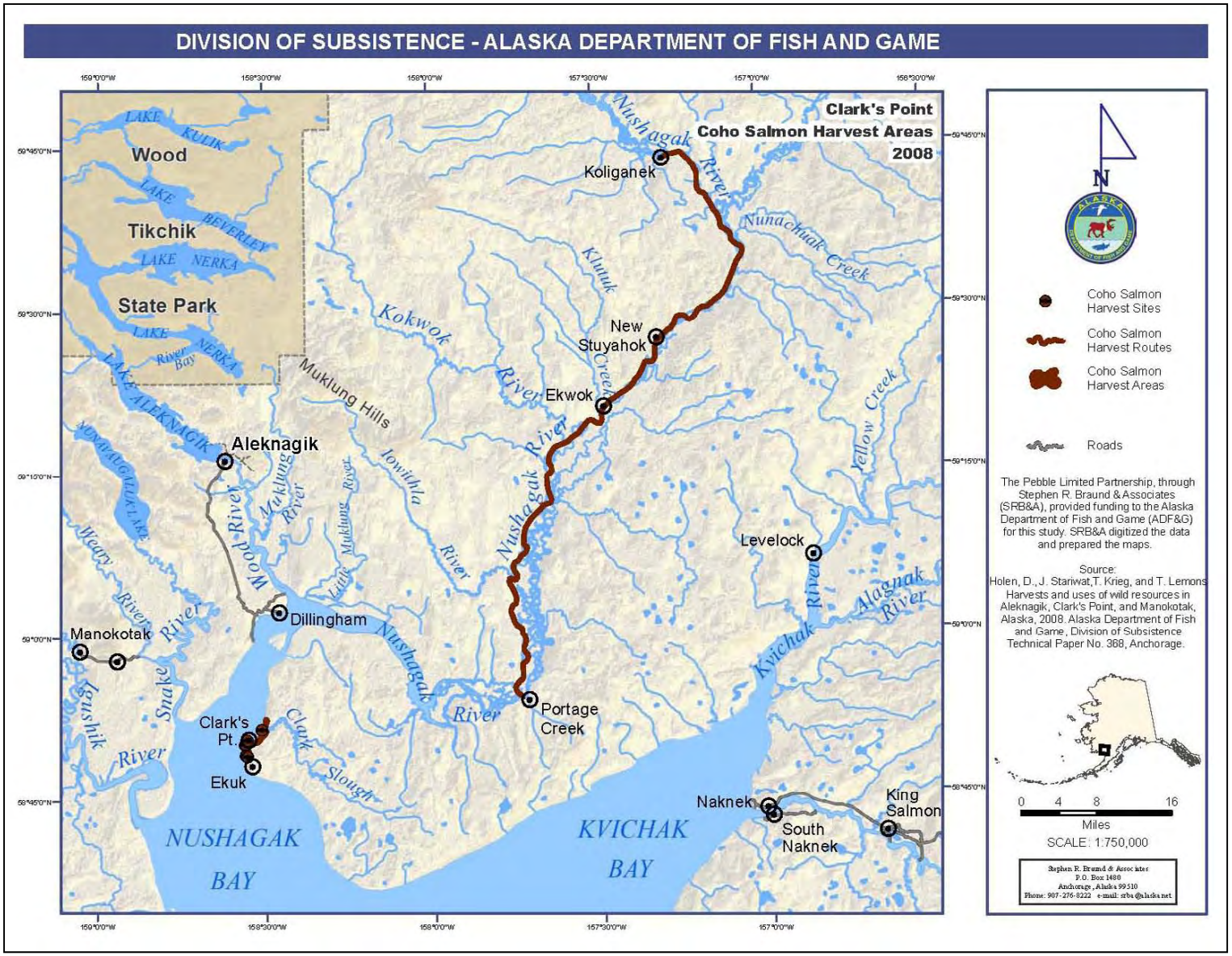

Figure 3-5.–Coho salmon harvest areas, Clark's Point, 2008.

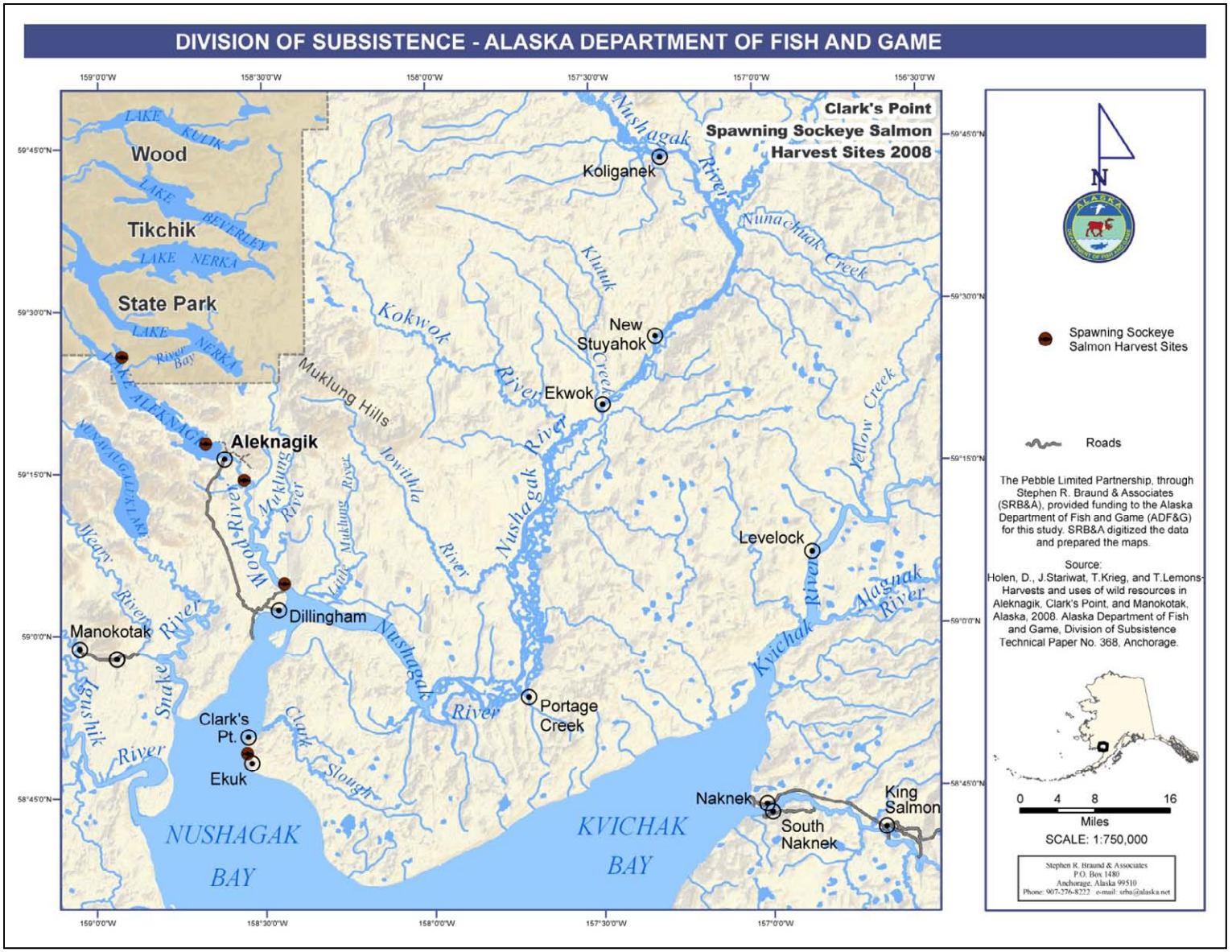

Figure 3-6.–Spawning sockeye salmon harvest sites, Clark's Point, 2008.

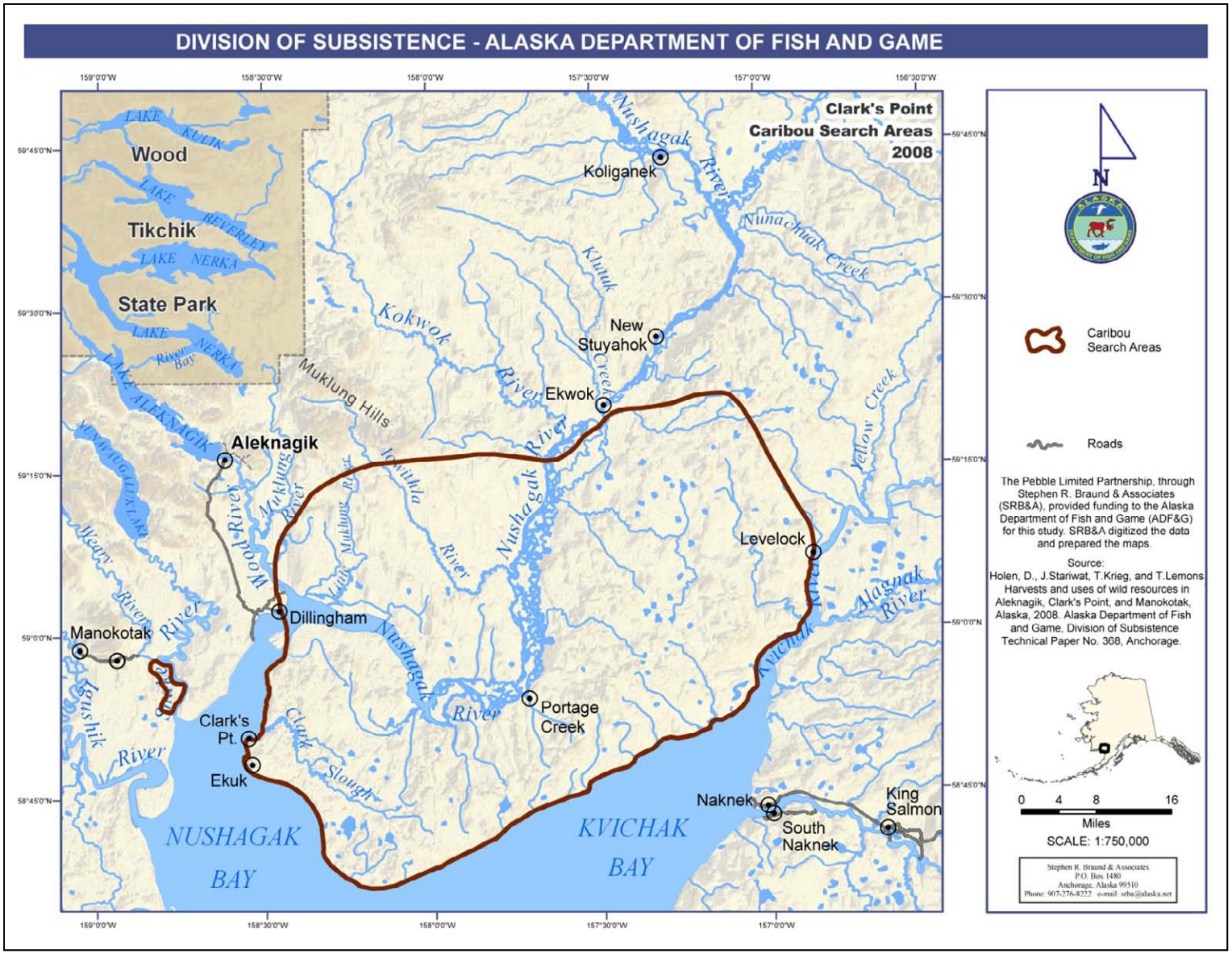

Figure 3-7.–Caribou hunting areas, Clark's Point, 2008.

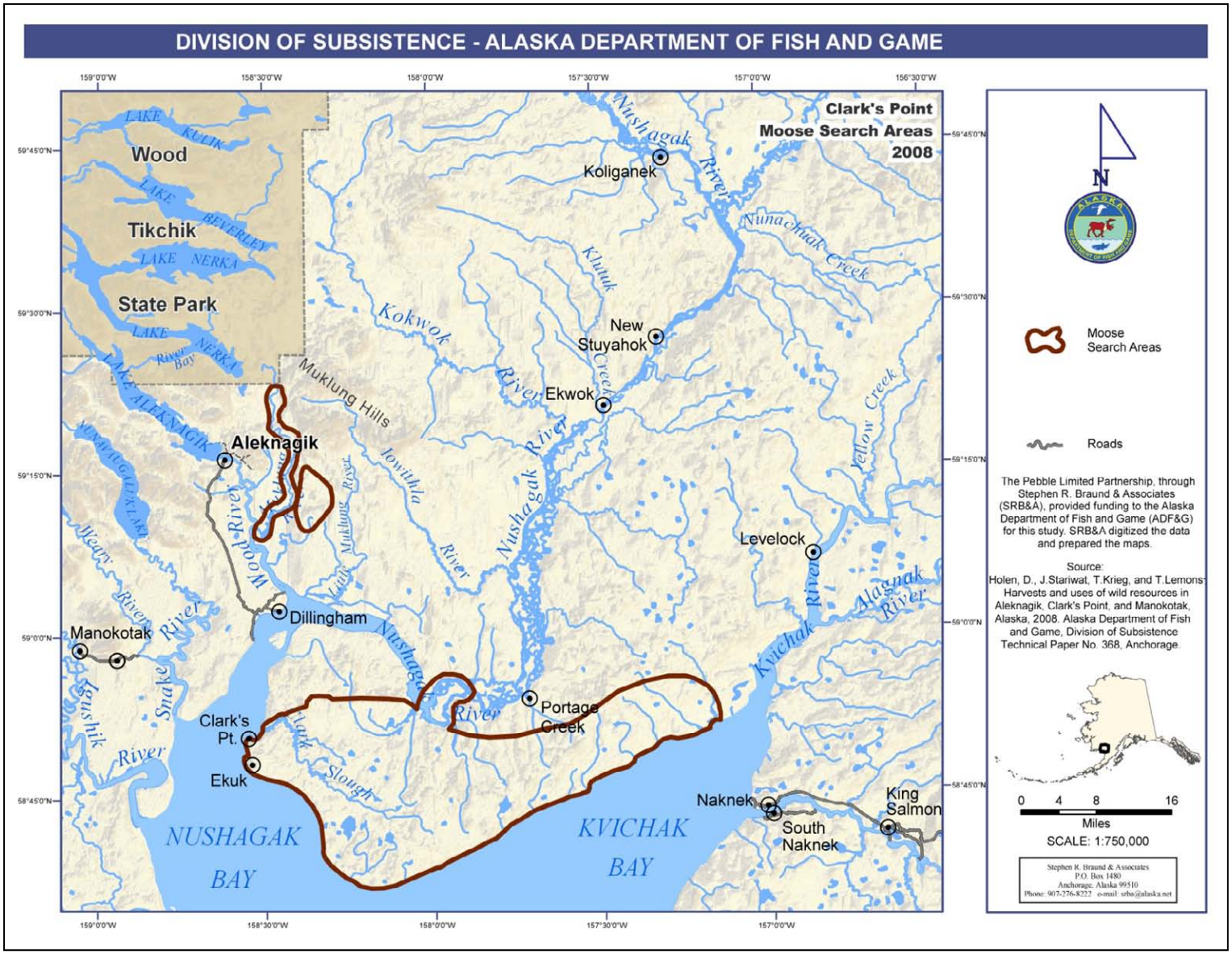

Figure 3-8.–Moose hunting areas, Clark's Point, 2008.

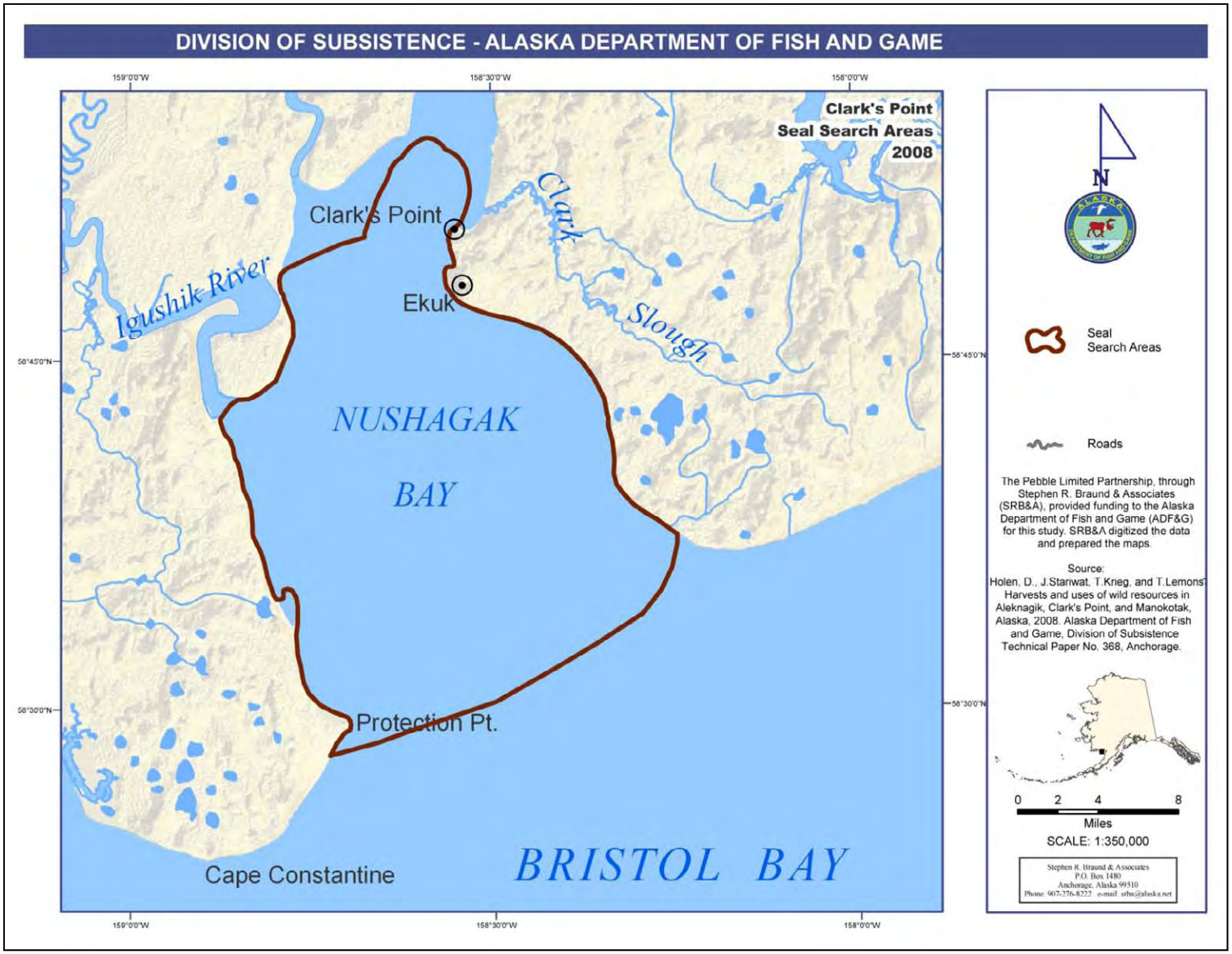

Figure 3-9.–Seal hunting areas, Clark's Point, 2008.

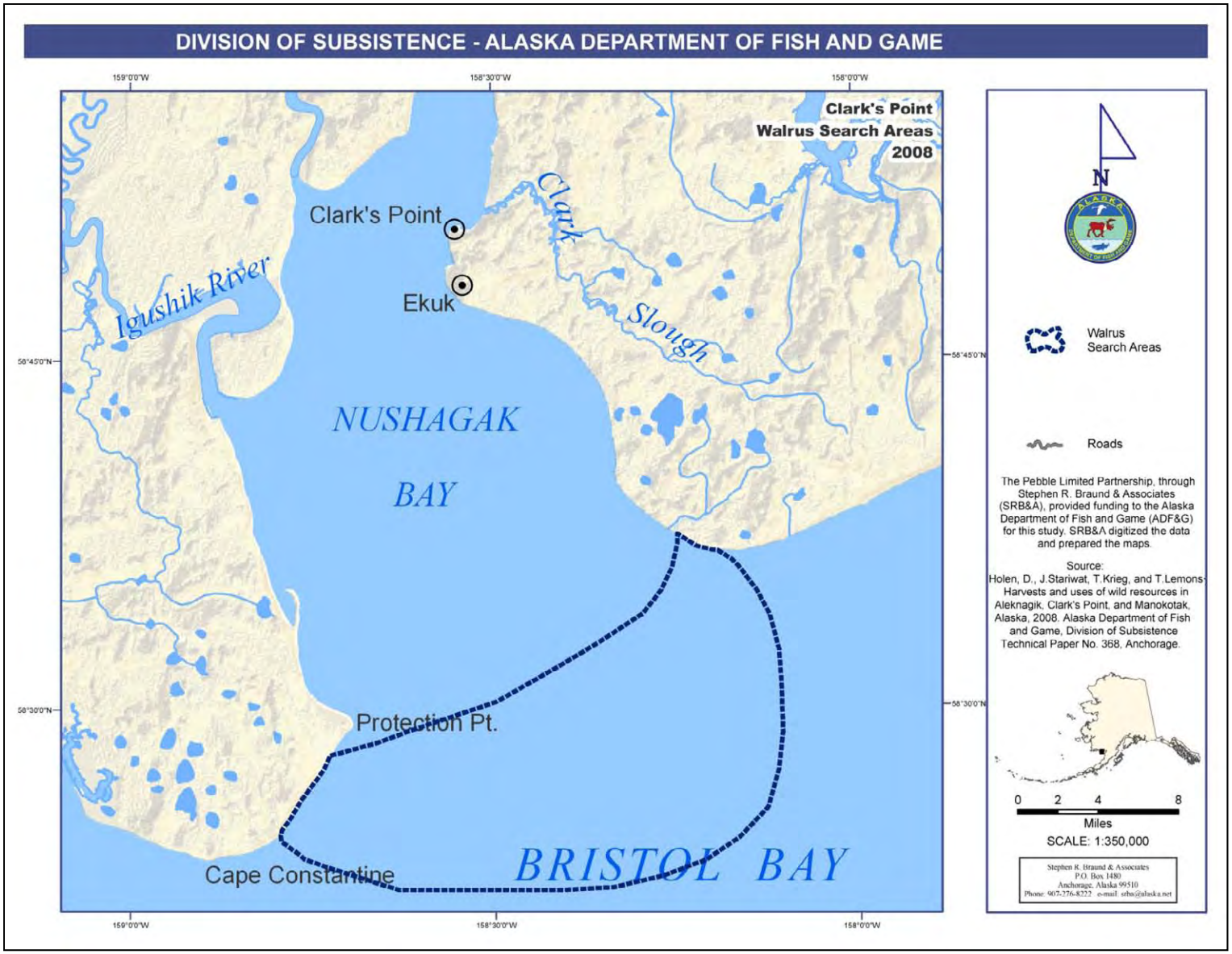

Figure 3-10.–Walrus hunting areas, Clark's Point, 2008.

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

SALMON

In 2008, Clark's Point residents used setnets to harvest 61% of their overall estimated subsistence salmon harvest (Table 3-5). Most of this effort was concentrated on the beaches in front of the community; however, some coho salmon harvests occurred in the upriver portion of the Nushagak River using rod and reel (Figure 3-5). Fifty-seven percent of the coho salmon harvest was from setnets in the subsistence fishery, and 61% of the fresh sockeye salmon harvest was from setnets. In addition, 97% of spawning sockeye salmon were caught with setnets, 51% of chum salmon, 82% of pink salmon, and 57% of Chinook salmon (Table 3-5). A portion of the total harvests of salmon in terms of pounds (39%) was removed from the commercial catch. This included Chinook salmon (43%), pink salmon (18%), chum salmon (49%), coho salmon (42%), and fresh sockeye salmon (39%). In addition to subsistence setnets and removal from commercial catches, rod and reel gear was used to harvest salmon by Clark's Point residents in 2008. Rod and reel harvests accounted for less than 1% of the total harvest. Much of this occurred upriver on the Nushagak where Clark's Point residents harvested coho salmon by rod and reel (Table 3-4; see Appendix C for maps of harvest locations of other salmon).

NONSALMON FINFISH

Table 3-5 lists the percentage of each nonsalmon fish harvested, by gear type, by Clark's Point residents in 2008. Residents caught most nonsalmon finfish with subsistence setnets. For example, 43% of smelt were caught by setnet, which accounted for 21% of the overall harvest of nonsalmon finfish. An estimated 20% of the smelt harvested were caught by ice fishing and 16% by seine. Harvests by hand line gear made up 46% of the flounder harvest, 56% of the freshwater Dolly Varden harvest, and 53% of the saltwater Dolly Varden harvest. Rod and reel gear made up 28% of the Dolly Varden harvest in fresh waters and 100% of the rainbow trout harvest. Rainbow trout accounted for 5% of the total nonsalmon fish harvest. Other nonsalmon fish harvested included Arctic grayling (3% of the harvest), whitefish (2%), and northern pike (1%). Respondents said that no herring were harvested in 2008 due to poor weather conditions and rough water.

LARGE LAND MAMMALS

In 2008, large land mammals made up an estimated 17% of the total harvest at Clark's Point (Figure 3-2). Residents noted that the harvest of large land mammals was considerably less for caribou, which they reported as difficult to harvest in the Clark's Point area for the 6 to 7 years prior to 2008. On the other hand, survey respondents did report that moose were plentiful near Clark's Point. In total, Clark's Point residents harvested 7,871 lb of large land mammals, or 209 lb per capita, in 2008 (Table 3-2). Moose made up 90% of the harvest (7,069 lb, or 188 lb per capita) and caribou 3% (246 lb, or 7 lb per capita). Brown bears made up the remaining 7% of large land mammal harvests, at 556 lb, or 15 lb per capita.

Table 3-6 lists the month and sex of harvested caribou and moose. All harvested moose and caribou were male, and there were an estimated 13 moose and 2 caribou taken. The caribou were harvested during the fall hunt in August, while moose were harvested during the fall and winter hunts, in August, September, and December (Table 3-6). An estimated 2 brown bears were harvested in September.

SMALL LAND MAMMALS/FURBEARERS

The estimated total harvest of small land mammals by Clark's Point residents in 2008 was 578 lb, or 15 lb per capita (Table 3-2). Survey respondents reported that porcupines, which made up most of the small land mammal harvests, at 524 lb (14 lb per capita), were not available locally, which may explain why porcupines were hunted over a large inland area (Table 3-2; see also Appendix C maps). Beavers used for food and fur accounted for 7% of the small land mammal harvest (43 lb, or 1 lb per capita) and hares accounted for 2% of the harvest (13 lb, or less than 1% per capita).

Table 3-4.–Estimated percentages of salmon harvest by gear type, resource, and total salmon harvest, Clark's Point, 2008.

Resource / Percent base	Removed from commercial catch		Subsistence methods: Setnet		Seine		Other		Subsistence gear, any method		Rod and reel		Any method	
	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon														
Gear type	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Resource	34.8%	38.5%	64.5%	61.0%	0.0%	0.0%	0.0%	0.0%	64.5%	61.0%	0.7%	0.6%	100.0%	100.0%
Total	34.8%	38.5%	64.5%	61.0%	0.0%	0.0%	0.0%	0.0%	64.5%	61.0%	0.7%	0.6%	100.0%	100.0%
Chum salmon														
Gear type	10.8%	9.7%	6.2%	6.4%	0.0%	0.0%	0.0%	0.0%	6.2%	6.4%	0.0%	0.0%	7.8%	7.7%
Resource	48.7%	48.7%	51.3%	51.3%	0.0%	0.0%	0.0%	0.0%	51.3%	51.3%	0.0%	0.0%	100.0%	100.0%
Total	3.8%	3.7%	4.0%	3.9%	0.0%	0.0%	0.0%	0.0%	4.0%	3.9%	0.0%	0.0%	7.8%	7.7%
Coho salmon														
Gear type	38.5%	36.0%	28.0%	30.5%	0.0%	0.0%	0.0%	0.0%	28.0%	30.5%	47.6%	60.4%	31.8%	32.8%
Resource	42.2%	42.2%	56.7%	56.7%	0.0%	0.0%	0.0%	0.0%	56.7%	56.7%	1.1%	1.1%	100.0%	100.0%
Total	13.4%	13.9%	18.0%	18.6%	0.0%	0.0%	0.0%	0.0%	18.0%	18.6%	0.3%	0.3%	31.8%	32.8%
Chinook salmon														
Gear type	13.4%	27.2%	9.4%	22.3%	0.0%	0.0%	0.0%	0.0%	9.4%	22.3%	0.0%	0.0%	10.7%	24.1%
Resource	43.4%	43.4%	56.6%	56.6%	0.0%	0.0%	0.0%	0.0%	56.6%	56.6%	0.0%	0.0%	100.0%	100.0%
Total	4.7%	10.4%	6.1%	13.6%	0.0%	0.0%	0.0%	0.0%	6.1%	13.6%	0.0%	0.0%	10.7%	24.1%
Pink salmon														
Gear type	9.2%	5.0%	22.9%	14.6%	0.0%	0.0%	0.0%	0.0%	22.9%	14.6%	0.0%	0.0%	17.9%	10.9%
Resource	17.9%	17.9%	82.1%	82.1%	0.0%	0.0%	0.0%	0.0%	82.1%	82.1%	0.0%	0.0%	100.0%	100.0%
Total	3.2%	1.9%	14.7%	8.9%	0.0%	0.0%	0.0%	0.0%	14.7%	8.9%	0.0%	0.0%	17.9%	10.9%
Sockeye salmon														
Gear type	28.1%	22.1%	23.8%	21.9%	0.0%	0.0%	0.0%	0.0%	23.8%	21.9%	23.8%	25.4%	25.3%	22.0%
Resource	38.6%	38.6%	60.7%	60.7%	0.0%	0.0%	0.0%	0.0%	60.7%	60.7%	0.7%	0.7%	100.0%	100.0%
Total	9.8%	8.5%	15.4%	13.3%	0.0%	0.0%	0.0%	0.0%	15.4%	13.3%	0.2%	0.1%	25.3%	22.0%
Spawning sockeye														
Gear type	0.0%	0.0%	9.7%	4.2%	0.0%	0.0%	0.0%	0.0%	9.7%	4.2%	28.6%	14.2%	6.5%	2.6%
Resource	0.0%	0.0%	96.9%	96.9%	0.0%	0.0%	0.0%	0.0%	96.9%	96.9%	3.1%	3.1%	100.0%	100.0%
Total	0.0%	0.0%	6.3%	2.5%	0.0%	0.0%	0.0%	0.0%	6.3%	2.5%	0.2%	0.1%	6.5%	2.6%
Unknown salmon														
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2009.

Table 3-5.–Estimated percentages of fish other than salmon harvested by gear type, resource, and total harvest, Clark's Point, 2008.

Resource / Percent base	Removed from commercial gear	Subsistence gear							Rod and reel	Any method
		Setnet	Seine	Hand line gear	Dip net	Ice fishing	Other subsistence gear	Any subsistence gear		
Nonsalmon fish										
Gear type	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	100.0%	100.0%	100.0%
Resource	0.0%	41.8%	8.0%	18.8%	6.3%	9.6%	0.0%	84.5%	15.5%	100.0%
Total	0.0%	41.8%	41.8%	18.8%	6.3%	9.6%	0.0%	84.5%	15.5%	100.0%
Herring										
Gear type	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.2%
Resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.2%
Unknown smelt										
Gear type	0.0%	51.1%	100.0%	0.0%	100.0%	100.0%	0.0%	53.5%	26.9%	49.4%
Resource	0.0%	43.2%	16.1%	0.0%	12.7%	19.5%	0.0%	91.5%	8.5%	100.0%
Total	0.0%	21.3%	21.3%	0.0%	6.3%	9.6%	0.0%	45.2%	4.2%	49.4%
Starry flounder										
Gear type	0.0%	32.4%	0.0%	61.6%	0.0%	0.0%	0.0%	29.7%	0.0%	25.1%
Resource	0.0%	53.8%	0.0%	46.2%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	13.5%	13.5%	11.6%	0.0%	0.0%	0.0%	25.1%	0.0%	25.1%
Dolly Varden–freshwater										
Gear type	0.0%	2.6%	0.0%	19.2%	0.0%	0.0%	0.0%	5.6%	11.6%	6.5%
Resource	0.0%	16.7%	0.0%	55.6%	0.0%	0.0%	0.0%	72.2%	27.8%	100.0%
Total	0.0%	1.1%	1.1%	3.6%	0.0%	0.0%	0.0%	4.7%	1.8%	6.5%
Dolly Varden–saltwater										
Gear type	0.0%	7.8%	0.0%	19.2%	0.0%	0.0%	0.0%	8.1%	0.0%	6.9%
Resource	0.0%	47.4%	0.0%	52.6%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	3.2%	3.2%	3.6%	0.0%	0.0%	0.0%	6.9%	0.0%	6.9%
Arctic grayling										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	17.4%	2.7%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	2.7%
Northern pike										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.3%	1.4%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	1.4%

- continued -

Table 3-5.–Page 2 of 2.

Resource / Percent base	Removed from commercial gear	Subsistence gear							Rod and reel	Any method
		Setnet	Seine	Hand line gear	Dip net	Ice fishing	Other subsistence gear	Any subsistence gear		
Rainbow trout										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	34.8%	5.4%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.4%	5.4%
Least cisco										
Gear type	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.5%
Resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	0.5%	0.5%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.5%
Round whitefish										
Gear type	0.0%	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.0%	1.9%
Resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	1.9%	1.9%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	1.9%

Source ADF&G Division of Subsistence household surveys, 2009.

Table 3-6.–Estimated large land mammal harvests by month and sex, Clark's Point, 2008.

	Black bear				Brown bear			
Harvest month	Unknown	Male	Female	Total	Unknown	Male	Female	Total
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	0.0	0.0	0.0	0.0	1.6	0.0	1.6
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**	**1.6**

	Caribou				Moose			
Harvest month	Unknown	Male	Female	Total	Unknown	Male	Female	Total
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	1.6	0.0	1.6	0.0	1.6	0.0	1.6
September	0.0	0.0	0.0	0.0	0.0	3.3	0.0	3.3
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	8.2	0.0	8.2
Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**1.6**	**0.0**	**1.6**	**0.0**	**13.1**	**0.0**	**13.1**

Source ADF&G Division of Subsistence household surveys, 2009.

MARINE MAMMALS

Marine mammals were a very important resource for Clark's Point in 2008, accounting for an estimated 11% of the overall harvest of wild foods. Hunters in Clark's Point harvested an estimated 41 seals in 2008, 25 of which were ringed seals and 16 were harbor seals harvested in salt waters. Researchers followed up with harvesters in Clark's Point and learned that marine mammal harvests were widely shared in the Bristol Bay region, especially with residents of neighboring Dillingham. The 41 seals taken by Clark's Point residents in 2008 yielded 2,291 lb of usable meat, or 61 lb per capita (Table 3-2). Hunting occurred in Nushagak Bay near the mouth of the Nushagak River down to the waters of Bristol Bay (Figure 3-9). Survey respondents reported difficulty harvesting seals due to late ice in the bay and poor weather conditions for hunting. No walruses were harvested by Clark's Point residents in 2008; however, 18% received and used the resource as a result of sharing from outside the community. The beluga whale harvest estimate was 3 animals, for 2,439 lb, or 66 lb per capita. The beluga whale hunting area was similar to the seal hunting area in Nushagak Bay but did not extend as far north as the mouth of the Nushagak River (see Appendix C maps).

MARINE INVERTEBRATES

Clams, cockles, and a small amount of mussels were the only marine invertebrate harvest reported by Clark's Point households in 2008. Marine invertebrates accounted for an estimated 88 lb of resources harvested in 2008 (2 lb per capita). The total harvest of clams was 25 lb, or less than 1 lb per capita. All were identified as butter clams. Nine percent of households also reported using razor clams and unknown clams that had been given to them. The estimated total harvest of cockles was 64 lb, or just under 2 lb per capita. The total estimated harvest of mussels was only 5 lb. The marine invertebrate resources were harvested from the tidal zones on the beaches of Metervik Bay and Kulukak Bay west of Cape Constantine as well as near Protection Point on the eastern shore of the cape (see Appendix C maps).

BIRDS AND EGGS

In 2008, Clark's Point residents harvested migratory birds along the shoreline of Nushagak Bay, as well as inland along the shoreline 3 to 6 miles from the bay, and around Ekuk (see Appendix C maps). The estimated harvest of migratory waterfowl totaled 1,136 lb, or 30 lb per capita. Upland birds, of which only ptarmigan were harvested, were hunted in a large inland area from the shores of the Nushagak Bay east towards the Black Point area of the Nushagak River. The total harvest for upland birds was 567 lb, or 15 lb per capita. Eggs were collected near Clark's Point and along Clark Slough. They were also gathered around an island at the mouth of the Nushagak River, and on the small islands of a lake southeast of Clark's Point towards Kvichak Bay (see Appendix C maps). In 2008, 292 lb, or 8 lb per capita, of bird eggs were harvested (Table 3-2). Most bird eggs came from gulls (289 lb, or 8 lb per capita).

WILD PLANTS

Berries and other wild plants were important to Clark's Point residents, based on the amount of harvest, and respondents reported spending a considerable amount of time collecting them in 2008. Harvest estimates totaled 3,947 lb, or 105 lb per capita, of berries, and 1,026 lb, or 27 lb per capita, of other wild plants (Table 3-2). Berries and other wild plants made up 11% of the total harvest (Figure 3-2). The majority of Clark's Point berry and plant harvests were concentrated in an area near Clark's Point and around Ekuk, and extended east to Clark Slough. Some berries were also harvested across Nushagak Bay on the east bank of the Snake River. Thirty-six cords of wood were also harvested in 2008 in an area from Clark's Point south to Ekuk, and as far east as the Black Point area of the Nushagak River (see Appendix C maps). Wood was used to heat homes and steam baths (*maqi* in Yup'ik), and to smoke fish and meat.

COMPARING HARVESTS AND USES IN 2008 WITH PREVIOUS YEARS

Table 3-7 summarizes the responses by Clark's Point residents as to whether their harvests of wild resources were less, the same, or more than in recent years. This table, as well as Figure 3-11, gives an overall response for all resources as well as by resource category. Overall, 36% of households related that their harvests were less than in recent years, while 64% related that they were about the same. No households reported harvesting more resources overall. The 2 categories where the most residents reported harvesting the same amount as in recent years were marine invertebrates (73%) and wild plants (73%). Large land mammals led the percentage for the decline in harvest: 82% of households related that they harvested fewer large land mammals than in recent years, and 18% said they harvested about the same. Figure 3-11 illustrates the declining percentage of large land mammals within the total harvest over time.

The reasons that residents of Clark's Point gave for changes in their harvests and uses are listed by resource category in Table 3-8 and Figure 3-12. This was an open-ended question, and respondents could offer more than one reason for changes. Project staff grouped the responses into categories, such as competition for resources, regulations hindering or helping residents harvest resources, sharing of harvests, effects of weather on animals and subsistence activities, changes in animal populations, personal reasons (such as work and health), and other outside effects on residents' opportunities to engage in subsistence activities. Changes in animal populations, the effects of weather, personal reasons, and other outside effects were the 4 major reasons for changes. Some households gave a combination of reasons (Figure 3-12).

Forty percent of households that reported harvesting fewer salmon compared to the recent past cited animal population changes for this difference (Table 3-8 and Figure 3-12). Through expanded discussion with respondents during the survey, it was discovered that the driving factor behind this response was changes in the river channels that made Chinook salmon more difficult to harvest. Personal reasons, such as work schedules, health, or equipment and fuel expenses, were the most cited reasons given by the 60% of residents who reported harvesting fewer salmon in 2008 compared to recent years. Sixty-seven percent also cited changes in animal populations for fewer harvests of large land mammals, particularly caribou during the study year compared to the previous 5 years. Twenty-two percent said the smaller harvest of large land mammals was due to personal reasons. No one reported harvesting more large land mammals than in recent years. Competition was the reason that 20% of respondents gave for using fewer birds and eggs than in recent years, and 57% of respondents cited weather as the reason for fewer harvests of marine mammals.

Changes in Clark's Point residents' resource harvests can also be clarified through comparisons with comparable findings from other study years. ADF&G administered comprehensive household harvest surveys in Clark's Point for the data years of 1973[8] and 1989 (Seitz 1996), as well as for the 2008 data year for this study (Table 3-2). Figure 3-13 summarizes the per capita harvests in pounds usable weight for each major resource category.

In 2008, harvest amounts of all resource categories except nonsalmon fish were larger than in any previous year for which comprehensive data are available (Figure 3-13). Salmon harvests in 2008 were considerably higher than harvests documented in the other 2 study years. The high harvest in 2008 was 637 lb per capita, compared to a harvest of 73 lb per capita in 1973 and 175 lb per capita in 1989 (Table

[8] Gasbarro, A. F., and G. Utermohle, 1974, unpublished field data, Bristol Bay subsistence survey, Division of Subsistence, Alaska Department of Fish and Game, Anchorage.

3-9). As noted above, researchers followed up with high harvesters in Clark's Point and learned that much of the harvest was shared within the community and throughout the Bristol Bay region, especially with households in neighboring Dillingham. This was true for salmon as well as for large land mammals and marine mammals. The large land mammal harvest was also considerably higher in 2008, with 209 lb per capita compared to a low of 87 lb per capita in 1989. In 2008, survey respondents noted an increase in the number of moose in the area, which probably accounts for the large harvest, despite fewer caribou harvests. Nonsalmon fish harvest amounts in 2008 were comparable to the other 2 study years.

Table 3-9 demonstrates a marked difference in harvests of all resources in the 3 study years, with pounds usable weight per capita harvests ranging from 335 lb in 1973, 361 lb in 1989, to the substantially higher estimated harvest of 1,210 lb in 2008. The 2008 overall harvest was over three times larger than the harvests reported in 1973 and 1989. The dramatic increase in overall harvest over time can be seen in the high harvest of salmon in 2008: 73 lb per capita in 1973 compared to 637 lb per capita in 2008. Marine mammal harvests also increased substantially, with 127 lb per capita in 2008 compared to 75 lb in 1973 and only 14 lb in 1989. Large land mammal harvests increased from 125 lb per capita harvested in 1973 and 87 lb in 1989 to 209 lb per capita in 2008.

Table 3-7.–Comparison of household harvests and uses in recent years, Clark's Point, 2008.

	Estimated	Valid responses		No response		Less		Same		More	
Resource	households	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
Salmon	18	18.0	100.0%	0.0	0.0%	8.2	45.5%	8.2	45.5%	1.6	9.1%
Nonsalmon finfish	18	18.0	100.0%	0.0	0.0%	1.6	9.1%	11.5	63.6%	4.9	27.3%
Marine invertebrates	18	18.0	100.0%	0.0	0.0%	4.9	27.3%	13.1	72.7%	0.0	0.0%
Large land mammals	18	18.0	100.0%	0.0	0.0%	14.7	81.8%	3.3	18.2%	0.0	0.0%
Furbearers	18	18.0	100.0%	0.0	0.0%	6.5	36.4%	11.5	63.6%	0.0	0.0%
Marine mammals	18	18.0	100.0%	0.0	0.0%	11.5	63.6%	6.5	36.4%	0.0	0.0%
Birds and eggs	18	18.0	100.0%	0.0	0.0%	8.2	45.5%	9.8	54.5%	0.0	0.0%
Wild plants	18	18.0	100.0%	0.0	0.0%	4.9	27.3%	13.1	72.7%	0.0	0.0%
Overall	18	18.0	100.0%	0.0	0.0%	6.5	36.4%	11.5	63.6%	0.0	0.0%
Any resource	18	18.0	100.0%	0.0	0.0%	18.0	100.0%	18.0	100.0%	4.9	27.3%

Source ADF&G Division of Subsistence household surveys, 2009.

Table 3-8.–Reasons for change in harvests and uses in recent years, Clark's Point.

Resource category	Use less or more	Estimated number of households[b]	Percentage of responses by category[a]							
			No reason given	Competition	Regulations	People are sharing less	Weather	Animal population changes[c]	Personal reasons (work/health)	Other outside effects
Salmon	Less	8.2	0.0%	0.0%	0.0%	20.0%	0.0%	40.0%	60.0%	0.0%
Salmon	More	1.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Nonsalmon finfish	Less	1.6	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Nonsalmon finfish	More	4.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	33.3%
Marine invertebrates	Less	4.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%	66.7%
Marine invertebrates	More	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Large land mammals	Less	14.7	0.0%	0.0%	11.1%	11.1%	0.0%	66.7%	22.2%	0.0%
Large land mammals	More	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Furbearers	Less	6.5	0.0%	0.0%	0.0%	0.0%	25.0%	50.0%	0.0%	50.0%
Furbearers	More	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Marine mammals	Less	11.5	0.0%	0.0%	0.0%	0.0%	57.1%	28.6%	28.6%	0.0%
Marine mammals	More	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Birds and eggs	Less	8.2	0.0%	20.0%	0.0%	0.0%	20.0%	20.0%	40.0%	0.0%
Birds and eggs	More	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wild plants	Less	4.9	0.0%	0.0%	0.0%	0.0%	66.7%	33.3%	0.0%	0.0%
Wild plants	More	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overall	Less	6.5	0.0%	0.0%	0.0%	0.0%	25.0%	50.0%	50.0%	25.0%
Overall	More	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Any resource	Less	18.0	0.0%	9.1%	9.1%	9.1%	45.5%	63.6%	36.4%	27.3%
Any resource	More	4.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	33.3%

a. Percentage of estimated number of households that reported less or more uses of the resource category who cited this reason.

b. Estimated number of households citing a change in uses. For number of valid responses, see Table 3-6. Estimated total households in community = 18.

c. Includes changes in size of population and/or changes in geographic distribution of animals during hunting seasons that affected harvest opportunities and success.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 3-9.–Clark's Point wild resource harvests by resource category, all study years.

Resource	Pounds usable weight per capita harvest[a]		
	1973	1989	2008
Salmon	72.9	175.2	637.2
Nonsalmon fish	39.1	34.41	33.8
Large land mammals	125.0	86.79	209.1
Small land mammals	6.4	7.48	15.4
Marine mammals	74.7	13.79	127.1
Birds and eggs	16.8	14.55	53.0
Marine invertebrates[b]		0.86	2.3
Vegetation[b]		28.09	132.1
All resources	**334.9**	**361.2**	**1,210.1**

a. Conversion factors have differed slightly over time. For more information, see CSIS.

b. Blank cells indicate data not collected for that study year.

Source ADF&G Division of Subsistence household surveys, 2009.

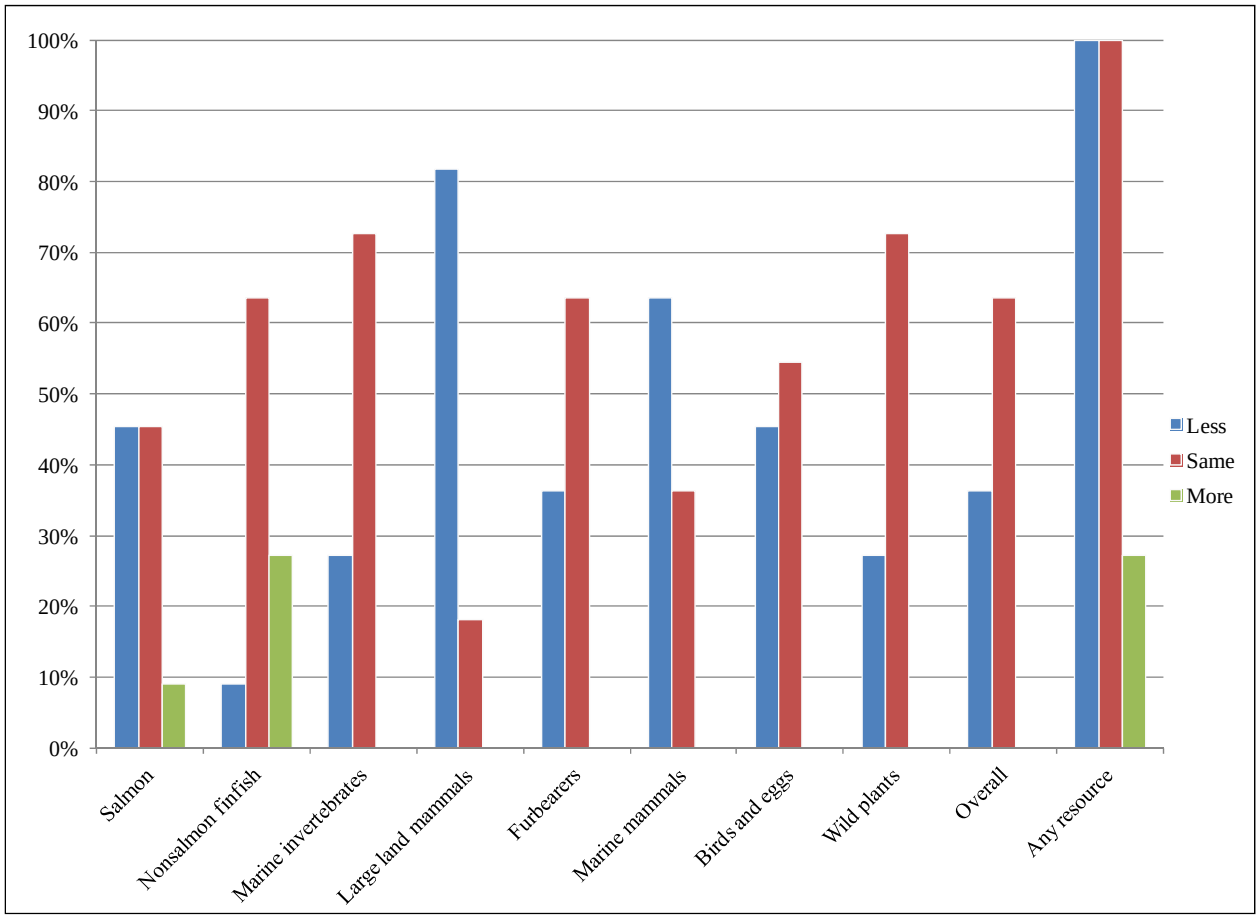

Figure 3-11.–Clark's Point residents' evaluation of harvests and uses of wild resources in 2008 compared to other recent years.

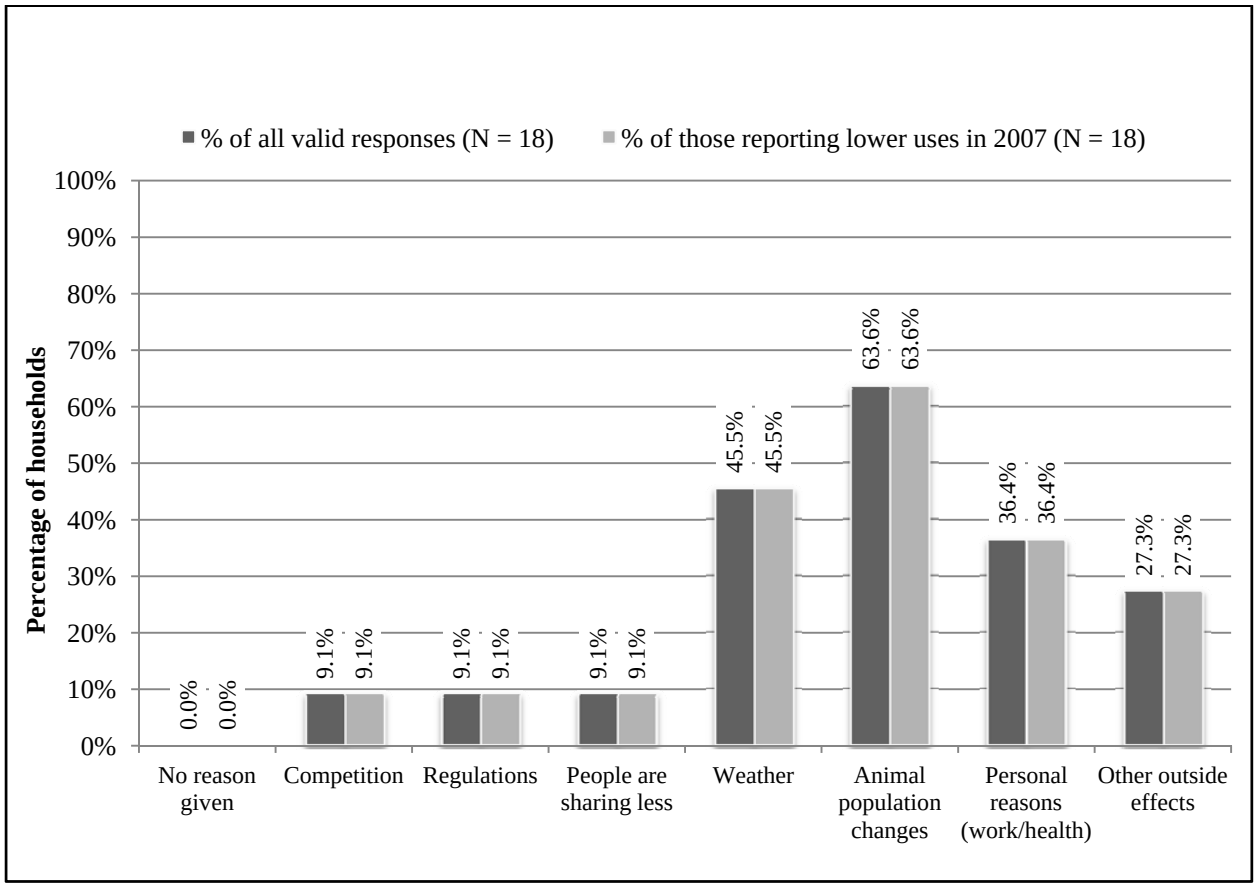

Figure 3-12.–Reasons cited by Clark's Point households for lower uses of any resource in 2008 compared to other recent years.

Table 3-10.–Composition of wild resource harvests by category, Clark's Point, all study years.

	Percentage of total harvest[a]		
Resource	1973	1989	2008
Salmon	21.8%	48.5%	52.7%
Nonsalmon fish	11.7%	9.5%	2.8%
Large land mammals	37.3%	24.0%	17.3%
Small land mammals	1.9%	2.1%	1.3%
Marine mammals	22.3%	3.8%	10.5%
Birds and eggs	5.0%	4.0%	4.4%
Marine invertebrates[b]		0.2%	0.2%
Vegetation[b]		7.8%	10.9%
All resources	**100.0%**	**100.0%**	**100.0%**

a. Conversion factors have differed slightly over time. For more information, see CSIS.

b. Blank cells indicate data not collected for that study year.

Source ADF&G Division of Subsistence household surveys, 2009.

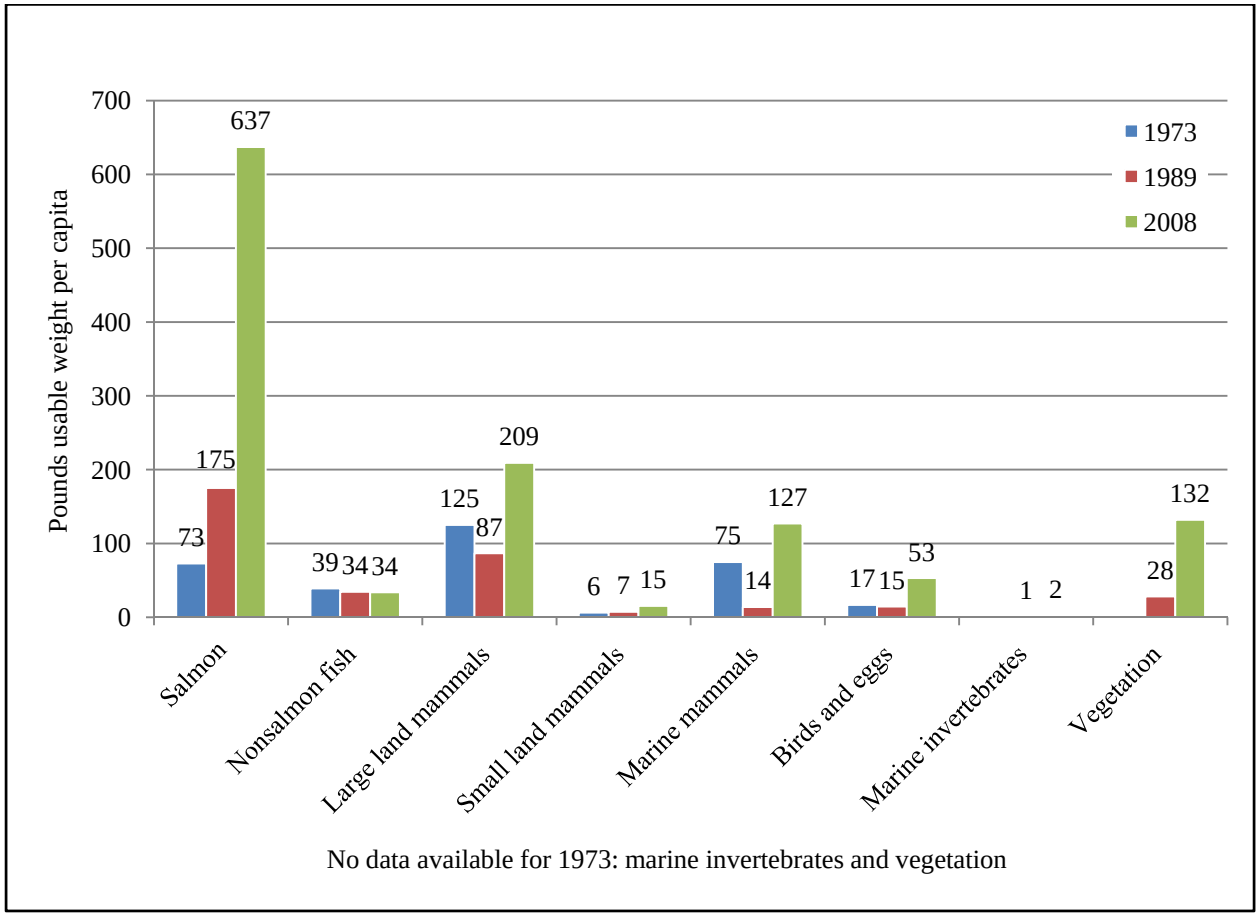

Figure 3-13.–Clark's Point harvests over time, 1973–2008.

LOCAL CONCERNS REGARDING RESOURCES

Following are some respondents' observations of resource populations and trends that were recorded during the survey. Not all households presented additional information during survey interviews so not all interviewed households are represented in the following observations. Residents also voiced their concerns about resources during the community review meeting. Those concerns have been included here as well.

These respondents expressed concerns about competition for resources with nonlocals, and cited cases of waste and disrespect for animals by nonlocal hunters. One resident reported a concern that "white hunters are taking down lots of fowl, shooting everything to leave to die." Another hunter reported that he had seen multiple caribou carcasses that had just the heads and legs removed—whole torsos had been left behind. This resident was not sure who was making the kills. Another resident remembered that when she or he was a child, his or her family would salvage abandoned animal carcasses. Another resident said she or he has found wasted animals on many occasions, and added that "To see that hurts me. Maybe Papa and the family will have nothing to eat any more." Other residents expressed concerns about guided sport hunters wasting meat and competing for scarce resources, particularly when regulations have caused a decrease in large game consumption by locals due to the reduction in the caribou bag limit from 6 to 2 animals in recent years.

One resident said he would like caribou hunting regulations "merged" across game management units (GMUs) 17C and 9 because he follows the caribou through both units but faces different regulations when crossing boundaries. Another resident echoed this concern, and further explained that the current boundaries were restricting hunting and that he would like to see the boundaries extended. One resident reported a need to take moose during closed seasons. He said that grocery and gas prices are high, that local residents rely on wild animals, and therefore there is a need to take them whenever is necessary, not just during open seasons. Residents also reported a desire to close locally owned lands to outside hunting, and wanted the project maps to reflect the property closures.

Many residents reported hardships with rising fuel, shipping, and grocery costs. For some, the fuel expenses limited their ability to make hunting and fishing trips, while others reported that their higher wild food harvests were due to the rising costs of store-bought groceries and shipping.

Residents also reported difficulty fishing and hunting due to weather and ice. Multiple hunters described difficulty harvesting seals in recent years due to late ice, blowing winds, and rough waters. Residents reported that seals move in and out of the area quickly, so the opportunity to hunt is restricted to a short time window. One respondent said, "The seals are out there, we just can't get them." Another hunter said harbor seals were not as buoyant in 2008 due to more fresh water in the tide, resulting in more struck and lost seals. Residents reported that harbor seals were afraid of skiffs, and that hunting near Kanakanak Channel was causing the seals to move up the bay.

Residents also reported that their difficulty in harvesting smelt was due to a cold winter and late ice. One resident reported that the smelt still run heavy in some years, and that he or she has harvested up to 35 gallons in half an hour, but that ice limited people from harvesting in 2008. Residents also reported that they did not fish for herring because the weather was bad and the water too rough, making the river difficult to cross. Poor weather conditions were also reported as a reason that it was difficult for some residents to hunt for birds.

One resident questioned the legitimacy of ADF&G's authority to regulate the taking of animals. She said, "Animals are put on earth by God, given to humans. Who is Fish and Game to regulate that?" Another resident reported that ADF&G does not have correct numbers for the amount of moose and caribou killed by wolves, saying "Wolves kill more than Fish and Game knows."

Many residents also expressed concerns over the development of a mine in the area, fearing disastrous effects on the water and animals. One resident reported that exploratory blasting at the proposed mine site

is already killing ground squirrels, and that he believed developers should be punished for the deaths. He suggested that the deaths of the ground squirrels showed wastefulness and carelessness. Residents also expressed concerns about contamination of subsistence resources. One resident reported that the blubber of some seals he had harvested had brown spots that seemed like cancer. Other residents feared that eating wild foods could cause cancer due to contamination.

LOCAL OBSERVATIONS OF RESOURCE POPULATIONS AND TRENDS

During household surveys for this project, Clark's Point residents reported shifts in population sizes and locations for multiple species. Over one-half of the households surveyed reported that caribou have been moving away from the community, and that within the past 6 or 7 years, no caribou have been sighted near Clark's Point. During 2008, one respondent reported that he or she regularly traveled 170 miles per day looking for caribou, and that he or she carried camping gear for 3 days as well as a spare snowmachine motor. Other residents said they have begun bartering for caribou with neighboring communities where caribou are still available. On the other hand, some residents reported that the moose population near the community is plentiful and increasing. One resident explained that wolves and coyotes are driving the moose closer to Clark's Point; however, other residents expressed concerns that an abundant bear population and wolves are competing with them for moose by killing calves.

Clark's Point residents also reported shifts in the location of the Chinook salmon run within the past 10 years, observing that the runs along the beaches of Clark's Point are still plentiful for sockeye and coho salmon, but the Chinook salmon have moved to the middle channel, to the west bank, and to Dillingham beaches of the Nushagak River. One household reported that chum salmon were also no longer common along the beach at Clark's Point. Residents suggested that changes in the river currents and sandbars, as well as climate change affecting water temperatures, could be reasons for the new path of the Chinook salmon run. One resident reported harvesting over 500 Chinook salmon off the beach at Clark's Point 28 years ago, but that residents have recently had to go without harvesting Chinook salmon, or to fish farther from the village. One household said it has begun fishing for Chinook salmon on the Wood River near Aleknagik, where they were able to harvest 59 Chinook salmon in 8 minutes. Another household planned to go to their relatives' house in Ekwok to fish for Chinook salmon.

Many residents reported that eiders were no longer around the Clark's Point area, and one household reported that Canada geese were moving out of the area as well. Residents said they have also observed fewer small land mammals near the community: there have been very few hares for 20 years and porcupines have become scarce for the past 10–12 years. However, these respondents said, the populations are beginning to recover.

Berries were reported to be late and scarce during 2008 due to a cold summer and little snow, but residents explained that it was normal for the number and timing of berries to vary from year to year. One household also reported that less wild spinach grew in 2008.

CHAPTER 4: MANOKOTAK

COMMUNITY BACKGROUND

Manokotak is located on the eastern shore of the Igushik River, approximately 20 miles by air southwest of the regional hub community, Dillingham. Manokotak is accessible by boat, airplane, and winter trails across the frozen tundra. The one store in the community carries a limited selection of food and clothing, and there is both an elementary and high school. The community is bordered by the river to the west, a lone, steep hill to the east, the airport to the south, and wet tundra to the north, limiting expansion only to sites not directly connected to the main village area. In 1988, a housing area called Manokotak Heights was developed approximately 5 miles to the east and is accessible from the main village by road or winter trail through a low mountain pass. The high school is located in Manokotak Heights.

Manokotak is a Yup'ik Eskimo community that was established as a permanent settlement in 1946–1947 when residents from the now-abandoned communities of Igushik and Tuklung, as well as other communities, moved to the location. People migrated primarily from the areas of Kulukak, Nushagak, and Togiak bays. Residents of Manokotak continue to use Igushik as a summer fish camp and travel regularly to Togiak and Aleknagik where large kin networks remain. Central Yup'ik continues to be the dominant language and is spoken by all generations, although most residents are bilingual. A Moravian church was established in the community in 1948 and was used as the school until a separate building was constructed in 1958–1959, after residents requested educational services from the Bureau of Indian Affairs. The community was incorporated as a second-class city in 1970, 10 years after the introduction of a post office (Schichnes and Chythlook 1988).

DEMOGRAPHY, CASH EMPLOYMENT, AND MONETARY INCOME

DEMOGRAPHY

According to the federal census, Manokotak had 399 residents in 2000 (ADLWD 2009a) of which 95% (378 residents) were Alaska Native (Table 1-1). The baseline household survey in 2008 resulted in a population estimate of 379 residents, of which nearly 100% (378 residents) were Alaska Native (Table 1-1).

In 2008, there were an estimated 96 year-round households in Manokotak (Table 1-5). Of these, 61 (64%) were interviewed. Interviewers attempted to contact all of the households. Nine households were unavailable or could not be contacted and 26 households declined to be interviewed.

The mean length of residency in Manokotak was 25 years, with the maximum residency at 87 years (Table 1-8). The largest age cohorts for males were youths between the ages of 5 and 9, and young adults between the ages 15 and 19, and 20 and 24. For females, the largest age cohorts were youths between 10 and 14 years, and 15 and 19 years of age. (Table 4-1 and Figure 4-1). Other age categories were fairly evenly distributed, with about 28% of the population in Manokotak being between 25 and 49 years of age. According to the household survey 53% (202 residents) of Manokotak residents were males and 47% (177 residents) were females (Table 1-8). Of all household heads in Manokotak, 99% were born in Alaska, and most household heads (56%) were born in the community. (Table 1-9). Seven percent were born in Togiak and 6% were born in Kulukak (Table 1-9).

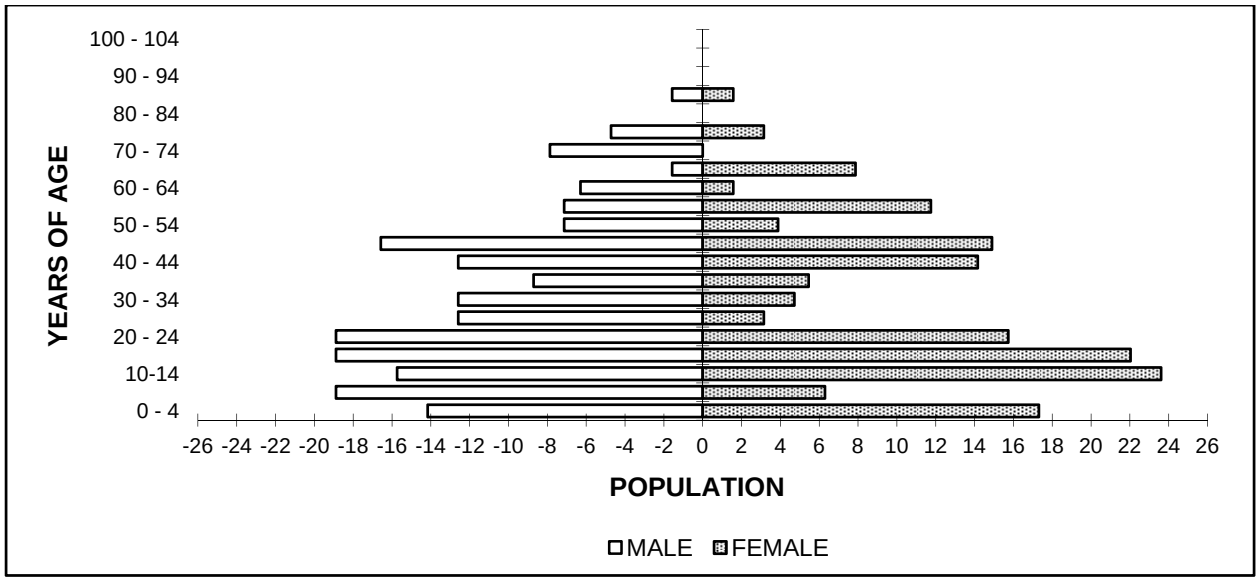

Figure 4-1.–Population profile, Manokotak, 2008.

Table 4-1.–Population profile, Manokotak, 2008.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	14.2	7.0%	7.0%	17.3	9.8%	9.8%	31.5	8.3%	8.3%
5–9	18.9	9.3%	16.3%	6.3	3.6%	13.4%	25.2	6.6%	14.9%
10–14	15.7	7.8%	24.1%	23.6	13.4%	26.7%	39.3	10.4%	25.3%
15–19	18.9	9.3%	33.4%	22.0	12.5%	39.2%	40.9	10.8%	36.1%
20–24	18.9	9.3%	42.7%	15.7	8.9%	48.1%	34.6	9.1%	45.2%
25–29	12.6	6.2%	49.0%	3.1	1.8%	49.9%	15.7	4.1%	49.4%
30–34	12.6	6.2%	55.2%	4.7	2.7%	52.5%	17.3	4.6%	53.9%
35–39	8.7	4.3%	59.5%	5.5	3.1%	55.6%	14.2	3.7%	57.7%
40–44	12.6	6.2%	65.7%	14.2	8.0%	63.6%	26.8	7.1%	64.7%
45–49	16.6	8.2%	73.9%	14.9	8.4%	72.0%	31.5	8.3%	73.0%
50–54	7.1	3.5%	77.4%	3.9	2.2%	74.2%	11.0	2.9%	75.9%
55–59	7.1	3.5%	80.9%	11.7	6.6%	80.9%	18.9	5.0%	80.9%
60–64	6.3	3.1%	84.0%	1.6	0.9%	81.8%	7.9	2.1%	83.0%
65–69	1.6	0.8%	84.8%	7.9	4.5%	86.2%	9.4	2.5%	85.5%
70–74	7.9	3.9%	88.7%	0.0	0.0%	86.2%	7.9	2.1%	87.6%
75–79	4.7	2.3%	91.0%	3.1	1.8%	88.0%	7.9	2.1%	89.6%
80–84	0.0	0.0%	91.0%	0.0	0.0%	88.0%	0.0	0.0%	89.6%
85–89	1.6	0.8%	91.8%	1.6	0.9%	88.9%	3.1	0.8%	90.5%
90–94	0.0	0.0%	91.8%	0.0	0.0%	88.9%	0.0	0.0%	90.5%
95–99	0.0	0.0%	91.8%	0.0	0.0%	88.9%	0.0	0.0%	90.5%
100–104	0.0	0.0%	91.8%	0.0	0.0%	88.9%	0.0	0.0%	90.5%
Missing	16.6	8.2%	100.0%	19.6	11.1%	100.0%	36.2	9.5%	100.0%
Total	**202.5**	**100.0%**		176.8	100.0%		379.3	100.0%	

Source ADF&G Division of Subsistence household surveys, 2008.

CASH EMPLOYMENT CHARACTERISTICS AND MONETARY INCOME

Forty-seven percent of the earned income in Manokotak in 2008 resulted from jobs with local governments (Table 4-2). Another key source of earned income was commercial fishing, which accounted for 32% of the annual total income for the community (Table 4-2). Local government provided 42% of available jobs; commercial fishing made up 38%; trade accounted for 6%, and transportation, communication, and utilities accounted for 4% (Table 4-2). Other jobs were in federal government, manufacturing, construction, and the finance sector. Sixty-four percent of all jobs were located in Manokotak, 15% in Nushagak, 7% in Igushik, and 4% in Togiak (Table 1-11). Other locations for jobs in 2008 included Dillingham, Anchorage, and the Bering Sea. As noted above, many of the jobs available locally are either in, or related to, the commercial fishing sector.

During 2008, 37% of adults in Manokotak were employed at some time. Due to the seasonal nature of commercial fishing, only 42% of those adults were employed year-round (Table 1-10). The mean number of months employed was 8. On average, in 2008, households contained 2 employed adults and 90% of all households contained at least 1 adult who was employed for at least part of the year.

LEVELS OF PARTICIPATION IN THE HARVESTS AND USES OF WILD RESOURCES

Table 1-13 reports levels of individual participation in the harvest and processing of wild resources by Manokotak residents in 2008. Eighty percent of Manokotak residents harvested some resource during the 2008 study year and 71% processed a resource. Thirty-one percent hunted birds and large land mammals and 44% processed those harvests. Over one-half of residents fished (57%) and one-half of residents processed fish (50%). Only about 17% trapped or hunted furbearers and 23% processed furbearing animals. Seventy-one percent picked berries and other wild plants and 65% processed those wild plants.

RESOURCE HARVEST AND USE PATTERNS

Table 1-14 summarizes the resource harvest and use characteristics of Manokotak in 2008 at the household level. All surveyed households used wild foods and 97% harvested those resources. The estimated average harvest was 759 lb usable weight per household, or 298 lb per capita. During the study year, Manokotak respondents harvested an average of 13 kinds of resources and used an average of 22 kinds of resources. In addition, surveyed households gave away, on average, 9 kinds of resources and received about 13 kinds of resources.

SPECIES USED AND SEASONAL ROUND

Residents of Manokotak harvest a wide variety of species throughout the year. Specific species typically are harvested only during certain periods of the year. Residents move through a cycle of harvest patterns that are regulated by the seasons. Although there is no beginning or end to a cycle, this report will begin with salmon since this resource comprises the highest percentage of the harvest in 2008, which is typical of communities of Southwest Alaska. In 2008, 80% of the households in Manokotak harvested salmon and 87% of that harvest was sockeye and Chinook salmon (Table 4-3). In the spring, community residents set gillnets at Igushik, Protection Point, and near Manokotak on the Igushik River and Weary River in order to harvest early-run Chinook salmon. Sockeye salmon, which arrive soon after the Chinook salmon, were harvested with setnets, in the same locations. Cockles were harvested from the intertidal zones of Kulukak Bay and Togiak Bay as well as near the mouth of the Snake River. Forty-eight percent of households reported the harvest of clams in 2008. In addition to setnet fishing for coho salmon, residents also fished with rod and reel for coho salmon in mid to late summer. Berries on the low bushes of the surrounding tundra ripen in late summer, and 84% of households reported harvesting berries from a variety of broad-ranging areas surrounding the community and near Togiak, Aleknagik, and Ekuk (Table 4-3).

Table 4-2.–Employment by industry, Manokotak, 2008.

	Jobs	Households	Individuals	Percentage of income
Estimated total number[a]	**267.5**	**86.6**	**170.0**	
Federal government	2.9%	8.2%	4.6%	3.9%
Administrative support occupations, including clerical	1.2%	3.3%	1.9%	2.5%
Precision production occupations	0.6%	1.6%	0.9%	0.4%
Military occupations	1.2%	3.3%	1.9%	0.9%
State government	0.0%	0.0%	0.0%	0.0%
Local and tribal governments	41.8%	75.4%	52.8%	47.1%
Executive, administrative and managerial	5.3%	13.1%	7.4%	6.4%
Social scientists, social workers, religious workers and lawyers	0.6%	1.6%	0.9%	0.8%
Teachers, librarians, and counselors	7.6%	18.0%	10.2%	10.2%
Health diagnosing and treating practitioners	0.6%	1.6%	0.9%	3.1%
Health technologists and technicians	2.4%	4.9%	2.8%	7.2%
Marketing and sales occupations	3.5%	8.2%	5.6%	2.9%
Administrative support occupations, including clerical	3.5%	9.8%	5.6%	3.5%
Service occupations	7.1%	16.4%	9.3%	7.3%
Mechanics and repairers	0.6%	1.6%	0.9%	0.3%
Construction and extractive occupations	1.8%	3.3%	1.9%	1.0%
Precision production occupations	2.4%	6.6%	3.7%	1.6%
Production working occupations	0.6%	1.6%	0.9%	0.4%
Transportation and material moving occupations	1.2%	3.3%	1.9%	0.7%
Handlers, equipment cleaners, helpers and laborers	4.1%	11.5%	6.5%	1.7%
Miscellaneous occupations	0.6%	1.6%	0.9%	0.0%
Agriculture, forestry and fishing	37.6%	54.1%	58.3%	32.3%
Agricultural, forestry and fishing occupations	37.6%	54.1%	58.3%	32.3%
Construction	0.6%	1.6%	0.9%	0.4%
Construction and extractive occupations	0.6%	1.6%	0.9%	0.4%
Food manufacturing	1.8%	1.6%	2.8%	2.5%
Mechanics and repairers	1.8%	1.6%	2.8%	2.5%
Other manufacturing	1.8%	4.9%	2.8%	0.2%
Writers, artists, entertainers, and athletes	1.8%	4.9%	2.8%	0.2%
Transportation, communication and utilities	3.5%	6.6%	4.6%	8.4%
Construction and extractive occupations	0.6%	1.6%	0.9%	0.3%
Transportation and material moving occupations	2.9%	6.6%	4.6%	8.0%
Trade	5.9%	14.8%	8.3%	3.2%
Executive, administrative and managerial	1.2%	3.3%	1.9%	0.8%
Marketing and sales occupations	1.2%	3.3%	1.9%	0.8%
Precision production occupations	0.6%	1.6%	0.9%	0.3%
Transportation and material moving occupations	1.2%	3.3%	1.9%	0.3%
Handlers, equipment cleaners, helpers and laborers	1.8%	4.9%	2.8%	1.0%
Services	2.9%	6.6%	4.6%	1.6%
Social scientists, social workers, religious workers and lawyers	0.6%	1.6%	0.9%	0.2%
Administrative support occupations, including clerical	0.6%	1.6%	0.9%	0.4%
Service occupations	1.8%	4.9%	2.8%	0.9%

a. Estimated number of households and individuals only include those that were employed during the study period.

Source ADF&G Division of Subsistence household surveys, 2009.

Amanka and Ualik lakes, also locally known as First and Second lakes, were popular locations for harvesting trout. The Igushik River was also popular for fishing for smelt: in the winter, 67% of residents harvested smelt on this river as well as from other locations near Togiak (Table 4-3).

In the fall, residents hunt for caribou and moose; however, only 13% of households attempted to harvest a caribou in 2008 and 8% of those households were successful. Caribou only made up 8 lb per capita, and it was the eighth most harvested resource in 2008 (Table 4-4). Residents harvested more berries in terms of pounds per capita than caribou (25 lb versus 8 lb). More residents (43%) participated in the fall moose hunt in 2008 than went caribou hunting, yet only 23% reported successful harvests of moose.

Migratory birds travel through the area in the fall and spring and stop to rest on the marsh and tundra areas that surround Manokotak. In 2008, 54% of the households hunted migratory birds (Table 4-3). Some households harvested small land mammal species (28%), which included beavers (16%), river (land) otters, (10%), red foxes (8%), porcupines (7%), hares (7%), and wolves (5%; Table 4-3).

HARVEST QUANTITIES

Table 4-3 reports estimated wild resource harvests and uses by Manokotak residents in 2008 and is organized first by category and then by species. All resources are reported in pounds usable weight (see Appendix B for conversion factors). The harvest category includes resources taken by any member of the surveyed household during the study year. The use category includes all resources taken and given away by a household, as well as resources acquired after a harvest, either as gifts, by barter, through hunting partnerships, or as meat given to hunting guides by their clients. Purchased foods are not included. Differences between harvest and use percentages reflect sharing between households, which results in a wider distribution of wild foods.

The total estimated harvest for all subsistence resources in 2008 for Manokotak was 113,196 lb, or 298 lb per capita (Table 4-3). Table 4-4 lists the top 10 resources harvested, in terms of pounds per capita, and the 10 resources used by the most Manokotak households. Salmon constituted the largest portion of the harvest, with 51,214 lb (45%, or 135 lb per capita; Table 4-3 and Figure 4-2). In 2008, 97% of Manokotak households used salmon and 80% harvested salmon. Included in the total of salmon were 21,821 lb of fresh sockeye salmon, or 58 lb per capita; 18,964 lb of Chinook salmon, or 50 lb per capita; 5,321 lb of coho salmon, or 14 lb per capita; 3,702 lb of spawning sockeye salmon, or 10 lb per capita, 1,152 lb of chum salmon, or 3 lb per capita; and 254 lb of pink salmon (Table 4-3 and Figure 4-3).

Nonsalmon fish made up 15% of the total harvest of wild resources in 2008 (Table 4-3 and Figure 4-2). In 2008, Manokotak residents harvested 16,575 lb of nonsalmon fish, or 44 lb per capita. Figure 4-4 shows the harvest of the major nonsalmon fish species, by percentage of total pounds, in Manokotak in 2008. About one-third of the harvest of nonsalmon fish was northern pike (5,605 lb, or 15 lb per capita). Another important nonsalmon fish species was smelt (2,921 lb, or 8 lb per capita) at 18% of the harvest.

Caribou and moose were another important source of wild foods at Manokotak in 2008, making up 15% of the overall harvest (16,893 lb harvested, or 45 lb per capita). Birds and eggs accounted for 6% of the overall harvest (6,566 lb, or 17 lb per capita). Marine mammals were 5% of the overall harvest at 5,565 lb harvested, or 15 lb per capita (Table 4-3 and Figure 4-2). The harvest of seals was 3,072 lb, or 8 lb per capita, and the harvest of beluga whales was 2,493 lb, or 7 lb per capita.

Berries were an important resource, ranking fourth in terms of pounds per capita and second for percentage of households using the resource (Table 4-4). Manokotak residents harvested an estimated 9,597 lb of berries, or 25 lb per capita in 2008. Cockles were also important, both in terms of harvest amounts and uses. Manokotak residents harvested 1,785 lb of clams in 2008, or 5 lb per household (Table 4-3).

Table 4-3.–Estimated harvests and uses of fish, game, and plant resources, Manokotak, 2008.

	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
Resource name(s)	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
All resources	**100.0%**	**96.7%**	**96.7%**	**93.4%**	**90.2%**	**113,195.6**	**1,179.1**	**298.4**	**51,561.0**		**537.1**	**30.1%**
Fish	100.0%	93.4%	93.4%	86.9%	75.4%	67,789.0	706.1	178.7	38,035.5		396.2	37.0%
Salmon	96.7%	82.0%	80.3%	60.7%	63.9%	51,214.2	533.5	135.0	10,012.0	ind	104.3	17.4%
Chum salmon	21.3%	18.0%	18.0%	11.5%	13.1%	1,152.0	12.0	3.0	236.1	ind	2.5	5.2%
Coho salmon	60.7%	47.5%	44.3%	27.9%	18.0%	5,321.4	55.4	14.0	1,043.4	ind	10.9	10.4%
Chinook salmon	77.0%	57.4%	57.4%	42.6%	34.4%	18,963.7	197.5	50.0	1,710.0	ind	17.8	12.4%
Pink salmon	16.4%	13.1%	13.1%	6.6%	9.8%	254.1	2.6	0.7	85.0	ind	0.9	4.6%
Sockeye salmon	93.4%	78.7%	78.7%	50.8%	60.7%	25,523.1	265.9	67.3	6,937.6	ind	72.3	13.6%
Fresh sockeye	93.4%	77.0%	77.0%	44.3%	45.9%	21,820.7	227.3	57.5	5,086.4	ind	53.0	12.4%
Spawning sockeye	63.9%	52.5%	52.5%	31.1%	36.1%	3,702.4	38.6	9.8	1,851.2	ind	19.3	11.3%
Unknown salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Nonsalmon fish	93.4%	80.3%	80.3%	83.6%	55.7%	16,574.8	172.7	43.7	28,023.5		291.9	37.9%
Herring	31.1%	8.2%	8.2%	26.2%	4.9%	1,888.5	19.7	5.0	314.8	gal	3.3	3.9%
Herring roe	67.2%	3.3%	3.3%	67.2%	1.6%	66.1	0.7	0.2	9.4	gal	0.1	0.9%
Herring sac roe	1.6%	0.0%	0.0%	1.6%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Herring spawn on kelp	67.2%	3.3%	3.3%	67.2%	1.6%	66.1	0.7	0.2	9.4	gal	0.1	0.9%
Smelt	88.5%	67.2%	67.2%	42.6%	36.1%	2,920.5	30.4	7.7	1,087.5	gal	11.3	27.1%
Capelin (grunion)	1.6%	0.0%	0.0%	1.6%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Unknown smelt	88.5%	67.2%	67.2%	42.6%	36.1%	2,920.5	30.4	7.7	1,087.5	gal	11.3	27.1%
Cods	4.9%	0.0%	0.0%	4.9%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Pacific (gray) cod	1.6%	0.0%	0.0%	1.6%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Pacific tomcod	3.3%	0.0%	0.0%	3.3%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Flounders	4.9%	4.9%	4.9%	0.0%	1.6%	151.1	1.6	0.4	50.4	ind	0.5	1.6%
Starry flounder	4.9%	4.9%	4.9%	0.0%	1.6%	151.1	1.6	0.4	50.4	ind	0.5	1.6%
Halibut	13.1%	1.6%	1.6%	11.5%	0.0%	29.9	0.3	0.1	29.9	lb	0.3	0.0%
Sculpin	1.6%	1.6%	1.6%	0.0%	0.0%	15.7	0.2	0.0	31.5	ind	0.3	0.0%
Unknown sculpin	1.6%	1.6%	1.6%	0.0%	0.0%	15.7	0.2	0.0	31.5	ind	0.3	0.0%
Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Salmon shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

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Table 4-3.–Page 2 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Fish, continued												
Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Yellowfin sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Alaska blackfish	54.1%	21.3%	21.3%	39.3%	13.1%	1,509.6	15.7	4.0	21,566.3	ind	224.6	10.7%
Burbot	3.3%	1.6%	1.6%	1.6%	1.6%	28.3	0.3	0.1	28.3	ind	0.3	0.0%
Char	67.2%	50.8%	49.2%	37.7%	26.2%	1,672.3	17.4	4.4	1,194.5	ind	12.4	12.6%
Dolly Varden	63.9%	49.2%	47.5%	34.4%	23.0%	1,474.0	15.4	3.9	1,052.9	ind	11.0	12.8%
Dolly Varden–freshwater	62.3%	47.5%	45.9%	32.8%	23.0%	1,449.8	15.1	3.8	1,035.5	ind	10.8	12.3%
Dolly Varden–saltwater	6.6%	4.9%	4.9%	1.6%	0.0%	19.8	0.2	0.1	14.2	ind	0.1	2.5%
Dolly Varden–Togiak trout	13.1%	1.6%	1.6%	11.5%	0.0%	4.4	0.0	0.0	3.1	ind	0.0	0.0%
Lake trout	13.1%	8.2%	8.2%	8.2%	6.6%	198.3	2.1	0.5	141.6	ind	1.5	3.6%
Arctic grayling	19.7%	9.8%	9.8%	11.5%	4.9%	111.3	1.2	0.3	159.0	ind	1.7	2.3%
Northern pike	70.5%	55.7%	54.1%	27.9%	27.9%	5,605.1	58.4	14.8	2,001.8	ind	20.9	11.1%
Sheefish	1.6%	1.6%	1.6%	1.6%	1.6%	259.7	2.7	0.7	47.2	ind	0.5	0.0%
Trout	27.9%	18.0%	14.8%	14.8%	6.6%	121.2	1.3	0.3	86.6	ind	0.9	5.2%
Rainbow trout	24.6%	16.4%	14.8%	13.1%	6.6%	121.2	1.3	0.3	86.6	ind	0.9	4.3%
Unknown trout	4.9%	1.6%	0.0%	3.3%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Whitefishes	45.9%	21.3%	19.7%	32.8%	13.1%	2,195.4	22.9	5.8	1,416.4	ind	14.8	6.8%
Broad whitefish	4.9%	1.6%	1.6%	3.3%	1.6%	377.7	3.9	1.0	94.4	ind	1.0	0.0%
Cisco	1.6%	0.0%	0.0%	1.6%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Least cisco	1.6%	0.0%	0.0%	1.6%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Humpback whitefish	31.1%	11.5%	11.5%	21.3%	6.6%	1,156.7	12.0	3.0	661.0	ind	6.9	3.7%
Round whitefish	18.0%	11.5%	9.8%	13.1%	6.6%	661.0	6.9	1.7	661.0	ind	6.9	5.4%
Land Mammals	88.5%	57.4%	39.3%	85.2%	36.1%	18,065.3	188.2	47.6	279.0		2.9	39.6%
Large land mammals	86.9%	44.3%	24.6%	82.0%	21.3%	16,892.9	176.0	44.5	46.1		0.5	12.8%
Black bear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

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Table 4-3.–Page 3 of 7.

Resource name(s)	Percentage of households: Use	Attempt	Harvest	Receive	Give	Pounds harvested: Total	Mean household	Per capita	Amount harvested[a]: Total	Unit	Mean household	95% confidence limit (±) harvest
Land mammals, continued												
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	49.2%	13.1%	8.2%	44.3%	6.6%	3,068.9	32.0	8.1	20.5	ind	0.2	5.2%
Moose	86.9%	44.3%	23.0%	78.7%	19.7%	13,824.0	144.0	36.4	25.6	ind	0.3	12.6%
Dall sheep	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Small land mammals	54.1%	31.1%	27.9%	37.7%	24.6%	1,172.5	12.2	3.1	232.9		2.4	43.1%
Beaver	39.3%	18.0%	16.4%	31.1%	18.0%	1,005.2	10.5	2.7	114.9	ind	1.2	5.9%
Coyote	1.6%	1.6%	1.6%	0.0%	1.6%	0.0	0.0	0.0	4.7	ind	0.0	0.0%
Fox	9.8%	8.2%	8.2%	3.3%	6.6%	0.0	0.0	0.0	20.5	ind	0.2	3.2%
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	9.8%	8.2%	8.2%	3.3%	6.6%	0.0	0.0	0.0	20.5	ind	0.2	3.2%
Red fox–cross phase	1.6%	1.6%	1.6%	0.0%	0.0%	0.0	0.0	0.0	1.6	ind	0.0	0.0%
Hare	14.8%	8.2%	6.6%	8.2%	4.9%	40.9	0.4	0.1	20.5	ind	0.2	66.4%
Alaska hare (jackrabbit)	1.6%	1.6%	1.6%	0.0%	1.6%	15.7	0.2	0.0	7.9	ind	0.1	0.0%
Snowshoe hare	9.8%	6.6%	4.9%	4.9%	3.3%	25.2	0.3	0.1	12.6	ind	0.1	3.8%
Unknown hare	3.3%	0.0%	0.0%	3.3%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
River (land) otter	13.1%	9.8%	6.6%	4.9%	9.8%	0.0	0.0	0.0	11.0	ind	0.1	4.5%
Lynx	1.6%	1.6%	1.6%	0.0%	0.0%	12.6	0.1	0.0	3.1	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%
Marten	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Mink	3.3%	3.3%	3.3%	0.0%	0.0%	0.0	0.0	0.0	12.6	ind	0.1	1.4%
Muskrat	3.3%	3.3%	3.3%	0.0%	3.3%	13.0	0.1	0.0	17.3	ind	0.2	1.3%
Porcupine	16.4%	6.6%	6.6%	9.8%	8.2%	100.7	1.0	0.3	12.6	ind	0.1	2.0%
Squirrels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Arctic groun (parka) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Red (tree) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Weasel	1.6%	1.6%	1.6%	0.0%	1.6%	0.0	0.0	0.0	3.1	ind	0.0	0.0%
Wolf	8.2%	4.9%	4.9%	3.3%	1.6%	0.0	0.0	0.0	9.4	ind	0.1	1.4%

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Table 4-3.–Page 4 of 7.

Resource name(s)	Percentage of households: Use	Attempt	Harvest	Receive	Give	Pounds harvested: Total	Mean household	Per capita	Amount harvested[a]: Total	Unit	Mean household	95% confidence limit (±) harvest
Land mammals, continued												
Wolverine	3.3%	1.6%	1.6%	1.6%	0.0%	0.0	0.0	0.0	3.1	ind	0.0	0.0%
Marine mammals	75.4%	27.9%	11.5%	68.9%	32.8%	5,565.0	58.0	14.7	37.6		0.4	12.8%
Porpoise	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Harbor porpoise	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Seal	68.9%	26.2%	11.5%	62.3%	31.1%	3,072.0	32.0	8.1	34.6	ind	0.4	11.3%
Bearded seal	13.1%	8.2%	4.9%	8.2%	11.5%	1,661.9	17.3	4.4	9.4	ind	0.1	4.4%
Harbor seal	65.6%	23.0%	9.8%	60.7%	27.9%	1,233.8	12.9	3.3	22.0	ind	0.2	9.8%
Harbor seal–saltwater	65.6%	23.0%	9.8%	60.7%	27.9%	1,233.8	12.9	3.3	22.0	ind	0.2	9.8%
Ringed seal	6.6%	3.3%	1.6%	4.9%	3.3%	176.3	1.8	0.5	3.1	ind	0.0	2.8%
Unknown seal	4.9%	0.0%	0.0%	4.9%	1.6%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Steller sea lion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Walrus	36.1%	0.0%	0.0%	36.1%	9.8%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Whale	21.3%	6.6%	3.3%	16.4%	8.2%	2,493.0	26.0	6.6	3.0	ind	0.0	4.4%
Beluga whale	21.3%	6.6%	3.3%	16.4%	8.2%	2,493.0	26.0	6.6	3.0	ind	0.0	4.4%
Birds and eggs	95.1%	75.4%	73.8%	73.8%	63.9%	6,565.7	68.4	17.3	8,865.5		92.3	19.7%
Migratory birds	86.9%	54.1%	54.1%	60.7%	49.2%	3,493.9	36.4	9.2	2,197.5	ind	22.9	23.2%
Ducks	65.6%	41.0%	41.0%	41.0%	44.3%	1,579.5	16.5	4.2	1,315.4	ind	13.7	26.7%
Bufflehead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Canvasback	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Eider	39.3%	16.4%	16.4%	32.8%	24.6%	645.1	6.7	1.7	241.6	ind	2.5	4.9%
Common eider	1.6%	0.0%	0.0%	1.6%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
King eider	37.7%	16.4%	16.4%	31.1%	24.6%	645.1	6.7	1.7	241.6	ind	2.5	4.9%
Gadwall	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Goldeneye	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown goldeneye	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Harlequin	1.6%	1.6%	1.6%	0.0%	1.6%	8.7	0.1	0.0	17.3	ind	0.2	0.0%
Mallard	34.4%	27.9%	27.9%	11.5%	19.7%	358.8	3.7	0.9	358.8	ind	3.7	13.9%

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Table 4-3.–Page 5 of 7.

Resource name(s)	Percentage of households: Use	Attempt	Harvest	Receive	Give	Pounds harvested: Total	Mean household	Per capita	Amount harvested[a]: Total	Unit	Mean household	95% confidence limit (±) harvest
Birds and eggs, continued												
Merganser	6.6%	6.6%	6.6%	0.0%	3.3%	1.9	0.0	0.0	3.1	ind	0.0	120.5%
Common merganser	1.6%	1.6%	1.6%	0.0%	0.0%	1.9	0.0	0.0	3.1	ind	0.0	0.0%
Red-breasted merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown merganser	4.9%	4.9%	4.9%	0.0%	3.3%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Long-tailed duck (oldsquaw)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Northern pintail	27.9%	24.6%	23.0%	11.5%	19.7%	124.6	1.3	0.3	155.8	ind	1.6	6.3%
Scaup	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown scaup	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Scoter	21.3%	19.7%	19.7%	4.9%	16.4%	320.1	3.3	0.8	355.7	ind	3.7	5.7%
Black scoter	19.7%	18.0%	18.0%	4.9%	14.8%	291.8	3.0	0.8	324.2	ind	3.4	5.8%
White-winged scoter	1.6%	1.6%	1.6%	0.0%	1.6%	28.3	0.3	0.1	31.5	ind	0.3	0.0%
Northern shoveler	3.3%	3.3%	3.3%	0.0%	1.6%	8.5	0.1	0.0	14.2	ind	0.1	2.2%
Teal	6.6%	6.6%	6.6%	1.6%	3.3%	12.3	0.1	0.0	40.9	ind	0.4	3.4%
Green-winged teal	6.6%	6.6%	6.6%	1.6%	3.3%	12.3	0.1	0.0	40.9	ind	0.4	3.4%
Wigeon	1.6%	1.6%	1.6%	0.0%	1.6%	2.2	0.0	0.0	3.1	ind	0.0	0.0%
Unknown ducks	24.6%	11.5%	11.5%	16.4%	11.5%	97.3	1.0	0.3	124.8	ind	1.3	5.5%
Geese	82.0%	54.1%	54.1%	50.8%	42.6%	1,227.9	12.8	3.2	789.2	ind	8.2	12.9%
Brant	3.3%	1.6%	1.6%	3.3%	3.3%	15.1	0.2	0.0	12.6	ind	0.1	0.0%
Canada geese	65.6%	45.9%	45.9%	39.3%	36.1%	716.9	7.5	1.9	570.5	ind	5.9	9.8%
Cacklers	50.8%	34.4%	34.4%	26.2%	27.9%	424.3	4.4	1.1	353.6	ind	3.7	6.7%
Lesser Canada geese	34.4%	24.6%	24.6%	19.7%	16.4%	209.3	2.2	0.6	174.4	ind	1.8	7.8%
Unknown Canada geese	4.9%	4.9%	4.9%	3.3%	1.6%	83.3	0.9	0.2	42.5	ind	0.4	2.0%
Emperor geese	4.9%	3.3%	3.3%	3.3%	3.3%	27.5	0.3	0.1	11.0	ind	0.1	2.2%
Snow geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

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Table 4-3.–Page 6 of 7.

Resource name (s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Birds and eggs, continued												
White-fronted geese	32.8%	24.6%	24.6%	11.5%	13.1%	445.7	4.6	1.2	185.7	ind	1.9	9.2%
Unknown geese	4.9%	1.6%	1.6%	3.3%	1.6%	22.7	0.2	0.1	9.4	ind	0.1	0.0%
Swan	13.1%	8.2%	8.2%	4.9%	8.2%	170.0	1.8	0.4	28.3	ind	0.3	4.1%
Trumpeter swan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Tundra (whistling) swan	13.1%	8.2%	8.2%	4.9%	8.2%	170.0	1.8	0.4	28.3	ind	0.3	4.1%
Unknown swan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Crane	31.1%	21.3%	19.7%	16.4%	18.0%	502.3	5.2	1.3	59.8	ind	0.6	4.5%
Sandhill crane	31.1%	21.3%	19.7%	16.4%	18.0%	502.3	5.2	1.3	59.8	ind	0.6	4.5%
Shorebirds	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Common snipe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Seabirds and loons	3.3%	1.6%	1.6%	1.6%	3.3%	14.2	0.1	0.0	4.7	ind	0.0	0.0%
Loons	3.3%	1.6%	1.6%	1.6%	3.3%	14.2	0.1	0.0	4.7	ind	0.0	0.0%
Arctic (Pacific) loons	1.6%	1.6%	1.6%	0.0%	1.6%	14.2	0.1	0.0	4.7	ind	0.0	0.0%
Unknown loon	1.6%	0.0%	0.0%	1.6%	1.6%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Other birds	78.7%	55.7%	54.1%	42.6%	32.8%	1,937.7	20.2	5.1	2,758.7	ind	28.7	15.4%
Upland game birds	78.7%	55.7%	54.1%	42.6%	32.8%	1,928.9	20.1	5.1	2,755.6	ind	28.7	15.4%
Grouse	23.0%	16.4%	14.8%	9.8%	11.5%	117.9	1.2	0.3	168.4	ind	1.8	4.5%
Ptarmigan	78.7%	54.1%	54.1%	41.0%	32.8%	1,811.0	18.9	4.8	2,587.2	ind	27.0	15.3%
Unknown ptarmigan	78.7%	54.1%	54.1%	41.0%	32.8%	1,811.0	18.9	4.8	2,587.2	ind	27.0	15.3%
Owl	1.6%	1.6%	1.6%	0.0%	1.6%	8.8	0.1	0.0	3.1	ind	0.0	0.0%
Snowy owl	1.6%	1.6%	1.6%	0.0%	1.6%	8.8	0.1	0.0	3.1	ind	0.0	0.0%
Bird eggs	70.5%	44.3%	44.3%	49.2%	45.9%	1,134.1	11.8	3.0	3,909.2	ind	40.7	7.7%
Duck eggs	9.8%	9.8%	9.8%	1.6%	9.8%	19.4	0.2	0.1	129.0	ind	1.3	2.8%
Geese eggs	8.2%	4.9%	4.9%	3.3%	6.6%	12.7	0.1	0.0	42.5	ind	0.4	1.9%
Swan eggs	4.9%	3.3%	3.3%	3.3%	3.3%	8.0	0.1	0.0	26.8	ind	0.3	0.8%
Shorebird eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Common snipe eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

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Table 4-3.–Page 7 of 7.

Resource name(s)	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Birds and eggs, continued												
Seabird and loon eggs	70.5%	44.3%	44.3%	47.5%	45.9%	1,094.0	11.4	2.9	3,711.0	ind	38.7	7.9%
Cormorant eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Gull eggs	68.9%	42.6%	42.6%	45.9%	44.3%	1,092.0	11.4	2.9	3,640.1	ind	37.9	7.7%
Murre eggs	8.2%	1.6%	1.6%	8.2%	4.9%	0.0	0.0	0.0	31.5	ind	0.3	0.0%
Tern eggs	3.3%	3.3%	3.3%	0.0%	3.3%	2.0	0.0	0.0	39.3	ind	0.4	0.6%
Unknown eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Marine invertebrates	82.0%	47.5%	47.5%	50.8%	41.0%	1,784.7	18.6	4.7	596.5		6.2	9.3%
Clams	1.6%	0.0%	0.0%	1.6%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Pacific littleneck (steamers) clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Razor clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Softshell clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Unknown clams	1.6%	0.0%	0.0%	1.6%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Cockles	80.3%	47.5%	47.5%	49.2%	41.0%	1,784.7	18.6	4.7	594.9	gal	6.2	9.3%
Crabs	3.3%	0.0%	0.0%	3.3%	1.6%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Dungeness crab	1.6%	0.0%	0.0%	1.6%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
King crab	1.6%	0.0%	0.0%	1.6%	1.6%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Red king crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown king crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Mussels	1.6%	1.6%	1.6%	0.0%	0.0%	0.0	0.0	0.0	1.6	gal	0.0	0.0%
Blue mussels	1.6%	1.6%	1.6%	0.0%	0.0%	0.0	0.0	0.0	1.6	gal	0.0	0.0%
Octopus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Scallops	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Shrimp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Vegetation	95.1%	88.5%	88.5%	47.5%	54.1%	13,425.8	139.9	35.4	3,747.0		39.0	13.5%
Berries	91.8%	85.2%	83.6%	37.7%	49.2%	9,596.9	100.0	25.3	2,399.2	gal	25.0	12.7%
Other plants/mushrooms	67.2%	60.7%	55.7%	23.0%	27.9%	3,829.0	39.9	10.1	957.2	gal	10.0	17.4%
Wood	68.9%	59.0%	59.0%	19.7%	21.3%	0.0	0.0	0.0	390.6	crd	4.1	8.9%

a. Amount of resource harvested is individual units, unless otherwise specified.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 4-4.–Top 10 resources harvested and used, Manokotak, 2008.

Harvest			Use		
Rank	Resource	Pounds per capita	Rank	Resource	Percentage of households using
1	Sockeye salmon	67.3	1	Sockeye salmon	93%
2	Chinook salmon	50.0	2	Berries	92%
3	Moose	36.4	3	Smelt	89%
4	Berries	25.3	3	Moose	87%
5	Northern pike	14.8	5	Geese	82%
6	Coho salmon	14.0	6	Cockles	80%
7	Plants/greens/mushrooms	10.1	7	Ptarmigan	79%
8	Caribou	8.1	8	Chinook salmon	77%
9	Smelt	7.7	9	Northern pike	70%
10	Beluga whale	6.6	10	Seabird and loon eggs	70%

Source ADF&G Division of Subsistence household surveys, 2009.

General Hunting, Fishing, and Gathering Areas

Manokotak residents' wild resource harvests in 2008 spanned an area from Togiak in the east to the Kvichak River in the west (see Appendix C maps). Harvests focused primarily around the community and to the north at Amanka, Ualik, and Nunavaugaluk lakes. Many resources were also harvested to the south on the Nushagak Peninsula. Moose and waterfowl were hunted along the Nushagak and Nuyakuk rivers from Dillingham upriver past Koliganek (Figure 4-5). Since much of the harvest was salmon, a great deal of harvesting effort was at the community's summer fish camp, Igushik, as well as near Manokotak on the Igushik and Weary rivers (Figure 4-6). In addition, some residents traveled west to the Togiak area to harvest plants and berries, caribou, bird eggs, salmon, and herring spawn on kelp. Kulukak Bay and Metervik Bay were important areas for harvesting cockles, seals, herring, and waterfowl (Figure 4-7). Residents of Manokotak hunted extensively in the waters of Nushagak Bay, extending into both Kvichak and Bristol Bay, for seals and migratory waterfowl (Figure 4-8).

SHARING AND RECEIVING WILD RESOURCES

In Manokotak in 2008, an estimated 93% of households received wild resources from other households and 90% of households gave resources away (tables 1-14 and 4-3). Households received an estimated average of 13 resources and gave away an average of 9 resources (Table 1-14). Fish were used by 100% of the respondent households and were among the most commonly shared resources, with 87% receiving and 75% giving fish (Table 4-3). The moose that were harvested in 2008 were widely shared, with 20% of the respondent households giving to other households and 79% receiving moose (Table 4-3). Caribou were also given away by only a small percentage of households (7%) but received by 44% of households.

Marine mammal harvests were also widely shared: 75% of the households used marine mammals, 69% received the harvest from others, 33% shared those harvests with others, but only 12% of households harvested them. This finding reveals a sharing cycle in which households move harvests throughout the community until all who desired the scarce resource received some. Seal meat and oil were the most widely shared, with 62% of households receiving seals and 31% giving the resource away (Table 4-3).

Marine invertebrates were also widely shared. In 2008, 48% of households harvested marine invertebrates, 41% gave away those resources, and 51% received them. Berries were a major component of the harvest: 92% of households used berries and 49% of households shared berries with 38% of households (Table 4-3).

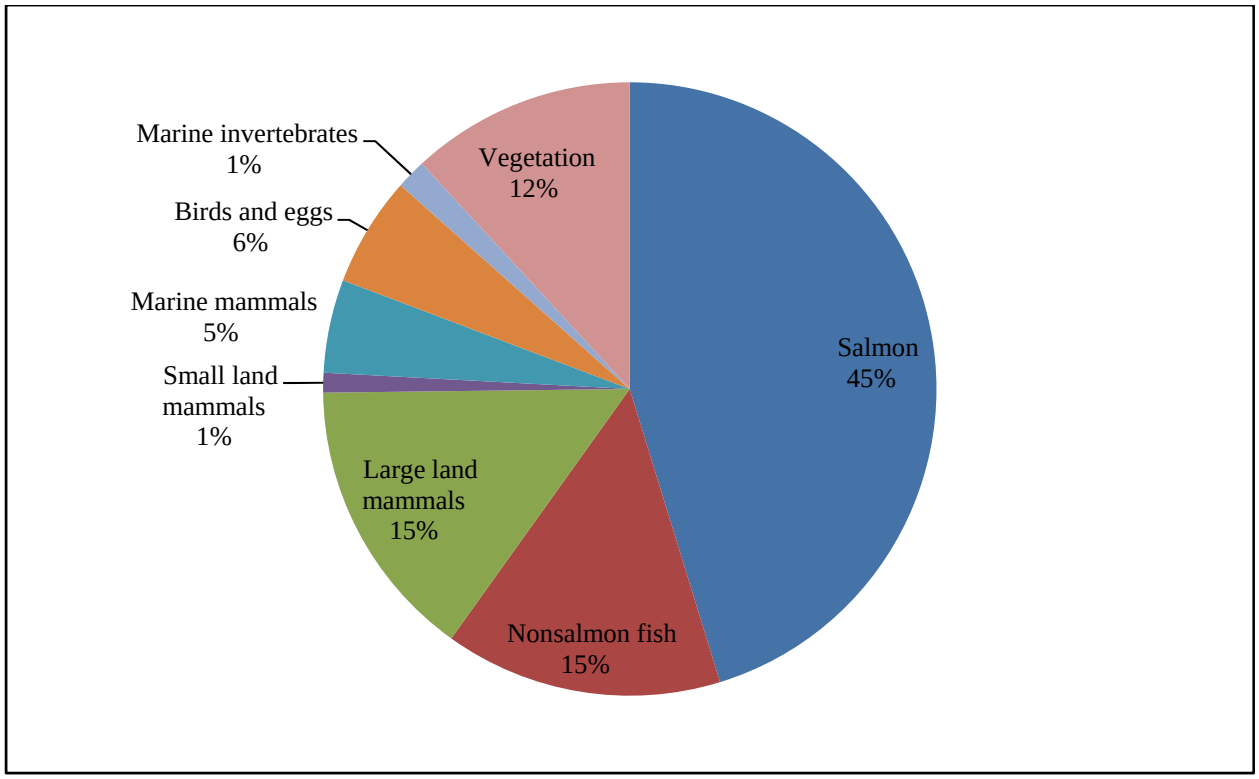

Figure 4-2.–Manokotak composition of wild resource harvests, pounds usable weight, 2008.

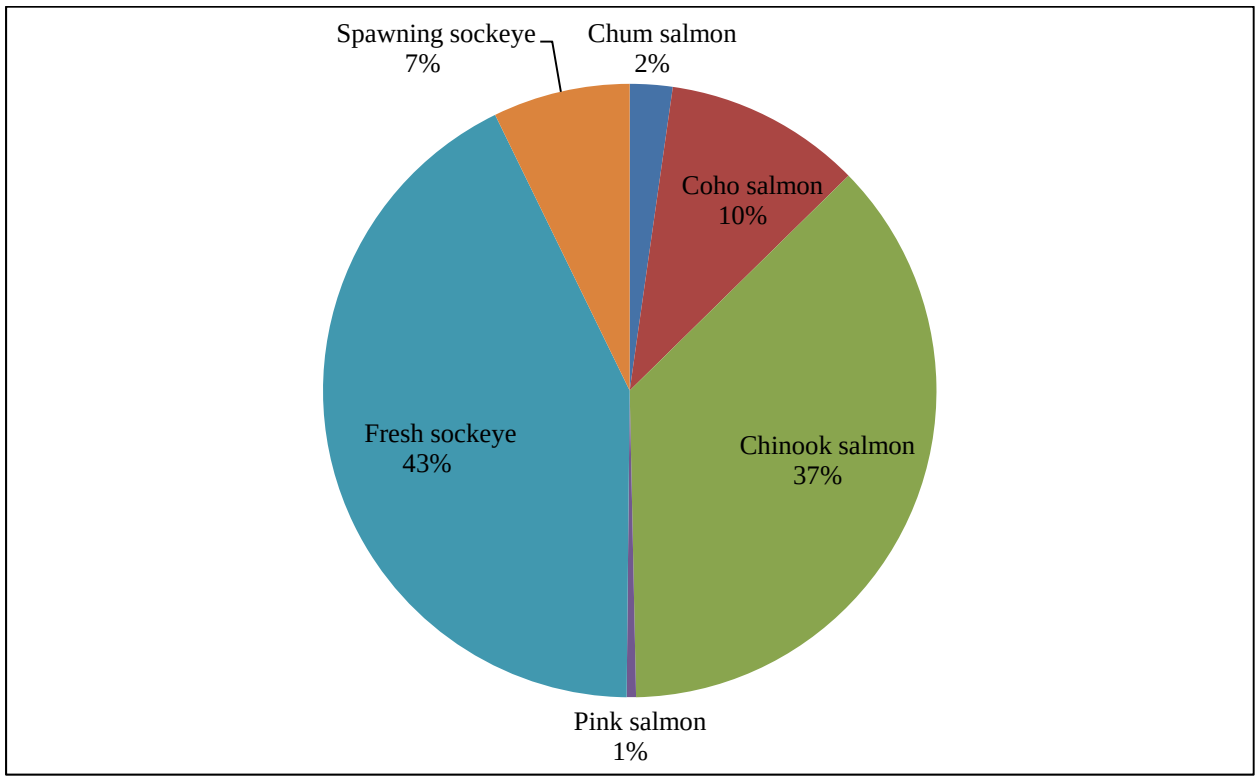

Figure 4-3.–Manokotak composition of salmon harvests, pounds usable weight, 2008.

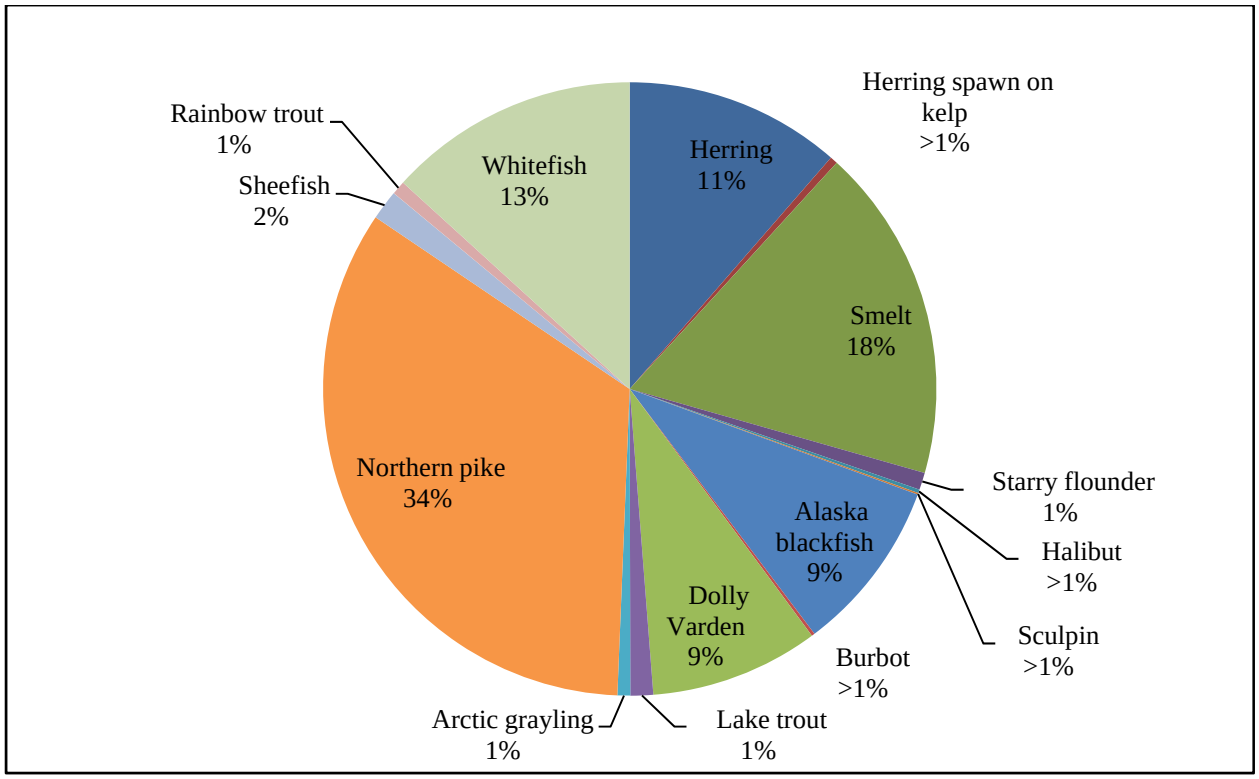

Figure 4-4.–Manokotak composition of nonsalmon fish harvests, pounds usable weight, 2008.

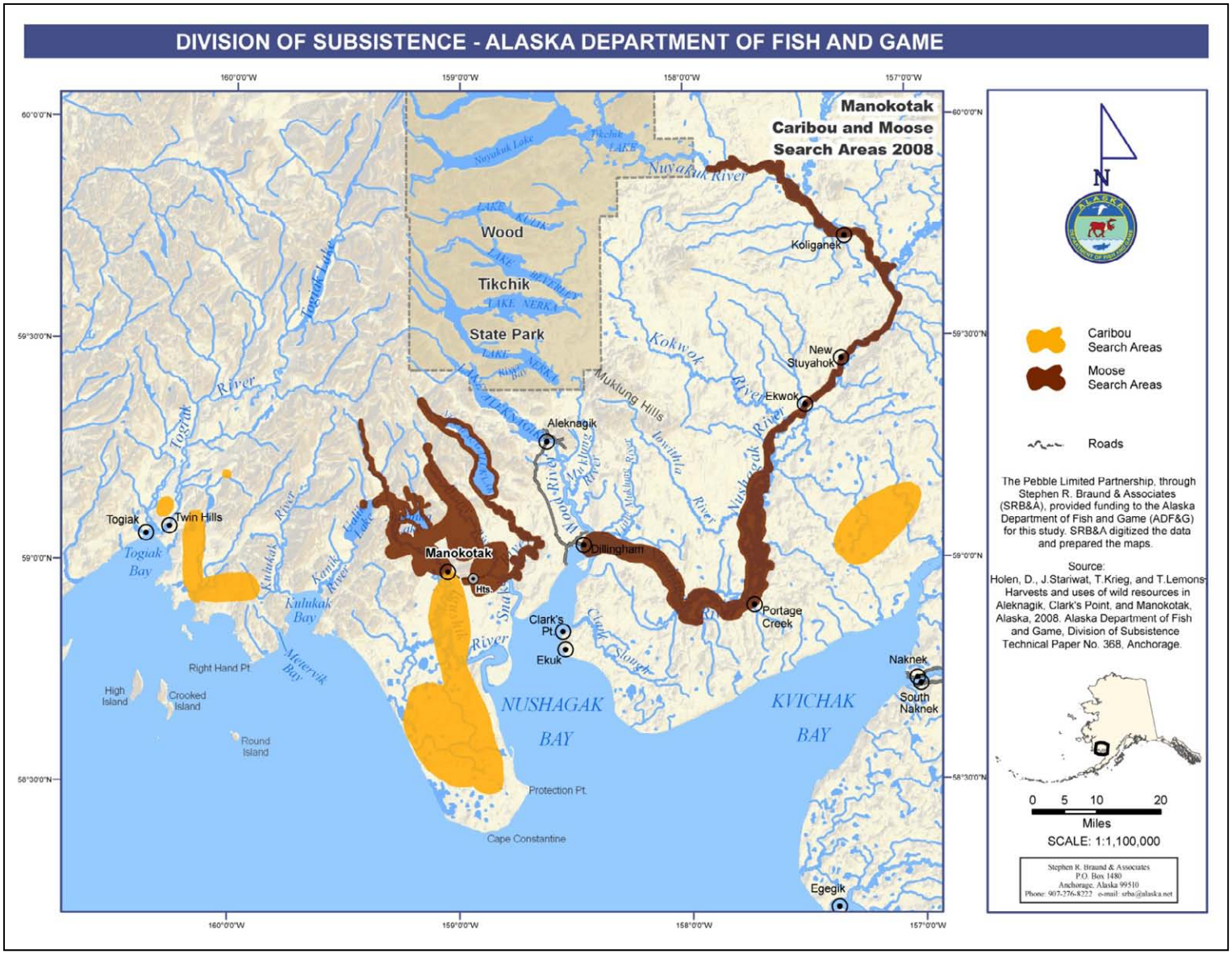

Figure 4-5.–Caribou and moose hunting areas, Manokotak, 2008.

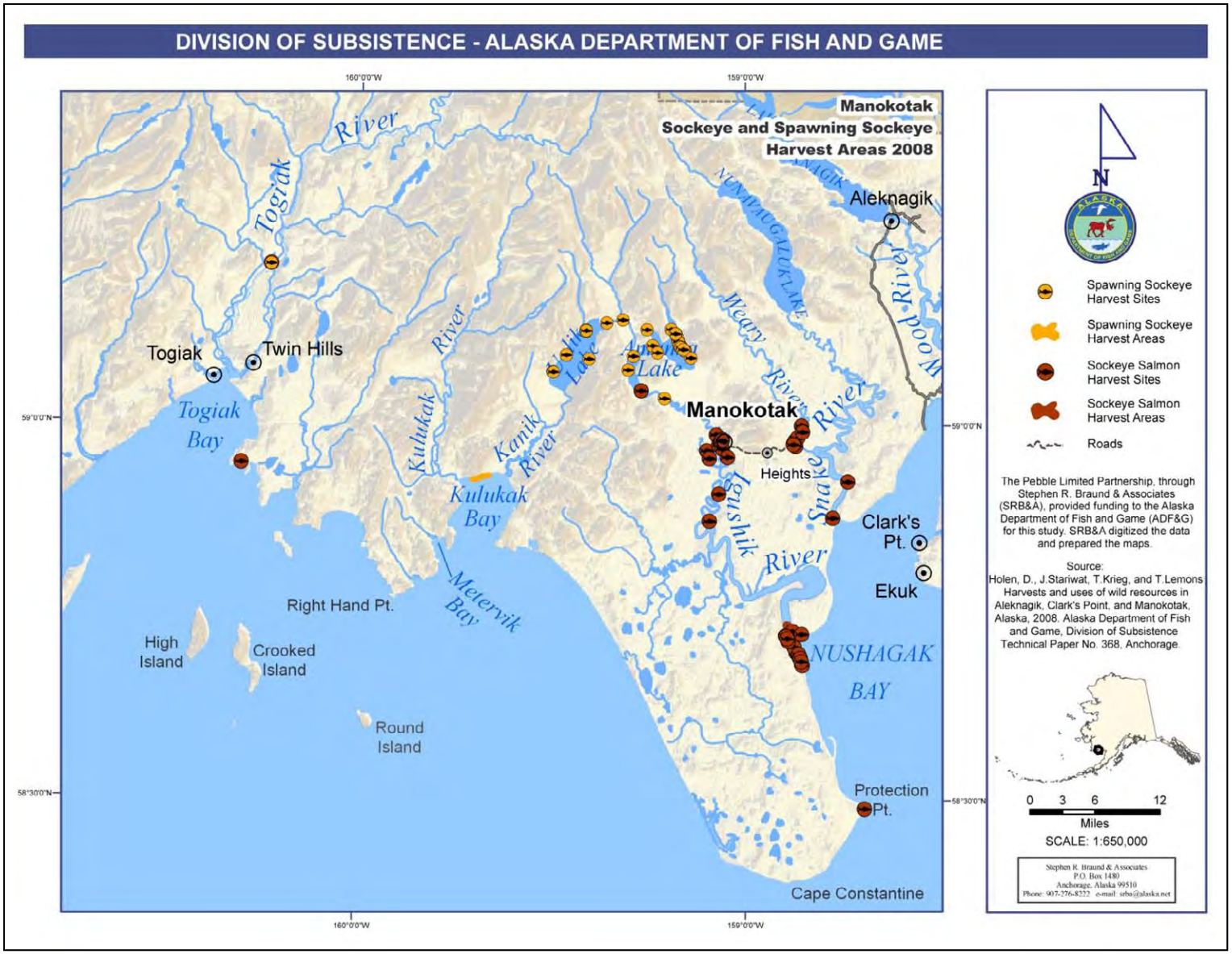

Figure 4-6.–Sockeye harvest locations, Manokotak, 2008.

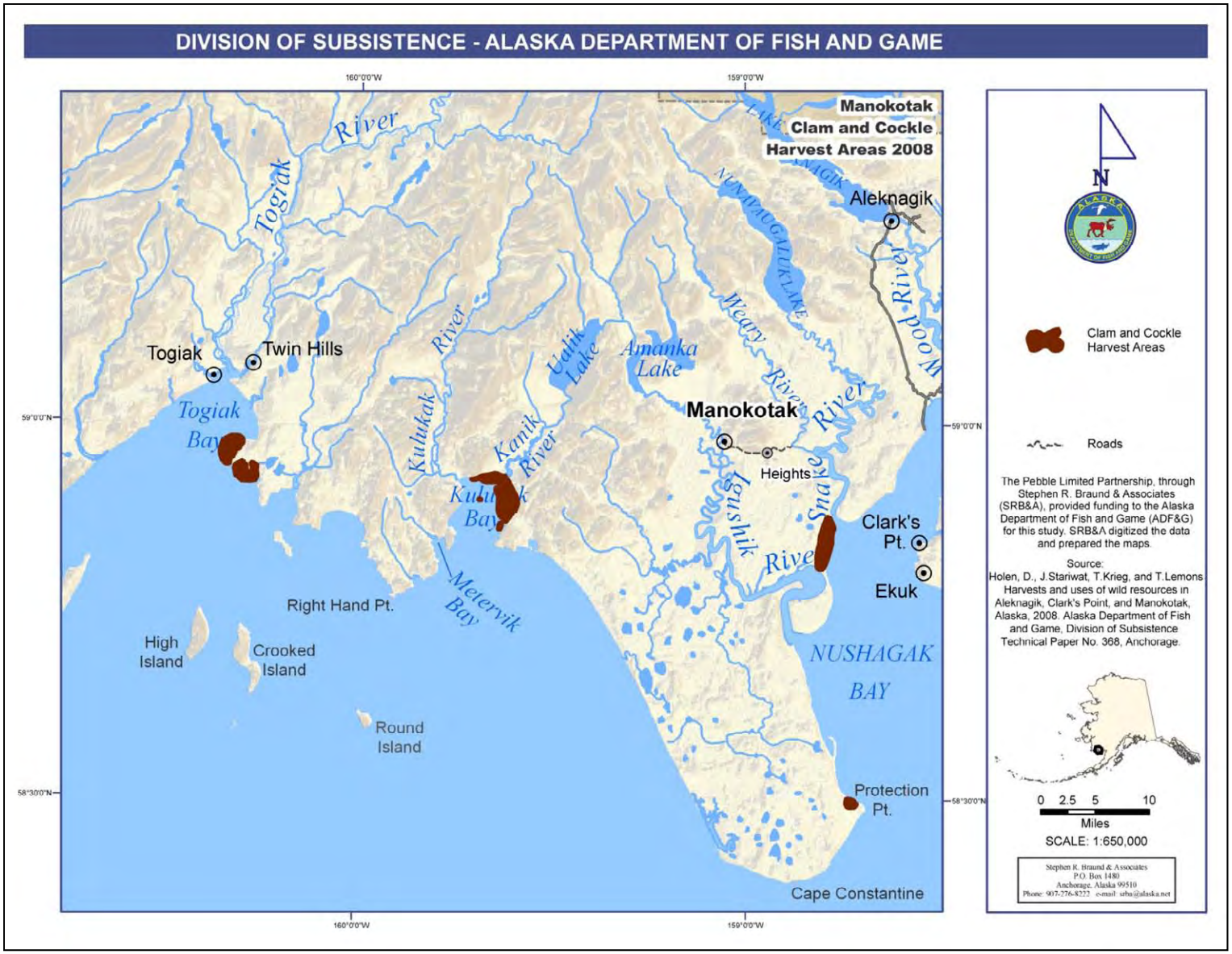

Figure 4-7.–Cockle harvest areas, Manokotak, 2008.

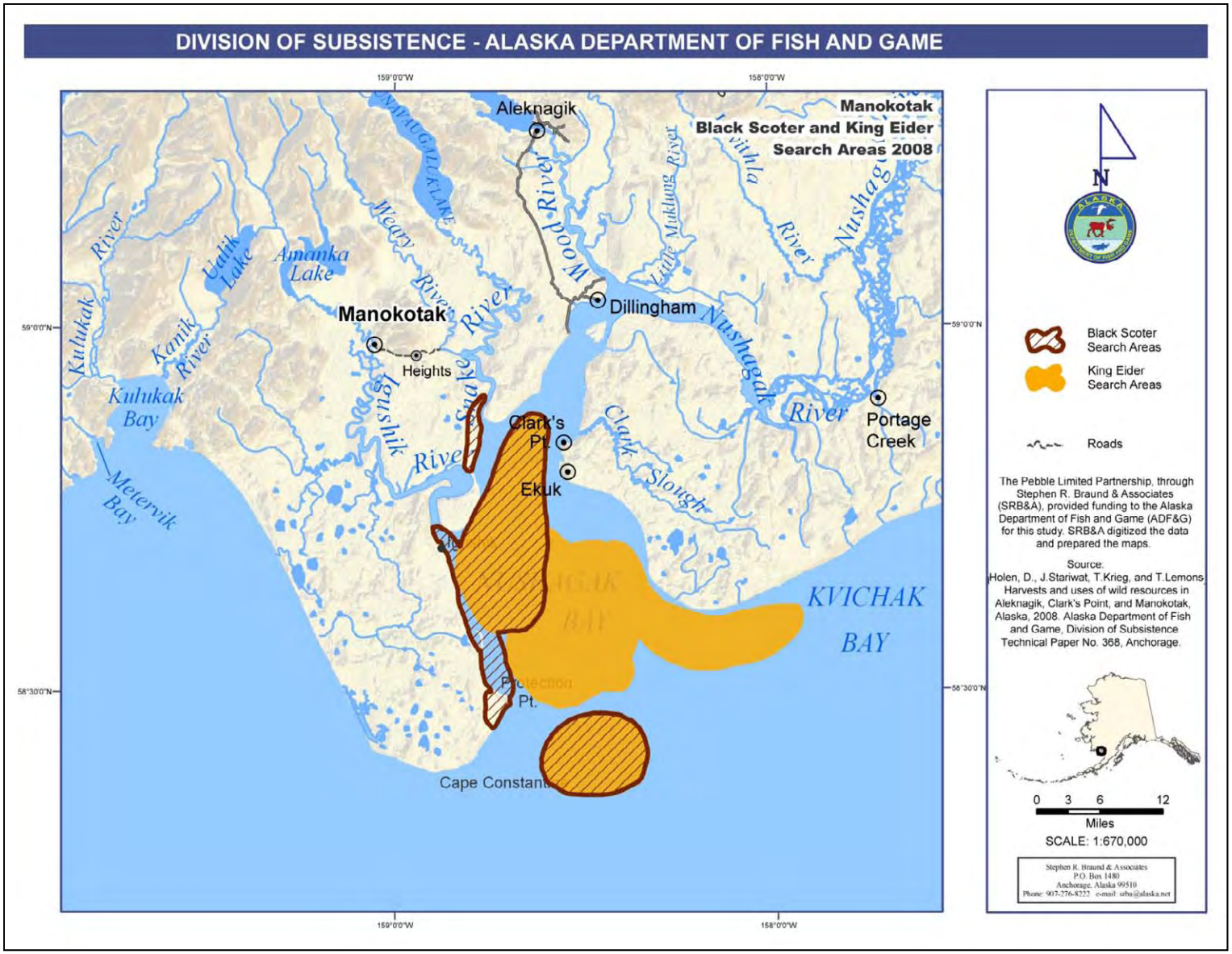

Figure 4-8.–Black scoter and king eider hunting areas, Manokotak, 2008.

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

SALMON

In 2008, Manokotak residents harvested 71% of their estimated salmon harvest for home use with setnets (Table 4-5). Much of this harvest occurred at the community's seasonal fish camp at Igushik (Figure 4-6). Much of this was sockeye salmon, with 85% of the sockeye salmon harvest coming from subsistence setnets. In addition, 44% of spawning sockeye salmon were caught with setnets, as were 79% of chum salmon, 70% of pink salmon, and 70% of coho salmon (Table 4-5). A portion of the total harvests of salmon (21%) was removed from the commercial catch. This included Chinook salmon (35%), pink salmon (30%), chum salmon (21%), sockeye salmon (15%), and coho salmon (14%). Thirty-nine percent of spawning sockeye salmon and 2% of Chinook salmon were harvested by seining. In addition to subsistence setnets and removal from commercial catches, rod and reel gear was used to harvest salmon by Manokotak residents in 2008. Rod and reel harvests accounted for 3% of the total harvest. Much of the effort was focused on spawning sockeye salmon and coho salmon, with 40% of households using this gear type to harvest spawning sockeye salmon and 51% to harvest coho salmon. Only 1% of the total harvest of spawning sockeye salmon and 1% of the total coho salmon harvest was by rod and reel gear (Table 4-5; see Appendix C for maps of harvest locations of other salmon).

NONSALMON FINFISH

Table 4-6 lists the percentage of each nonsalmon fish harvested, by gear type, by Manokotak residents in 2008. Residents caught most nonsalmon finfish by ice fishing (55%). For example, 88% of northern pike were caught by ice fishing, which accounted for 30% of the overall harvest of nonsalmon finfish. Setnets were also used to harvest of nonsalmon finfish, such as herring: 88% of the herring harvest was taken using this method, which accounted for 10% of the overall harvest of nonsalmon finfish. All harvests of halibut were conducted using rod and reel gear. Rod and reel gear was also used to harvest 27% of rainbow trout, 21% of Arctic grayling, and 14% of Dolly Varden. Residents mainly harvested freshwater fish, including rainbow trout and Arctic grayling, in Amanka and Ualik lakes and their surrounding streams while northern pike were primarily harvested in the small lakes south of Manokotak on the Nushagak Peninsula (see maps in Appendix C).

LARGE LAND MAMMALS

The only large land mammal species harvested in 2008 were caribou and moose. Moose were hunted mainly along waterways, whereas caribou were sought in larger inland areas (Table 4-3 and Figure 4-5). An estimated 21 caribou were harvested by Manokotak residents in 2008; 14 of these caribou (13 males and 1 female) were taken during February and March but respondents did not know when the remainder were harvested or what sex they were (Table 4-7). In 2008, caribou made up an estimated 3% of the overall harvest. Residents traveled south on the Nushagak Peninsula and to the east near the Kvichak River, as well as to the west to the Twin Hills and Togiak area to harvest caribou (Figure 4-5). Moose were hunted north of Manokotak along the Igushik, Weary, and Snake rivers and around the shores of Amanka and Nunavaugaluk lakes. In 2008, Manokotak residents harvested 25 moose, of which 21 were male, 3 were female, and the sex was unknown for 2 (Table 4-7). Moose accounted for 12% of the overall harvest in 2008 (Table 4-3).

SMALL LAND MAMMALS/FURBEARERS

Small land mammals and furbearers were harvested around Amanka and Ualik lakes and scattered areas around Manokotak, as well as near the Igushik, Snake, and Weary rivers (see Appendix C maps). The total estimated harvest of edible meat from small land mammals by Manokotak residents in 2008 was 1,173 lb, or 3 lb per capita. The 2 largest harvests of edible resources were beavers (1,005 lb, or 3 lb per

capita) and porcupines (101 lb, or less than 1 lb per capita). Red foxes, coyotes, hares, river otters, lynx, mink, muskrats, weasels, wolves, and wolverines were also harvested for furs (Table 4-3).

MARINE MAMMALS

In 2008, Manokotak residents hunted for seals on the Igushik River and along the west coast of Nushagak Bay near Igushik south to Protection Point. Seals were also hunted on the Snake River, in Kulukak Bay and near Metervik Bay (see Appendix C maps). An estimated 26% of households attempted to harvest seals, 12% harvested seals (which included 34 seals, or 3,072 lb), and 69% used seals. Of the seals harvested in 2008 by Manokotak residents, 22 were harbor seals, 9 were bearded seals, and 3 were ringed seals. In addition, residents participated in the harvest of 3 beluga whales (2,493 lb of whale), which was then distributed to and used by 21% of households in Manokotak. This resulted in an estimated 7 lb per capita overall for the community. No walruses were harvested by Manokotak residents in 2008; however, 36% of households received and used walruses during the study year.

MARINE INVERTEBRATES

Cockles were harvested by Manokotak residents on the beaches of Kulukak Bay, and also west of Rocky Point near Togiak Bay, south of the Snake River on the shores of Nushagak Bay, and near Protection Point (Figure 4-7). Residents harvested an estimated 1,785 lb of cockles, or 5 lb per capita (Table 4-3). Eighty percent of households used cockles, which were harvested by 48% of households; 41% of households shared cockles. In addition 3% of households received crabs from outside the community: no households reported harvesting this resource in 2008.

BIRDS AND EGGS

In 2008, Manokotak residents harvested waterfowl on the Nushagak Peninsula, in Kulukak Bay, and along the Nushagak and Nuyakuk rivers. Black scoter and king eiders were also hunted in the waters of Nushagak Bay, Kvichak Bay, and Bristol Bay (Figure 4-8). Manokotak residents harvested 3,494 lb of migratory birds, or 9 lb per capita. In addition, residents hunted upland birds on the Nushagak Peninsula and harvested 1,929 lb, or 5 lb per capita (Table 4-3). Eggs were collected near Igushik, Togiak, Amanka and Ualik lakes, and within a short distance of Manokotak on the Igushik and Snake rivers. Murre eggs were also gathered on a small island in Bristol Bay northwest of Round Island (see Appendix C maps). In 2008, an estimated 1,134 lb, or 3 lb per capita, of bird eggs were harvested (Table 4-3). Most bird eggs came from gulls (1,092 lb, or 3 lb per capita). Other bird eggs collected came from ducks (19 lb), geese (13 lb), swans (8lb), and terns (2 lb) which together accounted for less than 1 lb of the total harvest per capita.

WILD PLANTS

Berries, wood, and other wild plants were important to Manokotak residents. Residents picked berries around the community and along the Igushik River as well as a variety of other locations as far east as Quigmy River in the Togiak area and west to Aleknagik Lake Road. Berries were also harvested across Nushagak Bay in Ekuk. Households in Manokotak harvested 9,597 lb of berries, or 25 lb per capita. This equates to an estimated 2,399 gal of berries. High heating oil prices have apparently encouraged some residents to harvest more wood to heat their homes. In total, 391 cords of firewood, used to heat homes and steam baths (*maqi* in Yup'ik) and to smoke fish and meat, were gathered by Manokotak residents, who often used snowmachines and sleds in the winter to harvest from an area around Manokotak extending north to Amanka and Nunavaugaluk lakes and east nearly to the Aleknagik Lake Road (see Appendix C maps).

Table 4-5.–Estimated percentages of salmon harvest by gear type, resource, and total salmon harvest, Manokotak, 2008.

Resource / Percent base	Removed from commercial catch[a]		Subsistence methods											
			Setnet		Seine		Other		Subsistence gear, any method		Rod and reel		Any method	
	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon														
Geartype	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Resource	15.6%	21.3%	71.2%	70.9%	7.5%	3.6%	1.1%	1.4%	79.9%	75.9%	4.6%	2.8%	100.0%	100.0%
Total	15.6%	21.3%	71.2%	70.9%	7.5%	3.6%	1.1%	1.4%	79.9%	75.9%	4.6%	2.8%	100.0%	100.0%
Chum salmon														
Geartype	3.1%	2.2%	2.6%	2.5%	0.0%	0.0%	0.0%	0.0%	2.3%	2.4%	0.0%	0.0%	2.4%	2.2%
Resource	20.7%	20.7%	79.3%	79.3%	0.0%	0.0%	0.0%	0.0%	79.3%	79.3%	0.0%	0.0%	100.0%	100.0%
Total	0.5%	0.5%	1.9%	1.8%	0.0%	0.0%	0.0%	0.0%	1.9%	1.8%	0.0%	0.0%	2.4%	2.2%
Coho salmon														
Geartype	9.5%	6.9%	10.3%	10.3%	0.0%	0.0%	16.9%	13.5%	9.4%	9.8%	31.7%	51.1%	10.4%	10.4%
Resource	14.2%	14.2%	70.1%	70.1%	0.0%	0.0%	1.8%	1.8%	71.9%	71.9%	13.9%	13.9%	100.0%	100.0%
Total	1.5%	1.5%	7.3%	7.3%	0.0%	0.0%	0.2%	0.2%	7.5%	7.5%	1.4%	1.4%	10.4%	10.4%
Chinook salmon														
Geartype	38.6%	61.2%	14.4%	31.3%	5.2%	23.4%	38.0%	66.2%	13.8%	31.5%	0.7%	2.4%	17.1%	37.0%
Resource	35.2%	35.2%	59.9%	59.9%	2.3%	2.3%	2.5%	2.5%	64.7%	64.7%	0.2%	0.2%	100.0%	100.0%
Total	6.0%	13.0%	10.2%	22.2%	0.4%	0.9%	0.4%	0.9%	11.0%	23.9%	0.0%	0.1%	17.1%	37.0%
Pink salmon														
Geartype	1.6%	0.7%	0.8%	0.5%	0.0%	0.0%	0.0%	0.0%	0.7%	0.5%	0.0%	0.0%	0.8%	0.5%
Resource	29.6%	29.6%	70.4%	70.4%	0.0%	0.0%	0.0%	0.0%	70.4%	70.4%	0.0%	0.0%	100.0%	100.0%
Total	0.3%	0.1%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	0.6%	0.3%	0.0%	0.0%	0.8%	0.5%
Sockeye salmon														
Geartype	47.2%	29.0%	60.4%	50.9%	0.0%	0.0%	16.9%	11.4%	54.1%	47.7%	5.2%	7.0%	50.8%	42.6%
Resource	14.5%	14.5%	84.7%	84.7%	0.0%	0.0%	0.4%	0.4%	85.1%	85.1%	0.5%	0.5%	100.0%	100.0%
Total	7.4%	6.2%	43.0%	36.1%	0.0%	0.0%	0.2%	0.2%	43.2%	36.2%	0.2%	0.2%	50.8%	42.6%
Spawning sockeye														
Geartype	0.0%	0.0%	11.5%	4.5%	94.8%	76.6%	28.2%	8.8%	19.6%	8.1%	62.5%	39.5%	18.5%	7.2%
Resource	0.0%	0.0%	44.2%	44.2%	38.7%	38.7%	1.7%	1.7%	84.6%	84.6%	15.4%	15.4%	100.0%	100.0%
Total	0.0%	0.0%	8.2%	3.2%	7.2%	2.8%	0.3%	0.1%	15.6%	6.1%	2.8%	1.1%	18.5%	7.2%
Unknown salmon														
Geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2009.

a. Regulations allow commercial fishers to retain fish for their own noncommercial uses (5 AAC 39.010).

Table 4-6.–Estimated percentages of fish other than salmon harvested by gear type, resource, and total harvest, Manokotak, 2008.

Resource / Percent base	Removed from commercial gear[a]	Subsistence gear: Set net	Seine	Hand line gear	Dip net	Ice fishing	Other subsistence gear	Any subsistence gear	Rod and reel	Any method
Nonsalmon fish										
Gear type	100.0%	100.0%	100.0%	0.0%	100.0%	100.0%	0.0%	100.0%	100.0%	100.0%
Resource	1.7%	22.1%	9.3%	0.0%	0.6%	55.3%	0.0%	87.4%	1.7%	100.0%
Total	1.7%	22.1%	22.1%	0.0%	0.6%	55.3%	0.0%	87.4%	1.7%	100.0%
Herring										
Gear type	50.4%	45.1%	0.0%	0.0%	90.0%	0.0%	0.0%	12.1%	0.0%	11.4%
Resource	7.5%	87.5%	0.0%	0.0%	5.0%	0.0%	0.0%	92.5%	0.0%	100.0%
Total	0.9%	10.0%	10.0%	0.0%	0.6%	0.0%	0.0%	10.5%	0.0%	11.4%
Herring spawn on kelp										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
Unknown smelt										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	31.8%	0.0%	20.2%	0.0%	17.6%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	17.6%	0.0%	17.6%	0.0%	17.6%
Starry flounder										
Gear type	37.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.9%
Resource	68.8%	31.3%	0.0%	0.0%	0.0%	0.0%	0.0%	31.3%	0.0%	100.0%
Total	0.6%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.9%
Halibut										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.4%	0.2%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%
Unknown sculpin										
Gear type	5.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Resource	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Alaska blackfish										
Gear type	0.0%	0.0%	0.0%	0.0%	10.0%	0.5%	0.0%	0.4%	0.0%	9.1%
Resource	0.0%	0.0%	0.0%	0.0%	0.7%	3.1%	0.0%	3.8%	0.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.3%	0.0%	9.1%

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Table 4-6.–Page 2 of 3.

Resource / Percent base	Removed from commercial gear[a]	Subsistence gear: Set net	Seine	Hand line gear	Dip net	Ice fishing	Other subsistence gear	Any subsistence gear	Rod and reel	Any method
Burbot										
Gear type	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.2%
Resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.2%
Dolly Varden–freshwater										
Gear type	0.0%	4.2%	5.8%	0.0%	0.0%	11.0%	0.0%	8.6%	70.0%	8.7%
Resource	0.0%	10.6%	6.2%	0.0%	0.0%	69.3%	0.0%	86.2%	13.8%	100.0%
Total	0.0%	0.9%	0.9%	0.0%	0.0%	6.1%	0.0%	7.5%	1.2%	8.7%
Dolly Varden–saltwater										
Gear type	7.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Resource	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Dolly Varden–Togiak trout										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lake trout										
Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	1.4%	0.0%	1.2%
Resource	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	1.2%	0.0%	1.2%
Arctic grayling										
Gear type	0.0%	0.9%	3.6%	0.0%	0.0%	0.0%	0.0%	0.6%	8.1%	0.7%
Resource	0.0%	29.7%	49.5%	0.0%	0.0%	0.0%	0.0%	79.2%	20.8%	100.0%
Total	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.5%	0.1%	0.7%
Northern pike										
Gear type	0.0%	18.6%	0.0%	0.0%	0.0%	53.7%	0.0%	38.7%	0.0%	33.8%
Resource	0.0%	12.2%	0.0%	0.0%	0.0%	87.8%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	4.1%	4.1%	0.0%	0.0%	29.7%	0.0%	33.8%	0.0%	33.8%
Sheefish										
Gear type	0.0%	7.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	0.0%	1.6%
Resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	1.6%	1.6%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	1.6%

- continued -

Table 4-6.–Page 3 of 3.

Resource / Percent base	Removed from commercial gear[a]	Subsistence gear: Set net	Seine	Hand line gear	Dip net	Ice fishing	Other subsistence gear	Any subsistence gear	Rod and reel	Any method
Rainbow trout										
Gear type	0.0%	0.4%	0.0%	0.0%	0.0%	0.8%	0.0%	0.6%	11.5%	0.7%
Resource	0.0%	10.9%	0.0%	0.0%	0.0%	61.8%	0.0%	72.7%	27.3%	100.0%
Total	0.0%	0.1%	0.1%	0.0%	0.0%	0.5%	0.0%	0.5%	0.2%	0.7%
Broad whitefish										
Gear type	0.0%	10.3%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	2.3%
Resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	2.3%	2.3%	0.0%	0.0%	0.0%	0.0%	2.3%	0.0%	2.3%
Humpback whitefish										
Gear type	0.0%	9.0%	53.4%	0.0%	0.0%	0.0%	0.0%	8.0%	0.0%	7.0%
Resource	0.0%	28.6%	71.4%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	7.0%
Round whitefish										
Gear type	0.0%	2.4%	37.2%	0.0%	0.0%	0.0%	0.0%	4.6%	0.0%	4.0%
Resource	0.0%	13.1%	86.9%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
Total	0.0%	0.5%	0.5%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	4.0%

Note This table lists only those resources for which there was a harvest in the 2008 study year.

a. Regulations allow commercial fishers to retain fish for their own noncommercial uses (5 AAC 39.010).

Source ADF&G Division of Subsistence household surveys, 2009.

COMPARING HARVESTS AND USES IN 2008 WITH PREVIOUS YEARS

Table 4-8 summarizes the responses by Manokotak residents as to whether their harvest of wild resources was less, the same, or more than in recent years. This table, as well as Figure 4-9, gives an overall response for all resources by resource category. Overall, 15% of households related that their harvests were less than in recent years, while 66% related that they were about the same. Nineteen percent of households reported harvesting more resources overall. For all resource categories, 50% or more of Manokotak residents reported harvesting the same amount compared to recent years. For example, 50% of residents reported harvesting the same amount of salmon, 62% for large land mammals, 59% for marine mammals, and 60% of residents reported harvesting the same amount of nonsalmon finfish compared to recent years (Table 4-8). The 2 categories where residents reported the highest percentage of harvesting the same as in recent years were wild plants and berries (67%) and birds and eggs (66%). Furbearers led the percentage for the most dramatic decline in harvest, although 35% of households related that they harvested fewer furbearers than in recent years. This was followed by declining harvests of marine mammals (33%) and large land mammals (31%). The 2 categories where residents reported the highest percentage of harvesting more than in recent years were salmon (28%) and wild plants and berries (24%; Table 4-8 and Figure 4-9).

The reasons that respondents in Manokotak gave for changes in their harvests and uses are listed by resource category in Table 4-9 and Figure 4-10. This was an open-ended question, and respondents could offer more than one reason for changes. Project staff grouped the responses into categories, such as competition for resources, regulations hindering or helping residents harvest resources, sharing of harvests, effects of weather on animals and subsistence activities, changes in animal populations, personal reasons such as work and health, and other outside effects on residents' opportunities to engage in subsistence activities. Personal reasons, people sharing less, changing animal populations, and weather emerged as 4 major reasons for changes. Some households gave a combination of reasons.

Sixty-seven percent of households that had reported less use and lower harvests of any resource compared to the recent past cited personal reasons for this difference (Table 4-9 and Figure 4-10). Forty-two percent of households reported less use of any resource due to people sharing less, particularly less for marine mammals (35%) and birds and eggs (33%). No households cited competition as a reason for changes in their harvest or use of any resources and only 5% of households cited regulations as a reason for less harvest or use of any resources. Fifty percent of respondents reported harvesting more salmon due to changes in animal populations while 15% harvested less salmon due to the same reason. Changes in Manokotak residents' resource harvests can also be clarified through comparisons with findings from other study years. ADF&G administered comprehensive household harvest surveys in Manokotak in 1973[9], 1985 (Morris 1985), 1999 (Coiley-Kenner et al. 2003), and in this study for 2008 (Figure 4-11). Figure 4-11 summarizes the per capita harvests in pounds usable weight for each major resource category from these studies.

The 2008 salmon harvest of 135 lb per capita was similar to previous years for which comprehensive data are available: in 1973, Manokotak residents harvested 151 lb per capita, 136 lb in 1985, and 117 lb in 1999. In 2008, harvest amounts of marine invertebrates and vegetation were larger, especially vegetation, than in any previous year for which data are available. In contrast, 2008 harvests of large land mammals were considerably lower than harvests documented in the other 3 study years. The highest estimate of large land mammal harvest was 113 lb per capita in 1999, compared to a harvest of 45 lb per capita in 2008. Harvest amounts of small land mammals and marine mammals were also lower than previous

[9] Gasbarro, A. F., and G. Utermohle, 1974, unpublished field data, Bristol Bay subsistence survey, Division of Subsistence, Alaska Department of Fish and Game, Anchorage.

years. Marine mammal harvests declined steadily from 42 lb per capita in 1973 to only 15 lb per capita in 2008. The decline in small land mammal harvest amounts since 1973 has been considerable: the highest per capita harvest from the available data was 35 lb in 1985, compared to a low of 3 lb per capita in 2008. Nonsalmon fish harvest amounts in 2008 (44 lb per capita) were less than in 1973 (64 lb per capita) and 1985 (85 lb per capita), but higher than the 1999 harvest of 37 lb per capita. The berry and plant resources showed an increase in the harvest per capita since 1985[10] from 14 lb per capita to 35 lb per capita.

Table 4-10 demonstrates a decline of harvests in the 4 study years, with pounds usable weight per capita harvests dropping from 406 lb in 1973, 384 lb in 1985, 356 lb in 1999, to a low of 298 lb in 2008. The percentage of salmon as a portion of the overall harvest has slightly increased from 37% in 1973 to 45% in 2008, while at the same time large land mammals as a portion of the overall harvest have fluctuated from 27% of the overall harvest in 1973 to 16% in 1985, then 32% in 1999 to 15% of the overall harvest in 2008 (Table 4-10).

Table 4-7.–Estimated large land mammal harvests by month and sex, Manokotak, 2008.

	Black bear				Brown bear			
Harvest month	Unknown	Male	Female	Total	Unknown	Male	Female	Female
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

	Caribou				Moose			
Harvest month	Unknown	Male	Female	Total	Unknown	Male	Female	Total
January	0.0	0.0	0.0	0.0	1.6	6.3	3.1	11.0
February	0.0	4.7	0.0	4.7	0.0	0.0	0.0	0.0
March	0.0	7.9	1.6	9.4	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	9.4	0.0	9.4
September	0.0	0.0	0.0	0.0	0.0	1.6	0.0	1.6
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	1.6	0.0	1.6
Unknown	6.3	0.0	0.0	6.3	0.1	1.6	0.0	1.7
Total harvest	**6.3**	**12.6**	**1.6**	**20.5**	**1.7**	**20.5**	**3.1**	**25.3**

Source ADF&G Division of Subsistence household surveys, 2009.

10. These resources were not documented in the 1973 surveys.

Table 4-8.–Comparision of household harvest and use in recent years, 2008, Manokotak.

Resource	Estimated households	Valid responses		No response		Less		Same		More	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	96	91.3	95.1%	4.7	4.9%	20.5	22.4%	45.6	50.0%	25.2	27.6%
Nonsalmon finfish	96	94.4	98.4%	1.6	1.6%	20.5	21.7%	56.7	60.0%	17.3	18.3%
Marine invertebrates	96	86.6	90.2%	9.4	9.8%	15.7	18.2%	53.5	61.8%	17.3	20.0%
Large land mammals	96	91.3	95.1%	4.7	4.9%	28.3	31.0%	56.7	62.1%	6.3	6.9%
Furbearers	96	80.3	83.6%	15.7	16.4%	28.3	35.3%	44.1	54.9%	7.9	9.8%
Marine mammals	96	80.3	83.6%	15.7	16.4%	26.8	33.3%	47.2	58.8%	6.3	7.8%
Birds and eggs	96	92.9	96.7%	3.1	3.3%	18.9	20.3%	61.4	66.1%	12.6	13.6%
Wild plants	96	91.3	95.1%	4.7	4.9%	7.9	8.6%	61.4	67.2%	22.0	24.1%
Overall	96	92.9	96.7%	3.1	3.3%	14.2	15.3%	61.4	66.1%	17.3	18.6%
Any resource	96	96.0	100.0%	0.0	0.0%	67.7	70.5%	89.7	93.4%	51.9	54.1%

Source ADF&G Division of Subsistence household surveys, 2009.

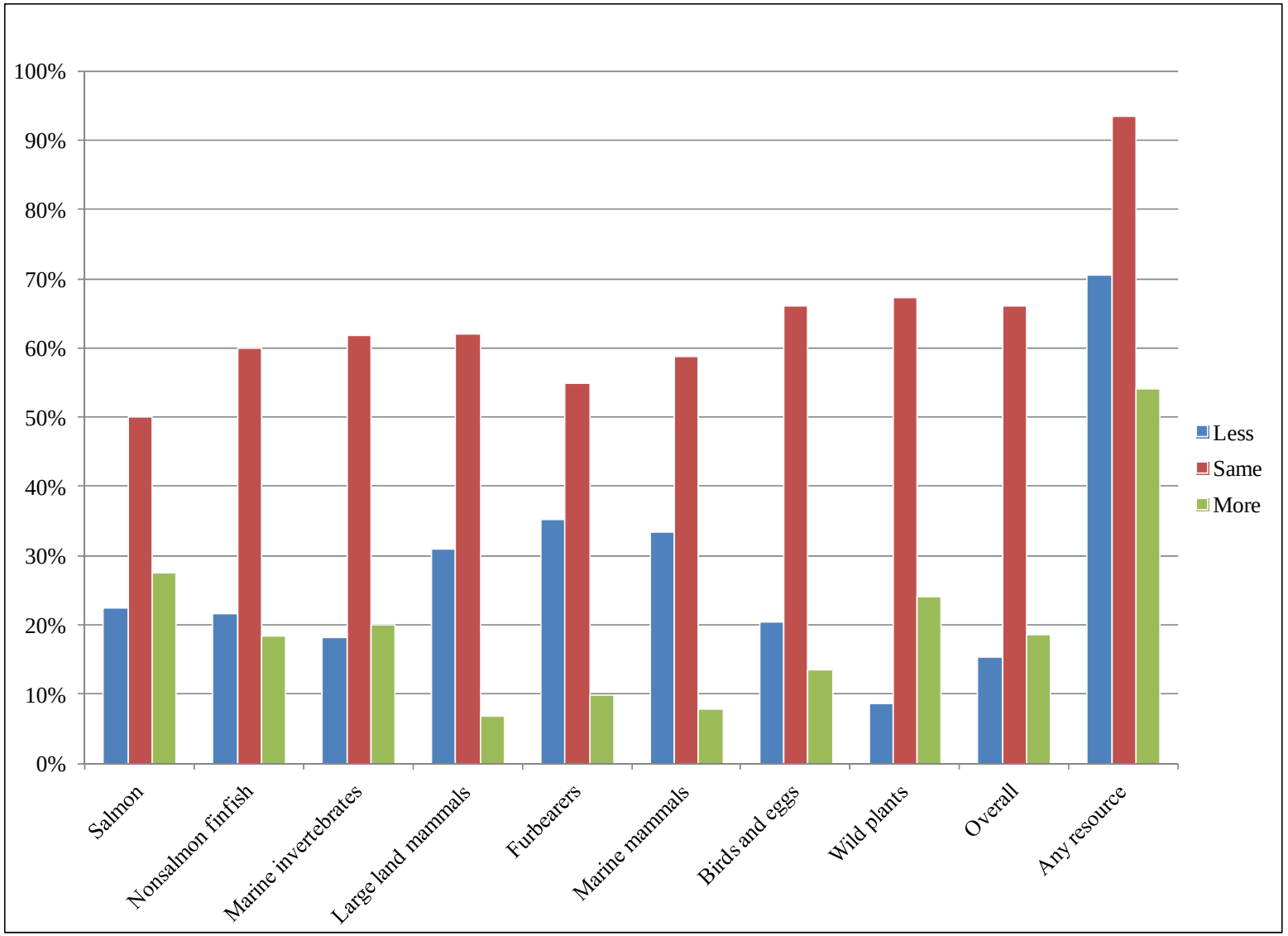

Figure 4-9.–Manokotak harvest and use in recent years, 2008.

Table 4-9.–Reasons for change in harvests and uses in recent years, Manokotak.

Resource Category	Use less or more	Estimated number of households[b]	Percentage of responses by category[a]							
			No reason Given	Competition	Regulations	People are sharing less	Weather	Animal population changes[c]	Personal reasons (work/health)	Other outside effects
Salmon	Less	20.5	0.0%	0.0%	0.0%	23.1%	23.1%	15.4%	53.8%	0.0%
Salmon	More	25.2	0.0%	0.0%	0.0%	12.5%	0.0%	50.0%	37.5%	0.0%
Nonsalmon finfish	Less	20.5	15.4%	0.0%	0.0%	23.1%	0.0%	15.4%	30.8%	15.4%
Nonsalmon finfish	More	17.3	0.0%	0.0%	0.0%	45.5%	0.0%	18.2%	36.4%	0.0%
Marine invertebrates	Less	15.7	10.0%	0.0%	0.0%	20.0%	20.0%	0.0%	50.0%	10.0%
Marine invertebrates	More	17.3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Large land mammals	Less	28.3	0.0%	0.0%	11.1%	27.8%	16.7%	27.8%	22.2%	5.6%
Large land mammals	More	6.3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Furbearers	Less	28.3	0.0%	0.0%	0.0%	16.7%	11.1%	22.2%	44.4%	16.7%
Furbearers	More	7.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Marine mammals	Less	26.8	5.9%	0.0%	0.0%	35.3%	0.0%	5.9%	41.2%	11.8%
Marine mammals	More	6.3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Birds and eggs	Less	18.9	16.7%	0.0%	0.0%	33.3%	0.0%	8.3%	41.7%	8.3%
Birds and eggs	More	12.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wild plants	Less	7.9	20.0%	0.0%	0.0%	0.0%	0.0%	20.0%	60.0%	0.0%
Wild plants	More	22.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overall	Less	14.2	11.1%	0.0%	0.0%	22.2%	11.1%	22.2%	33.3%	33.3%
Overall	More	17.3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Any resource	Less	67.7	14.0%	0.0%	4.7%	41.9%	20.9%	20.9%	67.4%	16.3%
Any resource	More	51.9	3.0%	0.0%	0.0%	33.3%	18.2%	39.4%	45.5%	0.0%

a. Percentage of estimated number of households that reported less or more uses of the resource category who cited this reason.

b. Estimated number of households citing a change in uses. For number of valid responses, see Table 4-7. Estimated total households in community = 96.

c. Includes changes in size of population and/or changes in geographic distribution of animals during hunting seasons that affected harvest opportunities and success.

Source ADF&G Division of Subsistence household surveys, 2009.

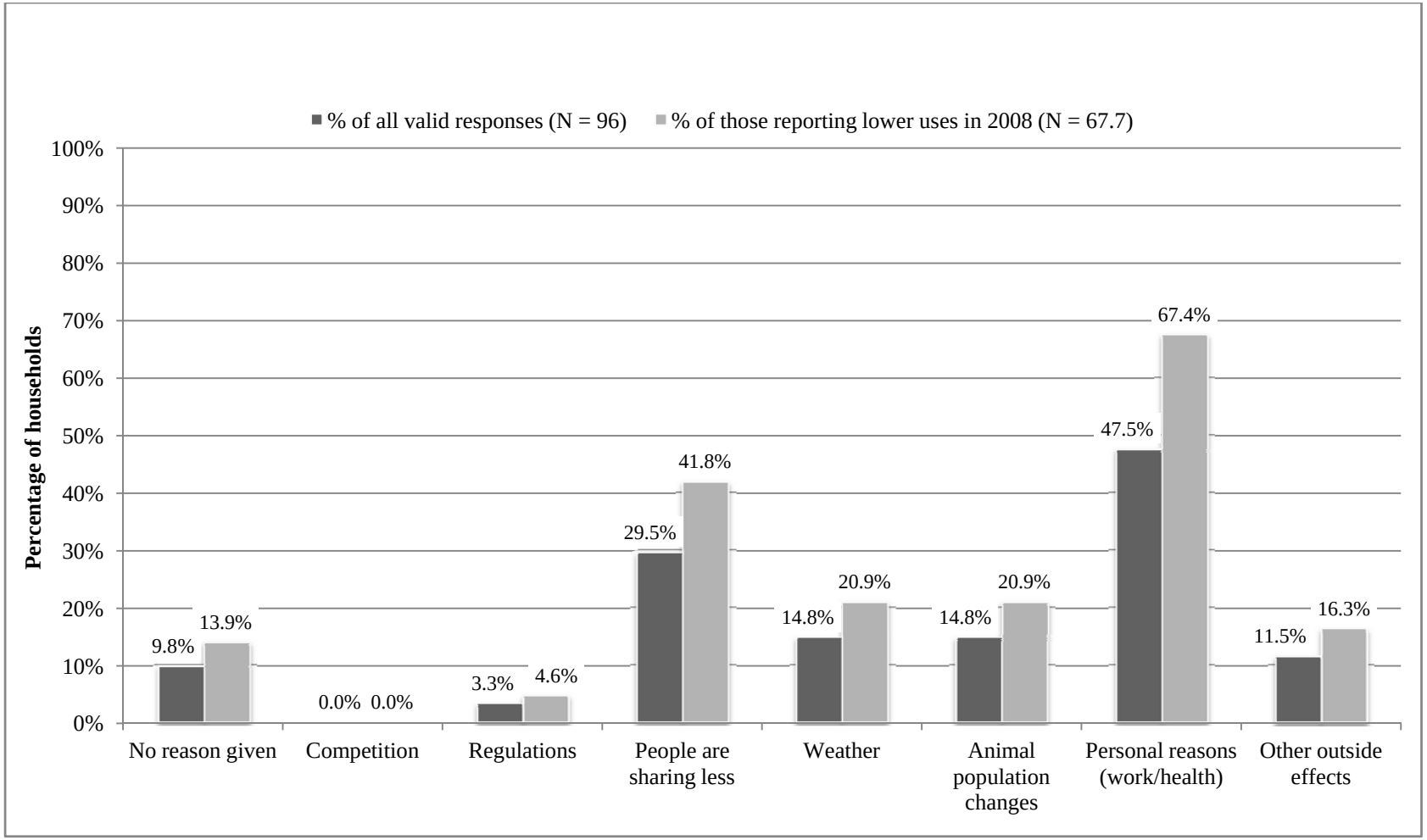

Figure 4-10.–Reasons cited by Manokotak households for lower uses of any resource in 2008 compared to other recent years.

Table 4-10.–Manokotak wild resource harvests by resource category, all study years.

	Pounds usable weight per capita harvest[a]			
Resource	1973	1985	1999	2008
Salmon	150.7	135.8	117.2	135.0
Nonsalmon fish	63.6	85.1	37.3	43.7
Large land mammals	109.6	60.4	113.3	44.5
Small land mammals	14.1	34.6	8.4	3.1
Marine mammals	42.3	32.6	27.9	14.7
Birds and eggs	25.6	16.9	16.5	17.3
Marine invertebrates[b]		4.5	2.9	4.7
Vegetation[b]		14.1	32	35.4
All resources	**405.9**	384.1	355.5	298.4

a. Conversion factors have differed slightly over time. For more information, see CSIS.

b. Blank cells indicate data not collected for that study year.

Source ADF&G Division of Subsistence household surveys, 2009.

Table 4-11.–Manokotak wild resource harvests by resource category, all study years.

	Percentage of total harvest[a]			
Resource	1973	1985	1999	2008
Salmon	37.1%	35.4%	33.0%	45.2%
Nonsalmon fish	15.7%	22.2%	10.5%	14.6%
Large land mammals	27.0%	15.7%	31.9%	14.9%
Small land mammals	3.5%	9.0%	2.4%	1.0%
Marine mammals	10.4%	8.5%	7.8%	4.9%
Birds and eggs	6.3%	4.4%	4.6%	5.8%
Marine invertebrates[b]		1.2%	0.8%	1.6%
Vegetation[b]		3.7%	9.0%	11.9%
All resources	**100.0%**	**100.0%**	**100.0%**	**100.0%**

a. Conversion factors have differed slightly over time. For more information, see CSIS.

b. Blank cells indicate data not collected for that study year.

Source ADF&G Division of Subsistence household surveys, 2009.

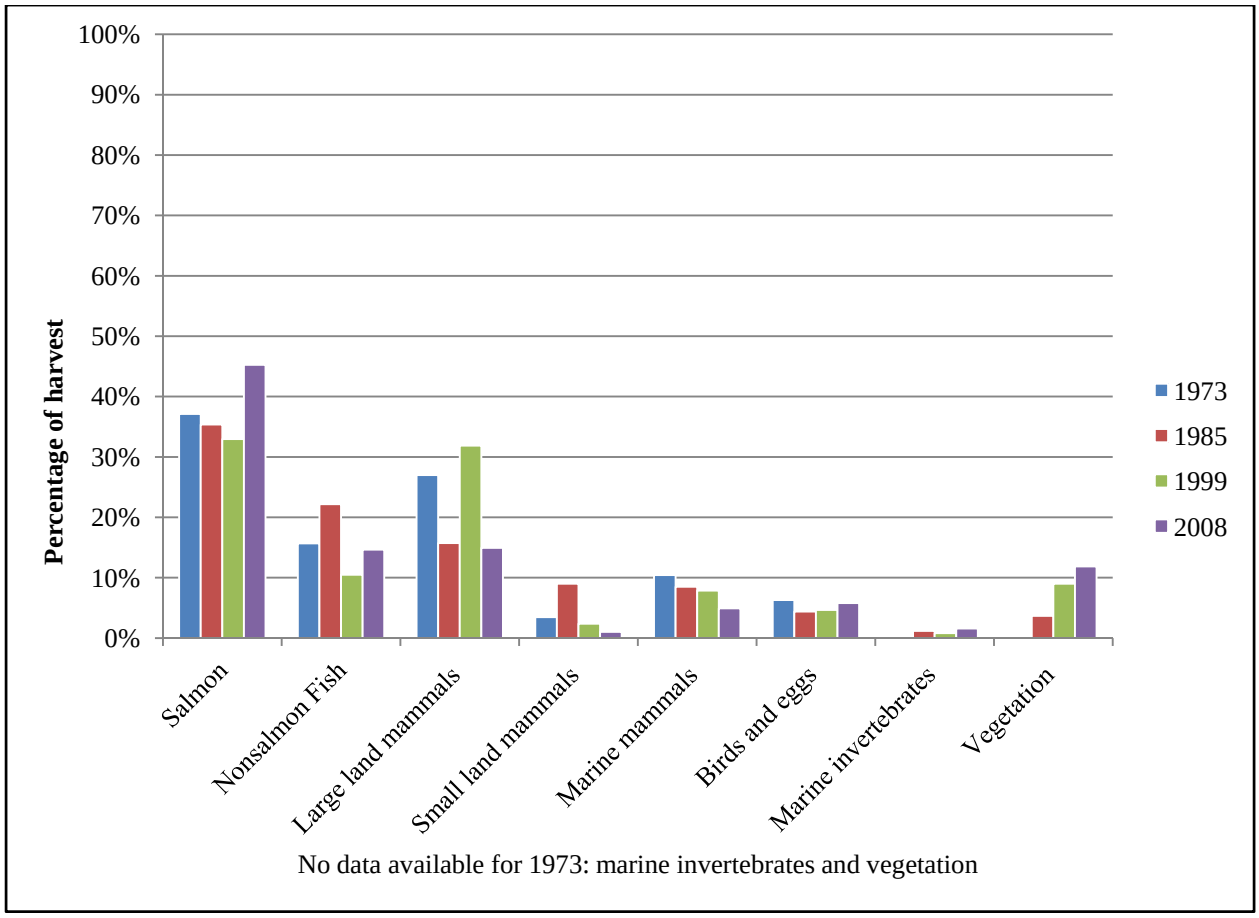

Figure 4-11.–Manokotak harvests over time, 1973–2008.

LOCAL CONCERNS REGARDING RESOURCES

Residents of Manokotak expressed their concerns regarding local resources during the survey and during the community review meeting. Manokotak residents expressed most concern about their difficulties harvesting enough moose and caribou. Survey respondents shared a variety of reasons their harvests were lower than needed, citing particularly that moose and caribou populations are declining, in part due to pressure from predators, such as wolves, and from pressure from other hunters. Respondents reported that the timing and length of hunting seasons made harvesting difficult, and the high price of gas limited their ability to travel for hunting trips. Some respondents also reported that they harvested smaller moose and caribou, with more lean meat, which made it difficult to meet their needs despite reaching the harvest limit. Residents who did not attempt to harvest moose or caribou also expressed concerns that fewer hunters were sharing meat; however, numerous survey respondents commented about an abundance of salmon in 2008 and said they were able to meet their subsistence needs for fish. This, however, was not reported as a replacement for moose or caribou meat.

Weather was also reported as a factor impacting Manokotak residents' harvests of wild resources. While some residents noted that their harvests of berries and plants increased due to more days of good weather in late summer and fall in 2008, others expressed concern over hardships presented by changes in the winter weather. One respondent, a trapper, lost most of his traps during a warm period in the winter when the ice melted. Multiple hunters had difficulty traveling at times in the winter due to poor trail conditions, although hunters said overall winter travel in 2008 was good. More respondents cited high fuel costs as a greater limitation to travel than the weather.

CHAPTER 5: DISCUSSION AND CONCLUSIONS

SUBSISTENCE HARVEST PATTERNS AND TRENDS, 1973 TO 2008

OVERVIEW OF FINDINGS FOR THE STUDY COMMUNITIES, 2008

Table 5-1 summarizes selected findings regarding demography, cash economy, and wild resource uses in 2008 in the 3 study communities in the Bristol Bay area: Aleknagik, Clark's Point, and Manokotak. The population of these 3 communities was diverse, ranging from an estimated population of 38 in Clark's Point to 379 in Manokotak. All communities had a high percentage of Alaska Native residents, ranging from 91% in Aleknagik and Clark's Point to 100% in Manokotak. In Manokotak, Yup'ik is still spoken in the household as well as in public buildings. According to 2000 federal census data, the population of the 3 study communities was 695 (see Table 1-1). Estimates from the Alaska Department of Labor and Workforce Development (ADLWD 2009b) for July 1, 2008, totaled 733. Population estimates, as generated by this study as of December 31, 2008, which specifically included only year-round residents, reflected a lower total population (592) than either the federal census or the ADLWD estimate. Although the ADF&G exclusion of seasonal residents from the 2008 population estimate may partially explain the lower totals, the population of the study communities appears to have declined since 2000, especially in Clark's Point. However, the estimated population in Manokotak is was similar, 399 in 2000 and 379 in 2008; the ADLWD estimated a population of 429 in Manokotak in 2008.

In terms of the cash sectors of the local economies during the 2008 study year, the community with the highest proportion of year-round employment was Manokotak (40%; Table 5-1). Cash and employment data are not available for Clark's Point because residents chose not to answer these questions. Manokotak also had the highest percentage of jobs located in the community (64%; Table 5-1). One of the reasons Aleknagik had fewer jobs located in the community was the percentage of residents who traveled to Dillingham daily to work. In 2008, there were an estimated 33 jobs located in Dillingham for Aleknagik residents (38%; Table 1-11). This can be compared to Manokotak, where 25 jobs (15%) were located in Nushagak, the site of a large cannery in Bristol Bay.

Both Aleknagik and Manokotak had comparable per capita incomes: the per capita income in Aleknagik was $9,651 and in Manokotak was $7,029. This was much lower than some neighboring communities, as well as for the State of Alaska per capita income, which was $22,660 in 2000 (ADLWD 2009b). As noted, neither community had a large number of adults employed year round, and, on average, residents worked 8 months a year (Table 1-10). This can be attributed to the commercial fishery since both Aleknagik and Manokotak had a large number of jobs in the commercial fishery in 2008 (30% in Aleknagik and 38% in Manokotak; tables 2-2 and 4-2).

Figure 5-1 illustrates subsistence harvest estimates in 2008 for each study community in pounds usable weight per capita. The overall harvests between communities varied greatly. Clark's Point had the highest harvest with 1,210 lb per capita, followed by Manokotak (298 lb per capita), and Aleknagik (296 lb per capita). Clark's Point is a small community where hunters who harvest a large number of resources distribute the harvest to neighboring communities, especially Dillingham. Overall, all 3 communities harvested a significant amount per capita. Harvests were also diverse: in Clark's Point, households used an average of 23 resources, while in Manokotak they used 22 resources, and in Aleknagik 15 resources (Table 5-1).

Table 5-1.–Comparison of selected study findings for comprehensive subsistence baseline update, 2008.

	Aleknagik	Clark's Point	Manokotak
Demography			
Population	175	38	379
Percentage Alaska Native	90.8%	91.3%	99.6%
Percentage of household heads born in Alaska	77.4%	93.3%	99.0%
Average length of residency, household heads (years)	30	35	38
Cash economy			
Percentage of jobs located in community	48.8%	–	64.1%
Average number of months employed	7.6	–	7.3
Percentage of employed adults working year-round	33.3%	–	39.8%
Average household income	$35,891	–	$27,772
Per capita income	$9,651	–	$7,029
Resource harvest and use			
Per capita harvest, pounds usable weight	296.0	1,210.1	298.4
Average household harvest, pounds usable weight	1,100.8	2,530.1	1,179.1
Number of resources used by 50% or more of households	8.0	16.0	15.0
Average number of resources used per households	14.5	22.7	21.5
Average number of resources attempted to harvest per household	11.0	14.0	13.4
Average number of resources harvested per household	10.3	17.2	12.8
Average number of resources received per household	6.2	9.5	12.5
Average number of resources given away per household	6.3	11.6	9.0
Percentage of total harvest taken by top 25%	45.7%	36.9%	48.3%
Percentage of households taking 70% of harvest	34.4%	36.4%	27.9%
Per capita harvest of lowest 50% of households	72.0	369.6	65.7
Percentage of total harvest taken by lowest 50% of households	24.1%	29.5%	21.7%
Average number of resources used by lowest 50% of households	12.2	21.3	17.0
Average number of resources used by top 25% of households	21.0	39.0	33.6

Source ADF&G Division of Subsistence household surveys, 2009.

Note No income information is available for Clark's Point due to a large amount of missing data.

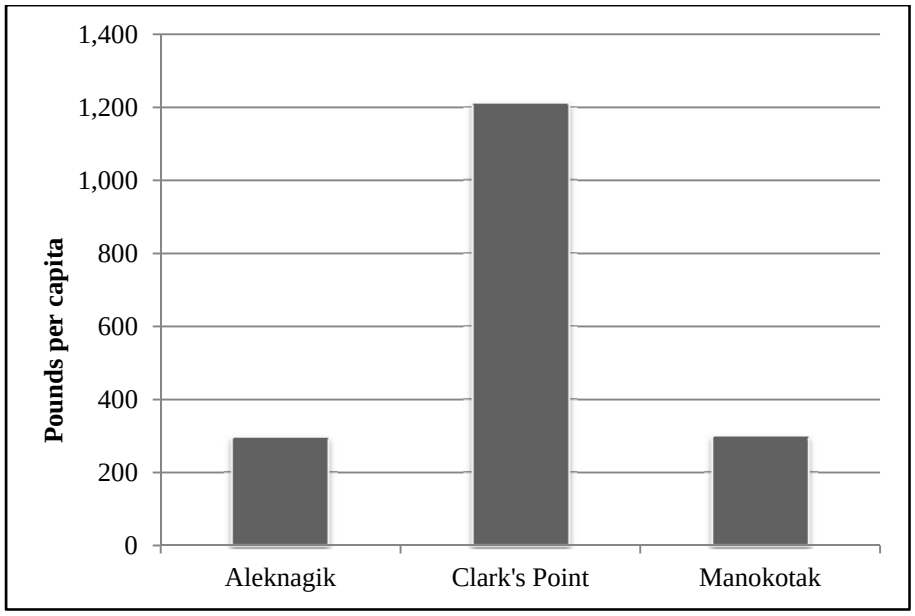

Figure 5-1.–Harvests of wild resources in pounds usable weight per capita, study communities, 2008.

The most important resource in all 3 study communities was salmon (Figure 5-2). As a total of all resources, salmon comprised an estimated 53% of the harvest in Clark's Point, 48% in Aleknagik, and 45% in Manokotak. The second most important resource for all 3 communities was large land mammals, particularly moose, which composed 21% of the harvest in Aleknagik, 17% of the harvest in Clark's Point, and 15% of the harvest in Manokotak. In Manokotak, there was also a high harvest of marine mammals (15% of the overall harvest). Vegetation, mostly berries, was also important in all 3 communities. In terms of weight, berries are light; furthermore, the harvest of berries is time consuming, so an important finding is that in Aleknagik 13% of the harvest was berries, 12% in Manokotak, and 11% in Clark's Point (Figure 5-2).

Total Harvest Levels in 2008 and Comparisons with Other Years

Every surveyed household in all 3 communities used wild foods in 2008 (Table 1-14). Most residents engaged in subsistence activities (Figure 5-3): 48% hunted (an estimated 218 people), 71% fished (377 people), 24% trapped (97 people), 82% gathered wild plants, particularly berries (455 people), 90% were involved in at least one harvest activity (503 people), and 78% processed subsistence resources (427 people). Although the bulk of the wild resource harvest was salmon, followed by large land mammals and other fish, almost all households used wild plants, and many used birds, bird eggs, and small game. Sharing of marine mammals was also important in all 3 communities. Based on respondent comments, sharing of subsistence resources binds families together in networks of mutual support and obligation. In the case of Clark's Point, there is a distribution of harvests across the region. Furthermore, subsistence activities and uses create a context in which respondents share traditional knowledge about harvest locations, fish and wildlife populations and behavior, and respectful relationships with the natural world. In short, survey results show that subsistence hunting, fishing, and gathering were vital components of the economies and way of life in these communities in 2008, as they had been for centuries.

Figure 5-4 shows per capita harvest estimates from 1973 to the present study of 2008. Except for the harvest for Clark's Point in 2008, the harvest in all 3 communities has only slightly varied over time. Harvest surveys occurred in all 3 communities for study year 1973, in Manokotak for study year 1985, in Aleknagik and Clark's Point for study year 1989, in Manokotak for study year 1999, and in all 3 communities for study year 2008. Clark's Point survey results show the largest increase in subsistence harvests: from a harvest of 335 lb per capita in 1973 to a harvest of 1,210 lb per capita in 2008. As noted

in Chapter 2, the reason for the high harvest was likely "super harvesters" who shared most of the harvest with other residents in the community, as well as with households in neighboring communities, especially Dillingham. Manokotak harvests have declined slowly over time, from a high of 406 lb per capita in 1973 to 298 lb per capita in 2008. Aleknagik harvests have varied over time, with a high of 379 lb per capita in 1989 (Figure 5-4).

A data point to consider when reviewing comparative harvests in these communities over time is that the 1973 study did not capture the harvests of plants and berries. During the 2008 study, findings revealed that in all 3 communities, plants and berries are an important component of the harvest, with a per capita harvest of 39 lb in Aleknagik, 132 lb per capita in Clark's Point, and 35 lb per capita in Manokotak.

Interviewed households' assessments of trends in total subsistence harvests over the last 5 years were mixed (Figure 5-4). A majority of respondent households in each study community, and 68% in the combined 3 communities, said that their overall subsistence harvests and uses had stayed about the same. In total, 19% of the interviewed households said their subsistence uses and harvests were reduced in 2008. The rate of reduction ranged from 15% in Manokotak, 19% in Aleknagik, to 36% in Clark's Point. The most common reason given for less subsistence uses was personal reasons (29%) as shown in Figure 5-5. Some reasons given by respondents include work interfering with the ability to spend time harvesting wild resources, lack of access to or inoperable transportation, high fuel costs, as well as poor health were all reasons that residents were unable to harvest resources. Other outside effects were also listed as a primary reason (25%). Animal population changes were a common response as well for lower harvests (21%). Respondents said that the main characteristic of the population change was the absence of caribou in the area in recent years. Weather was also a factor, and was especially an issue in spring, when snow is too thin for snowmachine transportation but too wet for all-terrain vehicle (ATV, four-wheeler) transportation. In some cases, residents noted that weather was not conducive to travel during openings for moose and caribou, and, coupled with the absence of moose and caribou, this meant lower participation in hunting because residents did not want to spend money on fuel if the chances of success were not good.

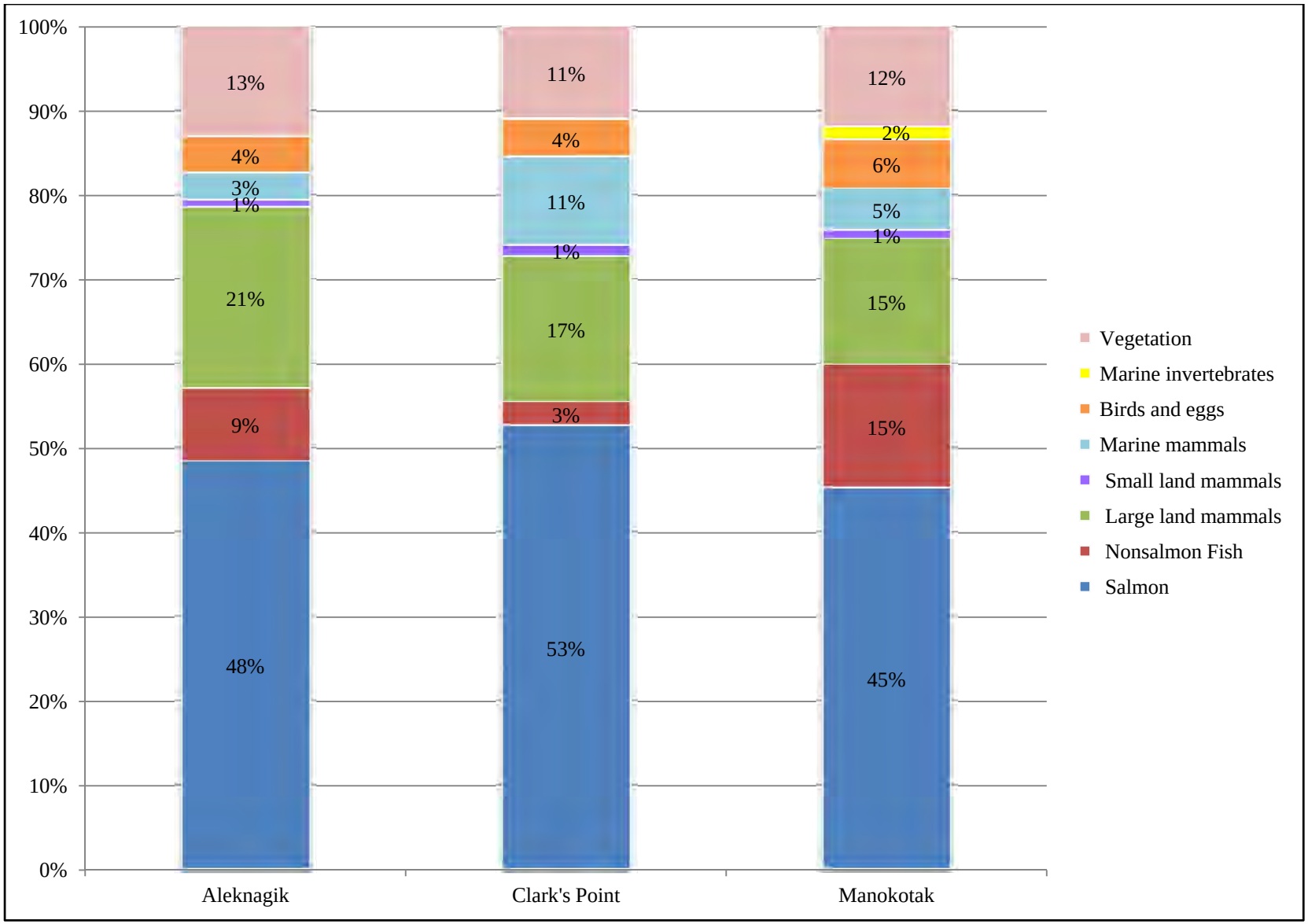

Figure 5-2.–Community harvest composition by resource category, 2008.

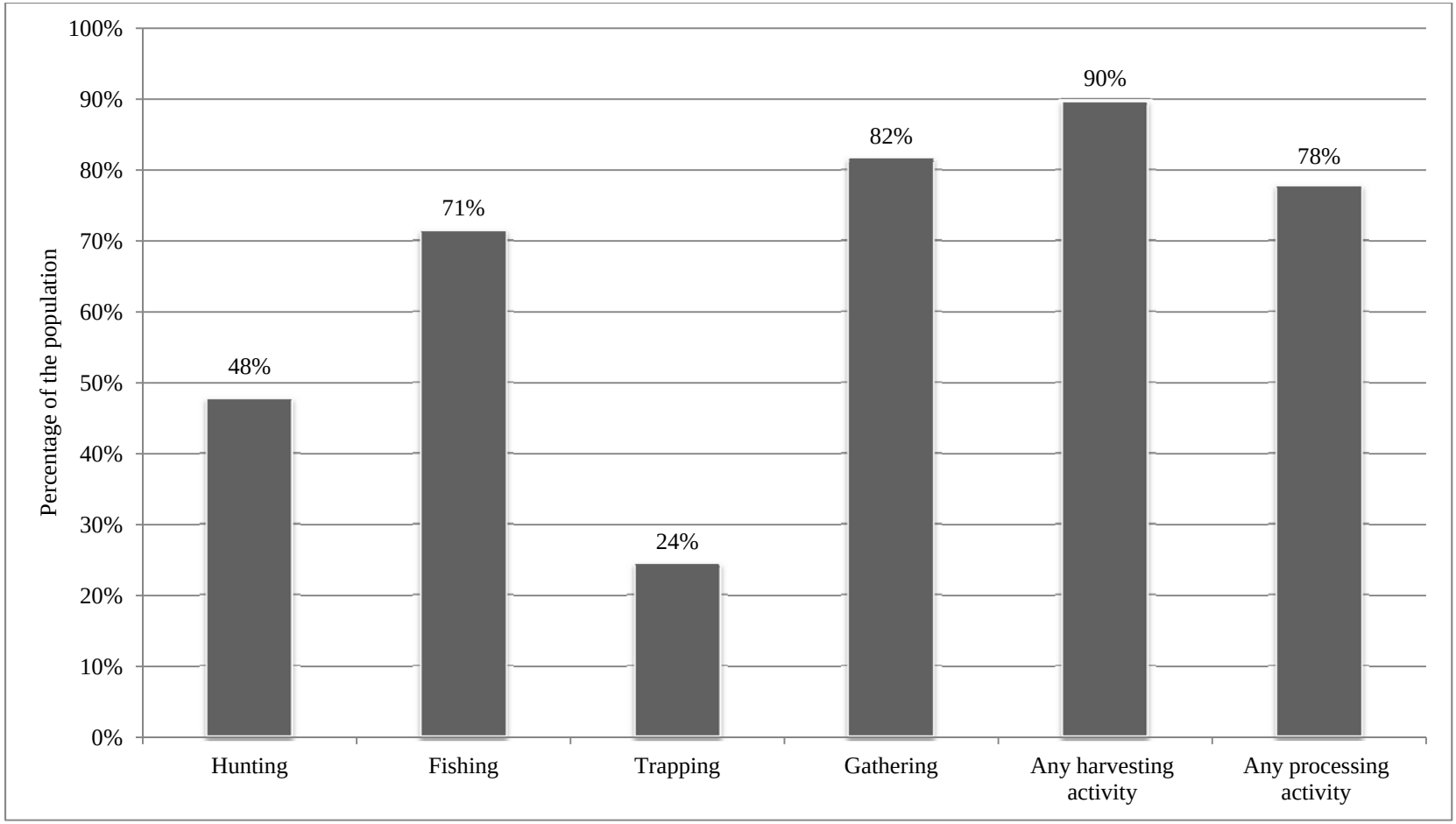

Figure 5-3.–Individual involvement in subsistence activities, all study communities combined, 2008.

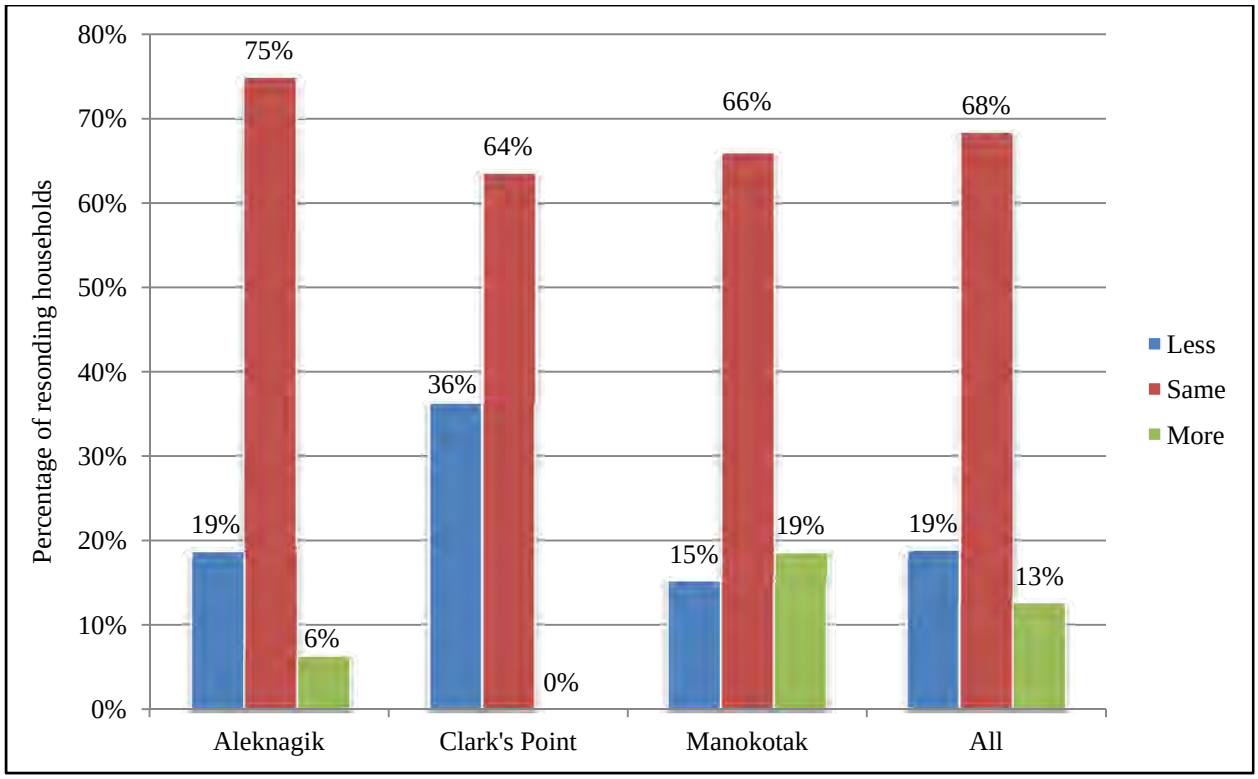

Figure 5-4.–Households' assessments of overall subsistence harvests and uses in 2008 compared to other recent years (about the last 5 years).

In spite of the limitations represented by the absence of long-term comprehensive data for these communities, trends in harvest levels could be analyzed by examining the proportionate uses of 2 key resources, salmon and moose, in overall harvests (Figure 5-6). The combined total of these 2 resources in 2008 harvests made up at least 57% (Manokotak) and as much as 67% of the total (Aleknagik; Figure 5-6). Therefore, because of the high contribution of these resources toward the overall total harvest of wild resources, changes to harvests of these 2 key resources would have an effect on overall subsistence patterns. Moose and salmon are also more important as subsistence resources due to the absence of caribou in the area, as noted by local residents during interviews.

Salmon

As noted in chapters 2 through 4, salmon ranked first in the total subsistence harvests of the study communities in 2008.[11] As estimated in usable pounds, salmon comprised 48% of the subsistence harvest in Aleknagik, 53% in Clark's Point, and 45% in Manokotak (figures 2-2, 3-2, and 4-2). Most (55%) interviewed households said their harvests and uses of salmon were about the same in 2008 as in other recent years (the last 5 years or so; Figure 5-7). An even number of households in Clark's Point said their harvests were about the same or less (45%) in 2008, while one-half of households in Manokotak said their harvests were about the same, and 69% of households in Aleknagik said their harvests were about the same (Figure 5-7). Of all households that reported lower harvests and uses of salmon in 2008 compared to other recent years, 40% cited personal reasons as the cause; changes in salmon populations ranked second (25%); and less sharing of salmon ranked third (21%), while weather was a factor for some residents (11%; Figure 5-8).

11. For a discussion in trends in the Nushagak and Kvichak districts subsistence salmon fishery, see Fall et al. 2009.

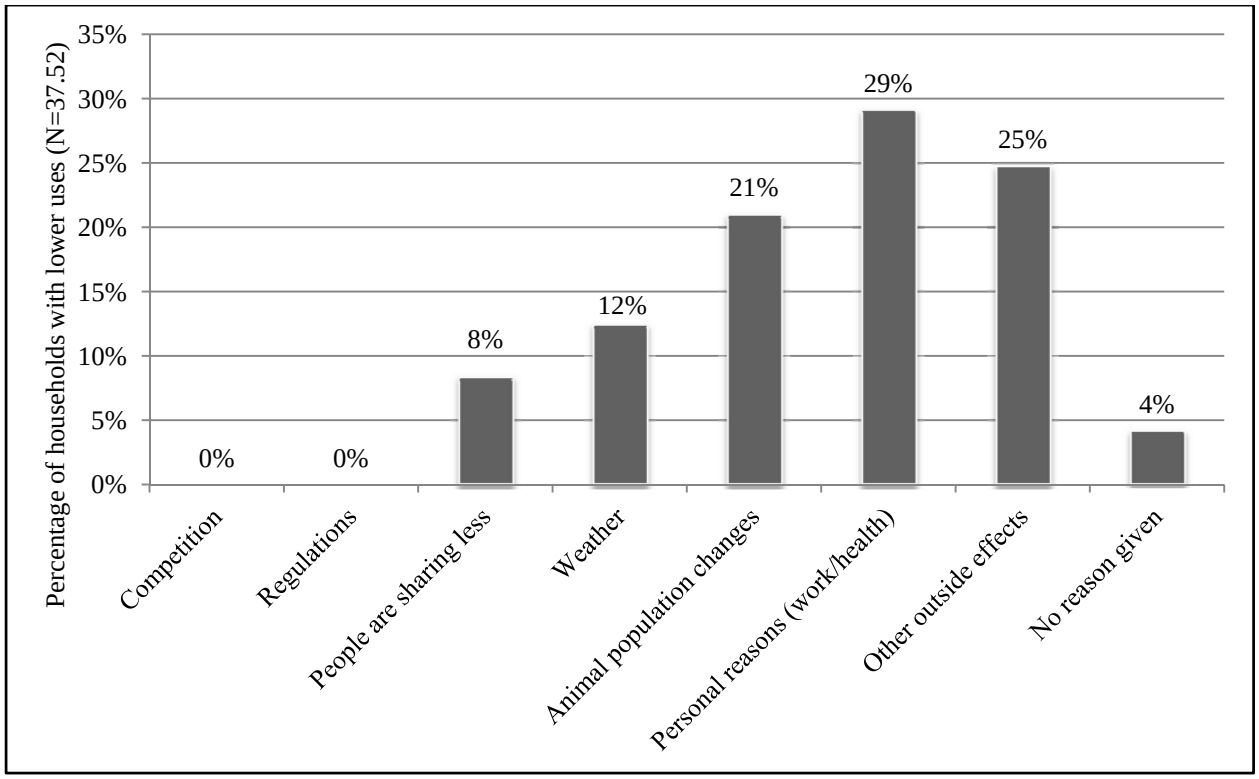

Figure 5-5.–Reasons for lower overall subsistence harvests and uses, all study communities, 2008.

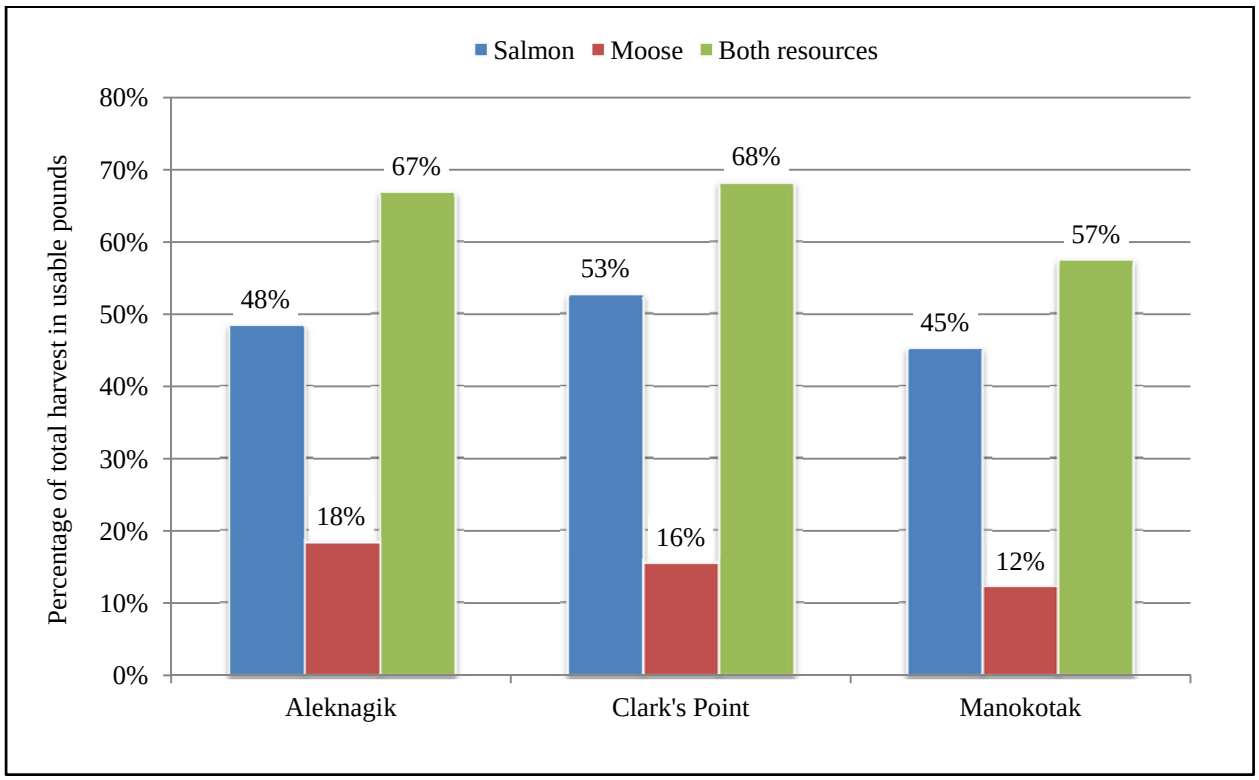

Figure 5-6.–Percentage of total harvest composed of salmon, moose, and caribou, study communities, 2008.

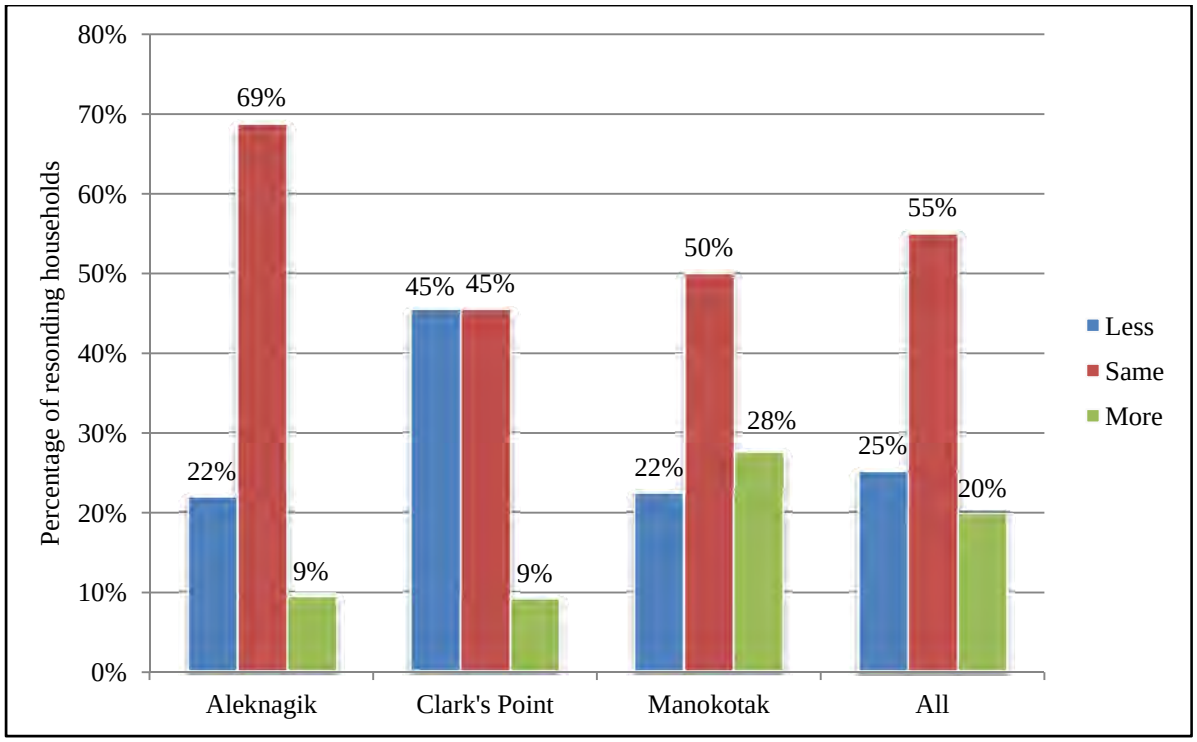

Figure 5-7.–Households' assessment of subsistence harvests and uses of salmon in 2008 compared to other recent years (about the last 5 years).

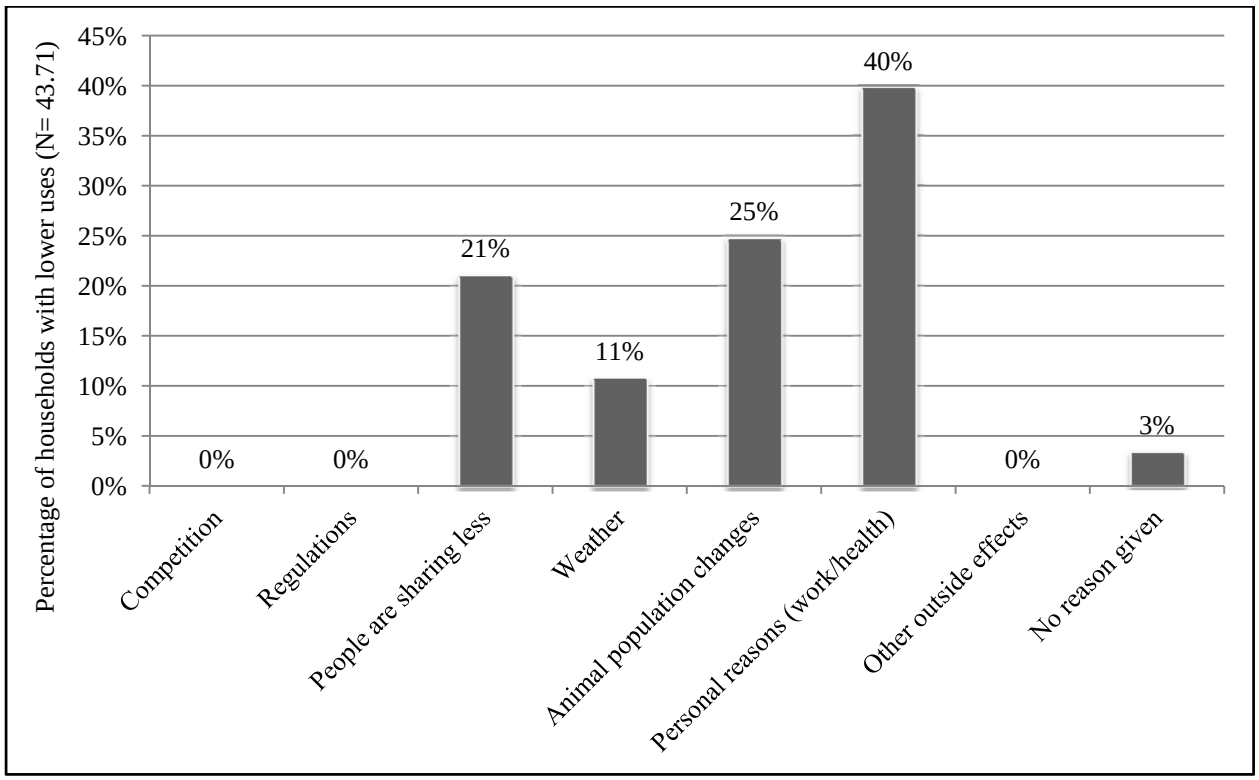

Figure 5-8.–Reasons for lower harvests or uses of salmon, all study communities combined, 2008.

Data from ADF&G Division of Subsistence household surveys suggest that there has been an increase in the harvest of salmon over time since the 1970s (Figure 5-9). Clark's Point saw the most dramatic increase in salmon harvests, from a low of 73 lb per capita in 1973 to 637 lb per capita in 2008. However, during follow-up to field work at the community review meeting, researchers contacted households to ask about the high harvest of salmon in Clark's Point and learned that, along with other resources, such as marine mammals, salmon are widely shared outside the community. Aleknagik saw a 57% increase in salmon harvests, from 91 lb per capita in 1973 to 143 lb per capita in 2008. Manokotak saw a slight decline over time, from 151 lb per capita in 1973 to 135 in 2008.

Estimates of subsistence harvests of salmon based on ADF&G subsistence permit returns, available since 1987, provide a longer annual timeline for discerning trends in the subsistence salmon harvests in each study community. Table 5-2 and figures 5-10, 5-11, and 5-12 report estimated subsistence salmon harvests by permit holders who were residents of one of the 3 communities from 1987 to 2008, in addition to averages for each decade and for the entire 20 years of the permit fishery.

Subsistence salmon harvests for Aleknagik, Clark's Point, and Manokotak, based on permit returns, generally display a downward trend, except in the case of Clark's Point, where the harvest was generally flat over the 24 year period (Table 5-2). For example, the long term (20 year) average annual harvest for Aleknagik was 53 lb of salmon per capita (Figure 5-10). Annual harvests of salmon averaged 92 lb per capita in the late 1980s, 51 lb per capita in the 1990s and 41 lb per capita in the 2000s (Figure 5-10). For Clark's Point, the long term average harvest was 69 lb of salmon per capita since 1987, with an average of 46 lb per capita in the late 1980s, an increase to 77 lb per capita for the 1990s, and dropping to 61 lb per capita in the 2000s. However, the overall harvest of 69 lb per capita is a fairly flat trend over time (Figure 5-11). In contrast to Clark's Point, subsistence salmon harvests in Manokotak have greatly decreased over time. The long term average annual harvest was 50 lb per capita of salmon, including an annual average for the late 1980s of 94 lb per capita, decreasing to 50 lb per capita in the 1990s, and finally to an average of 32 lb per capita in the 2000s (Figure 5-12).

Large Land Mammals

In addition to salmon, moose were the other major contributor to the wild food harvest of all 3 study communities. Moose contributed 12% to the overall harvest in Manokotak, 16% in Clark's Point, and 18% in Aleknagik. Moose were the major large land mammal species harvested, since caribou were inaccessible to local residents. In Aleknagik, an estimated 18 moose were harvested in 2008; there were 13 in Clark's Point, and 26 in Manokotak. Manokotak was the one community that was able to harvest a fair number of caribou as well, and in 2008 they harvested an estimated 21 caribou, while Clark's Point harvested 2 caribou and Aleknagik did not report any caribou harvests (Table 5-3). Harvested moose were widely shared and 91% of Aleknagik households used moose in 2008, 100% in Clark's Point, and 87% in Manokotak (tables 2-3, 3-2 and 4-3).

Over time, the harvest of both moose and caribou has varied in the 3 study communities. Tables 5-4 and 5-6 lists the per capita harvest from baseline surveys in 1973, 1985, 1989, 1999, and the current 2008 survey, as well as from a survey documenting the harvest and uses of large land mammals for study year 2001. Manokotak has had the most surveys over time, and these data demonstrate the extent that hunters relied on moose, and that caribou has been a resource that has varied in terms of abundance over time (figures 5-13 and 5-14). In the past, residents were much more focused on caribou, but have since shifted to moose. The current literature does not give precontact evidence of the use of moose on the northern Alaska Peninsula, but does give evidence that they were present by the early 1900s. The moose population on the northern Alaska Peninsula increased through the late 1970s as moose expanded into the area, then, as the productivity of the habitat declined, the moose population leveled off and also declined (Morris 1985:86). Currently, there are approximately 0.5 moose per square mile in GMU 9 (Lem Butler,

Wildlife Biologist, ADF&G, Palmer, personal communication, 2010). According to local residents, especially those from Aleknagik, although hunting did occur for caribou in 2008, the Mulchatna herd had moved out of the area, and fuel was too expensive to travel long distances to hunt a resource that did not provide many pounds of meat. Moose were more plentiful, and residents remarked that it was more efficient to hunt moose in the nearby area, either by boat, ATV, or snowmachine.

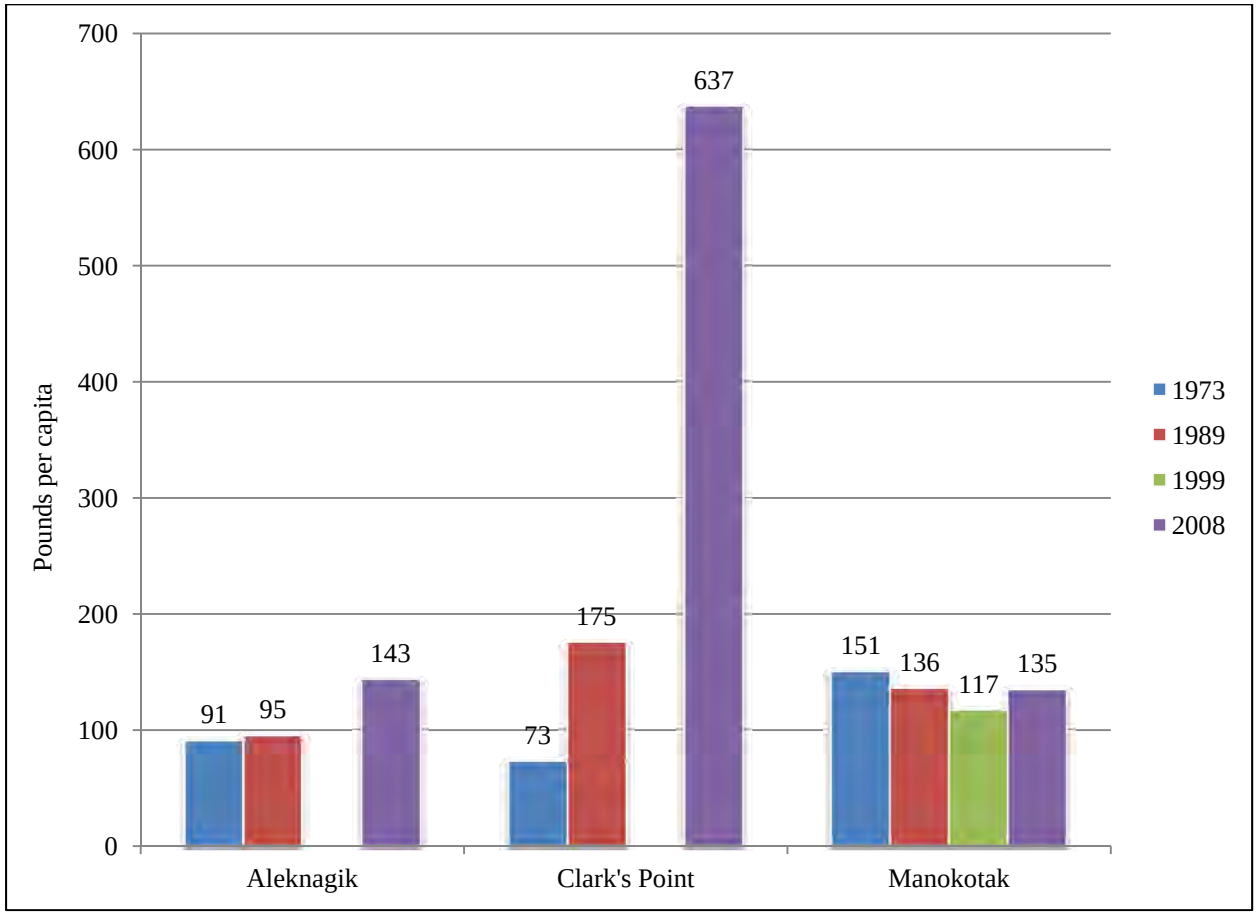

Figure 5-9.–Harvests of salmon, per pounds usable weight per capita, study communities, all study years.

Table 5-2.–Estimated per capita harvests of salmon, 1987–2008.

	Aleknagik			Clark's Point			Manokotak		
Year	Harvest	Population	Fish per person	Harvest	Population	Fish per person	Harvest	Population	Fish per person
1987	3,687	154	23.9	917	79	11.6	5,851	294	19.9
1988	2,577	154	16.7	323	79	4.1	5,686	294	19.3
1989	2,848	154	18.5	1,086	79	13.7	6,228	294	21.2
1990	2,277	185	12.3	623	60	10.4	6,606	385	17.2
1991	3,043	185	16.4	2,085	60	34.8	5,873	385	15.3
1992	2,184	185	11.8	917	60	15.3	4,317	385	11.2
1993	2,593	185	14.0	1,108	60	18.5	3,048	385	7.9
1994	2,289	185	12.4	389	60	6.5	3,491	385	9.1
1995	1,468	185	7.9	748	60	12.5	2,543	385	6.6
1996	1,733	185	9.4	784	60	13.1	3,833	385	10.0
1997	1,970	185	10.6	1,101	60	18.4	4,027	385	10.5
1998	1,112	185	6.0	900	60	15.0	4,069	385	10.6
1999	1,532	185	8.3	1,218	60	20.3	3,413	385	8.9
2000	1,111	221	5.0	1,147	75	15.3	3,173	399	8.0
2001	2,129	221	9.6	1,407	75	18.8	3,735	399	9.4
2002	1,517	221	6.9	963	75	12.8	3,254	399	8.2
2003	2,044	221	9.2	934	75	12.5	4,214	399	10.6
2004	2,206	221	10.0	1,079	75	14.4	2,052	399	5.1
2005	1,795	221	8.1	1,117	75	14.9	1,576	399	3.9
2006	2,047	221	9.3	684	75	9.1	1,654	399	4.1
2007	1,407	221	6.4	547	75	7.3	2,444	399	6.1
2008	3,309	221	15.0	2,016	75	26.9	5,429	399	13.6
Average (1987–1989)	3,037	154	19.7	775	79	9.8	5,922	294	20.1
Average (1990–1999)	2,020	185	10.9	987	60	16.5	4,122	385	10.7
Average (2000–2008)	1,952	221	9	1,099	75	15	3,059	399	8
Historical average (1987–2008)	2,131	196	11	1,004	69	15	3,933	378	11

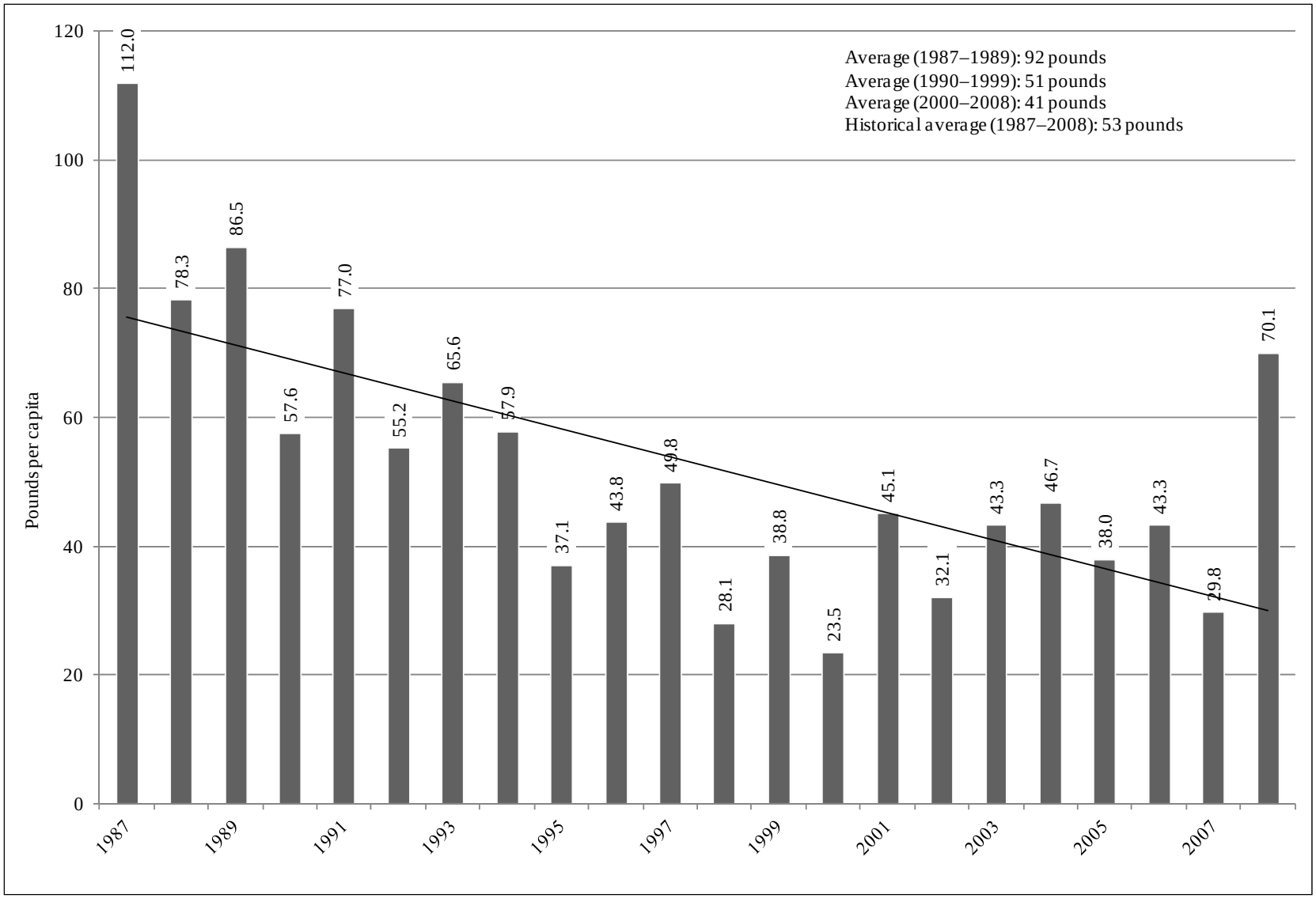

Figure 5-10.–Subsistence sockeye salmon harvests, Aleknagik, pounds usable weight per capita, 1987–2008.

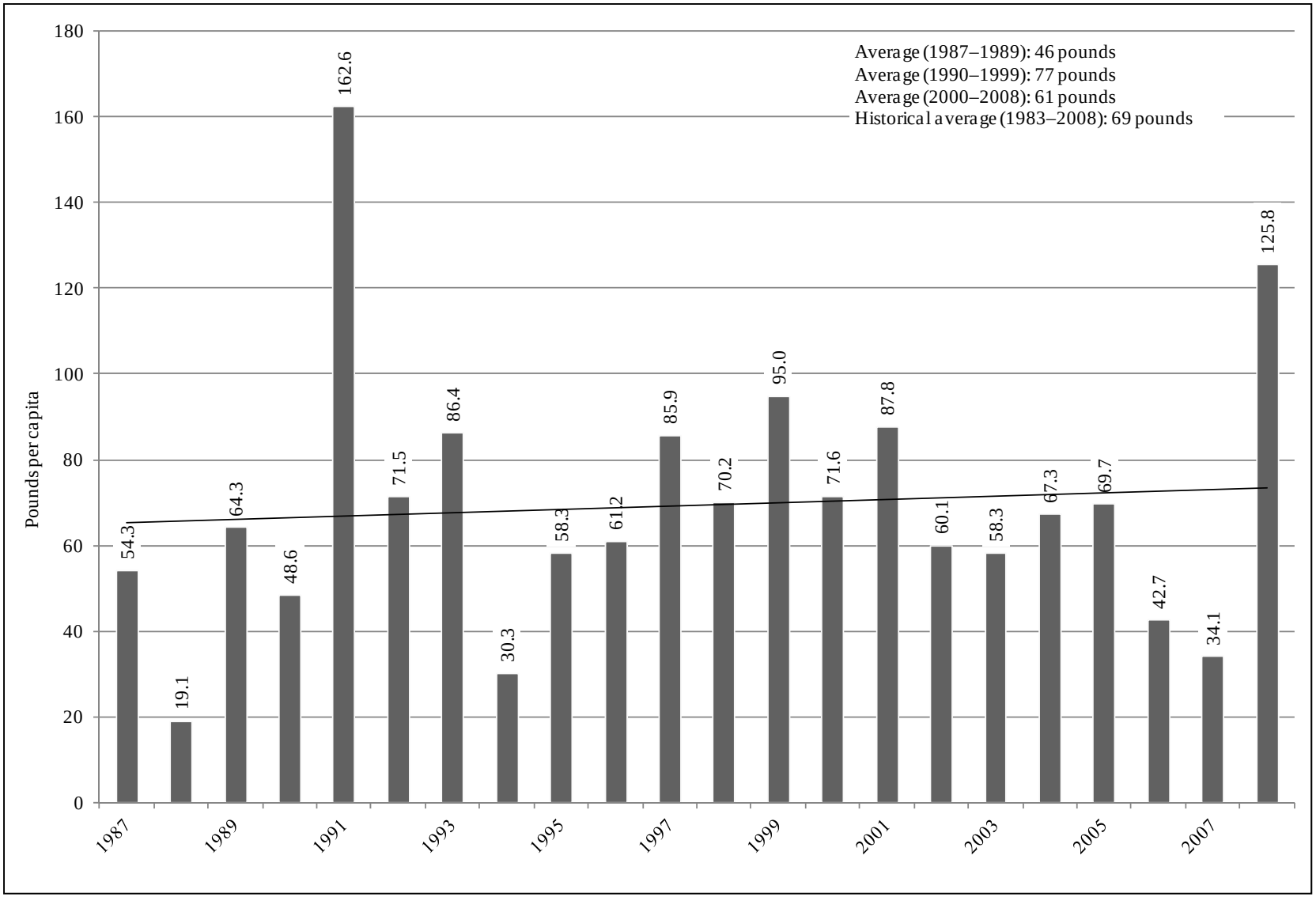

Figure 5-11.–Subsistence sockeye salmon harvests, Clark's Point, pounds usable weight per capita, 1987–2008.

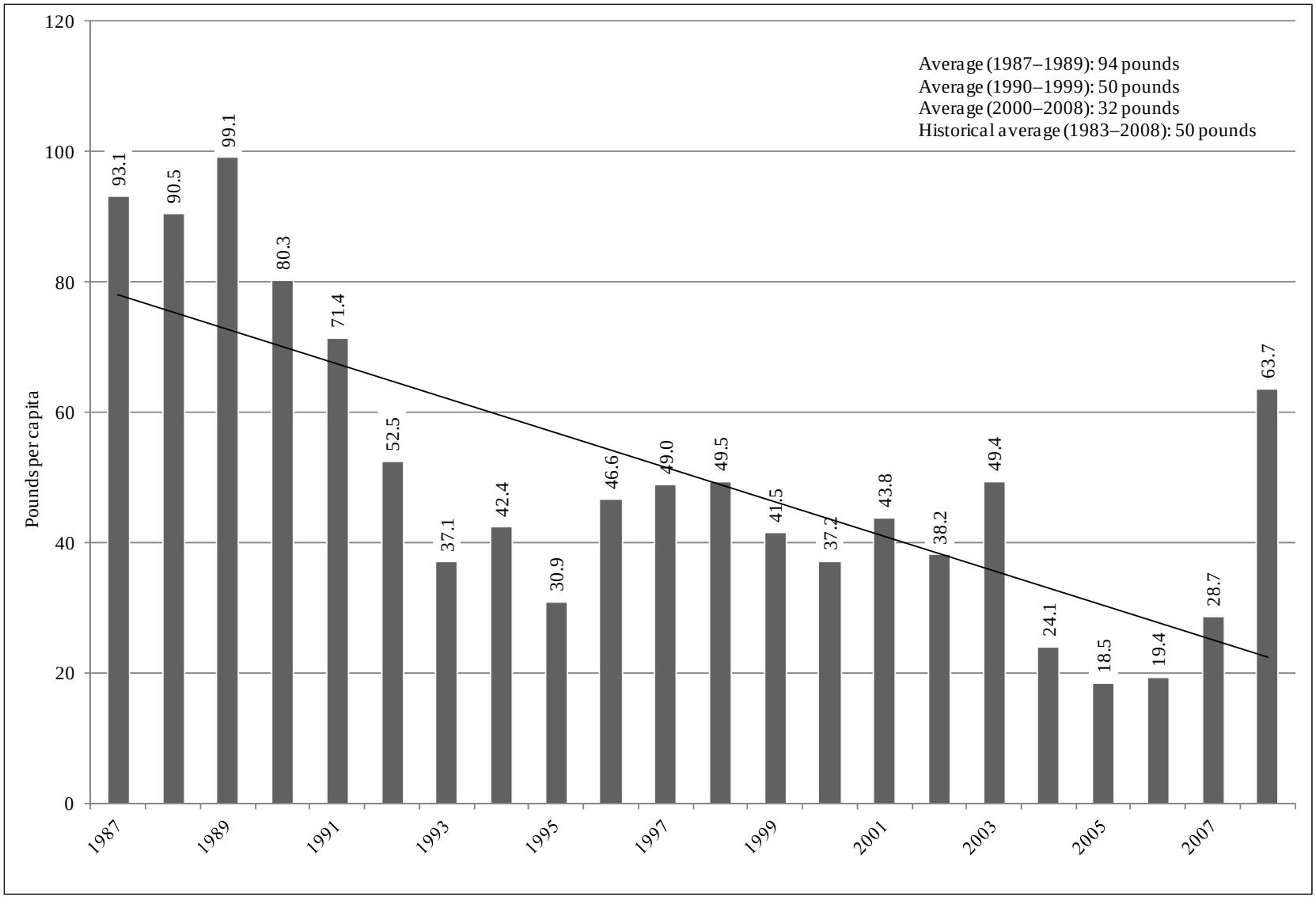

Figure 5-12.–Subsistence sockeye salmon harvests, Manokotak, pounds usable weight per capita, 1987–2008.

Table 5-3.–Estimated harvest of moose, 1973–2008.

	Estimated harvest of moose[a]					
Community	1973	1985	1989	1999	2001	2008
Aleknagik	7	–	24	–	24	18
Clark's Point	5	–	4	–	12	13
Manokotak	17	22	–	47	25	26

a. Blank cells indicate that harvest data were not collected for that year.

Sources ADF&G Community Subsistence Information System (CSIS); Seitz 1990; Coiley-Kenner et al. 2003; Holen et al. 2005; ADF&G Division of Subsistence household surveys, 2009.

Table 5-4.–Estimated harvest of caribou, 1973–2008.

	Estimated harvest of caribou					
Community	1973	1985	1989	1999	2001	2008
Aleknagik	6	–	57	–	48	0
Clark's Point	32	–	18	–	28	2
Manokotak	20	44	–	130	68	21

a. Blank cells indicate that harvest data were not collected for that year.

Sources ADF&G Community Subsistence Information System (CSIS); Seitz 1990; Coiley-Kenner et al. 2003; Holen et al. 2005; ADF&G Division of Subsistence household surveys, 2009.

Table 5-5.–Estimated per capita harvest of moose, 1973–2008.

	Estimated per capita harvest of moose, pounds per person					
Community	1973	1985	1989	1999	2001	2008
Aleknagik	47	–	90	–	82	55
Clark's Point	45	–	38	–	109	188
Manokotak	82	38	–	63	36	36

a. Blank cells indicate that harvest data were not collected for that year.

Sources ADF&G Community Subsistence Information System (CSIS); Seitz 1990; Coiley-Kenner et al. 2003; Holen et al. 2005; ADF&G Division of Subsistence household surveys, 2009.

Table 5-6.–Estimated per capita harvest of caribou, 1973–2008.

	Estimated per capita harvest of caribou, pounds per person					
Community	1973	1985	1989	1999	2001	2008
Aleknagik	11	–	60	–	45	0
Clark's Point	80	–	48	–	71	7
Manokotak	27	21	–	49	27	8

a. Blank cells indicate that harvest data were not collected for that year.

Sources ADF&G Community Subsistence Information System (CSIS); Seitz 1990; Coiley-Kenner et al. 2003; Holen et al. 2005; ADF&G Division of Subsistence household surveys, 2009.

Surveyed households' assessments of recent trends in large land mammal harvests (generally referring to moose and caribou) were mixed (Figure 5-15). For the 3 communities combined, 57% said their harvests and uses were about the same in 2008 as over the last 5 years, while 37% said large land mammal harvests and uses were lower, and 6% reported higher harvests and uses. Most interviewed households in Aleknagik (63%) and Manokotak (62%) reported that their harvests were about the same, while few households in Clark's Point (18%) said they were about the same and 82% reported less use in recent years.

Reasons for a reduction in harvest of large land mammal by residents of the 3 study communities were mixed, but the dominant reason was changes in animal populations (38%) mainly due to the absence of caribou. Personal reasons (25%) were also cited as a primary reason respondents were using fewer large land mammals in 2008, and 17% of respondents said they were using fewer large land mammal resources because people were sharing less (Figure 5-16).

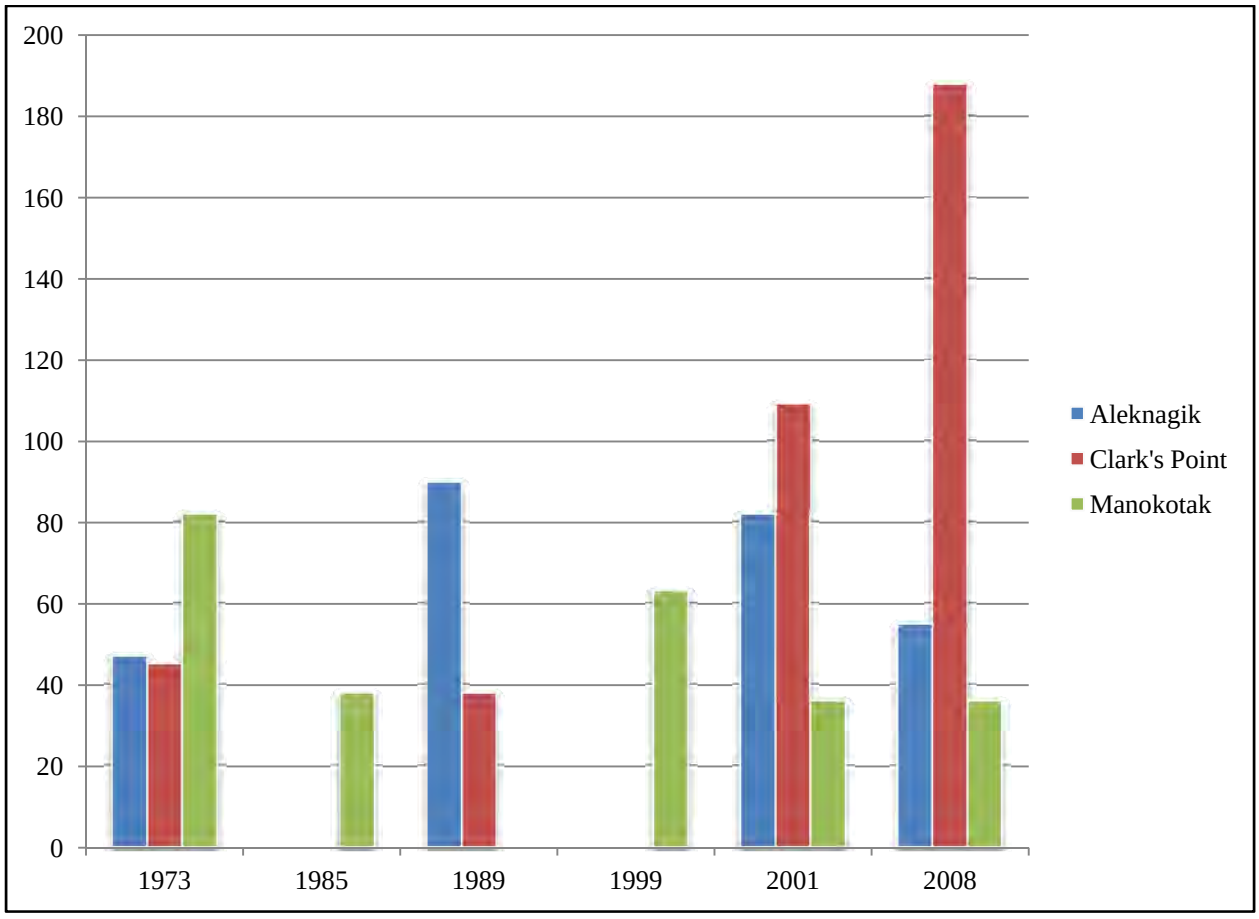

Figure 5-13. Estimated per capita harvest of moose over time, 1973–2008.

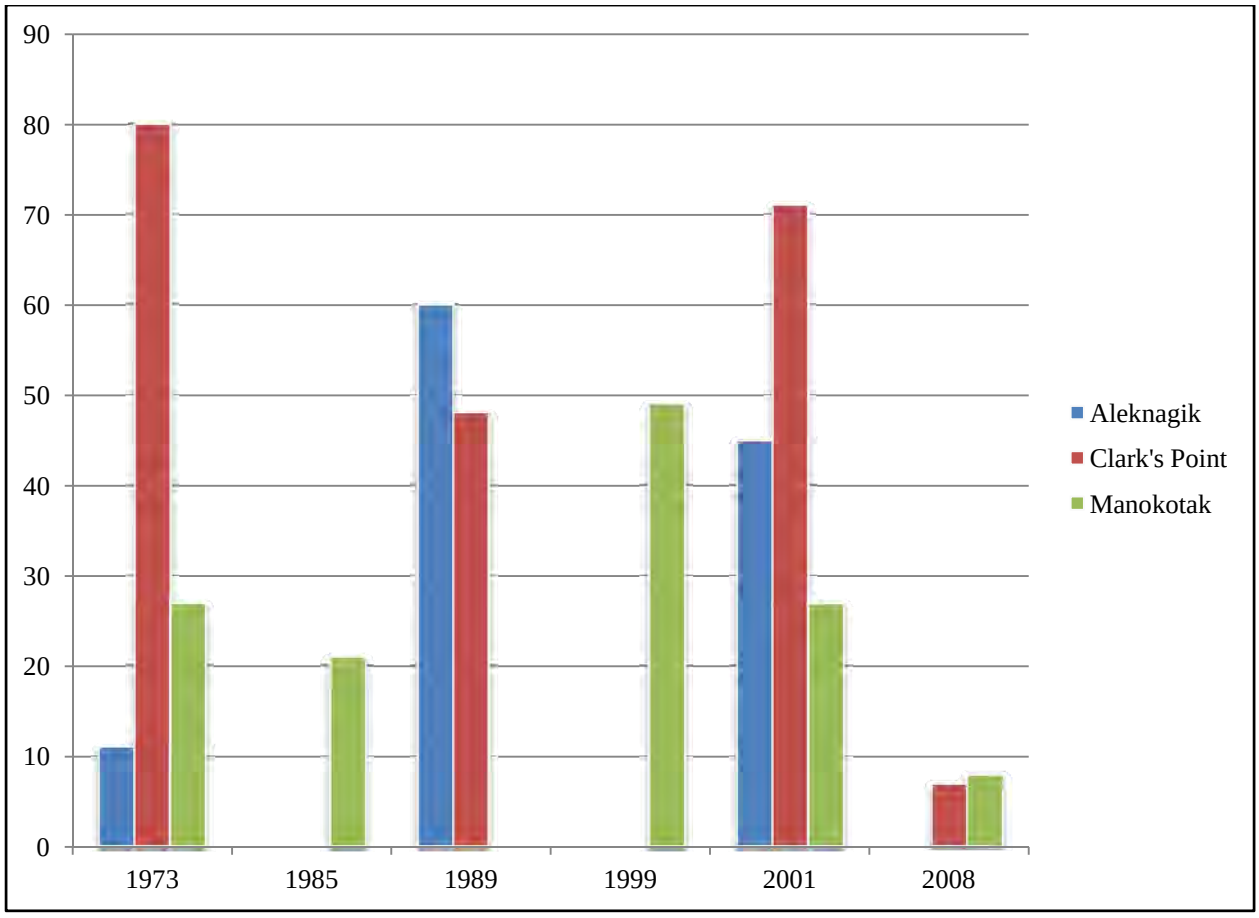

Figure 5-14. Estimated per capita harvest of caribou over time, 1973–2008.

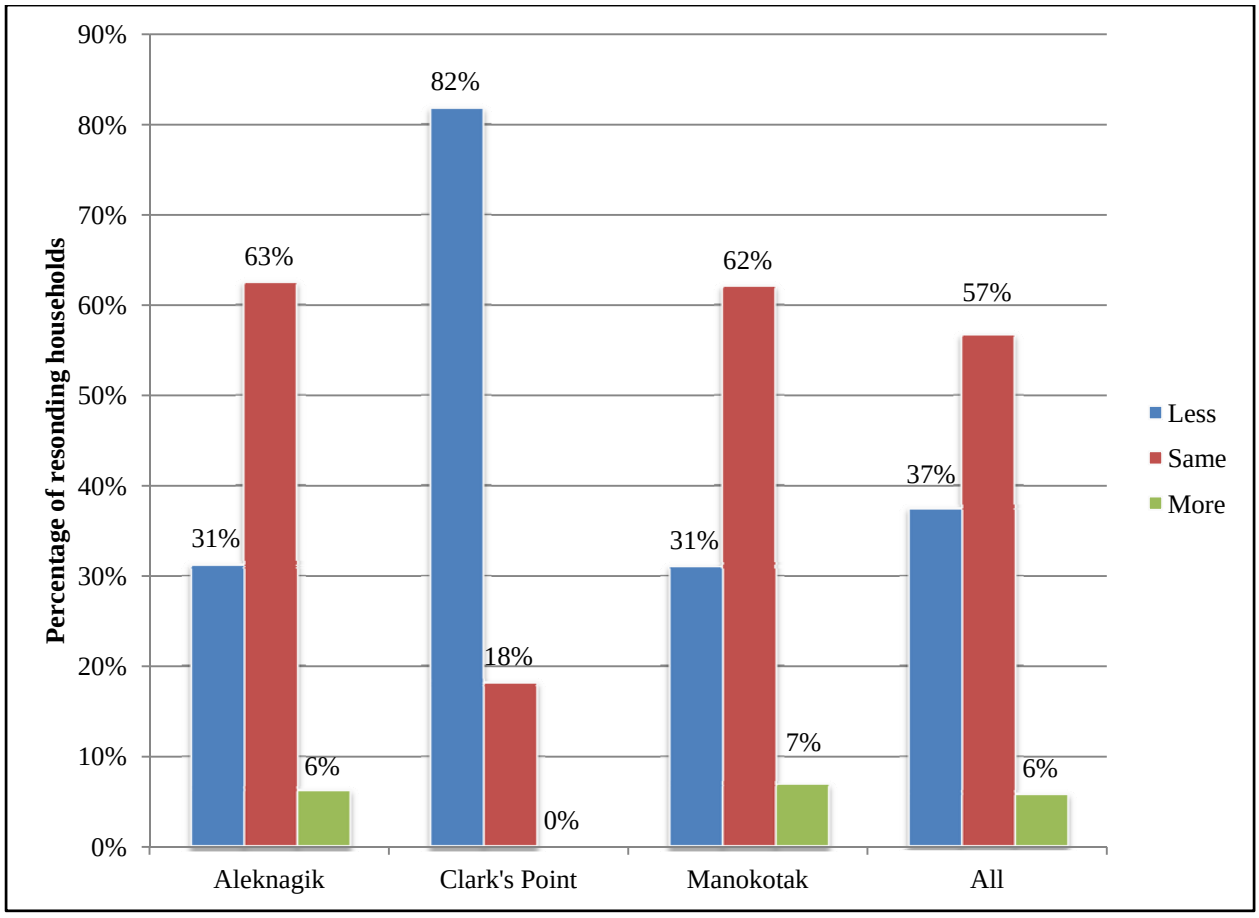

Figure 5-15.–Households' assessments of subsistence harvests and uses of large land mammals in 2008 compared to other recent years (about the last 5 years).

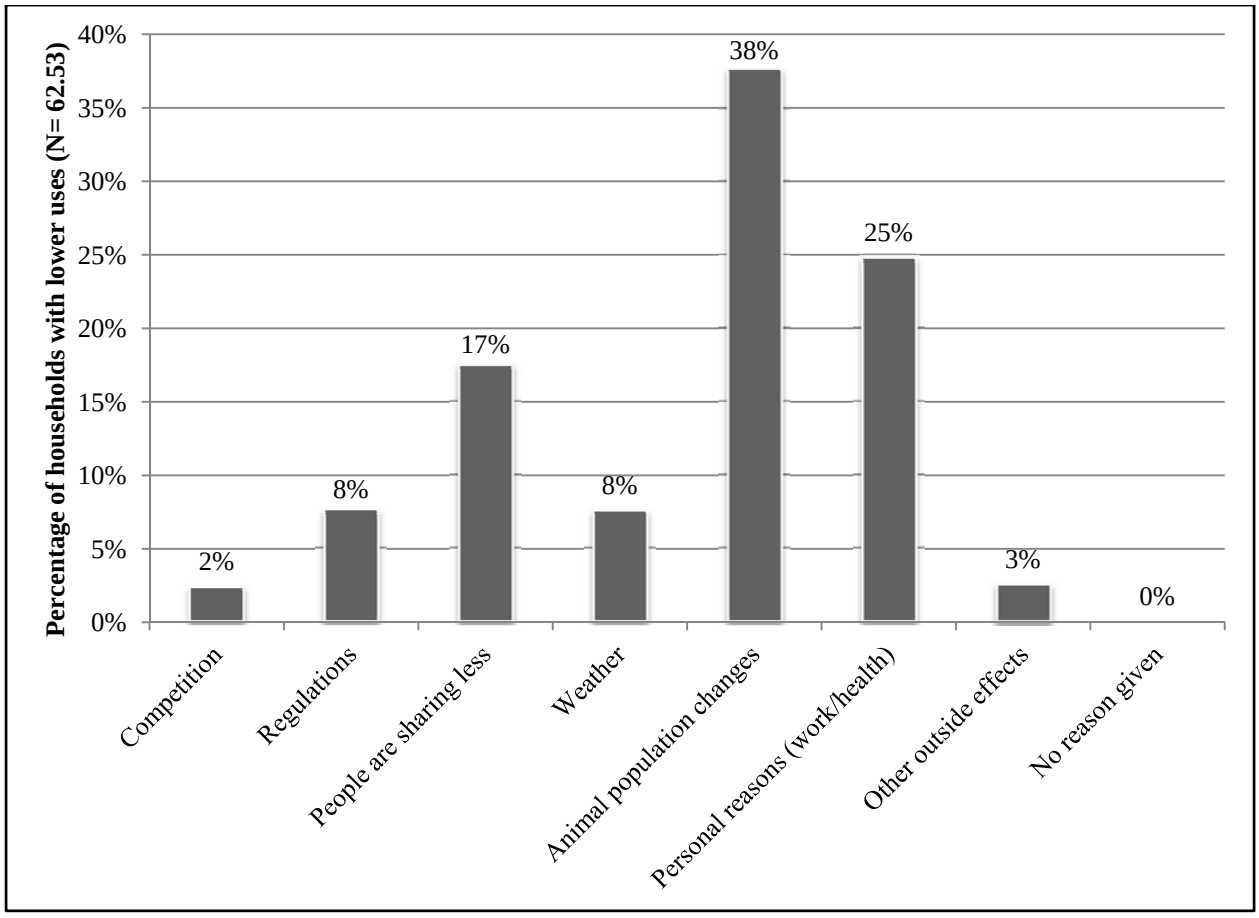

Figure 5-16.–Reasons reported for lower harvests or uses of large land mammals, all study communities combined, 2008.

CONCLUSION

This study has documented the continuing importance of subsistence hunting, fishing, and gathering to the residents in the Bristol Bay communities of Aleknagik, Clark's Point, and Manokotak. In the 2008 study year, virtually every respondent in the 3 communities participated in subsistence activities and used wild resources. Subsistence harvests were large and diverse in 2008, supplying a large portion of each community's food supply. Sockeye salmon, other fish, caribou, moose, and wild plants, especially berries, were the primary subsistence foods as measured in usable pounds, but many households also used small game, birds and their eggs, marine mammals, and clams. In addition to their own harvests, most households also received subsistence resources through extensive sharing networks. Respondents reported sharing their traditional knowledge of wild resources and harvest areas while engaged in subsistence activities.

Many participants in this study also reported that their subsistence uses and harvests have changed over their lifetimes and in the last 5 years. Results of the household surveys, as well as subsistence salmon permit data, suggest a long term trend of continued reliance on subsistence resources over time. Harvests of moose and caribou by residents of the 3 study communities were generally lower in 2008 than in other years for which household survey data were available. Reasons local residents cited for these changes included reduced resource abundance, regulations that have closed hunting in certain areas due to resource abundance, and personal reasons such as health, work, or changing household size. Causes of changes in subsistence harvests and uses are complex and require additional research that must involve collaboration with local communities to be successful.

Given the importance of subsistence resources and observations of changing harvest and use patterns, it is not surprising that respondents surveyed in the study communities expressed concerns about their future opportunities to hunt, fish, and gather wild resources in a manner consistent with their traditions and at levels that meet their harvest goals. As demonstrated by the study findings, subsistence uses of healthy fish and wildlife populations meaningfully link people to their past, are vital to the present health of each community, and encourage optimism about the future. In addition, providing opportunities for subsistence hunting and fishing is a mandate of state and federal law. Local residents desire to continue subsistence activities, not only for themselves, but also for their children and other future generations. The intent of this report has been to provide information that will help the communities work towards their goal of sustaining their way of life.

ACKNOWLEDGMENTS

The work in Aleknagik could not have been possible without the assistance of Tribal Administrator Allen Iluksik. ADF&G staff would also like to thank Russell Dyasuk, Nicholas Tinker, and Gusty Iluksik, Jr. for working on this project.

The work in Clark's Point would not have been possible without the support of Sharon Clark, Tribal Administrator for the Village Council, and the council members. Thanks to her and the people of Clark's Point who made careful consideration of the importance of participating in this project.

In Manokotak, our appreciation goes to all the local researchers who were instrumental in identifying households and who expertly assisted in much of the surveying and mapping. A special thanks goes to Anuska Sears for her determined work and her open invitations to community events and frigid fishing trips. Appreciation is also due to Anecia and Jonah Lomack for accommodations and a warm welcome to Manokotak.

And finally, thanks to the staff of SRB&A. Especially, thanks to Raena Shraer and Stephanie Schively, who have been good partners over many field projects.

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APPENDIX A: SURVEY INSTRUMENT, YEAR 2

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

HH ID: _____ START TIME: _____ INTERVIEWER: _____

ID # OF RESPONDENT BELOW _____ STOP TIME: _____ DATE: _____

CODER: _____

FIELD SUPERVISOR: _____

HOUSEHOLD INFORMATION - WHO WERE MEMBERS OF THIS HOUSEHOLD BETWEEN JANUARY 1 AND DECEMBER 31, 2008 ?

PERSON ID#	M/F	RELATION TO HH HEAD	BIRTHDATE (MM/DD/YR)	RESIDENCE OF PARENT WHEN BORN	TOTAL YEARS IN COMM.	ALASKA NATIVE	IN THE STUDY YEAR, DID YOU FISH/HUNT/PROCESS:							
							LM/MM/BIRDS*		FISH/MI**		FURBEARERS		PLANTS	
							HUNT?	PROCESS?	FISH?	PROCESS?	HUNT/TRAP?	PROCESS?	GATHER?	PROCESS?
HEAD 1	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
1		1												
HEAD 2	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
2		2												
3	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
3														
4	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
4														
5	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
5														
6	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
6														
7	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
7														
8	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
8														

* LM/MM/BIRDS - should include harvesting/attempting to harvest large and small game, birds, and marine mammals.

** FISH/MI - should include harvesting/attempting to harvest marine invertebrates, eg., clam digging, etc.

DEMOGRAPHY (0,1)

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

COMMERCIAL FISHING - SALMON.

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMMERCIAL SALMON FISHING BETWEEN JANUARY 1 AND DECEMBER 31, 2008?

Y N

IF YES: PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS, IF POUNDS THEN EDIBLE WEIGHT):

IF NO: DID YOU INCIDENTALLY HARVEST SALMON WHILE COMMERCIAL FISHING OTHER SPECIES?

	COMMERCIAL FISHED?		REMOVED FOR OWN USE	GAVE AWAY TO CREW	GAVE AWAY TO OTHERS		ID # FROM PAGE 1	
SPECIES	Y/N	INCIDENTAL*	#	#	#	UNITS	PERMIT HOLDER	CREW
CHINOOK SALMON *TARYAQ VAK*	Y N					IND		
113000001						1		
CHUM SALMON *KANGITNEQ*	Y N					IND		
111000001						1		
SOCKEYE SALMON *SAYAK*	Y N					IND		
115000001						1		
PINK SALMON *AMAQAAYAK*	Y N					IND		
114000001						1		
COHO SALMON *QAKIIYAQ*	Y N					IND		
112000001						1		
UNKNOWN SALMON	Y N					IND		
119000001						1		
	Y N					IND		
						1		

* Incidental harvest - Check only if household was not engaged in commercial salmon fishing for that specific resource.

NOTES:

COMMERCIAL FISHING - NON-SALMON FISH

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMMERCIAL FISHING (OTHER THAN SALMON) BETWEEN JANUARY 1 AND DECEMBER 31, 2008?

Y N

IF YES: PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

IF NO: DID YOU INCIDENTALLY HARVEST OTHER FISH WHILE COMMERCIAL FISHING FOR SALMON?

	COMMERCIAL FISHED?		FOR OWN USE	TO CREW	TO OTHERS		ID # FROM PAGE 1	
SPECIES	Y/N	INCIDENTAL	#	#	#	UNITS	PERMIT HOLDER	CREW
HALIBUT	Y N					LBS		
NATERNARPAK								
121800001						2		
HERRING	Y N					GAL		
IQALLUARPAK								
120200001						4		
HERRING SPAWN ON KELP	Y N					GAL		
MELUCUAQ								
120306001						4		
CAPELIN	Y N					IND		
CIKAAQ								
120402001						1		
SEA RUN DOLLIES	Y N					IND		
ANGYUK								
125006021						1		
PACIFIC "GRAY" COD	Y N					IND		
CETURRNAQ								
121001001						1		
SCULPIN (UNKNOWN)	Y N					IND		
KAYUTAK								
123099001						1		
STARRY FLOUNDER	Y N					IND		
NATERNAQ								
121406001						1		
SALMON SHARK	Y N					IND		
123204001						1		
YELLOWFIN SOLE	Y N					IND		
SAGIK								
123606001						1		
	Y N							

NOTES: _____

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

COMMERCIAL FISHING - MARINE INVERTEBRATES

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMMERCIAL FISHING FOR MARINE INVERTEBRATES BETWEEN JANUARY 1 AND DECEMBER 31, 2008?

Y N

IF YES: PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD BE EDIBLE WEIGHT):

IF NO: DID YOU INCIDENTALLY HARVEST MARINE INVERTEBRATES WHILE COMMERCIAL FISHING FOR OTHER SPECIES?

	COMMERCIAL FISHED?		FOR OWN USE	TO CREW	TO OTHERS		SHELLS ON?	ID # FROM PAGE 1	
SPECIES	Y/N	INCIDENTAL	#	#	#	UNITS	Y/N	PERMIT HOLDER	CREW
RAZOR CLAMS *ALIRUAQ*	Y N					GAL	Y N		
500612001						4			
PACIFIC LITTLENECK CLAMS (STEAMERS)	Y N					GAL	Y N		
500608001						4			
DUNGENESS CRAB *PUPSULEK*	Y N					IND	Y N		
501004001						1			
KING CRAB *PUPSULEGPAK*	Y N					IND	Y N		
501008991						1			
TANNER CRAB *PUPSULEK*	Y N					IND	Y N		
501012991						1			
OCTOPUS *AMIKUQ*	Y N					IND	Y N		
502200001						1			
SHRIMP *CUNGARALUKVAK*	Y N					LBS	Y N		
503400001						2			
SCALLOPS	Y N					LBS	Y N		
502699001						2			
	Y N						Y N		

NOTES:

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

NON-COMMERCIAL FISHING: SALMON.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE SALMON BETWEEN JANUARY 1 AND DECEMBER 31, 2008?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE

(UNITS SHOULD INDICATE INDIVIDUALS UNLESS NOTED OTHERWISE. POUNDS SHOULD BE EDIBLE WEIGHT):

			NUMBER HARVESTED BY:							
	USED?	TRIED TO HARVEST	SET NET	SEINE	ROD & REEL	OTHER GEAR			RECEIVED	GAVE AWAY
SPECIES	Y/N	Y/N	#	#	#	TYPE	#	UNITS	Y/N	Y/N
CHINOOK (KING) SALMON *TARYAQVAK*	Y N	Y N						IND	Y N	Y N
113000000								1		
SOCKEYE (RED) SALMON *SAYAK*	Y N	Y N						IND	Y N	Y N
115000000								1		
CHUM (DOG) SALMON *KANGITNEQ*	Y N	Y N						IND	Y N	Y N
111000000								1		
PINK SALMON *AMAQAAYAK*	Y N	Y N						IND	Y N	Y N
114000000								1		
COHO (SILVER) SALMON *QAKIIYAQ*	Y N	Y N						IND	Y N	Y N
112000000								1		
SPAWNING REDS *SAYALLEQ*	Y N	Y N						IND	Y N	Y N
117050000								1		
UNKNOWN SALMON	Y N	Y N						IND	Y N	Y N
119000000								1		
	Y N	Y N						IND	Y N	Y N
								1		

* 'ROD & REEL' INCLUDES TROLLING IN OPEN WATER

Was your household's harvest and use of salmon typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

NON-COMMERCIAL FISHING: NON-SALMON FINFISH.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE FISH OTHER THAN SALMON BETWEEN JANUARY 1 AND DECEMBER 31, 2008?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS UNLESS NOTED OTHERWISE. POUNDS SHOULD BE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	ROD & REEL #	DIP NET #	HAND LINE* #	SET NET #	ICE FISHING #	SEINE #	OTHER GEAR TYPE	OTHER GEAR #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N
SMELT *IQALLUAQ*	Y N	Y N									GAL	Y N	Y N
120499002											4		
HERRING *IQALLUARPAK*	Y N	Y N									GAL	Y N	Y N
120200002											4		
HERRING SAC ROE *MELUK*	Y N	Y N									GAL	Y N	Y N
120304002											4		
HERRING SPAWN-ON-KELP *MELUCUAQ*	Y N	Y N									GAL	Y N	Y N
120306002											4		
CAPELIN *CIKAAQ*	Y N	Y N									IND	Y N	Y N
120402002											1		
ROUND WHITEFISH "CANDLEFISH" *CINGIKEGGLIQ*	Y N	Y N									IND	Y N	Y N
126412002											1		
HUMPBACK WHITEFISH *URARUQ*	Y N	Y N									IND	Y N	Y N
126408002											1		
LEAST CISCO *CAVIRUTNNAQ*	Y N	Y N									IND	Y N	Y N
126406062											1		
PIKE *CUUKVAK*	Y N	Y N									IND	Y N	Y N
125400002											1		
GRAYLING *NAKRULLUGPAK*	Y N	Y N									IND	Y N	Y N
125200002											1		
RAINBOW TROUT *TALAARIQ*	Y N	Y N									IND	Y N	Y N
126204002											1		

LAKE TROUT *CIKIGNAQ* 125010002	Y N	Y N									IND 1	Y N	Y N
TOGIAK TROUT *ANERRLUAQ* 125006010	Y N	Y N									IND 1	Y N	Y N
TROUT - UNKNOWN 126299002	Y N	Y N									IND 1	Y N	Y N
DOLLY VARDEN *YUGYAQ* 125006012	Y N	Y N									IND 1	Y N	Y N
SEA RUN DOLLIES *ANGYUK* 125006022	Y N	Y N									IND 1	Y N	Y N
BURBOT "LING COD" *ATGIAQ* 124800002	Y N	Y N									IND 1	Y N	Y N
BLACK FISH *CANGIIQ* 124600002	Y N	Y N									IND 1	Y N	Y N
PACIFIC "GRAY" COD *CETURRNAQ* 121004002	Y N	Y N									IND 1	Y N	Y N
PACIFIC TOM COD 121008002	Y N	Y N									IND 1	Y N	Y N
SCULPIN (UNKNOWN) *KAYUTAQ* 123099002	Y N	Y N									IND 1	Y N	Y N
STARRY FLOUNDER *NATERNAQ* 121406002	Y N	Y N									IND 1	Y N	Y N
HALIBUT *NATERNARPAK* 121800002	Y N	Y N									LBS 2	Y N	Y N
YELLOWFIN SOLE *SAGIQ* 123606002	Y N	Y N									IND 1	Y N	Y N
	Y N	Y N										Y N	Y N

* Hand line used in open water.

Was your household's harvest and use of non-salmon fish typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different? _____

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

NON-COMMERCIAL FISHING: MARINE INVERTEBRATES [SHELLFISH].

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE MARINE INVERTEBRATES BETWEEN JANUARY 1 AND DECEMBER 31, 2008?

Y N [ ] IF YES, PLEASE COMPLETE THE FOLLOWING TABLE

(UNITS SHOULD INDICATE INDIVIDUALS UNLESS NOTED OTHERWISE. POUNDS SHOULD BE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	HARVESTED #	HARVESTED UNITS	RECEIVED Y/N	GAVE AWAY Y/N
RAZOR CLAMS *ALIRUAQ*	Y N	Y N		GAL	Y N	Y N
500612002				4		
SOFT SHELL CLAMS	Y N	Y N		GAL	Y N	Y N
500614002				4		
UNKNOWN CLAMS	Y N	Y N		GAL	Y N	Y N
500699002				4		
COCKLES (UNKNOWN) *TAVTAAQ*	Y N	Y N		GAL	Y N	Y N
500899002				4		
BLUE MUSSELS *AMYAK*	Y N	Y N		GAL	Y N	Y N
502002002				4		
SHRIMP *CUNGARALUKVAK*	Y N	Y N		LBS	Y N	Y N
503400002				2		
DUNGENESS CRAB	Y N	Y N		IND	Y N	Y N
501004002				1		
RED KING CRAB *PUPSULEGPAK*	Y N	Y N		IND	Y N	Y N
501008082				1		
TANNER CRAB (UNKNOWN) *PUPSULEK*	Y N	Y N		IND	Y N	Y N
501012992				1		
	Y N	Y N			Y N	Y N

Was your household's harvest and use of marine invertebrates typical of recent years? LESS SAME MORE [ ]

If different (less or more), how and why was it different? _____

_____

LARGE LAND MAMMALS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE LARGE LAND MAMMALS BETWEEN JANUARY 1 AND DECEMBER 31, 2008?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD BE INDIVIDUALS):

	IN 2007 DID MEMBERS OF YOUR HH...		SEX	HARVEST																	
	USED?	HARVEST		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS	FOR FOOD (MEAT/FAT)	FOR FAT ONLY	HIDE ONLY	TOTAL	RECEIVED	AWAY
	(circle)	(circle)		(enter number by sex and month of take)													(ind...)					Y/N	Y/N
CARIBOU *TUNTUQ*	Y N	Y N	M														ind	DO NOT FILL OUT FOR MOOSE AND CARIBOU				Y N	Y N
			F																				
			?																				
																	1						
MOOSE *TUNTUVAK*	Y N	Y N	M														ind					Y N	Y N
			F																				
			?																				
																	1						
BLACK BEAR *TAN'GERLIQ*	Y N	Y N	M														ind					Y N	Y N
			F																				
			?																				
																	1						
BROWN BEAR *TAQUKAQ*	Y N	Y N	M														ind					Y N	Y N
			F																				
			?																				
																	1						
DALL SHEEP *PENAIQ*	Y N	Y N	M														ind					Y N	Y N
			F																				
			?																				
																	1						

Was your household's harvest and use of large land mammals typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different? _____

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

MARINE MAMMALS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE MARINE MAMMALS BETWEEN JANUARY 1 AND DECEMBER 31, 2008?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS ARE INDIVIDUALS. POUNDS SHOULD BE EDIBLE WEIGHT.):

				NUMBER HARVESTED					
	USED*?	TRIED TO HARVEST?	SALVAGE?**	FOR FOOD	FOR HIDE ONLY	TOTAL		RECEIVED	GAVE AWAY
SPECIES	Y/N	Y/N	Y/N	#	#	#	UNITS	Y/N	Y/N
RINGED SEAL *NAYIQ*	Y N	Y N	Y N				IND	Y N	Y N
300810000							1		
BEARDED SEAL *MAKLAK*	Y N	Y N	Y N				IND	Y N	Y N
300802000							1		
SEAL (UNKNOWN)	Y N	Y N	Y N				IND	Y N	Y N
300899000							1		
WALRUS *ASVEQ*	Y N	Y N	Y N				IND	Y N	Y N
301400000							1		
BELUKHA *CETUAQ*	Y N	Y N	Y N				IND	Y N	Y N
301602000							1		
HARBOR PORPOISE *MANGAYAAQ*	Y N	Y N	Y N				IND	Y N	Y N
300604000							1		

FOR HARBOR (SPOTTED) SEAL AND SEA LION FILL OUT NEXT PAGE

ARBOR (SPOTTED) SE *ISSURIQ*	Y N	Y N	Y N				IND	Y N	Y N
300806040							1		
SEA LION *UGINAQ*	Y N	Y N	Y N				IND	Y N	Y N
301200000							1		

* Use includes meat and/or oil, and/or fur.

** For animal found dead or incidently caught in a subsistence net.

Was your household's harvest and use of marine mammals typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different? _____

HARBOR SEAL

2008 MARINE MAMMAL SURVEY

Southwest Alaska

Are any members of your household Alaska Natives? **Yes** (___) **No** (___) If No, thank you for your cooperation. This survey is relevant to Native households.

If yes, how many people lived in your household in 2008? (_____)

CHECK IF APPROPRIATE No Contact (_____)

DID YOU OR MEMBERS OF YOUR HOUSEHOLD HUNT OR USE HARBOR SEALS IN 2008? Yes ____ No ____

(IF YES TO HARBOR SEALS, COMPLETE THE FOLLOWING QUESTIONS:)

13. DID YOUR HOUSEHOLD HUNT/USE SEA LIONS IN 2008?
No ____, Thank you | Yes ____, Go to Sea lion form

During 2008, did you or your household:

	Yes	No
1. **Use** harbor seals (meat, hides, or oil)?		
2. **Hunt** harbor seals? .If yes, go to 2a and 2b.		
3. **Kill and retrieve** harbor seals?		
4. **Receive** harbor seals from other households or communities?		
5. **Give away** harbor seals to other households or communities?		

2a. **How many** seal hunters in your household? (_____)

2b. If you **hunted outside your region**, **where** did you hunt? _____

IF YES TO QUESTION 2 OR 3 ABOVE, GO TO QUESTION 6. IF NO, GO TO QUESTION 11, THEN COMPLETE SEA LION SURVEY QUESTION 13.

6. How many harbor seals did your household kill and retrieve? [Enter in total box.]
7. In which months were they killed and retrieved? How many in (January, etc.)? [Enter the numbers by month.]

HARBOR SEAL	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	TOTAL
TOTAL														

8. Of the harbor seals killed and retrieved in (January, etc.), how many were male, female, and how many were pups, juveniles, or adults? [Enter the numbers by mon

HARBOR SEAL (Detail)		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	TOTAL
ADULT	MALE														
	FEMALE														
	UNKNOWN														
JUVENILE	MALE														
	FEMALE														
	UNKNOWN														
PUP	MALE														
	FEMALE														
	UNKNOWN														
UNKNOWN AGE	MALE														
	FEMALE														
	UNKNOWN														

During 2008,

9. How many harbor seal were struck and lost by your household? [Enter number in total box.]
10. In which months were they struck and lost? [Enter numbers by month.]

HARBOR SEAL	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	TOTAL
STRUCK AND LOST														

Supplemental Questions:

11. During 2008, did you observe any changes to harbor seal numbers in your area? Increase _____ Decrease _____ No Change_____ Didn't Observe_____
12. During 2008, what was the condition of the seals you harvested? _____

Community: _____ (_____) **HHID:** (_____) **List: Hunter Random** **Interviewer:** _____ **Date:** _____

Alaska Native Harbor Seal Commission (ANHSC) 345-0554 ADFG Div. of Subsistence (907) 267-2353 Bristol Bay Native Association (907) 842-5257

SEA LION **2008 MARINE MAMMAL SURVEY** Southwest Alaska

DID YOU OR MEMBERS OF YOUR HOUSEHOLD HUNT OR USE SEA LIONS IN 2008? YES _____ NO _____

(IF YES, PLEASE COMPLETE THE FOLLOWING QUESTIONS:) **(IF NO, THAT COMPLETES THIS SURVEY. THANK YOU.)**

During 2008, did you or your household:	**Yes**	**No**
1. **Use** sea lions (meat, hides, or oil)?		
2. **Hunt** sea lions? If yes, go to 2a and 2b.		
3. **Kill and retrieve** sea lions?		
4. **Receive** sea lions from other households or communities?		
5. **Give away** sea lions to other households or communities?		

2a. **How many** sea lion hunters in your household? (_____)

2b. If you **hunted outside your region**, where did you hunt? _____

IF YES TO QUESTION 2 OR 3 ABOVE, GO TO QUESTION 6. IF NO, GO TO QUESTION 11.

6. How many sea lions did your household kill and retrieve? [Enter total number in box.]
7. In which months were they killed and retrieved? How many in (January, etc.)? [Enter the numbers by month.]

SEA LIONS	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	TOTAL
TOTAL														

8. Of the sea lions killed and retrieved in (January, etc.), how many were male, female, and how many were pups, juveniles, or adults? [Enter the numbers by month]

SEA LIONS (Detail)		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	TOTAL
ADULT	MALE														
	FEMALE														
	UNKNOWN														
JUVENILE	MALE														
	FEMALE														
	UNKNOWN														
PUP	MALE														
	FEMALE														
	UNKNOWN														
UNKNOWN AGE	MALE														
	FEMALE														
	UNKNOWN														

During 2008,

9. How many sea lions were struck and lost by your household? [Enter number in total box.]
10. In which months were they struck and lost? [Enter numbers by month.]

SEA LIONS	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	TOTAL
STRUCK AND LOST														

Supplemental Question: **THANK YOU FOR YOUR COOPERATION**

11. During 2008, did you observe any changes to sea lion numbers in your area? Increase _____ Decrease _____ No Change_____ Didn't Observe_____
12. During 2008, what was the condition of the sea lions you harvested? _____

Community: _____ (_____) **HHID:** (_____) **List: Hunter Random** **Interviewer:** _____ **Date:** _____

Alaska Native Harbor Seal Commission (ANHSC) 345-0554 **ADFG Div. of Subsistence (907) 267-2353** **Bristol Bay Native Association (907) 842-5257**

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

SMALL LAND MAMMALS/FURBEARERS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE SMALL LAND MAMMALS/FURBEARERS BETWEEN JANUARY 1 AND DECEMBER 31, 2008?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS).

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED: FOOD #	FUR ONLY #	FOOD & FUR #	TOTAL #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NUMBER SOLD	AVERAGE PRICE
BEAVER *PALUQTAQ*	Y N	Y N					IND	Y N	Y N		
220200000							1				
PORCUPINE *ISSALUQ*	Y N	Y N					IND	Y N	Y N		
222600000							1				
RED FOX *KAVIAQ*	Y N	Y N					IND	Y N	Y N		
220804000							1				
CROSS FOX *TUNGULIAYAAQ*	Y N	Y N					IND	Y N	Y N		
220804020							1				
ARCTIC FOX *ULIIQ*	Y N	Y N					IND	Y N	Y N		
220802000							1				
COYOTE *KAYU*	Y N	Y N					IND	Y N	Y N		
220400000							1				
LAND OTTER *CUIGNILNGUQ*	Y N	Y N					IND	Y N	Y N		
221200000							1				
LYNX *TERTULI*	Y N	Y N					IND	Y N	Y N		
221600000							1				
MARMOT *CIKIK*	Y N	Y N					IND	Y N	Y N		
221800000							1				
MARTEN *QAVCICUAR*	Y N	Y N					IND	Y N	Y N		
222000000							1				
MINK *IMARMIUTAQ*	Y N	Y N					IND	Y N	Y N		
222200000							1				

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED FOOD #	FUR ONLY #	FOOD & FUR #	TOTAL #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NUMBER SOLD	AVERAGE PRICE
MUSKRAT *KANAQLAK*	Y N	Y N					IND	Y N	Y N		
222400000							1				
WEASEL *NARULLGIQ*	Y N	Y N					IND	Y N	Y N		
223000000							1				
WOLF *KEGLUNEQ*	Y N	Y N					IND	Y N	Y N		
223200000							1				
WOLVERINE *TERIKAANIAQ*	Y N	Y N					IND	Y N	Y N		
223400000							1				
ARCTIC HARE *TUNDRA*	Y N	Y N					IND	Y N	Y N		
221002000							1				
SNOWSHOE HARE *CIRIIQ / NULLUTUUYAK*	Y N	Y N					IND	Y N	Y N		
221004000							1				
JACK RABBIT QAYUQUEGGLIQ	Y N	Y N					IND	Y N	Y N		
221006000							1				
UNKNOWN HARE	Y N	Y N					IND	Y N	Y N		
221099000							1				
TREE SQUIRREL (RED) *QIGUIQ*	Y N	Y N					IND	Y N	Y N		
222804000							1				
PARKA SQUIRREL (GROUND) *QANGANAQ*	Y N	Y N					IND	Y N	Y N		
222802000							1				

Was your household's harvest and use of small land mammals typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different? _____

_____

_____

BIRDS AND EGGS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE BIRDS OR EGGS BETWEEN JANUARY 1 AND DECEMBER 31, 2008?
Y N IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD BE INDIVIDUALS).

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	# HARVESTED BY SEASON (MONTHS) SPRING A M J	SUMMER J A	FALL S O N	WINTER D J F M	UNIT	RECEIVED Y/N	GAVE AWAY Y/N
GROUSE (SPRUCE HEN) *EGTUK*	Y N	Y N					IND	Y N	Y N
421802000							1		
PTARMIGAN (UNKNOWN) *QANGIG*	Y N	Y N					IND	Y N	Y N
421804990							1		
CANADA GEESE- LITTLE "CACKLERS" *LAGIQ*	Y N	Y N					IND	Y N	Y N
410404040							1		
CANADA GEESE - BIG "LESSER" *LAGIRPAK*	Y N	Y N					IND	Y N	Y N
410404060							1		
CANADA GEESE - UNKNOWN	Y N	Y N					IND	Y N	Y N
410404990							1		
WHITE-FRONTED GEESE "SPECKLEBELLY" *NEQLEQ*	Y N	Y N					IND	Y N	Y N
410410000							1		
BRANT "SEA GEESE" *NEQLERNAQ*	Y N	Y N					IND	Y N	Y N
410402000							1		
EMPEROR GEESE *NACAULLEK*	Y N	Y N					IND	Y N	Y N
410406000							1		
SNOW GEESE *KANGUQ*	Y N	Y N					IND	Y N	Y N
410408000							1		
GEESE - UNKNOWN	Y N	Y N					IND	Y N	Y N
410499000							1		
TUNDRA SWANS *QUGYUK*	Y N	Y N					IND	Y N	Y N
410604000							1		
TRUMPETER SWANS	Y N	Y N					IND	Y N	Y N
410602000							1		
SWANS - UNKNOWN	Y N	Y N					IND		
410699000							1		
SANDHILL CRANES *QUCILLGAQ*	Y N	Y N					IND	Y N	Y N
410802000							1		
MALLARDS *UQULKATAGPAK*	Y N	Y N					IND	Y N	Y N
410214000							1		

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	# HARVESTED BY SEASON (MONTHS) SPRING A M J	SUMMER J A	FALL S O N	WINTER D J F M	UNIT	RECEIVED Y/N	GAVE AWAY Y/N
NORTHERN PINTAILS *UQULKATAQ*	Y N	Y N					IND	Y N	Y N
410220000							1		
GOLDENEYES (UNKNOWN) *ANARNISSAKAQ*	Y N	Y N					IND	Y N	Y N
410210990							1		
NORTHERN SHOVELERS *SUGG'ERPAK*	Y N	Y N					IND	Y N	Y N
410230000							1		
GADWALLS	Y N	Y N					IND	Y N	Y N
410208000							1		
GREEN-WINGED TEALS *TENGESQAAR*	Y N	Y N					IND	Y N	Y N
410232060							1		
BUFFLEHEADS	Y N	Y N					IND	Y N	Y N
410202000							1		
HARLEQUINS *CETUSQAAR*	Y N	Y N					IND	Y N	Y N
410212000							1		
SCAUPS (UNKNOWN) *KIPALEK*	Y N	Y N					IND	Y N	Y N
410226990							1		
WIGEON (UNKNOWN) *QATKEGALIQ*	Y N	Y N					IND	Y N	Y N
410236990							1		
OLD SQUAW *AARRAANGIIQ*	Y N	Y N					IND	Y N	Y N
410218000							1		
CANVASBACK	Y N	Y N					IND	Y N	Y N
410204000							1		
COMMON MERGANSER	Y N	Y N					IND	Y N	Y N
410216020							1		
RED-BREASTED MERGANSER	Y N	Y N					IND	Y N	Y N
410216040							1		
MERGANSER (UNKNOWN) *PAYIQ*	Y N	Y N					IND	Y N	Y N
410216990							1		
BLACK SCOTERS "BLACK DUCK" *KUKUMYAR*	Y N	Y N					IND	Y N	Y N
410228020							1		
COMMON EIDERS *METRAG*	Y N	Y N					IND	Y N	Y N
410206020							1		

BIRDS (15A)

SPECIES	USED?	TRIED TO HARVEST	# HARVESTED BY SEASON (MONTHS) SPRING	SUMMER	FALL	WINTER	UNIT	RECEIVED	GAVE AWAY
	Y/N	Y/N	A M J	J A	S O N	D J F M		Y/N	Y/N
KING EIDERS *QENALLEK*	Y N	Y N					IND	Y N	Y N
410206040							1		
DUCKS - UNKNOWN	Y N	Y N					IND	Y N	Y N
410299000							1		
COMMON SNIPE *KUKUKUAQ*	Y N	Y N					IND	Y N	Y N
411002000							1		
GULL EGGS *NARU'YAQ*	Y N	Y N					IND	Y N	Y N
431212990							1		
MURRE EGGS *ALPAK*	Y N	Y N					IND	Y N	Y N
431218990							1		
GEESE EGGS *NEQLEQ*	Y N	Y N					IND	Y N	Y N
430499000							1		
DUCK EGGS *YAQULEK*	Y N	Y N					IND	Y N	Y N
430299000							1		
SWAN EGGS *QUGYUK*	Y N	Y N					IND	Y N	Y N
430699000							1		
TERN EGGS *TEKIYAAR*	Y N	Y N					IND	Y N	Y N
431226990							1		
SNIPE EGGS *KUKUKUAQ*	Y N	Y N					IND	Y N	Y N
431002000							1		
CORMORANT EGGS *UYALEK*	Y N	Y N					IND	Y N	Y N
431204990							1		
UNKNOWN EGGS *KAYANGUQ*	Y N	Y N					IND	Y N	Y N
439900000							1		
	Y N	Y N						Y N	Y N

Was your household's harvest and use of birds and eggs typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

WILD PLANTS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE WILD PLANTS (INCLUDING FIREWOOD) BETWEEN JANUARY 1 AND DECEMBER 31, 2008?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT).

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	AMOUNT HARVESTED #	AMOUNT HARVESTED UNIT	RECEIVED Y/N	GAVE AWAY Y/N	WHAT KIND WERE USED (EITHER HARVESTED OR RECEIVED) FOR BOTH BERRIES AND PLANTS IN 2007
BERRIES *ACSAQ*				GAL			
601000000				4			
PLANTS/GREENS/MUSHROOMS *PALURUTAQ*				GAL			
602000000				4			
WOOD *PUYURKAQ*				CORDS			
604000000				6			

Was your household's harvest and use of wild plants typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:	

OVERALL ASSESSMENT.

Was your household's overall harvest and use of subsistence resources typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

EMPLOYMENT.

PLEASE INDICATE THE FOLLOWING INFORMATION FOR ALL JOBS HELD BY THE EMPLOYED PERMANENT HOUSEHOLD MEMBERS 16 OR OLDER LISTED ON PAGE 1 BETWEEN JANUARY 1 AND DECEMBER 31, 2008.

FOR THOSE OVER 16 NOT EMPLOYED, PLEASE SPECIFY RETIRED, UNEMPLOYED, DISABLED, STUDENT, OR HOMEMAKER.

REMINDER: INCLUDE COMMERCIAL FISHING HERE
COMMERCIAL FISHING AND BUSINESS OWNERS - ADJUSTED GROSS AFTER EXPENSES. IF LESS THAN ZERO, ENTER 0.

PERSON ID # FROM FIRST PAGE OF SURVEY	JOB #	JOB TITLE	EMPLOYER TYPE	LOCATION city/town	WHICH MONTHS WORKED IN 2008 circle each month worked	FULL TIME	PART TIME	SHIFT - FULL TIME	ON CALL - VARIES	PERSONAL GROSS INCOME
					circle one					
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							

WORK SCHEDULE: FT - Fulltime (35+ hours/week)
PT - Parttime (<35 hours/week)
Shift Fulltime (2 weeks on/off, etc.)
Oncall - Irregular, on call, comm. fishing

NOTES: ______________________________

ALEKNAGIK:	8	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2008	HHID:

OTHER INCOME.

ANSWER ALL THAT APPLY. INDICATE ANNUAL AMOUNT FOR THE PERIOD OF JANUARY 1 AND DECEMBER 31, 2008.
IT IS OKAY TO LEAVE BLANK IF NOT APPLICABLE OR TO STATE SOME AMOUNT. MARK A -8 IF AMOUNT IS UNKNOWN AND IT EXISTED.

AK PERMANENT FUND* (32)	$	/YR		ADULT TEMPORARY ASSISTANCE PROGRAM (02)	$	/YR		DIVIDENDS/INTEREST (14)	$	/YR	
SOCIAL SECURITY (07)	$	/YR		PENSION/RETIREMENT (05)	$	/YR		ADULT PUBLIC ASSISTANCE (03)	$	/YR	
SUPP. SECURITY INCOME (SSI) (10)	$	/YR		WORK COMP/INSURANCE (08)	$	/YR		ENERGY ASSISTANCE (09)	$	/YR	
NATIVE CORP. DIVIDEND (13)	$	/YR		FOOD STAMPS (11)	$	/YR		UNEMPLOYMENT (12)	$	/YR	
								OTHER: _____ (____)	$	/YR	

*[AK PERMANENT FUND 2008: $2,069 2- $4138 3- $6207 4- $8276 5- $10345 6- $12414 7- $14483 8- $16552 9- $18621 10- $20690
**[ENERGY ASSISTANCE 2008: $1,200 2- $2400 3- $3600 4- $4800 5- $6000 6- $7200 7- $8400 8- $9600 9- $10800 10- $12000

FOOD:

PLEASE ESTIMATE YOUR MONTHLY EXPENSES TO PURCHASE FOOD: $_____/MONTH

WHAT PERCENTAGE OF ALL THE MEAT, FISH, AND BIRDS THAT YOU ATE IN THE LAST YEAR WAS FROM WILD RESOURCES? [33]
___ (1) NONE ___ (2) 1-25% ___ (3) 26-50% ___ (4) 51-75% ___ (5) 76-99% ___ (6) ALL

BBNC DIVIDENDS ARE PAID OUT QUARTERLY	
JANUARY =	$2.75 SHARE
APRIL, JULY & DECEMBER =	$2.75 SHARE
TOTAL PER SHARE 2008: 2.75 + 3(3.00)= $11.75	
100 SHARES=	$1,175.00
200 SHARES=	$2,350.00
300 SHARES=	$3,525.00
400 SHARES=	$4,700.00

DO YOU HAVE ANY OTHER QUESTIONS, COMMENTS, OR CONCERNS?

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

INTERVIEW SUMMARY:

COMMUNITY ID:_____ HH ID:_____ SUMMARY (30B)

APPENDIX B: CONVERSION FACTORS

Resource	Reporting unit	Conversion to pounds	Resource	Reporting unit	Conversion to pounds
Chum salmon	Individual	4.88	Sea otter	Individual	0.00
Coho salmon	Individual	5.10	Steller sea lion	Individual	200.00
Chinook salmon	Individual	11.09	Walrus	Individual	560.00
Pink salmon	Individual	2.99	Beluga whale	Individual	831.00
Sockeye salmon	Individual	4.29	Bufflehead	Individual	0.40
Landlocked salmon	Individual	1.50	Canvasback	Individual	1.10
Spawning sockeye salmon	Individual	2.00	Gadwall	Individual	0.80
Unknown salmon	Individual	8.00	Unknown goldeneye	Individual	0.80
Herring	Gallon	6.00	Mallard	Individual	1.00
Herring sac roe	Gallon	7.00	Merganser	Individual	0.60
Herring spawn on kelp	Gallon	7.00	Northern pintail	Individual	0.80
Smelt	Gallon	6.00	Scaup	Individual	0.90
Capelin (grunion)	Individual	3.25	Unknown scaup	Individual	0.90
Unknown smelt	Gallon	3.25	Scoter	Individual	0.90
Pacific (gray) cod	Individual	3.20	Black scoter	Individual	0.90
Walleye pollock (whiting)	Individual	1.40	Northern shoveler	Individual	0.60
Unknown cod	Individual	3.20	Green-winged teal	Individual	0.30
Flounder	Individual	3.00	Wigeon	Individual	0.70
Unknown flounder	Individual	3.00	American wigeon	Individual	0.70
Lingcod	Individual	4.00	Unknown wigeon	Individual	0.70
Unknown greenling	Individual	1.00	Unknown duck	Individual	0.78
Pacific halibut	Individual	23.50	Brant	Individual	1.20
Pacific halibut	Pound	1.00	Cackling Canada goose	Individual	1.20
Black rockfish	Individual	1.50	Dusky Canada goose	Individual	3.60
Rougheye (red) rockfish	Individual	4.00	Lesser Canada goose[a]	Individual	1.20
Unknown rockfish	Individual	2.00	Unknown Canada goose	Individual	1.96
Sablefish (black cod)	Individual	3.10	Snow goose	Individual	2.30
Slimy sculpin (bullhead)	Individual	0.50	White-fronted goose	Individual	2.40
Unknown shark	Individual	9.00	Unknown goose	Individual	2.40
Unknown sole	Individual	1.00	Tundra (whistling) swan	Individual	6.00
Stickleback (needlefish)	Individual	0.20	Unknown swan	Individual	6.00
Wolffish	Individual	0.50	Sandhill crane	Individual	8.40
Alaska blackfish	Individual	0.07	Common snipe	Individual	0.10
Burbot	Individual	1.00	Unknown loon	Individual	3.00
Arctic char	Individual	1.40	Tern	Individual	1.00
Dolly Varden	Individual	1.40	Arctic tern	Individual	1.00
Dolly Varden – fresh water	Individual	1.40	Grouse	Individual	0.70
Dolly Varden – salt water	Individual	1.40	Unknown ptarmigan	Individual	0.70
Lake trout	Individual	1.40	Duck eggs	Individual	0.15
Arctic grayling	Individual	0.70	Unknown duck eggs	Individual	0.15
Northern pike	Individual	2.80	Goose eggs	Individual	0.30
Sheefish	Individual	5.50	Unknown goose eggs	Individual	0.30
Unknown sturgeon	Individual	34.00	Swan eggs	Individual	0.30
Longnose sucker	Individual	1.50	Unknown swan eggs	Individual	0.30
Rainbow trout	Individual	1.40	Seabird and loon eggs	Individual	0.30
Steelhead trout	Individual	1.40	Gull eggs	Individual	0.30

-continued-

Resource	Reporting unit	Conversion to pounds	Resource	Reporting unit	Conversion to pounds
Unknown trout	Individual	1.40	Unknown gull eggs	Individual	0.30
Broad whitefish	Individual	4.00	Tern eggs	Individual	0.05
Least cisco	Individual	0.40	Unknown tern eggs	Individual	0.05
Humpback whitefish	Individual	1.75	Unknown eggs	Individual	0.15
Round whitefish	Individual	1.00	Butter clam	Gallon	3.00
Black bear	Individual	58.00	Butter clam	Quart	0.75
Brown bear	Individual	340.00	Freshwater clam	Gallon	3.00
Caribou	Individual	150.00	Gaper (horse) clam	Gallon	3.00
Moose	Individual	540.00	Pacific littleneck (steamer) clam	Gallon	3.00
Dall sheep	Individual	104.00	Arctic surfclam (pinkneck clam)	Gallon	3.00
Beaver	Individual	8.75	Pacific razor clam	Gallon	3.00
Coyote	Individual	0.00	Softshell clams	Gallon	3.00
Red fox	Individual	0.00	Unknown clams	Gallon	3.00
Red fox – crossphase	Individual	0.00	Cockle	Gallon	3.00
Alaska hare (jackrabbit)	Individual	5.60	Unknown cockle	Gallon	3.00
Snowshoe hare	Individual	2.00	Dungeness crab	Individual	0.70
River otter	Individual	0.00	King crab	Individual	2.30
Lynx	Individual	4.00	Red king crab	Individual	1.00
Alaska marmot	Individual	5.00	Tanner crab	Individual	1.60
American marten	Individual	0.00	Unknown Tanner crab	Individual	1.60
Mink	Individual	0.00	Unknown crab	Individual	1.57
Muskrat	Individual	0.75	Unknown mussel	Gallon	1.50
Porcupine	Individual	8.00	Octopus	Individual	4.00
Arctic ground (parka) squirrel	Individual	0.50	Scallop	Pound	1.00
Red (tree) squirrel	Individual	0.50	Unknown scallop	Pound	1.00
Weasel	Individual	0.00	Shrimp	Individual	0.04
Gray wolf	Individual	0.00	Shrimp	Pound	1.00
Wolverine	Individual	0.00	Berries	Gallon	4.00
Harbor seal	Individual	56.00	Plants / greens / mushrooms	Pound	1.00
Harbor seal – fresh water	Individual	56.00	Plants / greens / mushrooms	Gallon	4.00
Harbor seal – salt water	Individual	56.00	Wood	Cord	0.00
Unknown seal	Individual	56.00			

a. Both *Branta canadensis taverner* and *B. canadensis parvipes*.

APPENDIX C: HARVEST USE AREA MAPS BY COMMUNITY

Please contact the Alaska Department of Fish and Game, Division of Subsistence for a copy of Appendix C, Technical Paper No. 368:

Alaska Department of Fish and Game
Division of Subsistence
333 Raspberry Road
Anchorage, Alaska 99518-1565
Phone 907-267-2353
Fax 907-267-2450
http://www.adfg.alaska.gov/index.cfm?adfg=contacts.anchorage

APPENDIX D: OVERVIEW OF STUDY FINDINGS

Subsistence Harvests and Uses of Wild Resources in Aleknagik, Clark's Point, and Manokotak, Alaska, 2008

An Overview of Study Findings

Division of Subsistence
Alaska Department of Fish and Game

December 2011

Background

The following is a brief overview of research conducted by the Division of Subsistence of the Alaska Department of Fish and Game (ADF&G) to provide baseline harvest and use data of all wild resources by residents of Aleknagik, Clark's Point, and Manokotak. The study period covers January 1 to December 31, 2008. Funding for this project was provided by Stephen R. Braund and Associates (ADF&G Agreement Number IHP-06-050). This project is part of a larger project documenting wild resource use and harvest in the area near the potential development of the Pebble Project. Phase I of the project examined the subsistence baseline information in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth in 2005 for the 2004 study year (Fall et al. 2006). Phase II expanded the study to 5 additional communities within the Kvickak and Nushagak watersheds: Igiugig, Kokhanok, Koliganek, Levelock, and New Stuyahok for the 2005 study year (Krieg et al. 2009). Phase III expanded the study to communities in Bristol Bay, including King Salmon, Naknek, and South Naknek in 2008 for the 2007 study year, as well as the interior community of Lime Village (Holen et al. 2010; Holen and Lemons 2010). The goal of this phase of the study, Phase IV, is to complete subsistence baseline studies for the communities of Aleknagik, Clark's Point, and Manokotak. The final phase (V) of the study was completed in April 2011 in Dillingham.

Methods

The primary data gathering method was systematic household surveys using the ADF&G Division of Subsistence standard data-gathering instrument. The surveys were conducted face-to-face in resident's homes. The goal was to interview a representative of each year-round household in Aleknagik and Clark's Point, and a sample of 60 households in Manokotak. In total, 104 households were interviewed, 60% of the year-round resident households. With the help of community liasions, household interviews were conducted to collect harvest and use information for all wild resources. Each household had accompanying mapping conducted as well for each resource including use area and/or harvest location, amount of harvest, and month of harvest. Participation was voluntary, and individual and household-level data are confidential as well as mapped harvest locations for large land mammal and marine mammal species. In addition subsistence users were asked to discuss their observations about resource use and abundance and their concerns relating to subsistence resources and their continuing opportunities to harvest subsistence resources.

Findings

Figure 1 illustrates subsistence harvest estimates in 2008 for each study community in pounds usable weight per capita. The overall harvests between communities varied greatly. Clark's Point had the highest harvest with 1,210 lb per capita, followed by Manokotak (298 lb per capita), and Aleknagik (296 lb per capita). Clark's Point is a small community where hunters who harvest a large number of resources distribute the harvest to neighboring communities, especially Dillingham. Overall, all 3 communities harvested a significant amount per capita. Harvests were also diverse: in Clark's Point, households used an average of 23 resources, while in Manokotak they used 22 resources, and in Aleknagik 15 resources.

Figure 1. Harvests of wild resources in pounds usable weight per capita, study communities, 2008

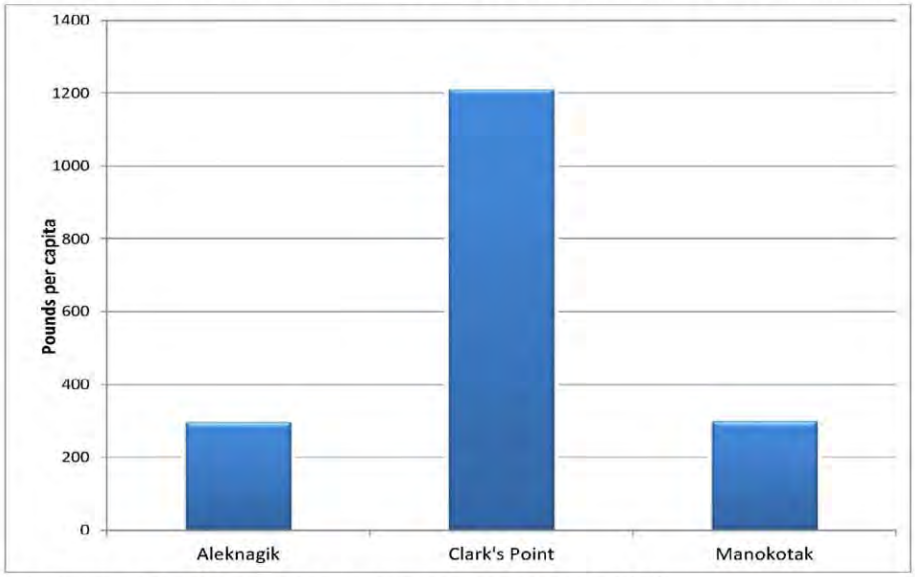

Figure 2. Community harvest composition by resource category, 2008

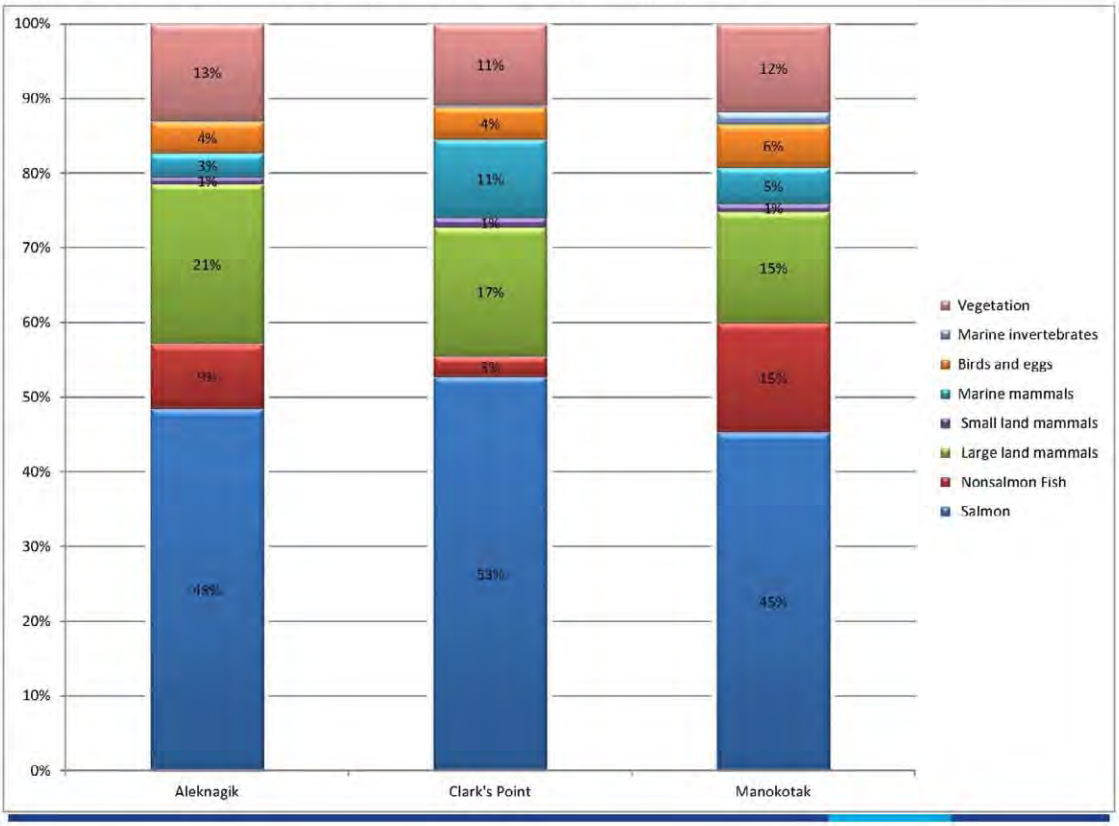

Figure 2 shows the composition by resource category of each community's harvest in 2008. Each community was varied in the distribution of their harvest. Both salmon and moose were important sources of wild foods in all three communities in 2008.

In the 2008 study year, virtually every person in the 3 communities used wild resources. Most residents engaged in subsistence activities (see Figure 3), and subsistence harvests were large and diverse in 2008, supplying a large portion of each community's food supply. Although the bulk was salmon and large land mammals, almost all households used other fish, wild plants, and many used birds, bird eggs, small game, marine invertebrates, and marine mammals. Sharing of these resources bound families together in networks of mutual support and obligation. Further, subsistence activities and uses created a context in which people shared traditional knowledge about harvest locations, fish and wildlife populations and behavior, and respectful relationships with the natural world. In short, subsistence hunting, fishing, and gathering were vital components of the economy and way of life of these communities in 2008, as they have been for centuries.

For More Information:

Complete results for this project appear in: *D. Holen, J. Stariwat, T. M. Krieg, and T. Lemons. 2012. Subsistence harvests and uses of wild resources in Aleknagik, Clark's Point, and Manokotak, Alaska, 2008. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 368, Anchorage.*

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Figure 3. Individual involvement in subsistence activities, all study communities combined, 2008