Technical Paper No. 302

Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004

by

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December 2006

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

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	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, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

TECHNICAL PAPER NO. 302

SUBSISTENCE HARVESTS AND USES OF WILD RESOURCES IN ILIAMNA, NEWHALEN, NONDALTON, PEDRO BAY, AND PORT ALSWORTH, ALASKA, 2004

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December 2006

Final Report to Stephen R. Braund and Associates under ADF&G Agreement IHP-05-049 to fulfill obligations for the Lake Clark National Park and Preserve, National Park Service, NPS Agreement Number H9855040051 under ADF&G Agreement COOP 05-022

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ABSTRACT

SUBSISTENCE HARVESTS AND USES OF WILD RESOURCES IN ILIAMNA, NEWHALEN, NONDALTON, PEDRO BAY, AND PORT ALSWORTH, ALASKA, 2004

This report presents updated information about subsistence uses of fish, wildlife, and plant resources in 5 communities of southcentral Alaska -- Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth. The Division of Subsistence of the Alaska Department of Fish and Game conducted the study in collaboration with the National Park Service and Stephen R. Braund & Associates. The Pebble Project is a proposed open pit mine located 18 miles to the northwest of Iliamna and 18 miles southwest of Nondalton. The potential development of the mine requires 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, 116 households were interviewed, 79% of the year-round resident households. The study documented the continuing importance of subsistence hunting, fishing, and gathering to the study communities. In 2004, virtually every person in each community participated in subsistence activities and used wild resources. Subsistence harvests were large and diverse. Estimated wild resource harvests were 469 pounds usable weight per person in Iliamna, 692 pounds per person in Newhalen, 358 pounds per person in Nondalton, 306 pounds per person in Pedro Bay, and 133 pounds per person in Port Alsworth. Most participants in this study reported their subsistence uses and harvests have changed in their lifetimes and over the last 5 years, due to reduced resource populations, shifts in the locations of moose and caribou, competition with nonlocal sport hunters, and a warming climate. Residents voiced concerns about the potential development of a mine and the construction of a road through and near their traditional subsistence harvest areas.

EXECUTIVE SUMMARY

This report presents updated information about subsistence uses of fish, wildlife, and plant resources in 5 communities within the resident zone of the Lake Clark National Park and Preserve, southcentral Alaska. The study communities were Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth. The study area is within the Kvichak River-Iliamna Lake-Lake Clark drainage, a part of the Bristol Bay watershed. The Kvichak River system supports the world's largest run of sockeye salmon. The residents of all 5 communities rely on subsistence hunting, fishing, and gathering for nutrition and to support their way of life. The Division of Subsistence of the Alaska Department of Fish and Game (ADF&G) conducted the study in collaboration with the National Park Service and Stephen R. Braund & Associates (SRB&A).

The Pebble Project is a proposed open pit mine located 18 miles to the northwest of Iliamna near Frying Pan Lake, and 18 miles southwest of Nondalton. The mineral deposit includes gold, copper, molybdenum, and silver. The proposed project includes construction of a road from the deposit to a port facility on Cook Inlet. The potential development of the mine and road requires updated baseline information about subsistence harvests and uses in the five study communities that this study addressed. SRB&A is a contractor for Northern Dynasty Mines Inc., the mine developer.

The primary methods for collecting subsistence harvest and use information were systematic household surveys and mapping interviews. A key goal was to structure the survey instrument to collect demographic, resource harvest and use, and other economic data for the 2004 study year that are compatible with data collected in previous rounds of household surveys in the study communities, and information that appears in the ADF&G Community Subsistence Information System. In addition, key respondents were interviewed in each community about trends in subsistence resources and key resource issues. Before the interviewing began, project personnel held scoping meetings in each study community to elicit ideas about research questions and to learn more about current issues. After preliminary study findings were available, a second round of community meetings took place to review and discuss the results.

ADF&G personnel trained local research assistants in 4 of the 5 study communities to administer the household survey. The goal was to interview a knowledgeable member of all year-round households. Participation was voluntary and all individual and household level responses are confidential. In total, 116 households were interviewed, 79% of the year-round resident households. Twenty-two households could not be contacted during the interviewing period, and 10 households declined to participate. The refusal rate for the project was 7%.

According to the study findings, the year-round population of the study communities was as follows: Iliamna, 73; Newhalen, 125; Nondalton, 164; Pedro Bay, 69; and Port Alsworth, 109. These estimates suggest an overall population decline since the 2000 federal census. Except for Port Alsworth, a majority of the population was Alaska Native in 2000.

The study documented the continuing importance of subsistence hunting, fishing, and gathering to the residents of Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth. In the 2004 study year, virtually every person in each of the 5 communities participated in subsistence

activities and used wild resources. Subsistence harvests were large and diverse in 2004, supplying a large portion of each community's food supply. Estimated wild resource harvests were 469 pounds usable weight per person in Iliamna, 692 pounds per person in Newhalen, 358 pounds per person in Nondalton, 306 pounds per person in Pedro Bay, and 133 pounds per person in Port Alsworth.

Sockeye salmon, other fish, caribou, moose, and wild plants 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. People shared traditional knowledge of wild resources and harvest areas while engaged in subsistence activities.

In Newhalen and Nondalton, most adults with cash employment worked seasonally, and worked in cash-producing jobs on average between 7 and 8 months in 2004. Only about 53% of employed adults in Pedro Bay worked year-round (working on average about 8.3 months), as did 67% in Port Alsworth (9.8 month average) and 79% in Iliamna (10.5 months on average), the subregional hub. Per capita cash incomes in all 5 study communities were well below the state's average of $22,660.

Most participants in this study reported their subsistence uses and harvests have changed in their lifetimes and over the last 5 years. Results of the household surveys, as well as subsistence salmon permit data, suggest a long-term trend towards lower harvests of salmon, although this trend varies by community and family. Harvests of moose and caribou by residents of the 5 study communities were generally lower in 2004 than in other years for which household survey data area available. Reasons local residents cite for these changes include reduced resource populations, shifts in the locations of moose and caribou, competition with nonlocal sport hunters, and a warming climate. Causes of changes in subsistence harvests and uses are complex and require additional research that must involve collaboration with local communities.

During the household surveys, key respondent interviews, and community meetings, residents offered comments about the potential development of a mine and the construction of a road through and near their traditional subsistence harvest areas. Among the major concerns raised by local residents were the following:

- Subsistence is not a welfare system. Mining jobs will not replace people's need to subsistence hunt, fish, and gather wild foods, that are much more healthful than foods purchased in stores.
- There are seal haulouts in Iliamna Lake that could be affected by barge traffic associated with mine development and operation. Local residents avoid those areas during the pupping season of the seals, and when the seal pups are small. Barge traffic is believed to affect pupping. Local residents also avoid the areas where seals are feeding, such as the mouth of the Iliamna River, during the pupping season.
- There is concern that the presence of sockeye and Chinook salmon in the Upper Koktuli River has not been adequately acknowledged by developers during public discussions about the possible effects of the mine.

- The proposed road would increase emissions and reduce air and surface water quality. This is in addition to the dust from the frequent truck traffic associated with the road.
- In the opinion of many local residents, there has already been a net loss to subsistence opportunities, and the subsistence way of life has been changed as a result of the planning and exploration activities associated with the mine. In their view, every year there is more activity associated with the mine that disturbs local wildlife populations, such as helicopter traffic. For some, "The mine is already here."

Other important issues and concerns voiced by local community residents who participated in this study included the following.

Iliamna and Newhalen: Current Resource Concerns

- Nonlocal hunters are overharvesting caribou from the Mulchatna Herd.
- Lichen are too thin to support the formerly large herd of caribou near the Mulchatna River – the lichen are thicker up around the Nushagak River. It may be 10 years before the caribou return.

Nondalton: Current Resource Concerns

- Caribou numbers are down significantly over the past 5-8 years, affecting subsistence harvests greatly. Local residents cannot compete with fly-in hunters
- Caribou movements are disturbed by helicopter traffic noise, causing the caribou to move farther away from Nondalton.
- Nonlocal hunters overharvest caribou and moose, waste parts of the carcass, and displace local people.
- Community residents continue to use their traditional trapping and hunting areas around Groundhog Mountain, which could be impacted by a mine.

Pedro Bay: Current Resource Concerns

- The Dolly Varden in the Iliamna River are being overharvested in the sport fishery. In addition, motorized boats are disturbing stream habitat.
- Pile River Valley moose are adversely affected by increasing wolf and bear populations.

Port Alsworth: Current Resource Concerns

- Wolf and bear populations are impacting local numbers of moose.
- Sockeye salmon returns have fluctuated widely over the last 5 years.
- Donations of meat from non-local hunters have diminished in recent years.
- Recent warm winters and poor snow conditions make travel for trapping difficult. The failure of Lake Clark and Sixmile Lake to freeze impedes caribou movements in the area.

Given the importance of subsistence resources and the observations of changing harvest and use patterns, it is not surprising that residents of all five 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 nutritional needs. As demonstrated by the study findings, subsistence uses of healthy fish and wildlife populations link people meaningfully to their past, are vital to the present health of each community, and encourage optimism about the future. Local residents' desire to continue subsistence activities is not only for themselves, but also for their children and future generations. The information in this report is intended to assist the communities to work towards their goal to sustain their way of life.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX TABLES

LIST OF APPENDIX FIGURES

All maps are included on the CD found in a pocket inside the back cover of this report. Select maps have been included within the document and list of figures.

ACKNOWLEDGEMENTS

The researchers would like to thank the communities involved for their support and all the local assistants listed in chapter one for their hard work. Funding for this project was provided through a cooperative agreement with Lake Clark National Park and Preserve (NPS Agreement Number H9855040051; ADF&G Agreement Number COOP 05-022) and Stephen R. Braund and Associates (ADF&G Agreement Number IHP-05-049).

CHAPTER ONE: INTRODUCTION

STUDY BACKGROUND

This report provides updated information about subsistence uses of fish, wildlife, and wild plant resources in five communities within the resident zone of the Lake Clark National Park and Preserve, southcentral Alaska.[1] The study communities are Nondalton (population 221 in 2000), Port Alsworth (104 people), Iliamna (102 people), Newhalen (160 people), and Pedro Bay (50 people). Table 1-1 reports the population of each community in 2000 and 2004, based on federal and state estimates, and the findings of this study, respectively. The study area is within the Kvichak River-Iliamna Lake-Lake Clark drainage area, a part of the Bristol Bay watershed (Fig. 1-1). The Kvichak River system supports the world's largest run of sockeye salmon. The residents of all five communities rely 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, bears, sheep); small game and furbearers; birds; and wild plants (Behnke 1982, Morris 1986, Scott et al. 2001).

The Pebble Project is a proposed open pit mine located 18 miles to the northwest of the community of Iliamna near Frying Pan Lake, and 18 miles southwest of the community of Nondalton. The mineral deposit includes gold, copper, molybdenum, and silver. In addition to the mine itself, the project would include construction of a road from the deposit to a port facility on Cook Inlet. Northern Dynasty Mines Inc. (NDM), of Vancouver, Canada, the mine developer, began environmental baseline studies in 2004 to gather information needed for a feasibility study and applications for federal and state permits (NDM 2005).

The potential development of the Pebble Mine created the need for updated baseline information about subsistence harvests and uses in the five study communities, plus demographic and other economic data. Table 1-2 shows the years in which previous studies of subsistence harvests and uses have been conducted in each community. Before the present study, there had been no comprehensive systematic household survey in Nondalton or Port Alsworth since 1983 to document the full range of subsistence harvests and uses by community residents. The last comprehensive survey data for Iliamna and Newhalen pertained to 1991 and for Pedro Bay pertained to 1996. In addition to serving as an updated baseline from which to assess any socioeconomic changes due to the development of the mine, the study results will have broader applicability in resource management and land planning.

The Division of Subsistence of the Alaska Department of Fish and Game (ADF&G) conducted the study in collaboration with the National Park Service (NPS) (Cooperative Agreement No. COOP-05-022 [ADF&G]; H9855040051, Modification 01 for NPS); Stephen R. Braund & Associates (SRB&A) (Contract No. IHP-05-049), a contractor for NDM (the mine developer); and the study communities. The NPS and SRB&A provided funding for this study. SRB&A is an anthropological consulting firm based in Anchorage, Alaska, that specializes in sociocultural, subsistence and subsistence mapping, traditional knowledge, and cultural resource research and analysis.

[1] "Resident zone" refers to those communities whose residents may participate in subsistence activities within Lake Clark National Park.

STUDY OBJECTIVES

The project had the following objectives:

A. Design a survey instrument to produce updated baseline information about subsistence hunting, fishing, and gathering and other topics that is compatible with information collected in previous rounds of household interviews.
B. Conduct key respondent interviews to explore key issues in the communities.
C. Train local residents in administration of the systematic household survey.
D. Conduct household surveys to record the following information:
    1. Demographic information
    2. Involvement in use, harvest, and sharing of fish, wildlife, and wild plants in 2004
    3. Estimates of amount of resources harvested in 2004
    4. Information about jobs and cash income
    5. Assessments of changes in subsistence harvest and use patterns
    6. Location of hunting and harvests of subsistence resources in 2004.
E. Collaboratively review and interpret study findings with the study communities.
F. Produce a final report.
G. Communicate study findings to the 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 providing study findings to each study community upon completion of the research.

Project Planning and Approvals

After approval of the contracts, project staff from ADF&G, SRB&A, and NPS and others met on July 23, 2004 to refine project objectives, methods, schedules, and responsibilities. Table 1-3 lists participants in that discussion. Several participants stressed certain issues and proposed ways to address these issues:

- Mary McBurney, NPS, Lake Clark-Katmai Unit, emphasized her agency's need for updated data for Lake Clark National Park resident zone communities of Port Alsworth and Nondalton.
- Stephen Braund, SRB&A, discussed his contract with NDM to collect subsistence data from a number of communities within the Kvichak-Iliamna Lake-Lake Clark system, including an immediate need for data for Port Alsworth, Nondalton, Iliamna, Pedro Bay, and Newhalen. This included detailed mapping of long-term and recent subsistence use areas.

- Karen Stickman, Native American Fish and Wildlife Association, stressed the importance of collecting "Traditional Ecological Knowledge," or TEK, as part of this research.
- Together, the group decided that the Division of Subsistence could efficiently collect baseline subsistence harvest data and one-year harvest map data from these five communities, helping both NPS and SRB&A achieve their objectives as well as collecting TEK information.

To meet the information needs of the participating organizations, coordinate research, and minimize respondent burden, the group decided:

- SRB&A would conduct research on respondent households' subsistence activities over the last 10 years using detailed mapping sessions. (The results of these interviews do not appear in this report.)
- The Division of Subsistence would use its standard household harvest survey instrument to meet both NPS and SRB&A data needs for updated baseline data.
- 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 study year (2004). This would assist SRB&A in their mapping efforts.

An additional follow-up meeting was held between Division of Subsistence staff and Mary McBurney and Don Callaway of NPS on September 16, 2004. They discussed the draft research design before it was submitted to communities for review.

Following these two scoping meetings, in late September 2004, ADF&G staff distributed the draft research design for NPS, SRB&A, and community review. They then contacted community/tribal governments in the five communities to arrange project scoping meetings. The goal of these meetings was to introduce the project, solicit ideas on topics, and establish the background for community approvals for the research. Table 1-4 lists each community meeting, which took place from October 20 through October 22, 2004. Issues raised during these meetings will be discussed at the beginning of each individual community chapter.

Following these meetings, each tribal government passed a resolution in support of the project. Cooperative agreements were negotiated between ADF&G and the tribal governments of Iliamna, Newhalen, Nondalton, and Pedro Bay to support each tribe's hiring a local research assistant to help conduct the surveys. There is no tribal or municipal government in Port Alsworth. Due to privacy concerns, members of this community preferred that the surveys only be conducted by ADF&G staff; therefore, no local assistant was hired in Port Alsworth.

ADF&G also developed a cooperative agreement with Karen Stickman of the Native American Fish and Wildlife Society. Ms. Stickman grew up in Nondalton, continues to participate in subsistence activities with her family members there, and co-authored a study of Nondalton's subsistence fisheries (Stickman et al. 2003). For this project, she conducted and transcribed three key respondent interviews in Nondalton, which are discussed in the Nondalton chapter, below. In addition Karen Stickman returned to Nondalton in October, 2004 to conduct follow-up interviews with the same key respondents.

Table 1-5 lists all project staff. The list includes those individuals involved in project management, field research, data entry, data analysis, map production, and report writing.

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 October 2004. A key goal was to structure the survey instrument to collect demographic, resource harvest and use, and other economic data that are compatible with information collected in previous rounds of household surveys in the study communities, and that appear in the ADF&G Community Subsistence Information System (CSIS) (formerly the Community Profile Database [CPDB] [Scott et al. 2001]). Appendix A is an example of the survey instrument used in this project.

ADF&G personnel trained local research assistants in each community (except Port Alsworth) to administer the household survey. The goal was to interview a representative of each year-round household in all communities. Participation was voluntary and all individual and household level responses are confidential.

As shown in Table 1-6, the study team interviewed 116 households in the 5 study communities, representing 79% of the year-round resident households. Twenty-two households could not be contacted during the interviewing period, and 10 households declined to participate. The refusal rate for the project was 7%. No households in Nondalton, Pedro Bay, or Port Alsworth declined to participate in the survey, but there were 5 refusals (17%) in Newhalen (17%) and 5 refusals (28%) in Iliamna. On average, interviews (including mapping) took approximately 0.74 hours (44 minutes) to complete. The longest average for interviews was at Nondalton at just over an hour, and the shortest average (30 minutes) was at Iliamna (Table 1-7).

Mapping of Locations of Subsistence Hunting, Fishing, and Gathering, 2004

During household interviews, the researchers asked respondents to indicate the location of their hunting, fishing, and gathering activities during the 2004 study year. In addition, interviewers asked the respondents to mark on the map the sites of each harvest, the species harvested, the amount harvested, and the month of the 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 to depict trap lines.

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 in 2001-2002 (Holen et al. 2005), an ADF&G study of freshwater fishing activities in 2003 (Krieg et al. 2005), an ADF&G mapping project in Iliamna and Newhalen in 1992 (unpublished), and the mapping project conducted as part of ADF&G's Regional Habitat Management Guides project in the early1980s (Wright et al. 1985: Appendix D). Table 1-8 summarizes the sample data for the mapping interviews.

The maps used in each community consisted of a set of 3 paper maps covering the areas around: (1) Lake Clark, (2) Iliamna Lake, and (3) the Upper Mulchatna River. They were produced by Division of Subsistence staff using ArcGIS 9.1 software. Two sets of maps were used for each surveyed household to record their subsistence activities for the year; 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 household's identification number, the survey date, and the interviewer's initials on each form.

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 survey. Others chose to map harvest areas immediately following the survey. For the most part, the ADF&G researchers conducted all the mapping portions of the interviews except in Nondalton and Newhalen. In these two communities, ADF&G researchers conducted most of the initial mapping interviews. After the local research assistants were adequately trained, they completed the few remaining household interviews, including mapping, on their own. Division staff checked all maps for consistency by matching them to the survey forms following completion of fieldwork.

Key Respondent Interviews

The initial plan was to conduct key respondent interviews in each study community in October, November, and December 2004, and also during the household survey period in January and February 2005. ADF&G staff prepared a list of topics (protocol) following the October community planning meetings (Appendix B). The purpose of these key respondent interviews was to determine if additional questions should be added to the survey instrument and to identify the type of questions that could potentially arise during the survey process.

The first key respondent interviews occurred in two of the five study communities, Iliamna and Pedro Bay in late 2004. However, most key respondent interviewing occurred while the harvest surveys were ongoing in January and February 2005. To begin, the ADF&G researchers asked the local research assistants to compile a list of local residents who were the most active in subsistence activities or who were knowledgeable about resource uses and TEK. These households were interviewed first. The goal was also to interview people of different ages to understand in detail the activities of young subsistence users and the detailed long-term knowledge of elders. During the survey interview, the local research assistants conducted the survey, leaving the ADF&G researcher to ask additional questions. In some cases, researchers returned to ask follow-up questions of knowledgeable local residents with the assistance of the local research assistants. These questions helped fill in potential gaps in the data and to obtain a further understanding of issues affecting local subsistence opportunities.

On November 8, 2004 ADF&G researchers Brian Davis and Davin Holen met with two staff members of the Iliamna Village council to discuss their community's concerns regarding the project. This discussion led into an open-ended interview in which the two local residents related their current concerns regarding local subsistence opportunities and the impact of regulations. Although this interview was brief, it assisted in formulating additional questions for the survey instrument.

In Pedro Bay, Brian Davis and Davin Holen conducted key respondent interviews at the village office with four residents and later at the home of one other resident. These interviews were open-ended with residents discussing their history of subsistence use in the area and their current concerns regarding potential mineral extraction, future construction of roads, impacts of sport fishing lodges, and regulations. The results of these interviews and additional information from Iliamna and Pedro Bay, obtained during the later survey process, are detailed in the individual community chapters.

In Port Alsworth, Brian Davis conducted 21 household harvest surveys in February 2005. Davis learned about individuals with particular, expert knowledge of subsistence activities and the environment. He asked additional questions during the survey, in conformance with the key respondent interview protocol, and recorded responses on the survey form. These "extended" household harvest surveys provided valuable information on the history of subsistence in Port Alsworth, local observations of resource population trends, changing weather patterns, and other topics. These observations are included throughout the Port Alsworth chapter, providing much of the context for interpreting the harvest data from this community, as well as particular points for discussion.

In Newhalen, Davin Holen and the local research assistant conducted 25 household harvest surveys in January and February 2005. During the surveys, Holen asked additional questions about resource population trends, changes in harvest areas, and the use of freshwater seals for subsistence. These observations will be detailed in the chapter for Newhalen.

In Nondalton, key respondent interviews were scheduled to coincide with a March 24, 2005 community planning and development meeting conducted by the Nondalton Tribal Council, Nondalton City Council, and Kijik Corporation. Project personnel decided to conduct the interviews at this time because key respondents were likely to be in the community for the meeting. The meeting started the afternoon of March 24 and was well attended. Due to a lengthy agenda and strong community participation it continued into the next day. At the conclusion of the meeting on March 25, Karen Stickman, local research assistant Terina Trefon, and Ted Krieg conducted two key respondent interviews. The same interviewers conducted a third interview the morning of March 26. Key respondents in the first interview were two women, 50 and 70 years of age, who are lifelong residents of Nondalton. The second interview involved two men, one 82 years old and a lifelong resident of Nondalton and the other 76 years of age who has lived in Nondalton since the early 1950s. The third interview on March 26 involved an 84 year old woman who has lived in Nondalton all of her life and her approximately 50 year old son who was born and raised in Nondalton and had recently moved back to live there full time. The interviews were audio taped and Karen Stickman transcribed the tapes. A map of the area was used to facilitate discussion and, although mapping was not a main focus of the interviews, historical resource harvest areas and some locations identified during each of the interviews were mapped.

Household Survey Implementation

Iliamna and Newhalen

As noted above, staff traveled to Iliamna on November 8-11, 2004 for preliminary work and key respondent interviews. They contacted the local governments and potential local research assistants. Household surveys began in January 2005. Davin Holen visited the communities twice, between January 23-26 and between January 28-February 2. The 2 local research assistants, Tim Anelon in Iliamna and Crystal Wassillie in Newhalen, were assigned to the project by their respective village councils. Project staff conducted fieldwork in Iliamna and Newhalen simultaneously due to the relative ease of travel between these 2 communities. (They are connected by 5 miles of paved road.) The different daily schedules of the 2 local research assistants allowed for Holen to work with the Newhalen local research assistant during the day and the Iliamna local research assistant in the morning and evening.

Davin Holen and Brian Davis made a follow-up trip from March 15-17, 2005 to complete the surveys for Iliamna. The local research assistant for Newhalen had completed all possible surveys for Newhalen. Due to his other duties for the Iliamna Village Council, the Iliamna local research assistant had completed only 11 surveys. The ADF&G researchers interviewed 2 additional people but this still left the community with 5 households that could not be contacted after repeated attempts between January and March. There were 5 refusals, a relatively high percentage of total contacts (28 percent). Subsequent inquiry suggested that sensitivity about the cash income questions in the survey may have caused the refusals. In the large land mammal harvest survey, conducted by the Division of Subsistence and BBNA in 2002, the refusal rate in Iliamna was 16 percent (4 of 25 contacted households), compared to a project refusal rate of 12 percent (Holen et al. 2005:7). Thirteen household surveys (59%) were completed in Iliamna and 25 (81%) in Newhalen (Table 1-6).

Pedro Bay

The Pedro Bay Village Council hired Karla Jensen as the local research assistant in February 2005. Brian Davis traveled to the community on February 16 and began conducting the surveys with Jensen's assistance. Pedro Bay residents were largely available during this time of the year, and only 2 households were out of the community. Davis and Jensen had little trouble contacting people to participate in the survey. Jensen made most of the initial contacts, and then drove Davis around to people's houses on her ATV. One survey was done at the Bed and Breakfast where Davis was staying, because the interviewee lived far away from the community's center and the path to his house was treacherous. When he left the community on February 19, Davis had completed 18 household surveys (86%) (Table 1-6).

Port Alsworth

Davis flew to Port Alsworth on January 24, 2005, and began conducting household surveys that day. There is no local government in the community, so Davis chose as his point of contact the Alsworth family, primarily Glen Alsworth Jr. who runs the family lodge in the center of town. Mr. Alsworth helped orient Davis to the community's layout, and told him which households

were not year-round residents, and would therefore not be included in the survey. Davis conducted household surveys with 20 of 30 permanent full-time households in Port Alsworth between January 24 and 27. Several households were out of town, and unreachable during Davis's stay. Also, there were approximately 3 permanent residences across the Tanalian River west of Port Alsworth, and none of these were contacted during that period. Davis left the community on January 28, intending to return the next week to complete more interviews, but in early February a tragic airplane accident left the community in despair. Instead of returning to Port Alsworth, in mid-February Davis telephoned 2 of the 3 households west of the Tanalian River and conducted surveys with them over the phone. In total, 22 household surveys (73%) were completed (Table 1-6).

Nondalton

The Nondalton Village Council hired Terina Trefon as the local research assistant on January 20, 2005. After training by ADF&G staff, she reviewed the Nondalton household list, updated it with new households, and identified households that were not living in the community during the study year. Terina contacted households to make appointments and from January 21 through January 26 she worked with ADF&G researcher Ted Krieg to conduct surveys. After January 26, Terina conducted surveys independently.

By the 5th of February, 35 households had been surveyed. Krieg had planned to return to Nondalton on February 7 to work with Terina but on February 5, two young Nondalton men fell through the ice at the head of the Newhalen River and drowned. This was a devastating loss to the community and plans to continue any work there at that time were put on hold.

On March 8, Krieg returned to Nondalton to complete the baseline surveys and start interviews with Terina for another project, Customary Trade and Barter of Subsistence Fish in the Bristol Bay Area. They reviewed the 35 completed baseline subsistence harvest surveys, and identified and contacted 7 households for follow up questions to complete missing information or correct unclear responses. Three additional households were surveyed for the baseline project. Generally for most households there was a break of a month or more between the baseline surveys and the start of the customary trade surveys. This helped to prevent confusion by avoiding concurrent surveys for two different projects. Thirty-eight out of 43 Nondalton households (88%) were surveyed for the baseline project (Table 1-6).

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. Responses were coded following standardized codebook conventions used by Division of Subsistence to facilitate data entry. Information management staff within the Division of Subsistence set up database structures within an MS 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 secure Internet site. Daily incremental backups of the database

occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than one hour of data entry would be lost in the unlikely event of a catastrophic failure. All survey data were entered twice and each set compared to minimize data entry errors.

Once data were entered and confirmed, information was processed with the use of the Statistical Package for the Social Sciences (SPSS) Version 11.5. 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 in numbers of animals, gallons, or buckets were converted to pounds usable weight using standard factors (see Appendix C for conversion factors).

ADF&G staff also used SPSS for analyzing the survey information. 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 situationally. The Division of Subsistence has standardized practices to address missing information, such as minimal value substitution or use of an average 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 is treated as a "non-response" and not included in community estimates. ADF&G staff 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:

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

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 an unknown value falls 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 percent. 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 percent confidence limits is 1.96. Though there are numerous ways to express the formula below, it contains the components of a SD, V, and SE.

Relative Precision of the Mean (CL%):

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

s = sample standard deviation
n = sample size
N = population size
$t_{\alpha/2}$ = *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 away from the sampled mean.

The corrected, final data from the household survey will be added to the Division of Subsistence Community Subsistence Information System (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 researchers in consultation with community officials and other knowledgeable respondents. Population estimates for each community and other demographic data based on the division's household survey (pertaining to the population as of December 31, 2004) differ from estimates developed by the federal census (pertaining to April 2000) and the Alaska Department of Labor and Workforce Development (ADLWD; pertaining to July 1, 2004), for several reasons (see Table 1-1). The division survey results may reflect changes in each community's population since the federal census in 2000 and the ADLWD estimate of July 2004. Also, the division survey took place largely in January and February 2005, months when seasonal residents of the community are likely to be absent. Some seasonal residents may be part of the federal and ADLWD estimates. Differences in the composition of the sample upon which each population estimate is based may also account for some of the differences. (See, for example, the discussion of the population estimate for Pedro Bay in Chapter Four.)

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 to mark 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.

As a follow-up, ADF&G staff Davin Holen and Brian Davis met with SRB&A to discuss the type of map data that could be displayed in a public document during final map production. This was in response to community concerns regarding confidentiality of detailed harvest locations. ADF&G then provided SRB&A with a map template for this final report. Using the template, SRB&A produced the maps for this report.

Preliminary Data Review Meeting

When preliminary results were available on June 1, 2005, project staff presented an overview of some of the draft study findings to project partners in Anchorage. Table 1-9 lists the participants in that review meeting.

Community Review Meetings

ADF&G staff presented preliminary survey findings at meetings in each of the study communities in early November 2005 that were organized in collaboration with the village councils or community leadership. What was learned during the community meetings appears in the individual community chapters and is also summarized in Chapter Seven. (See Table 7-2 in Chapter Seven for numbers of participants.)

Final Report Organization

ADF&G staff prepared this final report. It summarizes the results of the key respondent interviews, systematic household surveys, mapping interviews conducted by ADF&G, and community meetings. The findings are organized primarily by study community. A set of multi-community tables, that are referenced and discussed in all subsequent chapters, appears at the end of this introductory chapter. These include findings on demographic characteristics (Table 1-10), place of birth (Table 1-11), employment characteristics (Table 1-12), job site locations (Table 1-13), cost of food and income spent on food (Table 1-14), individual participation in harvesting and processing of wild resources (Table 1-15), characteristics of resource harvest and use (Table 1-16), and percentage of households harvesting salmon by gear type and species (Table 1-17). Figure 1-2 shows estimated harvests of wild resources, in pounds usable weight per person by study community, for each year for which comprehensive household surveys have been conducted. Supplemental tables about salmon and nonsalmon harvests by gear type, participation in the harvest of nonsalmon fish by gear type, and removal of fish from commercial harvests for home use appear in Appendix D. Because of the large number of maps produced for this project of hunting, fishing, and gathering areas used by each community in 2004, all maps are included on a CD found inside the back cover of this report (Appendix E). Selected maps appear in the community chapters. 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 NPS, SRB&A, and the study communities for 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 five study communities (Appendix F).

Table 1-1. Population of the Study Communities, 2000 and 2004

	Census Year 2000				July 1, 2004	Study Findings for 2004[1]			
	Total Population		Alaska Native Population		Total	Total Population		Alaska Native Population	
	Households	Population	People	% of Total	Population	Households	Population	People	% of Total
Iliamna	35	102	59	58%	90	22	73	49	67%
Newhalen	39	160	146	91%	183	31	125	120	96%
Nondalton	68	221	199	90%	205	43	164	147	90%
Pedro Bay	17	50	32	64%	47	21	69	49	71%
Port Alsworth	34	104	23	22%	113	30	109	19	18%
Total	193	637	459	72%	638	147	540	385	71%

[1] Pertains to estimated population as of 12/31/04 based on surveys of year-round households; see also Table 1-10 and individual community chapters.

Sources: U.S. Census Bureau 2001; Alaska Department of Labor and Workforce Development 2006

For 2000: U.S. Census Bureau 2001

For July 1, 2004 estimate: Alaska Department of Labor and Workforce Development 2006

For Study Findings, 2004: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 1-2. Comprehensive and Other Subsistence Harvest and Use Household Survey Projects, Kvichak-Iliamna Lake-Lake Clark Communities

Community	Year and Study Type										
	1973	1980	1981	1983	1988	1991	1992	1996	2001	2002	2004
Nondalton	ALL	ALL	ALL	ALL					LLM	FWF	ALL
Port Alsworth				ALL					LLM	FWF	ALL
Iliamna	ALL			ALL		ALL			LLM	FWF	ALL
Newhalen	ALL			ALL		ALL			LLM	FWF	ALL
Pedro Bay	ALL			ALL				ALL	LLM	FWF	ALL
Igiugig	ALL			ALL			ALL		LLM	FWF	
Kokhanok	ALL			ALL			ALL		LLM	FWF	
Levelock	ALL				ALL		ALL	FWF	LLM	FWF	

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
Shaded cells = this study

Note: annual estimates of salmon harvested in subsistence nets are available for all communities in ADF&G subsistence fisheries database (ADF&G 2003).

Note: all studies above 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). ADF&G is the only repository of the data collected in the UAF study.

Table 1-3. Participants in Project Scoping Meeting, July 23, 2004

Name	Organization
Braund, Stephen	Stephen R. Braund & Associates
Davis, Brian	ADF&G, Division of Subsistence
Dolezal, Wayne	ADF&G, Division of Sport Fish
Fall, James	ADF&G, Division of Subsistence
Foo, Stan	Alaska Department of Natural Resources
Gaul, Karen	National Park Service
Holen, Davin	ADF&G, Division of Subsistence
Krieg, Ted (teleconference)	ADF&G, Division of Subsistence
McBurney, Mary (teleconference)	National Park Service
Stickman, Karen	Native American Fish and Wildlife Society

Table 1-4. Community Scoping Meetings, October 2004

Community	Date	Attendance[a]	
		Community Residents	Total
Pedro Bay	10/20/2004	8	12
Iliamna	10/20/2004	0	b
Nondalton	10/21/2004	12	18
Newhalen	10/21/2004	8	12
Port Alsworth	10/22/2004	10	16

[a] Brian Davis, James Fall, and Davin Holen of ADF&G, and Erik Hilsinger of Stephen R. Braund & Associates attended all the meetings. Mary McBurney and Jennifer Shaw of the National Park Service attended the meetings in Nondalton and Port Alsworth.

[b] No community members attended and the meeting was cancelled. One Iliamna Tribal Council member attended the meeting in Newhalen the following evening. Davis and Holen met with the Iliamna Tribal Council on November 9, 2004**.**

Table 1-5. Project Staff

Task	Name	Organization
Project Design & Management	James Fall	ADF&G, Division of Subsistence
Data Management Lead	Bridget Easley	ADF&G, Division of Subsistence
Programmer	David Koster	ADF&G, Division of Subsistence
Data Entry	Bertha Angnabooguk	ADF&G, Division of Subsistence
Cartography	Iris A. Prophet	Stephen R. Braund & Associates
	Stephen R. Braund	Stephen R. Braund & Associates
	Erik S. Braund	Stephen R. Braund & Associates
	Raena K. Schraer	Stephen R. Braund & Associates
	Davin Holen	ADF&G, Division of Subsistence
Field Research Staff	Brian Davis	ADF&G, Division of Subsistence
	Davin Holen	ADF&G, Division of Subsistence
	Ted Krieg	ADF&G, Division of Subsistence
	Karen Stickman	Native American Fish and Wildlife Society
	Tim Anelon	Iliamna
	Karla Jensen	Pedro Bay
	Crystal Wassillie	Newhalen
	Terina Trefon	Nondalton
National Park Service Liaison	Mary McBurney	National Park Service
SR Braund & Asso. Liaison	Stephen R. Braund	Stephen R. Braund & Associates

Table 1-6. Sample Achievement, 2004

	Iliamna	Newhalen	Nondalton	Pedro Bay	Port Alsworth	All Communities
Estimated Number of Households	23	39	48	29	36	175
Interview Goal	23	39	48	29	36	175
Households Interviewed	13	25	38	18	22	116
Households Failed to Contact	4	1	5	3	9	22
Households Declined to be Interviewed	5	5	0	0	0	10
Moved/Non-Resident Households *	1	8	5	8	6	28
Final Estimate of Permanent Households	22	31	43	21	30	147
Percentage Interviewed	59%	81%	88%	86%	73%	79%
Interview Weighting Factor	1.69	1.24	1.13	1.17	1.36	NA
Refusal Rate **	28%	17%	0%	0%	0%	7%
Sampled Population	43	101	145	59	80	428
Estimated Population	73	125	164	69	109	540

* Non-Resident Household - A household that had not lived in the community for at least three months during the study year.
** Refusal Rate = Number of refusals/number of households contacted

Table 1-7. Average Length of Interviews

Community	Number Surveys	Length of Interviews (hours) Mean	Maximum	Minimum
Iliamna	13	0.50	1.05	0.13
Newhalen	25	0.66	1.25	0.25
Nondalton	38	1.03	3.50	0.30
Pedro Bay	18	0.73	1.50	0.25
Port Alsworth	22	0.78	1.83	0.37
Total	116	0.74	3.50	0.13

Table 1-8. Summary of Map Data Interviews

Community	Total Number of Households Interviewed	Number of Households that Provided Geographic Use Area Information About:						
		Salmon	Other Fish	Land Mammals	Marine Mammals	Birds	Plants	Any Category
Iliamna	13	13	10	5	3	8	11	13
Newhalen	25	23	22	11	6	21	23	25
Nondalton	38	33	29	21	0	18	35	37
Pedro Bay	18	15	11	5	0	12	18	18
Port Alsworth	22	18	14	12	0	8	19	22

Table 1-9. Participants in Agency Preliminary Findings Review Meeting, June 1, 2005

Name	Organization
Braund, Stephen	Stephen R. Braund & Associates
Callaway, Don	National Park Service
Davis, Brian	ADF&G, Division of Subsistence
Dolezal, Wayne	ADF&G, Division of Sport Fish
Fall, James	ADF&G, Division of Subsistence
Gaul, Karen	National Park Service
Holen, Davin	ADF&G, Division of Subsistence
Koster, Dave	ADF&G, Division of Subsistence
Krieg, Ted (teleconference)	ADF&G, Division of Subsistence
McBurney, Mary	National Park Service
Ryland, Dave	ADF&G, Division of Sport Fish
Stickman, Karen	Native American Fish and Wildlife Society
Waring, Kevin	Kevin Waring and Associates

Table 1-10. Demographic Characteristics of Households, 2004

Characteristics	Iliamna	Newhalen	Nondalton	Pedro Bay	Port Alsworth
Sampled Households	13	25	38	18	22
Number of Households in the Community	22	31	43	21	30
Percentage of Households Sampled	59.1%	80.6%	88.4%	85.7%	73.3%
Household Size					
Mean	3.3	4.0	3.8	3.3	3.6
Minimum	1.0	1.0	1.0	1.0	1.0
Maximum	7.0	9.0	9.0	10.0	7.0
Sample Population	43.0	101.0	145.0	59.0	80.0
Estimated Community Population	72.8	125.2	164.1	68.8	109.1
Age					
Mean	34.5	30.9	28.4	29.9	27.0
Minimum*	1.0	0.0	0.0	0.0	0.0
Maximum	72.0	85.0	99.0	82.0	73.0
Median	40.0	25.0	24.0	25.0	25.0
Length of Residency - Population					
Mean	22.5	22.7	24.4	16.4	10.8
Minimum	1.0	0.0	0.0	0.0	1.0
Maximum	72.0	85.0	99.0	82.0	50.0
Length of Residency - Household Heads					
Mean	29.9	35.3	35.1	26.4	14.8
Minimum	8.0	2.0	1.0	0.5	1.0
Maximum	72.0	85.0	83.0	82.0	50.0
Sex					
Males					
Number	38.9	65.7	86.0	36.2	55.9
Percentage	53.5%	52.5%	52.4%	52.5%	51.3%
Females					
Number	33.8	59.5	78.1	32.7	53.2
Percentage	46.5%	47.5%	47.6%	47.5%	48.8%
Alaska Native					
Households (Either Head)					
Number	15.2	31.0	41.9	18.7	6.8
Percentage	69.2%	100.0%	97.4%	88.9%	22.7%
Estimated Population					
Number	49.1	120.3	147.1	49.0	19.1
Percentage	67.4%	96.0%	89.7%	71.2%	17.5%

* Minimum household age of 0 indicates newborn in 2005.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 1-11. Place of Birth of Household Heads

Birthplace	Percentage of Household Heads				
	Iliamna	Newhalen	Nondalton	Pedro Bay	Port Alsworth
Study Communities					
Iliamna	24.0%	0.0%	0.0%	0.0%	0.0%
Newhalen	8.0%	47.8%	0.0%	3.3%	0.0%
Nondalton	8.0%	0.0%	61.5%	0.0%	2.5%
Pedro Bay	0.0%	0.0%	3.1%	33.3%	0.0%
Port Alsworth	0.0%	0.0%	0.0%	0.0%	12.5%
Other Bristol Bay Communities					
Chignik Lake	0.0%	0.0%	1.5%	0.0%	0.0%
Dillingham	0.0%	2.2%	0.0%	6.7%	0.0%
Igiugig	4.0%	8.7%	0.0%	0.0%	0.0%
Kokhanok	0.0%	8.7%	1.5%	0.0%	0.0%
Koliganek	0.0%	2.2%	0.0%	0.0%	0.0%
Levelock	4.0%	2.2%	0.0%	0.0%	0.0%
Naknek	0.0%	2.2%	0.0%	0.0%	0.0%
New Stuyahok	0.0%	0.0%	1.5%	0.0%	0.0%
Balance of Lake and Peninsula Borough	0.0%	0.0%	1.5%	10.0%	0.0%
Lake Clark	0.0%	4.3%	0.0%	0.0%	0.0%
Old Nondalton	0.0%	0.0%	4.6%	0.0%	0.0%
Chekok	4.0%	0.0%	0.0%	0.0%	0.0%
Pile Bay	0.0%	0.0%	0.0%	0.0%	2.5%
Dillingham/ Wood River	4.0%	2.2%	0.0%	0.0%	0.0%
Other Alaska Communities					
Anchorage	0.0%	0.0%	3.1%	6.7%	0.0%
Bethel	0.0%	2.2%	0.0%	0.0%	0.0%
Emmonak	0.0%	2.2%	0.0%	0.0%	0.0%
Fairbanks	0.0%	0.0%	1.5%	0.0%	0.0%
Kotzebue	0.0%	0.0%	0.0%	3.3%	0.0%
Lime Village	0.0%	0.0%	3.1%	0.0%	0.0%
Old Harbor	0.0%	0.0%	0.0%	6.7%	0.0%
Pilot Station	0.0%	2.2%	0.0%	0.0%	0.0%
Russian Mission	0.0%	2.2%	0.0%	0.0%	0.0%
Sitka	0.0%	0.0%	1.5%	0.0%	0.0%
Soldotna	0.0%	0.0%	0.0%	0.0%	2.5%
Other U.S.	44.0%	10.9%	13.8%	30.0%	75.0%
Foreign	0.0%	0.0%	0.0%	0.0%	5.0%

Note: "birthplace" means the residence of the parents of the individual when the individual was born.

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 1-12. Employment Characteristics, 2004

Characteristics	Iliamna	Newhalen	Nondalton	Pedro Bay	Port Alsworth
All Adults					
Number	55.8	83.1	113.2	46.7	69.5
Mean Weeks Employed	33.2	22.7	19.5	34.0	35.9
Employed Adults					
Number	40.6	57.0	78.1	44.3	58.6
Percentage	72.7%	68.7%	69.0%	95.0%	84.3%
Jobs					
Number	54.2	68.2	126.7	68.8	98.2
Mean	1.3	1.2	1.6	1.6	1.7
Minimum	1.0	1.0	1.0	1.0	1.0
Maximum	3.0	2.0	4.0	4.0	4.0
Months Employed					
Mean	10.5	7.6	6.5	8.3	9.8
Minimum	2.0	0.0	1.0	1.0	2.0
Maximum	12.0	12.0	12.0	12.0	12.0
Percent Employed Year-Round	79.2%	28.3%	20.3%	52.6%	67.4%
Mean Weeks Employed	45.7	33.1	28.3	35.8	42.5
HOUSEHOLDS					
Number	22	31	43	21	30
Employed					
Number	20.3	28.5	39.6	19.8	27.3
Percentage	92.3%	92.0%	92.1%	94.4%	90.9%
Jobs per Employed Household					
Mean	2.7	2.4	3.2	3.5	3.6
Minimum	1.0	1.0	1.0	1.0	1.0
Maximum	5.0	4.0	10.0	6.0	9.0
Employed Adults					
Minimum	1.0	1.0	1.0	1.0	1.0
Maximum	4.0	4.0	5.0	5.0	4.0
Mean					
Employed Households	2.0	2.0	2.0	2.2	2.2
Total Households	1.8	1.8	1.8	2.1	2.0
Mean Person Weeks of Employment	91.4	66.1	55.7	80.0	91.4

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 1-13. Location of Jobs, 2004

Location of Job	Iliamna (Estimated 54 jobs)		Newhalen (Estimated 68 jobs)		Nondalton (Estimated 127 jobs)		Pedro Bay (Estimated 69 jobs)		Port Alsworth (Estimated 98 jobs)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Iliamna	47	87.5%	11	16.4%	8	6.2%	1	1.7%	0	0.0%
Newhalen	0	0.0%	37	54.5%	0	0.0%	0	0.0%	0	0.0%
Nondalton	0	0.0%	0	0.0%	84	66.1%	0	0.0%	0	0.0%
Pedro Bay	0	0.0%	0	0.0%	0	0.0%	62	89.8%	0	0.0%
Port Alsworth	0	0.0%	0	0.0%	1	0.9%	0	0.0%	91	93.1%
Study Area Subtotal	47	87.5%	48	70.9%	93	73.2%	63	91.5%	91	93.1%
Anchorage	0	0.0%	0	0.0%	1	0.9%	1	1.7%	1	1.4%
Balance of Bristol Bay Census Area	0	0.0%	0	0.0%	0	0.0%	1	1.7%	0	0.0%
Balance of Prince of Wales Census Sub-Area	0	0.0%	1	1.8%	0	0.0%	0	0.0%	0	0.0%
Balance of Yukon Flats Census Sub-Area	0	0.0%	0	0.0%	2	1.8%	0	0.0%	0	0.0%
Egegik	0	0.0%	0	0.0%	1	0.9%	0	0.0%	0	0.0%
Fairbanks	0	0.0%	0	0.0%	7	5.4%	0	0.0%	0	0.0%
Igiugig	2	3.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Kokhanok	0	0.0%	1	1.8%	0	0.0%	0	0.0%	0	0.0%
McGrath	0	0.0%	0	0.0%	17*	13.4%	0	0.0%	0	0.0%
Naknek	0	0.0%	1	1.8%	0	0.0%	0	0.0%	0	0.0%
Pilot Station	0	0.0%	0	0.0%	1	0.9%	0	0.0%	0	0.0%
Port Heiden	0	0.0%	0	0.0%	1	0.9%	0	0.0%	0	0.0%
Prudhoe Bay	0	0.0%	1	1.8%	1	0.9%	1	1.7%	0	0.0%
Balance of Lake and Peninsula Borough	0	0.0%	0	0.0%	1	0.9%	0	0.0%	4	4.2%
Tuklung	0	0.0%	0	0.0%	0	0.0%	1	1.7%	0	0.0%
Bristol Bay	3	6.3%	15	21.8%	0	0.0%	0	0.0%	0	0.0%
Other U.S.	0	0.0%	0	0.0%	0	0.0%	1	1.7%	0	0.0%
Statewide	0	0.0%	0	0.0%	1	0.9%	0	0.0%	0	0.0%
Statewide (Excluding Southeast)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	1.4%
Missing	2	3.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Totals:	54	100.0%	68	100.0%	110	100.0%	69	100.0%	98	100.0%

*Seasonal Jobs in Firefighting
Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 1-14. Estimated Annual Cost of Purchasing Food, 2004

	Mean Household Cost of Annual Food Purchase	Cost of Food per Capita	Percent of Annual Cash Income Spent on Food
Iliamna	$8,673	$2,622	17.4%
Newhalen	$9,925	$2,406	18.3%
Nondalton	$8,365	$2,205	28.5%
Pedro Bay	$5,063	$1,544	9.8%
Port Alsworth	$5,308	$1,467	10.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 1-15. Individual Participation in the Harvest and Processing of Wild Resources, 2004

			Iliamna	Newhalen	Nondalton	Pedro Bay	Port Alsworth
Total Number of People			72.8	125.2	164.1	68.8	109.1
BIRDS / GAME	Hunt	Number	33.8	43.4	47.5	39.7	31.4
		Percentage	46.5%	34.7%	29.0%	57.6%	28.8%
		Missing	0.0	0.0	0.0	0.0	0.0
		Missing %	0.0%	0.0%	0.0%	0.0%	0.0%
	Process	Number	45.7	74.4	56.6	36.2	75.0
		Percentage	62.8%	59.4%	34.5%	52.5%	68.8%
		Missing	0.0	0.0	0.0	0.0	0.0
		Missing %	0.0%	0.0%	0.0%	0.0%	0.0%
FISH	Fish	Number	52.5	85.6	132.4	58.3	83.2
		Percentage	72.1%	68.3%	80.7%	84.7%	76.3%
		Missing	0.0	0.0	0.0	0.0	0.0
		Missing %	0.0%	0.0%	0.0%	0.0%	0.0%
	Process	Number	57.5	84.3	130.1	61.8	83.2
		Percentage	79.1%	67.3%	79.3%	89.8%	76.3%
		Missing	0.0	0.0	0.0	0.0	0.0
		Missing %	0.0%	0.0%	0.0%	0.0%	0.0%
FURBEARERS	Hunt or Trap	Number	27.1	18.6	37.3	1.2	20.5
		Percentage	37.2%	14.9%	22.8%	1.7%	18.8%
		Missing	0.0	0.0	0.0	0.0	0.0
		Missing %	0.0%	0.0%	0.0%	0.0%	0.0%
	Process	Number	35.5	23.6	38.5	5.8	17.7
		Percentage	48.8%	18.8%	23.4%	8.5%	16.3%
		Missing	0.0	0.0	0.0	0.0	0.0
		Missing %	0.0%	0.0%	0.0%	0.0%	0.0%
PLANTS	Gather	Number	55.8	90.5	149.4	61.8	81.8
		Percentage	76.7%	72.3%	91.0%	89.8%	75.0%
		Missing	0.0	0.0	0.0	0.0	0.0
		Missing %	0.0%	0.0%	0.0%	0.0%	0.0%
	Process	Number	55.8	78.1	148.2	61.8	76.4
		Percentage	76.7%	62.4%	90.3%	89.8%	70.0%
		Missing	1.7	0.0	0.0	0.0	0.0
		Missing %	2.3%	0.0%	0.0%	0.0%	0.0%
ANY RESOURCE							
	Attempt	Number	66.0	107.9	152.8	66.5	98.2
		Percent	90.7%	86.1%	93.1%	96.6%	90.0%
	Process	Number	64.3	104.2	153.9	66.5	96.8
		Percent	88.4%	83.2%	93.8%	96.6%	88.8%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 1-16. Characteristics of Resource Harvest and Use, 2004

	Iliamna	Newhalen	Nondalton	Pedro Bay	Port Alsworth
Mean Number Of Resources Used Per Household	11.4	14.8	13.7	10.8	11.0
Minimum	4.0	3.0	4.0	3.0	1.0
Maximum	18.0	37.0	48.0	19.0	29.0
95 % Confidence Limit (+/-)	14.4%	11.1%	7.6%	7.6%	13.8%
Median	11.0	12.0	11.5	9.5	9.5
Mean Number Of Resources Attempted To Harvest Per Household	9.5	13.2	11.6	7.8	9.2
Minimum	3.0	2.0	0.0	1.0	1.0
Maximum	20.0	48.0	46.0	15.0	27.0
95 % Confidence Limit (+/-)	21.1%	14.7%	8.9%	9.7%	16.4%
Median	8.0	10.0	9.5	8.5	8.5
Mean Number Of Resources Harvested Per Household	8.4	12.2	10.8	6.7	7.4
Minimum	3.0	2.0	0.0	1.0	1.0
Maximum	17.0	32.0	45.0	12.0	21.0
95 % Confidence Limit (+/-)	20.3%	12.7%	9.0%	10.2%	15.5%
Median	7.0	9.0	9.0	6.5	7.0
Mean Number Of Resources Received Per Household	4.8	5.6	5.4	5.7	4.5
Minimum	0.0	0.0	0.0	1.0	0.0
Maximum	12.0	17.0	23.0	12.0	11.0
95 % Confidence Limit (+/-)	36.7%	17.3%	10.2%	12.1%	18.2%
Median	4.0	3.0	4.0	5.0	3.5
Mean Number Of Resources Given Away Per Household	3.2	8.1	6.3	3.5	3.4
Minimum	0.0	0.0	0.0	0.0	0.0
Maximum	14.0	28.0	32.0	8.0	22.0
95 % Confidence Limit (+/-)	54.8%	17.6%	12.3%	13.4%	32.9%
Median	1.0	6.0	3.0	3.5	2.0
Mean Household Harvest, Pounds	1552.7	2793.8	1364.8	1001.3	483.0
Minimum	103.3	120.0	0.0	0.0	4.3
Maximum	4116.0	7902.6	4879.9	5589.9	1719.4
Total Pounds Harvested	20185.5	69844.2	51861.7	18022.6	10625.4
Community Per Capita Harvest, Pounds	469.4	691.5	357.7	305.5	132.8
Percent Using Any Resource	100.0%	100.0%	100.0%	100.0%	100.0%
Percent Attempting To Harvest Any Resource	100.0%	100.0%	97.4%	100.0%	100.0%
Percent Harvesting Any Resource	100.0%	100.0%	97.4%	100.0%	100.0%
Percent Receiving Any Resource	76.9%	96.0%	97.4%	100.0%	90.9%
Percent Giving Away Any Resource	53.8%	80.0%	92.1%	88.9%	72.7%
Number Of Households In Sample	13	25	38	18	22
Number of Resources Available	112	113	112	112	114

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 1-17. Percentage of Households Harvesting Salmon by Gear Type and Species, 2004

RESOURCE	Removed from Commercial Catch	Subsistence Methods			Subsistence Gear Any Method	Rod and Reel	Any Method
		Setnet	Seine	Other			
Iliamna							
Salmon	7.7%	100.0%	0.0%	0.0%	100.0%	15.4%	100.0%
Chum Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho Salmon	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%
Chinook Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pink Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye Salmon	7.7%	100.0%	0.0%	0.0%	100.0%	15.4%	100.0%
Landlocked Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Spawning Sockeye	0.0%	46.2%	0.0%	0.0%	46.2%	0.0%	46.2%
Unknown Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Newhalen							
Salmon	16.0%	92.0%	4.0%	4.0%	92.0%	8.0%	92.0%
Chum Salmon	4.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%
Coho Salmon	0.0%	4.0%	0.0%	4.0%	8.0%	8.0%	16.0%
Chinook Salmon	16.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.0%
Pink Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye Salmon	8.0%	92.0%	0.0%	0.0%	92.0%	4.0%	92.0%
Landlocked Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Spawning Sockeye	0.0%	44.0%	4.0%	0.0%	48.0%	0.0%	48.0%
Unknown Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nondalton							
Salmon	2.6%	78.9%	18.4%	0.0%	84.2%	18.4%	86.8%
Chum Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	2.6%
Chinook Salmon	2.6%	0.0%	0.0%	0.0%	0.0%	2.6%	5.3%
Pink Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye Salmon	2.6%	78.9%	18.4%	0.0%	84.2%	18.4%	86.8%
Landlocked Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Spawning Sockeye	0.0%	31.6%	2.6%	0.0%	34.2%	2.6%	36.8%
Unknown Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pedro Bay							
Salmon	0.0%	77.8%	0.0%	5.6%	77.8%	27.8%	77.8%
Chum Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	5.6%
Chinook Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pink Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye Salmon	0.0%	77.8%	0.0%	0.0%	77.8%	27.8%	77.8%
Landlocked Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Spawning Sockeye	0.0%	33.3%	0.0%	5.6%	38.9%	16.7%	55.6%
Unknown Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Port Alsworth							
Salmon	4.5%	77.3%	0.0%	0.0%	77.3%	9.1%	81.8%
Chum Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	4.5%
Chinook Salmon	0.0%	4.5%	0.0%	0.0%	4.5%	0.0%	4.5%
Pink Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye Salmon	4.5%	77.3%	0.0%	0.0%	77.3%	9.1%	81.8%
Landlocked Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Spawning Sockeye	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

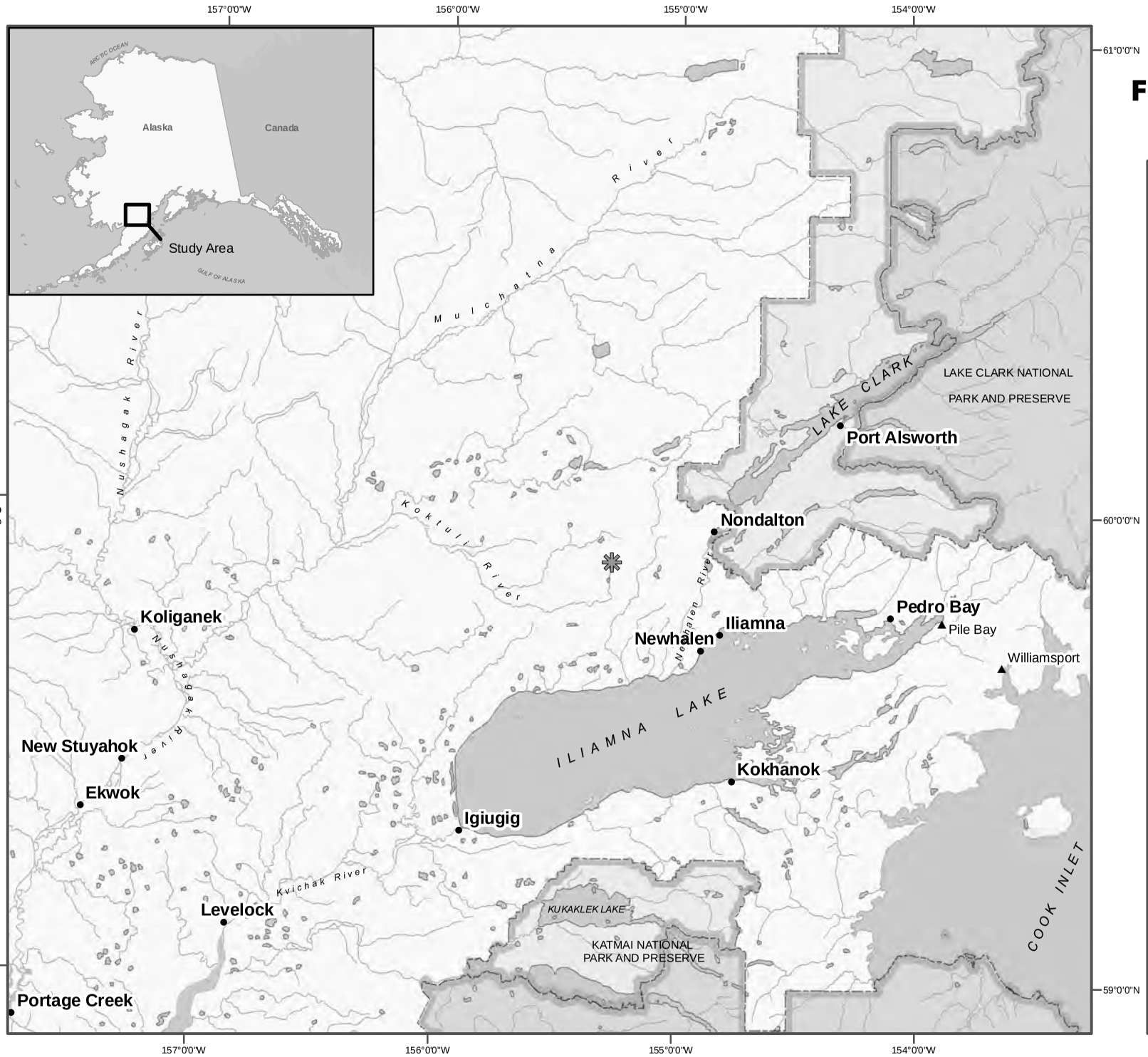

Figure 1-1

- Pebble Mine Site
- Communities
- Other Localities
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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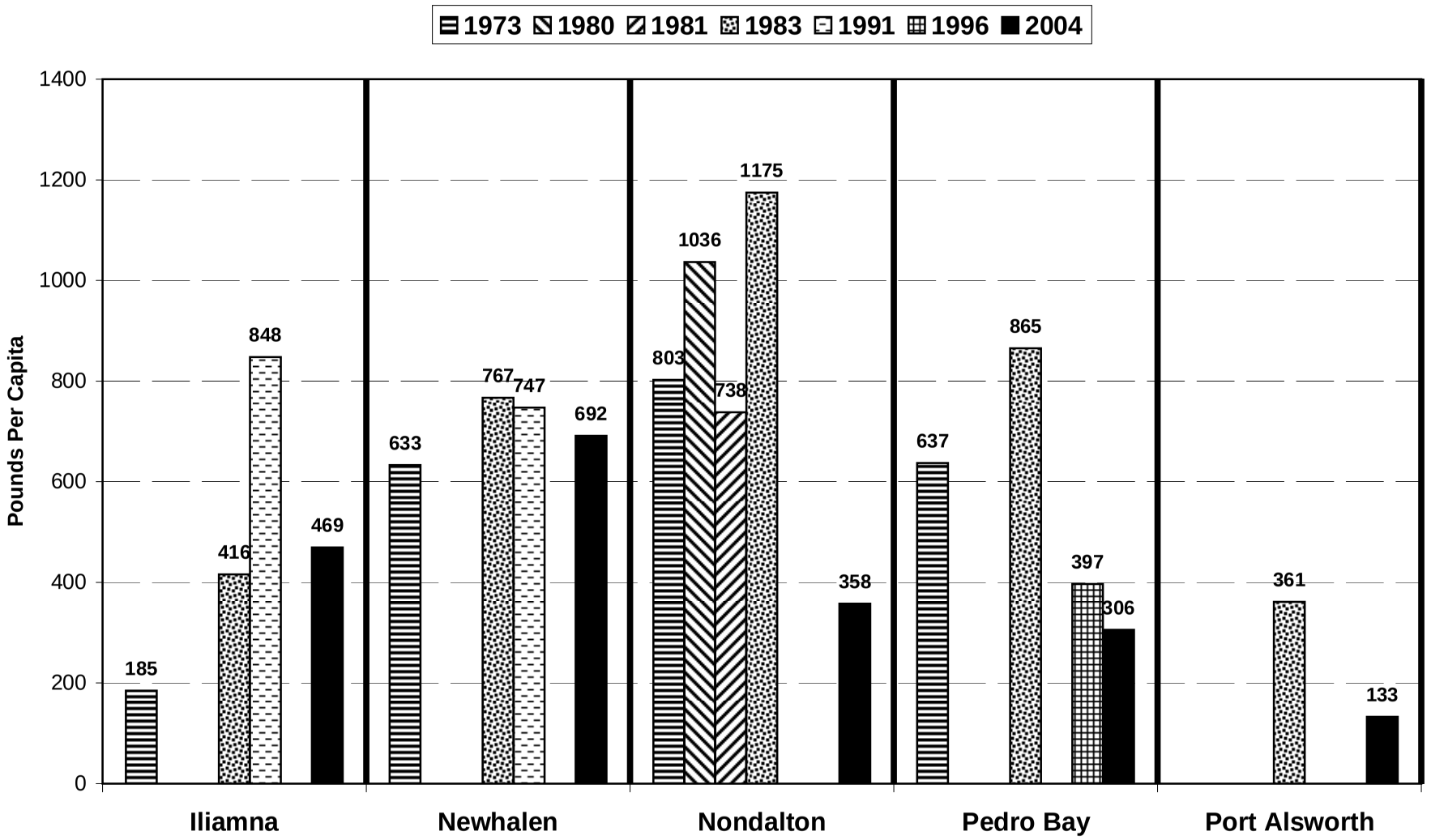
Figure 1-2. Estimated Total Wild Resource Harvests, Pounds Usable Weight per Person, Study Communities, All Study Years



CHAPTER TWO: ILIAMNA

COMMUNITY BACKGROUND

Two distinct indigenous populations inhabit the study area: the riverine Central Yup'ik Eskimos on the southern and western edge of Iliamna Lake, and the Dena'ina Athabascans on the northern and eastern shores of Iliamna Lake and the area surrounding Lake Clark. The original homeland of the Dena'ina may have been along the Stony River, to the northwest of Iliamna Lake. From there, the Dena'ina may have moved south and west into the Lake Clark, Cook Inlet, and Susitna River drainage areas, and to the western side of the Kenai Peninsula (VanStone and Townsend 1970; Kari 1988).

The Yup'ik Eskimo population of Iliamna Lake once consisted of two separate groups, the *Kiatagmiut*, who were the more northern group, and the *Aglurmiut*. The *Aglurmiut*, whose territory may have included most of the Alaska Peninsula as far south as Port Moller, occupied the western two-thirds of Iliamna Lake (VanStone 1967). According to VanStone (1984:224-225), the diversity of inter-Yup'ik ethnicity became blurred with European contact "as epidemic diseases, the establishment of schools and missions, and particularly the emergence of the fur trade and an important commercial salmon-fishing industry in Bristol Bay resulted in considerable movement of Eskimos throughout the region, the coalescence of some populations and the dispersal of others." When the schoolteacher Hannah Breece traveled across Iliamna Lake from the Dena'ina village of Old Iliamna in 1910, she encountered a small community of Yup'ik people living along the Newhalen River (near present day Newhalen) who appeared to have good relations with the majority Athabascan population to the north and east (Jacobs 1995:147-149),

The residents of the communities of Iliamna and Newhalen today are the descendants of the people who Breece met at the mouth of the Newhalen River as well as later arrivals of Yup'ik and Dena'ina descent. Because Iliamna is the hub community in the area, Euro-Americans have settled there and in Newhalen. These two communities are consequently a mosaic of peoples.

Sport hunting and fishing have become important to the tourist economy of the area and lodges for both hunting and fishing are common. Iliamna has a paved runway and small docking facilities for river barges and is connected by paved road to Newhalen, 5 miles away. During the winter a road is open between Iliamna – Newhalen and Nondalton, located 22 miles away, although the road is only paved halfway.

DEMOGRAPHY, CASH EMPLOYMENT, AND MONETARY INCOME

Demography

According to the federal census, Iliamna had 102 residents in 2000 (DCED 2005), of which 58% (59 residents) were Alaska Native (Table 1-1). The baseline harvest survey in 2005 found a population of 73 residents of which 67% (49 residents) were Alaska Native (Table 1-10). Local residents interviewed for this project attributed the population decline to the recent closing of

hunting and fishing lodges, and lack of jobs for younger residents. Also, some of the people counted in the US Census may have been only seasonal residents of the community.

There were an estimated 22 year-round households in Iliamna (Table 1-6). Of these 13 (59%) were interviewed. Interviewers failed to contact 4 households, 1 household had moved, and 5 households (28%) declined to be interviewed. ADF&G staff later learned that sensitivity about the cash income questions in the survey might have caused the refusals.

The mean number of years of residency in Iliamna was 23 years with the maximum residence at 72 years (Table 1-10). The largest age cohort for both males and females was between 40 and 44 years of age. Interestingly there were no residents between the ages of 20 to 34 (Fig. 2-1, Table 2-1). This is consistent with respondents' comments about the lack of jobs in the community for young men and women.

Of the household heads interviewed, over one-half (56%) were born in Alaska (Table 1-11). Most were born in Iliamna (24%) or in nearby communities such as Newhalen (8%), Nondalton (8%), Igiugig (4%), Levelock (4%), and Chekok (4%).

Cash Employment Characteristics and Monetary Income

Key industries in which Iliamna residents found cash employment during 2004 included transportation, communications, and utilities, which provided 32% of earned income, the most of any job category (Table 2-2). Also important were jobs in local government, mainly with the local tribal council (13% of jobs, 23% of employed households). Commercial fishing remained important with 9% of the jobs, accounting for 9% of the income for the community. Twenty-three percent of employed households in Iliamna were involved in the commercial fishing industry in 2004. In 2004, there were 3 stores and numerous lodges in Iliamna. The retail trade and services categories together provided 28% of all the community's jobs. In 2004, a majority of jobs held by Iliamna residents were located in Iliamna (47 out of 54 jobs; 88%; Table 1-13).

Most employed adults in Iliamna (79%) worked year-round in 2004 (Table 1-12). The mean for months employed was 10.5. On average, in 2004, households contained 2 employed adults, and 92% of households contained at least one adult who was employed.

LEVELS OF PARTICIPATION IN THE HARVEST AND USE OF WILD RESOURCES

Table 1-15 reports levels of individual participation in the harvest and processing of wild resources by Iliamna residents in 2004. Forty-six percent of Iliamna residents hunted birds and large land mammals and 63% processed game and birds. Even more people fished (72%) and processed fish (79%). Fewer residents trapped or hunted furbearers (37%) or processed furbearing animals (49%). Picking berries and other wild plants had a high participation rate: 77% of individuals harvested and processed wild plants. In total, 91% of Iliamna residents attempted to harvest resources and 88% processed resources.

RESOURCE HARVEST AND USE PATTERNS

Table 1-16 summarizes the resource harvest and use characteristics of Iliamna in 2004. Every household used, attempted to harvest, and harvested at least one wild resource. The average harvest was 1,553 pounds usable weight per household and 469 pounds per capita. During the study year Iliamna households harvested an average of 8 different kinds of resources and used an average of 11 different kinds of resources.

Species Used and Seasonal Round

Fish were by far the most commonly harvested resource in Iliamna in 2004, which is typical of communities of southwest Alaska. In 2004, 100% of Iliamna's households harvested sockeye salmon. Community residents set nets off the beach in front of the community each spring to harvest the abundant sockeye salmon run. In late summer, they harvest spawning sockeye at fish camps located at streams away from the community. Late summer also sees the ripening of berries on the low bushes of the surrounding tundra. Harvesting berries is a favorite activity and 85% of households reported using and harvesting berries (Table 2-3).

Iliamna Lake and surrounding smaller lakes support numerous freshwater fish species, which are harvested throughout the year. Ice fishing is a major subsistence activity in the winter with residents targeting northern pike, arctic char, and Dolly Varden. In 2004, 77% of Iliamna households harvested freshwater fish, and 92% of households used non-salmon fish.

A fall activity that often stretches into the winter is moose hunting. In 2004, the second major source of subsistence foods by weight at Iliamna (after sockeye salmon) was moose. During the study year, 77% of households used moose and 46% hunted moose (Table 2-3). Besides moose, the only other large land mammal harvested was caribou, which are mainly taken in the spring until the season ends in April. Similar to moose, 77% of households used caribou and 46% hunted caribou (Table 2-3).

The other large species taken by Iliamna households, which is unique to this region of Alaska , is freshwater seal (a distinct population of harbor seal; *Phoca vitulina*).[1] Thirty percent of households used freshwater seal in 2004. Almost a quarter of households harvested a freshwater seal (23%), while 31% of households hunted this resource (Table 2-3). Hunters reported that they harvest seals at anytime of the year, but winter is preferred because seals are fat and winter hunting does not disrupt the pupping season. In winter, hunters take seals at leads in the ice.

Migratory birds travel through the Iliamna Lake area in the fall and spring, stopping to rest on the marsh and tundra areas that surround the community. Migratory birds were used by 39% of households with 31% of households harvesting them. Upland birds such as ptarmigan are hunted as well, mainly in the fall, and 23% of households reported using and harvesting upland game birds (Table 2-3).

[1] Iliamna Lake's resident harbor seals are among only 4 seal populations in the world that spend all of their lives in freshwater. The other 3 are the Nerpa or Baikal seal (*Phoca sibirica)* of Lake Baikal in Siberia and 2 subspecies of ringed seal: *Phoca hispida saimensis* found in Lake Saimaa in Finland and *Phoca hispida ladogensi* found in Lake Lagoda in northwestern Russia (Wikipedia.org 2006).

In the summer Iliamna residents travel by plane to the clam-rich beaches of Spring Point in Chinitna Bay on Cook Inlet. Twenty-three percent of households in Iliamna in 2004 harvested razor clams from this location (Table 2-3).

Harvest Quantities

Table 2-3 reports wild resource harvests and uses by Iliamna residents in 2004 and is organized first by general category and then by species. All resources are reported in pounds usable weight (see Appendix C 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, and resources acquired after a harvest, either as gifts, by trade, through hunting partnerships, or meat given to hunting guides by their clients. Purchased foods are not included. Differences between harvest and use percentages reflect sharing between households, which resulted in a wider distribution of wild foods.

The total harvest for all subsistence resources during 2004 for Iliamna was 34,160 pounds, or 469 pounds per person (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 Iliamna households. Fish constituted the largest portion of the harvest with 29,413 pounds (86%) or 404.2 pounds per person (Fig. 2-2). Based upon harvest timing, there are two kinds of sockeye salmon. Those that arrive in June and July and are harvested fresh totaled 24,655 pounds or 339 pounds per person, more than any other single resource by far (Table 2-3). These salmon are mainly caught near the community. Residents travel to additional streams in September and October to harvest spawned and spawning sockeyes, which are referred to as "spawning reds" due to their dark red color. Harvests of spawning sockeyes totaled 2,254 pounds or 31 pounds per person.

Non-salmon fish are also an important resource (Table 2-3, Fig. 2-2). In 2004, Iliamna residents harvested 2,478 pounds of non-salmon fish or 34 pounds per person. The major species harvested included Dolly Varden (464 total pounds, 6 pounds per person), rainbow trout (398 total pounds, 6 pounds per person), northern pike (398 pounds, 5 pounds per person), and whitefish (343 total pounds, 5 pounds per person) (Table 2-3).

Large land mammals (Table 2-3) were the other major source of wild foods at Iliamna in 2004, with 2,335 pounds harvested (32 pounds per person). Over 78 % of this was moose: 1,828 total pounds or 25 pounds per person. Caribou made up the most of the rest of the large land mammal harvest (22%) with 508 pounds (7 pounds per person).

Marine mammal harvests were also important for residents of Iliamna in 2004 (Table 2-3). They harvested 474 pounds of freshwater harbor seal, or 7 pounds per person. Harvests of migratory birds and their eggs contributed 104 pounds (1 pound per person), harvests of gull eggs added another 107 pounds (1 pound per person), and ptarmigan provided 101 pounds (1 pound per person).

Razor clams are a popular, nonlocal wild resource, found on the other side of the Chigmit Mountains from Iliamna Lake at Spring Point in Chinitna Bay. Iliamna residents harvested 117 pounds of razor clams (2 pounds per person) in 2004 (Table 2-3).

As noted earlier, late summer harvests of berries are important in Iliamna's seasonal round. They totaled 1,425 pounds in 2004 (20 pounds per person; Table 2-3).

General Hunting, Fishing, and Gathering Areas[2]

Iliamna residents' wild resource harvests in 2004 were concentrated in three areas. One was an area to the west of the community near Talarik Creek and up into the Koktuli River drainage. This was the location of most moose and caribou hunting (Fig. 2-3, Fig. 2-4). The second important area was east of the community around Pedro Bay, where moose and freshwater seal hunting took place (Fig. 2-3, Fig. 2-5). The third key area was Lake Clark (Fig. 2-3).

Iliamna Lake, immediately south of the community, was important for freshwater (nonsalmon) fishing in 2004. In addition, residents traveled to the Lower Talarik Creek and up the Newhalen River for freshwater fish. Salmon fishing was concentrated on the beach off of Iliamna and in Knutson Bay to the east for spawning reds. Bird harvests, small land mammal hunting, and berry gathering activities were concentrated on the north shore of Iliamna Lake.

SHARING AND RECEIVING WILD RESOURCES

In Iliamna in 2004, 77% of households received wild resources from other households and 54% of households gave resources away (Table 1-16, Table 2-3). Households received an average of 5 resources and gave away an average of 3 resources (Table 1-16). As previously noted, fish were the most abundantly used resource, and they were among the most commonly shared resources also, with 39 % of households giving fish away and 54% of households receiving fish (Table 2-3).

Large land mammals also were widely shared. Caribou were scarce in 2004 and only 508 pounds were harvested, but 23% of Iliamna households gave away caribou and 69% received caribou. Moose was the dominant large land mammal harvested and was also widely shared: 31% of households gave moose away and 62% received moose (Table 2-3).

Interestingly, 23% of Iliamna households gave away freshwater seal, representing 100% of the households that harvested the resource. However, no Iliamna households reported receiving seal in 2004 (Table 2-3). Surveyed individuals and key respondents reported that they shared the seals widely with relatives in other communities and that Iliamna households who harvested the seals were mainly the only ones who eat seal.

Birds and eggs were shared at a lesser extent than other major resources. While migratory birds were given to other households (23%), only 15% of Iliamna households in 2004 reported receiving migratory birds. Eggs were given and received by 15% of households (Table 2-3).

[2] For the complete set of maps of Iliamna residents' hunting, fishing, and gathering areas in 2004, see the CD in pocket inside the back cover of this report.

Razor clams were another resource widely given and received in 2004. Fifteen percent of Iliamna households gave away razor clams, and 39% of households received them. Berries were the only other edible wild resource shared, with 31% of households receiving berries and 23% of households giving away berries (Table 2-3).

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

Large Land Mammals

In 2004, large land mammals made up a small portion of Iliamna's harvest (7%) compared to salmon (79%). Even the harvest of non-salmon fish was higher than large land mammals (Fig. 2-2). Moose was the dominant large land mammal harvested in terms of usable weight: 78% of the harvest of large land mammals compared to 22% for caribou. Caribou have not been a major resource for residents in Iliamna for the past 5 to 10 years due to the herd migrating to other areas. Moose harvests have made up for the loss of caribou. No other large land mammals were harvested in 2004. Large land mammal hunting was concentrated to the west of Iliamna at the headwaters of the Koktuli River system (Fig. 2-3). This area was also the location of most of Iliamna's caribou harvests. The other caribou hunting area in 2004 was to the northwest of Igiugig (Fig. 2-4).

Marine Mammals

For the study year, Iliamna reported the highest harvest of freshwater seals of any study community. Seal hunting took place at Porcupine and Flat Islands near Pedro Bay (Fig. 2-5), and all seal harvests in 2005 occurred there. Hunting also occurred on the islands just south of Iliamna; however, no harvests were reported there for 2004.

Salmon

In 2004, Iliamna residents harvested most of their sockeye salmon (98%) with set nets off the beach near the community (Table 2-5). Very little sockeye salmon were taken from commercial harvests (Table 2-5). In addition, there was also a small harvest of sockeye salmon on the Newhalen River using rod and reel gear (1.0% of the sockeye harvest). One household reported traveling to the fish camps of Nondalton families, located at the outlet of Sixmile Lake, for subsistence sockeye salmon fishing.

One resident noted that the sockeye run was strong in 2004. In the eastern part of the bay near Iliamna, he netted a little over 200 fish in a single night. In the previous few years it would have taken days to harvest this much, he said.

Spawning sockeye salmon were harvested in the fall in Knutson Bay east of Iliamna. All were harvested with set nets (Table 2-5).

Freshwater Fish

Table 2-6 lists the percentage of each non-salmon fish harvested by Iliamna residents in 2004 by gear type. Both humpback whitefish and longnose suckers were taken in set nets (and a small percentage by seine) placed in Sixmile Lake near Nondalton. Ice fishing was the second major method used to harvest freshwater fish. Ice fishing primarily took place near the community in Lake Iliamna for northern pike, grayling, and Dolly Varden. In addition, Lake Clark was an important site for freshwater fishing, especially for lake trout and burbot.

Marine Invertebrates

All marine invertebrates were harvested outside of the immediate area and therefore were not mapped. One person explained that over the summer, groups of about five Iliamna residents charter planes to go clamming at Spring Point in Chinitna Bay. They arrive at the beginning of low tide and leave when the tide starts to come back in. They are able to dig for clams for about 4 to 5 hours.

Small Land Mammals

The total harvest of small land mammals by Iliamna residents in 2004 was 44 pounds or 2 pounds per person, all of which was beaver (Table 2-3). These were taken in the headwaters of the Upper and Lower Talarik creeks.

Birds and Eggs

In 2004, Iliamna residents harvested waterfowl and upland birds along the north shore of Iliamna Lake. Upland birds were also harvested in the Upper Talarik area. Both Porcupine and Flat Islands were the location of egg gathering during 2004. Iliamna residents took 104 pounds of migratory birds and 101 pounds of upland birds in 2004 (Table 2-3).

Wild Plants

The north shore of Iliamna Lake was also a popular location for gathering berries. The community is surrounded in the distance by small mountains and hills. This bowl encompasses the berry gathering area that stretches as far north as Nondalton. The large berry gathering area is also evident in the amount of berries collected. In all 1,425 pounds of berries were harvested in 2004, or 20 pounds per person (Table 2-3).

COMPARING HARVESTS AND USES IN 2004 WITH PREVIOUS YEARS

All interviewed Iliamna households reported that, in total, their harvests and uses of resources in 2004 were about the same as in the recent past (the last 5 years). Table 2-7 summarizes respondents' assessments for each major resource category (see also Fig. 2-6). For example, 46% of households reported that their use of salmon in 2004 was the same in recent years, while the same percentage of households reported that they used more salmon in 2004. The use of

wild plants had a similar pattern. For the other categories, most Iliamna residents reported using less or the same amount of resources. In the case of large land mammals, 42% of respondents said they used less while 50% used the same and only 8 % used more.

Table 2-8 lists the reasons that residents of Iliamna gave for changes in harvests and uses by resource category. This was an open-ended question. 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 the animal populations themselves, personal reasons such as work and health, and other outside effects on residents' opportunities to engage in subsistence activities. Weather was a factor in shaping subsistence patterns. Some Iliamna residents said that because of poor weather in 2004 they participated less in harvesting birds and eggs, trapping furbearers, fishing for non-salmon fish, and harvesting plants than in other recent years. Changes in caribou and moose populations led to fewer large land mammal harvests, but more abundant salmon resulted in higher subsistence salmon harvests than in other recent years.

Figure 2-7 reports the percentage of Iliamna households that cited particular reasons for lower uses of any resource category. Changes in resource populations was the most frequently cited reason: 67% of Iliamna households who had lower uses of at least one resource category in 2004, said that reductions in resource populations or shifts in location and movements resulted in lower uses or harvests, as did 31% of all respondents who provided evaluations of subsistence uses. Weather was a key factor for 50% of households with lower uses of at least one resource category, and personal reasons such as health or conflicts with work schedules were a reason cited by 17%. These topics will be further explored in the combined Iliamna – Newhalen section on local observations of resource populations and trends.

Changes in Iliamna's resource harvests can also be discerned through comparisons with findings from other study years. Comprehensive household harvest surveys were administered in Iliamna in 1973, 1983, and 1991 as well as this study for 2004 (Fig. 2-8). Surveys pertaining just to large mammals took place for 2001 and for non-salmon fish for 2003 (Table 2-9, Table 2-10). Figure 2-8 summarizes the per capita harvests in pounds usable weight for each major resource category from these studies. In 1991, the harvest of almost all resource categories by Iliamna residents was higher than in the other study years. The harvest of large land mammals in 1991 was particularly notable, at 253 pounds per person, compared to 76 pounds per person in 1973, 31 pounds per capita in 1983, 123 pounds per person in 2001, and 32 pounds per person in 2004. In 2004, harvests of salmon by Iliamna residents (370 pound per person) were substantial, and about midway between estimates for 1992 (431 pounds per person) and 1983 (336 pounds per person). Salmon harvests were much lower in 1973 (81 pounds per person) than in any other study year.

LOCAL OBSERVATIONS OF RESOURCE POPULATIONS AND TRENDS

Interviews in Iliamna and Newhalen were conducted during the same time period. Although the communities are distinct from each other, because they use many of the same resources and harvest areas, respondents' observations about trends in resource populations for both communities will be discussed together in the next chapter.

Figure 2-1. Population Profile, Iliamna, 2004

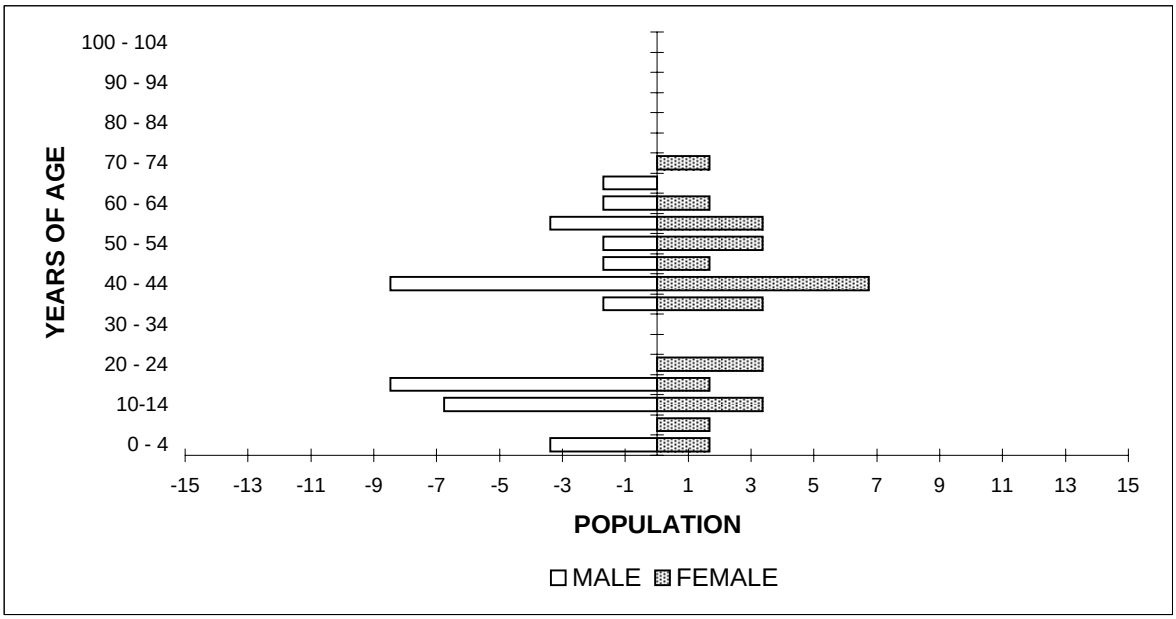


Table 2-1. Population Profile, Iliamna, 2004

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	3.4	8.7%	8.7%	1.7	5.0%	5.0%	5.1	7.0%	7.0%
5-9	0.0	0.0%	8.7%	1.7	5.0%	10.0%	1.7	2.3%	9.3%
10-14	6.8	17.4%	26.1%	3.4	10.0%	20.0%	10.2	14.0%	23.3%
15 - 19	8.5	21.7%	47.8%	1.7	5.0%	25.0%	10.2	14.0%	37.2%
20 - 24	0.0	0.0%	47.8%	3.4	10.0%	35.0%	3.4	4.7%	41.9%
25 - 29	0.0	0.0%	47.8%	0.0	0.0%	35.0%	0.0	0.0%	41.9%
30 - 34	0.0	0.0%	47.8%	0.0	0.0%	35.0%	0.0	0.0%	41.9%
35 - 39	1.7	4.3%	52.2%	3.4	10.0%	45.0%	5.1	7.0%	48.8%
40 - 44	8.5	21.7%	73.9%	6.8	20.0%	65.0%	15.2	20.9%	69.8%
45 - 49	1.7	4.3%	78.3%	1.7	5.0%	70.0%	3.4	4.7%	74.4%
50 - 54	1.7	4.3%	82.6%	3.4	10.0%	80.0%	5.1	7.0%	81.4%
55 - 59	3.4	8.7%	91.3%	3.4	10.0%	90.0%	6.8	9.3%	90.7%
60 - 64	1.7	4.3%	95.7%	1.7	5.0%	95.0%	3.4	4.7%	95.3%
65 - 69	1.7	4.3%	100.0%	0.0	0.0%	95.0%	1.7	2.3%	97.7%
70 - 74	0.0	0.0%	100.0%	1.7	5.0%	100.0%	1.7	2.3%	100.0%
75 - 79	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
80 - 84	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
85 - 89	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
90 - 94	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
95 - 99	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
100 - 104	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
Missing	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
TOTAL	38.9	100.0%		33.8	100.0%		72.8	100.0%	

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 2-2. Employment by Industry, Iliamna, 2004

	Jobs	Households	Individuals	Percentage of Income
Estimated Total Number*	54.2	20.3	40.6	
Federal Government	6.3%	15.4%	8.3%	7.5%
Executive, Administrative and Managerial	3.1%	7.7%	4.2%	3.0%
Natural Scientists and Mathematicians	3.1%	7.7%	4.2%	4.5%
Social Scientists, Social Workers, Religious Workers and Lawyers	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	0.0%	0.0%	0.0%	0.0%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
State Government	3.1%	7.7%	4.2%	3.0%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	3.1%	7.7%	4.2%	3.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Local & Tribal Governments	12.5%	23.1%	16.7%	15.1%
Executive, Administrative and Managerial	6.3%	15.4%	8.3%	6.1%
Social Scientists, Social Workers, Religious Workers and Lawyers	0.0%	0.0%	0.0%	0.0%
Teachers, Librarians, and Councelors	3.1%	7.7%	4.2%	6.0%
Health Diagnosing and Treating Practitioners	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Marketing and Sales Occupations	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	0.0%	0.0%	0.0%	0.0%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	3.1%	7.7%	4.2%	3.0%
Agriculture, Forestry & Fishing	9.4%	23.1%	12.5%	9.1%
Agricultural, Forestry and Fishing Occupations	9.4%	23.1%	12.5%	9.1%
Mining	3.1%	7.7%	4.2%	1.2%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Precision Production Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	3.1%	7.7%	4.2%	1.2%
Construction	6.3%	15.4%	8.3%	5.0%
Mechanics and Repairers	3.1%	7.7%	4.2%	1.9%
Construction and Extractive Occupations	3.1%	7.7%	4.2%	3.0%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Manufacturing	6.3%	15.4%	8.3%	13.5%
Precision Production Occupations	6.3%	15.4%	8.3%	13.5%
Transportation, Communication & Utilities	25.0%	30.8%	29.2%	31.9%
Executive, Administrative and Managerial	9.4%	15.4%	12.5%	9.1%
[continued]				

Table 2-2. Employment by Industry, Iliamna, 2004

	Jobs	Households	Individuals	Percentage of Income
Technologists and Technicians, Except Health	3.1%	7.7%	4.2%	6.1%
Administrative Support Occupations, Including Clerical	6.3%	15.4%	8.3%	8.4%
Mechanics and Repairers	3.1%	7.7%	4.2%	1.5%
Transportation and Material Moving Occupations	3.1%	7.7%	4.2%	6.7%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Wholesale Trade	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Retail Trade	9.4%	15.4%	12.5%	6.8%
Executive, Administrative and Managerial	3.1%	7.7%	4.2%	3.0%
Marketing and Sales Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	6.3%	15.4%	8.3%	3.8%
Services	18.8%	38.5%	25.0%	6.9%
Executive, Administrative and Managerial	6.3%	15.4%	8.3%	0.7%
Social Scientists, Social Workers, Religious Workers and Lawyers	0.0%	0.0%	0.0%	0.0%
Health Diagnosing and Treating Practitioners	0.0%	0.0%	0.0%	0.0%
Health Technologists and Technicians	3.1%	7.7%	4.2%	3.0%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	0.0%	0.0%	0.0%	0.0%
Service Occupations	3.1%	7.7%	4.2%	0.7%
Agricultural, Forestry and Fishing Occupations	3.1%	7.7%	4.2%	1.5%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	3.1%	7.7%	4.2%	0.9%
Miscellaneous Occupations	0.0%	0.0%	0.0%	0.0%

* Estimated number of households and individuals only include those employed during the study period.
SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 2-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Iliamna, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*			95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total		Mean HH	Harvest
All Resources	100.0%	100.0%	100.0%	76.9%	53.8%	34,160.1	1,552.7	469.4				24.1%
Fish	100.0%	100.0%	100.0%	53.8%	38.5%	29,412.9	1,336.9	404.2				25.5%
Salmon	100.0%	100.0%	100.0%	38.5%	30.8%	26,935.0	1,224.3	370.1	6,879.2	Ind	312.7	25.4%
Chum Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Coho Salmon	7.7%	7.7%	7.7%	0.0%	0.0%	25.9	1.2	0.4	5.1	Ind	0.2	0.0%
Chinook Salmon	15.4%	0.0%	0.0%	15.4%	7.7%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Pink Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Sockeye Salmon	100.0%	100.0%	100.0%	15.4%	30.8%	24,655.0	1,120.7	338.8	5,747.1	Ind	261.2	30.3%
Landlocked Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Spawnouts	46.2%	46.2%	46.2%	23.1%	7.7%	2,254.2	102.5	31.0	1,127.1	Ind	51.2	15.2%
Spawning Sockeye	46.2%	46.2%	46.2%	23.1%	7.7%	2,254.2	102.5	31.0	1,127.1	Ind	51.2	15.2%
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%
Non-Salmon Fish	92.3%	76.9%	76.9%	38.5%	30.8%	2,477.9	112.6	34.1				26.5%
Herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Gal	0.0	0.0%
Herring Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Gal	0.0	0.0%
Herring Sac Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Gal	0.0	0.0%
Herring Spawn on Kelp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Gal	0.0	0.0%
Smelt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Gal	0.0	0.0%
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 Cod (gray)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Walleye Pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Lingcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Halibut	23.1%	7.7%	7.7%	15.4%	15.4%	84.6	3.8	1.2	84.6	Lbs	3.8	0.0%
Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Black Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Red Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Bullhead 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%

Table 2-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Iliamna, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Unknown 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%
Unknown Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Wolffish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	15.4%	15.4%	15.4%	7.7%	7.7%	42.3	1.9	0.6	42.3 Ind	1.9	9.7%
Char	92.3%	76.9%	76.9%	30.8%	15.4%	656.3	29.8	9.0	468.8 Ind	21.3	19.7%
Arctic Char	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Dolly Varden	92.3%	76.9%	76.9%	30.8%	15.4%	464.4	21.1	6.4	331.7 Ind	15.1	18.7%
Dolly Varden-saltwater	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	53.8%	46.2%	46.2%	15.4%	7.7%	191.9	8.7	2.6	137.1 Ind	6.2	21.0%
Grayling	61.5%	53.8%	53.8%	15.4%	7.7%	242.8	11.0	3.3	346.9 Ind	15.8	10.5%
Pike	46.2%	38.5%	38.5%	23.1%	7.7%	398.0	18.1	5.5	142.2 Ind	6.5	25.9%
Unknown Pike	46.2%	38.5%	38.5%	23.1%	7.7%	398.0	18.1	5.5	142.2 Ind	6.5	25.9%
Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sucker	7.7%	7.7%	7.7%	0.0%	0.0%	253.8	11.5	3.5	169.2 Ind	7.7	0.0%
Trout	76.9%	61.5%	61.5%	30.8%	7.7%	457.3	20.8	6.3	326.6 Ind	14.8	22.6%
Rainbow Trout	76.9%	61.5%	61.5%	30.8%	7.7%	398.0	18.1	5.5	284.3 Ind	12.9	21.3%
Steelhead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Trout	7.7%	7.7%	7.7%	0.0%	0.0%	59.2	2.7	0.8	42.3 Ind	1.9	0.0%
Whitefish	38.5%	23.1%	23.1%	23.1%	7.7%	342.7	15.6	4.7	203.1 Ind	9.2	21.0%
Broad Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	30.8%	15.4%	15.4%	23.1%	7.7%	325.8	14.8	4.5	186.2 Ind	8.5	13.2%
Round Whitefish	7.7%	7.7%	7.7%	0.0%	0.0%	16.9	0.8	0.2	16.9 Ind	0.8	0.0%
Land Mammals	76.9%	61.5%	38.5%	69.2%	30.8%	2,379.8	108.2	32.7			41.0%
Large Land Mammals	76.9%	53.8%	15.4%	69.2%	30.8%	2,335.4	106.2	32.1			55.5%
Black Bear	7.7%	7.7%	0.0%	7.7%	7.7%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Brown Bear	0.0%	7.7%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Caribou	76.9%	46.2%	7.7%	69.2%	23.1%	507.7	23.1	7.0	3.4 Ind	0.2	62.6%
Moose	76.9%	46.2%	15.4%	61.5%	30.8%	1,827.7	83.1	25.1	3.4 Ind	0.2	39.6%
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	30.8%	30.8%	23.1%	15.4%	7.7%	44.4	2.0	0.6			24.6%

Table 2-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Iliamna, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Beaver	15.4%	15.4%	15.4%	7.7%	7.7%	44.4	2.0	0.6	5.1 Ind	0.2	13.2%
Coyote	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Fox	7.7%	7.7%	7.7%	0.0%	0.0%	0.0	0.0	0.0	11.8 Ind	0.5	0.0%
Red Fox	7.7%	7.7%	7.7%	0.0%	0.0%	0.0	0.0	0.0	11.8 Ind	0.5	0.0%
Hare	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Snowshoe Hare	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Mink	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Muskrat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Porcupine	7.7%	0.0%	0.0%	7.7%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Parka Squirrel (ground)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	0.0%	7.7%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Wolverine	0.0%	7.7%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Marine Mammals	30.8%	30.8%	23.1%	7.7%	23.1%	473.8	21.5	6.5			19.9%
Seal	30.8%	30.8%	23.1%	0.0%	23.1%	473.8	21.5	6.5	8.5 Ind	0.4	19.9%
Harbor Seal	30.8%	30.8%	23.1%	0.0%	23.1%	473.8	21.5	6.5	8.5 Ind	0.4	19.9%
Harbor Seal (freshwater)	30.8%	30.8%	23.1%	0.0%	23.1%	473.8	21.5	6.5	8.5 Ind	0.4	19.9%
Harbor Seal (saltwater)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sea Otter	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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Whale	7.7%	0.0%	0.0%	7.7%	7.7%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Belukha	7.7%	0.0%	0.0%	7.7%	7.7%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Birds and Eggs	69.2%	61.5%	61.5%	23.1%	38.5%	316.7	14.4	4.4			13.0%
Migratory Birds	38.5%	30.8%	30.8%	15.4%	23.1%	103.5	4.7	1.4	81.2 Ind	3.7	12.4%
Ducks	23.1%	23.1%	23.1%	7.7%	15.4%	48.5	2.2	0.7	55.8 Ind	2.5	9.2%
Bufflehead	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%
Mallard	15.4%	15.4%	15.4%	0.0%	7.7%	22.0	1.0	0.3	22.0 Ind	1.0	8.7%
Northern Pintail	15.4%	15.4%	15.4%	0.0%	7.7%	16.2	0.7	0.2	20.3 Ind	0.9	5.4%

Table 2-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Iliamna, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
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%
Wigeon	7.7%	7.7%	7.7%	0.0%	0.0%	2.4	0.1	0.0	3.4 Ind	0.2	0.0%
American Wigeon	7.7%	7.7%	7.7%	0.0%	0.0%	2.4	0.1	0.0	3.4 Ind	0.2	0.0%
Unknown Ducks	7.7%	7.7%	7.7%	7.7%	7.7%	7.9	0.4	0.1	10.2 Ind	0.5	0.0%
Geese	30.8%	23.1%	23.1%	7.7%	7.7%	55.0	2.5	0.8	25.4 Ind	1.2	12.9%
Canada Geese	23.1%	15.4%	15.4%	7.7%	7.7%	26.5	1.2	0.4	13.5 Ind	0.6	4.0%
Dusky Canada Geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Lesser Canada Geese (taverner/parvi	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Canada Geese	23.1%	15.4%	15.4%	7.7%	7.7%	26.5	1.2	0.4	13.5 Ind	0.6	4.0%
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	7.7%	7.7%	7.7%	0.0%	0.0%	24.4	1.1	0.3	10.2 Ind	0.5	0.0%
Unknown Geese	7.7%	7.7%	7.7%	0.0%	0.0%	4.1	0.2	0.1	1.7 Ind	0.1	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%
Tundra Swan (whistling)	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%
Seabirds & Loons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Loons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Loon	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	23.1%	23.1%	23.1%	0.0%	15.4%	106.6	4.8	1.5	152.3 Ind	6.9	14.2%
Upland Game Birds	23.1%	23.1%	23.1%	0.0%	15.4%	106.6	4.8	1.5	152.3 Ind	6.9	14.2%
Grouse	7.7%	7.7%	7.7%	0.0%	0.0%	5.9	0.3	0.1	8.5 Ind	0.4	0.0%
Ptarmigan	23.1%	23.1%	23.1%	0.0%	15.4%	100.7	4.6	1.4	143.8 Ind	6.5	16.2%
Unknown Ptarmigan	23.1%	23.1%	23.1%	0.0%	15.4%	100.7	4.6	1.4	143.8 Ind	6.5	16.2%
Bird Eggs	46.2%	38.5%	38.5%	15.4%	15.4%	106.6	4.8	1.5	355.4 Ind	16.2	7.1%
Duck Eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown 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%
Unknown 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%
Seabird & Loon Eggs	46.2%	38.5%	38.5%	15.4%	15.4%	106.6	4.8	1.5	355.4 Ind	16.2	7.1%
Gull Eggs	46.2%	38.5%	38.5%	15.4%	15.4%	106.6	4.8	1.5	355.4 Ind	16.2	7.1%
Marine Invertebrates	46.2%	23.1%	23.1%	38.5%	15.4%	118.0	5.4	1.6			5.0%
Clams	46.2%	23.1%	23.1%	38.5%	15.4%	118.0	5.4	1.6	39.3 Gal	1.8	5.0%
Butter Clams	7.7%	7.7%	7.7%	0.0%	0.0%	1.3	0.1	0.0	0.4 Gal	0.0	0.0%
Freshwater Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Horse Clams (Gaper)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%

Table 2-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Iliamna, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Pacific Littleneck Clams (Steamers)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Pinkneck 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	46.2%	23.1%	23.1%	38.5%	15.4%	116.8	5.3	1.6	38.9 Gal	1.8	5.3%
Unknown Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Cockles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Unknown Cockles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
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%
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%
Tanner Crab, Bairdi	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Tanner Crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Unknown 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 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%
Unknown 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	84.6%	84.6%	84.6%	30.8%	23.1%	1,458.8	66.3	20.0			34.7%
Berries	84.6%	84.6%	84.6%	30.8%	23.1%	1,424.9	64.8	19.6	356.2 Gal	16.2	36.6%
Plants/Greens/Mushrooms	7.7%	7.7%	7.7%	0.0%	0.0%	33.8	1.5	0.5	8.5 Gal	0.4	0.0%
Wood	7.7%	7.7%	7.7%	0.0%	0.0%	0.0	0.0	0.0	5.1 Crd	0.2	0.0%

Table 2-4. Top Ten Resources Harvested and Used, Iliamna, 2004

Harvest			Use		
Rank	Resource	Lbs per Capita	Rank	Resource	% of HHs Using
1	Sockeye salmon	338.81	1	Sockeye Salmon	100.0%
2	Spawning sockeye	30.98	2	Dolly Varden	92.3%
3	Moose	25.12	3	Berries	84.6%
4	Berries	19.58	4	Caribou	76.9%
5	Caribou	6.98	4	Moose	76.9%
6	Freshwater seal	6.51	4	Rainbow Trout	76.9%
7	Dolly Varden	6.38	7	Grayling	61.5%
8	Rainbow trout	5.47	8	Lake trout	53.8%
9	Pike	5.47	9	Gull eggs	46.2%
10	Humpback whitefish	4.48	9	Razor clams	46.2%
			9	Pike	46.2%

Source: ADF&G, Division of Subsistence, Household Survey, 2005

Table 2-5. Estimated Percentages of Salmon Harvest by Gear Type, Resource, and Total Salmon Harvest, Iliamna, 2004

Resource	Percent Base	Removed from Commercial Catch		Subsistence Methods								Rod and Reel		Any Method	
				Setnet		Seine		Other		Subsistence Gear Any Method					
		No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
Salmon	geartype	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	1.3%	1.4%	97.8%	97.6%	0.0%	0.0%	0.0%	0.0%	97.8%	97.6%	0.9%	0.9%	100.0%	100.0%
	total	1.3%	1.4%	97.8%	97.6%	0.0%	0.0%	0.0%	0.0%	97.8%	97.6%	0.9%	0.9%	100.0%	100.0%
Chum 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%
Coho Salmon	geartype	5.7%	6.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	resource	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	total	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Chinook 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%
Pink 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%
Sockeye Salmon	geartype	94.3%	93.3%	83.3%	91.4%	0.0%	0.0%	0.0%	0.0%	83.3%	91.4%	100.0%	100.0%	83.5%	91.5%
	resource	1.5%	1.5%	97.5%	97.5%	0.0%	0.0%	0.0%	0.0%	97.5%	97.5%	1.0%	1.0%	100.0%	100.0%
	total	1.2%	1.3%	81.5%	89.2%	0.0%	0.0%	0.0%	0.0%	81.5%	89.2%	0.9%	0.9%	83.5%	91.5%
Landlocked 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%
Spawning Sockeye	geartype	0.0%	0.0%	16.7%	8.6%	0.0%	0.0%	0.0%	0.0%	16.7%	8.6%	0.0%	0.0%	16.4%	8.4%
	resource	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	total	0.0%	0.0%	16.4%	8.4%	0.0%	0.0%	0.0%	0.0%	16.4%	8.4%	0.0%	0.0%	16.4%	8.4%
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: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 2-6. Estimated Percentages of Non-Salmon Fish Harvest by Gear Type, Resource, and Total Harvest, Iliamna, 2004[1]

Resource	Percent Base	Removed from Commercial Gear	Subsistence Gear							Rod and Reel	Any Method
			Set Net	Seine	Hand Line Gear	Dip Net	Ice Fishing	Other Subsistence Gear	Any Subsistence Gear		
Non-Salmon Fish	geartype	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	100.0%	100.0%
	resource	0.0%	22.2%	0.0%	0.0%	0.0%	49.8%	0.0%	72.0%	28.0%	100.0%
	total	0.0%	22.2%	22.2%	0.0%	0.0%	49.8%	0.0%	72.0%	28.0%	100.0%
Halibut	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.2%	3.4%
	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%	3.4%	3.4%
Burbot	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	0.0%	2.4%	0.0%	1.7%
	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%	1.7%	0.0%	1.7%	0.0%	1.7%
Dolly Varden	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	26.9%	0.0%	18.6%	19.1%	18.7%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	71.4%	0.0%	71.4%	28.6%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	13.4%	0.0%	13.4%	5.4%	18.7%
Lake Trout	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	8.5%	0.0%	5.8%	12.6%	7.7%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	54.3%	0.0%	54.3%	45.7%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	0.0%	4.2%	3.5%	7.7%
Grayling	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	8.6%	0.0%	6.0%	19.6%	9.8%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	43.9%	0.0%	43.9%	56.1%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	0.0%	4.3%	5.5%	9.8%
Unknown Pike	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	26.5%	0.0%	18.3%	10.2%	16.1%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	82.1%	0.0%	82.1%	17.9%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	13.2%	0.0%	13.2%	2.9%	16.1%
Sucker	geartype	0.0%	46.2%	0.0%	0.0%	0.0%	0.0%	0.0%	14.2%	0.0%	10.2%
	resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	total	0.0%	10.2%	10.2%	0.0%	0.0%	0.0%	0.0%	10.2%	0.0%	10.2%
Rainbow Trout	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	18.8%	0.0%	13.0%	23.9%	16.1%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	58.3%	0.0%	58.3%	41.7%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	9.4%	0.0%	9.4%	6.7%	16.1%
Unknown Trout	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	4.8%	0.0%	3.3%	0.0%	2.4%
	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%	2.4%	0.0%	2.4%	0.0%	2.4%
Humpback Whitefish	geartype	0.0%	53.8%	0.0%	0.0%	0.0%	2.4%	0.0%	18.3%	0.0%	13.1%
	resource	0.0%	90.9%	0.0%	0.0%	0.0%	9.1%	0.0%	100.0%	0.0%	100.0%
	total	0.0%	12.0%	12.0%	0.0%	0.0%	1.2%	0.0%	13.1%	0.0%	13.1%
Round Whitefish	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	0.7%
	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%	0.7%	0.7%

[1] This table lists only those resources for which there was a harvest in the 2004 study year.

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 2-7. Assessment of Household's Harvest and Use of Resources in 2004 Compared to Other Recent Years, Iliamna

Resource	Estimated Households	No Response		Valid Responses		Less		Same		More	
		no	pct	no	pct	no	pct	no	pct	no	pct
Salmon	22	0.0	0.0%	22.0	100.0%	1.7	7.7%	10.2	46.2%	10.2	46.2%
Non-Salmon Finfish	22	3.4	15.4%	18.6	84.6%	1.7	9.1%	16.9	90.9%	0.0	0.0%
Marine Invertebrates	22	10.2	46.2%	11.8	53.8%	1.7	14.3%	10.2	85.7%	0.0	0.0%
Large Land Mammals	22	1.7	7.7%	20.3	92.3%	8.5	41.7%	10.2	50.0%	1.7	8.3%
Furbearers	22	10.2	46.2%	11.8	53.8%	3.4	28.6%	8.5	71.4%	0.0	0.0%
Marine Mammals	22	13.5	61.5%	8.5	38.5%	0.0	0.0%	6.8	80.0%	1.7	20.0%
Birds and Eggs	22	3.4	15.4%	18.6	84.6%	1.7	9.1%	16.9	90.9%	0.0	0.0%
Wild Plants	22	3.4	15.4%	18.6	84.6%	1.7	9.1%	8.5	45.5%	8.5	45.5%
Overall	22	0.0	0.0%	22.0	100.0%	0.0	0.0%	22.0	100.0%	0.0	0.0%
Any Resource	22	0.0	0.0%	22.0	100.0%	10.2	46.2%	22.0	100.0%	15.2	69.2%

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 2-8. Iliamna: Reasons for Change in Harvests and Uses in Recent Years

			Percentage of Responses by Category[1]							
Resource Category	Use Less or More	Estimated Number of Households[2]	No Reason Given	Competition	Regulations	People are Sharing Less	Weather	Animal Population Changes[3]	Personal Reasons (Work/Health)	Other Outside Effects
Salmon	Less	1.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Salmon	More	10.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Non-Salmon Finfish	Less	1.7	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Marine Invertebrates	Less	1.7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Large Land Mammals	Less	8.5	0.0%	20.0%	0.0%	0.0%	0.0%	80.0%	0.0%	0.0%
Large Land Mammals	More	1.7	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Furbearers	Less	3.4	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Marine Mammals	More	1.7	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Birds and Eggs	Less	1.7	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Wild Plants	Less	1.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wild Plants	More	8.5	60.0%	0.0%	0.0%	0.0%	40.0%	0.0%	0.0%	0.0%
Any Resource	Less	10.2	33.3%	16.7%	0.0%	0.0%	50.0%	66.7%	16.7%	0.0%
Any Resource	More	15.2	33.3%	11.1%	0.0%	0.0%	22.2%	77.8%	0.0%	0.0%

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

[2] Estimated number of households citing a change in uses. For number of valid responses, see Table 2-7. Estimated total households in community = 22.

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

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 2-9 Iliamna Wild Resource Harvests by Resource Category, All Study Years

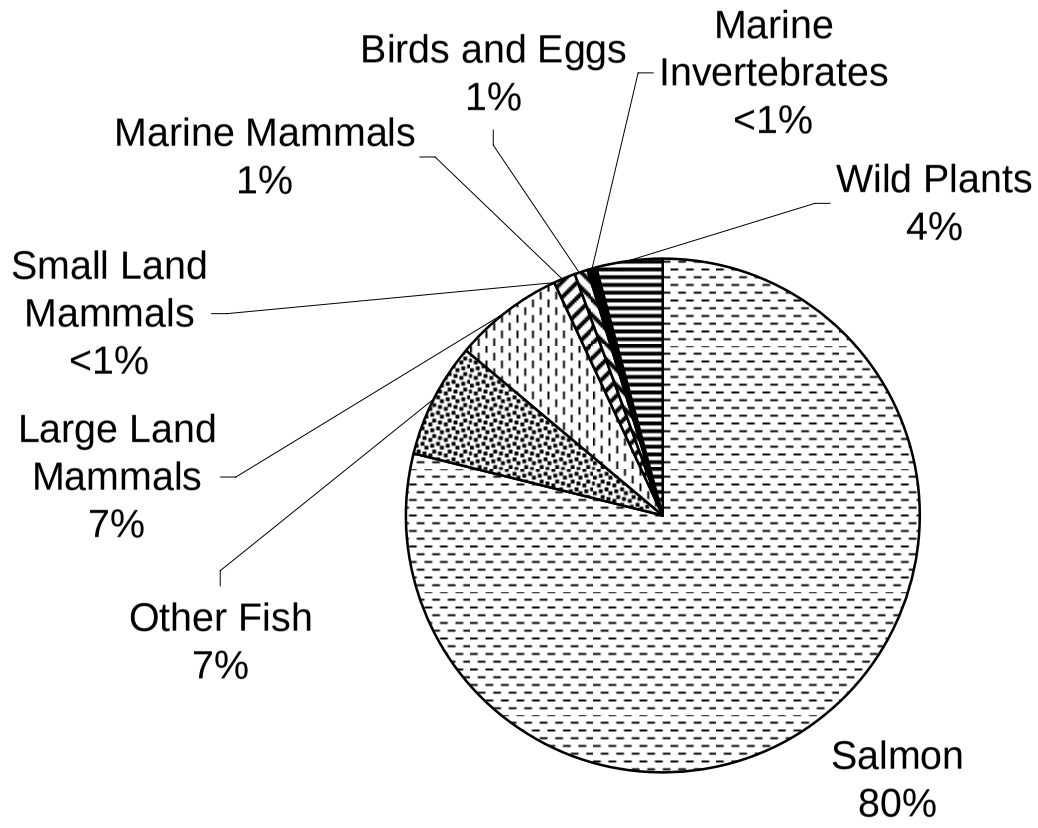
	Pounds Usable Weight Per Capita					
	1973	1983	1991	2001	2003	2004
Salmon	80.6	335.8	431.4			370.1
Non-Salmon Fish	20.7	26.2	76.6		20.4	34.1
Large Land Mammals	75.6	31.2	252.5	122.6		32.1
Small Land Mammals	2.6	2.0	10.0			0.6
Marine Mammals	0.0	1.9	41.5			6.5
Birds and Eggs	5.8	2.6	15.5			4.4
Marine Invertebrates	0.0	0.2	3.3			1.6
Vegetation		16.2	16.7			20.0
All Resources	185.3	416.0	847.6			469.4

blank cells indicate data not collected for that study year

Table 2-10 Composition of Wild Resource Harvests by Category, Iliamna, All Study Years

	Percentage of Total Harvest					
	1973	1983	1991	2001	2003	2004
Salmon	43.5%	80.7%	50.9%			78.8%
Non-Salmon Fish	11.2%	6.3%	9.0%			7.3%
Large Land Mammals	40.8%	7.5%	29.8%			6.8%
Small Land Mammals	1.4%	0.5%	1.2%			0.1%
Marine Mammals	0.0%	0.5%	4.9%			1.4%
Birds and Eggs	3.1%	0.6%	1.8%			0.9%
Marine Invertebrates	0.0%	0.1%	0.4%			0.3%
Vegetation		3.9%	2.0%			4.3%
All Resources	100.0%	100.0%	100.0%			100.0%

Figure 2-2. Composition of Wild Resource Harvests, Iliamna, 2004, by Resource Category



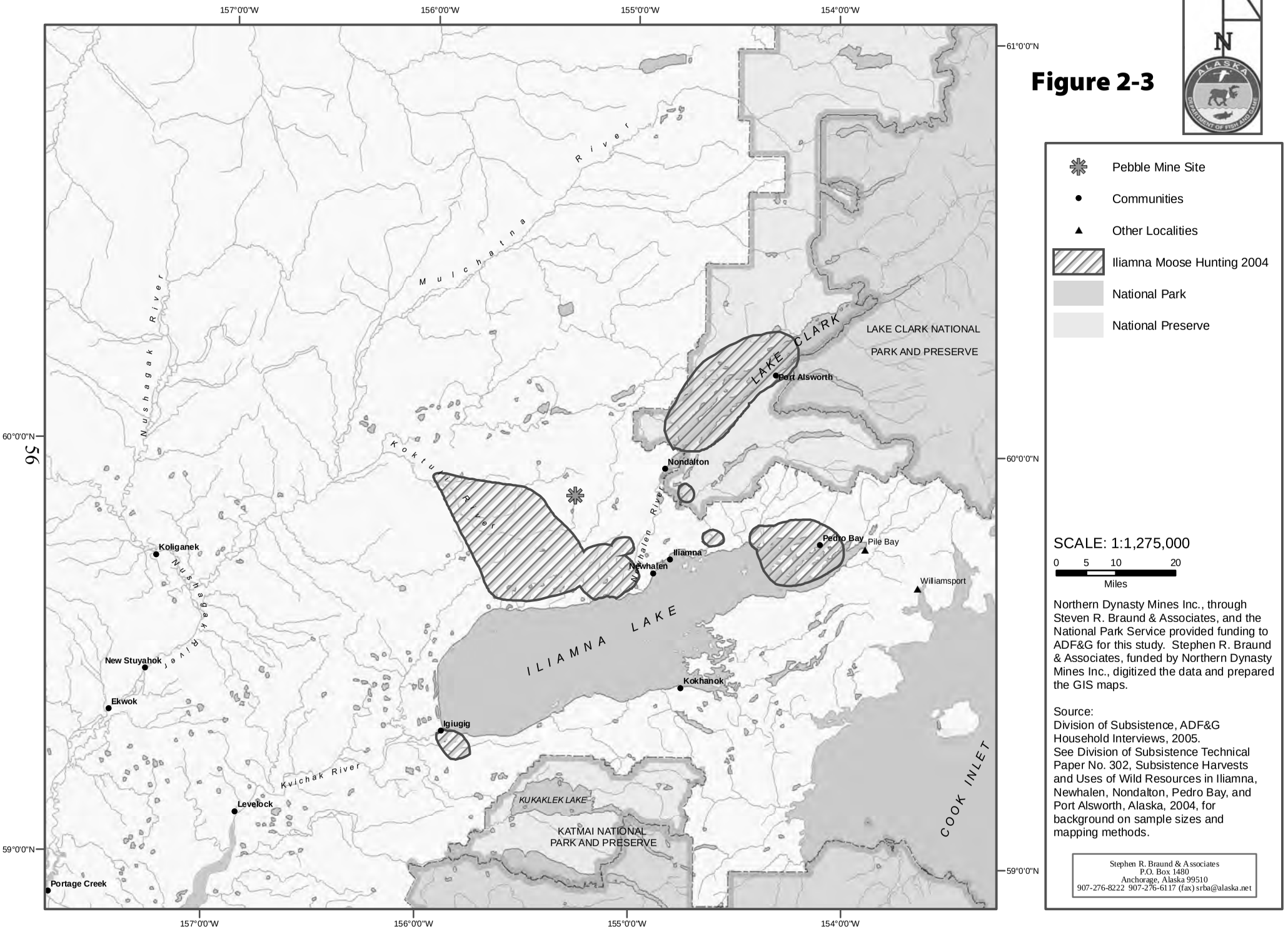


Figure 2-3

- Pebble Mine Site
- Communities
- Other Localities
- Iliamna Moose Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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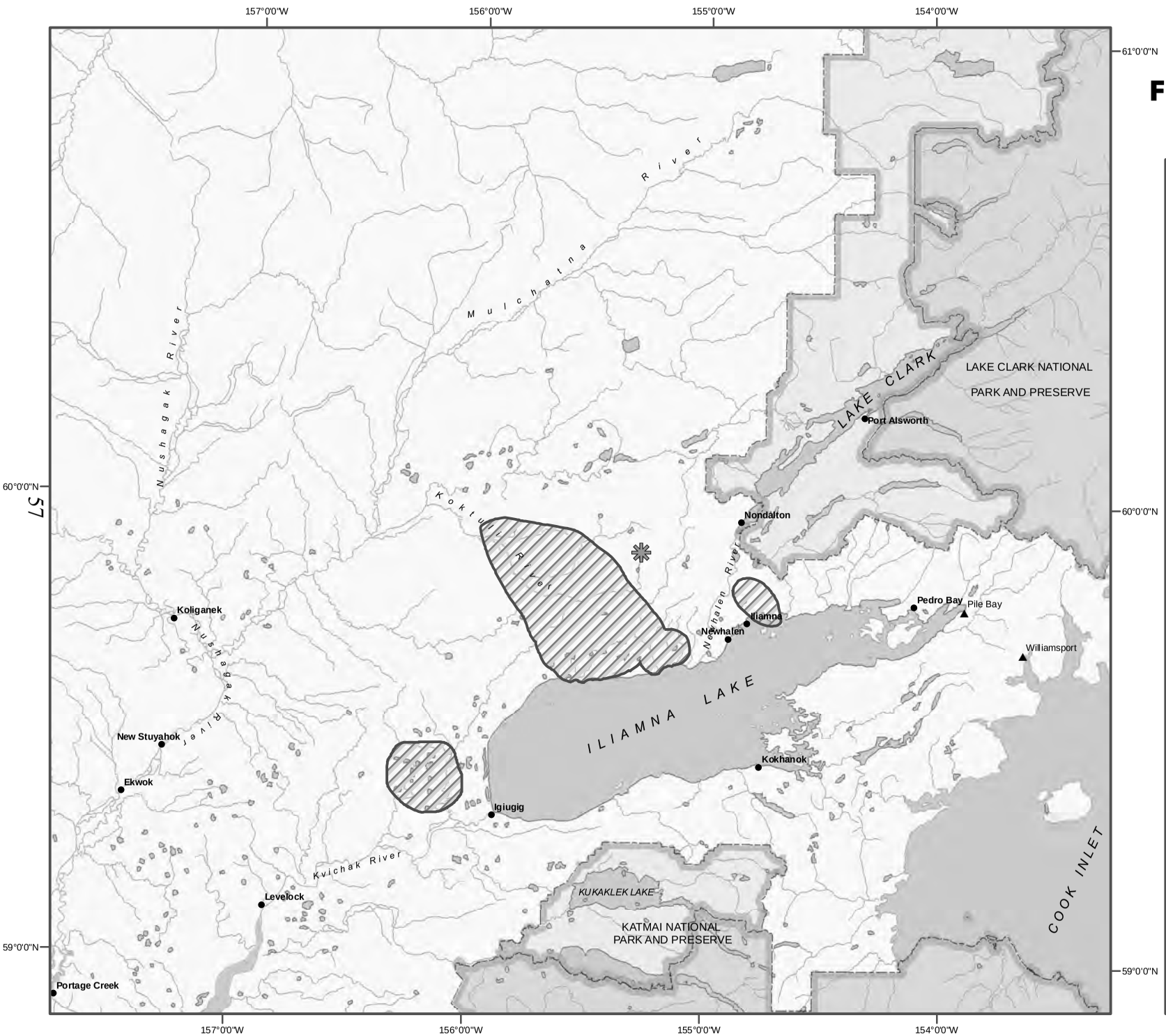

Figure 2-4

- Pebble Mine Site
- Communities
- Other Localities
- Iliamna Caribou Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
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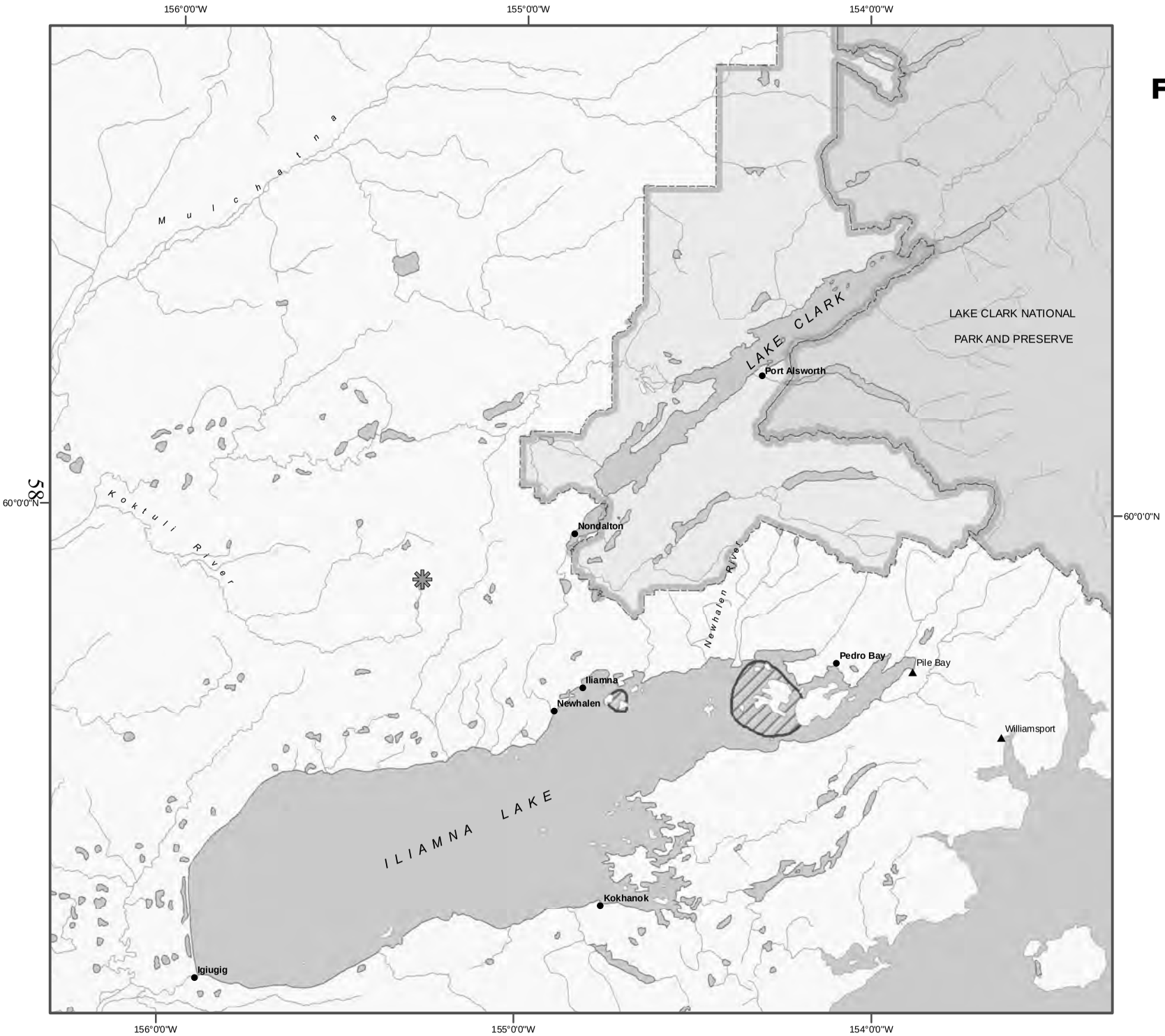

Figure 2-5

- Pebble Mine Site
- Communities
- Other Localities
- Iliamna Freshwater Seal Hunting 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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Figure 2-6. Iliamna Households' Assessment of Harvest and Uses of Wild Resources in 2004 Compared to Other Recent Years

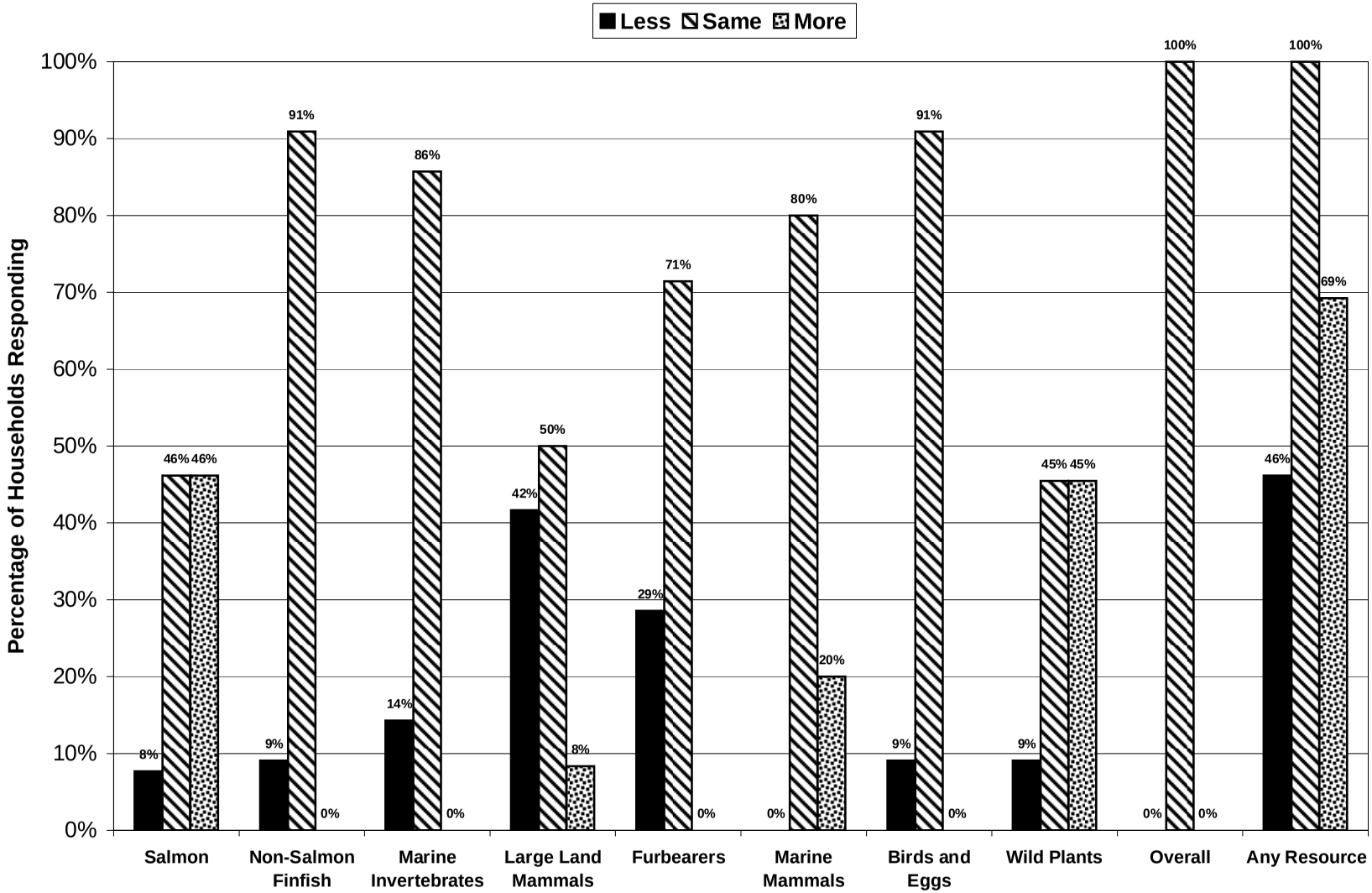


Figure 2-7. Reasons Cited by Iliamna Households for Lower Uses of Any Resource in 2004 Compared to Other Recent Years

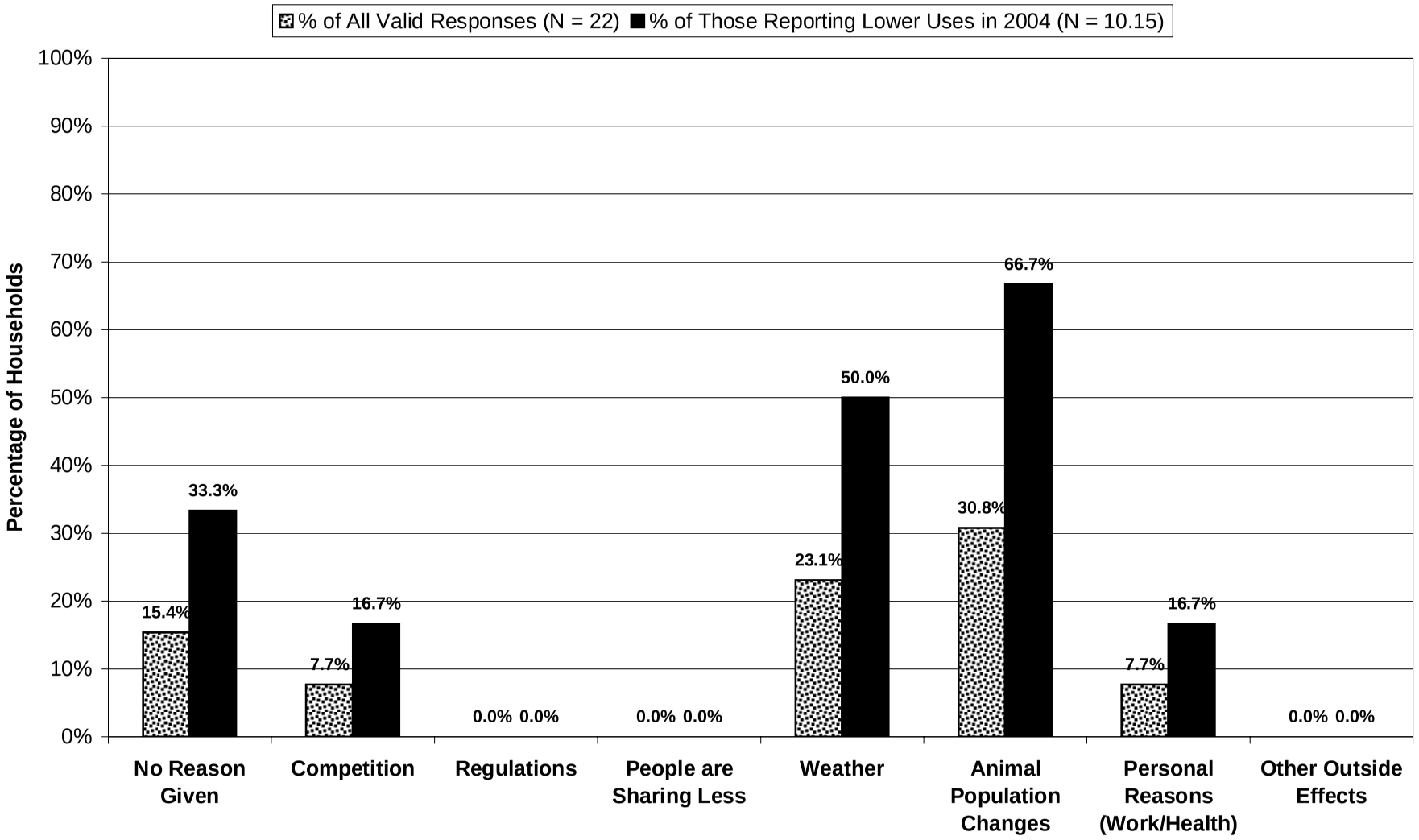
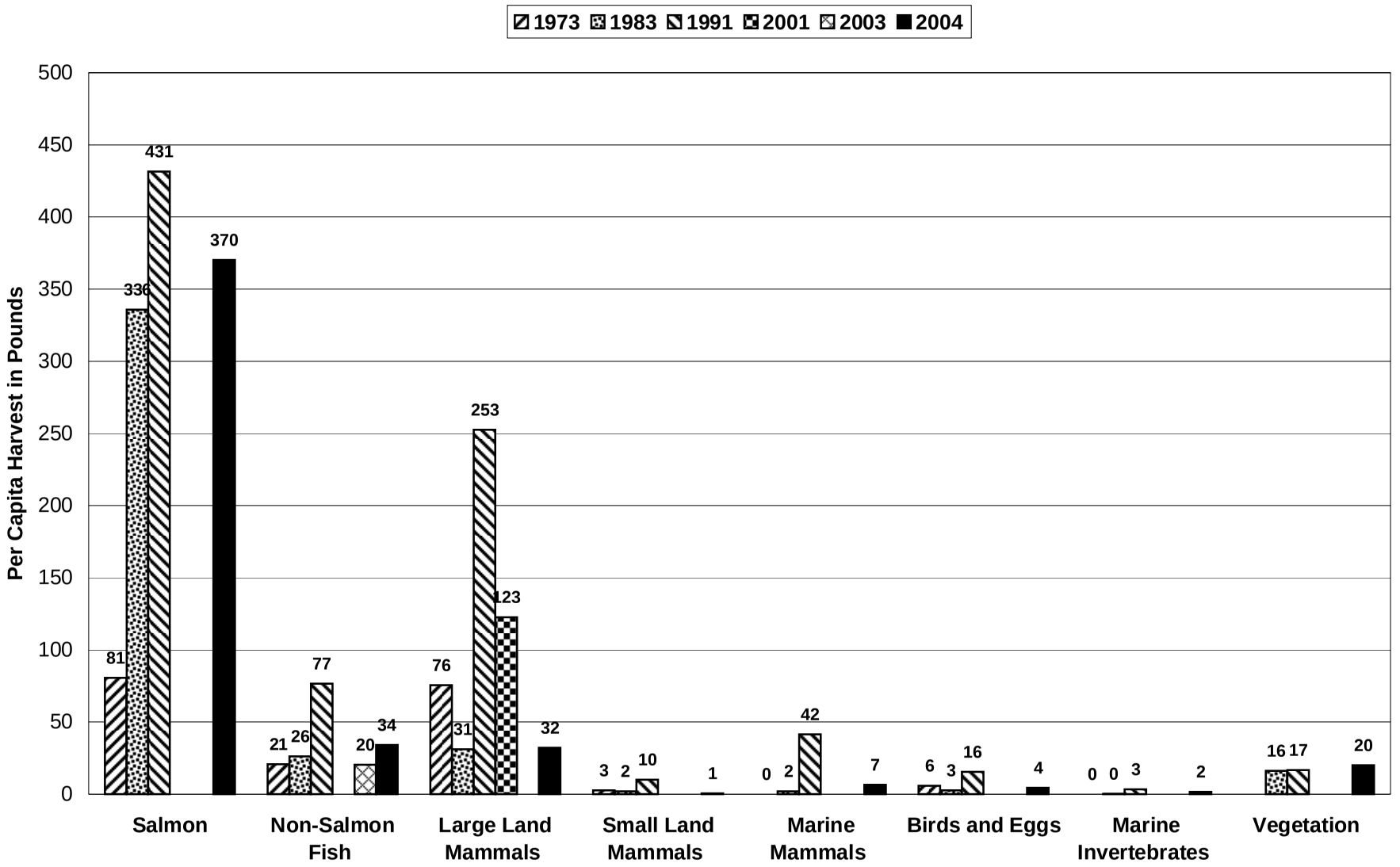


Figure 2-8. Iliamna Wild Resource Harvests Over Time by Resource Category



CHAPTER THREE: NEWHALEN

COMMUNITY BACKGROUND

Positioned at the mouth of the Newhalen River on Iliamna Lake, where strong runs of sockeye salmon return each year, the community of Newhalen has been shaped by the river that bears its name. A former location of the village is not far from the current village site. In fact, some houses border the old village. Today, this predominately Yup'ik village appears like an extension of neighboring Iliamna, to which it is connected by road. Nevertheless, Newhalen residents relate a distinct history of themselves as a separate community.

DEMOGRAPHY, CASH EMPLOYMENT, AND MONETARY INCOME

Demography

During the 2000 census there were 160 residents living in Newhalen (DCED 2005), of which 91% (146 residents) were Alaska Native (Table 1-1). The ADF&G survey in 2005 found a population of 125 residents of which 96% (120 residents) were Alaska Native (Table 1-10). Residents note that while the population for Newhalen has declined, good job opportunities and strong family ties help maintain the community.

Project staff established an initial estimate of 39 year-round households in Newhalen (Table 1-6). Of these, 25 (81%) were interviewed. Interviewers failed to contact one household, 8 households had moved, and 5 households (17%) declined to be interviewed. These 5 households declined because they objected to a nonlocal resident questioning them about their subsistence hunting and fishing. They wanted to maintain their privacy from a management agency that they fear might restrict their future subsistence opportunities.

The average length of residency in Newhalen was 23 years with the maximum at 85 years (Table 1-10). The largest age group of residents for both males and females was between 15-19 years of age (Fig. 3-1). In the study year, there were quite a few children of all ages in Newhalen, supporting the view that this is a thriving community of families (Fig. 3-1, Table 3-1). However, there were few young people between the ages of 20-30, which could be due to residents pursuing higher education or economic opportunities elsewhere.

Of the household heads interviewed, 11% were born outside of Alaska, while 48% were born in Newhalen (Table 1-11). The most frequent communities of birth outside of Newhalen were nearby Kokhanok (9%) and Igiugig (9%). A little over 4% of household heads came from the general Lake Clark area (Table 1-11).

Cash Employment Characteristics and Monetary Income

With their proximity and connection by road, Iliamna and Newhalen share many services. The school for both communities is located in Newhalen. The school provides jobs for teachers, teachers' aides, custodians, and other service-related occupations. In addition, a new health care

facility located between the two communities is an important employer. As mentioned in the Iliamna chapter, the shared airport provides jobs as well.

Some of the notable sources of employment for Newhalen residents during 2004 included local and tribal government (40% of jobs), fishing (24% of jobs), transportation (11% of jobs), and the service sector (18% of jobs). Local and tribal government employed 48% of employed individuals (this included the school), 22% of employed adults worked in the services sector, and 13% worked in the transportation sector (Table 3-2). Local and tribal government provided for 39% of earned income in Newhalen in 2004, and commercial fishing provided for 22%.

Most jobs held by Newhalen residents in 2004 were located in Newhalen (37 out of 68 jobs; 55%) (Table 1-13). Other locations included nearby Iliamna with 11 jobs (16%), and Bristol Bay (15 jobs or 22%). The number of jobs located in Bristol Bay is consistent with 24% of Newhalen's residents being employed in commercial fishing (Table 3-2).

For most of Newhalen's working adults, wage employment was seasonal; only 28% of adults worked year round in 2004. The mean months employed during 2004 was 8, in part because the school is only open 9 months a year. In 2004, 92% of Newhalen's households had at least one employed adult and the mean per household was 2 (Table 1-12). In Newhalen, there are many extended families living in a single household, therefore several adults can pool their relatively low incomes to support the household.

LEVELS OF PARTICIPATION IN THE HARVEST AND USE OF WILD RESOURCES

Table 1-15 reports levels of individual participation in the harvest and processing of wild resources by residents of Newhalen in 2004. Almost 35% of Newhalen residents hunted birds and large land mammals and 59% processed game and birds. More people fished (68%) and processed fish (67%). Fewer residents trapped or hunted furbearers (15%) and 19% processed furbearing animals. Picking berries and other wild plants was an important activity with 72% of people participating; 62% reported processing wild plants. In total, 86% of Newhalen's residents attempted to harvest resources in 2004. This is a high participation rate, especially considering that Newhalen has a relatively young population and some children are too young to help with harvesting or processing wild foods.

RESOURCE HARVEST AND USE PATTERNS

Table 1-16 reports resource harvest and use characteristics of Newhalen for the 2004 study year. Every household used, attempted to harvest, and harvested at least one wild resource. The average household harvest was 2,794 pounds usable weight; this represents 692 pounds per capita. (All resources are recorded in pounds usable weight. See Appendix C for conversion factors.) During 2004, Newhalen residents harvested an average of 12 different kinds of resources (the most of any study community) and used an average of 15 different kinds of resources. In addition, Newhalen residents gave away an average of 8 resources to other households, the most of any study community.

Species Used and Seasonal Round

Perched on the banks at the mouth of the Newhalen River, the community of Newhalen is well positioned to harvest the typically abundant sockeye salmon run headed for Lake Clark. The run begins in June. In 2004, fish were by far the most commonly harvested resource by Newhalen residents; 96% of households harvested fish (Table 3-3). Late run salmon, commonly referred to as spawning sockeye due to their distinctive red coloring and white meat, are harvested in the fall.

The Newhalen River is a popular fishing location for Newhalen residents for non-salmon fish. In 2004, 88% of Newhalen households reported harvesting and using some type of freshwater fish (Table 3-3). In summer, residents use rod and reel in the Newhalen River to fish for rainbow trout and Dolly Varden. In winter, the area's lakes harbor northern pike, trout, and Dolly Varden that are caught through the ice. Fishing for rainbow trout is especially popular in spring as days grow longer and warmer. It is common then to see strings of rainbow trout hanging outside drying in the wind.

Early spring is also a favored time for hunting caribou. In 2004, caribou were the second most harvested species by weight in Newhalen (after sockeye salmon); 88% of households reported using caribou and 44% harvested caribou (Table 3-3). (See the more detailed section on large land mammals for a further discussion.) Besides caribou the other major large land mammal harvested was moose, which are taken in fall and early winter.

Freshwater seals are also an important traditional resource taken by the hunters of Newhalen. Fifty-two percent of households reported using freshwater seal and 24% of households harvested a seal (Table 3-3). Seals are taken on islands near the community and are harvested mostly in winter when the lake ice is thick. However, freshwater seals are taken anytime of year as hunters note that they are "always fat and healthy looking."

Winter is also the best season for harvesting furbearing animals because their fur is thick. For example, in 2004 beaver were harvested by 12% of households and porcupine by 24% of households. Residents also harvested fox, hare, and mink (Table 3-3).

Newhalen residents are also actively engaged in hunting migratory waterfowl that pass through the area in the fall and spring. Upland birds are hunted in the fall as well. Gull eggs, harvested on the numerous islands of Iliamna Lake where the gulls nest, were taken by 80% of households. In the fall residents harvest berries on the low bushes of the tundra that surround their community; 92% of households in Newhalen reported using and harvesting berries in 2004 (Table 3-3).

As with Iliamna, razor clams were also a popular resource, although the effort to harvest these meant a charter flight to Spring Point in Chinitna Bay. Thirty-six percent of households in Newhalen harvested clams from this location in 2004.

Harvest Quantities

Table 3-3 summarizes wild resource harvest and use information for Newhalen in 2004 and is organized first by general category and then by species. The "harvest" category includes resources taken by any member of the surveyed household during 2004. The "use" category includes all resources taken and given away by a household, and resources acquired after a harvest, either as gifts, by trade, through hunting partnerships, or meat given to hunting guides by their clients. Purchased foods were not recorded. Differences between harvest and use percentages reflect sharing between households, which resulted in a wider distribution of wild foods.

The total harvest for all subsistence resources during 2004 for the community of Newhalen was 86,607 usable pounds, or 692 pounds per person (Table 3-3). Table 3-4 lists the top 10 resources harvested in terms of pounds per capita, and the 10 resources used by the most Newhalen households. Fish constituted the largest portion of the harvest with 66,870 pounds (77%), or 534 pounds per person (Table 3-3, Fig. 3-2). Fresh sockeye salmon that arrive in June and July were the major resource harvested with 52,632 pounds or 420 pounds per person. The spawning sockeye salmon harvested in September and October constituted 8,439 pounds of the harvest (Table 3-3) or 32 pounds per person.

Non-salmon fish are also an important resource for Newhalen residents, who harvested 3,980 pounds of non-salmon fish, or 32 pounds per person, in 2004 (Table 3-3). The major harvests in this resource category included 1,304 pounds of Dolly Varden (10 pounds per person), 382 pounds of grayling (3 pounds per person), 1,137 pounds of rainbow trout (9 pounds per person), 536 pounds of unknown trout (4 pounds per person) and 191 pounds of whitefish (2 pounds per person) (Table 3-3).

The other major source of wild foods in 2004 for Newhalen was large land mammals with 12,693 pounds harvested (101 pounds per person). Caribou made up a significant quantity of harvested meat at 7,440 pounds (59 % of the total large land mammal harvest) or 59 pounds per person. Moose made up most of the rest of the large land mammal harvest with 4,687 pounds (37 pounds per person) (Table 3-3). Moose in 2004 constituted 37 % of the total large land mammal harvest in harvestable pounds.

Small land mammals were a small portion of the overall harvest for Newhalen residents in 2004, with a total harvest of 392 pounds, 3 pounds per person. The largest harvest by weight was porcupine with 258 pounds (2 pounds per person; Table 3-3).

Marine mammals were important for residents of Newhalen in 2004, including a harvest of 556 pounds of freshwater harbor seal, 4 pounds per person. Migratory birds and their eggs were also important, with 1,088 pounds of migratory birds harvested (9 pounds per person), and 811 pounds of eggs harvested (6 pounds per person; Table 3-3). Ptarmigan made up 104 pounds of the harvest (1 pound per person). Razor clams are a favored, non-local wild resource. Newhalen residents harvested 313 pounds of razor clams (3 pounds per person) in the study year (Table 3-3).

The size of berry harvest in Newhalen reflects the good local berry crop in 2004. In total 3,184 pounds of berries were harvested in 2004, or 25 pounds per person (Table 3-3).

Harvest Areas[1]

Much of Newhalen's wild resource harvesting takes place along the north shore of Iliamna Lake. When residents travel away from the community to hunt or fish it is mainly east along the shore of the lake. However, in 2004 residents traveled to a variety of outlying areas for subsistence activities in addition to this central area. For example, for moose and caribou, residents traveled across the lake to the south shore and hunted around Kokhanok (Fig. 3-3, Fig. 3-4). Hunters also traveled to the Nushagak River for caribou. Moose harvests were concentrated on the north shore of the lake but caribou were harvested in almost all areas hunted. Brown and black bear hunting occurred near Newhalen, although the one harvest of brown bear occurred closer to Pedro Bay; one of the two black bear harvests occurred on the south shore of Iliamna Lake. Freshwater seals were hunted on small islands in the eastern part of Iliamna Lake and on leads in the ice (Fig. 3-5). Hunting of small land mammals was concentrated around Newhalen and to the east.

In 2004, salmon fishing for both fresh sockeye salmon and spawning reds was concentrated around the community of Newhalen. In addition, some salmon fishing took place along the shoreline of the lake west of the community, and a few fishermen traveled to Kokhanok to fish. In 2004, freshwater fishing occurred almost entirely on the river near the community and along the shoreline of the lake to the west as far as Lower Talarik Creek. Some fishing occurred upriver towards Nondalton.

Birds and eggs were taken near Newhalen, although a few hunters traveled to the other side of the lake to hunt waterfowl. Berries were harvested on both the north and south shores of Iliamna Lake.

SHARING AND RECEIVING WILD RESOURCES

In Newhalen in 2004, 96% of households received resources from others and 80% of households gave resources away (Table 1-16). Households received an average of 6 resources and gave away an average of 8 resources. As noted above, fish were the most widely used resource, and were among the most commonly shared resources as well, with 72% of households giving fish away and 72% of households receiving fish (Table 3-3). Sixty-four percent of households gave salmon away and 32% received salmon. Newhalen households also widely shared non-salmon fish in 2004 (52% gave away and 56% received). Of all freshwater fish species, char and Dolly Varden were the most frequently given (48%) and received (28%) species.

Large land mammals also were widely shared in Newhalen in 2004. Although some hunting took place near the community, most successful hunters had to travel long distances to harvest caribou, and the meat was shared upon their return. Sixty percent of households gave away

[1] For the complete set of maps of Newhalen residents' hunting, fishing, and gathering areas in 2004, see the CD in pocket inside the back cover of this report.

caribou and 68% harvested caribou. In addition, 36% of households gave away moose and 56% received moose (Table 3-3).

Regarding small land mammals, 12% of Newhalen residents gave away porcupine in 2004 and 4% received it. Freshwater seals were shared by more residents than harvested them (24%) leading to the conclusion that the resource was subsequently redistributed upon receipt. Thirty-six percent of households gave away freshwater seal and 32% received the resource (Table 3-3).

Migratory birds are an important resource for Newhalen residents and were widely shared. More households gave away migratory birds (40%) than received them (32%). This pattern was especially evident in the two main categories of ducks (28% giving and 16% receiving) and geese (36% giving and 24% receiving). Eggs were given away by 48% of households and received by 40%. Ptarmigan followed a similar pattern with 24% giving away the resource and 12% receiving the resource.

Razor clams from trips to Chinitna Bay were given away by 16% of households and received by 20%. Picking berries had a high participation rate (92%), and while 52% of residents gave away berries, only 20% received them (Table 3-3).

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

Large Land Mammals

Both moose and caribou were important for Newhalen residents for subsistence use in 2004 although hunters often had to travel far to harvest these resources (Fig. 3-3, Fig. 3-4). Caribou made up 59% of the large land mammal harvest compared to 37% for moose. Comparing Figure 3-3 with Figure 3-4 shows that residents did not travel to as many areas to hunt moose as caribou, and that some of the caribou hunting areas were far removed from the community.

Both brown and black bears were harvested by Newhalen residents in 2004. These two resources made up 3% and 1% of the total large land mammal harvest respectively. In 2004, the brown bear hunting area was similar to the moose hunting area. Sheep hunting efforts extended to the Tazimina Lakes area, but there were no harvests of this resource in 2004. In 2004, large land mammal in total accounted for 15% of the total wild resource harvest by Newhalen residents (Fig. 3-2).

Marine Mammals

Newhalen was the only study community besides Iliamna to harvest freshwater seals in 2004. Figure 3-5 shows that the hunting area for Newhalen was quite large in 2004, encompassing many of the small islands in the eastern portion of Iliamna Lake, along with islands to the south closer to Kokhanok. One resident related that community residents also hunted seals just off of Newhalen on some small rock islands. In 2004, marine mammals accounted for about 1% of Newhalen's total wild resource harvest (Fig. 3-2).

Salmon

In 2004, salmon comprised 73% of the total harvest of wild resources by Newhalen residents (Fig. 3-2). Almost all sockeye salmon were harvested near the community on the Newhalen River. In addition, both fresh sockeye and spawning sockeye ("red fish") were caught along the north shore and near Kokhanok. Spawning sockeye salmon were harvested in the fall in the same locations. A small harvest of coho salmon took place at the mouth of the Upper Talarik Creek.

Newhalen residents primarily fished for sockeye salmon with set gillnets. Overall, 96% of sockeye harvests were by this method and were concentrated in the Newhalen River (Table 3-5). Most spawning sockeye were caught with set nets (97%; Table 3-5). Of all salmon harvests for home use by Newhalen, just 4% (3,543 pounds) were removed from commercial harvests. This included 4% of the sockeye harvest and 2% of the Chinook harvest (Table 3-5).

Freshwater Fish

Five percent of Newhalen's wild resource harvest in 2004 was fish other than salmon (Fig. 3-2). The Newhalen River and Lower Talarik Creek were Newhalen's main locations for fishing for freshwater fish in 2004, especially for northern pike and Dolly Varden. Other species such as stickleback, rainbow trout, lake trout, and Arctic grayling were caught in these locations and at the mouths of other streams on the north shore of Iliamna Lake. Whitefish species, including humpback whitefish, least cisco, and round whitefish were caught in locations ranging from the outlet of Iliamna Lake at Igiugig to Nondalton on Sixmile Lake.

Table 3-6 lists the methods Newhalen residents used for freshwater fish harvests in 2004. Ice fishing was the main method for catching all species of freshwater fish, accounting for 78% of the total harvest of nonsalmon fish. The second most productive method was rod and reel in open water, which yielded 20% of the total harvest of freshwater fish. Regarding particular species, 80% of Dolly Varden was caught through the ice while 20 % was caught in open water with rod and reel. Of the total harvest of rainbow trout, 69% was caught by ice fishing and 27% by rod and reel. (The percentage of households harvesting freshwater fish by gear type and species is reported in Table 3A-4 in Appendix D.)

Marine Invertebrates

As discussed above, residents of Newhalen travel to Chinitna Bay by air charter to harvest razor clams. Because Chinitna Bay is outside the study area, this location was not recorded on maps. Less than 1% of Newhalen's wild resource harvest in 2004 was made up of marine invertebrates (Fig. 3-2).

Small Land Mammals

In 2004, small land mammals represented less than 1% of the total wild resource harvest by Newhalen residents (Fig. 3-2). Porcupine and beaver, the two main small land mammals harvested in 2004, were hunted mainly near Newhalen on the north shore of Iliamna Lake.

These hunting areas cover the shoreline from Newhalen south towards Igiugig and north into the headwaters of the Koktuli River system. As shown in Table 3-3, 98 pounds of beaver and 258 pounds of porcupine were harvested. This equates to about 11 beavers and 32 porcupines harvested by residents of Newhalen in this area surrounding their community.

Birds and Eggs

Birds and eggs contributed 2% of Newhalen's total wild resource harvest in 2004, an estimated 605 birds, or 1,088 pounds (Table 3-3). Migratory bird hunting extended along the shoreline southeast to Igiugig, north towards the Koktuli River system, and into Sixmile Lake near Nondalton. In addition, residents hunted on the south side of the lake below Kokhanok. Gull eggs were harvested on Flat Island and other islands south of Newhalen off the coast in Iliamna Lake.

Wild Plant Resources

Newhalen residents were very active berry harvesters in 2004. Berries were found near the community, on the road towards Nondalton to the north, and across Iliamna Lake on the south shore. The community harvested a total of 3,184 pounds of berries or 796 gallons, which equates to 26 gallons per household (Table 3-3). Wild plants made up 4% of the community's total wild resource harvest in 2004 (Fig. 3-2).

COMPARING HARVESTS AND USES IN 2004 WITH PREVIOUS YEARS

Most residents of Newhalen (80%) reported that their harvest and use of wild resources in 2004 were about the same as in the recent past (the last 5 years). Table 3-7 summarizes assessments for each major resource category (see also Fig. 3-6). For example, a majority of respondents said uses of freshwater fish, marine invertebrates, marine mammals, and birds and eggs were the same in 2004 as in other recent years. However, 63% of respondents reported using less furbearers (small land mammals), with 25% using the same, and 13% using more. Almost half of the respondents (48%) said that their uses of large land mammals were less in 2004 than in other recent years, and the same number reported that uses remained about the same. Assessments were also mixed for salmon: 24% of respondents reported lower uses, 44% said uses of salmon had not changed, and 32% said uses were higher.

Table 3-8 reports reasons that residents of Newhalen gave for whether they harvested or used less or more of each resource category than in the recent past. This was an open-ended question. Researchers grouped responses into categories such as competition for resources, regulations either hindering or helping residents harvest resources, sharing of harvests, effects of weather on animals and subsistence activities, changes in the animal populations themselves, personal reasons such as work and health, and other outside effects on residents' ability to engage in subsistence activities**.** For example, many residents of Newhalen (36%) related that resource population changes caused lower harvests in 2004 (Fig. 3-7). This was especially evident for large land mammals (Table 3-8). In addition, personal reasons, such as having more cash employment, influenced whether residents of Newhalen had time to conduct subsistence activities. As shown in Figure 3-7, 61% of all Newhalen respondents with reduced uses of at

least one resource category cited personal reasons as the cause. (For more on the topic of cash employment interfering with subsistence activities in Newhalen, see Holen et al. 2005.) These topics are explored further below.

Changes in harvests of large land mammals in Newhalen are also demonstrated by comparisons with findings from pervious household harvest surveys were carried out in 1973, 1983, and 1991 (Table 3-9, Table 3-10). Figure 3-8 shows that Newhalen residents harvested 165 pounds per person of large land mammals in 1973, 30 pounds per person in 1983, 205 pounds per person in 1991, 108 pounds per person in 2001, and 101 pounds per person in 2004.

LOCAL OBSERVATIONS OF RESOURCE POPULATIONS AND TRENDS

This section reviews information gathered during the research in both Newhalen and Iliamna because residents of these communities use similar resources and harvest areas. Although each community maintains a distinct identify, some people live in one community and work in the other and therefore travel throughout the areas used by the other. Residents of both communities related the importance of moose and caribou in the subsistence economy and expressed concern that these two species are leaving the area. In addition residents discussed Iliamna Lake's population of freshwater seals that, in their view, are abundant.

Caribou and Moose

Changes in relative abundance and increases in hunting pressure on moose and caribou were the prime concern expressed by residents of Iliamna and Newhalen. Key respondents made this point in interviews for this project, and during an earlier large land mammal project conducted in 2002 (Holen et al. 2005).

Moose has supplanted caribou as a dominant large land mammal species in the immediate hunting area, according to the residents of Iliamna and Newhalen. However, residents note moose are scarce near Iliamna and Newhalen. One hunter from Newhalen related that moose are located closer to the community of Koliganek, and he and other hunters in Newhalen usually have to go to the Nushagak River area to find moose. This hunter, in his 50s, grew up in the area, and said that this has always been the case, and that there never has been many moose in the immediate area around Newhalen. The traditional travel route to the Nushagak River for both moose and caribou hunting is through the proposed Pebble Project area.

In 2004, Iliamna harvested substantially more moose than caribou (Table 3-3) and Newhalen harvested more caribou than moose, although Newhalen hunters had to travel long distances to do so (Fig. 3-3, Fig. 3-4). One reason for the extra effort in obtaining caribou is that residents in Newhalen prefer caribou to moose. If the weather is conducive, they travel long distances by snowmachine or four-wheeler in spring to wherever the caribou herd is located (Holen et al. 2005). One resident interviewed in 2005 noted that Newhalen hunters usually try to harvest caribou instead of moose. In the past few years they have not had caribou in the immediate area; in 2004 they were scarce elsewhere as well. Therefore, hunters from Newhalen mainly traveled to the Nushagak River drainage to harvest caribou and also harvested more moose closer to Newhalen.

One local resident noted that the caribou used to migrate out of the area every fall and then returned in December after the hunting season – "it's as if they knew the timing of the hunting season," this hunter said. But caribou have not returned to the Iliamna and Newhalen area for the past 7 years. An explanation for this change in migratory behavior offered by 2 Iliamna hunters is that the caribou have overgrazed the area and have now moved elsewhere. Local hunters learned from a resident of the Aniak-Bethel area that caribou were available there for the first time in about 40 years. According to Newhalen hunters, caribou have moved west toward the Dillingham area as well.

These 2 Iliamna hunters related that over the past few years caribou have migrated further north-northeast each year, echoing the explanations given by Newhalen hunters. They added that there is good feed further north and they believe the Mulchatna Herd is dispersing into new areas with abundant lichen. Lichen take 10 to 15 years to regenerate. Hunters do not expect a return of the caribou to the Iliamna-Newhalen area anytime soon because, they say, in the local area, the lichen are three-quarters of an inch thick, whereas further north lichen are 8 to 12 inches thick.

Understandably, Newhalen and Iliamna residents are worried about this trend in the caribou distribution. Some hunters offer other explanations besides the lack of lichen. For example, some key respondents said that the caribou have moved away because of an increase in hunting pressure. One resident said he still remembers when 10,000 caribou walked right through Iliamna. In his opinion, the nonlocal sport hunting activity has disrupted the annual caribou migration. He explained that the caribou start moving away when the season opens up. He believes a later season, after the sport hunters have left, may allow the caribou to move into the Iliamna-Newhalen area unencumbered by nonlocal hunting pressure.

Iliamna and Newhalen hunters said they would like to ensure that their children have the opportunity to hunt the caribou that have been a traditional resource for them, their parents, and their grandparents. One hunter said that in the past he did not hunt much, but now he has two older boys and as a family they spend more time hunting. The boys can hunt more because they are older, and he wants to share this activity with them. There is a more practical reason as well; he has two growing boys and his family needs more meat. He said he and his wife have full-time jobs and can earn a good living and buy groceries for the family. However, what is truly important to him is ensuring that his children, and his children's children, continue to have the opportunity to experience the environment the way he did, and that includes hunting caribou.

Another possible reason given by many key respondents for the scarcity of caribou in the area is the increase in helicopter traffic due to mineral exploration. This view is that the number of caribou in the herd has not decreased, but they have moved elsewhere because of the noise of the helicopters. These respondents think that hunting pressure from nonlocal residents coupled with noise from mineral exploration has changed the migrations of caribou away from the north shore of Iliamna Lake and further inland. One local guide said this past year he did not guide in the direction of the mine. He thinks he will stop using that area because even though the mine has not been developed yet, there is so much traffic into that area.

Due to the lack of caribou in the vicinity of Newhalen, moose have become the primary large land mammal species hunted. One resident, who runs an air taxi service, noted that moose harvests are up over the past 3 years. He attributed this higher moose harvest to the lack of caribou. The caribou antlers he does see are "pathetically small," meaning they come from immature animals. He has not seen a large caribou rack in over 7 years, referring to the absence of a large healthy herd with full-grown male caribou. He added that sport hunters are targeting moose, due to the absence of the Mulchatna Herd within local flying distance of Iliamna and Newhalen. He sees a lot of moose antlers being packed for shipping out of Iliamna. There is local concern that nonlocal hunters will increase their effort to harvest moose as the quality and abundance of caribou steadily declines. This will reduce what is available to local residents. Local families will have to travel further to harvest moose. One resident noted that it is hard for families that cannot afford to travel longer distances from Iliamna to hunt moose. Some residents said they will have to rely on abundant freshwater fish and salmon - fish will have to suffice for their families, they said, until caribou and moose numbers increase.

Local residents can obtain meat from sport hunters who do not wish to ship it home. Local residents complain that the meat is often rotten or dirty. However, in some cases this may be changing. Two residents of Iliamna noted that in the past few years the quality of meat brought in by sport hunters, who are mainly after large land mammal racks for mounting, has improved. They attribute this to the presence of tougher hunting regulations and hunter education, both by the state of Alaska, and by local air taxi services. A regulation that requires that meat be left on the bone during transport (5 AC 92.220(d)(1)) has dramatically increased the accountability of hunters to take care of meat. The air taxi operators as a whole spend time with the hunters to make sure they know what the rules are and how to care for the meat. One operator tells the hunters that if the meat is rotten, he will not sign for it to be given away locally. He will expect the hunter to ship the rotten meat home. At 50 cents to a dollar a pound, the hunters readily comply with the requirements, especially as a moose can yield over 500 pounds of meat.

The meat from large land mammals that are harvested by sport hunters, especially moose in recent years, is distributed to local residents in Iliamna and Newhalen, and other local communities as well. One air taxi operator in the area relates that he gives away "truckloads" of meat each August through September. There is too much to share locally, so he flies the surplus to Kokhanok or other communities. A hunter in Newhalen related that the quality of the meat he received from sport hunters in 2004 was good. For the most part, he does not hunt as much anymore because there are too many sport hunters. His family obtains the meat that they need through the distribution by the air taxi services.

Seals

Both Newhalen and Iliamna harvested freshwater seals in 2004. However, as one resident related, people do not take large numbers of seals, nor do they travel long distances to hunt them. They harvest seals occasionally and then share the meat with others, especially elders. The fat is heavy on Lake Iliamna seals year-round, which means people can hunt them at any time (except mating season), although the best time to hunt is February when the ice is thick enough for safe travel. Then, they hunt seals from the ice, following the open water leads.

People in the communities respect the seals and one hunter said that it is sad to see them shot and wasted. This past fall he noticed that there were 3 seals on the beach that had been shot. One of the seals was very large. He did not know who shot the seals. In Pedro Bay, residents related that they have seen "boatloads of armed tourists" on the lake shooting at anything that moves, including beaver and birds. The respondents worried that seals may be disturbed during these incidents as well.

One resident who hunts seals every year reported that seals are abundant, and there are more seals in the lake than many people assume. He indicated that one of the islands off the community of Newhalen has a large population. He continued to describe the current health of the seals as good -- they are fat and healthy looking. In his view, they are not heavily hunted and grow quite large as they age. He has seen some very large seals. The seal population has been steady over the years, according to this respondent.

Additional Notes on Resource Changes and Local Concerns

Changes in Weather

Residents of Iliamna and Newhalen indicated that the presence or absence of upland birds relates to weather conditions. There was no snow or birds in the area during the winter of 2004 – 2005. This was unusual. One hunter says he harvested 60 ptarmigan in 2003, but only harvested one in 2004. Another hunter explained that ptarmigan come down to the lowlands around Iliamna when the snow is deep at higher elevations, but as there was not a large snowfall this past year they stayed higher up. Another couple related that around the airport there are usually lots of cranberries and blueberries, but this past year the blueberry harvest was poor. They related this to a low amount of water in the soil.

Changes in Water

Changes in the levels of water was noted by one family who travels to Black Lake every year to fish in spring. The household head takes his daughter and other children from neighboring families. The lake is known for its large grayling, the targeted species for this family. In 2004, for the first time in this family's experience, the water in the creek was too low to fish. It was a very dry season. Low amounts of rainfall or snowmelt could be responsible for these drier than normal conditions. This area also produced a poor berry harvest in 2004 that may also be related to the dry conditions.

Potential Changes to the Land

Along with changes in the weather, and what residents see as a gradual warming (see Holen et al. 2005), key respondents in Iliamna and Newhalen expressed concerns about the potential effects of a mine in the area for two reasons. The first issue concerned the number of people who might move into the area to work at the mine or provide support services. Local residents worry that hunting and fishing by these new arrivals will crowd out local subsistence hunters. Residents reported their observations about the effects that increased helicopter traffic and the influx of sport hunters and fishermen are already having on migrating caribou. They worry that with a

developing and operating mine, there may be an increase in the population of local communities. The concern is that the ecosystem of the communities' traditional hunting and fishing areas will not be able to sustain that many people.

In addition, key respondents are concerned about potential direct impact of a mine on fish, wildlife, and plant resources. Residents of Iliamna said that the communities of the Nushagak River drainage may have to deal with water pollution caused by mine development and operation because they are downstream from the Koktuli River, the closest watershed to the potential mine site. Iliamna and Newhalen residents are also worried about the dust from large trucks traveling through the area that, they fear, may contaminate berries and other wild plants. Residents said that they will distrust any advice that the dust is not harmful to berries, and will likely stop eating them.

Figure 3-1. Population Profile, Newhalen, 2004

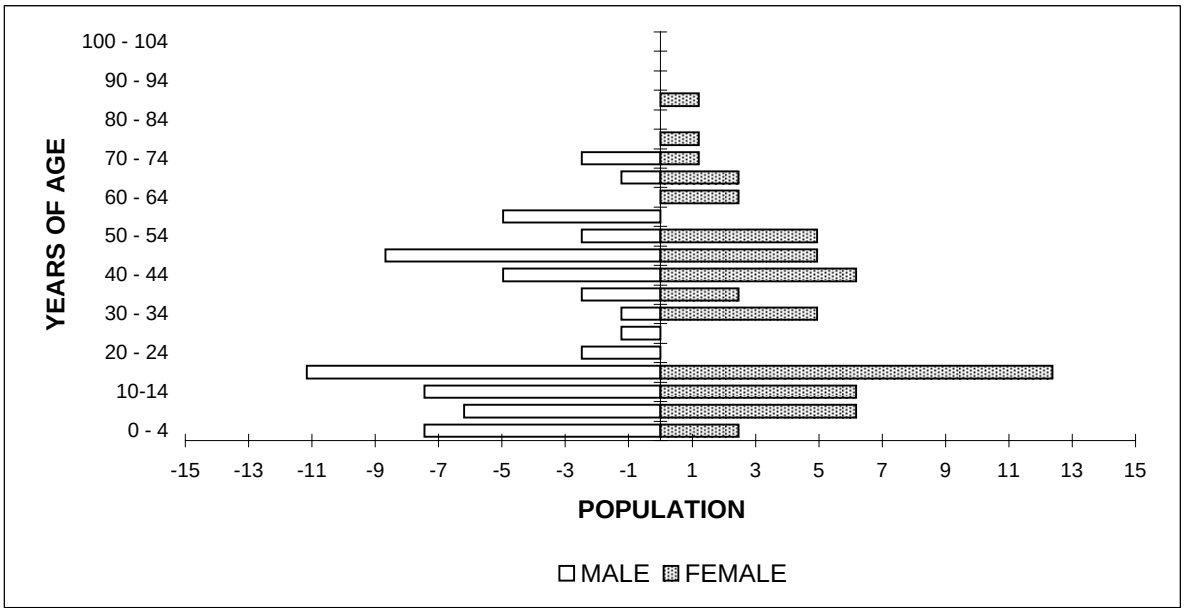


Table 3-1. Population Profile, Newhalen, 2004

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	7.4	11.3%	11.3%	2.5	4.2%	4.2%	9.9	7.9%	7.9%
5-9	6.2	9.4%	20.8%	6.2	10.4%	14.6%	12.4	9.9%	17.8%
10-14	7.4	11.3%	32.1%	6.2	10.4%	25.0%	13.6	10.9%	28.7%
15 - 19	11.2	17.0%	49.1%	12.4	20.8%	45.8%	23.6	18.8%	47.5%
20 - 24	2.5	3.8%	52.8%	0.0	0.0%	45.8%	2.5	2.0%	49.5%
25 - 29	1.2	1.9%	54.7%	0.0	0.0%	45.8%	1.2	1.0%	50.5%
30 - 34	1.2	1.9%	56.6%	5.0	8.3%	54.2%	6.2	5.0%	55.4%
35 - 39	2.5	3.8%	60.4%	2.5	4.2%	58.3%	5.0	4.0%	59.4%
40 - 44	5.0	7.5%	67.9%	6.2	10.4%	68.8%	11.2	8.9%	68.3%
45 - 49	8.7	13.2%	81.1%	5.0	8.3%	77.1%	13.6	10.9%	79.2%
50 - 54	2.5	3.8%	84.9%	5.0	8.3%	85.4%	7.4	5.9%	85.1%
55 - 59	5.0	7.5%	92.5%	0.0	0.0%	85.4%	5.0	4.0%	89.1%
60 - 64	0.0	0.0%	92.5%	2.5	4.2%	89.6%	2.5	2.0%	91.1%
65 - 69	1.2	1.9%	94.3%	2.5	4.2%	93.8%	3.7	3.0%	94.1%
70 - 74	2.5	3.8%	98.1%	1.2	2.1%	95.8%	3.7	3.0%	97.0%
75 - 79	0.0	0.0%	98.1%	1.2	2.1%	97.9%	1.2	1.0%	98.0%
80 - 84	0.0	0.0%	98.1%	0.0	0.0%	97.9%	0.0	0.0%	98.0%
85 - 89	0.0	0.0%	98.1%	1.2	2.1%	100.0%	1.2	1.0%	99.0%
90 - 94	0.0	0.0%	98.1%	0.0	0.0%	100.0%	0.0	0.0%	99.0%
95 - 99	0.0	0.0%	98.1%	0.0	0.0%	100.0%	0.0	0.0%	99.0%
100 - 104	0.0	0.0%	98.1%	0.0	0.0%	100.0%	0.0	0.0%	99.0%
Missing	1.2	1.9%	100.0%	0.0	0.0%	100.0%	1.2	1.0%	100.0%
TOTAL	65.7	100.0%		59.5	100.0%		125.2	100.0%	

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 3-2. Employment by Industry, Newhalen, 2004

	Jobs	Households	Individuals	Percentage of Income
Estimated Total Number*	68.2	28.5	57.0	
Federal Government	1.8%	4.0%	2.2%	1.9%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%
Natural Scientists and Mathematicians	0.0%	0.0%	0.0%	0.0%
Social Scientists, Social Workers, Religious Workers and Lawyers	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	1.8%	4.0%	2.2%	1.9%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
State Government	0.0%	0.0%	0.0%	0.0%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Local & Tribal Governments	40.0%	68.0%	47.8%	39.3%
Executive, Administrative and Managerial	7.3%	12.0%	8.7%	13.8%
Social Scientists, Social Workers, Religious Workers and Lawyers	1.8%	4.0%	2.2%	1.1%
Teachers, Librarians, and Councelors	3.6%	8.0%	4.3%	9.1%
Health Diagnosing and Treating Practitioners	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Marketing and Sales Occupations	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	5.5%	12.0%	6.5%	4.0%
Service Occupations	10.9%	20.0%	13.0%	8.5%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	3.6%	8.0%	4.3%	1.1%
Handlers, Equipment Cleaners, Helpers and Laborers	7.3%	16.0%	8.7%	1.7%
Agriculture, Forestry & Fishing	23.6%	52.0%	28.3%	21.7%
Agricultural, Forestry and Fishing Occupations	23.6%	52.0%	28.3%	21.7%
Mining	1.8%	4.0%	2.2%	1.7%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Precision Production Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	1.8%	4.0%	2.2%	1.7%
Construction	1.8%	4.0%	2.2%	1.7%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	1.8%	4.0%	2.2%	1.7%
Manufacturing	0.0%	0.0%	0.0%	0.0%
Precision Production Occupations	0.0%	0.0%	0.0%	0.0%
Transportation, Communication & Utilities	10.9%	20.0%	13.0%	10.6%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	1.8%	4.0%	2.2%	1.7%
Administrative Support Occupations, Including Clerical	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	3.6%	8.0%	4.3%	3.9%

[continued]

Table 3-2. Employment by Industry, Newhalen, 2004

	Jobs	Households	Individuals	Percentage of Income
Transportation and Material Moving Occupations	5.5%	8.0%	6.5%	5.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Wholesale Trade	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Retail Trade	1.8%	4.0%	2.2%	1.7%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%
Marketing and Sales Occupations	1.8%	4.0%	2.2%	1.7%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Services	18.2%	32.0%	21.7%	21.5%
Executive, Administrative and Managerial	3.6%	8.0%	4.3%	8.7%
Social Scientists, Social Workers, Religious Workers and Lawyers	1.8%	4.0%	2.2%	3.3%
Health Diagnosing and Treating Practitioners	1.8%	4.0%	2.2%	3.7%
Health Technologists and Technicians	3.6%	8.0%	4.3%	3.7%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	1.8%	4.0%	2.2%	1.7%
Service Occupations	1.8%	4.0%	2.2%	0.3%
Agricultural, Forestry and Fishing Occupations	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Miscellaneous Occupations	3.6%	4.0%	4.3%	0.2%

* Estimated number of households and individuals only include those that were employed during the study period.
SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 3-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Newhalen, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
All Resources	100.0%	100.0%	100.0%	96.0%	80.0%	86,606.8	2,793.8	691.5			15.7%
Fish	100.0%	96.0%	96.0%	72.0%	72.0%	66,869.8	2,157.1	533.9			16.2%
Salmon	100.0%	92.0%	92.0%	32.0%	64.0%	62,889.5	2,028.7	502.2	16,714.0 Ind	539.2	15.8%
Chum Salmon	4.0%	4.0%	4.0%	0.0%	0.0%	363.1	11.7	2.9	74.4 Ind	2.4	0.0%
Coho Salmon	16.0%	16.0%	16.0%	0.0%	12.0%	189.7	6.1	1.5	37.2 Ind	1.2	2.7%
Chinook Salmon	16.0%	16.0%	16.0%	0.0%	4.0%	1,265.1	40.8	10.1	114.1 Ind	3.7	9.9%
Pink Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sockeye Salmon	100.0%	92.0%	92.0%	28.0%	60.0%	52,632.1	1,697.8	420.3	12,268.6 Ind	395.8	13.7%
Landlocked Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Spawnouts	48.0%	48.0%	48.0%	12.0%	36.0%	8,439.4	272.2	67.4	4,219.7 Ind	136.1	12.1%
Spawning Sockeye	48.0%	48.0%	48.0%	12.0%	36.0%	8,439.4	272.2	67.4	4,219.7 Ind	136.1	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%
Non-Salmon Fish	88.0%	88.0%	88.0%	56.0%	52.0%	3,980.3	128.4	31.8			20.3%
Herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Herring Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Herring Sac Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Herring Spawn on Kelp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Smelt	4.0%	4.0%	0.0%	4.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Cod	4.0%	4.0%	4.0%	0.0%	0.0%	4.0	0.1	0.0	1.2 Ind	0.0	0.0%
Pacific Cod (gray)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Walleye Pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Cod	4.0%	4.0%	4.0%	0.0%	0.0%	4.0	0.1	0.0	1.2 Ind	0.0	0.0%
Flounder	4.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Flounder	4.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Lingcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Halibut	12.0%	8.0%	8.0%	8.0%	4.0%	86.8	2.8	0.7	86.8 Lbs	2.8	0.8%
Rockfish	4.0%	4.0%	4.0%	0.0%	0.0%	2.5	0.1	0.0	1.2 Ind	0.0	0.0%
Black Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Red Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Rockfish	4.0%	4.0%	4.0%	0.0%	0.0%	2.5	0.1	0.0	1.2 Ind	0.0	0.0%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Bullhead 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%

Table 3-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Newhalen, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Unknown 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%
Unknown Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Stickleback (needlefish)	4.0%	4.0%	4.0%	0.0%	0.0%	1.5	0.0	0.0	7.4 Ind	0.2	0.0%
Wolffish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	4.0%	0.0%	0.0%	4.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Char	84.0%	84.0%	84.0%	28.0%	48.0%	1,432.2	46.2	11.4	1,023.0 Ind	33.0	23.8%
Arctic Char	8.0%	8.0%	8.0%	4.0%	4.0%	29.5	1.0	0.2	21.1 Ind	0.7	0.9%
Dolly Varden	80.0%	80.0%	80.0%	28.0%	48.0%	1,303.7	42.1	10.4	931.2 Ind	30.0	24.6%
Dolly Varden-saltwater	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	24.0%	24.0%	24.0%	4.0%	8.0%	99.0	3.2	0.8	70.7 Ind	2.3	9.3%
Grayling	72.0%	72.0%	72.0%	12.0%	28.0%	381.9	12.3	3.0	545.6 Ind	17.6	17.1%
Pike	36.0%	36.0%	32.0%	12.0%	8.0%	194.4	6.3	1.6	69.4 Ind	2.2	10.4%
Unknown Pike	36.0%	36.0%	32.0%	12.0%	8.0%	194.4	6.3	1.6	69.4 Ind	2.2	10.4%
Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Trout	80.0%	80.0%	80.0%	24.0%	44.0%	1,685.7	54.4	13.5	1,204.0 Ind	38.8	23.0%
Rainbow Trout	60.0%	56.0%	56.0%	12.0%	32.0%	1,137.1	36.7	9.1	812.2 Ind	26.2	22.1%
Steelhead	8.0%	8.0%	8.0%	4.0%	0.0%	13.9	0.4	0.1	9.9 Ind	0.3	1.3%
Unknown Trout	32.0%	32.0%	32.0%	16.0%	20.0%	534.7	17.2	4.3	381.9 Ind	12.3	8.8%
Whitefish	36.0%	28.0%	28.0%	16.0%	20.0%	191.3	6.2	1.5	138.9 Ind	4.5	7.0%
Broad Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Cisco	4.0%	4.0%	4.0%	0.0%	4.0%	1.0	0.0	0.0	2.5 Ind	0.1	0.0%
Least Cisco	4.0%	4.0%	4.0%	0.0%	4.0%	1.0	0.0	0.0	2.5 Ind	0.1	0.0%
Humpback Whitefish	20.0%	12.0%	12.0%	12.0%	8.0%	125.9	4.1	1.0	71.9 Ind	2.3	5.2%
Round Whitefish	16.0%	16.0%	16.0%	4.0%	12.0%	64.5	2.1	0.5	64.5 Ind	2.1	3.1%
Land Mammals	92.0%	52.0%	44.0%	76.0%	64.0%	13,084.8	422.1	104.5			20.2%
Large Land Mammals	92.0%	52.0%	44.0%	76.0%	60.0%	12,692.6	409.4	101.3			10.6%
Black Bear	16.0%	12.0%	8.0%	8.0%	8.0%	143.8	4.6	1.1	2.5 Ind	0.1	18.5%
Brown Bear	8.0%	8.0%	4.0%	8.0%	8.0%	421.6	13.6	3.4	1.2 Ind	0.0	18.5%
Caribou	88.0%	52.0%	44.0%	68.0%	60.0%	7,440.0	240.0	59.4	49.6 Ind	1.6	9.2%
Moose	60.0%	32.0%	20.0%	56.0%	36.0%	4,687.2	151.2	37.4	8.7 Ind	0.3	11.3%
Dall Sheep	0.0%	4.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Small Land Mammals	32.0%	28.0%	28.0%	20.0%	20.0%	392.2	12.7	3.1			12.7%

Table 3-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Newhalen, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Beaver	16.0%	16.0%	12.0%	12.0%	8.0%	97.7	3.2	0.8	11.2 Ind	0.4	5.0%
Coyote	0.0%	4.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Fox	8.0%	8.0%	8.0%	4.0%	4.0%	0.0	0.0	0.0	9.9 Ind	0.3	2.7%
Red Fox	8.0%	8.0%	8.0%	4.0%	4.0%	0.0	0.0	0.0	9.9 Ind	0.3	2.7%
Hare	8.0%	8.0%	4.0%	0.0%	0.0%	5.0	0.2	0.0	2.5 Ind	0.1	5.3%
Snowshoe Hare	8.0%	8.0%	4.0%	0.0%	0.0%	5.0	0.2	0.0	2.5 Ind	0.1	5.3%
Land Otter	0.0%	4.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Lynx	0.0%	4.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Marmot	0.0%	4.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Marten	0.0%	4.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Mink	4.0%	4.0%	4.0%	0.0%	0.0%	0.0	0.0	0.0	2.5 Ind	0.1	0.0%
Muskrat	0.0%	4.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Porcupine	24.0%	24.0%	24.0%	4.0%	12.0%	257.9	8.3	2.1	32.2 Ind	1.0	7.7%
Squirrel	8.0%	8.0%	8.0%	0.0%	8.0%	31.6	1.0	0.3	63.2 Ind	2.0	1.1%
Parka Squirrel (ground)	8.0%	8.0%	8.0%	0.0%	8.0%	13.0	0.4	0.1	26.0 Ind	0.8	4.8%
Tree Squirrel	4.0%	4.0%	4.0%	0.0%	4.0%	18.6	0.6	0.1	37.2 Ind	1.2	0.0%
Weasel	0.0%	4.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Wolf	8.0%	12.0%	8.0%	0.0%	0.0%	0.0	0.0	0.0	3.7 Ind	0.1	5.3%
Wolverine	4.0%	8.0%	4.0%	0.0%	4.0%	0.0	0.0	0.0	1.2 Ind	0.0	18.5%
Marine Mammals	52.0%	32.0%	24.0%	32.0%	36.0%	555.5	17.9	4.4			7.5%
Seal	52.0%	32.0%	24.0%	32.0%	36.0%	555.5	17.9	4.4	9.9 Ind	0.3	7.5%
Harbor Seal	52.0%	32.0%	24.0%	32.0%	36.0%	555.5	17.9	4.4	9.9 Ind	0.3	7.5%
Harbor Seal (freshwater)	52.0%	32.0%	24.0%	32.0%	36.0%	555.5	17.9	4.4	9.9 Ind	0.3	7.5%
Harbor Seal (saltwater)	4.0%	0.0%	0.0%	4.0%	4.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sea Otter	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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Whale	16.0%	0.0%	0.0%	16.0%	8.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Belukha	16.0%	0.0%	0.0%	16.0%	8.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Birds and Eggs	92.0%	84.0%	84.0%	56.0%	52.0%	2,032.0	65.5	16.2			18.8%
Migratory Birds	60.0%	48.0%	48.0%	32.0%	40.0%	1,088.0	35.1	8.7	605.1 Ind	19.5	11.9%
Ducks	36.0%	32.0%	32.0%	16.0%	28.0%	156.5	5.0	1.2	197.2 Ind	6.4	8.7%
Bufflehead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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%
Mallard	4.0%	4.0%	4.0%	0.0%	4.0%	12.4	0.4	0.1	12.4 Ind	0.4	0.0%
Northern Pintail	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%

Table 3-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Newhalen, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*			95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total		Mean HH	Harvest
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%
Wigeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
American Wigeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Ducks	36.0%	32.0%	32.0%	16.0%	28.0%	144.1	4.6	1.2	184.8	Ind	6.0	9.5%
Geese	56.0%	44.0%	44.0%	24.0%	36.0%	717.2	23.1	5.7	298.8	Ind	9.6	14.6%
Canada Geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Dusky Canada Geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Lesser Canada Geese (taverner/parvi	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Canada 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	8.0%	8.0%	8.0%	0.0%	4.0%	14.9	0.5	0.1	6.2	Ind	0.2	3.7%
Unknown Geese	52.0%	40.0%	40.0%	24.0%	32.0%	702.3	22.7	5.6	292.6	Ind	9.4	13.3%
Swan	24.0%	24.0%	24.0%	0.0%	24.0%	104.2	3.4	0.8	17.4	Ind	0.6	3.7%
Tundra Swan (whistling)	24.0%	24.0%	24.0%	0.0%	24.0%	104.2	3.4	0.8	17.4	Ind	0.6	3.7%
Crane	4.0%	4.0%	4.0%	0.0%	4.0%	20.8	0.7	0.2	2.5	Ind	0.1	0.0%
Sandhill Crane	4.0%	4.0%	4.0%	0.0%	4.0%	20.8	0.7	0.2	2.5	Ind	0.1	0.0%
Seabirds & Loons	12.0%	12.0%	12.0%	4.0%	4.0%	89.3	2.9	0.7	89.3	Ind	2.9	6.9%
Loons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Loon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Tern	12.0%	12.0%	12.0%	4.0%	4.0%	89.3	2.9	0.7	89.3	Ind	2.9	6.9%
Arctic Tern	4.0%	4.0%	4.0%	4.0%	0.0%	9.9	0.3	0.1	9.9	Ind	0.3	0.0%
Other Birds	32.0%	28.0%	28.0%	12.0%	24.0%	132.8	4.3	1.1	189.7	Ind	6.1	7.7%
Upland Game Birds	32.0%	28.0%	28.0%	12.0%	24.0%	132.8	4.3	1.1	189.7	Ind	6.1	7.7%
Grouse	12.0%	12.0%	12.0%	4.0%	8.0%	28.6	0.9	0.2	40.9	Ind	1.3	1.7%
Ptarmigan	32.0%	28.0%	28.0%	12.0%	24.0%	104.2	3.4	0.8	148.8	Ind	4.8	6.9%
Unknown Ptarmigan	32.0%	28.0%	28.0%	12.0%	24.0%	104.2	3.4	0.8	148.8	Ind	4.8	6.9%
Bird Eggs	88.0%	80.0%	80.0%	40.0%	48.0%	811.1	26.2	6.5	3,018.2	Ind	97.4	18.0%
Duck Eggs	32.0%	20.0%	20.0%	20.0%	28.0%	29.2	0.9	0.2	194.7	Ind	6.3	5.1%
Unknown Duck Eggs	32.0%	20.0%	20.0%	20.0%	28.0%	29.2	0.9	0.2	194.7	Ind	6.3	5.1%
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%
Unknown 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%
Seabird & Loon Eggs	88.0%	80.0%	80.0%	28.0%	40.0%	781.9	25.2	6.2	2,823.5	Ind	91.1	17.5%
Gull Eggs	88.0%	80.0%	80.0%	28.0%	40.0%	768.9	24.8	6.1	2,563.1	Ind	82.7	16.5%
Tern Eggs	20.0%	20.0%	20.0%	8.0%	16.0%	13.0	0.4	0.1	260.4	Ind	8.4	3.9%
Marine Invertebrates	56.0%	36.0%	36.0%	20.0%	16.0%	312.5	10.1	2.5				7.0%
Clams	56.0%	36.0%	36.0%	20.0%	16.0%	312.5	10.1	2.5	104.2	Gal	3.4	7.0%

Table 3-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Newhalen, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Butter Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Freshwater Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Horse Clams (Gaper)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Pacific Littleneck Clams (Steamers)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Pinkneck 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	56.0%	36.0%	36.0%	20.0%	16.0%	312.5	10.1	2.5	104.2 Gal	3.4	7.0%
Unknown Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Cockles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Unknown Cockles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
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%
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%
Tanner Crab, Bairdi	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Tanner Crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Unknown 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 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%
Unknown 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	92.0%	92.0%	92.0%	28.0%	60.0%	3,752.2	121.0	30.0			14.6%
Berries	92.0%	92.0%	92.0%	20.0%	52.0%	3,184.3	102.7	25.4	796.1 Gal	25.7	13.1%
Plants/Greens/Mushrooms	48.0%	48.0%	48.0%	12.0%	24.0%	567.9	18.3	4.5	142.0 Gal	4.6	19.8%
Wood	56.0%	48.0%	48.0%	12.0%	12.0%	0.0	0.0	0.0	111.0 Crd	3.6	22.9%

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

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 3-4. Top Ten Resouces Harvested and Used, Newhalen, 2004

Harvest			Use		
Rank	Resource	Lbs per Capita	Rank	Resource	% of HHs Using
1	Sockeye salmon	420.3	1	Sockeye salmon	100.0%
2	Spawning sockeye	67.4	2	Berries	92.0%
3	Caribou	59.4	3	Caribou	88.0%
4	Moose	37.4	3	Gull eggs	88.0%
5	Berries	25.4	5	Dolly Varden	80.0%
6	Dolly Varden	10.4	6	Grayling	72.0%
7	Chinook salmon	10.1	7	Moose	60.0%
8	Rainbow trout	9.1	8	Rainbow trout	60.0%
9	Gull eggs	6.2	9	Razor clams	56.0%
10	Unknown geese	5.6	10	Unknown geese	52.0%
			10	Freshwater seal	52.0%

Source: ADF&G, Division of Subsistence, Household Survey, 2005

Table 3-5. Estimated Percentage of Salmon Harvest by Gear Type, Resource, and Total Salmon Harvest, Newhalen, 2004

Resource	Percent Base	Removed from Commercial Catch		Subsistence Methods								Rod and Reel		Any Method	
				Setnet		Seine		Other		Subsistence Gear Any Method					
		No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
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	3.8%	5.6%	95.2%	93.7%	0.7%	0.4%	0.1%	0.1%	96.1%	94.2%	0.1%	0.2%	100.0%	100.0%
	total	3.8%	5.6%	95.2%	93.7%	0.7%	0.4%	0.1%	0.1%	96.1%	94.2%	0.1%	0.2%	100.0%	100.0%
Chum Salmon	geartype	11.7%	10.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.6%
	resource	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	total	0.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.6%
Coho Salmon	geartype	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	100.0%	100.0%	0.1%	0.2%	70.6%	74.0%	0.2%	0.3%
	resource	0.0%	0.0%	20.0%	20.0%	0.0%	0.0%	40.0%	40.0%	60.0%	60.0%	40.0%	40.0%	100.0%	100.0%
	total	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.2%	0.3%
Chinook Salmon	geartype	18.0%	35.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	2.0%
	resource	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	total	0.7%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	2.0%
Pink 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%
Sockeye Salmon	geartype	70.3%	54.0%	74.2%	86.0%	0.0%	0.0%	0.0%	0.0%	73.6%	85.6%	29.4%	26.0%	73.4%	83.7%
	resource	3.6%	3.6%	96.3%	96.3%	0.0%	0.0%	0.0%	0.0%	96.3%	96.3%	0.1%	0.1%	100.0%	100.0%
	total	2.7%	3.0%	70.7%	80.6%	0.0%	0.0%	0.0%	0.0%	70.7%	80.6%	0.0%	0.0%	73.4%	83.7%
Landlocked 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%
Spawning Sockeye	geartype	0.0%	0.0%	25.7%	13.9%	100.0%	100.0%	0.0%	0.0%	26.3%	14.2%	0.0%	0.0%	25.2%	13.4%
	resource	0.0%	0.0%	97.1%	97.1%	2.9%	2.9%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	total	0.0%	0.0%	24.5%	13.0%	0.7%	0.4%	0.0%	0.0%	25.2%	13.4%	0.0%	0.0%	25.2%	13.4%
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: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 3-6. Estimated Percentages of Non-Salmon Fish Harvest by Gear Type, Resource, and Total Harvest, Newhalen, 2004[1]

Resource	Percent Base	Removed from Commercial Gear	Subsistence Gear							Rod and Reel	Any Method
			Set Net	Seine	Hand Line Gear	Dip Net	Ice Fishing	Other Subsistence Gear	Any Subsistence Gear		
Non-Salmon Fish	geartype	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%	100.0%	100.0%
	resource	0.0%	1.3%	0.0%	0.9%	0.0%	78.0%	0.0%	80.2%	19.8%	100.0%
	total	0.0%	1.3%	1.3%	0.9%	0.0%	78.0%	0.0%	80.2%	19.8%	100.0%
Unknown Cod	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.1%
	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%	0.1%	0.1%
Halibut	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.0%	2.2%
	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%	2.2%	2.2%
Unknown Rockfish	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%
	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%	0.1%	0.1%
Stickleback	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(needlefish)	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%
Arctic Char	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.9%	0.0%	0.7%
	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%	0.7%	0.0%	0.7%	0.0%	0.7%
Dolly Varden	geartype	0.0%	0.0%	0.0%	100.0%	0.0%	33.4%	0.0%	33.6%	29.2%	32.8%
	resource	0.0%	0.0%	0.0%	2.7%	0.0%	79.6%	0.0%	82.3%	17.7%	100.0%
	total	0.0%	0.0%	0.0%	0.9%	0.0%	26.1%	0.0%	27.0%	5.8%	32.8%
Lake Trout	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	0.0%	2.8%	1.3%	2.5%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	89.5%	0.0%	89.5%	10.5%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	2.2%	0.3%	2.5%
Grayling	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	11.7%	0.0%	11.4%	2.2%	9.6%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	95.5%	0.0%	95.5%	4.5%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	9.2%	0.0%	9.2%	0.4%	9.6%
Unknown Pike	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	6.0%	0.0%	5.9%	0.9%	4.9%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	96.4%	0.0%	96.4%	3.6%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	4.7%	0.0%	4.7%	0.2%	4.9%
Rainbow Trout	geartype	0.0%	100.0%	0.0%	0.0%	0.0%	25.2%	0.0%	26.1%	38.5%	28.6%
	resource	0.0%	4.6%	0.0%	0.0%	0.0%	68.7%	0.0%	73.3%	26.7%	100.0%
	total	0.0%	1.3%	1.3%	0.0%	0.0%	19.6%	0.0%	20.9%	7.6%	28.6%
Steelhead	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	0.7%	0.3%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	62.5%	0.0%	62.5%	37.5%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.2%	0.1%	0.3%
Unknown Trout	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	13.3%	0.0%	12.9%	15.4%	13.4%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	77.3%	0.0%	77.3%	22.7%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	10.4%	0.0%	10.4%	3.1%	13.4%
Least Cisco	geartype	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%
Humpback Whitefish	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	4.1%	0.0%	3.9%	0.0%	3.2%
	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%	3.2%	0.0%	3.2%	0.0%	3.2%
Round Whitefish	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	2.0%	0.0%	1.6%
	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%	1.6%	0.0%	1.6%	0.0%	1.6%

[1] This table lists only those resources for which there was a harvest in the 2004 study year.

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 3-7. Assessment of Household's Harvest and Use of Resources in 2004 Compared to Other Recent Years, Newhalen

Resource	Estimated Households	No Response		Valid Responses		Less		Same		More	
		no	pct	no	pct	no	pct	no	pct	no	pct
Salmon	31	0.0	0.0%	31.0	100.0%	7.4	24.0%	13.6	44.0%	9.9	32.0%
Non-Salmon Finfish	31	3.7	12.0%	27.3	88.0%	3.7	13.6%	22.3	81.8%	1.2	4.5%
Marine Invertebrates	31	13.6	44.0%	17.4	56.0%	3.7	21.4%	9.9	57.1%	3.7	21.4%
Large Land Mammals	31	2.5	8.0%	28.5	92.0%	13.6	47.8%	13.6	47.8%	1.2	4.3%
Furbearers	31	21.1	68.0%	9.9	32.0%	6.2	62.5%	2.5	25.0%	1.2	12.5%
Marine Mammals	31	14.9	48.0%	16.1	52.0%	3.7	23.1%	11.2	69.2%	1.2	7.7%
Birds and Eggs	31	2.5	8.0%	28.5	92.0%	5.0	17.4%	21.1	73.9%	2.5	8.7%
Wild Plants	31	2.5	8.0%	28.5	92.0%	1.2	4.3%	13.6	47.8%	13.6	47.8%
Overall	31	0.0	0.0%	31.0	100.0%	3.7	12.0%	24.8	80.0%	2.5	8.0%
Any Resource	31	0.0	0.0%	31.0	100.0%	22.3	72.0%	31.0	100.0%	19.8	64.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 3-8. Newhalen: Reasons for Change in Harvests and Uses in Recent Years

			Percentage of Responses by Category[1]							
Resource Category	Use Less or More	Estimated Number of Households[2]	No Reason Given	Competition	Regulations	People are Sharing Less	Weather	Animal Population Changes[3]	Personal Reasons (Work/Health)	Other Outside Effects
Salmon	Less	7.4	16.7%	0.0%	16.7%	0.0%	0.0%	33.3%	33.3%	0.0%
Salmon	More	9.9	37.5%	0.0%	12.5%	0.0%	0.0%	25.0%	25.0%	0.0%
Non-Salmon Finfish	Less	3.7	33.3%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%
Non-Salmon Finfish	More	1.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Marine Invertebrates	Less	3.7	33.3%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%
Marine Invertebrates	More	3.7	0.0%	0.0%	0.0%	0.0%	33.3%	0.0%	66.7%	0.0%
Large Land Mammals	Less	13.6	27.3%	0.0%	0.0%	9.1%	0.0%	54.5%	9.1%	0.0%
Large Land Mammals	More	1.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Furbearers	Less	6.2	40.0%	0.0%	0.0%	0.0%	0.0%	20.0%	40.0%	0.0%
Furbearers	More	1.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Marine Mammals	Less	3.7	33.3%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%
Marine Mammals	More	1.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Birds and Eggs	Less	5.0	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	75.0%	0.0%
Birds and Eggs	More	2.5	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%
Wild Plants	Less	1.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Wild Plants	More	13.6	9.1%	0.0%	0.0%	0.0%	18.2%	54.5%	18.2%	0.0%
Overall	Less	3.7	0.0%	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%
Overall	More	2.5	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%
Any Resource	Less	22.3	38.9%	5.6%	5.6%	5.6%	0.0%	50.0%	61.1%	0.0%
Any Resource	More	19.8	37.5%	0.0%	6.3%	0.0%	18.8%	50.0%	31.3%	0.0%

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

[2] Estimated number of households citing a change in uses. For number of valid responses, see Table 3-7. Estimated total households in community = 31

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

Source: Alaska Department of Fish and Game, Division of Subsistence, Households Surveys, 2005

Table 3-9. Newhalen Wild Resource Harvests by Resource Category, All Study Years

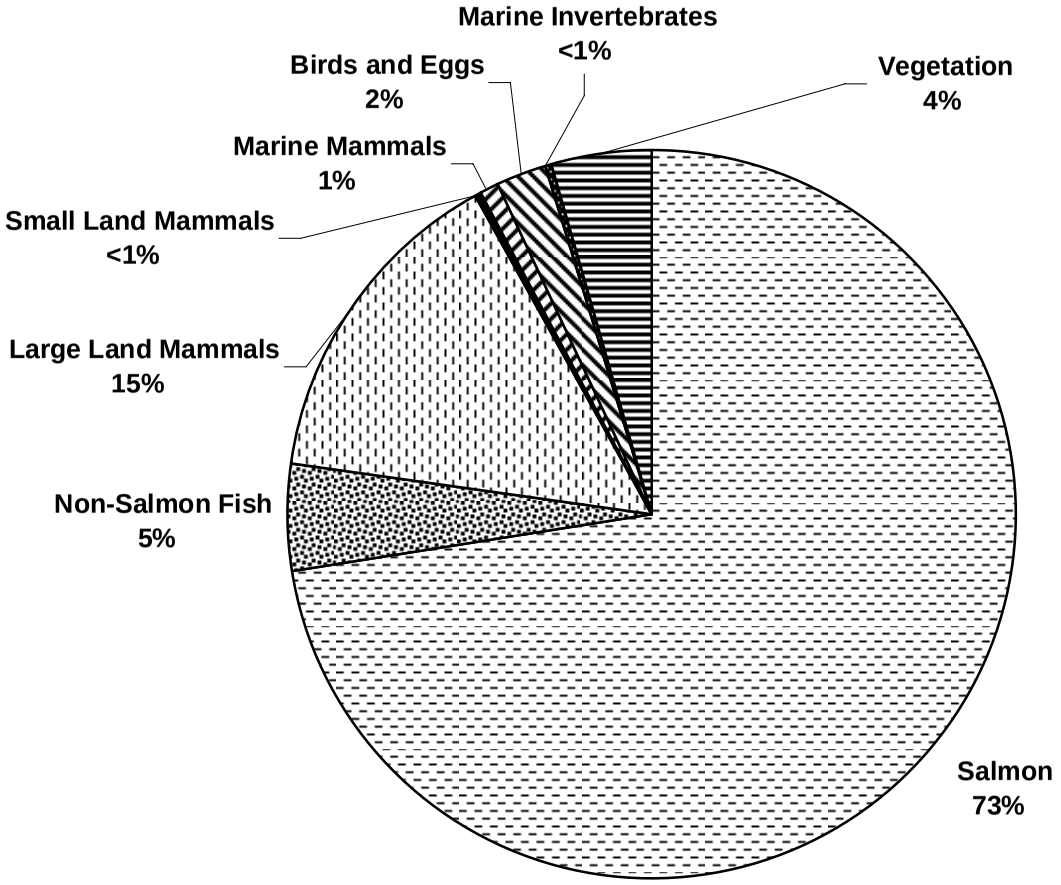
	Pounds Usable Weight Per Capita					
	1973	1983	1991	2001	2003	2004
Salmon	344.0	679.5	420.2			502.2
Non-Salmon Fish	79.0	27.1	37.6		47.9	31.8
Large Land Mammals	165.2	30.2	204.6	107.7		101.4
Small Land Mammals	29.9	9.5	24.5			3.1
Marine Mammals	2.2	5.7	8.3			4.4
Birds and Eggs	12.5	5.4	20.8			16.2
Marine Invertebrates	0.0	0.0	3.3			2.5
Vegetation	NA	9.8	28.0			30.0
All Resources	632.8	767.1	747.2			691.5

Blank cells indicate data not available.

Table 3-10. Composition of Wild Resource Harvests by Category, Newhalen, All Study Years

	Percentage of Total Harvest					
	1973	1983	1991			2004
Salmon	54.4%	88.6%	56.2%			72.6%
Non-Salmon Fish	12.5%	3.5%	5.0%			4.6%
Large Land Mammals	26.1%	3.9%	27.4%			14.7%
Small Land Mammals	4.7%	1.2%	3.3%			0.5%
Marine Mammals	0.3%	0.7%	1.1%			0.6%
Birds and Eggs	2.0%	0.7%	2.8%			2.3%
Marine Invertebrates	0.0%	0.0%	0.4%			0.4%
Vegetation		1.3%	3.7%			4.3%
All Resources	100.0%	100.0%	100.0%			100.0%

Figure 3-2. Composition of Wild Resource Harvests, Newhalen, 2004, by Resource Category



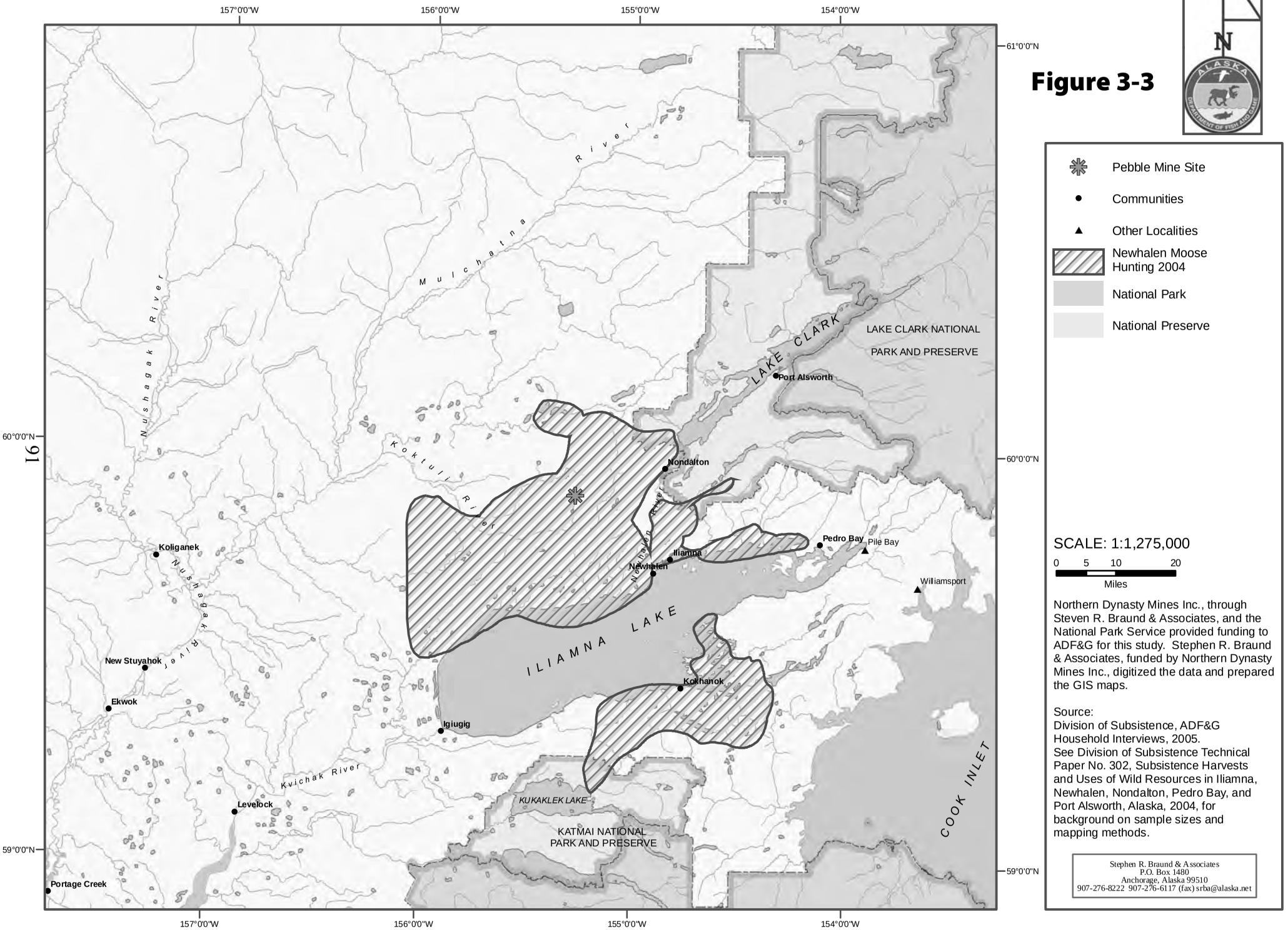


Figure 3-3

- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Moose Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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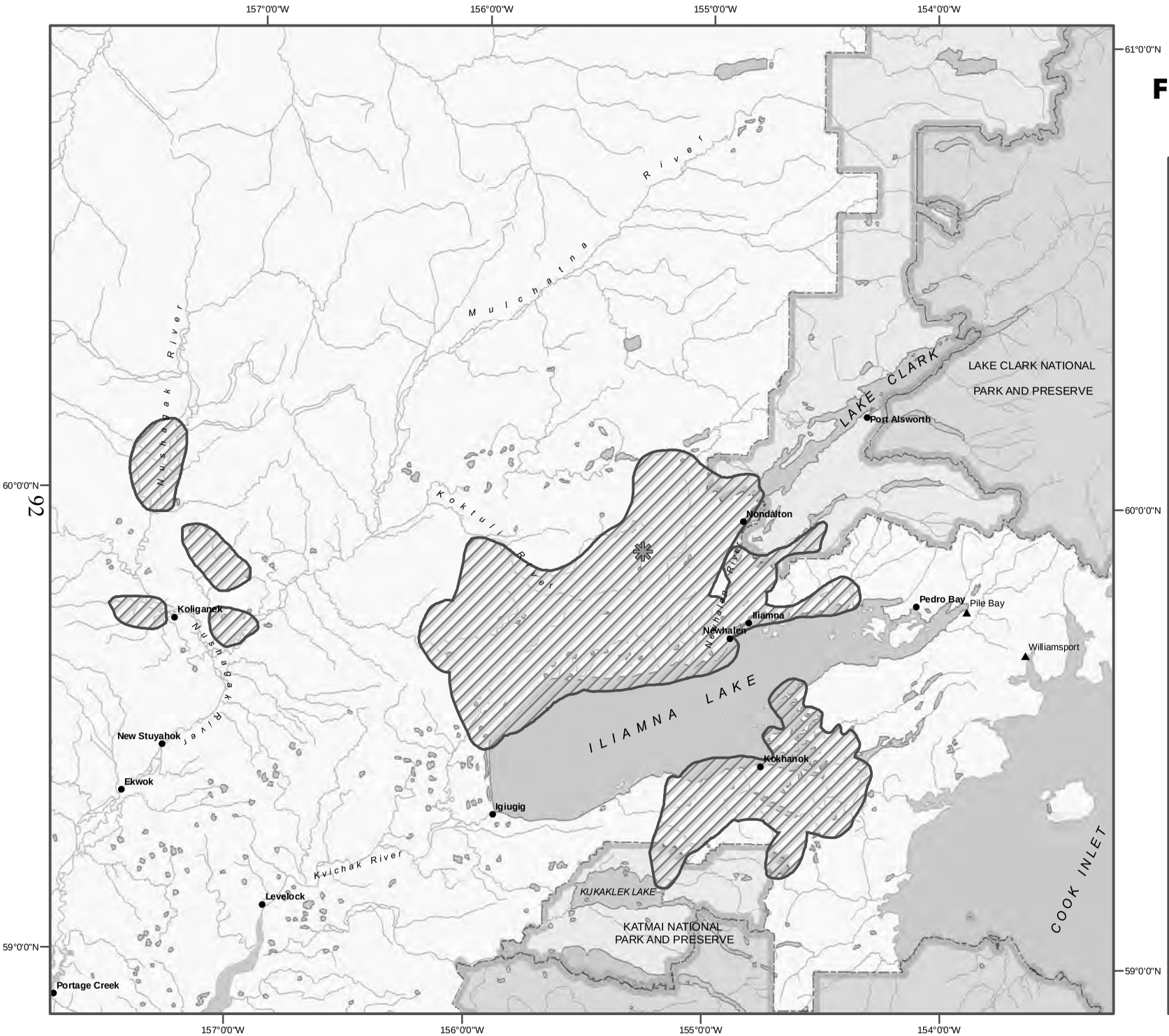

Figure 3-4

- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Caribou Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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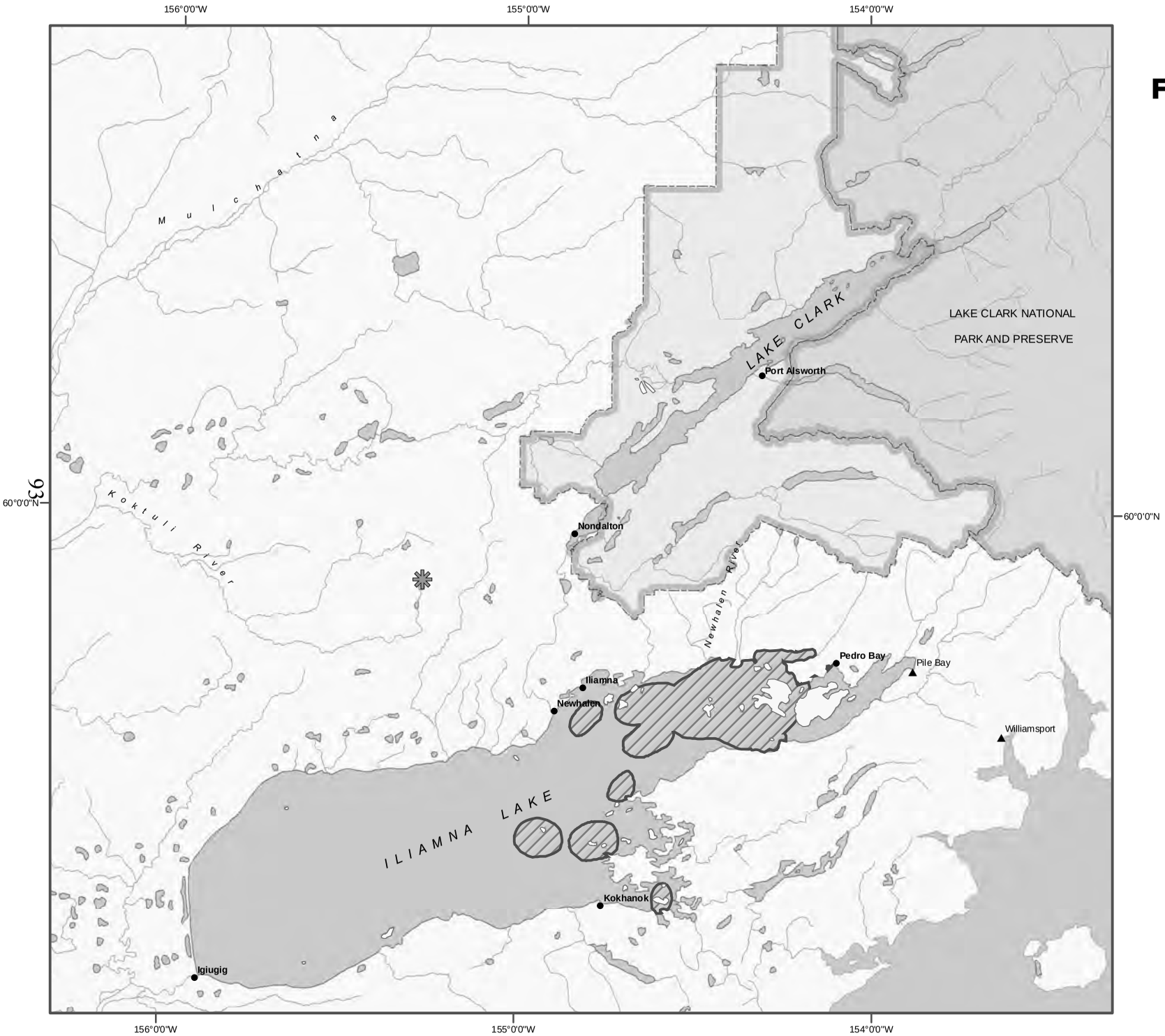

Figure 3-5

- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Freshwater Seal Hunting 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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Figure 3-6. Newhalen Households' Assessment of Harvest and Uses of Wild Resources in 2004 Compared to Other Recent Years

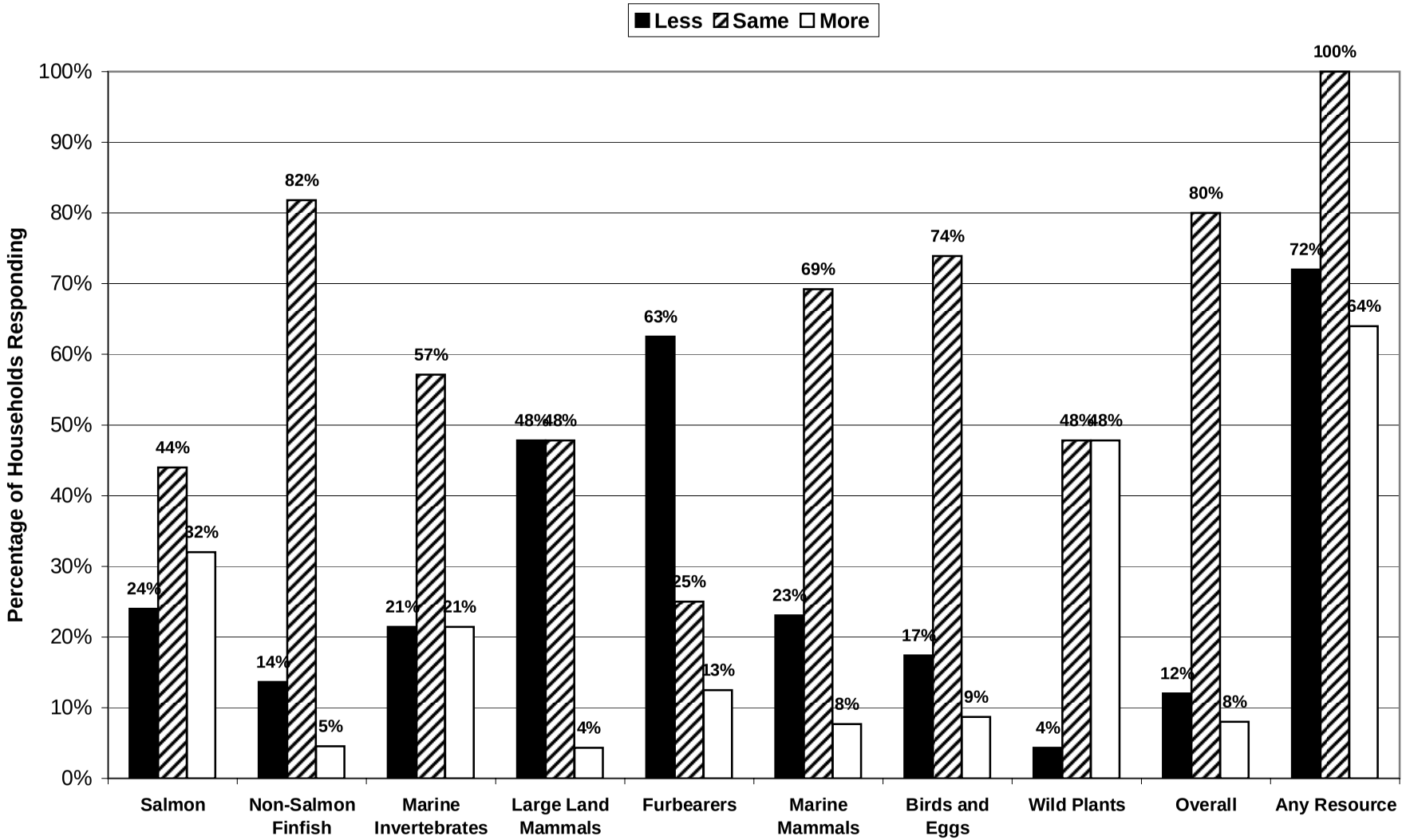


Figure 3-7. Reasons Cited by Newhalen Households for Lower Uses of Any Resource in 2004 Compared to Other Recent Years

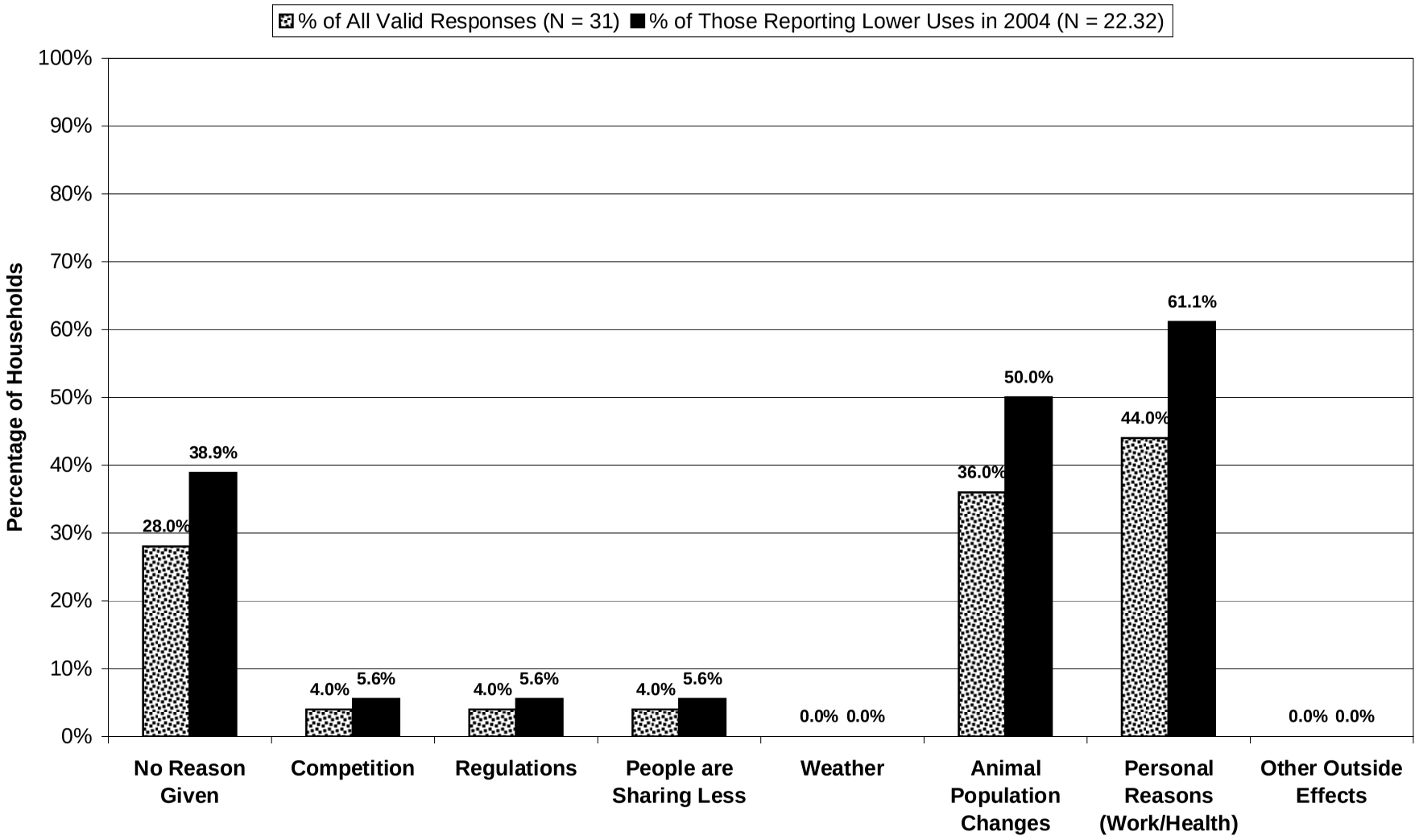
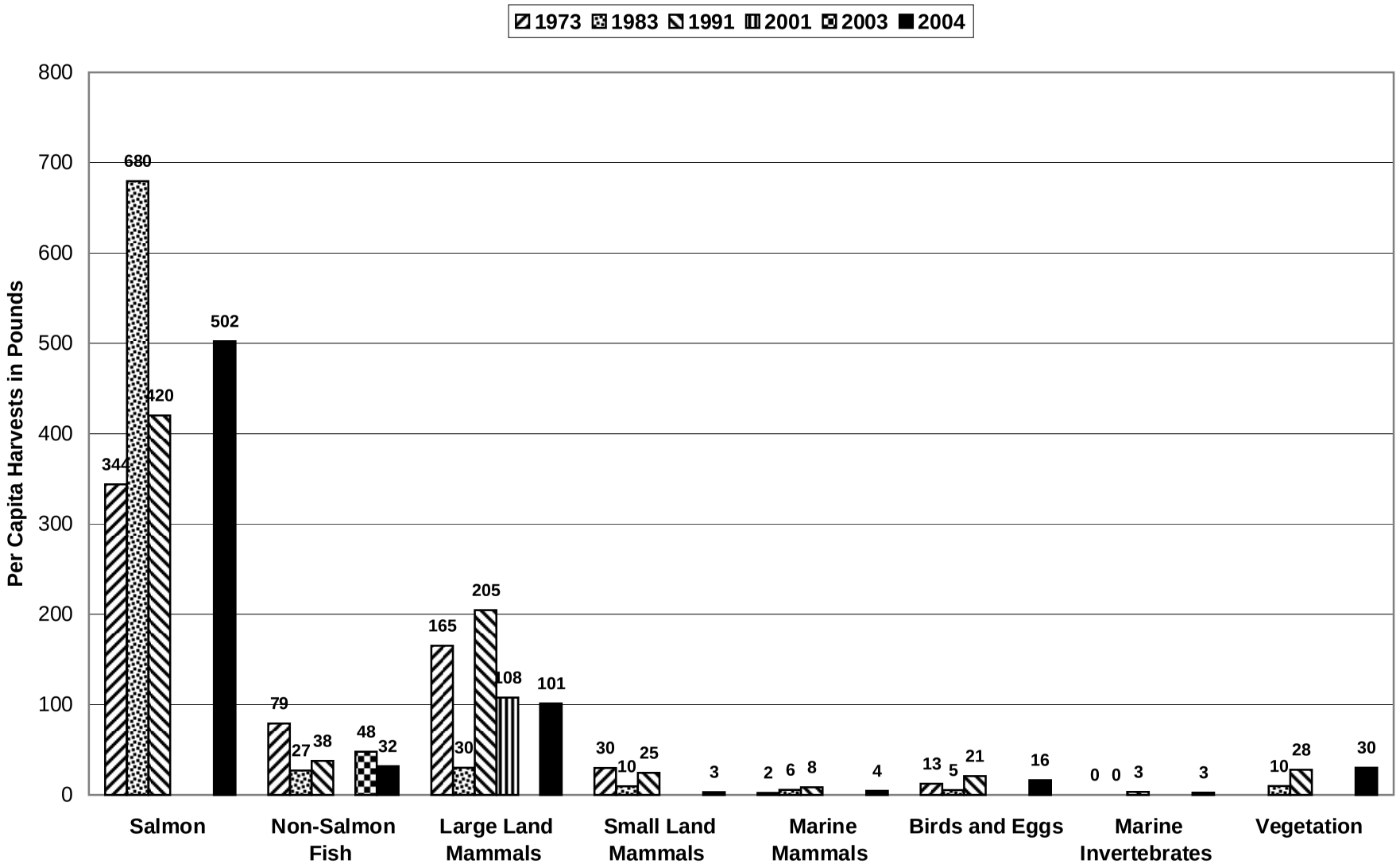


Figure 3-8. Newhalen Wild Resource Harvests Over Time by Resource Category



CHAPTER FOUR: PEDRO BAY

COMMUNITY BACKGROUND

At the far eastern end of Iliamna Lake, where the irregular shoreline breaks into numerous bays and islands, Pedro Bay lies beneath the 3,000-foot peaks of the Chigmit Mountains. The village of Pedro Bay sits at the head of the bay of the same name, with the prominent peaks of Pedro Mountain and Knutson Mountain looming to the west and north. The community is physically isolated, sandwiched between these high mountains to the north and rocky islands and lakeshore to the south.

Pedro Bay is the only contemporary Athabascan community on Iliamna Lake. In the historic period, archaeological evidence indicates Pedro Bay was occupied in the mid-1700s (Townsend 1965), and was subsequently abandoned. In 1906, a man named "Old Pedro" lived at the site, giving the community its modern name. Beginning around 1935, families from the nearby villages of Old Iliamna, and a younger community, Pile Bay, started abandoning their communities and moving to Pedro Bay. The present population is descended from those settlers.

Pedro Bay had two stores in 2004, both located in private residences. Residents enjoyed private telephone service, satellite TV, and regular air service to Anchorage via Iliamna or Port Alsworth. The village council had recently received funds through the Denali Commission for construction of a new bulk fuel storage facility, and many residents found temporary employment on that project in 2004 (see section below on employment).

DEMOGRAPHY, CASH EMPLOYMENT, AND MONETARY INCOME

Table 1-10 contains demographic data about the community of Pedro Bay. These data (like all the estimates reported in this chapter) are based on the sample of 18 households surveyed out of 21 (86%). The average household contained 3.3 people; there were a few single-person households, and one household had 10 family members in residence. The total number of people in the community in 2004 is estimated at 69.

When these data were presented to the community, in November 2005, some suggested that this population estimate is too high. But after consideration, and hand-tallies, some argued that it seemed reasonable. In actuality, this population estimate may be somewhat inflated. The State of Alaska's demographer estimated 2004 population for Pedro Bay was only 47 (Table 1-1). This estimate was used for planning this research. However, the number of people actually accounted for during this study was 59, in the 18 interviewed households (Table 1-10).

This sample population (the number of people in all the households surveyed) is used to create the average household size (59/18=3.28), which is then multiplied by the number of households that were not surveyed. This number is then added to the sample population to get the estimated population for all households (59 + [3.28 * 3] = 68.8). The sample included the single household with ten members, which increased the average household size somewhat, thus having some effect on the total estimated population.

However, this sample was large (86%), and the expansion calculation applied only to 3 unsurveyed households. If it were assumed that each of the unsurveyed households had only one resident, the population estimate would be 62 (59 in the sample population, plus 3). Therefore, the estimated population used in this study is likely closer to the actual total than that of the state demographer (Table 1-1, Table 1-10).

The household survey collected information on the age, length of residency in the community, and whether or not household members were Alaska Native. In Pedro Bay in 2004, there were slightly more males than females (53% to 48%). The average age was 30 years, with the youngest being under one year, and the oldest being 82 years (Fig. 4-1, Table 4-1). The median age, which estimates the greatest age of the youngest 50% of the population, was 25. Seventy-one percent of the individuals in Pedro Bay were Alaska Native, and households who had at least one head who was Alaska Native totaled 89%.

In Pedro Bay, the average household head had lived in the community for 26 years. One-third of the household heads were born in Pedro Bay (Table 1-11). The least amount of time spent in the community for a particular household head was half a year, and the longest was 82 years (the oldest person in Pedro Bay had also been born there).

Table 1-12 shows the employment characteristics of the community for 2004. The estimated number of working-age adults (16 years and over) was 47. Of those, 44 (95%) were employed in 2004, with the average person working 34 weeks. The total number of different jobs estimated was 69 (many adults had more than one job, and the average number of jobs per person was 1.6). The average number of months employed was 8, and the percent of adults employed year-round was 53%.

Similar statistics are reported at the household level in Table 1-12. Of all the households in Pedro Bay, 94% had members who were employed. The average number of jobs per household was 4, and the average number of weeks employed per household was 80 (with more than one household member working, this figure can exceed the number of weeks in the year).

Ninety percent of the jobs held by Pedro Bay residents in 2004 were located in the community of Pedro Bay (Table 1-13). Other locations included Anchorage, Iliamna, and Prudhoe Bay. Pedro Bay residents' jobs fell into one of several different standard classes, including federal government, local/tribal government organizations, fishing, construction, transportation, mining, retail, and services (Table 4-2). Most jobs were classified as local/tribal government (70%), including those with the Pedro Bay Village Council and the Pedro Bay school.

Some of the Pedro Bay Village Council jobs were associated with the construction of a new fuel storage facility in Pedro Bay in 2004. The construction agreement gave the Village Council the opportunity to hire and pay its members for work on the project supervised by an engineering contractor from outside the community. A few jobs were held in the Bristol Bay commercial salmon fishery, with the federal government, and with contractors working on preparations for development of the Pebble Project, as well as with telecommunications, health, and religious services.

LEVELS OF PARTICIPATION IN THE HARVEST AND USE OF WILD RESOURCES

Every household in Pedro Bay successfully harvested at least one resource in 2004 (Table 4-3, Table 1-16). The survey instrument also collected participation information for each member of each household, including young children. The survey found 97% of the population in Pedro Bay attempted to harvest at least one resource in 2004 (Table 1-15). About 85% of the population fished, and 90% helped pick or process wild plants or berries. About 57% of the population hunted large game animals or birds, and 2% was involved in trapping for small game and furbearers. The survey also collected information on the participation in processing wild foods or furs, and that information is presented in Table 1-15 as well.

These data show the entire population of Pedro Bay is active in its subsistence pursuits, involving young people as well as adults. Table 1-15 shows that Pedro Bay had the highest rates of participation for individual community members of any community in this study, with 97% of individuals attempting to harvest at least one resource. A number of people said how much they enjoy spending time with their children, looking for fish or other resources, simply being out on the land. Others said they looked forward to the time when their young children would be old enough to take a more active role in subsistence activities, and hoped the resources would remain sufficiently abundant.

One observation made by residents of Pedro Bay was that, with resources becoming less and less abundant, young people will not experience enough success in pursuing subsistence fish and wildlife. Without that encouragement, some fear their young people will become discouraged and never wholly grow into their traditional subsistence way of life. In spite of these concerns, the data show that the knowledge used in subsistence activities is being shared with those who, in the future, might choose to continue to live a subsistence way of life.

RESOURCE HARVEST AND USE PATTERNS

Species Used and Seasonal Round

The households in Pedro Bay used an estimated 37 different wild food resources in 2004 (Table 4-3), and the average household used about 11 different resources (Table 1-16). The greatest number of resources used by a single household was 19, while the least was 3. Some of the most commonly used resources (measured by the number of households that reported using them) included sockeye salmon (both “bright” and “spawning” stages), berries, moose, halibut, sea gull eggs, green plants, and Dolly Varden. Several resources were used by just a single household, including chum and pink salmon (not locally available), black bear, ptarmigan, and steamer clams (not locally available).

The seasonal round of harvest in Pedro Bay is similar to other communities in Southwest Alaska. The sockeye salmon that ascend the Kvichak River from Bristol Bay into Iliamna Lake usually arrive in the vicinity of Pedro Bay in early July. The “bright” sockeye fishery was on schedule in 2004, according to survey respondents, and was also more plentiful than the few years leading up to this study. People mostly use set gillnets to harvest the bright sockeye during a 2 to 3 week period extending from early to late July. Sockeye are the only salmon widely used by

Pedro Bay residents, as other species do not inhabit the area, however one household said they harvested a coho salmon locally (Table 4-3).

Other mid-summer activities include fishing for trout, northern pike, and Dolly Varden, and harvesting green plants around the village. Late summer sees residents picking berries and doing more fishing for trout and pike in the open waters of Iliamna Lake. In fall, Pedro Bay hunters look for moose on the islands near the village, at the head of Pile Bay and along the lakeshore near the community. Fishing families go to the lakes, streams, and sloughs behind the village to harvest spawning sockeye for preparation of the traditional food called *nudelvaya*.

In winter, people fish for Dolly Varden and other "trout" through the ice in Iliamna Lake near the mouths of streams. However, with mild winters in the years leading up to this study, ice-fishing had dropped off somewhat because of unstable ice.

Harvest Quantities

Table 4-3 lists the resources harvested and used by Pedro Bay households in 2004, with estimated quantities based on the results of the harvest survey. This table organizes harvest data in general resource categories, subcategories, and specific individual resources, listing them in vertical, hierarchical order, with members of a resource category shown indented below the general category name. For example, "Humpback Whitefish" is a subset of "Whitefish," which is a subset of Non-Salmon Fish, and so on up the list. The data on the "Whitefish" row summarize the data for all the resources subsumed below it, including "Humpback Whitefish," "Cisco," and "Round Whitefish."

In total, the estimated 2004 community harvest of wild foods totaled 21,026 pounds of usable weight (Table 4-3). With 29 households living in the community full-time, the per-household average was 1,001 pounds; dividing the total harvest by the estimated population of 69 generated an estimated per capita harvest of 306 pounds. In relation to the other communities in this study, Pedro Bay had the second-lowest estimated per capita harvest with Port Alsworth being lower, and Newhalen having the highest (Table 1-16).

The composition of the harvest in Pedro Bay, broken into major resource categories, is illustrated in Figure 4-2. Salmon made up the largest portion of the harvest for home use in 2004: 82% of the total harvest (an estimated 250 pounds usable meat per capita). Pedro Bay's reliance on salmon is great, and the proportion of salmon to the total harvest was higher than any other study community. Land mammals ranked second (10 %, 30 pounds per capita) and non-salmon fish ranked third (5%, 15 pounds per capita). Wild plants provided 2% of the total (7 pounds per person), and birds and eggs totaled 1% (3 pounds). There were no harvests of marine invertebrates or marine mammals reported by Pedro Bay residents for 2004.

Table 4-4 lists the 10 specific resources harvested in the largest quantities during the study year, and the resources ranked in order of the percentage of households that reported using them. In terms of weight contribution and household participation, sockeye salmon (in the "bright" phase) was the most prominent subsistence resource; every household used bright sockeye salmon. Berries were also harvested by 100% of households, but the contribution of berry resources in

pounds ranked below that of other resources, such as moose, which had a lower rate of household use (78%). Both measures are valuable tools for assessing the relative importance of any subsistence resource. "Usable weight" shows the bulk contribution of the resource to daily diet and caloric consumption. "Household participation" documents the resource's value as a social or traditional practice (a democratizing activity that even the elderly and the young can participate in), or as a special, non-staple luxury food that many in the community enjoy. Some of these characteristics are discussed below.

Harvest Areas[1]

The community of Pedro Bay sits on the lakeshore in proximity to a number of aquatic and terrestrial resources. Sockeye salmon come into the water body of Pedro Bay every summer, and funnel into Pedro Creek right near the community. Knutson Bay to the northwest is another spawning area for sockeye. Pedro Bay residents harvest "bright" sockeye in the bays of Iliamna Lake, and "spawning" reds in the rivers, streams, and "fish ponds" above the lake. Some of these fish ponds are immediately behind the community, an easy walk or short drive from most homes. Salmon fishing is mostly linked to these spots, and residents do not travel far to harvest sockeye.

Pedro Bay residents fish for Dolly Varden near the community in Pedro Bay, offshore around the islands, and east in Pile Bay and in the Iliamna River (Fig. 4-3). Dolly Varden fishers also go farther to the west towards Iliamna and near Chekok Bay. Northern pike were also harvested both in Pedro Bay and west in Iliamna Lake near Chekok Bay. Lake trout harvests were mostly limited to the waters near Pedro Bay.

Birds and bird eggs were harvested in the areas immediately around the community of Pedro Bay, to the west around the mouth of Knutson Creek, as well as on the islands nearby (Porcupine Island, Flat Island, and the smaller islands).

A few households hunted moose, mostly near the community, either on the mainland near Knutson Mountain, or around Pile Bay, or on the islands near Pedro Bay (Fig. 4-4). Pedro Bay residents traveled farther north for Dall sheep, into the mountains of Lake Clark National Preserve around Tazimina Lakes. In 2004, no Pedro Bay residents hunted caribou in the Iliamna Lake region.

SHARING AND RECEIVING WILD RESOURCES

Households were asked, in addition to what they harvested in 2004, if they received wild foods from other households, and whether or not they gave any resources away. The sharing of wild foods is a common feature of a community's subsistence economy, one that reinforces the social and traditional elements of the enterprise. Even to ask the question drew suspicious looks from respondents, or else laughter, because to not share wild food is almost unthinkable in rural Alaska communities. Woven into the ethics of customary and traditional subsistence practices,

[1] For the complete set of maps of Pedro Bay residents' hunting, fishing, and gathering areas in 2004, see the CD in pocket inside the back cover of this report.

the principles that guide and help to maintain a household's ability to harvest wild foods and sustain the community, is the widespread participation in sharing.

Table 4-3 shows that 100% of households in Pedro Bay reported receiving at least one resource in 2004, and that about 89% gave away at least some wild food to another household. This helps explain the difference between the percent of households that "used" a resource and the percent that "harvested" a resource, insofar as some households do not harvest for themselves but are able to use a resource because it is given to them. (In some cases, no one might have harvested a particular resource in a community, but some report using it, which usually indicates that the resource was shared from outside the community.)

Sharing is not uniform among all resources. It follows different patterns in different situations. Sharing can sometimes be related to the quantity of a resource harvest, the number of households harvesting, as well as the different kinds of social or family connections within the community. If harvest quantities are unusually low one year (due to poor returns, problems with gear or transportation, personal matters), it might affect the distribution of those resources in a negative way. In other situations, sharing traditions might override the urge to conserve for one's own use.

Moose were only harvested by 17% of the Pedro Bay households, and 61% reported receiving moose (Table 4-3). The percentage of households giving moose was 22%, greater than the number actually harvesting, which means households that received moose in turn gave some away to someone else. In the end, 78% of households reported using moose, with a large percentage of non-harvesting households using moose thanks to the practice of sharing. These data indicate that the moose meat was distributed at least once, and probably two or more times; consequently, a high percentage of households in the community benefited from the special expertise, resourcefulness, and luck of a few households. Sharing of moose meat has no doubt been impacted by decreased hunter success in recent years. The issues surrounding the moose harvest are complex, and will be discussed in some detail in following sections of this chapter, and in other chapters in this report.

Sockeye salmon were shared in a different way than were moose. A large percentage of the community harvested salmon in 2004, and comments indicated that the run was larger than other recent years. Over 77% of households harvested sockeye salmon, with the average household harvesting 761 pounds of sockeye. The survey asked a question about salmon availability, and most of the people who answered the question said their salmon harvest was adequate, or the same as other recent years (see Table 4-7, below). Forty-four percent of households received salmon, and 72% gave salmon away. With households having fairly even access to salmon, made possible by owning a gill net or borrowing a net owned by someone else, sharing was not emphasized as it was for moose. The percentage of households receiving salmon was less than the percentage of households giving salmon, indicating that the harvesting households were specifying which households received some, probably elders or particular people in need.

Halibut were shared with a large percentage of households, 67%, even though only 6% reported harvesting halibut (there are no halibut in Iliamna Lake, so residents had to travel to salt water to get these fish). Gull eggs were also widely distributed, with 56% of households receiving them

from others (Table 4-3). Sharing of other resources is described by the data in Table 4-3, showing the percentages of households that used, harvested, received, and gave away those resources.

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

Large Land Mammals

Pedro Bay residents who hunted moose had a modest success rate, with 72% of households attempting and 17% harvesting. The total estimated moose harvest per capita in Pedro Bay was 28 pounds, higher than any other resource besides sockeye salmon (Table 4-4). Moose were hunted on the islands near Pedro Bay (Flat Island and Porcupine Island, and in the bay on Porcupine Island that Pedro Bay residents call Wooden Spoon). Hunters also looked for moose around Squirrel Point and Old Iliamna, on the lakeshore directly opposite Pedro Bay, as well as in the lower portions of Pile River valley and Knutson Creek valley (Fig. 4-4).

A few Pedro Bay residents also hunted caribou, with 6% of households attempting and 6% harvesting (only one surveyed household), netting 3 pounds of caribou meat per capita. The caribou was harvested outside of the local, Iliamna Lake area. Caribou do not regularly come into the vicinity of Pedro Bay, although in 1997 a couple thousand animals were reported near Chekok Bay, about 20 miles west along the lakeshore (Holen et al. 2005).

Marine Mammals

No Pedro Bay households harvested marine mammals in 2004. Some individuals in the community who hunted freshwater harbor seals in Iliamna Lake in 2004; 11% said they tried, but were unsuccessful (Table 4-3). These hunters looked primarily on and around the islands in the far eastern end of Iliamna Lake near Pedro Bay. No meat, blubber, or oil was traded in to Pedro Bay, and no household reported using any marine mammal products in 2004.

Salmon

As measured in pounds usable weight, salmon provided the largest portion of the estimated wild resources harvest in Pedro Bay in the study year. The estimated per capita harvest of salmon was 250 pounds. Every Pedro Bay household reported using salmon during the study year, and 83% reported harvesting salmon. Sockeye salmon composed the overwhelming majority of the salmon harvest, with a per capita estimated harvest of 232 pounds, with 100% of households using the resource and 78% of households harvesting sockeye (Table 4-3).

Fish from the late phase of the sockeye run, the “spawning” sockeye, or “spawnouts” were also harvested in large numbers. About 56% of households reported harvesting an estimated 18 pounds per capita. One household (6% of those surveyed) reported harvesting coho salmon, with less than one pound per capita in total harvest (Table 4-3).

Sharing was responsible for almost half of Pedro Bay households receiving king salmon in 2004; while no one surveyed reported harvesting any king salmon, 44% said they received some. (This

resource may have come from outside the community, since king salmon do not spawn in Iliamna Lake. Because 15% of the households were not surveyed, it is possible that one of these unsurveyed households traveled outside the region for king salmon and brought it back to the community.)

As shown in Table 4-5, subsistence set gillnet was the method used for most of the Pedro Bay salmon harvest in 2004. In pounds usable weight, subsistence set nets contributed 93% of the total salmon harvest. Rod and reel gear accounted for 7% by weight. This gear was used frequently to harvest spawning sockeye but only incidentally for other salmon harvests. No Pedro Bay households reported keeping any salmon out of their commercial catches in 2004.

Freshwater Fish

In the Pedro Bay harvest table (Table 4-3), fish other than salmon were the third-ranked resource category, as measured in pounds usable weight, behind salmon and large land mammals (Fig. 4-2). These "non-salmon" finfish included halibut, Dolly Varden, rainbow trout, rockfish, lake trout, northern pike, and cod, and the overall contribution of the category totaled about 15 pounds per capita in 2004, or 5% of the total harvest.

Most households used at least one kind of non-salmon fish in 2004: 89% reported using non-salmon fish and 61% said they harvested at least one species in this category (Table 4-3). While salmon was the most-used fish resource, non-salmon finfish were still very important to the average Pedro Bay household in 2004.

The species in this category harvested in greatest quantity was Dolly Varden, with a per capita harvest of 9 pounds. (Dolly Varden and lake trout are grouped together under the sub-category "Char" in the harvest table, although Pedro Bay residents refer to these, as well as rainbow trout, collectively as "trout.") Other per capita estimates include 3 pounds of rainbow trout, 1 pound of halibut, 1 pound of cod, and 1 pound of pike. Approximately 61% of households in Pedro Bay harvested Dolly Varden. Halibut (a marine fish) was harvested by only 6% of households (one surveyed household), but gifts of halibut were received by 67%, bringing the percentage of households using halibut up to 72% (Table 4-3). As reported in Table 4-6, rod and reel fishing in open water accounted for 69% of Pedro Bay's harvest of nonsalmon fish in 2004, and ice fishing provided 27%.

Marine Invertebrates

Pedro Bay households did not harvest any marine invertebrates in 2004. An estimated 28% of households received shellfish from other households, and because no Pedro Bay household reported harvesting or giving away shellfish, it can be inferred that the resources were coming from outside the community. The species used in this manner included steamer clams, razor clams, shrimp, mussels, and king crab (Table 4-3).

Small Land Mammals

Trapping and hunting of small mammals was not a common subsistence practice in Pedro Bay in 2004, but some harvest of furbearers was recorded. Red fox and coyote were both taken, and furs were shared with other households. No pounds of subsistence harvest were tabulated for these animals, however, since they were not used for food (Table 4-3)

Birds and Eggs

Pedro Bay households harvested ducks, upland game birds, and bird eggs in 2004, and bird resources constituted 1% of the community's total harvest by weight (Fig. 4-2). Half the households reported harvests of grouse, or spruce hen, while one-third of households harvested sea gull eggs. The per capita harvest of sea gull eggs, the highest in this category, was 2 pounds, while the grouse harvest weighed 1 pound per capita and the ptarmigan harvest weighed 0.3 pounds per capita. A small amount of tern eggs were also harvested, contributing 0.03 pounds per person. Sharing of gull eggs was common, and over half the households reported receiving gull eggs from other households in 2004 (Table 4-3).

Wild Plant Resources

Among all major resource categories, the highest levels of participation in subsistence harvesting were recorded for the collection of wild plants, including berries, green plants, and firewood. Every household surveyed in Pedro Bay used, attempted to harvest, and harvested wild plant resources in 2004, while half the households received, and over half gave away, wild plant resources. Overall, the category contributed nearly 7 pounds of berries and green plant foods per person. Berries were used by 100% of Pedro Bay households, and wild green plants were used by 72% of households (Table 4-3). Sharing wild plants was common, but not as extensive as with resources such as moose or halibut; collecting berries and plants is not restricted to individuals with special equipment, ability to travel or unique skills, making those resources more accessible to a wider group of participants.

COMPARING HARVESTS AND USES IN 2004 WITH PREVIOUS YEARS

Survey respondents in Pedro Bay provided assessments about how their harvests and uses of wild resources in 2004 compared with other recent years (over the last 5 years) (Table 4-7, Fig. 4-5). For each resource category, the majority of respondents said that harvests and uses were about the same. About 27% said their uses of salmon were lower in 2004, as did 31% concerning non-salmon fish and 20% for large land mammals. For wild resources overall, most Pedro Bay respondents (63%) said that harvests and uses were down in 2004 compared to other recent years.

Table 4-8 lists the reasons that residents of Pedro Bay gave for whether they harvested or used less or more wild foods in 2004 than in the recent past. This was an open-ended question. Project personnel grouped the responses into various categories such as competition for resources, regulations either hindering or helping residents harvest resources, sharing of harvests, effects of weather on animals and subsistence activities, changes in the animal populations

themselves, personal reasons such as work and health, and other outside effects on residents' ability to engage in subsistence activities. These reasons are reported by resource category in Table 4-8**.** In Pedro Bay, personal reasons were a primary factor for less involvement in subsistence uses, cited by 55% of respondents with lower uses of at least one resource category in 2004 (Fig. 4-6). Other key factors were animal population changes, the weather, people sharing less, and competition with nonlocal hunters and fishermen. (See also discussion below.)

Table 4-9, Table 4-10, and Figure 4-7 report estimates of Pedro Bay's per capita harvest of major resource categories for 4 study years. The harvests estimated for 1982 measured higher than other study years for salmon and non-salmon fish. The 1973 study year documented relatively high harvests for most resources, especially small land mammals, and birds and eggs. The 1996 large land mammal harvest is interesting for its unusually high harvest of caribou, an estimated 15 animals, for about 34 pounds per person. In 1982, Pedro Bay hunters only took 6 caribou, for 15 pounds per person (Scott et al. 2001). For almost every resource category, the 2004 harvest was the lowest recorded for any survey year; exceptions are that birds and eggs and vegetation registered higher per capita harvests in 2004 than in 1996, harvests of large land mammals were higher in 2004 than in 2001, and harvests of nonsalmon fish were higher in 2004 than in 2003. The 1982 study estimated an exceptionally large salmon harvest (720 pounds per capita). Non-salmon finfish were harvested in greater amounts in 1982 than in 2004, as were small mammals such as beaver, snowshoe hare, and porcupine.

When these comparative figures were presented to the group assembled at the Pedro Bay Village Council building in November 2005, some discussion followed about why the overall harvest had diminished over time. Some questioned the comparison of per capita measures, where the total pounds estimate is divided by the population. Some suggested that regulations imposed between the earlier and the later studies may have restricted and reduced harvests. Others talked about changes in the weather, changes in predators, and natural changes in animal habitats.

Over the course of conducting the household surveys, some Pedro Bay residents talked about internal changes that may be reflected in these harvest patterns-- changes in the community that may have precipitated the changes in harvests over time. People have stopped harvesting beaver, snowshoe hare, and porcupine for food, said elders in key respondent interviews, and no harvests of these animals were reported for 2004. A few people said that, as the community loses its elders of the last generation, there is much less demand for these types of foods.

One important explanation raised during the November 2005 meeting, as well as during the household surveys, is that in recent years people in Pedro Bay are simply too busy working to spend as much time on subsistence activities. Whether in the oil industry, communications, construction, or administration, Pedro Bay residents feel that wage labor has caused people to spend less time hunting and fishing for food.

Economic and employment data were collected during this study (see Economics section above). The average adult spent 35 weeks working in 2004, and 95% of adults were employed at some point during that year. This is up from the 1996 study that found that the average adult worked an average of 27 weeks, and 85% of adults were employed (Scott et al. 2001). These data

support the recent comments of Pedro Bay residents, and show that, as people begin spending more time at work, they may find less time for pursuing subsistence activities.

LOCAL OBSERVATIONS OF RESOURCE POPULATIONS AND TRENDS

Five key respondent interviews were conducted in Pedro Bay for this study. During these interviews, individuals commented on changing resource patterns, and changing human use of resources. The information collected during these interviews is discussed throughout this chapter. In addition, much "contextual" or background information was collected during the harvest surveys themselves, and many of those points are also included in the discussion parts of this chapter.

One Pedro Bay resident in a key respondent interview described the occurrence in 2003 of an unusual amount of diseased sockeye salmon entering the drainages around Pedro Bay. The respondent said that the livers of the salmon were diseased, causing a nasty odor that permeated the entire body of the fish. Many people did not put up any salmon at all in 2003 because of this abnormality.

"Fall fish" are the spawning sockeye that congregate in Knutson Creek and Pedro Creek. Up Pedro Creek, there are several small lakes that residents call the "fish ponds," located in the low-lying, swampy area between the village and the airstrip. New maps, made for land-use planning, give names to the largest of these ponds: Cottonwood Lake, Wamsen Lake, and Joliek Pond. In 2003, fall fish did not show up in significant numbers, causing many households in Pedro Bay to be without adequate stores of the dried fall fish that residents call *nudelvaya*.

However, in 2004 an unusually high number of sockeye salmon returned to the lake waters in Pedro Bay, plugging the bays and spawning along the lakeshores, and the fall fish were once again plentiful. Another setback was encountered, however, when unseasonably warm temperatures in November of 2004 prevented the fish from "freeze drying," as is normally done with fall fish. Most of the drying fish were salvaged by simply putting them into the freezer and allowing them to continue to dry there.

Pedro Bay residents commented on the increased presence of predators, particularly wolves and brown bears, around their community. Many attributed decreasing moose populations to bear and wolf predation. Pile River, and the areas around Pile Bay to the east of Pedro Bay, are where moose are normally found by local hunters, but pressure from brown bears, wolves, and according to some, an increasing number of nonlocal sport hunters, is thinning the moose population in that area.

The moose in Pile River, on which Pedro Bay residents depend, are especially susceptible to changes in the habitat around the village that come with development projects. Some respondents noted that the runway expansion displaced moose that normally travel past the village on their way west in the winter, and back to Pile River in the spring. These residents see expansion of the road past Pedro Bay and Pile Bay to Cook Inlet as being very threatening to the Pile River valley moose population, keeping them from their normal, seasonal migration along

the corridor that is being proposed for the new road. Others in Pedro Bay commented on the increasing number of nonlocal hunters in recent years, taking a toll on the moose in the area.

Respondents also had comments related to changes in population and presence of several non-food species. A few households noted that the coyote population around Pedro Bay increased significantly between the mid-1980s and 2004. During that period, coyotes were responsible for decreasing populations of spruce grouse, rabbits (hares), and red fox, respondents said. One household observed that wolverine and lynx populations around Pedro Bay had been low beginning in the mid-1970s, but only in the years leading up to 2004 had they started to rebound.

LOCAL CONCERNS REGARDING RESOURCES

In 2004, subsistence activities were practiced by every household in Pedro Bay (Table 4-3), and by over 96% of all the individuals in that community (Table 1-15). Local residents volunteered information on environmental changes, weather patterns, animal health, and the influx of non-local sport fishers. They were also self-reflective, discussing the way their jobs affect the time they spend pursuing subsistence activities, and the way the loss of certain elders impacts the community's subsistence pattern.

Many individuals in Pedro Bay voiced concern over the proposed Pebble Project in the Iliamna Lake region. People fear the likely influx of outsiders, and the negative effects on wildlife that they believe will result. The proposed road from the mine to Cook Inlet is routed very close to the village of Pedro Bay.

Although there was no direct question on the survey about the Pebble Project development, 8 out of 18 households surveyed voiced strong opposition to the proposed mine and road because of their potential impacts on the local environment. Specific concerns included contamination of the Kvichak River system fisheries; contamination of, or other negative effects on, the Iliamna Lake seal population; dust from the road affecting vegetation in the area; and reduced air quality from truck emissions. These Pedro Bay residents are fearful of what might then happen to their subsistence way of life, which depends heavily on clean, unspoiled resources.

Besides these 8 respondents, several others reserved opinions on the mine, but objectively described environmental changes that they believe would directly result, such as interference with the moose migration from the Pile River valley through Pedro Bay to the Knutson River valley. Archaeological resources and other sites of cultural importance are located on the hillsides near the community, and some feared the impact of road construction on those sites. The November 2005 data review meeting also brought on discussions about the proposed mine, and while some did not speak out in favor, several did talk about the great harm that, in their view, such a development could have on the environment that continues to be an integral part of life in Pedro Bay.

Figure 4-1. Population Profile, Pedro Bay, 2004

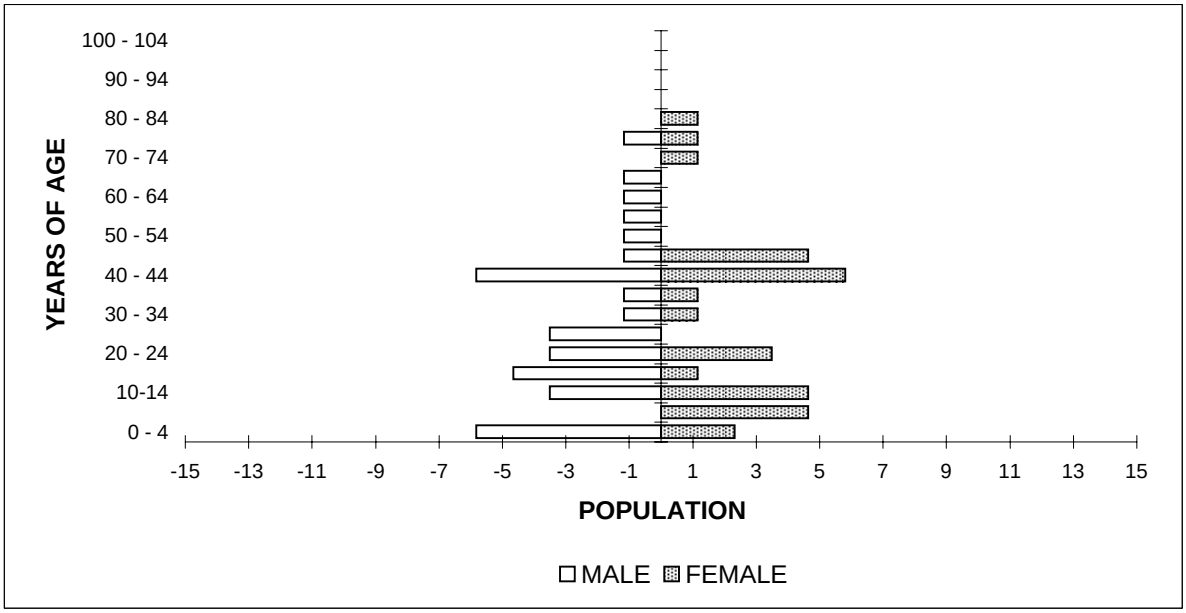


Table 4-1. Population Profile, Pedro Bay, 2004

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	5.8	16.1%	16.1%	2.3	7.1%	7.1%	8.2	11.9%	11.9%
5-9	0.0	0.0%	16.1%	4.7	14.3%	21.4%	4.7	6.8%	18.6%
10-14	3.5	9.7%	25.8%	4.7	14.3%	35.7%	8.2	11.9%	30.5%
15 - 19	4.7	12.9%	38.7%	1.2	3.6%	39.3%	5.8	8.5%	39.0%
20 - 24	3.5	9.7%	48.4%	3.5	10.7%	50.0%	7.0	10.2%	49.2%
25 - 29	3.5	9.7%	58.1%	0.0	0.0%	50.0%	3.5	5.1%	54.2%
30 - 34	1.2	3.2%	61.3%	1.2	3.6%	53.6%	2.3	3.4%	57.6%
35 - 39	1.2	3.2%	64.5%	1.2	3.6%	57.1%	2.3	3.4%	61.0%
40 - 44	5.8	16.1%	80.6%	5.8	17.9%	75.0%	11.7	16.9%	78.0%
45 - 49	1.2	3.2%	83.9%	4.7	14.3%	89.3%	5.8	8.5%	86.4%
50 - 54	1.2	3.2%	87.1%	0.0	0.0%	89.3%	1.2	1.7%	88.1%
55 - 59	1.2	3.2%	90.3%	0.0	0.0%	89.3%	1.2	1.7%	89.8%
60 - 64	1.2	3.2%	93.5%	0.0	0.0%	89.3%	1.2	1.7%	91.5%
65 - 69	1.2	3.2%	96.8%	0.0	0.0%	89.3%	1.2	1.7%	93.2%
70 - 74	0.0	0.0%	96.8%	1.2	3.6%	92.9%	1.2	1.7%	94.9%
75 - 79	1.2	3.2%	100.0%	1.2	3.6%	96.4%	2.3	3.4%	98.3%
80 - 84	0.0	0.0%	100.0%	1.2	3.6%	100.0%	1.2	1.7%	100.0%
85 - 89	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
90 - 94	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
95 - 99	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
100 - 104	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
Missing	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
TOTAL	36.2	100.0%		32.7	100.0%		68.8	100.0%	

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 4-2. Employment by Industry, Pedro Bay, 2004

	Jobs	Households	Individuals	Percentage of Income
Estimated Total Number*	68.8	19.8	44.3	
Federal Government	3.4%	5.6%	5.3%	3.2%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%
Natural Scientists and Mathematicians	0.0%	0.0%	0.0%	0.0%
Social Scientists, Social Workers, Religious Workers and Lawyers	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	1.7%	5.6%	2.6%	2.5%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	1.7%	5.6%	2.6%	0.7%
State Government	0.0%	0.0%	0.0%	0.0%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Local & Tribal Governments	69.5%	77.8%	81.6%	66.9%
Executive, Administrative and Managerial	6.8%	22.2%	10.5%	15.2%
Social Scientists, Social Workers, Religious Workers and Lawyers	0.0%	0.0%	0.0%	0.0%
Teachers, Librarians, and Councelors	8.5%	16.7%	13.2%	8.5%
Health Diagnosing and Treating Practitioners	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	1.7%	5.6%	2.6%	2.7%
Marketing and Sales Occupations	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	1.7%	5.6%	2.6%	0.3%
Service Occupations	13.6%	33.3%	18.4%	4.8%
Mechanics and Repairers	6.8%	22.2%	10.5%	9.3%
Construction and Extractive Occupations	3.4%	11.1%	5.3%	9.3%
Handlers, Equipment Cleaners, Helpers and Laborers	27.1%	44.4%	28.9%	16.7%
Agriculture, Forestry & Fishing	3.4%	11.1%	5.3%	0.5%
Agricultural, Forestry and Fishing Occupations	3.4%	11.1%	5.3%	0.5%
Mining	1.7%	5.6%	2.6%	1.6%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Precision Production Occupations	1.7%	5.6%	2.6%	1.6%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Construction	1.7%	5.6%	2.6%	5.3%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Transportation and Material Moving Occupations	1.7%	5.6%	2.6%	5.3%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Manufacturing	0.0%	0.0%	0.0%	0.0%
Precision Production Occupations	0.0%	0.0%	0.0%	0.0%
Transportation, Communication & Utilities	1.7%	5.6%	2.6%	0.8%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%

[continued]

Table 4-2. Employment by Industry, Pedro Bay, 2004

	Jobs	Households	Individuals	Percentage of Income
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	1.7%	5.6%	2.6%	0.8%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Wholesale Trade	1.7%	5.6%	2.6%	1.6%
Mechanics and Repairers	1.7%	5.6%	2.6%	1.6%
Retail Trade	3.4%	11.1%	5.3%	1.6%
Executive, Administrative and Managerial	1.7%	5.6%	2.6%	0.0%
Marketing and Sales Occupations	1.7%	5.6%	2.6%	1.6%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Services	13.6%	44.4%	21.1%	18.5%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%
Social Scientists, Social Workers, Religious Workers and Lawyers	1.7%	5.6%	2.6%	3.3%
Health Diagnosing and Treating Practitioners	3.4%	11.1%	5.3%	13.1%
Health Technologists and Technicians	1.7%	5.6%	2.6%	0.2%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	0.0%	0.0%	0.0%	0.0%
Service Occupations	1.7%	5.6%	2.6%	0.5%
Agricultural, Forestry and Fishing Occupations	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	1.7%	5.6%	2.6%	0.2%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	1.7%	5.6%	2.6%	0.5%
Miscellaneous Occupations	1.7%	5.6%	2.6%	0.8%

* Estimated number of households and individuals only include those that were employed during the study period.
SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 4-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Pedro Bay, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
All Resources	100.0%	100.0%	100.0%	100.0%	88.9%	21,026.4	1,001.3	305.5			22.2%
Fish	100.0%	88.9%	88.9%	88.9%	83.3%	18,285.3	870.7	265.6			23.5%
Salmon	100.0%	88.9%	83.3%	77.8%	72.2%	17,232.2	820.6	250.3	4,345.8 Ind	206.9	24.2%
Chum Salmon	5.6%	0.0%	0.0%	5.6%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Coho Salmon	11.1%	5.6%	5.6%	5.6%	5.6%	11.9	0.6	0.2	2.3 Ind	0.1	0.0%
Chinook Salmon	44.4%	0.0%	0.0%	44.4%	5.6%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Pink Salmon	5.6%	0.0%	0.0%	5.6%	5.6%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sockeye Salmon	100.0%	83.3%	77.8%	44.4%	72.2%	15,986.0	761.2	232.2	3,726.3 Ind	177.4	22.7%
Landlocked Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Spawnouts	72.2%	61.1%	55.6%	38.9%	33.3%	1,234.3	58.8	17.9	617.2 Ind	29.4	16.9%
Spawning Sockeye	72.2%	61.1%	55.6%	38.9%	33.3%	1,234.3	58.8	17.9	617.2 Ind	29.4	16.9%
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%
Non-Salmon Fish	88.9%	61.1%	61.1%	83.3%	38.9%	1,053.0	50.1	15.3			18.6%
Herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Herring Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Herring Sac Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Herring Spawn on Kelp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Smelt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Cod	11.1%	5.6%	5.6%	5.6%	0.0%	67.2	3.2	1.0	21.0 Ind	1.0	0.0%
Pacific Cod (gray)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Walleye Pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Cod	11.1%	5.6%	5.6%	5.6%	0.0%	67.2	3.2	1.0	21.0 Ind	1.0	0.0%
Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Lingcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Halibut	72.2%	5.6%	5.6%	66.7%	16.7%	87.5	4.2	1.3	87.5 Lbs	4.2	0.0%
Rockfish	5.6%	5.6%	5.6%	0.0%	0.0%	9.3	0.4	0.1	4.7 Ind	0.2	0.0%
Black Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Red Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Rockfish	5.6%	5.6%	5.6%	0.0%	0.0%	9.3	0.4	0.1	4.7 Ind	0.2	0.0%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Bullhead 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%

Table 4-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Pedro Bay, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Unknown 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%
Unknown Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Wolffish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	5.6%	0.0%	0.0%	5.6%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Char	66.7%	61.1%	61.1%	33.3%	22.2%	614.6	29.3	8.9	439.0 Ind	20.9	16.7%
Arctic Char	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Dolly Varden	66.7%	61.1%	61.1%	27.8%	22.2%	596.6	28.4	8.7	426.2 Ind	20.3	17.3%
Dolly Varden-saltwater	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	16.7%	27.8%	11.1%	11.1%	0.0%	18.0	0.9	0.3	12.8 Ind	0.6	14.8%
Grayling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Pike	16.7%	16.7%	16.7%	5.6%	5.6%	65.3	3.1	0.9	23.3 Ind	1.1	4.1%
Unknown Pike	16.7%	16.7%	16.7%	5.6%	5.6%	65.3	3.1	0.9	23.3 Ind	1.1	4.1%
Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Trout	44.4%	38.9%	38.9%	16.7%	16.7%	209.1	10.0	3.0	149.3 Ind	7.1	12.5%
Rainbow Trout	44.4%	38.9%	38.9%	16.7%	16.7%	199.3	9.5	2.9	142.3 Ind	6.8	13.0%
Steelhead	5.6%	5.6%	5.6%	0.0%	0.0%	9.8	0.5	0.1	7.0 Ind	0.3	0.0%
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%
Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Broad Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Land Mammals	83.3%	77.8%	27.8%	66.7%	27.8%	2,065.0	98.3	30.0			32.1%
Large Land Mammals	77.8%	72.2%	22.2%	61.1%	22.2%	2,065.0	98.3	30.0			25.3%
Black Bear	5.6%	0.0%	0.0%	5.6%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Brown Bear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Caribou	27.8%	5.6%	5.6%	27.8%	5.6%	175.0	8.3	2.5	1.2 Ind	0.1	0.0%
Moose	77.8%	72.2%	16.7%	61.1%	22.2%	1,890.0	90.0	27.5	3.5 Ind	0.2	30.7%
Dall Sheep	11.1%	11.1%	0.0%	11.1%	5.6%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Small Land Mammals	11.1%	5.6%	5.6%	5.6%	5.6%	0.0	0.0	0.0			0.0%

Table 4-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Pedro Bay, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Beaver	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Coyote	5.6%	5.6%	5.6%	0.0%	0.0%	0.0	0.0	0.0	2.3 Ind	0.1	0.0%
Fox	11.1%	5.6%	5.6%	5.6%	5.6%	0.0	0.0	0.0	2.3 Ind	0.1	0.0%
Red Fox	11.1%	5.6%	5.6%	5.6%	5.6%	0.0	0.0	0.0	2.3 Ind	0.1	0.0%
Hare	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Snowshoe Hare	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Mink	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Muskrat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Porcupine	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Parka Squirrel (ground)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Wolverine	5.6%	0.0%	0.0%	5.6%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Marine Mammals	0.0%	11.1%	0.0%	0.0%	0.0%	0.0	0.0	0.0			0.0%
Seal	0.0%	11.1%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Harbor Seal	0.0%	11.1%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Harbor Seal (freshwater)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Harbor Seal (saltwater)	0.0%	11.1%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sea Otter	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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Whale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Belukha	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Birds and Eggs	94.4%	72.2%	66.7%	61.1%	44.4%	197.8	9.4	2.9			23.1%
Migratory Birds	11.1%	11.1%	11.1%	0.0%	0.0%	8.4	0.4	0.1	10.5 Ind	0.5	2.1%
Ducks	11.1%	11.1%	11.1%	0.0%	0.0%	8.4	0.4	0.1	10.5 Ind	0.5	2.1%
Bufflehead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Goldeneye	11.1%	11.1%	11.1%	0.0%	0.0%	8.4	0.4	0.1	10.5 Ind	0.5	2.1%
Unknown Goldeneye	11.1%	11.1%	11.1%	0.0%	0.0%	8.4	0.4	0.1	10.5 Ind	0.5	2.1%
Mallard	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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%

Table 4-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Pedro Bay, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
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%
Wigeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
American Wigeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Geese	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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Dusky Canada Geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Lesser Canada Geese (taverner/parvi	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Canada 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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Geese	0.0%	0.0%	0.0%	0.0%	0.0%	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%
Tundra Swan (whistling)	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%
Seabirds & Loons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Loons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Loon	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	55.6%	61.1%	50.0%	5.6%	22.2%	76.8	3.7	1.1	109.7 Ind	5.2	17.2%
Upland Game Birds	55.6%	61.1%	50.0%	5.6%	22.2%	76.8	3.7	1.1	109.7 Ind	5.2	17.2%
Grouse	55.6%	61.1%	50.0%	5.6%	22.2%	53.9	2.6	0.8	77.0 Ind	3.7	15.3%
Ptarmigan	5.6%	5.6%	5.6%	0.0%	0.0%	22.9	1.1	0.3	32.7 Ind	1.6	0.0%
Unknown Ptarmigan	5.6%	5.6%	5.6%	0.0%	0.0%	22.9	1.1	0.3	32.7 Ind	1.6	0.0%
Bird Eggs	72.2%	38.9%	38.9%	55.6%	22.2%	112.6	5.4	1.6	416.5 Ind	19.8	13.5%
Duck Eggs	11.1%	11.1%	11.1%	0.0%	0.0%	1.2	0.1	0.0	8.2 Ind	0.4	4.7%
Unknown Duck Eggs	11.1%	11.1%	11.1%	0.0%	0.0%	1.2	0.1	0.0	8.2 Ind	0.4	4.7%
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%
Unknown 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%
Seabird & Loon Eggs	72.2%	38.9%	38.9%	55.6%	22.2%	111.4	5.3	1.6	408.3 Ind	19.4	13.6%
Gull Eggs	72.2%	33.3%	33.3%	55.6%	22.2%	109.2	5.2	1.6	364.0 Ind	17.3	12.8%
Tern Eggs	11.1%	11.1%	11.1%	5.6%	0.0%	2.2	0.1	0.0	44.3 Ind	2.1	3.8%
Marine Invertebrates	27.8%	0.0%	0.0%	27.8%	11.1%	0.0	0.0	0.0			0.0%
Clams	22.2%	0.0%	0.0%	22.2%	11.1%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Butter Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Freshwater Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Horse Clams (Gaper)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%

Table 4-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Pedro Bay, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Pacific Littleneck Clams (Steamers)	5.6%	0.0%	0.0%	5.6%	5.6%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Pinkneck 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	16.7%	0.0%	0.0%	16.7%	5.6%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Unknown Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Cockles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Unknown Cockles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Crabs	5.6%	0.0%	0.0%	5.6%	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	5.6%	0.0%	0.0%	5.6%	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%
Tanner Crab, Bairdi	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Tanner Crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Mussels	5.6%	0.0%	0.0%	5.6%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Unknown Mussels	5.6%	0.0%	0.0%	5.6%	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 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%
Unknown 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	5.6%	0.0%	0.0%	5.6%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Vegetation	100.0%	100.0%	100.0%	50.0%	55.6%	478.3	22.8	6.9			17.4%
Berries	100.0%	88.9%	88.9%	27.8%	38.9%	393.2	18.7	5.7	98.3 Gal	4.7	18.5%
Plants/Greens/Mushrooms	72.2%	72.2%	72.2%	5.6%	16.7%	85.2	4.1	1.2	21.3 Gal	1.0	15.5%
Wood	72.2%	61.1%	61.1%	27.8%	16.7%	0.0	0.0	0.0	105.0 Crd	5.0	10.5%

Table 4-4. Top Ten Resources Harvested and Used, Pedro Bay, 2004

Harvest			Use		
Rank	Resource	Lbs per Capita	Rank	Resource	% of HHs Using
1	Sockeye Salmon	232.2	1	Sockeye Salmon	100.0%
2	Moose	27.5	2	Berries	100.0%
3	Spawning Sockeye	17.9	3	Moose	77.8%
4	Dolly Varden	8.7	4	Spawning Sockeye	72.2%
5	Berries	5.7	5	Halibut	72.2%
6	Rainbow Trout	2.9	6	Sea Gull Eggs	72.2%
7	Caribou	2.5	7	Wild Green Plants	72.2%
8	Sea Gull Eggs	1.6	8	Dolly Varden	66.7%
9	Halibut	1.3	9	Grouse	55.6%
10	Wild Green Plants	1.2	10	Rainbow Trout	44.4%

Source: ADF&G, Division of Subsistence, Household Survey, 2005

Table 4-5. Estimated Percentage of Salmon Harvest by Gear Type, Resource, and Total Salmon Harvest, Pedro Bay, 2004

Resource	Percent Base	Removed from Commercial Catch		Subsistence Methods								Rod and Reel		Any Method	
				Setnet		Seine		Other		Subsistence Gear Any Method					
		No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
Salmon	geartype	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	resource	0.0%	0.0%	89.8%	92.5%	0.0%	0.0%	1.3%	0.7%	91.2%	93.2%	8.8%	6.8%	100.0%	100.0%
	total	0.0%	0.0%	89.8%	92.5%	0.0%	0.0%	1.3%	0.7%	91.2%	93.2%	8.8%	6.8%	100.0%	100.0%
Chum 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%
Coho Salmon	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.0%	0.1%	0.1%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%
Chinook 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%
Pink 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%
Sockeye Salmon	geartype	0.0%	0.0%	91.0%	95.6%	0.0%	0.0%	0.0%	0.0%	89.6%	94.9%	45.6%	63.9%	85.7%	92.8%
	resource	0.0%	0.0%	95.3%	95.3%	0.0%	0.0%	0.0%	0.0%	95.3%	95.3%	4.7%	4.7%	100.0%	100.0%
	total	0.0%	0.0%	81.7%	88.4%	0.0%	0.0%	0.0%	0.0%	81.7%	88.4%	4.0%	4.4%	85.7%	92.8%
Landlocked 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%
Spawning Sockeye	geartype	0.0%	0.0%	9.0%	4.4%	0.0%	0.0%	100.0%	100.0%	10.4%	5.1%	53.8%	35.1%	14.2%	7.2%
	resource	0.0%	0.0%	57.1%	57.1%	0.0%	0.0%	9.5%	9.5%	66.5%	66.5%	33.5%	33.5%	100.0%	100.0%
	total	0.0%	0.0%	8.1%	4.1%	0.0%	0.0%	1.3%	0.7%	9.4%	4.8%	4.8%	2.4%	14.2%	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: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 4-6. Estimated Percentage of Non-Salmon Fish Harvest by Gear Type, Resource, and Total Harvest, Pedro Bay, 2004[1]

Resource	Percent Base	Removed from Commercial Gear	Subsistence Gear							Rod and Reel	Any Method
			Set Net	Seine	Hand Line Gear	Dip Net	Ice Fishing	Other Subsistence Gear	Any Subsistence Gear		
Non-Salmon Fish	geartype	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	resource	0.0%	0.5%	0.0%	0.0%	0.0%	27.3%	3.1%	30.9%	69.1%	100.0%
	total	0.0%	0.5%	0.5%	0.0%	0.0%	27.3%	3.1%	30.9%	69.1%	100.0%
Unknown Cod	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.2%	6.4%
	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%	6.4%	6.4%
Halibut	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.0%	8.3%
	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%	8.3%	8.3%
Unknown Rockfish	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.9%
	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%	0.9%	0.9%
Dolly Varden	geartype	0.0%	100.0%	0.0%	0.0%	0.0%	79.0%	100.0%	81.4%	45.6%	56.7%
	resource	0.0%	0.8%	0.0%	0.0%	0.0%	38.1%	5.6%	44.4%	55.6%	100.0%
	total	0.0%	0.5%	0.5%	0.0%	0.0%	21.6%	3.1%	25.2%	31.5%	56.7%
Lake Trout	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	1.5%	1.8%	1.7%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	27.3%	0.0%	27.3%	72.7%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.5%	1.2%	1.7%
Unknown Pike	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	5.7%	0.0%	5.0%	6.7%	6.2%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	25.0%	75.0%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	1.6%	4.7%	6.2%
Rainbow Trout	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	13.6%	0.0%	12.0%	22.0%	18.9%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	19.7%	0.0%	19.7%	80.3%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	0.0%	3.7%	15.2%	18.9%
Steelhead	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.9%
	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%	0.9%	0.9%

[1] This table lists only those resources for which there was a harvest in the 2004 study year.

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 4-7. Assessment of Household's Harvest and Use of Resources in 2004 Compared to Other Recent Years, Pedro Bay

Resource	Estimated Households	No Response		Valid Responses		Less		Same		More	
		no	pct	no	pct	no	pct	no	pct	no	pct
Salmon	21	3.5	16.7%	17.5	83.3%	4.7	26.7%	9.3	53.3%	3.5	20.0%
Non-Salmon Finfish	21	2.3	11.1%	18.7	88.9%	5.8	31.3%	12.8	68.8%	0.0	0.0%
Marine Invertebrates	21	3.5	16.7%	17.5	83.3%	1.2	6.7%	16.3	93.3%	0.0	0.0%
Large Land Mammals	21	3.5	16.7%	17.5	83.3%	3.5	20.0%	14.0	80.0%	0.0	0.0%
Furbearers	21	3.5	16.7%	17.5	83.3%	0.0	0.0%	17.5	100.0%	0.0	0.0%
Marine Mammals	21	4.7	22.2%	16.3	77.8%	0.0	0.0%	16.3	100.0%	0.0	0.0%
Birds and Eggs	21	3.5	16.7%	17.5	83.3%	4.7	26.7%	12.8	73.3%	0.0	0.0%
Wild Plants	21	3.5	16.7%	17.5	83.3%	3.5	20.0%	14.0	80.0%	0.0	0.0%
Overall	21	2.3	11.1%	18.7	88.9%	11.7	62.5%	7.0	37.5%	0.0	0.0%
Any Resource	21	2.3	11.1%	18.7	88.9%	12.8	68.8%	18.7	100.0%	3.5	18.8%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 4-8. Pedro Bay: Reasons for Change in Harvests and Uses in Recent Years

			Percentage of Responses by Category[1]							
Resource Category	Use Less or More	Estimated Number of Households[2]	No Reason Given	Competition	Regulations	People are Sharing Less	Weather	Animal Population Changes[3]	Personal Reasons (Work/Health)	Other Outside Effects
Salmon	Less	4.7	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	75.0%	0.0%
Salmon	More	3.5	0.0%	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%
Non-Salmon Finfish	Less	5.8	0.0%	40.0%	0.0%	20.0%	0.0%	40.0%	60.0%	0.0%
Marine Invertebrates	Less	1.2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Large Land Mammals	Less	3.5	0.0%	0.0%	0.0%	66.7%	33.3%	33.3%	66.7%	0.0%
Birds and Eggs	Less	4.7	25.0%	0.0%	0.0%	0.0%	50.0%	25.0%	50.0%	0.0%
Wild Plants	Less	3.5	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	33.3%	0.0%
Overall	Less	11.7	10.0%	0.0%	0.0%	10.0%	0.0%	50.0%	60.0%	0.0%
Any Resource	Less	12.8	18.2%	18.2%	0.0%	18.2%	27.3%	54.5%	54.5%	0.0%
Any Resource	More	3.5	0.0%	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%

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

[2] Estimated number of households citing a change in uses. For number of valid responses, see Table 4-7. Estimated total households in community = 21

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

Source: Alaska Department of Fish and Game, Division of Subsistence, Households Surveys, 2005

Table 4-9. Pedro Bay Wild Resource Harvests by Resource Category, All Study Years

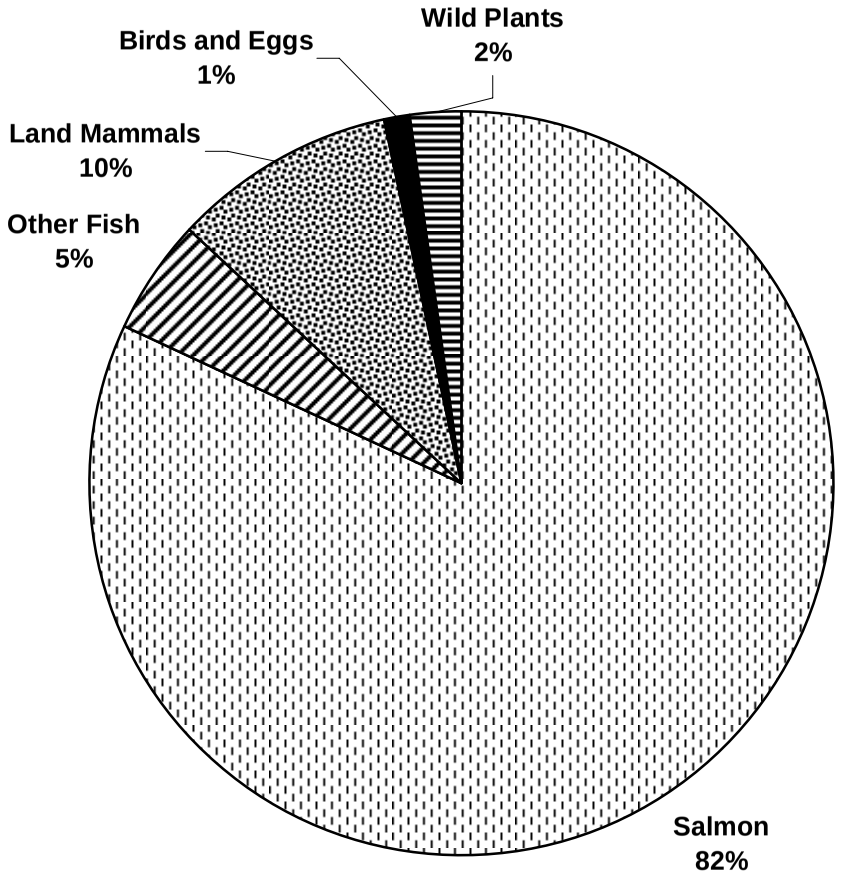
	Pounds Usable Weight Per Capita					
	1973	1982	1996	2001	2003	2004
Salmon	417.5	721.0	290.7			250.3
Non-Salmon Fish	65.0	69.4	25.9		6.3	15.3
Large Land Mammals	116.8	49.4	72.6	15.6		30.0
Small Land Mammals	19.8	4.8	0.0			0.0
Birds and Eggs	17.3	4.6	2.2			2.9
Marine Invertebrates	0.0	3.5	2.1			0.0
Vegetation	NA	12.4	3.3			6.9
All Resources	636.4	865.1	396.7			305.5

Bank cells indicate that data are unavailable.

Table 4-10. Composition of Wild Resource Harvests by Category, Pedro Bay, All Study Years

	Percentage of Total Harvest					
	1973	1982	1996	2001	203	2004
Salmon	65.6%	83.3%	73.3%			82.0%
Non-Salmon Fish	10.2%	8.0%	6.5%			5.0%
Large Land Mammals	18.4%	5.7%	18.3%			9.8%
Small Land Mammals	3.1%	0.6%	0.0%			0.0%
Birds and Eggs	2.7%	0.5%	0.5%			0.9%
Marine Invertebrates	0.0%	0.4%	0.5%			0.0%
Vegetation		1.4%	0.8%			2.3%
All Resources	100.0%	100.0%	100.0%			100.0%

Figure 4-2. Composition of Wild Resource Harvests, Pedro Bay, 2004, by Resource Category



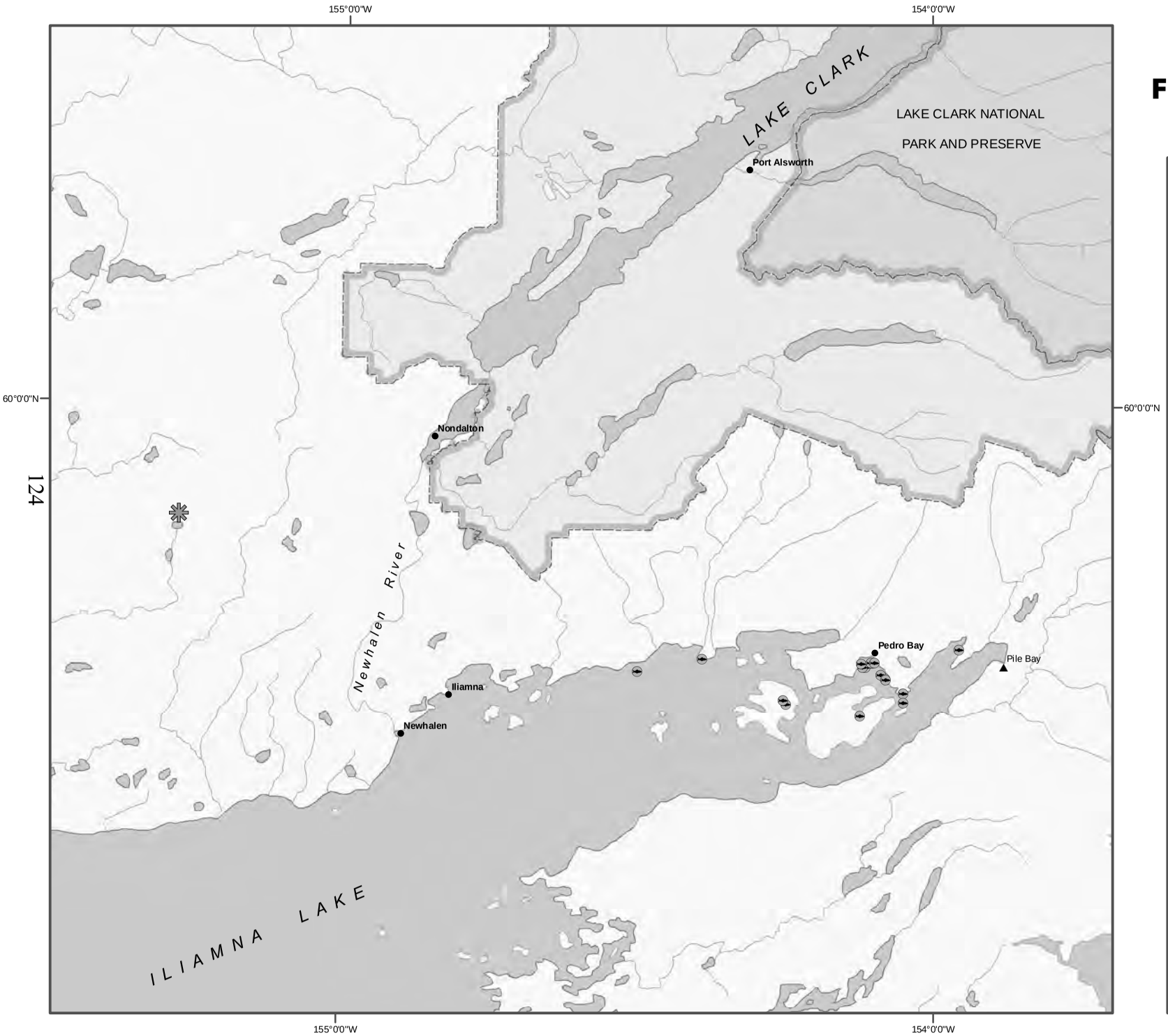


Figure 4-3

- Pebble Mine Site
- Communities
- Other Localities
- Pedro Bay Dolly Varden Harvest 2004
- National Park
- National Preserve

SCALE: 1:500,000

0 2.5 5 10

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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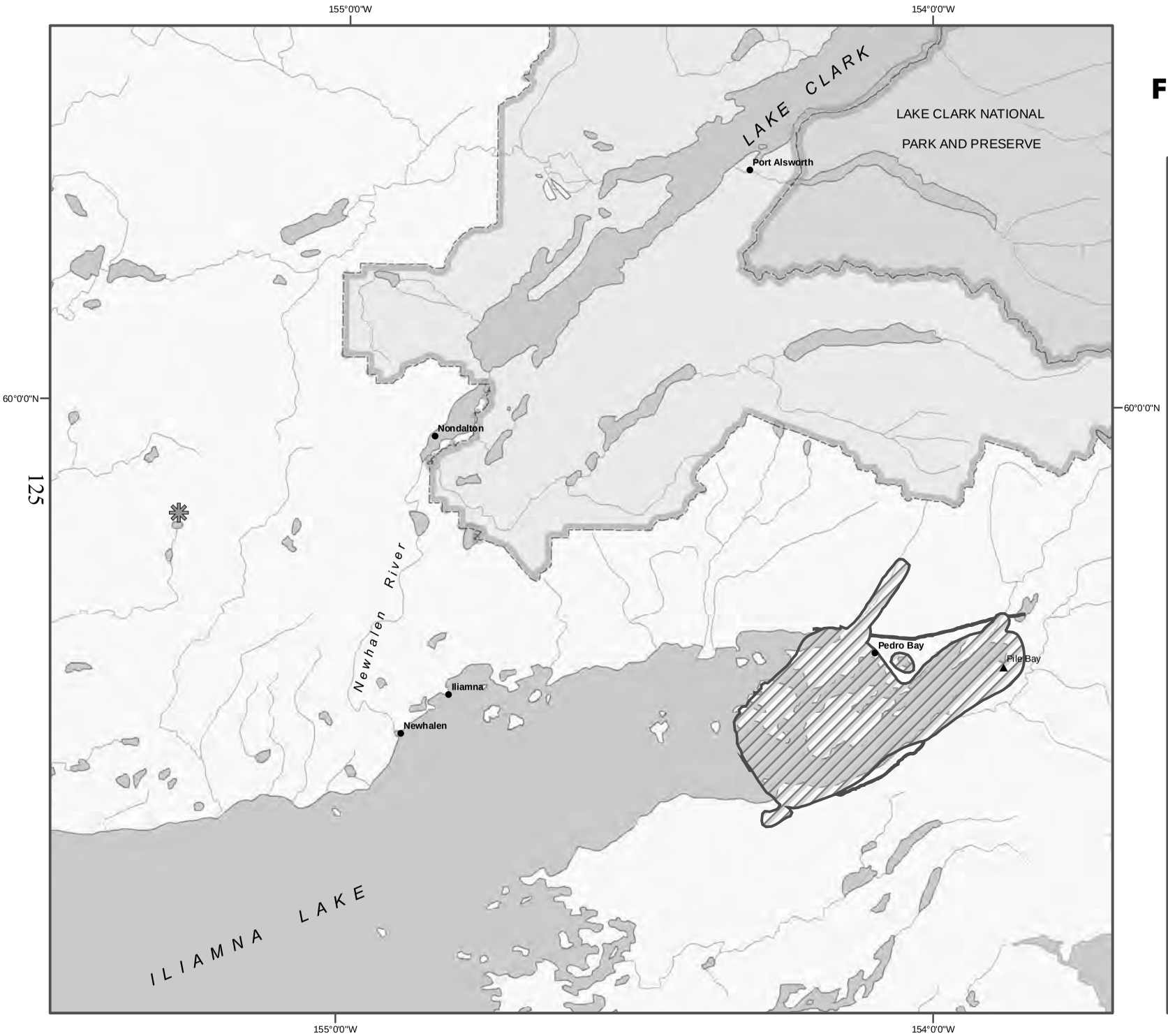

Figure 4-4

N

- Pebble Mine Site
- Communities
- Other Localities
- Pedro Bay Moose Hunting 2004
- National Park
- National Preserve

SCALE: 1:500,000

0 2.5 5 10

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

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Figure 4-5. Pedro Bay Households' Assessment of Harvest and Uses of Wild Resources in 2004 Compared to Other Recent Years

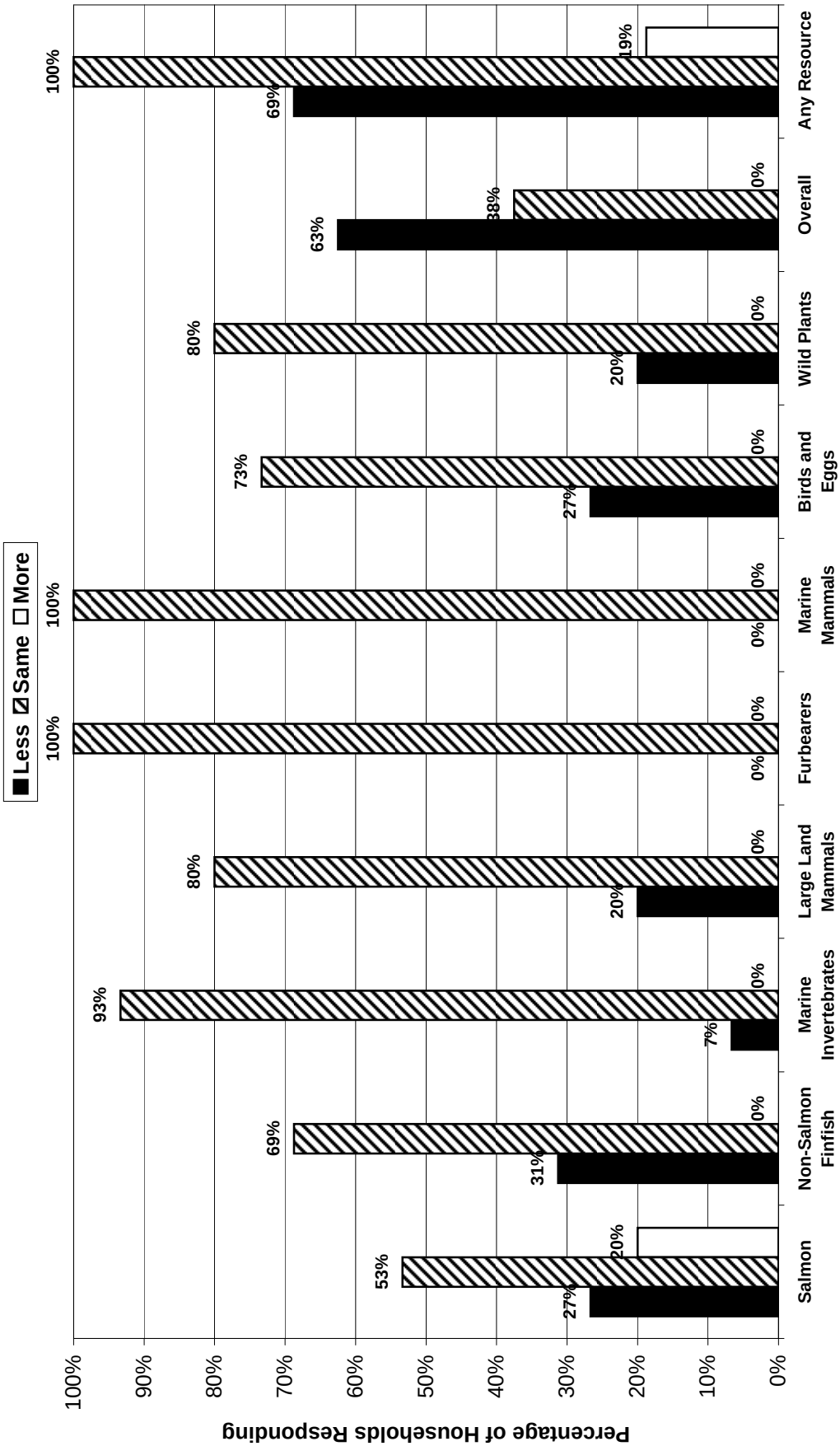


Figure 4-6. Reasons Cited by Pedro Bay Households for Lower Uses of Any Resource in 2004 Compared to Other Recent Years

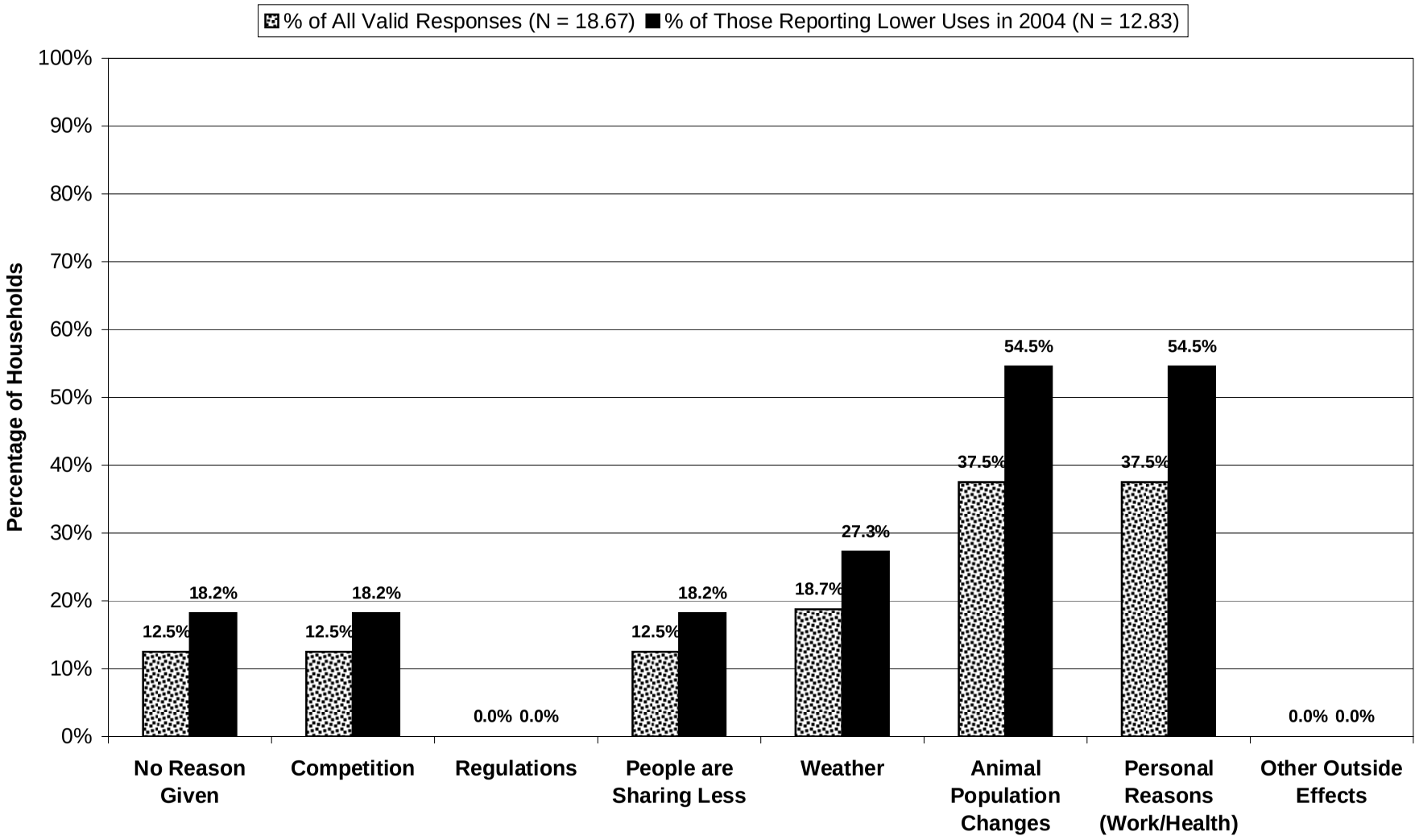
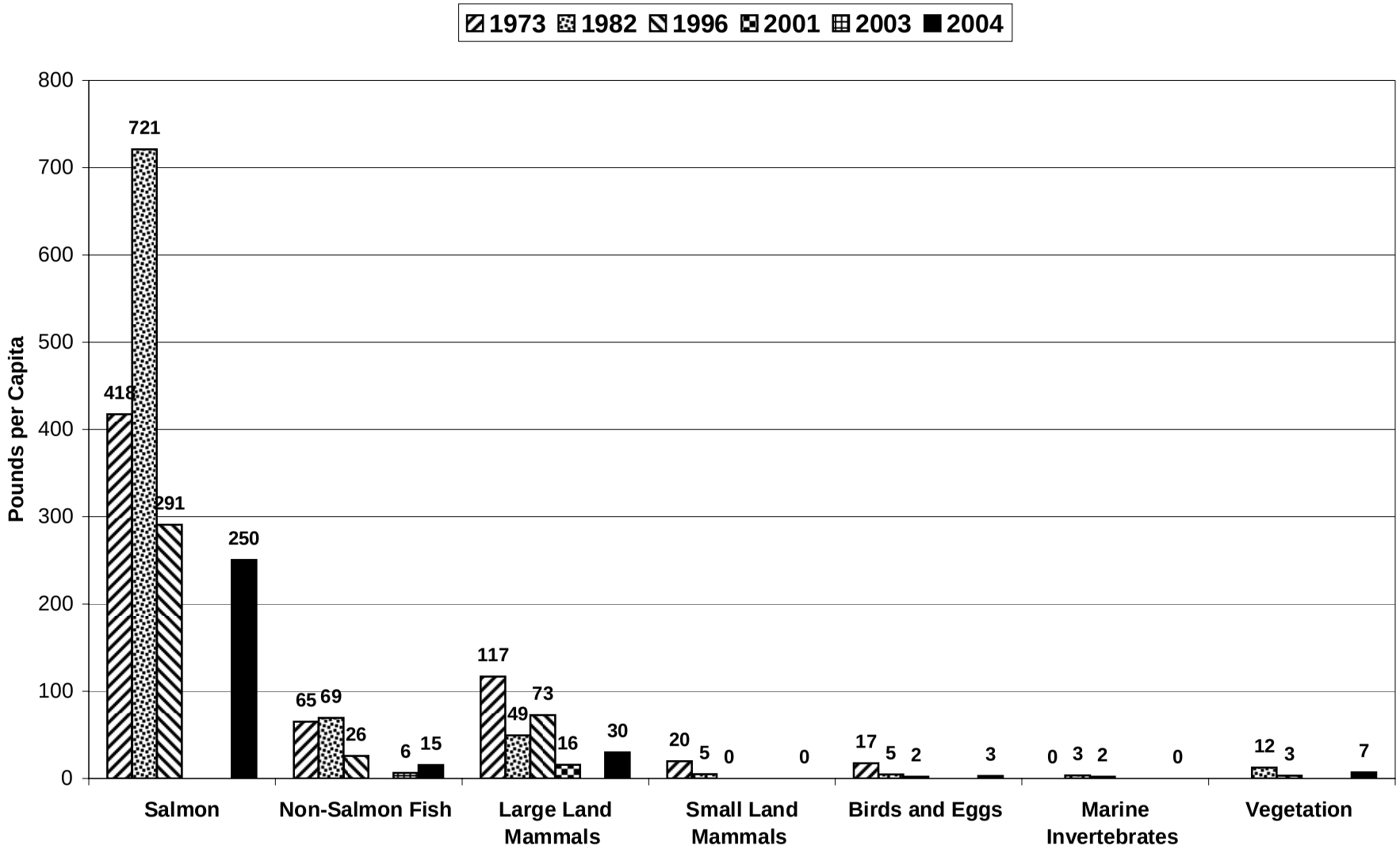


Figure 4-7. Pedro Bay Wild Resource Harvests Over Time by Resource Category



CHAPTER FIVE: PORT ALSWORTH

COMMUNITY BACKGROUND

There has been a settlement at Port Alsworth since the 1890s when Euro-American prospectors moved into Lake Clark country looking for copper and gold. After the settlement was established, Dena'ina from nearby Kijik on the opposite shore of Lake Clark near the Chulitna River moved to the site as well. Eventually, many of the Euro-American settlers left and the Dena'ina moved to the new settlement of Nondalton after Kijik was abandoned in 1914. In 1942, Glen "Babe" Alsworth Sr. moved his family from Bristol Bay to Tanalian Point to establish a homestead. With a passion for aviation, Babe Alsworth started Lake Clark Air at the site, building a 4000-foot runway near Hardenberg Bay. The aviation business in Port Alsworth has continued and many guide services and lodges have made Port Alsworth their base since this time.

After the passage of the Alaska Interest Lands Conservation Act (ANILCA) in November 1980, the new Lake Clark National Park and Preserve was established and Port Alsworth became the site of the National Park Service headquarters for the new park. Port Alsworth today caters to adventure tourists who come to explore this remote national park, and sport hunters and fishermen who use the many guide services headquartered at Port Alsworth.

DEMOGRAPHY, CASH EMPLOYMENT, AND MONETARY INCOME

Table 1-10 contains demographic data about the community of Port Alsworth. These data are based on the 73% sample (22 households out of 30) surveyed. The average household contained 3.6 people; people living alone constituted the minimum number of people per household, and one household had 7 family members in residence. The total number of people in the community in 2004 is estimated at 109.

The household survey collected information on the age, length of residency in the community, and whether or not household members were Alaska Native. In Port Alsworth, there were slightly more males than females (51% to 49%). The average age was 27 years, with the youngest being under one year, and the oldest being 73 years (Table 5-1, Fig. 5-1). The median age, which estimates the greatest age of the youngest 50% of the population, was 25. Of the individuals living in Port Alsworth in 2004, 18% were Alaska Native, and households who had at least one head who was Alaska Native totaled 23%.

In Port Alsworth, the average household head had lived in the community for 15 years. The least amount of time spent in the community for a particular household head was one year, and the longest was 50 years.

Table 1-12 shows the employment characteristics of the community for 2004. The estimated number of working-age adults (16 years and over) was 70. Of those, 59 (84%) were employed in 2004, with the average person working 43 weeks. The estimated total number of different jobs in the community was 98 (many adults had more than one job, and the average number of jobs

per person was 1.7). Seasonal work was common for many adults; the average number of months employed was 9, and 67% of adults were employed year-round.

Similar statistics are reported on the household level in Table 1-12. Of all the households in Port Alsworth, 91% had members who were employed in 2004. The average number of jobs per household was 3.6, and the average number of weeks employed per household was 91 (with more than one household member working, this figure can exceed the number of weeks in the year).

Over 90% of the jobs held by Port Alsworth residents were located in the community of Port Alsworth (Table 1-13). Port Alsworth residents' jobs fell into one of several different standard classes, including federal, state, and local governments, construction, transportation, retail, and services (Table 5-2). Most jobs in Port Alsworth were classified as being part of a "service" industry (35%), including those with the airlines and guided hunting and fishing services based in Port Alsworth.

LEVELS OF PARTICIPATION IN THE HARVEST AND USE OF WILD RESOURCES

Every household in Port Alsworth was successful in harvesting at least one resource in 2004 (Table 5-3). The survey instrument also collected participation information for each member of each household, including young children. According to survey results, 90% of the population in Port Alsworth attempted to harvest at least one resource in 2004 (Table 1-15). Over 76% of the population fished, and 75% helped pick or process berries. About 29% of the population hunted large game animals or birds, and 19% were involved in trapping for small game and furbearers. The survey also collected information on the participation in processing wild foods or furs, and that information is presented in Table 1-15, as well.

These data show the population of Port Alsworth is active in its subsistence pursuits, involving young people as well as adults. A number of people remarked that they enjoy spending time with their children, looking for fish or other resources, and just being out on the land. Others said they looked forward to the time when their children would be old enough to participate in subsistence activities. They hoped the resources would be abundant enough to support enough success to encourage their young people to continue to hunt, fish, and gather wild foods. The study findings show that at Port Alsworth, the knowledge used in subsistence activities is being shared with those who, in the future, might choose to continue to live a subsistence lifestyle.

RESOURCE HARVEST AND USE PATTERNS

Species Used and Seasonal Round

The 2004 wild food harvest in Port Alsworth included many different kinds of resources. In total, Port Alsworth residents used an estimated 49 different wild food resources in 2004 (Table 5-3). The average household used about 11 different kinds of resources; the greatest number of resources used by a single household was 29, while the least was one (Table 1-16). No household reported not using wild food resources in 2004. Some of the most commonly used resources (measured by the number of households using them) included sockeye salmon, berries,

caribou, moose, northern pike, and lake trout. Several resources were used by only one household, including smelt (not available locally), porcupine, and tanner crab (not available locally).

The seasonal round of harvest in Port Alsworth is similar to other communities in the Bristol Bay region of Alaska. The sockeye salmon that come up the Kvichak River from Bristol Bay, through Iliamna Lake, up the Newhalen River and north into Lake Clark usually arrive in the vicinity of Port Alsworth in early July. Residents plan on their timely arrival, and in 2004 the run was on time, with more fish than in the 2003 or 2002 seasons (see discussion below). People mostly use set gillnets to harvest the sockeye during a two-to-three-week period extending from early to late July. Sockeye are the only salmon widely harvested in Port Alsworth, as other species do not normally inhabit the area (Table 5-3). Some of the communities surveyed in this project use sockeye salmon both in the early, or "bright" stage, as well as in the later stage of spawning, known as "red fish," "fall fish," or "spawnouts." The residents of Port Alsworth, however, almost exclusively target the bright sockeye (Table 5-3). Nondalton residents frequently travel to the Kijik site on Lake Clark, across the lake from Port Alsworth, to harvest their fall fish (see Chapter 6).

Other mid-summer activities include fishing for trout, pike, and Dolly Varden, and harvesting green plants. Late summer sees Port Alsworth residents picking berries, and continuing to fish for trout and pike in the open waters of Lake Clark. In fall, Port Alsworth hunters look for moose in the river valleys leading into Lake Clark. Caribou hunting season begins later, in early winter, and in 2004 pilots were flying far to the north and west to hunt caribou. A major concern in recent years has been the movement of the Mulchatna Caribou Herd out of the Lake Clark area into the Nushagak River drainage to the northwest. (See below for more discussion.)

Winter activities had been limited in the years leading up to this study because unusually temperate weather has made for inadequate snow cover on land and prevented Lake Clark from freezing. Trapping and caribou hunting activities are both largely dependent on cold weather; Port Alsworth residents like to cross the lake ice on snowmachines or to track animals in the snow on land. Several residents said that their harvest of caribou and small game animals was less than normal because of the lack of good winter conditions in 2004-2005.

The winter months at the beginning of the study period, January and February 2005, saw some ice forming along the lakeshores. The ice was firm enough to walk on, and Port Alsworth residents headed out to fish through the ice during these coldest winter months.

Harvest Quantities

Table 5-3 lists the resources harvested and used by Port Alsworth households in 2004, with estimated quantities based on the results of the harvest survey. This table organizes harvest data in general resource categories, subcategories, and specific individual resources, listing them in vertical, hierarchical order, with members of a resource category shown indented below the general category name. For example, "Humpback Whitefish" is a subset of "Whitefish," which is a subset of Non-Salmon Fish, and so on up the list. The data on the "Whitefish" row

summarize the data for all the resources subsumed below it, including "Humpback Whitefish," "Cisco," and "Round Whitefish."

In total, the estimated 2004 community harvest of wild resources totaled 14,489 pounds of usable food weight. With 30 households living in the community full-time, the per-household average was 483 pounds; dividing the total harvest by the estimated population of 109 generated an estimated per capita harvest of 133 pounds (Table 5-3). Compared to other communities in this study, Port Alsworth had the lowest estimated harvest, in total and per capita (Table 1-16). The Division of Subsistence conducted harvest research in Port Alsworth in 1983 and estimated the per capita harvest at 361 pounds (Table 1-18). The 2004 per capita harvest of 133 pounds represents a significant decline since the 1983 study, and some of the factors that contributed to this decrease are discussed in later sections of this chapter.

The composition of the harvest in Port Alsworth, broken into major resource categories, is illustrated in Figure 5-2. Salmon made up the largest portion of the harvest for home use in 2004: 67% of the total harvest (an estimated 89 pounds usable meat per capita). Land mammals ranked second (19%, 25 pounds per capita) and nonsalmon fish ranked third (9%, 12 pounds per capita). Wild plants provided 3% of the total (4 pounds per person), birds and eggs totaled 1% (2 pounds), and shellfish less than 1% (1 pound). There were no marine mammal harvests reported by Port Alsworth residents in 2004

Table 5-4 lists the 10 specific resources harvested in the largest quantities during the study year and the resources ranked in order of the percentage of households that reported using them. In terms of weight contribution and household participation, sockeye salmon was the most prominent subsistence resource. Berries were harvested by a large number of households (86%), second only to sockeye, but the overall contribution of berry resources in pounds ranked well below that of other resources, such as Dall sheep, which had a much lower rate of household use (36%).

Both measures are valuable tools for assessing the relative importance of any subsistence resource, "usable weight" showing the resource's caloric contribution, and "household participation" showing the resource's value as a social or traditional practice, a democratizing activity that even the elderly and the young can participate in, or as a special, non-staple luxury food that many in the community enjoy. Some of these characteristics will be discussed in sections that follow this one.

Harvest Areas[1]

Port Alsworth residents looked for wild food resources close to home, in Lake Clark, on the lakeshores, in the mountains near the community on the south side of the lake, and in the drainages of the Chulitna and Kijik rivers on the north side of Lake Clark. Port Alsworth residents harvested salmon on the lakeshore immediately in front of the village (Fig. 5-3). Wild plants, including berries, various green plants, and firewood, were harvested close to the community, along the roads and trails leading out of the village, as well as on lakeshores

[1] [1] For the complete set of maps of Port Alsworth residents' hunting, fishing, and gathering areas in 2004, see the CD in pocket inside the back cover of this report.

somewhat removed from the community. Non-salmon finfish, like lake trout and rainbow trout, whitefish, northern pike, and grayling, were taken in Lake Clark, and Dolly Varden were taken in Lake Kontrashibuna just south of Port Alsworth. Parts of Lake Clark froze in the winter of 2003-2004, and ice fishing took place all around the lake and in Hardenbough Bay close to the community.

Most Port Alsworth residents sought resources in locations that were close to home in 2004. The exception was caribou; residents who are pilots flew far to the west looking for the Mulchatna Herd. These caribou used to come close to Port Alsworth, along the shores of Lake Clark and north near Snipe Lake and in the valley of the Chilikodrotna River. Figure 5-4 shows the wide area in which Port Alsworth hunters searched for caribou in 2004, mostly without success.

SHARING AND RECEIVING WILD RESOURCES

Households were asked, in addition to what they harvested in 2004, if they received wild food resources from other households, and whether or not they gave any away. The sharing of wild foods is a common feature of a community's subsistence economy, one that reinforces the social and traditional elements of the enterprise. When asked if they shared part of the resources they had harvested, some Port Alsworth respondents laughed and said, "Of course," or, "We always share," or "That's the way we do it," implying that not doing so would be rude, uncaring, or even unethical. Indeed, sharing is one part of the ethic of subsistence, the principles guiding and helping to sustain households and community members.

Table 5-3 shows that about 91% of households in Port Alsworth reported receiving at least one resource in 2004, and that about 73% gave away at least some wild food to another household. This helps explain the difference between the percent of households that "used" a resource and the percent that "harvested" a resource, insofar as some households do not harvest for themselves but are able to use a resource because it is given to them. In some cases, no one might have harvested a particular resource in a community, but some report using it, which usually indicates that someone in the community received some of that resource from someone outside the community.

Sharing is not uniform among all resources. It occurs differently in different situations. Variations in sharing behaviors can sometimes be related to the quantity of a resource harvest, the number of households harvesting a particular resource, as well as the different kinds of social or family connections within the community. Residents suggested several factors that can affect harvests in a negative way, such as: poor returns of salmon, problems with gear or transportation, and personal matters. These might also reduce the distribution of those resources. But in certain situations, traditions of sharing or family obligations might cause sharing to continue, only in smaller transaction amounts owing to decreased harvest amounts. A community's subsistence pattern may reflect a flexible system of distribution in which households attempt to balance their own needs with the needs of others in the community.

Of the 32% of households in Port Alsworth that attempted to harvest caribou, only 9% were successful in 2004. Eighty-six percent of households reported receiving caribou, however (Table 5-3), and 23% gave away caribou. The number of households giving caribou was greater than

the number actually harvesting caribou, demonstrating that people who received caribou in turn passed some of that meat to other households. In the end, 86% of households reported using caribou. The data show that the caribou meat was distributed once, and probably two or more times; consequently, nearly every household in the community benefited from the special expertise, resourcefulness, and luck of a few households.

Sharing of caribou meat has no doubt been impacted by decreased hunter success in recent years. The issues surrounding the caribou harvest are complex, and will be discussed in some detail in following sections of this chapter, and in other chapters in this report.

Moose were also harvested by a very few households (5%), and was distributed to others, but unlike caribou, was probably not passed on a second or third time (Table 5-3). Nine percent of households gave moose meat away, about double the amount that harvested moose, compared to the 23% of households that gave away caribou. Moose have also been scarce in the Lake Clark area (see discussion below), and the amounts given away by the harvesting households must have been small, thus reducing the ability of receiving families to pass some of it on to someone else. (This is inferred from the data, however, because during the survey respondents were not asked for the quantity of resources given or received.)

Sockeye salmon were shared in a different way than were caribou or moose. A large percentage of the community harvested salmon in 2004, and comments indicated that the run was more abundant than other recent years. Most people said their salmon harvest was adequate. Over 81% of households harvested sockeye salmon, with the average household harvesting 318 pounds of sockeye (Table 5-3). Salmon were received by 46% of households, and given away by 36%. With households having fairly even access to salmon, by owning a gill net or borrowing a net owned by someone else, sharing was not emphasized as prominently as it was for caribou. Table 5-3 reports the percentages of households that used, harvested, received, and gave away other resources.

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

Large Land Mammals

General Use Patterns

The large land mammal species harvested by Port Alsworth households in 2004 included caribou, Dall sheep, moose, and black bear, and the average harvest of animals in this resource category totaled 25 pounds usable weight per person. This quantity of game meat makes the large land mammal category the second highest contributor to overall Port Alsworth harvest after salmon. Almost all of the households interviewed (91%) used at least one type of large land mammal resource in 2004. About 64% of households attempted to harvest, and slightly fewer (55%) successfully harvested. Meat was distributed through households' participation in sharing, discussed above, such that almost every household was able to use these big game resources; 91% reported receiving meat from others, and every harvesting household (55%), gave some away (Table 5-3). One point to consider when looking at the "receiving" data is that some of the meat received by Port Alsworth households came from nonlocal hunters who often

drop off moose or caribou meat for distribution within the community; in addition to the 55% of Port Alsworth households that gave away meat, there are an uncounted number of non-local hunters who also contributed to the community's use of these resources.

Caribou

The residents of Port Alsworth for decades have relied heavily on caribou as a subsistence food. In 2004, an estimated 9% of Port Alsworth households harvested caribou. Harvest estimates place the harvest of individual caribou at 7 animals, for a total estimated community harvest of 1,022 pounds of meat (Table 5-3). Based on these figures, a total of 9 pounds were harvested per person, more than any other species of large land mammal, and second only to sockeye salmon in the overall subsistence species harvested.

Despite its prominent position in the 2004 harvest, the success rate for hunting households was poor, as discussed above. The overall lack of caribou in Port Alsworth freezers is due primarily to the diminished presence of the Mulchatna Caribou Herd in the Lake Clark/Iliamna Lake region, which has affected other communities in the area as well (see other chapters in this report). The 2004 per capita estimate for Port Alsworth caribou harvest (9 pounds) represents a 36% decrease from the Division of Subsistence 1983 estimate, when the per capita caribou harvest was 13 pounds. Other information and comments provided by Port Alsworth residents during this survey strongly confirmed this harvest trend, indicating most of the decrease occurred between 1999 and 2004. There are several reasons offered to explain the decreased local access to Mulchatna Herd caribou, and these will be discussed in the next section of this chapter (as well as in other chapters).

When asked if their use and harvest of large land mammals had changed between 1999 and 2004, almost half the respondents (46%; Table 5-7) said that they were using less, and caribou was mentioned most often as the missing resource in this estimation. (The remaining 54% of respondents said they were using the same amount of large land mammals as in other recent years.)

There are different facets to the relationship between local caribou hunters and those hunters from outside the area; each group affects the other in both positive and negative ways. The caribou near Lake Clark are not only targeted by local hunters for subsistence, but also by non-local hunters who support the fly-in hunting and guiding industry that operates out of Port Alsworth. Respondents in this study noted the pressure put on the local caribou population by these guided and fly-in hunters, pressure that reduces the chances for hunting success by local hunters. Some Port Alsworth residents see "trophy hunting" by outsiders as having a significant negative impact on their household's access to caribou.

But some of the resident pilots and guides earn their living from the industry that brings non-local hunters into the Lake Clark area (as well as fly-in fishing charters). Because of the money brought into the community by these clients, Port Alsworth residents are able to fly their own planes to hunting locations north and west of Lake Clark to hunt caribou and moose for use in their own homes and in the homes of their neighbors.

Also, many people in the survey said they benefit from the way hunters from outside the area often donate the meat from their successful outings. Some said they can depend on such donations, and that there is no need to hunt for themselves. High shipping costs encourage these visiting hunters to leave the meat in the village. The guides or pilots then distribute the meat to the residents of Port Alsworth, who have come to depend on the donated meat. In 2004, 86% of households received caribou from others, and some of that came from nonlocal sport hunters. The estimated pounds of caribou harvest for Port Alsworth do not reflect the meat received from sport hunters for 2004, so it should be understood that the per capita estimate of 9 pounds is a minimum amount used, allowing for some amount of additional pounds of the donated meat.

However, in 2004, with fewer caribou in the Lake Clark area, the sport hunters flying out of Port Alsworth were bringing fewer animals back through the community on their way to Anchorage. Households reported that meat available for distribution was much decreased in 2004, and those that had depended on such donations in the past found that they had little caribou or moose meat in their freezer that year. (See discussion below on "Local Observations of Resource Populations and Trends.")

Other Large Land Mammals

Although 36% of households attempted to hunt moose in 2004, only one household surveyed (5% of the total) was successful, and moose hunting had the worst success rate of any hunting done for big game by Port Alsworth residents (Table 5-3). Despite this lack of success, nearly half the households in Port Alsworth received moose from someone, and over half the households in Port Alsworth used moose. Considering that only one household actually harvested moose, it is safe to assume that some of the shared moose meat came from nonlocal sport hunters who left the meat for distribution to the community, and perhaps also from friends or extended family members living outside of Port Alsworth. The study generated no estimates of the amounts received by households from others, so therefore, like caribou, the estimated 7 pounds of moose meat per person in Port Alsworth should be viewed as a minimum amount of what was actually used.

Port Alsworth households harvested an estimated 7 Dall sheep in 2004, approximately 7 per capita pounds of sheep meat (Table 5-3). . More households harvested Dall sheep than any other species of large land mammal: 23% had successful sheep hunts in 2004, with 27% attempting. Some survey respondents said that they were shifting their attention away from moose and caribou because of the probable greater success in hunting sheep. The sheep hunting activity documented for Port Alsworth residents was conducted under the federal subsistence regulations, allowing residents of the zone in and around Lake Clark National Park and Preserve to hunt in the park lands.

Black bear was harvested by only one surveyed household (5%), and the resource was used by 27 % as a result of sharing. The per capita harvest of black bear was less than one pound. Respondents did not talk about donated black bear meat, but it is possible that some was received from nonlocal hunters.

Brown bear was used by 5% of households, but no one attempted a subsistence hunt for brown bear in 2004. The "use" actually documents the fact that one brown bear was shot at a remote camp "in defense of life and property." That bear was confiscated by the authorities, and nothing appears in the harvest table under brown bear.

Marine Mammals

No one in Port Alsworth harvested marine mammals in 2004, nor did anyone receive or use meat, blubber or oil products from marine mammals (Table 5-3). Previous research done in the community has also shown no harvests of marine mammals, and survey respondents' comments indicated that, even if someone offered them some, they have never eaten seal oil or seal meat and would probably decline the offer.

Salmon

As measured in pounds usable weight, salmon provided the largest portion of the estimated wild resource harvest in Port Alsworth in the study year, with an estimated per capita harvest of 89 pounds (Table 5-3). Every Port Alsworth household reported using salmon during the study year, and 82% reported harvesting salmon. The total harvest of salmon in 2004 was 9,712 pounds. Sockeye salmon composed the overwhelming majority of the salmon harvest, with a per capita estimated harvest of 88 pounds, with 100% of households reporting using and 82% of households harvesting sockeye. Coho (silver) and Chinook (king) salmon were harvested in very small amounts, with less than one pound per capita in total harvest. Despite its small overall contribution, a significant percentage of Port Alsworth households received and used king salmon: 41% used it and 36% received it in 2004, even though only 5% of households reported harvesting any king salmon.

As shown in Table 5-5, subsistence set gillnet was the method used for most of the Port Alsworth salmon harvest in 2004. In pounds usable weight, set nets contributed 86.5% of the total salmon harvest, removal from commercial fishing nets contributed 12%, and rod and reel gear accounted for only 2% (206 pounds). The small king salmon harvest was limited specifically to the subsistence set net method, and the cohos were all taken using rod and reel. The sockeye harvest was carried out using methods very similar to those for all salmon combined: 87% subsistence set net, 12% commercial catch removal, and 1% from rod and reel.

The study findings show that sockeye are the most important salmon species to Port Alsworth residents. The sockeye are bound for Kijik Lake, via the Kijik River, which enters Lake Clark at a point directly across the lake from the community of Port Alsworth. A majority of residents said that their harvest and use of salmon in 2004 was about the same as it had been for the previous five years: 64% said it was on par, while 23% said their harvest and use had decreased during that time, and 14% said it had increased (Table 5-7). Several respondents said that the sockeye runs had been low in the years leading up to this study, and the answers to the "less, same, or more" questions might indicate where the respondent happened to be on the up-and-down cycle of years in the recent past. For the most part, residents said that the run in 2004 was fairly strong. More discussion of the community's sockeye harvest is included in the Discussion section below.

Other Fish

As shown in the Port Alsworth harvest table (Table 5-3), fish other than salmon was the third-ranked resource category, measured in pounds usable weight, behind salmon and large land mammals in 2004. These "non-salmon" finfish included Dolly Varden, whitefish, northern pike, and halibut; the total contribution of the category was about 12 pounds per capita. Most households used at least one kind of non-salmon fish in 2004 (73% reported using non-salmon fish and 64% said they harvested at least one species in this category). While salmon was the most-used fish resource, the non-salmon finfish were still very important to most Port Alsworth households in 2004.

The species in this category harvested in greatest quantity was northern pike; the average household harvested about 4 pounds of pike in 2004. Pike were mainly harvested by rod and reel methods in the open water of Lake Clark or its feeder streams (Table 5-6). Approximately half of the households in Port Alsworth harvested pike (46%), and the harvest was shared so that 55% of households were able to use that resource.

Other non-salmon species harvested by Port Alsworth residents in 2004 included (with their per capita harvest estimates): humpback whitefish (2 pounds); lake trout (2 pounds); halibut (1 pound); burbot (1 pound); and Dolly Varden (1 pound). Rod and reel was the most commonly used method for harvesting these species. Portions of the lake trout, humpback whitefish, and burbot harvests were obtained through ice fishing (Table 5-6). Ice fishing is designated a subsistence fishery in state fishing regulations for the Bristol Bay Area, rather than the "sport" designation given to rod and reel fishing in open water. Ice fishing was practiced by 32% of the households in Port Alsworth in 2004, and rod and reel fishing was practiced by 55% (see Appendix D). Most of the halibut Port Alsworth residents caught came from the fisheries near Homer or Seward on the Kenai Peninsula. Overall, rod and reel accounted for 70% of the nonsalmon fish harvest by Port Alsworth residents in 2004, ice fishing produced 14%, and other subsistence gear such as set nets and seines produced the rest (Table 5-6).

Marine Invertebrates

Marine invertebrates, or shellfish, did not constitute a significant part of the wild food harvest by Port Alsworth households in 2004. The average harvest of only one pound per person was comprised almost entirely of razor clams (1 pound). A very small amount of butter clams (less than one pound) made up the difference (Table 5-3). Despite the small amount harvested, the percentage of households participating in the harvest and use of marine invertebrates was not insignificant. Over 30% harvested razor clams or butter clams, and half of all the households in Port Alsworth reported using shellfish. Some shellfish species were received from outside the community (e.g. king crab was received and used by 9% of households, tanner crab by 5%). The relationship between the community's participation in harvest, use, giving and receiving of razor clams, in particular, illustrates how sharing resources between households is prevalent even when the total amount harvested is small.

Small Land Mammals

This category of resources includes species normally caught by trapping, such as wolf, beaver, or marten, or small game hunted with snares or rifles, such as rabbits (hare) or squirrels. Fifty-five percent of Port Alsworth households participated in small game hunting/trapping, and 36% of households successfully harvested animals in this category. The per capita harvest (based on the combined edible weight of the resources) was one pound, comprised of the meat weight from beaver, snowshoe hare, and porcupine harvests (Table 5-3).

Birds and Eggs

Ptarmigan were the most-harvested species of bird by Port Alsworth residents in 2004, with one pound harvested per capita. Canada geese (less than one pound per capita) and spruce grouse (less than one pound per capita) were also harvested. Other birds used included duck species (mallard, merganser, Northern pintail, widgeon, and scaup), as well as white-front geese. Thirty-six percent of Port Alsworth households harvested birds, and the resources were shared by a few households so that 46% of households used birds in 2004. No Port Alsworth households attempted to harvest or used bird eggs in 2004 (Table 5-3).

Wild Plant Resources

Gathering berries was a common subsistence practice among Port Alsworth households in 2004, with 86% of the households participating. Some additional households collected wild green plants, such as cow parsnip and other wild greens, and 59% of households harvested firewood. The total amount of edible vegetable matter (without wood) harvested per capita equaled 4 pounds, almost all of which was berries (Table 5-3).

COMPARING HARVESTS AND USES IN 2004 WITH PREVIOUS YEARS

Survey respondents in Port Alsworth provided assessments of how their harvests and uses of wild resources in 2004 compared with other recent years (Table 5-7, Fig. 5-5). For each resource category, the majority of respondents said that harvests and uses were about the same. About 45 percent said their uses of large land mammals and wild plants were lower in 2004, as did 33% concerning birds and eggs, 27% regarding small game, and 23% for salmon. For wild resources in total, half of the Port Alsworth respondents (50%) said that harvests and uses were down in 2004 compared to other recent years, 46% said overall uses were about the same, and 4% said uses had gone up.

Table 5-8 lists the reasons that residents of Port Alsworth gave for whether they harvested less or more of each resource category in 2004 than in the recent past. This was an open-ended question. Project staff grouped responses into various categories such as competition for resources, regulations either hindering or helping residents harvest resources, sharing of harvests, effects of weather on animals and subsistence activities, changes in the animal populations themselves, personal reasons such as work and health, and other outside effects on residents' opportunities to engage in subsistence activities. In Port Alsworth, personal reasons were the major explanation respondents gave for not participating in subsistence uses as much as they had

in the recent past. Of those households that had lower uses of at least one category of wild foods in 2004, 77% cited personal reasons as the cause (Fig. 5-6). Another key explanation for lower uses was change in resource populations (53% of all households with at least one lower resource use). Another factor was poor or unusual weather, especially evident in large land mammal hunting, salmon fishing, and furbearer trapping. Receiving fewer resources through less sharing was another frequently cited reason (29%). (See further discussion below.)

The harvest in 2004 was significantly less than that estimated for Port Alsworth in 1983 (Table 5-9, Table 5-10). The total per capita harvest estimate in the earlier study (361 pounds) was composed of resource category harvests all greater than those recorded for 2004, with the exception of non-salmon finfish, which had a slightly higher harvest in 2004. Figure 5-7 shows how each resource category compared over these two study years. It also depicts estimates of large land mammal harvests for 2001 and nonsalmon fish for 2003.

The decrease in salmon harvest, from 240 pounds in 1983 to 89 pounds in 2004, constituted the greatest decrease in total pounds, representing a decline of 151 pounds of salmon per person. Conversely, the percentage of households harvesting salmon increased from 61% in 1983, to 81% in 2004. During the 2004 study, respondents described the low numbers of salmon that returned to Lake Clark in recent years, with reference to the much higher numbers available for harvest in the early 1980s. The decrease in salmon harvest might be due, at least in part, to diminished salmon runs. The increased number of households harvesting salmon in 2004 also indicates that the efforts to harvest have increased, possibly in response to decreasing abundance.

Compared to the 1983 per capita harvest, the 2004 harvest represents a 63% decrease in salmon. Yet, this is less than the 75% decrease in the pounds of land mammal meat harvested, where the per capita harvest decreased from 95 pounds in1983, to 23 pounds in 2004 (Table 5-9). In relative measures, the decrease in the harvest of moose and caribou is more drastic than the decrease in salmon harvest.

According to Port Alsworth residents, the movements of the Mulchatna Caribou Herd to the northwest, the problem of overhunting, and increased predation have all affected their hunting success in recent years. With fewer households harvesting these animals, the per capita harvest has decreased. But when considering how much meat is available to the average household, another factor must be considered -- receiving meat donated by nonlocal sport hunters. Since the 1990s, Port Alsworth residents have enjoyed this distribution of meat without needing to harvest for themselves. With the supplemental meat, local harvests can decrease a certain amount and sustain a level of meat used in the home. The decrease in harvested moose and caribou in 2004 can be seen as an adjustment to the decreased need to harvest for one's own household, as donated meat becomes more expected. Also, the amount of meat available to the average household does not necessarily decrease as much as the amount harvested. Thus, the loss of 75% of the harvest in 2004 may not mean that Port Alsworth households are doing without 75% of their yearly moose and caribou. Much of this difference might be made up through gifts from nonlocal hunters.

LOCAL OBSERVATIONS OF RESOURCE POPULATIONS AND TRENDS

After several years of weak sockeye salmon runs in Lake Clark in the vicinity of Port Alsworth, survey respondents said that the 2004 run was fairly strong. Some residents said that the 2004 run seemed to be a high point on a normal cycle of high and low return years. But many residents said that the 2004 run represented a rebound after a 3 or 4 year period during which the strength of the run seemed to be at least half of what it was as late as 1995. However, one respondent shared his perspective that the new "norm" was still significantly less than the amount of salmon running to Lake Clark as late as the mid-1980s. During the meeting at which Port Alsworth residents reviewed the findings of this report, people said that the 2005 salmon run was significantly weaker than the 2004 run.

Several survey respondents said that during the weak run years of 2002 and 2003, they had purposefully restricted their harvest as a conservation measure. Households that normally take around 250 fish were taking only 125, hoping that allowing more fish to reach Kijik to spawn would result in stronger future runs. One household said they did not fish at all in 2003, for the same reasons. In-season observations during late-June and early-July of 2004 showed that the run was going to be strong, so the self-imposed restrictions were lifted, and harvests resumed their normal level (upwards of 200 salmon) for these households. Still, some of the residents making these observations said that the run strength was not nearly that of the early 1990s.

The sportfish guiding businesses in Port Alsworth have started to advocate for catch-and-release of trout, char, and pike in the Lake Clark area. Some residents noted that the populations of those species have diminished significantly since 1990, and that catch-and-release was necessary for conservation, especially when used for spawning females. The implications were not clearly stated; are local fishers taking too many spawning females when they should only be harvesting males? Do these advocates mean that local fishers are fishing these species for sport—not for subsistence or home use—and should begin releasing the fish instead of keeping them? Are these fish kept as incidental by-catch while targeting other subsistence species?

One of the most common environmental observations in Port Alsworth is the increase in the predator species populations, and the corresponding decrease in the moose and caribou populations. Residents say that predators, brown bears in particular, have impacted the local moose populations, tipping the scales over the past 25-30 years, or even longer. One long-time resident said that the brown bear population has increased 20 times over the past 40 years, going from 2 bears inhabiting the local area up to 40. Other respondents had only noticed the trend starting in the 1980s. A Port Alsworth pilot said that he counted 24 brown bears in Lake Clark Pass as he flew over in October of 2004. Many respondents said these bears are preying on moose calves. Local residents are familiar with the moose that live near the community, and keep track of the number and health of their calves. Another person suggested that another possible change stemming from the recent downturn of salmon runs, is that the bears may have shifted their focus from spawning salmon (relatively unavailable in recent years), to moose calves.

Wolf populations have also increased over the years, according to respondents in the Lake Clark area. One respondent has kept tabs on the wolf population, noting that in the early 1990s there

were two wolf packs in the area, one with 7 animals and the other with 11. Now, he said, there are three packs, with populations of 26, 18, and 30 animals. These animals are taking a large toll on the moose populations, as well as whatever caribou are still in the area. Predator control is something that a majority of Port Alsworth residents support, although more than one respondent said that these fluctuations are cyclical and best left to run their course.

Port Alsworth residents, particularly those who fly small aircraft for air taxis or sport hunting-fishing guiding services, described the movement of the Mulchatna Caribou Herd away from the Lake Clark region beginning around the year 2000. Some claim to have seen the change starting as early as 1995, the beginning of a peak of hunting activity where nonlocal sport hunters were flying into the area to harvest the biggest bull caribou. A common impression is that over-hunting by these sport hunters hit the caribou population particularly hard, and coincided with a general movement of the animals to the northwest, out of the Mulchatna River drainage and into the Nushagak River drainage.

Changes in the winter temperatures also affected the behavior of caribou. Before recent years, Lake Clark and the Newhalen River froze regularly in the winter and caribou moved north along the lakeshore south of Port Alsworth, crossing Lake Clark and heading into the hills on the north shore of the lake. Years without solid ice on the lake have impeded caribou movement to the area.

Port Alsworth residents noted the warmer winters and hotter, drier summers, and the effects these are having on the environment in their area. Some of the changes include insect problems in summer, the decreased ability of hunters and trappers to travel on snow and ice during winter, and changes in the vegetation that caribou eat. People related reports from the upper Kuskokwim and Nushagak river areas that the lichen that caribou feed on are twice and three-times as thick there as they are in the hills north of Lake Clark. It did not emerge from these interviews whether, in the view of local respondents, the thickness of Lake Clark area lichen has changed in recent years from overgrazing by the herd, or as a result of the changing weather.

One pilot gave very detailed descriptions of the locations, movements, and populations of Mulchatna Herd caribou. He said that caribou used to be abundant around the Caribou Lakes, in the Chilikodrotna River basin, but that overhunting thinned the population of bulls in that area in the mid-1990s. Portions of the Mulchatna Herd still come into that area, funneling through the Frying Pan Lake area north of Iliamna Lake on their way north toward Twin and Turquoise lakes, but they were very thinly dispersed in those areas in 2004. In the mid-1990s caribou calved near Twin Lake and Turquoise Lake; in 2004 they had moved to areas further north and west to calf where the lichen was thicker and more abundant.

Guided and fly-in sport hunters are also having difficulty finding and harvesting caribou,. In the past, these nonlocal sport hunters regularly donated portions of the meat to the residents of Port Alsworth rather than pay for shipping the meat back home. But in 2004, Port Alsworth residents reported shortages of caribou and moose meat donated by successful trophy hunters. Some respondents saw the decline in trophy hunter success as the cause of this shortage of donated meat. Another factor, related to the relocation of caribou to the northwest, was that many sport hunters are being flown by Port Alsworth air services to locations farther from the village; when

hunters and animals have to be transported back to Port Alsworth, the meat is now being donated to villages closer to the hunting location, such as Stony River or Lime Village. Reducing the weight of cargo for the return flight to Port Alsworth decreases fuel consumption, and the result is less meat available for redistribution in that community.

The data review meeting in November 2005 included discussion of the fall caribou and moose harvests. Participants in the meeting said that harvests were virtually nil, and that no meat was left behind by nonlocal sport hunters that season.

CONCLUSIONS

Resource Harvest and Use

This project documented subsistence harvest patterns for Port Alsworth in 2004, 21 years after the last survey (the only other complete baseline for this community). Compared to the 1983 findings, the 2004 harvest in Port Alsworth was down significantly, from 361 pounds to 133 pounds per person.

The survey asked respondents whether their harvest and use of different resources had changed over the five years preceding 2004. The results are shown in Table 5-7 where all major resource categories had a majority of respondents indicate their harvest and use was " the same" as 5 years before. (Marine mammals are not used by Port Alsworth households, making their zero harvest in 2004 " the same" as their harvest in 1999.) A few households said their use and harvest of salmon had gone up since 1999, and some did just as well for marine invertebrates, mostly because of logistical reasons.

A significant number of households said their use of large land mammals, especially moose and caribou, decreased over those 5 years, with the main reason being that caribou had relocated away from the Lake Clark region, and that moose populations around the lake have been reduced by increased predation (see discussion above). Although the survey only asked about the 5 years leading up to 2004, a longer-term picture of changing harvest patterns can be seen by looking at the past survey data. Figure 5-8 shows the overall decrease in harvests between 1983 and 2004, in particular the 75% decrease in large land mammal harvests. During that time the moose harvest went down from 80 pounds to 7 pounds, and the caribou harvest was down from 13 pounds to 9 pounds (Table 5-9; Scott et. al 2001).

As mentioned above, the donations of moose and caribou meat by nonlocal sport hunters have supplemented Port Alsworth meat consumption in recent years. During the November 2005 data review meeting, community members said that no meat at all had been donated during the fall 2005 hunting season, and that some households would go without game meat all year as a result.

Compared to other recent years since 1999, half of Port Alsworth respondents said that their overall harvest and use was down in 2004 (Table 5-9). The main reason given was the sharp decline in caribou and moose abundance and harvests.

The Proposed Pebble Project

Although there were no specific questions in the survey about the Pebble Project, 41% of the Port Alsworth respondents brought up in the comments section of the survey their opposition to mine development. Port Alsworth residents said that they, and others who live in the vicinity of the proposed mine site, had not been kept adequately informed about the environmental risks associated with development of the mine, and many questions were left unanswered, respondents felt. People were both afraid and angry, and expressed the view that government and industry are moving forward with plans without adequate consultation with local area residents. During the November 2005 data review meeting, community members restated their desire that the mine not be permitted, with possible contamination of resources being their primary concern. Most of these concerns centered on the possibility (in most cases, the perceived probability) of contamination of river and ground water negatively impacting the fish populations in the Kvichak and Nushagak river drainage systems, including Iliamna Lake, which is directly connected to Lake Clark.

In addition to the prospect of contaminated water, people wondered about the possible effects of dust (from new gravel roads), noise (from the mine and from road traffic), and increased human presence (from the mine site, and from road traffic both related and unrelated to the mine). One respondent said that the helicopter traffic around the proposed mine site had already started to divert caribou away from that location, a major route for caribou traveling eastward toward Nondalton, Lake Clark, and Port Alsworth.

These individuals expressed fears for the viability of their subsistence practices, and the well-being of others who depend on wild resources from the area, including commercial fishers, the sport-guiding industry, and subsistence users throughout the watershed. At the heart of their opposition is a concern for the fundamental health of the fish, animals, and the environment itself, which some respondents said is more valuable than any amount of gold.

Opposition to mineral development came from a diverse group of households in Port Alsworth: from those headed by people born and raised in the area to those who had recently arrived; from those working in the sport-guiding and tourist industry, to government employees and the self-employed; from those whose concerns were for the well-being of their own subsistence harvests to those whose main concerns were more aligned with environmental conservation. A few respondents said that the notion of an economic boom for the people of the region was being overstated, especially when weighed against the potential threat to natural resources. One respondent said, “Even if I lived in Colorado, I would oppose this mine. It’s the well-being of the environment and the communities I’m worried about, not just my own self-interest.”

The impassioned arguments against the proposed gold mine are evidence for a continued dependence on and appreciation for subsistence traditions and practices in Port Alsworth. Despite substantial decreases in wild food harvests over the 1980s and 1990s, subsistence foods are still regularly found on Port Alsworth households’ dinner tables. In 2004, individual participation rates were high for fishing, hunting, gathering plants and berries, as well as for processing of wild food resources. Sharing between households is still very common, with over 90% of households receiving at least one resource (Table 5-3). Some respondents said the

community is relying more and more on store-bought food flown in from Anchorage. The cost of that food per capita, relative to the average household income, is the second lowest of any study community (Table 1-14), around 10%. But, despite the availability of non-wild foods, Port Alsworth residents emphasized their continued desire for wild food, as an economic alternative to purchasing food, for taste preference, and for cultural integrity as well.

Figure 5-1. Population Profile, Port Alsworth, 2004

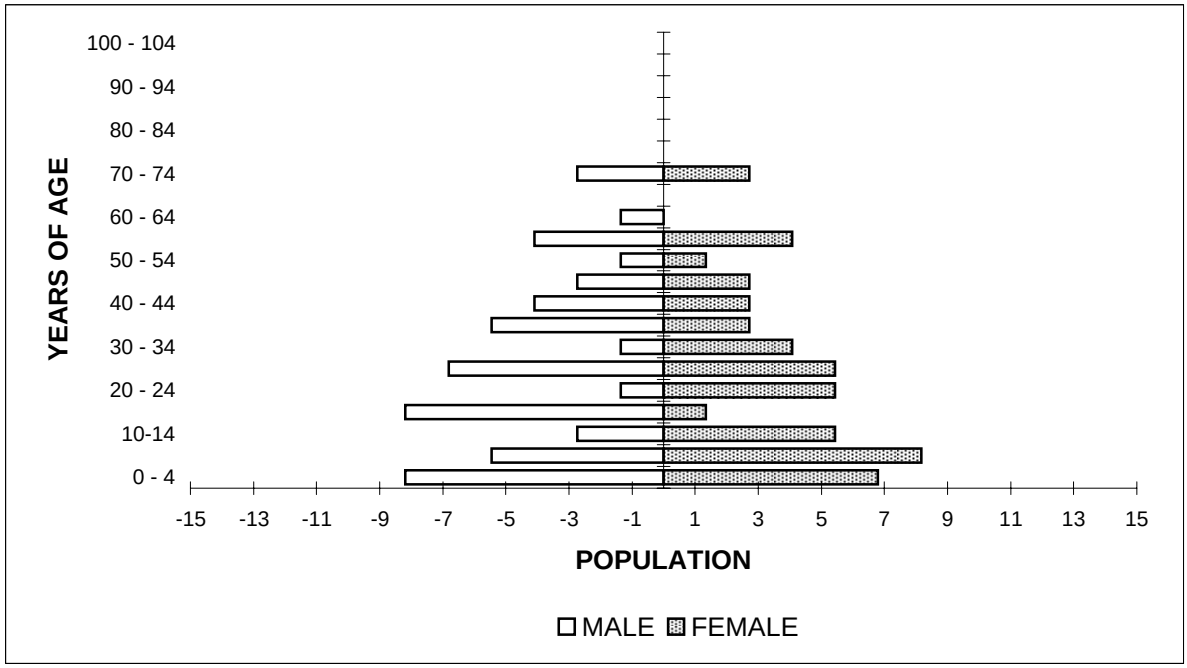


Table 5-1. Population Profile, Port Alsworth, 2004

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	8.2	14.6%	14.6%	6.8	12.8%	12.8%	15.0	13.8%	13.8%
5-9	5.5	9.8%	24.4%	8.2	15.4%	28.2%	13.6	12.5%	26.3%
10-14	2.7	4.9%	29.3%	5.5	10.3%	38.5%	8.2	7.5%	33.8%
15 - 19	8.2	14.6%	43.9%	1.4	2.6%	41.0%	9.5	8.8%	42.5%
20 - 24	1.4	2.4%	46.3%	5.5	10.3%	51.3%	6.8	6.3%	48.8%
25 - 29	6.8	12.2%	58.5%	5.5	10.3%	61.5%	12.3	11.3%	60.0%
30 - 34	1.4	2.4%	61.0%	4.1	7.7%	69.2%	5.5	5.0%	65.0%
35 - 39	5.5	9.8%	70.7%	2.7	5.1%	74.4%	8.2	7.5%	72.5%
40 - 44	4.1	7.3%	78.0%	2.7	5.1%	79.5%	6.8	6.3%	78.8%
45 - 49	2.7	4.9%	82.9%	2.7	5.1%	84.6%	5.5	5.0%	83.8%
50 - 54	1.4	2.4%	85.4%	1.4	2.6%	87.2%	2.7	2.5%	86.3%
55 - 59	4.1	7.3%	92.7%	4.1	7.7%	94.9%	8.2	7.5%	93.8%
60 - 64	1.4	2.4%	95.1%	0.0	0.0%	94.9%	1.4	1.3%	95.0%
65 - 69	0.0	0.0%	95.1%	0.0	0.0%	94.9%	0.0	0.0%	95.0%
70 - 74	2.7	4.9%	100.0%	2.7	5.1%	100.0%	5.5	5.0%	100.0%
75 - 79	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
80 - 84	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
85 - 89	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
90 - 94	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
95 - 99	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
100 - 104	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
Missing	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
TOTAL	55.9	100.0%		53.2	100.0%		109.1	100.0%	

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 5-2. Employment by Industry, Port Alsworth, 2004

	Jobs	Households	Individuals	Percentage of Income
Estimated Total Number*	98.2	27.3	58.6	
Federal Government	15.3%	45.5%	25.6%	27.8%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%
Natural Scientists and Mathematicians	1.4%	4.5%	2.3%	3.4%
Social Scientists, Social Workers, Religious Workers and Lawyers	1.4%	4.5%	2.3%	1.3%
Technologists and Technicians, Except Health	1.4%	4.5%	2.3%	1.1%
Administrative Support Occupations, Including Clerical	2.8%	9.1%	4.7%	0.8%
Service Occupations	2.8%	9.1%	4.7%	8.4%
Construction and Extractive Occupations	1.4%	4.5%	2.3%	3.0%
Transportation and Material Moving Occupations	1.4%	4.5%	2.3%	5.6%
Handlers, Equipment Cleaners, Helpers and Laborers	2.8%	9.1%	4.7%	4.3%
State Government	1.4%	4.5%	2.3%	0.1%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	1.4%	4.5%	2.3%	0.1%
Local & Tribal Governments	16.7%	45.5%	27.9%	3.3%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%
Social Scientists, Social Workers, Religious Workers and Lawyers	0.0%	0.0%	0.0%	0.0%
Teachers, Librarians, and Councelors	2.8%	9.1%	4.7%	0.3%
Health Diagnosing and Treating Practitioners	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Marketing and Sales Occupations	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	0.0%	0.0%	0.0%	0.0%
Service Occupations	13.9%	36.4%	23.3%	3.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Agriculture, Forestry & Fishing	0.0%	0.0%	0.0%	0.0%
Agricultural, Forestry and Fishing Occupations	0.0%	0.0%	0.0%	0.0%
Mining	0.0%	0.0%	0.0%	0.0%
Service Occupations	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Precision Production Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Construction	5.6%	13.6%	9.3%	1.6%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	4.2%	13.6%	7.0%	1.3%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	1.4%	4.5%	2.3%	0.3%
Manufacturing	1.4%	4.5%	2.3%	0.0%
Precision Production Occupations	1.4%	4.5%	2.3%	0.0%
Transportation, Communication & Utilities	18.1%	36.4%	30.2%	25.1%
Executive, Administrative and Managerial	2.8%	9.1%	4.7%	6.8%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	2.8%	9.1%	4.7%	1.5%
Mechanics and Repairers	2.8%	9.1%	4.7%	5.4%

[continued]

Table 5-2. Employment by Industry, Port Alsworth, 2004

	Jobs	Households	Individuals	Percentage of Income
Transportation and Material Moving Occupations	6.9%	22.7%	11.6%	9.8%
Handlers, Equipment Cleaners, Helpers and Laborers	2.8%	4.5%	4.7%	1.6%
Wholesale Trade	2.8%	9.1%	4.7%	2.3%
Mechanics and Repairers	2.8%	9.1%	4.7%	2.3%
Retail Trade	4.2%	9.1%	7.0%	2.6%
Executive, Administrative and Managerial	2.8%	9.1%	4.7%	2.3%
Marketing and Sales Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	1.4%	4.5%	2.3%	0.3%
Services	34.7%	54.5%	46.5%	37.2%
Executive, Administrative and Managerial	5.6%	9.1%	9.3%	14.0%
Social Scientists, Social Workers, Religious Workers and Lawyers	5.6%	9.1%	7.0%	6.3%
Health Diagnosing and Treating Practitioners	0.0%	0.0%	0.0%	0.0%
Health Technologists and Technicians	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	1.4%	4.5%	2.3%	0.0%
Administrative Support Occupations, Including Clerical	0.0%	0.0%	0.0%	0.0%
Service Occupations	11.1%	27.3%	18.6%	9.2%
Agricultural, Forestry and Fishing Occupations	1.4%	4.5%	2.3%	2.8%
Mechanics and Repairers	5.6%	18.2%	9.3%	0.8%
Transportation and Material Moving Occupations	1.4%	4.5%	2.3%	3.7%
Handlers, Equipment Cleaners, Helpers and Laborers	2.8%	9.1%	4.7%	0.4%
Miscellaneous Occupations	0.0%	0.0%	0.0%	0.0%

* Estimated number of households and individuals only include those that were employed during the study period.
SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 5-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Port Alsworth, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*			95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total		Mean HH	Harvest
All Resources	100.0%	100.0%	100.0%	90.9%	72.7%	14,489.2	483.0	132.8				20.2%
Fish	100.0%	95.5%	95.5%	63.6%	59.1%	11,026.1	367.5	101.1				19.5%
Salmon	100.0%	81.8%	81.8%	54.5%	45.5%	9,712.1	323.7	89.0	2,250.0	Ind	75.0	20.2%
Chum Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Coho Salmon	13.6%	4.5%	4.5%	13.6%	9.1%	83.5	2.8	0.8	16.4	Ind	0.5	0.0%
Chinook Salmon	40.9%	4.5%	4.5%	36.4%	18.2%	75.6	2.5	0.7	6.8	Ind	0.2	0.0%
Pink Salmon	4.5%	0.0%	0.0%	4.5%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Sockeye Salmon	100.0%	81.8%	81.8%	45.5%	36.4%	9,553.1	318.4	87.6	2,226.8	Ind	74.2	16.0%
Landlocked Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Spawnouts	4.5%	0.0%	0.0%	4.5%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Spawning Sockeye	4.5%	0.0%	0.0%	4.5%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
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%
Non-Salmon Fish	72.7%	63.6%	63.6%	45.5%	40.9%	1,314.0	43.8	12.0				16.9%
Herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Gal	0.0	0.0%
Herring Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Gal	0.0	0.0%
Herring Sac Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Gal	0.0	0.0%
Herring Spawn on Kelp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Gal	0.0	0.0%
Smelt	4.5%	0.0%	0.0%	4.5%	0.0%	0.0	0.0	0.0	0.0	Gal	0.0	0.0%
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 Cod (gray)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Walleye Pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Lingcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Halibut	50.0%	9.1%	9.1%	40.9%	27.3%	136.4	4.5	1.3	136.4	Lbs	4.5	5.7%
Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Black Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Red Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Unknown Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%
Bullhead Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	Ind	0.0	0.0%

Table 5-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Port Alsworth, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown 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%
Unknown Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Wolffish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	18.2%	18.2%	18.2%	0.0%	9.1%	90.0	3.0	0.8	90.0 Ind	3.0	6.8%
Char	54.5%	54.5%	54.5%	9.1%	22.7%	322.6	10.8	3.0	230.5 Ind	7.7	20.3%
Arctic Char	4.5%	4.5%	4.5%	0.0%	0.0%	11.5	0.4	0.1	8.2 Ind	0.3	0.0%
Dolly Varden	22.7%	22.7%	18.2%	0.0%	4.5%	80.2	2.7	0.7	57.3 Ind	1.9	12.0%
Dolly Varden-saltwater	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	54.5%	54.5%	54.5%	9.1%	22.7%	231.0	7.7	2.1	165.0 Ind	5.5	22.7%
Grayling	31.8%	31.8%	31.8%	9.1%	9.1%	67.0	2.2	0.6	95.7 Ind	3.2	9.0%
Pike	54.5%	50.0%	45.5%	9.1%	9.1%	408.5	13.6	3.7	145.9 Ind	4.9	17.7%
Unknown Pike	54.5%	50.0%	45.5%	9.1%	9.1%	408.5	13.6	3.7	145.9 Ind	4.9	17.7%
Sheefish	4.5%	0.0%	0.0%	4.5%	4.5%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Rainbow Trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Steelhead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Whitefish	45.5%	45.5%	45.5%	9.1%	13.6%	289.4	9.6	2.7	200.5 Ind	6.7	27.6%
Broad Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Cisco	4.5%	4.5%	4.5%	0.0%	4.5%	16.4	0.5	0.2	40.9 Ind	1.4	0.0%
Least Cisco	4.5%	4.5%	4.5%	0.0%	4.5%	16.4	0.5	0.2	40.9 Ind	1.4	0.0%
Humpback Whitefish	40.9%	40.9%	40.9%	9.1%	9.1%	264.9	8.8	2.4	151.4 Ind	5.0	21.2%
Round Whitefish	4.5%	4.5%	4.5%	0.0%	4.5%	8.2	0.3	0.1	8.2 Ind	0.3	0.0%
Land Mammals	90.9%	63.6%	54.5%	90.9%	50.0%	2,694.2	89.8	24.7			24.3%
Large Land Mammals	90.9%	50.0%	31.8%	90.9%	50.0%	2,547.3	84.9	23.4			16.7%
Black Bear	27.3%	27.3%	4.5%	18.2%	9.1%	79.1	2.6	0.7	1.4 Ind	0.0	116.4%
Brown Bear	4.5%	4.5%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Caribou	86.4%	31.8%	9.1%	86.4%	22.7%	1,022.7	34.1	9.4	6.8 Ind	0.2	21.8%

Table 5-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Port Alsworth, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Moose	54.5%	36.4%	4.5%	45.5%	9.1%	736.4	24.5	6.8	1.4 Ind	0.0	163.0%
Dall Sheep	36.4%	27.3%	22.7%	13.6%	22.7%	709.1	23.6	6.5	6.8 Ind	0.2	23.3%
Small Land Mammals	40.9%	54.5%	36.4%	4.5%	9.1%	146.9	4.9	1.3			24.3%
Beaver	18.2%	18.2%	13.6%	4.5%	4.5%	59.7	2.0	0.5	6.8 Ind	0.2	8.9%
Coyote	13.6%	13.6%	13.6%	0.0%	0.0%	0.0	0.0	0.0	6.8 Ind	0.2	9.3%
Fox	27.3%	40.9%	27.3%	0.0%	4.5%	0.0	0.0	0.0	43.6 Ind	1.5	19.4%
Red Fox	27.3%	40.9%	27.3%	0.0%	4.5%	0.0	0.0	0.0	43.6 Ind	1.5	19.4%
Hare	9.1%	9.1%	9.1%	0.0%	0.0%	27.3	0.9	0.3	13.6 Ind	0.5	4.3%
Snowshoe Hare	9.1%	9.1%	9.1%	0.0%	0.0%	27.3	0.9	0.3	13.6 Ind	0.5	4.3%
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	4.5%	18.2%	4.5%	0.0%	0.0%	49.1	1.6	0.5	12.3 Ind	0.4	17.6%
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	4.5%	4.5%	4.5%	0.0%	0.0%	0.0	0.0	0.0	1.4 Ind	0.0	0.0%
Mink	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Muskrat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Porcupine	4.5%	4.5%	4.5%	0.0%	4.5%	10.9	0.4	0.1	1.4 Ind	0.0	0.0%
Squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Parka Squirrel (ground)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	13.6%	36.4%	13.6%	0.0%	0.0%	0.0	0.0	0.0	4.1 Ind	0.1	18.6%
Wolverine	13.6%	27.3%	13.6%	0.0%	0.0%	0.0	0.0	0.0	8.2 Ind	0.3	17.6%
Marine Mammals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0			0.0%
Seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Harbor Seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Harbor Seal (freshwater)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Harbor Seal (saltwater)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sea Otter	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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Whale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Belukha	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Birds and Eggs	45.5%	40.9%	36.4%	9.1%	9.1%	174.7	5.8	1.6			20.0%
Migratory Birds	18.2%	13.6%	13.6%	4.5%	4.5%	63.0	2.1	0.6	84.5 Ind	2.8	11.2%
Ducks	9.1%	9.1%	4.5%	4.5%	4.5%	35.2	1.2	0.3	62.7 Ind	2.1	7.2%
Bufflehead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%

Table 5-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Port Alsworth, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Goldeneye	0.0%	4.5%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Goldeneye	0.0%	4.5%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Mallard	4.5%	4.5%	4.5%	0.0%	4.5%	4.1	0.1	0.0	4.1 Ind	0.1	0.0%
Merganser	4.5%	4.5%	4.5%	0.0%	4.5%	2.5	0.1	0.0	4.1 Ind	0.1	0.0%
Northern Pintail	4.5%	4.5%	4.5%	0.0%	4.5%	2.2	0.1	0.0	2.7 Ind	0.1	0.0%
Scaup	4.5%	4.5%	4.5%	0.0%	4.5%	2.5	0.1	0.0	2.7 Ind	0.1	0.0%
Northern Shoveler	4.5%	4.5%	4.5%	0.0%	4.5%	3.3	0.1	0.0	5.5 Ind	0.2	0.0%
Teal	4.5%	4.5%	4.5%	0.0%	4.5%	7.4	0.2	0.1	24.5 Ind	0.8	0.0%
Green Winged Teal	4.5%	4.5%	4.5%	0.0%	4.5%	7.4	0.2	0.1	24.5 Ind	0.8	0.0%
Wigeon	4.5%	4.5%	4.5%	0.0%	4.5%	13.4	0.4	0.1	19.1 Ind	0.6	0.0%
American Wigeon	4.5%	4.5%	4.5%	0.0%	4.5%	13.4	0.4	0.1	19.1 Ind	0.6	0.0%
Unknown Ducks	4.5%	0.0%	0.0%	4.5%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Geese	13.6%	13.6%	13.6%	0.0%	4.5%	27.8	0.9	0.3	21.8 Ind	0.7	7.9%
Canada Geese	9.1%	9.1%	9.1%	0.0%	4.5%	24.5	0.8	0.2	20.5 Ind	0.7	4.3%
Dusky Canada Geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Lesser Canada Geese (taverner/parvi	9.1%	9.1%	9.1%	0.0%	4.5%	24.5	0.8	0.2	20.5 Ind	0.7	4.3%
Unknown Canada 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	4.5%	4.5%	4.5%	0.0%	0.0%	3.3	0.1	0.0	1.4 Ind	0.0	0.0%
Unknown Geese	0.0%	0.0%	0.0%	0.0%	0.0%	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%
Tundra Swan (whistling)	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%
Seabirds & Loons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Loons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Loon	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	36.4%	36.4%	27.3%	4.5%	9.1%	111.7	3.7	1.0	159.5 Ind	5.3	16.7%
Upland Game Birds	36.4%	36.4%	27.3%	4.5%	9.1%	111.7	3.7	1.0	159.5 Ind	5.3	16.7%
Grouse	27.3%	18.2%	13.6%	4.5%	0.0%	20.0	0.7	0.2	28.6 Ind	1.0	9.0%
Ptarmigan	18.2%	22.7%	18.2%	0.0%	9.1%	91.6	3.1	0.8	130.9 Ind	4.4	10.2%
Unknown Ptarmigan	18.2%	22.7%	18.2%	0.0%	9.1%	91.6	3.1	0.8	130.9 Ind	4.4	10.2%
Bird Eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Duck Eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown 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%

Table 5-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Port Alsworth, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
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%
Unknown 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%
Seabird & Loon 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	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	50.0%	31.8%	31.8%	31.8%	13.6%	115.6	3.9	1.1			9.5%
Clams	50.0%	31.8%	31.8%	27.3%	13.6%	115.6	3.9	1.1	38.5 Gal	1.3	9.5%
Butter Clams	9.1%	4.5%	4.5%	4.5%	0.0%	1.0	0.0	0.0	0.3 Gal	0.0	0.0%
Freshwater Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Horse Clams (Gaper)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Pacific Littleneck Clams (Steamers)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Pinkneck 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	45.5%	31.8%	31.8%	22.7%	13.6%	114.5	3.8	1.1	38.2 Gal	1.3	9.7%
Unknown Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Cockles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Unknown Cockles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Crabs	9.1%	0.0%	0.0%	9.1%	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	9.1%	0.0%	0.0%	9.1%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Tanner Crab	4.5%	0.0%	0.0%	4.5%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Tanner Crab, Bairdi	4.5%	0.0%	0.0%	4.5%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Tanner Crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Unknown 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 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%
Unknown 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	86.4%	86.4%	86.4%	36.4%	31.8%	478.6	16.0	4.4			16.6%
Berries	86.4%	86.4%	86.4%	18.2%	22.7%	463.6	15.5	4.3	115.9 Gal	3.9	16.4%
Plants/Greens/Mushrooms	13.6%	13.6%	13.6%	0.0%	0.0%	15.0	0.5	0.1	3.8 Gal	0.1	7.4%
Wood	63.6%	59.1%	59.1%	18.2%	13.6%	0.0	0.0	0.0	70.2 Crd	2.3	11.8%

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

Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys, 2005

Table 5-4. Top Ten Resources Harvested and Used, Port Alsworth, 2004

Harvest			Used		
Rank	Resource	Lbs per Capita	Rank	Resource	% of HHs Using
1	Sockeye Salmon	87.6	1	Sockeye Salmon	100.0%
2	Caribou	9.4	2	Berries	86.4%
3	Moose	6.8	3	Caribou	86.4%
4	Dall Sheep	6.5	4	Moose	54.5%
5	Berries	4.3	5	Pike	54.5%
6	Pike	3.8	6	Lake Trout	54.5%
7	Humpback Whitefish	2.4	7	Halibut	50.0%
8	Lake Trout	2.1	8	Razor Clams	54.5%
9	Halibut	1.3	9	Chinook Salmon	40.9%
10	Razor Clams	1.0	10	Humpback Whitefish	40.9%

Source: ADF&G, Division of Subsistence, Household Survey, 2005

Table 5-5. Estimated Percentages of Salmon Harvest by Gear Type, Resource, and Total Salmon Harvest, Port Alsworth, 2004

Resource	Percent Base	Removed from Commercial Catch		Subsistence Methods								Rod and Reel		Any Method	
				Setnet		Seine		Other		Subsistence Gear Any Method					
		No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
Salmon	geartype	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	11.5%	11.4%	86.5%	86.4%	0.0%	0.0%	0.0%	0.0%	86.5%	86.4%	2.0%	2.1%	100.0%	100.0%
	total	11.5%	11.4%	86.5%	86.4%	0.0%	0.0%	0.0%	0.0%	86.5%	86.4%	2.0%	2.1%	100.0%	100.0%
Chum 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%
Coho Salmon	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	36.4%	40.5%	0.7%	0.9%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.9%	0.7%	0.9%
Chinook Salmon	geartype	0.0%	0.0%	0.4%	0.9%	0.0%	0.0%	0.0%	0.0%	0.4%	0.9%	0.0%	0.0%	0.3%	0.8%
	resource	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	total	0.0%	0.0%	0.3%	0.8%	0.0%	0.0%	0.0%	0.0%	0.3%	0.8%	0.0%	0.0%	0.3%	0.8%
Pink 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%
Sockeye Salmon	geartype	100.0%	100.0%	99.6%	99.1%	0.0%	0.0%	0.0%	0.0%	99.6%	99.1%	63.6%	59.5%	99.0%	98.4%
	resource	11.6%	11.6%	87.1%	87.1%	0.0%	0.0%	0.0%	0.0%	87.1%	87.1%	1.3%	1.3%	100.0%	100.0%
	total	11.5%	11.4%	86.2%	85.7%	0.0%	0.0%	0.0%	0.0%	86.2%	85.7%	1.3%	1.3%	99.0%	98.4%
Landlocked 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%
Spawning Sockeye	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%
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: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 5-6. Estimated Percentages of Non-Salmon Fish Harvest by Gear Type, Resource, and Total Harvest, Port Alsworth, 2004 [1]

Resource	Percent Base	Removed from Commercial Gear	Subsistence Gear							Rod and Reel	Any Method
			Set Net	Seine	Hand Line Gear	Dip Net	Ice Fishing	Other Subsistence Gear	Any Subsistence Gear		
Non-Salmon Fish	geartype	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	resource	0.0%	15.6%	0.0%	0.0%	0.0%	14.2%	0.2%	30.0%	70.0%	100.0%
	total	0.0%	15.6%	15.6%	0.0%	0.0%	14.2%	0.2%	30.0%	70.0%	100.0%
Halibut	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.8%	10.4%
	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%	10.4%	10.4%
Burbot	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	46.9%	0.0%	22.1%	0.3%	6.8%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	97.0%	0.0%	97.0%	3.0%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	6.6%	0.0%	6.6%	0.2%	6.8%
Arctic Char	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.9%
	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%	0.9%	0.9%
Dolly Varden	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.7%	6.1%
	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%	6.1%	6.1%
Lake Trout	geartype	0.0%	18.6%	0.0%	0.0%	0.0%	5.1%	0.0%	12.1%	19.9%	17.6%
	resource	0.0%	16.5%	0.0%	0.0%	0.0%	4.1%	0.0%	20.7%	79.3%	100.0%
	total	0.0%	2.9%	2.9%	0.0%	0.0%	0.7%	0.0%	3.6%	13.9%	17.6%
Grayling	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.8%	7.0%	5.1%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	4.5%	95.5%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	4.9%	5.1%
Unknown Pike	geartype	0.0%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	43.6%	31.1%
	resource	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	98.1%	100.0%
	total	0.0%	0.6%	0.6%	0.0%	0.0%	0.0%	0.0%	0.6%	30.5%	31.1%
Least Cisco	geartype	0.0%	8.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.1%	0.0%	1.2%
	resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	total	0.0%	1.2%	1.2%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	1.2%
Humpback Whitefish	geartype	0.0%	69.7%	0.0%	0.0%	0.0%	43.6%	0.0%	56.9%	4.4%	20.2%
	resource	0.0%	54.1%	0.0%	0.0%	0.0%	30.6%	0.0%	84.7%	15.3%	100.0%
	total	0.0%	10.9%	10.9%	0.0%	0.0%	6.2%	0.0%	17.1%	3.1%	20.2%
Round Whitefish	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	4.4%	0.0%	2.1%	0.0%	0.6%
	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%	0.6%	0.0%	0.6%	0.0%	0.6%

[1] This table lists only those resources for which there was a harvest in the 2004 study year.

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 5-7. Assessment of Household's Harvest and Use of Resources in 2004 Compared to Other Recent Years, Port Alsworth

Resource	Estimated Households	No Response		Valid Responses		Less		Same		More	
		no	pct	no	pct	no	pct	no	pct	no	pct
Salmon	30	0.0	0.0%	30.0	100.0%	6.8	22.7%	19.1	63.6%	4.1	13.6%
Non-Salmon Finfish	30	0.0	0.0%	30.0	100.0%	4.1	13.6%	25.9	86.4%	0.0	0.0%
Marine Invertebrates	30	0.0	0.0%	30.0	100.0%	5.5	18.2%	23.2	77.3%	1.4	4.5%
Large Land Mammals	30	0.0	0.0%	30.0	100.0%	13.6	45.5%	16.4	54.5%	0.0	0.0%
Furbearers	30	0.0	0.0%	30.0	100.0%	8.2	27.3%	21.8	72.7%	0.0	0.0%
Marine Mammals	30	0.0	0.0%	30.0	100.0%	0.0	0.0%	30.0	100.0%	0.0	0.0%
Birds and Eggs	30	1.4	4.5%	28.6	95.5%	9.5	33.3%	19.1	66.7%	0.0	0.0%
Wild Plants	30	0.0	0.0%	30.0	100.0%	13.6	45.5%	16.4	54.5%	0.0	0.0%
Overall	30	0.0	0.0%	30.0	100.0%	15.0	50.0%	13.6	45.5%	1.4	4.5%
Any Resource	30	0.0	0.0%	30.0	100.0%	23.2	77.3%	30.0	100.0%	4.1	13.6%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 5-8. Port Alsworth: Reasons for Change in Harvests and Uses in Recent Years

			Percentage of Responses by Category[1]							
Resource Category	Use Less or More	Estimated Number of Households[2]	No Reason Given	Competition	Regulations	People are Sharing Less	Weather	Animal Population Changes[3]	Personal Reasons (Work/Health)	Other Outside Effects
Salmon	Less	6.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Salmon	More	4.1	33.3%	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%
Non-Salmon Finfish	Less	4.1	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	66.7%	0.0%
Marine Invertebrates	Less	5.5	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	100.0%	0.0%
Marine Invertebrates	More	1.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Large Land Mammals	Less	13.6	0.0%	0.0%	0.0%	30.0%	30.0%	60.0%	40.0%	0.0%
Furbearers	Less	8.2	0.0%	0.0%	0.0%	16.7%	33.3%	0.0%	50.0%	0.0%
Birds and Eggs	Less	9.5	28.6%	0.0%	0.0%	14.3%	14.3%	0.0%	42.9%	0.0%
Wild Plants	Less	13.6	30.0%	0.0%	0.0%	0.0%	0.0%	40.0%	30.0%	0.0%
Overall	Less	15.0	0.0%	0.0%	0.0%	18.2%	45.5%	54.5%	81.8%	0.0%
Overall	More	1.4	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Any Resource	Less	23.2	23.5%	0.0%	0.0%	29.4%	23.5%	52.9%	76.5%	0.0%
Any Resource	More	4.1	66.7%	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%

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

[2] Estimated number of households citing a change in uses. For number of valid responses, see Table 5-7. Estimated total households in community = 30

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

Source: Alaska Department of Fish and Game, Division of Subsistence, Households Survey, 2005

Table 5-9. Port Alsworth Wild Resource Harvests by Resource Category, All Study Years

	Pounds Usable Weight Per Capita			
	1983	2001	2003	2004
Salmon	239.8			89.0
Non-Salmon Fish[1]	11.6		0.2	12.0
Large Land Mammals	94.9	15.6		23.4
Small Land Mammals	1.9			1.3
Birds and Eggs	4.4			1.6
Marine Invertebrates	1.1			1.1
Vegetation	7.4			4.4
All Resources	361.1			132.8

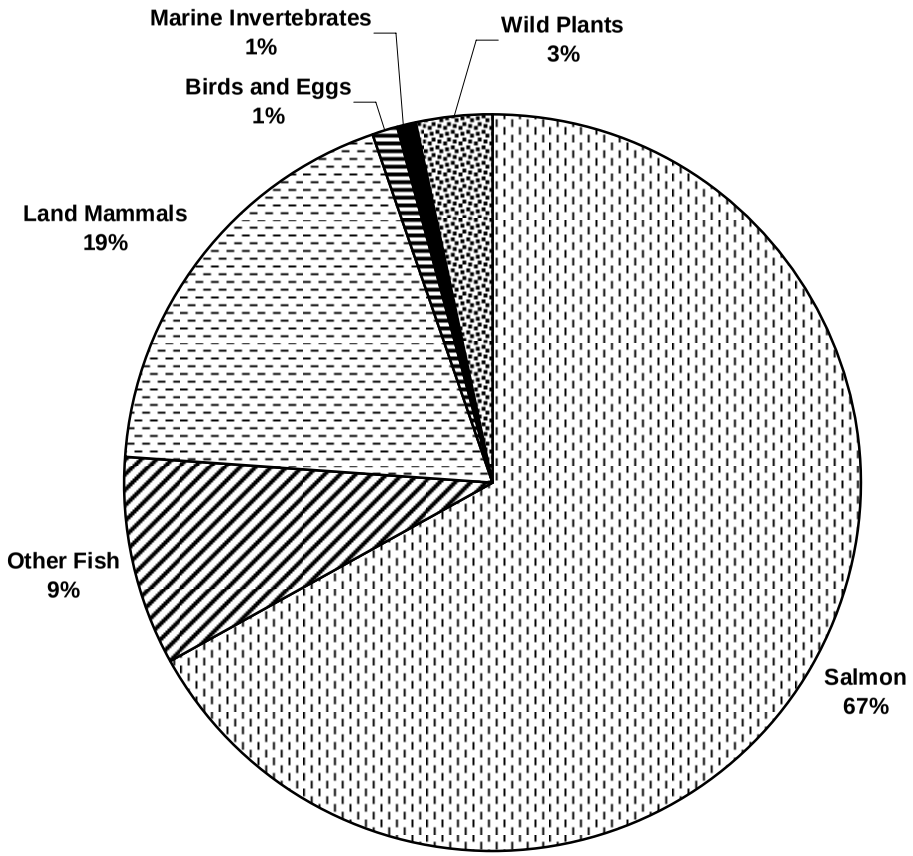
Blank cells indicate that data not available.

[1] Poor ice conditions prevented most fishing for nonsalmon fish in 2003.

Table 5-10. Composition of Wild Resource Harvests by Category, Port Alsworth, All Study Years

	Percentage of Total Harvest			
	1983	2001	2003	2004
Salmon	66.4%			67.0%
Non-Salmon Fish	3.2%			9.0%
Large Land Mammals	26.3%			17.6%
Small Land Mammals	0.5%			1.0%
Birds and Eggs	1.2%			1.2%
Marine Invertebrates	0.3%			0.8%
Vegetation	2.0%			3.3%
All Resources	100.0%			100.0%

Figure 5-2. Composition of Wild Resource Harvests, Port Alsworth, 2004, by Resource Category



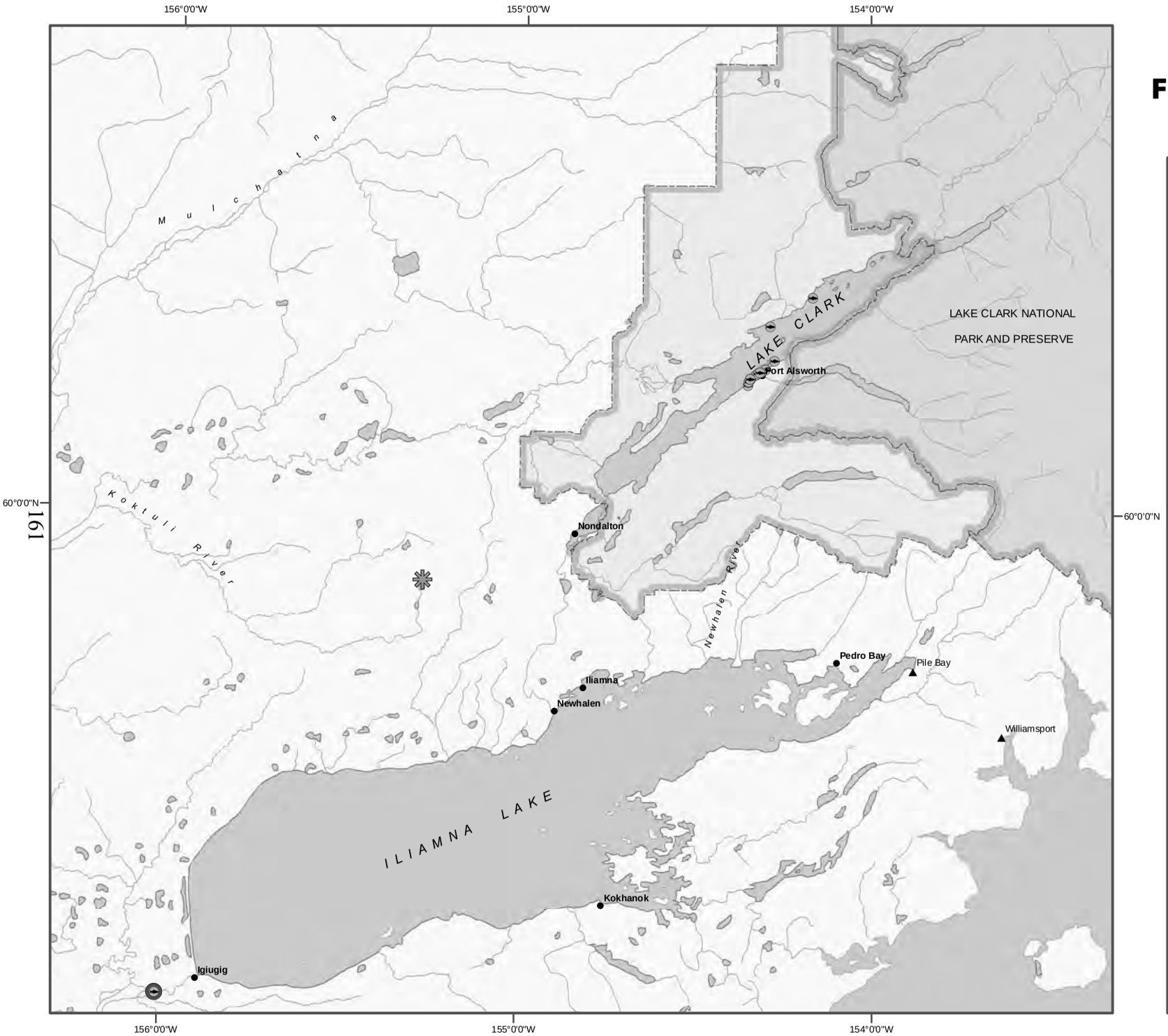


Figure 5-3

- Pebble Mine Site
- Communities
- Other Localities
- Port Alsworth Sockeye Salmon Harvest 2004
- Port Alsworth Spawning Sockeye Salmon Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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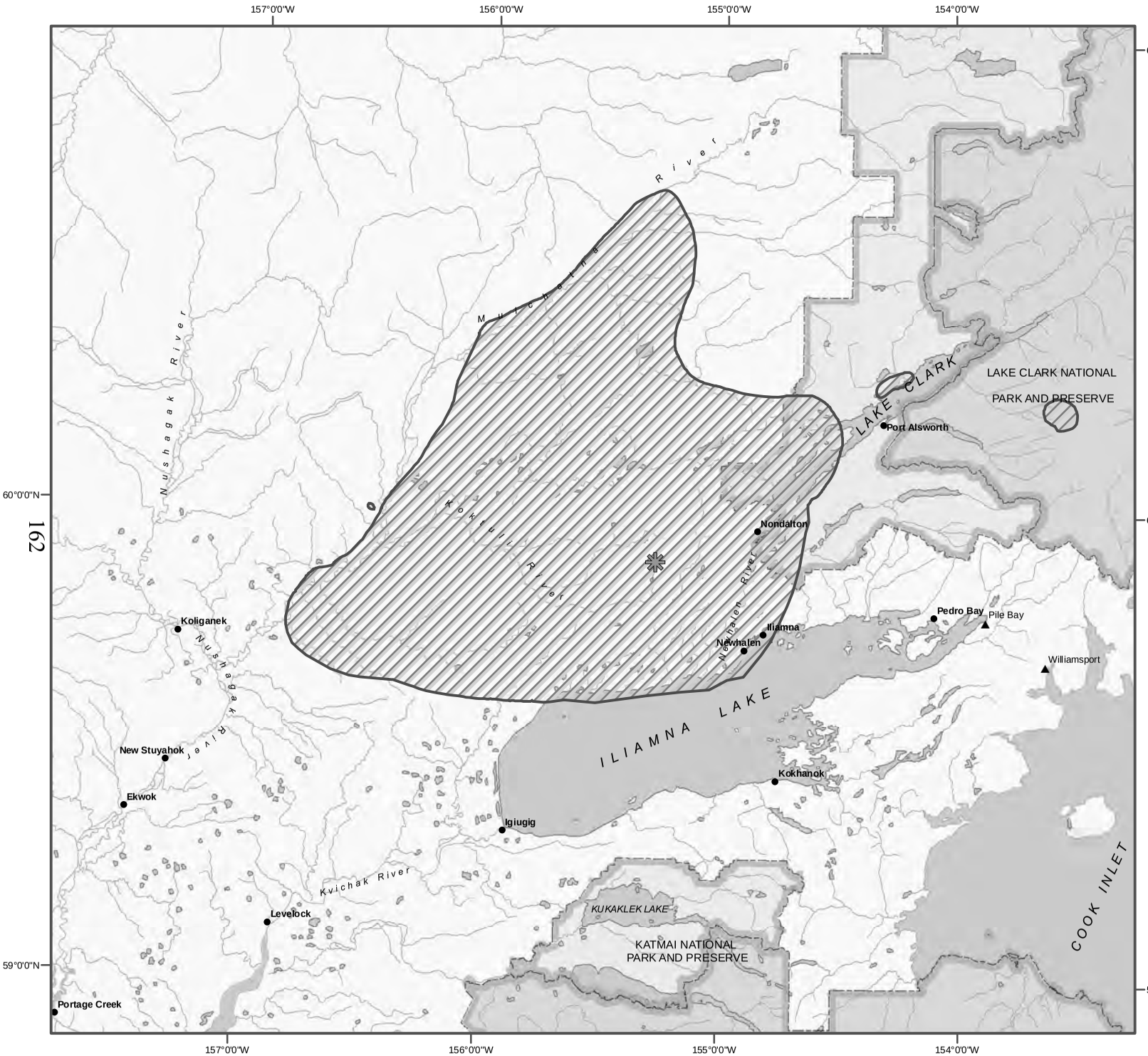

Figure 5-4

- Pebble Mine Site
- Communities
- Other Localities
- Port Alsworth Caribou Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
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Figure 5-5. Port Alsworth Households' Assessment of Harvest and Uses of Wild Resources in 2004 Compared to Other Recent Years

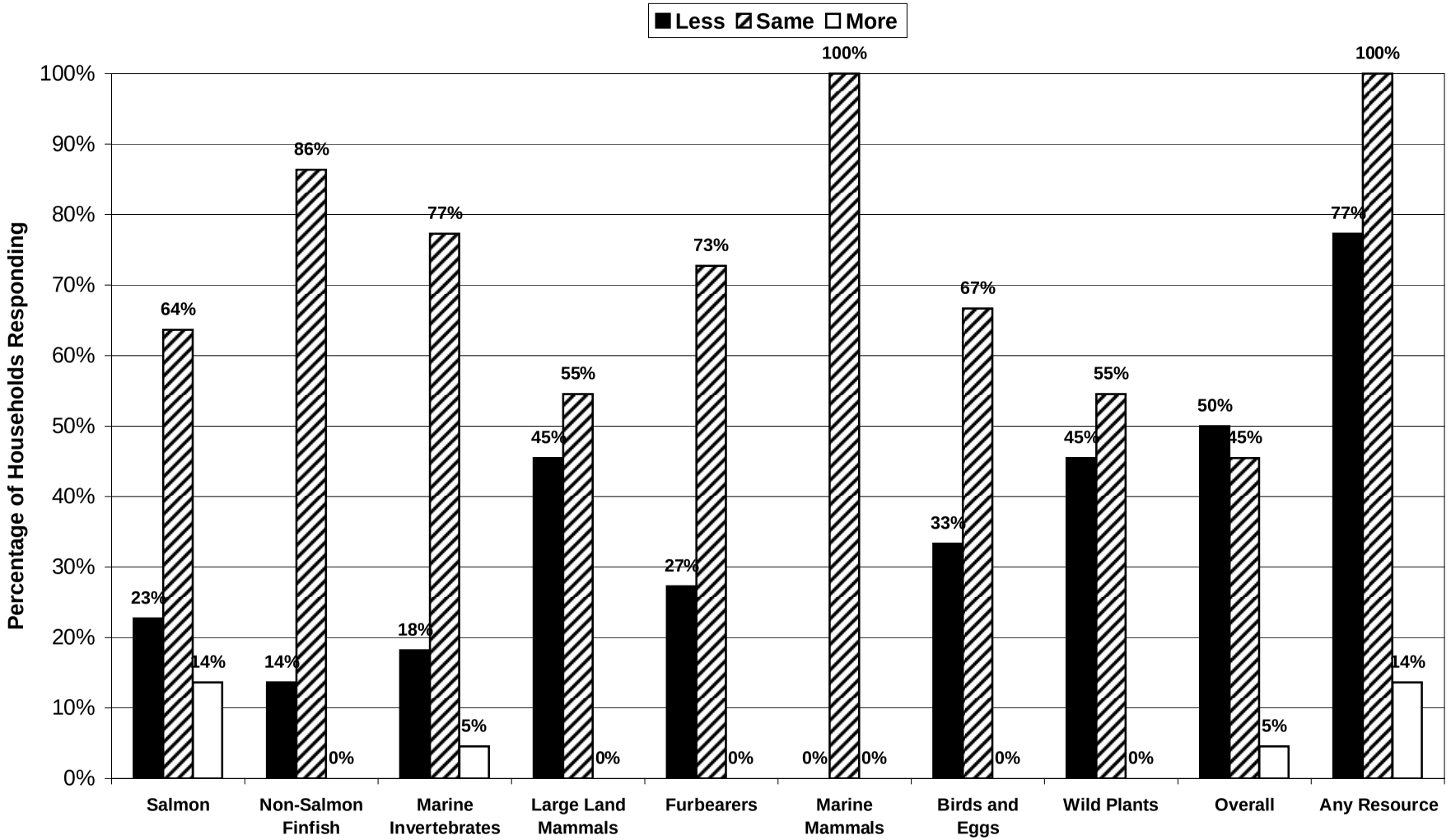


Figure 5-6. Reasons Cited by Port Alsworth Households for Lower Uses of Any Resource in 2004 Compared to Other Recent Years

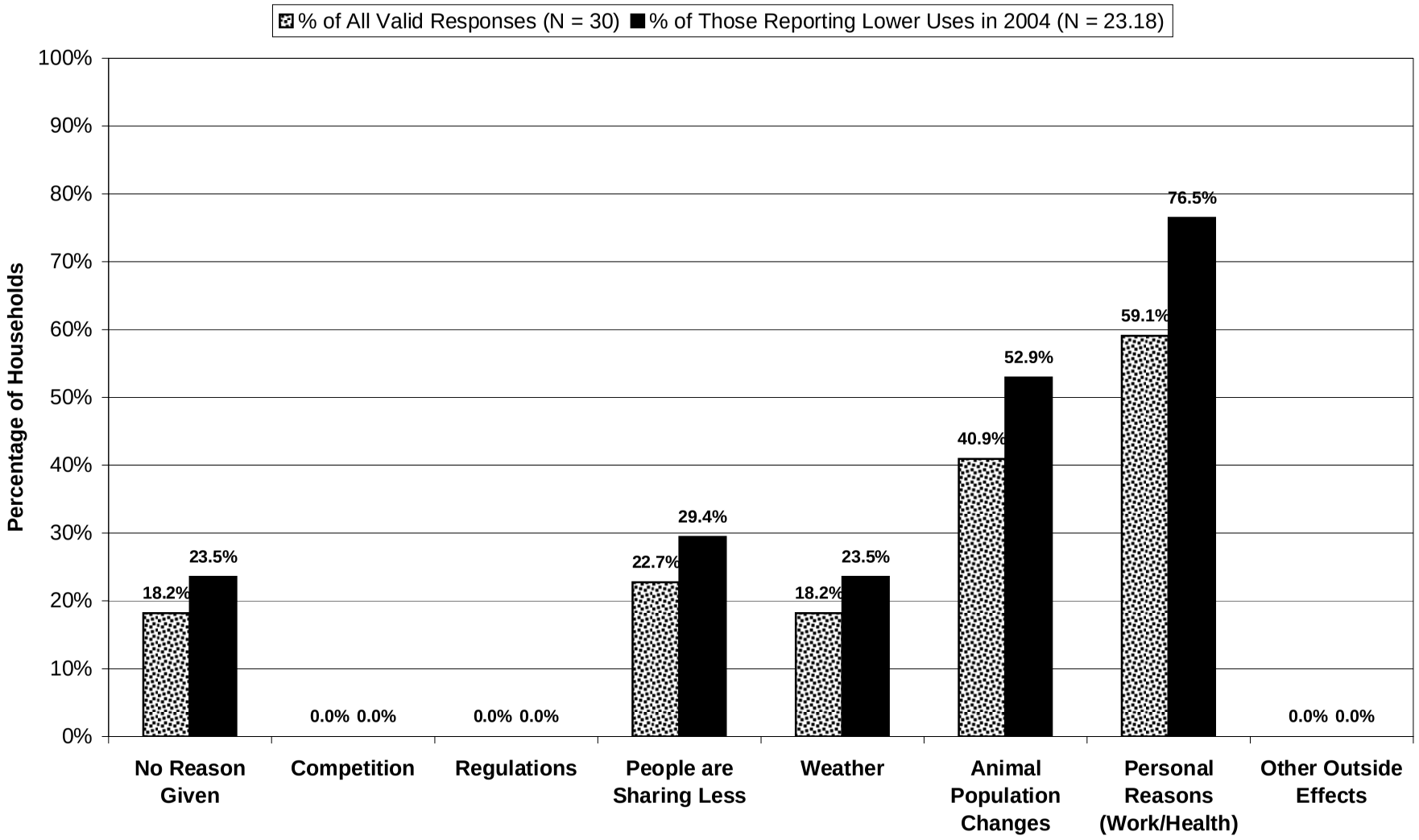
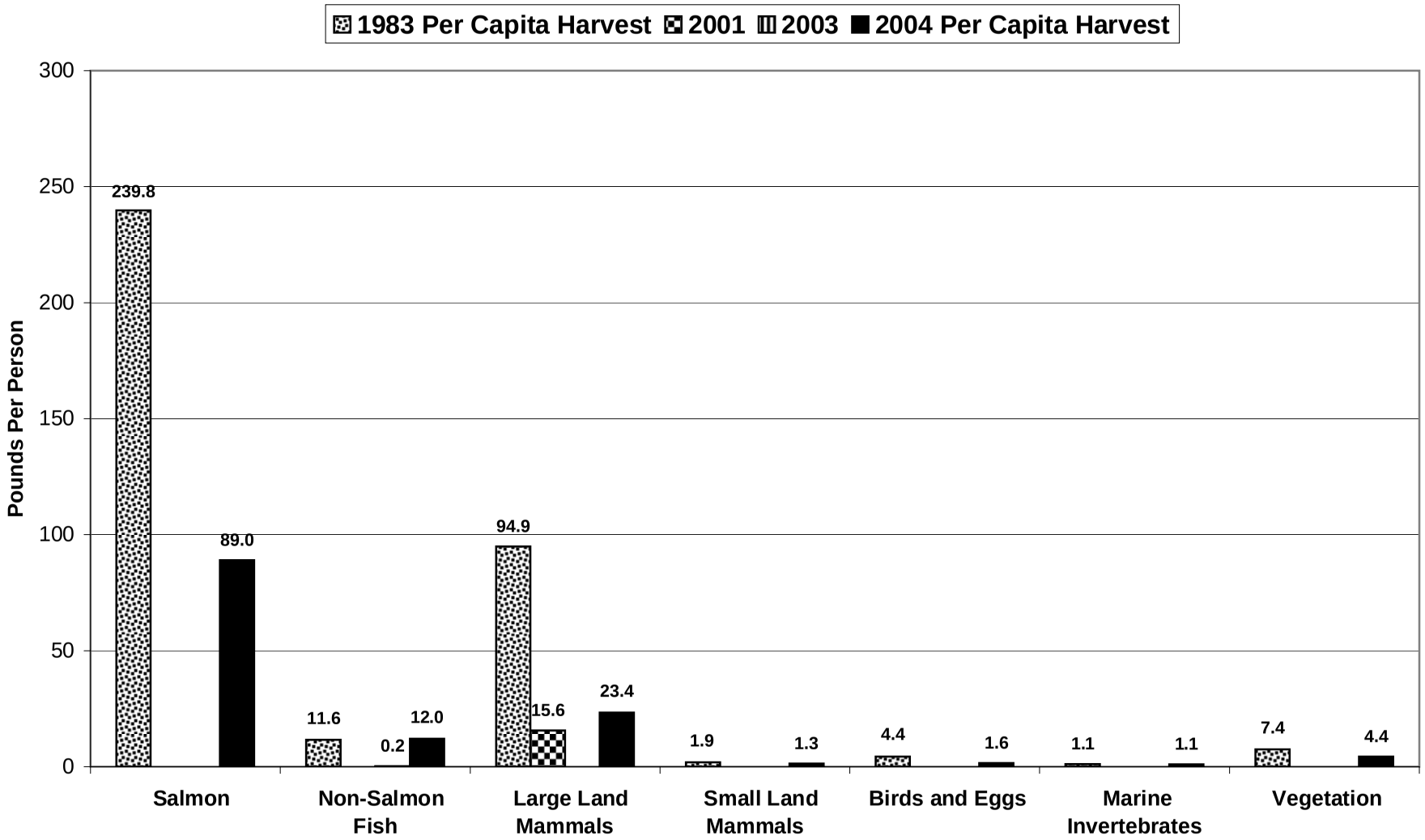


Figure 5-7. Port Alsworth Wild Resource Harvests Over Time by Resource Category



CHAPTER SIX: NONDALTON

This chapter is based primarily on 2 sources. The first is the harvest surveys and mapping interviews completed by ADF&G in January and February of 2005, and the second is the 3 key respondent group interviews carried out in March of 2005 and the follow-up interviews conducted in August of that year. Karen Stickman, Theodore Krieg, and Terina Trefon conducted the key respondent interviews. Six residents of Nondalton were interviewed, 2 per interview. The second section of this chapter, after the community background, includes a summary of the data from the harvest survey. It also includes maps from the initial harvest survey interviews. The final section of the chapter presents information from the key respondent interviews, including a map that was completed during these interviews, separate from the harvest survey mapping effort.

COMMUNITY BACKGROUND

Lake Clark is within the territory of Dena'ina Athabascan people (Osgood 1937, Townsend 1981). Few Russian explorers entered the Dena'ina country during their occupation of Alaska, which ended in 1867 with the sale of Alaska to the United States. The Dena'ina residents of Lake Clark traveled across mountain passes to trade with the Russians at posts located along Cook Inlet. In the late 19th century American explorers began to enter the Lake Clark area. The first documented American exploration occurred in January1891 when a party under the leadership of Alfred B. Schanz and John W. Clark (an agent of the Alaska Commercial Company), for whom the lake was named, explored the area (Schanz 1897). They visited Kijik, a Dena'ina village on Lake Clark near the mouth of the Chulitna River.

Kijik was the major community of Inland Dena'ina in this area until 1902 when residents began moving to Nondalton on neighboring Sixmile Lake. The reason for the move in 1902 was a measles epidemic that decimated the population. Old Nondalton was also closer to trading posts on Iliamna Lake and canneries along the shores of Bristol Bay. Kijik was completely abandoned by 1914 (VanStone and Townsend 1970). The people of Nondalton moved the village to its current location in the 1930s.

Today, sport hunting and fishing have become important to the local economy in the Lake Clark and Sixmile Lake areas. Residents of Nondalton have worked locally as guides and packers. They travel frequently to Lake Clark for subsistence fishing and hunting, where they interact with sport hunters and fishermen who are the clients of lodges operated in Nondalton and Port Alsworth.

In November 2002, a road between Iliamna and Nondalton (the "Iliamna – Nondalton inter-tie") was approved as part of the Southwest Alaska Transportation Plan. The road is unfinished, but a 2004 revision to the plan strongly encourages its completion. This new permanent road, including a bridge over the Newhalen River, will enable supplies to be easily transported to Nondalton from the barge landing and paved runway at Iliamna. Major roads in Iliamna and Newhalen were paved in the summer of 2003, and the road leading to Nondalton was partially paved. Some residents of Nondalton are unsure whether they want a road and bridge to connect

them to Iliamna and Newhalen and construction on the inter-tie was on hold at the time of this research.

DEMOGRAPHY, CASH EMPLOYMENT, AND MONETARY INCOME

Demography

There were 221 Nondalton residents reported in the 2000 census (DCED 2005), of which 90% (199 residents) were Alaska Native. The ADF&G survey in 2005 found a population of 164 residents of whom 90% (147 residents) were Alaska Native (Table 1-10).

When the survey began, the estimate of year-round households in Nondalton was 48, but 5 of these had moved. Of the revised estimate of 43 permanent households, 38 (88%) were interviewed. Interviewers failed to contact 5 households. There were no refusals (Table 1-6).

The mean number of years of residency in Nondalton was 24 years with the maximum residence at 99 years (Table 1-10). The largest age group of residents for both males and females was between 15-19 years of age. Except for females between the ages of 65-69 there were few residents over the age of 55 (Fig. 6-1, Table 6-1). Otherwise, there was a relatively even distribution of ages for both males and females in Nondalton between the ages of 0-55.

Of the household heads interviewed, 14% were born outside of Alaska (Table 1-11). Most household heads (62%) were born in Nondalton (66% if Old Nondalton is included). A few residents were born in other communities in the surrounding area, including Pedro Bay (3%), Kokhanok (2%), and New Stuyahok (2%). The remainder were born in Anchorage (3%), Chignik Lake (2%), Fairbanks (2%), and Sitka (2%).

Cash Employment Characteristics and Monetary Income

In 2004, most jobs in Nondalton resulted from employment with state (20% of jobs) and local and tribal governments, including the school (44% of jobs). Mining provided a significant portion of the community's income (14%) in 2004, as well as jobs for 16% of all employed adults. The service sector was a major source of income (21%; Table 6-2).

In 2004, a majority of jobs were located in Nondalton (84 out of 127 jobs; 66%). One important type of job located outside the community is firefighting with the Alaska Department of Natural Resources. This accounts for the high amount of income from state service jobs (19%) (Table 6-2). Seventeen of these jobs in 2004 were in McGrath. Eight jobs were in Iliamna, and seven in Fairbanks (5%; Table 1-13).

Only 20% of employed adults in Nondalton were employed year-round in 2004. Most households held multiple jobs (average of 3.2 jobs per household). The mean for months employed during 2004 was 7. On average, households had 1.8 adults employed during 2004, with 92% of households containing an adult who was employed during 2004 (Table 1-12).

LEVELS OF PARTICIPATION IN THE HARVEST AND USE OF WILD RESOURCES

Table 1-15 reports levels of individual participation in the harvest and processing of wild resources by residents of Nondalton in 2004. Twenty-nine percent of Nondalton residents hunted birds and large land mammals and 35 % processed game and birds. More people fished (81%) and processed fish (79%). Fewer residents trapped or hunted furbearers (23%) or processed furbearers (23%). The gathering of wild plants and berries had a high participation rate: 91% of individuals harvested wild plants and 90% processed them. In total, 93% of all Nondalton residents attempted to harvest one or more resource and 94% processed one or more resource in 2004.

RESOURCE HARVEST AND USE PATTERNS

Table 1-16 shows resource harvest and use characteristics of Nondalton for the 2004 study year. Every household used at least one wild resource, and 97% of households harvested at least one resource. The average household harvest was 1,365 pounds usable weight, 358 pounds per capita. During the study year, Nondalton households harvested an average of 12 different kinds of resources and used an average of 14 different types of resources.

Species Used and Seasonal Round

The summer run of sockeye salmon into Sixmile Lake and upstream into Lake Clark traditionally broke the spring season of hunger for the Athabascan people of this area. This was a time when stores of salmon were usually depleted and residents were living on whatever fresh game and fish were available. Today, as well, residents of Nondalton end the winter with the summer run of sockeye salmon. In 2004, 87 % of Nondalton households harvested sockeye salmon (Table 6-3). Sockeye are first harvested in June and July and then again when they reach their spawning grounds in October or later; 40% of households participated in this late fishery in 2004.

Sixmile Lake on which Nondalton sits has abundant freshwater fish. In addition, residents of Nondalton travel to Lake Clark and the numerous surrounding smaller lakes to harvest fish other than salmon. In 2004, 76% of households harvested freshwater fish, and 82% of households used freshwater fish. The two most used freshwater fish species by Nondalton households were rainbow trout (63% of households using), lake trout (61%), grayling (55%), humpback whitefish (55%) and northern pike (37%). These fish are abundant in the two largest lakes and the surrounding smaller lakes and streams (Table 6-3).

Moose are a popular species to harvest in fall following the rut and throughout the winter. In 2004, 45% of Nondalton households hunted moose, but only 16% were successful. Besides moose, caribou are harvested through the fall and winter. Black bear, a favorite large land mammal species, was also harvested in 2004 (13% of households; Table 6-3).

The other major resource category that is important for both subsistence foods and for cash income for Nondalton residents is small land mammals. Trapping occurs in the coldest part of the winter when the fur of animals is prime. Fifty percent of households in Nondalton harvested

small land mammals in 2004. The two most important were beaver and porcupine, followed by lynx and snowshoe hare (Table 6-3).

Spring and fall are seasons for hunting migratory waterfowl on their way to and returning from their nesting areas. In 2004, 40% of households in Nondalton harvested migratory birds. Of all migratory birds, mallard ducks and geese were the 2 most harvested resources. Fall also sees hunting for upland game birds. Both ptarmigan and grouse were harvested by Nondalton residents in 2004 (29% of households harvested ptarmigan and 40% harvested grouse; Table 6-3).

The fall season is also a time for gathering berries. Most Nondalton households (92%) harvested berries in 2004; 32% harvested other wild plants such as greens and mushrooms.

Harvest Quantities

Table 6-3 summarizes wild resource harvests and uses by Nondalton residents in 2004 and is organized first by general category and then by species. All resource harvests are reported in pounds usable weight (see Appendix C for conversion factors). The "harvest" category includes resources actually taken by members of the surveyed households during 2004. The "use" category includes all resources taken and given away by a household, and resources acquired after a harvest, either as gifts, by trade, through hunting partnerships, or meat given to hunting guides by their clients. The use category is not confined to resources for human consumption, but incorporats all non-commercial uses of resources. Purchased foods were not recorded. Differences between harvest and use percentages reflect resources that have been shared, and sharing between households resulted in a wider distribution of wild foods.

The total harvest for all subsistence resources during 2004 for the community of Nondalton was 58,686 pounds usable weight, or 358 pounds per person (Table 6-3). Table 6-4 lists the top 10 resources harvested in terms of pounds per capita, and the 10 resources used by the most Nondalton households. Fish constituted the largest portion of the harvest with 41,566 pounds (71%), or 253 pounds per person. Sockeye salmon are divided into 2 categories by harvest period. Those that are caught in June-July were the major harvest with 33,433 pounds harvested or 204 pounds per person (Fig. 6-2). Those harvested in September and October are called spawning reds due to their dark red coloration at the time. These constituted 2,480 pounds of the harvest, or 15 pounds per person (Table 6-3).

Freshwater fish were an important resource in Nondalton in 2004. Community residents harvested 5,562 pounds of freshwater fish or 34 pounds per person. The top 4 harvests of freshwater fish include 1,168 pounds of humpback whitefish (7 pounds per person), 741 pounds of rainbow trout (5 pounds per person), 611 pounds of grayling (3 pounds per person), and 558 pounds of northern pike (3 pounds per person; Table 6-3).

Large land mammals are an important component in the diet of Nondalton residents. In 2004 Nondalton residents harvested 13,417 pounds of large land mammals, or 82 pounds per person (Table 6-3, Fig. 6-2). Moose made up most of this, at 9,166 pounds (75% of the total large land mammal harvest) or 56 pounds per person. Caribou was second with 2,716 pounds (17 pounds

per person), or 22% of the harvest. Black bear constituted 328 pounds of the harvest (2 pounds per person).

Small land mammal harvests for Nondalton in 2004 were significant compared to the other study communities. Nondalton residents harvested 1,207 pounds of small land mammals or 7 pounds per person. The three main species by harvest weight were beaver with 743 pounds (5 pounds per person), porcupine with 380 pounds harvested (2 pounds per person), and lynx at 50 pounds, less than one pound per person (Table 6-3).

As mentioned above, migratory and upland birds are an important part of the diet in Nondalton. In 2004, community residents harvested 624 pounds of birds, or 4 pounds per person. Migratory birds constituted 400 pounds of the harvest (2 pounds per person) and upland game birds represented 225 pounds (1 pound per person; Fig. 6-2). For migratory birds, geese made the most significant contribution with 208 pounds, 1 pound per person. Also important were ducks (131 pounds or 1 pound per person). Grouse and ptarmigan were harvested in significant numbers: 153 pounds of grouse (1 pound per person), and 72 pounds of ptarmigan (less than one pound per person). There were no egg harvests in 2004 (Table 6-3).

During 2004, berries made a major contribution to the diet in Nondalton. Community residents harvested 2,666 pounds of berries,16 pounds per person. In addition, harvests of other wild plants, greens, and mushrooms totaled 346 pounds, 2 pounds per person (Table 6-3, Fig. 6-2).

Harvest Areas[1]

In 2004, residents of Nondalton traveled extensively to harvest subsistence resources. For example, to hunt caribou and moose, residents traveled to the headwaters of the Mulchatna River to the north and well into the Koktuli River system. To the south, they traveled towards Iliamna Lake into the headwaters of Upper Talarik Creek and east to the far end of Little Lake Clark (Fig. 6-3, Fig. 6-4). Brown and black bear hunting covered the same area. Sheep hunting, however, was concentrated in the steep mountains surrounding Little Lake Clark.

In 2004, fishing for both salmon and freshwater fish mainly occurred at the outlet of Sixmile Lake. Nondalton residents used the entire lake, especially in winter when ice fishing is a popular activity. They also fished in the Newhalen River as far south as Petrof Falls and north on Lake Clark, especially in Chulitna Bay.

Small game hunting and trapping in 2004 were concentrated around Nondalton and outwards into two main locations: near Groundhog Mountain near the headwaters of Upper Talarik Creek and in the Chulitina River valley. These locations were also popular for waterfowl and upland bird hunting. Nondalton residents traveled the farthest in their berry picking activities. Much of this effort occurred around Iliamna Lake, on both the north and south shores. They also traveled far inland into the headwaters of the Koktuli River to harvest berries around Groundhog Mountain and Frying Pan Lake.

[1] For the complete set of maps of Nondalton residents' hunting, fishing, and gathering areas in 2004, see the CD in pocket inside the back cover of this report.

SHARING AND RECEIVING WILD RESOURCES

In 2004, the sharing of resources between households in Nondalton was important (Table 1-16, Table 6-3). In the study year, 97% of Nondalton households received resources from another household and 92% of households gave resources away. They received an average of 5 kinds of resources and gave away an average of 6 types. As noted earlier, fish were the most commonly used resource, and fish were among the most widely shared resources as well, with 68% of households giving fish away and 74% of households receiving fish. Sockeye salmon was the most shared resource, with 53% of households giving away sockeye salmon and 47% receiving sockeye salmon.

Large land mammals also were widely shared, especially moose: 37% of the households gave moose away and 63% of the households received moose. This demonstrates that successful hunters shared moose with other households. Caribou were also frequently shared: 29% of the households shared caribou, and 47% of the households received caribou (Table 6-3).

Nondalton residents shared birds to a lesser extent than other major resources in 2004. While migratory birds were given (24%) to other households, only 13% of households received migratory birds. This pattern is the same for upland game birds with 26% giving away these birds and 8% receiving them (Table 6-3).

Concerning other resources, 45% of households in Nondalton shared small land mammals, and 21% of the households received them. Beaver and porcupine, the largest contributors by weight and effort in this category, were the most shared (26% giving away beaver and 13% receiving beaver; 34% giving away porcupine and 13% receiving porcupine; Table 6-3).

The final major category, wild plants, had a high rate of sharing in 2004 with 55% giving away these resources and 40% receiving them. Mostly, Nondalton residents shared berries: 55% gave away berries and 34% received them. Other wild plants, greens, and mushrooms were not shared as much: 11% of households gave away these resources and 13% received them (Table 6-3).

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

Large Land Mammals

Moose made up 75% of the total large land mammal harvest for Nondalton in 2004. The estimated harvest was 17 moose, for 9,166 pounds of meat, 56 pounds per capita (Table 6-3). Hunters traveled great distances to harvest moose; areas hunted included the shores of Lake Clark, the Chulitna River Valley, across Sixmile Lake from Nondalton, and near Groundhog Mountain (Fig. 6-3). Figure 6-4 shows the 2004 Nondalton caribou hunting area. Most of the 18 caribou taken by Nondalton residents in 2004 were harvested on a small stream near Upper Talarik Creek.

Both brown bear and black bear were hunted by Nondalton residents. Bear hunting areas were the same as those for moose because these two activities occurred simultaneously. In 2004, no brown bears were harvested. The estimated harvest of about 6 black bears took place around the

community itself and in the Chulitna River Valley. Sheep hunting took place in the headwaters of Lake Clark near Little Lake Clark within Lake Clark National Park but none were harvested. A more detailed discussion of large land mammal hunting patterns is included below.

Marine Mammals

For 2004, Nondalton residents reported no marine mammal harvests. About 8% of the households received gifts of seal (Table 6-3).

Salmon

The community of Nondalton harvested fresh sockeye salmon, spawning sockeye salmon, and coho salmon in 2004 (Table 6-3). Sockeye salmon accounted for a majority of the salmon harvest and total resource harvest. They were taken in a multitude of locations, from above the Petroff Falls on the Newhalen River, to the fish camps at the outlet of Sixmile Lake, and north into Lake Clark as far as Chulitna Bay. Spawning sockeye salmon were harvested at the Sixmile Lake fish camps and upstream into Lake Clark as far as Kijik. There were also about 5 coho salmon taken at the outlet of Sixmile Lake (Table 6-3).

In 2004, setnets accounted for 73% of Nondalton's sockeye salmon harvest, and 22% were caught with seines. All Chinook salmon were either removed from the commercial catch (60%), or caught by rod and reel (40%). All coho salmon were taken with rod and reel. Removal of fish from commercial harvests accounted for only 0.3% of the community's total harvest of salmon in 2004 (Table 6-5).

Freshwater Fish

Freshwater fish accounted for 9% of Nondalton's wild resource harvests in 2004 (Fig. 6-2). Humpback whitefish had the highest harvest at 1,168 pounds (Table 6-3). These were mainly caught around Nondalton in Sixmile Lake. Dolly Varden were caught at the outlet of Sixmile Lake and along the Newhalen River just upstream of the Petrof Falls. A few arctic char were caught near Nondalton and along the Newhalen River as well. Lake trout, rainbow trout, and "unknown trout" were caught in locations stretching from the Chulitna Bay on Lake Clark downstream as far as Petrof Falls on the Newhalen River. Arctic grayling were caught in Sixmile Lake and along the Newhalen River as far as the first bend south of the village. Northern pike were mainly caught in Chulitna Bay on Lake Clark. Other species harvested in 2004 were longnose sucker, which were caught in Sixmile Lake, and burbot, which were caught in Sixmile Lake and the Chulitna Bay on Lake Clark.

Table 6-6 reports the estimated harvest of freshwater fish by Nondalton residents in 2004 by gear type. Much of the freshwater fish harvest was accomplished by ice fishing. For example, 60% of grayling, 41% of pike, and 45% of humpback whitefish were harvested through the ice. However, rod and reel fishing in open water was also important for some species. For example, 52% of Dolly Varden and 57% of rainbow trout were caught with rod and reel, mostly in the Newhalen River. Ice fishing occurs throughout winter and into late spring on Sixmile Lake. The

only nonsalmon fish removed from commercial harvests were 5 saltwater Dolly Varden, known locally as “sea going dollies.”

Marine Invertebrates

Nondalton residents harvested few marine invertebrates in 2004. These resources are not available locally. The marine invertebrate species most often harvested was razor clams (37 pounds, less than one pound per person; Table 6-3).

Small Land Mammals

In 2004, Nondalton residents were active hunters and trappers of small land mammals, harvesting a total of 1,207 pounds (Table 6-3). Most harvests of small land mammals occurred around Nondalton and extended west into the area near Groundhog Mountain. Porcupine (62% of all small game) and beaver (32%) were the two main species of small game harvested by Nondalton residents. A more detailed description of small land mammal hunting patterns is included below.

Birds and Eggs

In 2004, residents of Nondalton harvested two kinds of upland birds: grouse (153 pounds) and ptarmigan (72 pounds; Table 6-3). These harvests occurred in three locations: near Groundhog Mountain, just behind Nondalton to the west, and in the flats at the mouth of the Chulitna River. Waterfowl harvests also occurred in this last location and the waterfowl hunting area extended upstream in the Chulitna River Valley to the Nikabuna Lakes. The harvest of migratory birds totaled 400 pounds, 2 pounds per capita (Table 6-3).

Wild Plants

Nondalton residents used three primary areas for harvesting berries in 2004: the headwaters of the Koktuli River, the north shore of Iliamna Lake, and the south shore of Iliamna Lake. Figure 6-2 demonstrates the importance of berries and other wild plants, and the estimated quantity harvested, 2,666 pounds (16 pounds per capita) (Table 6-3). In addition to berries, residents of Nondalton harvested 346 pounds (2 pounds per person) of other wild plants, including greens and mushrooms, in the area immediately around Nondalton and on the islands in Iliamna Lake, including Flat Island.

COMPARING HARVESTS AND USES IN 2004 WITH PREVIOUS YEARS

In Nondalton, 57% of the survey respondents said that their harvest and use of resources in 2004 was about the same in the recent past (the last 5 years), 37% said uses were less, and 6% said uses had increased. However, 81% of Nondalton respondents said their use of large land mammals was less than in recent years (Table 6-7). Figure 6-5 shows that for most of the evaluated categories, respondents said that their uses had not changed compared to other recent years.

Table 6-8 lists the reasons that residents of Nondalton gave for changes in resource uses. This was an open-ended question. Project staff grouped responses into various categories such as competition for resources, regulations either hindering or supporting residents harvest resources, sharing of harvests, effects of weather on animals and subsistence activities, changes in the animal populations themselves, personal reasons such as work and health, and other factors that affected opportunities to engage in subsistence activities. These reasons are broken down by resource category in Table 6-8. There were multiple reasons cited by Nondalton residents for less use in 2004. Changes in animal populations were the primary explanation: 71% of households with lower uses of at least one resource category in 2004 cited this as a cause (Fig. 6-6). Other factors for harvesting less include personal reasons (55% of households with lower uses of at least one resource) and poor or unusual weather (29%). These topics will be further explored in detail below.

Comparisons can also be made with other study years for which baseline harvest data are available. For Nondalton this includes 1973, 1980, 1981, 1983, and the current study in 2004. Except for bird harvests in 1980 and nonsalmon fish harvests in 2003, estimated harvests of all resource categories were lower in 2004 than in any previous study year (Table 6-9, Table 6-10, Fig. 6-7). The 2004 estimated total wild resource harvest was also the lower than all previous estimates for Nondalton. Possible explanations for this lower harvest are discussed in the final chapter of this report.

LOCAL OBSERVATIONS OF RESOURCE POPULATIONS AND TRENDS

The following discussion is based on 3 in-depth interviews conducted by Karen Stickman (Native American Fish and Wildlife Society) and Ted Krieg (ADF&G) in Nondalton in March 2005. These interviews were tape recorded and transcribed. In addition, Karen Stickman returned to Nondalton in August 2005 to ask follow-up questions. The interview protocol for these interviews appears in Appendix B. Each of the following sections consists mainly of comments taken directly from the interviews. No names are used to maintain anonymity. This section is longer than the corresponding sections in the other community chapters because of the length of these taped and transcribed interviews.

Traditional and Contemporary Seasonal Round

"We do everything – fishing and hunting – year-round."

Nondalton Hunter ~ 2005

The seasonal round of subsistence harvests as it once existed and as it exists today is an appropriate starting point for this discussion. We begin with fishing because of its significance to the community. One resident explained Nondalton's fishing activities during the year as follows.

> In the summer, we put up fish, split fish, can fish, salt fish, freeze fish, smoke fish. What else do we eat? Trout, we fish for trout, Dolly Varden, whitefish and the whitefish, we dry it – smoke it in the smoke house. All year too, all seasons

> we fish. Summertime we get our salmon so we could have that for the winter. Year around we have trout, lingcod (burbot), set hooks for lake trout.

In Nondalton, large land mammals are second in importance after fish as a subsistence resource. As one resident related, "In the summer we have caribou, hunt caribou, usually up on the mountains."

An important summer and fall activity is picking berries and wild plants.

> Cranberries, blackberries, blueberries. Mostly in the fall and in the summer we get black berries, blue berries, salmon berries, low bush cranberries, and currants. There's medicinal plants we pick, when they are ripe at a certain time – [this] is when they have more medicine, when flowers are blooming, before they bloom is when they're much stronger. In the summer time too, we pick *hushnila* (roseroot), low bush plants that grow on the mountain, that's for sores There's *ts'elveni,* that's good for sores, mosquito bites, infection, they make tea out of it and drink it, wormwood is the English name, they pick that certain time too; rose hips is good to make jam or juice or tea. Most of these you get from the mountain, *ts'elveni* you can pick along the beach, grow along the banks of the river, along the creeks, lakes and ponds. And that *vinik*, pick *vinik* certain time, like second week, or third week in July when *vinik* is on the mountain, mountain ash is ripe at a certain time. They use pitch too, for cuts – gather pitch – it stops the bleeding. A lot of different plants are important, for being sick too, that blackberry leaves; they use that for stomachache, diarrhea, cramps in your stomach. We have lots of medicine that we gather, when they are fully ripe, sometimes before they're ripe we have to pick it.

Other resources that are important and that are harvested throughout the year include small land mammals and waterfowl. As one person explained:

> We eat mountain squirrels, rabbit, porcupine, get rabbits any time of year, porcupine, [although] not springtime. The animals, we don't bother them in the spring when they're having their young ones. When they first start eating greens too their meat doesn't taste good; no fat in it. [The] reason they use it in the fall is they have fat, use the fat also. [We] eat beaver, muskrat, ducks, swans; we don't eat that many swans. Porcupine, you don't eat it unless you are really hungry because they are so easy to kill; just hit them over the head.

<u>Preservation of Wild Foods</u>

As noted above, fish remain one of the most abundant and important resources for residents of Nondalton, who today, as in the past, use many methods to preserve fish. Preserving fish involves the following steps.

> When they catch the fish, they clean it [and] they save the fish, even the fish fins. The heads they split them and dry it, everything, only thing they throw away is a

> little bit of the guts – that's all. They cut the belly fin off and hang it in the smoke house to smoke and dry, the eggs, dry them, now we salt them, them days we used to hang it in the smoke house to dry. Dried eggs are good eating.

In the past, fish eggs were important travel food, as noted here.

> They use that (dried fish eggs) for hunting too, [for] survival. They use to take a little piece of dried salmon eggs [and] put in their pocket or grub box, mostly for survival, little piece of fish eggs and dry fish they keep in their pocket.

Other methods of preserving fish included wrapping fish "with grass and birch bark" and placing this in the ground.

> They used to dry fish, dry meat, [and] dry trout. For salmon they didn't have salt so they used spruce bark and they buried the fish so no air gets in. In the springtime after the winter, they dig it up and it is almost as fresh as when they put it in.

Because of the possibility of resource shortages in the past, the Dena'ina of the Nondalton area were careful to use all parts of the fish. One person said, "They never wasted anything. They had ways of saving it. We still don't waste anything now; we don't get any more than we need."

Moose and caribou were also preserved in different ways. According to one resident:

> They dried it, my mom used to fry it little bit and then put it in a barrel, layer it, meat and oil, meat and oil and pack it like that. I saw her do that. They put it in brine or dry it. They fry it and put it in moose guts or you know, caribou food bag then they sew it up and they keep it like that for wintertime.

Although not hunted as frequently now, in the past sheep were an important resource not only for meat, but also for hides, which were used for blankets. Caribou skins were also used.

> Long time ago they used to use the skin, they make blanket out of it or sleeping bag for the winter. My dad and them used to get caribou and sheep too, making sleeping bag out of it for traveling. We used to sleep in caribou skin too; they cover it up on each side.

<u>Traditional Harvest Areas</u>

Today, residents of Nondalton travel to many parts of their traditional territory to harvest fish, moose, caribou, black and brown bears, small land mammals, and birds. They understand their local ecosystem and know where to find each resource. Their contemporary use of this area mirrors their traditional use of lands to which they once controlled access. Figure 6-8 shows the location by number of the places mentioned by respondents; Table 6-11 is a key for the numbered places.

Residents of the local communities continue to respect the boundaries of their neighbors. As one key respondent said,

> I am the best trapper. Trapping, we used to do that all the time, that's income. These young peoples around here they don't trap. [Trapping] used to be mostly around Chulitna, Mulchatna. All the trapping grounds for Nondalton [are] around here, up to Tazimina [Lake]. Mulchatna, I used to trap in there all the time, that's my trapping ground. But, trapping ground goes up Lake Clark, all the way to Mulchatna and Telaquana (1). They used to go to Long Lake and to Nondalton again.
>
> What they do, like Newhalen, they hardly go in anybody else's trap line. They respect one another for that. That's trapping and hunting. Iliamna, hardly go down this way, they respect the others. Like over here, that's Nondalton's trap line, all they way from Mulchatna up to Telequana. Like here's Dutna Lake, they go far as there, all the way Telequana. They went to Frying Pan Lake. They camp, go on this side of Groundhog Mountain, there's timber over here, hill and timber, good camping ground.

In some cases in the past, harvest areas were shared with other communities, including other Dena'ina from Pedro Bay and Old Iliamna, and Yup'ik people from Newhalen (Fig. 6-9). However, residents of other communities had to obtain permission from Nondalton to use their lands.

> What Nondalton village should do, like spring beaver hunting, muskrat hunting, otter hunting, Nondalton used to take Chulitna (2) up to Long Lake (4). Nondalton would have Pedro Bay come over and they give them ground, far as here up to Nicovena (3), that's far as they give them land to trap and they give Newhalen land from here on up, and they trap. That's the way they used to respect one another, Nondalton give so much land to trap. Pedro Bay, and Old Iliamna. They used to respect one another's trapping ground; they used to give it to them to trap in the spring. But, they used to make rules, you go in somebody's, say Old Iliamna's trapping ground, you can go in there and get beaver, and you know that's their area. That's our way.

One of the most important areas for harvesting a variety of resources is the Chulitna River valley that extends northeast from Lake Clark just up the lake from Kijik. One resident described the abundance of resources in the Chulitna River valley and the areas to the north.

> Chulitna is good place in the springtime; catch any kind of trout there. They used to get moose caribou, beaver, ducks -- this was always there -- that's why they move up there in the springtime. Beaver in the spring time, you know, before they eat the greens, that's when we want to get the beaver, after they start eating the greens the meat is no more good, so we don't eat the beaver after they start eating the greens.

> Chultina, you could survive there, that's where they used to always camp, springtime; all the way up to Long Lake (4), [and] Nicovena (3). Kijik, maybe it's good, but it's so far away, they do put up fall fish in the fall time, they used to camp up there and put up all their *nudelvay* (dried fall fish). Kijik is where we do fall fish.

Other important areas were north to Telequana Lake and west to the Mulchatna River.

> Well for getting meat, they have to go up Middle Fork, Mulchatna and Telequana. Telequana, that's where my grandpa and them came from. And that's where my dad stayed with us in the fall time, then all winter, we would go trapping, because there was no moose around. If he gets [a] moose he's got to come down and bring some down to grandma and them.

> Yeah, we use Chulitna River (5). Now, they got moose, caribou all over, we had the hardest time to keep up with meat, we didn't know how to can, after I learn how to can, I can it for the winter, I used to can 10 cases, canning fish too. Then they used jars. They used Chulitna (for hunting), Currant Creek (6), Big River, if they go with boat. If they walk, they go up Telequana way. They get moose up at Currant Creek and black bear. Right up the head of the lake there, they get sheep (7). Used to, but no more now, hardly anybody hunt sheep no more… I look for sheep, but I never see any. But nobody cares for the meat I think, the old timers used to, we did, because we grew up with it.

The areas around lower and upper Tazimina Lake were also important for hunting. One resident said, "I know it was good hunting over here in Tazimna lakes, they used to hunt and trap, moose mostly."

<u>Camps within Traditional Use Areas</u>

Before the advent of snowmachines and four-wheelers (locally called a "Honda"), it took a considerable amount of time to travel to hunting and trapping areas. Residents of Nondalton therefore had camps situated throughout their traditional territory. Below is a discussion by 4 residents of Nondalton, extracted from two interviews, about the locations of camps and the resources harvested near each one. Tents were used in many locations. Some sites had more permanent structures such as caches built on stilts and steam baths. One resident said that when you build a camp, the first thing you construct is the steam bath.

> There used to be a lot of camping sites all over, everywhere, wherever they camp they leave poles for tent frame or steam bath especially. Duthca (8), they used to always make those caches, with logs way up high so animals don't get it and they just stored their meat in it.

> [One location is] Telequana [which] was abandoned, it was used a lot long time ago, and all along [the] Chulitna, all the way up the river, all along Tazimna (9), these mountains over here is good place to fish for trout too, there's mountain

> trout, Tazimina Mountains. Right behind Ground Hog Mountain (10) too, in the springtime we hunt ptarmigan, lots of ptarmigan in the spring there and they nest there. That's our nesting area for caribou, caribou have their young in that area, around Ground Hog Mountain in this area, where the caribou have their young. Mountain squirrels too, they used to eat mountain squirrels, we don't eat it today, maybe the elders, but we used the skins to make mittens, hats, parkas. There are camps for just squirrel hunting, up on the mountains.

When asked about camps in the Groundhog Mountain area, key respondents replied:

> Right in those creeks, right along here, there's trapping camps (11), all around that mountain, there's Frying Pan Lake (12), there would be hunting and trapping camps, Ground Hog too, they used to hunt jack rabbits, lots of jack rabbits all over Ground Hog Mountain. They use the fur, eat the meat. Lynx too, they eat lynx, all over, you can get lynx all over, beaver too, wolverine. Mostly in the winter they trap lynx.

The following discussion centered on the hunting and trapping camps around Groundhog Mountain and the area south towards Frying Pan Lake.

> There is a camp; the most recent camp is right under there (Ground Hog Mountain). They used to trap beaver all around Frying Pan Lake (12). [He] trapped beaver there and sold the fur the David Green [Company] and they found gold dust in the fur, you know, we had to tell them where we got the beaver, that's when word got out that there is gold in the area. All over in that area, all the way Mulchatna, Dutna Lake, Whitefish Lake (13), all the men, families used to go out, [and] Chilchitna (14), they trap beaver there. Little Mulchatna, all over, Pete Koktelash had a cabin there. Nicovena (3), Long Lake (4), they trap all over there, trapping, hunting, fishing, in all these places they were trapping were camps, There are camp sites all over that area. Hoholitna (15) they trap there, any place they trap is an abandoned camp area, people don't go that far much any more. Chilchitna (14) was a very popular area for trapping, because they used to get moose too, when there was so much snow. Bonanza Hills (16), they trapped up there too, [there are] abandoned camps, Swan Lake, they been all over trapping. They always came back for church holidays in May.

The Chulitna River valley is a popular area that harbors many species for trapping and there were many camps located there. Some of the resources found here include "beaver, wolverine, lynx, martin, muskrat, fox, [and] weasel." Some traditional trapping areas are no longer used as two residents related, below. They also discussed some of their memories of these places.

> Trapping now, nobody traps, all the trappers are gone now. [So, now nobody goes to the old campsites?] Not now, especially Chulitna, Newhalen people used to go way up above Nicovena (3), those two big lakes, now nobody goes there. When they [did] go over there they camp, to catch squirrels. The Nicovena area, they used skin boats, they all came down the Chulitna. Moose skin [boats], my dad

> used to make that boat, all he had to do is get one moose and we would have a boat.
>
> Well my dad's from Telequana, that's a big lake there, that's where he was born, and we went up there in the summer time, wintertime. After we start school, we don't go up there anymore, him and mom used to go up there and trap. I've seen it (Telequana) [in the] summer time, winter time, spring time, we used to go up there in spring time, no airplane, nothing.

Adjustments to Changing Patterns of Use

Over the last century, subsistence harvest patterns at Nondalton have changed for several reasons. The opening of a school in Nondalton caused parents to stay in the community during the winter. The movement of animals to different areas has changed people's patterns of use, as will be discussed in the large land mammal section. Fishing patterns changed when some streams lost their productivity as good spawning streams. In addition, as just discussed above, residents are no longer trapping as they once did. As will be discussed below, the presence of sport hunters and fishers changed local patterns of use as well.

Large Land Mammals

Moose and caribou are two key species in Nondalton's subsistence harvests. When one is not available in the area, hunters focus their harvesting efforts on the other. Key respondents described some of the adjustments they have had to make over the years. For example, in response to a question about whether people are now traveling father to find moose, a respondent said:

> Only for caribou. They are not around the place where they usually hang around.
>
> Well, they didn't have any moose when I was small, they had to go way up Telequana to get their moose or middle fork, but right down here there was none. I was born [in] 1921, and they have to go far as Middle Fork I guess, to find a moose, that's way up. It's over Telequana way, on the other side, going toward Telequana.

Another respondent added:

> We used to have caribou during the wintertime, we used to have moose up here on the hillside, I don't know what cause it but there's hardly any moose around. We never did take too much, just take what we need to eat. Before my time, our elders tell us, at that time, there was no caribou or either moose, moose came after caribou. There was no moose around, unless you go back [on the] Mulchatna [River] somewhere. Finally we got moose around here and same with caribou. First time they see moose, they were all excited, seeing a big animal. [This was] way back, when they lived in Kijik, they moved away from Kijik, I am 82, this was long time before I was born.

Moose and caribou have been scarce in the past few years. Caribou have not been in areas near Nondalton for about 8 years. Moose were scarce 2 years ago but they are beginning to make a comeback, according to key respondents in Nondalton. A key respondent described moose and caribou hunting efforts in 2004.

> Last year they had to go all the way past Lime Village to get caribou; moose too. It's hard to get now, don't see moose around, like if you go to Chulitna, used to be we don't [have to] go very far and see moose, not anymore. We used to go up to Chulitna, you go up and stand on look out bluff, moose will be out there in the flats and you just take your pick, go up there today, in the fall when you're ready to hunt, there's nothing, not one moose. Caribou used to come out on the beach, there's less moose and caribou.
>
> [Today] they have to go further. For caribou and moose, for caribou, we have to go up in the mountains for caribou and moose we have to go up the lake. To go farther, depends on where you get your moose, you might go 40-50 miles.

Fishing and Trapping

Fish are an essential subsistence resource for the people of Nondalton. During the winter and early spring, ice fishing is a popular activity at Sixmile Lake and other locations further from the village. Fishing locations have changed over time and fishing success has varied from year to year.

> Well I heard one time there was no fish around here one summer and they went all the way to Telequana and made camp and that's where they got their fish for the winter. I think that fish came from Mulchatna River, there was no fish around here, that's what Agnes (Cusma) said. I know that happened once, she was telling me about it. Spring time we used to go up Chulitna and get pikes and white fish, dry meat and ducks and salt the ducks in brine water during the summer, beaver meat we put it in brine water, then soak it out and eat it, it was good, people don't do that anymore but it might come to that some day. Telequana, they would have to walk up from Kijik, up Telequana trail. Agnes said they had camp up there, smoke house, cache, everything.

Many people said that they no longer use some streams because of the presence of beaver dams. Key respondents linked the quantity of spawning sockeye salmon in particular streams to beaver trapping. They said that rivers with thinner ice are productive spawning streams because trappers can cut through the ice and control the beaver population.

> Up the lake there isn't much fall fish like there used to be either, remember there used to be a lot of fish, they go up the creeks or go up to that lake and get fish. Fall the beaches used to be covered with dead fish, you could just smell it in the fall, today you find just a few fish here and there, maybe 10, 20, long time ago there used to be lots they used to make piles and piles of fish for feeding dogs, it

has a lot of food value, you know oil, so they used to cook that for the dogs. Fish that's on the bottom, you know it got hair growing on it; they used to eat that too.

Before, they used to open up the beaver dam so the fish could go up to the lake and spawn and now nobody does that anymore, nobody even traps beaver, hardly, anymore. There's a lot of beaver. They used to open it up (beaver dams) so the fish could go up the river. Well everybody used to go trapping, everybody in the village used to leave, to go trapping beaver, lynx, wolverine, fox, they trap all winter. Mulchatna was a good area for trapping, because its easy trapping there, water didn't freeze as much, because fish spawn in Mulchatna, so the water doesn't get that thick, certain parts. Whereas Chulitna, if your trapping there, the ice get 5, 6 feet cause you know, [freshwater] fish [and] salmon don't spawn in Chulitna, king salmon and rainbow spawn in Mulchatna so it's easier trapping there, most of the people trapped there. The ones that really worked hard is the ones who trapped in Chulitna because you had to chop [through] five [or] six feet of ice.

Adjustments to Changing Technology, Economy, and Culture

In the view of the elders interviewed for this project, "modern society" has caught up with residents of Nondalton. Two elders described how things have changed.

[It has] changed so much, every thing is modern now; people don't do it any more…a few people still trap today. We like to set up trapping camp and stay out there. They used to have dogs to travel long ago and put up a lot of fish for their dogs, today they have snowmachines [and] Hondas, and it takes a lot of gas to travel to those areas. It's a lot of work, today people don't need the furs, and [they] don't need the money. [They] can make money going firefighting and there are jobs they can go to…they are not depending on furs to make money. It's a lot of work to make camp, check traps every day.

[People stopped trapping in the] late 60s [or] early 70s especially, when we got electricity and running water, when we first got our running water was in the 70s, 71, [and] late 70s in when we got our electricity. Then everybody started getting snowmachines, [before] they use dogs. They used to fill up the smokehouse three times; they put up fish for dogs too then. Bones too, a bundle of fish is forty fish. Today my family put up maybe 200 fish at the most.

There used to be a lot of sharing if somebody got moose everybody got a piece, there was no way to freeze it especially with elders today everybody put their meat in the freezer, not as much sharing. A lot of people don't put up fish anymore, like springtime used to be as soon as school is out we move to fish camp, nobody left in the village, not one family, now maybe there's a couple families [and] that's it, the rest stay in the village.

> They are losing how we put up fish. I want my kids to know this, that's what we raised up on mostly, fish (salmon) and trouts (freshwater fish). Maybe the warmer weather affects the fish.

Local Observations of Environmental Change and Health of Animals

The previous respondent noted the many changes occurring in subsistence activities, and mentioned the possibility of warmer weather affecting fish. The following comments also describe the effects that a warming climate may be having on the health and abundance of subsistence resources.

> [In the] summertime water is warmer and in the wintertime it is not cold like it used to be and that's why we're losing our berries and our fish. Probably be warmer this year and no water cause there's no snow on the mountain. When I went through the pass there's just a little bit [of] snow. I don't think were going to have much water this summer, lack of snow, it did change a lot.

> The modern day uses we have today changes the environment, I think, we use more gas-powered engines to travel and there's a lot of pollution like fallout affects the caribou. [This] affects the animals from the wars [like] they had a long time ago, fallout that came over the area I think that affected the animals and the meat who knows, maybe that's why we're getting cancer today. We're getting different diseases than we used to get. There's some caribou that are sick too they call it hoof disease, and birds they say is carrying diseases cause of pollution, come from way down south all that pollution.

The interviewer asked if community residents would eat sick caribou.

> It seems like a long time ago the caribou used to be fat, you know like 6 inches of fat on the caribou, whereas today there's just maybe 2 inches at the most, today they are not as fat I noticed that when I was hunting in Chignik Lake, the caribou was fat, I said, we used to have caribou like that, that fat you know, now we don't, moose too, I never noticed that moose be sick but I know caribou was.

Human Influence on Changing Patterns of Use

During the key respondent interviews, the elders described how, over time, the methods of harvesting animals and fish have changed. However, according to 2 Nondalton residents, despite these changes, the traditional values of respect for the resource and not harvesting more than is needed, persist.

> They utilized everything from the animal, the bones they used to make tools out of. [You are] supposed to never leave bones laying around anywhere, you put it back in the water, don't leave bones where people walk, most of the time I saw bones out here in the fish hole, they throw it in the water, beaver bones, moose

> bones or any kind of bones. Fish bones they don't let lay around either, it goes back to the water, they respect whatever they got.
>
> Because they feel, that their spirits, it could change your luck if you did not take care of the animal properly, your luck would change and the next time you went hunting, you know, you might not get that animal because you did not properly take care of it, you had to treat that animal respectfully, so the next time you hunt, you'll get another moose, you've treated that animal with respect. You didn't just throw their bones so people could walk over it, especially women, women are not supposed to step over bones, fish bones or any kind of animal bones, they didn't step over, even your own body, other people's body, if they did it could change their luck, especially men, women are not supposed to step over men, it could change their luck, if they're going hunting or something.

Connected to Nondalton residents' tradition that animals be respected are their objections to catch and release fishing. In their view, this practice is disrespectful to the fish. Survey respondents reported that they find in their subsistence nets dead fish that have torn mouths from the extraction of hooks in the catch and release fishery. Also, they reported that some of the released fish survive but have difficulty eating.

> They just fish and release. When they release the fish [the fish] die. You are not supposed to do that you know, take them off the hook and throw it back in the water. I find a lot of fish today, their mouth is torn and they're skinny cause their mouth are torn from the hook, you know, catch and release, we'd catch a trout with a hook and say how come this trout is so skinny, cause his mouth is torn, he can't eat. Whereas you catch a healthy trout, you can tell it wasn't caught and released, because it's healthy, it's fat, taste good.

In the comments below, one respondent describes the proliferation of lodges in the area. Others remarked that many hunters arrive from urban areas of Alaska to hunt and fish, usually by charter flights but often in their own planes. The final comment in this set expresses the concern of many Nondalton residents that in the future even more people will arrive in the area and this will drastically change the character of the land around their community.

> There are lodges across Chulitna, at Port Alsworth there is lots of lodges up there. There are two lodges in Nondalton and Lake Iliamna has lots of lodges. [From] Kenai, Eagle River, Wasilla; those planes come out, those outsiders some of them they call it subsistence too.
>
> Too many hunters all over seems like they know when it's hunting season, hear more airplanes you know they're constantly moving and hiding (the animals) we don't get no games [animals] like we used to, cause all the flying around. People get it and they don't take all of it either, they just take maybe the legs and leave the rest and they take the horns and that's it when we get moose we take everything, even the hoofs, the skin, everything even the head all the intestines

> inside, everything is eatable we don't throw nothing away cause we don't get it all the time.
>
> I think the amount of people coming in, outsiders, there's more people coming in now, with airplanes it's so easy to get to these hunting and fishing areas you can just fly in there. We tried to get moose recently, we chartered a plane because we couldn't get moose, so we thought if we fly out and go hunting. Every lake we flew into and try to land, there's already a bunch of campsites there. Airplanes brought them in already so there's already people hunting there. So the only place we found was Jola Lake (17), this was in the fall, when moose season was open, even up at Long Lake there was camps. Long time ago there never used to be anybody. And there's more cows than bulls (moose), and they make criminals out of us, they say don't kill cows, if there's no bulls around. Very seldom we get moose, we didn't get our moose last winter, last couple winters, no moose in the area. What's going to happen when this Pebble mine goes in, how much more people will be lined up along our rivers, when ever they take a break, there'll be people spreading all over our land. Like Kenai, wall-to-wall people, whereas around here it's not like that, yet. I hate to see the day when there's wall-to-wall people.

Regulatory Impacts on Subsistence

Nondalton is on the edge of Lake Clark National Park and Preserve. Consequently, community residents have to deal with both state and federal fishing and hunting regulations, depending upon land status. For example, the Chulitna River valley begins at Lake Clark, within the boundaries of Lake Clark National Preserve, and extends onto state lands. Differences between these regulations, such as different seasons or bag limits, can be confusing and frustrating for subsistence hunters and fishers. In addition, there is a more general sentiment about regulations that many community residents share.

> [They have] made criminals out of us. We had to be sneaky about it, when we got hungry we went out and got it. Now we have to be scared to get what we want, afraid people will catch us, and say that guy is getting that and turn them in and it never used to be like that. You know, we could get meat any time we wanted it because we never were wasteful, and they gave it to everybody who needed it, not only for themselves. Now they have to be careful where they get it, and scare somebody might catch us. Not so much fishing, but for moose, caribou, ducks, certain time of year you have to get ducks.

In another interview, respondents remarked that they do not understand the need for regulations that restrict their subsistence activities when they are not wasteful. In addition they object to open hunting seasons during the rut, because to eat this meat with a strong taste requires drying it outside, sometimes all winter.

> It's harder now, because of the regulations. They don't let us residents be as we used to be, they have to watch, not like before…. They should let us get our

> subsistence when we need it, we don't kill just to kill, we kill it to eat it and give it to our neighbors, but we can't do that anymore because of regulations I guess. Let us get the animal when it's the prime time to eat the animal, we know the best time of year to get the moose, but then the season is closed, and even for caribou. [For example] if they had a season before the main hunters came in so we could get our game before, give us a chance first before they bring in hunters. Then in the winter the moose is good meat after the rutting season, during the rutting season is when we get to go hunting and the meat is no good. We don't like to eat moose when its rutting and after rutting season late in the winter.

Although the presence of a national park has changed the character of the area, some Nondalton residents said the park has improved subsistence hunting for them by limiting nonlocal sport hunters. In the past, they said, such hunters competed with residents from local communities such as Nondalton. One respondent explained:

> There was more commercial hunting before the park. There was just too many people. But after they made it a park, closed the hunting, then it's better for subsistence. Those people they came to get sheep, caribou and just the horns. That [was] all they were after, not the meat. I don't think anybody here wants sheep, it got a different taste… people don't eat it as much.

Some respondents stated that stronger regulations are needed to protect the resources from overhunting. They expressed confidence that biologists can manage the resources and would like to see them do more. These respondents would like to see more oversight of hunters who are dropped off alone to hunt without guides. They said they have firsthand knowledge that such hunters do not care for meat properly.

> Biologists when they manage, seems to be one of big arguments that come up, is about having a cow moose season, biologists say they have to protect the females because they're the ones that have the babies, and then they have… but then they're getting rid of all the bulls now… I think this area is getting less and less moose, less and less caribou because there's so much activity in the area that they just, you know, kind of like move out, if we could have closing the area for like 5 years and maybe let locals get what they need and keep the commercial hunting and fishing out for maybe 5 years, to bring back the population, would help a lot. It's getting worse. If you just close the area and bring back more bulls or cows, they're out there being lonely, too many cows and not enough bulls.
>
> I just hope they can regulate the hunting season and let the locals get their meat, so we'll have a chance to get meat. The hunters and the lodges, they don't give it to the locals. We never get meat and when they bring it in its already rotten, it's already sour. If all the lodges brought in the meat, took care of it so that we could eat it, we wouldn't even have to go hunting, we'd have our meat for the winter… During hunting season, its already spoiled by the time they bring it in, or it's full of bugs, dirty you know, when we get moose we take care of it so that meat is clean. We don't just lay it any where, we put down the brushes, lay the meat on it

so it doesn't get full of sand, rocks or twigs, the meat will be clean. They hang it up so the blood can drain out of it.

LOCAL CONCERNS OF NONDALTON RESIDENTS

Another key concern of the Nondalton residents interviewed for this project is that many community members are not participating in subsistence activities as they did in the past. For the most part, in their view, older residents and adults with families remain actively involved in subsistence activities, but the younger generation (school age) does not. Some residents believe that youth can become involved in subsistence activities through culture camps. Two key respondents discussed some of the activities being carried out to teach the younger generation.

> They do less fish than they used to. Like white people, they got to have a license or they can't do subsistence. There is less taking [of subsistence] than there used to be because not as much people putting fish up. And then my grandpa and them used to tell me, if you get too used to white people's food some day it's going to cost so much you won't be able to afford it, then you'll have to go back to your own food you were raised up on. I think he was right; it's getting close to that, things are going higher all the time. Like, you said, have a camp for children and teach time out there, that subsistence, a lot of the children here in the village, they don't know how to put up food, like how to put up food, it would be nice to teach. That would be good to have a camp set up some place. Remember [how they] buried fish down there that one year and next year they pick it up. They tell everybody, we're going to pick up that fish we put in the ground last year. Lucky, I didn't have breakfast, it saved that way, put birch bark all the way around, when they pack them, they put fireweed then fish, like that, then they cover it, after they cover it there's no air in it, they put gravel on top, so no air, so the fish is preserved all through the winter.

One of the biggest concerns is the lack of caribou in the area. Some residents believe the cause to be environmental; the caribou have exhausted the available lichen on which they feed. Some, however, believe that caribou are prevented from moving into the high country by too many sport hunters and the helicopter traffic headed for the potential mine area. One respondent said,

> There's not much caribou here, toward the mountain, not anymore up there now. Nobody gets caribou, just moose, but no caribou.

> I think the drop-off hunters is what's hurting mostly, because they're unguided, they can do anything they want. You know, I've heard some hunters say, oh I just want to hunt something, could I just kill this. I say, well are you gonna eat it? No I just want to kill something, I am out here to kill something, why not kill that duck or that *chulyin* (raven) or that seagull, just to kill something, you know, shoot at a beaver, just to kill anything that's alive out there. And if there unguided, then they could do anything they want, we wouldn't even know, they could be killing anything out there. And they don't bring all the meat in. And garbage too, we take care of our area, you can go out there right now, drive all the way around Lake

> Clark, except for a few places there might be, the younger generation don't pick up their trash, the older, the area is clean because we've taken care of it for thousands of years, we've always picked up after ourselves, we never left any kind of trace to show that we've been there.

In addition, the possibility of a mine located on and near productive subsistence use areas is of concern to Nondalton residents. Some believe that jobs would be of benefit to the younger generation. Yet one respondent remarked on the possibility of a mine in the area and jobs by saying, "Sometimes we get rich, but then we're gonna starve," meaning that although mine development might bring a cash income, it might also damage the traditional resources that the Nondalton people and their ancestors have relied upon for centuries.

Figure 6-1. Population Profile, Nondalton, 2004

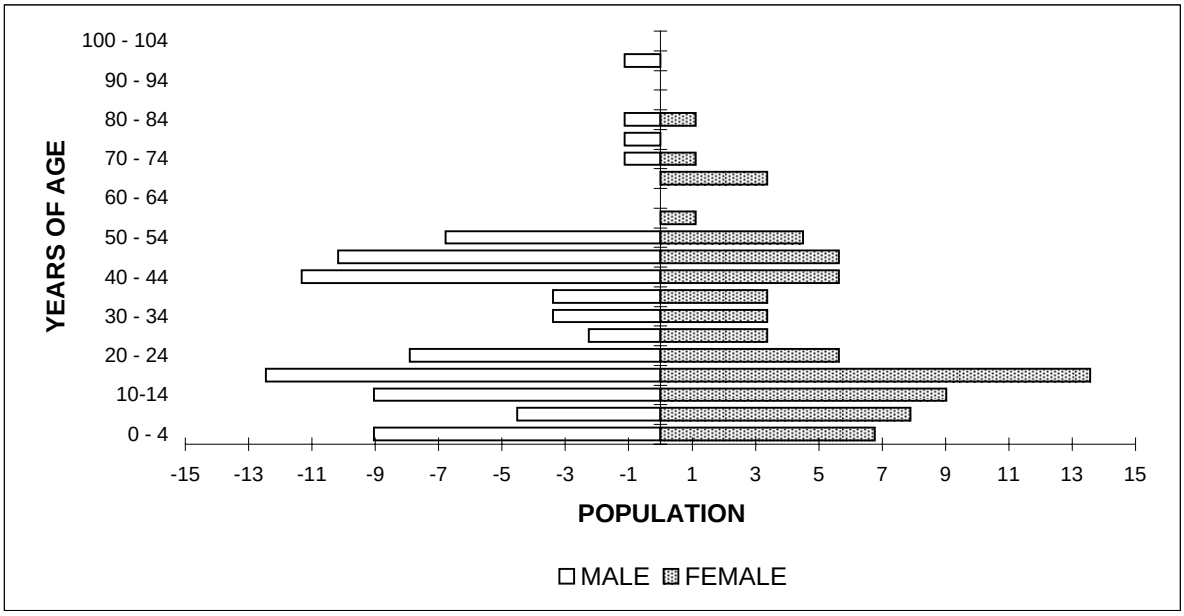


Table 6-1. Population Profile, Nondalton, 2004

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	9.1	10.5%	10.5%	6.8	8.7%	8.7%	15.8	9.7%	9.7%
5-9	4.5	5.3%	15.8%	7.9	10.1%	18.8%	12.4	7.6%	17.2%
10-14	9.1	10.5%	26.3%	9.1	11.6%	30.4%	18.1	11.0%	28.3%
15 - 19	12.4	14.5%	40.8%	13.6	17.4%	47.8%	26.0	15.9%	44.1%
20 - 24	7.9	9.2%	50.0%	5.7	7.2%	55.1%	13.6	8.3%	52.4%
25 - 29	2.3	2.6%	52.6%	3.4	4.3%	59.4%	5.7	3.4%	55.9%
30 - 34	3.4	3.9%	56.6%	3.4	4.3%	63.8%	6.8	4.1%	60.0%
35 - 39	3.4	3.9%	60.5%	3.4	4.3%	68.1%	6.8	4.1%	64.1%
40 - 44	11.3	13.2%	73.7%	5.7	7.2%	75.4%	17.0	10.3%	74.5%
45 - 49	10.2	11.8%	85.5%	5.7	7.2%	82.6%	15.8	9.7%	84.1%
50 - 54	6.8	7.9%	93.4%	4.5	5.8%	88.4%	11.3	6.9%	91.0%
55 - 59	0.0	0.0%	93.4%	1.1	1.4%	89.9%	1.1	0.7%	91.7%
60 - 64	0.0	0.0%	93.4%	0.0	0.0%	89.9%	0.0	0.0%	91.7%
65 - 69	0.0	0.0%	93.4%	3.4	4.3%	94.2%	3.4	2.1%	93.8%
70 - 74	1.1	1.3%	94.7%	1.1	1.4%	95.7%	2.3	1.4%	95.2%
75 - 79	1.1	1.3%	96.1%	0.0	0.0%	95.7%	1.1	0.7%	95.9%
80 - 84	1.1	1.3%	97.4%	1.1	1.4%	97.1%	2.3	1.4%	97.2%
85 - 89	0.0	0.0%	97.4%	0.0	0.0%	97.1%	0.0	0.0%	97.2%
90 - 94	0.0	0.0%	97.4%	0.0	0.0%	97.1%	0.0	0.0%	97.2%
95 - 99	1.1	1.3%	98.7%	0.0	0.0%	97.1%	1.1	0.7%	97.9%
100 - 104	0.0	0.0%	98.7%	0.0	0.0%	97.1%	0.0	0.0%	97.9%
Missing	1.1	1.3%	100.0%	2.3	2.9%	100.0%	3.4	2.1%	100.0%
TOTAL	86.0	100.0%		78.1	100.0%		164.1	100.0%	

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 6-2. Employment by Industry, Nondalton, 2004

	Jobs	Households	Individuals	Percentage of Income
Estimated Total Number*	126.7	39.6	78.1	
Federal Government	8.9%	21.1%	14.5%	4.9%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%
Natural Scientists and Mathematicians	0.0%	0.0%	0.0%	0.0%
Social Scientists, Social Workers, Religious Workers and Lawyers	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	1.8%	5.3%	2.9%	1.5%
Service Occupations	6.3%	13.2%	10.1%	3.2%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Transportation and Material Moving Occupations	0.9%	2.6%	1.4%	0.2%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
State Government	19.6%	39.5%	30.4%	15.2%
Service Occupations	18.8%	39.5%	30.4%	14.7%
Mechanics and Repairers	0.9%	2.6%	1.4%	0.5%
Construction and Extractive Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Local & Tribal Governments	43.8%	76.3%	63.8%	41.4%
Executive, Administrative and Managerial	6.3%	18.4%	10.1%	15.6%
Social Scientists, Social Workers, Religious Workers and Lawyers	1.8%	5.3%	2.9%	0.8%
Teachers, Librarians, and Councelors	11.6%	34.2%	18.8%	4.7%
Health Diagnosing and Treating Practitioners	0.9%	2.6%	1.4%	0.4%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Marketing and Sales Occupations	0.9%	2.6%	1.4%	0.2%
Administrative Support Occupations, Including Clerical	2.7%	7.9%	4.3%	3.1%
Service Occupations	5.4%	13.2%	8.7%	5.6%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	4.5%	10.5%	5.8%	3.9%
Handlers, Equipment Cleaners, Helpers and Laborers	9.8%	28.9%	15.9%	7.1%
Agriculture, Forestry & Fishing	2.7%	5.3%	4.3%	1.8%
Agricultural, Forestry and Fishing Occupations	2.7%	5.3%	4.3%	1.8%
Mining	12.5%	21.1%	15.9%	14.3%
Service Occupations	0.9%	2.6%	1.4%	0.1%
Construction and Extractive Occupations	2.7%	7.9%	4.3%	2.9%
Precision Production Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	8.9%	13.2%	10.1%	11.4%
Construction	0.9%	2.6%	1.4%	0.8%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Construction and Extractive Occupations	0.9%	2.6%	1.4%	0.8%
Transportation and Material Moving Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Manufacturing	0.0%	0.0%	0.0%	0.0%
Precision Production Occupations	0.0%	0.0%	0.0%	0.0%
Transportation, Communication & Utilities	1.8%	5.3%	2.9%	0.3%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%
Technologists and Technicians, Except Health	0.9%	2.6%	1.4%	0.1%
Administrative Support Occupations, Including Clerical	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%

[continued]

Table 6-2. Employment by Industry, Nondalton, 2004

	Jobs	Households	Individuals	Percentage of Income
Transportation and Material Moving Occupations	0.9%	2.6%	1.4%	0.2%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Wholesale Trade	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Retail Trade	0.9%	2.6%	1.4%	0.8%
Executive, Administrative and Managerial	0.9%	2.6%	1.4%	0.8%
Marketing and Sales Occupations	0.0%	0.0%	0.0%	0.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Services	8.9%	18.4%	11.6%	20.5%
Executive, Administrative and Managerial	0.0%	0.0%	0.0%	0.0%
Social Scientists, Social Workers, Religious Workers and Lawyers	0.0%	0.0%	0.0%	0.0%
Health Diagnosing and Treating Practitioners	3.6%	7.9%	4.3%	10.3%
Health Technologists and Technicians	0.9%	2.6%	1.4%	0.7%
Technologists and Technicians, Except Health	0.0%	0.0%	0.0%	0.0%
Administrative Support Occupations, Including Clerical	0.0%	0.0%	0.0%	0.0%
Service Occupations	3.6%	7.9%	4.3%	7.6%
Agricultural, Forestry and Fishing Occupations	0.0%	0.0%	0.0%	0.0%
Mechanics and Repairers	0.0%	0.0%	0.0%	0.0%
Transportation and Material Moving Occupations	0.9%	2.6%	1.4%	2.0%
Handlers, Equipment Cleaners, Helpers and Laborers	0.0%	0.0%	0.0%	0.0%
Miscellaneous Occupations	0.0%	0.0%	0.0%	0.0%

* Estimated number of households and individuals only include those that were employed during the study period.
SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 6-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Nondalton, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
All Resources	100.0%	97.4%	97.4%	97.4%	92.1%	58,685.7	1,364.8	357.7			8.3%
Fish	94.7%	92.1%	92.1%	73.7%	68.4%	41,566.3	966.7	253.3			8.1%
Salmon	92.1%	86.8%	86.8%	63.2%	55.3%	36,004.8	837.3	219.4	9,044.7 Ind	210.3	8.6%
Chum Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Coho Salmon	5.3%	2.6%	2.6%	2.6%	0.0%	28.9	0.7	0.2	5.7 Ind	0.1	0.0%
Chinook Salmon	13.2%	5.3%	5.3%	10.5%	0.0%	62.7	1.5	0.4	5.7 Ind	0.1	2.3%
Pink Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sockeye Salmon	92.1%	86.8%	86.8%	47.4%	52.6%	33,432.8	777.5	203.8	7,793.2 Ind	181.2	7.9%
Landlocked Salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Spawnouts	47.4%	39.5%	36.8%	28.9%	18.4%	2,480.4	57.7	15.1	1,240.2 Ind	28.8	7.8%
Spawning Sockeye	47.4%	39.5%	36.8%	28.9%	18.4%	2,480.4	57.7	15.1	1,240.2 Ind	28.8	7.8%
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%
Non-Salmon Fish	81.6%	76.3%	76.3%	44.7%	52.6%	5,561.5	129.3	33.9			11.2%
Herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Herring Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Herring Sac Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Herring Spawn on Kelp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Smelt	7.9%	2.6%	2.6%	5.3%	2.6%	407.4	9.5	2.5	67.9 Gal	1.6	2.6%
Cod	5.3%	0.0%	0.0%	5.3%	2.6%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Pacific Cod (gray)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Walleye Pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Cod	5.3%	0.0%	0.0%	5.3%	2.6%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Greenling	2.6%	2.6%	2.6%	2.6%	0.0%	9.1	0.2	0.1	2.3 Ind	0.1	0.0%
Lingcod	2.6%	2.6%	2.6%	2.6%	0.0%	9.1	0.2	0.1	2.3 Ind	0.1	0.0%
Unknown Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Halibut	36.8%	7.9%	7.9%	34.2%	5.3%	332.7	7.7	2.0	332.7 Lbs	7.7	2.4%
Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Black Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Red Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Bullhead Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%

Table 6-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Nondalton, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown 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%
Unknown Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Wolffish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	28.9%	26.3%	26.3%	10.5%	10.5%	122.2	2.8	0.7	122.2 Ind	2.8	6.4%
Char	68.4%	65.8%	65.8%	13.2%	44.7%	1,015.5	23.6	6.2	725.3 Ind	16.9	13.4%
Arctic Char	5.3%	5.3%	5.3%	0.0%	0.0%	47.5	1.1	0.3	33.9 Ind	0.8	0.9%
Dolly Varden	34.2%	34.2%	34.2%	7.9%	21.1%	489.5	11.4	3.0	349.7 Ind	8.1	7.0%
Dolly Varden-saltwater	2.6%	2.6%	2.6%	0.0%	2.6%	7.9	0.2	0.0	5.7 Ind	0.1	0.0%
Lake Trout	63.2%	60.5%	60.5%	13.2%	31.6%	478.4	11.1	2.9	341.7 Ind	7.9	12.2%
Grayling	55.3%	55.3%	55.3%	15.8%	21.1%	611.5	14.2	3.7	873.6 Ind	20.3	9.8%
Pike	36.8%	28.9%	28.9%	15.8%	18.4%	557.6	13.0	3.4	199.2 Ind	4.6	6.1%
Unknown Pike	36.8%	28.9%	28.9%	15.8%	18.4%	557.6	13.0	3.4	199.2 Ind	4.6	6.1%
Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sucker	21.1%	18.4%	18.4%	5.3%	13.2%	229.1	5.3	1.4	152.8 Ind	3.6	9.9%
Trout	63.2%	60.5%	60.5%	15.8%	23.7%	1,105.8	25.7	6.7	789.8 Ind	18.4	9.7%
Rainbow Trout	63.2%	60.5%	60.5%	15.8%	21.1%	741.4	17.2	4.5	529.6 Ind	12.3	9.6%
Steelhead	2.6%	2.6%	2.6%	0.0%	0.0%	3.2	0.1	0.0	2.3 Ind	0.1	0.0%
Unknown Trout	23.7%	23.7%	23.7%	5.3%	10.5%	361.2	8.4	2.2	258.0 Ind	6.0	3.3%
Whitefish	55.3%	55.3%	55.3%	7.9%	31.6%	1,170.6	27.2	7.1	669.9 Ind	15.6	6.8%
Broad Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
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	55.3%	55.3%	55.3%	7.9%	31.6%	1,168.4	27.2	7.1	667.6 Ind	15.5	6.8%
Round Whitefish	2.6%	2.6%	2.6%	0.0%	0.0%	2.3	0.1	0.0	2.3 Ind	0.1	0.0%
Land Mammals	89.5%	60.5%	55.3%	86.8%	57.9%	13,416.6	312.0	81.8			16.0%
Large Land Mammals	84.2%	44.7%	26.3%	78.9%	47.4%	12,209.7	283.9	74.4			10.5%
Black Bear	42.1%	26.3%	13.2%	34.2%	13.2%	328.2	7.6	2.0	5.7 Ind	0.1	5.9%
Brown Bear	0.0%	2.6%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Caribou	52.6%	31.6%	13.2%	47.4%	28.9%	2,715.8	63.2	16.6	18.1 Ind	0.4	9.1%
Moose	68.4%	44.7%	15.8%	63.2%	36.8%	9,165.8	213.2	55.9	17.0 Ind	0.4	11.5%

Table 6-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Nondalton, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Dall Sheep	5.3%	5.3%	0.0%	5.3%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Small Land Mammals	57.9%	50.0%	50.0%	21.1%	44.7%	1,206.8	28.1	7.4			13.1%
Beaver	36.8%	28.9%	28.9%	13.2%	26.3%	742.6	17.3	4.5	84.9 Ind	2.0	6.0%
Coyote	2.6%	2.6%	2.6%	0.0%	0.0%	0.0	0.0	0.0	1.1 Ind	0.0	0.0%
Fox	7.9%	7.9%	7.9%	0.0%	0.0%	0.0	0.0	0.0	15.8 Ind	0.4	0.9%
Red Fox	7.9%	7.9%	7.9%	0.0%	0.0%	0.0	0.0	0.0	15.8 Ind	0.4	0.9%
Hare	7.9%	7.9%	7.9%	0.0%	5.3%	29.4	0.7	0.2	14.7 Ind	0.3	3.0%
Snowshoe Hare	7.9%	7.9%	7.9%	0.0%	5.3%	29.4	0.7	0.2	14.7 Ind	0.3	3.0%
Land Otter	7.9%	7.9%	7.9%	0.0%	2.6%	0.0	0.0	0.0	4.5 Ind	0.1	5.7%
Lynx	7.9%	7.9%	7.9%	0.0%	0.0%	49.8	1.2	0.3	12.4 Ind	0.3	1.7%
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	7.9%	7.9%	7.9%	0.0%	0.0%	0.0	0.0	0.0	45.3 Ind	1.1	2.0%
Mink	2.6%	2.6%	2.6%	0.0%	0.0%	0.0	0.0	0.0	2.3 Ind	0.1	0.0%
Muskrat	2.6%	2.6%	2.6%	0.0%	0.0%	0.8	0.0	0.0	1.1 Ind	0.0	0.0%
Porcupine	44.7%	36.8%	36.8%	13.2%	34.2%	380.2	8.8	2.3	47.5 Ind	1.1	4.9%
Squirrel	2.6%	2.6%	2.6%	0.0%	2.6%	4.0	0.1	0.0	7.9 Ind	0.2	0.0%
Parka Squirrel (ground)	2.6%	2.6%	2.6%	0.0%	2.6%	4.0	0.1	0.0	7.9 Ind	0.2	0.0%
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	2.6%	2.6%	2.6%	0.0%	0.0%	0.0	0.0	0.0	2.3 Ind	0.1	0.0%
Wolf	10.5%	10.5%	10.5%	0.0%	2.6%	0.0	0.0	0.0	10.2 Ind	0.2	2.7%
Wolverine	7.9%	7.9%	7.9%	0.0%	0.0%	0.0	0.0	0.0	6.8 Ind	0.2	1.3%
Marine Mammals	7.9%	2.6%	0.0%	7.9%	0.0%	0.0	0.0	0.0			0.0%
Seal	7.9%	2.6%	0.0%	7.9%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Harbor Seal	7.9%	2.6%	0.0%	7.9%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Harbor Seal (freshwater)	5.3%	2.6%	0.0%	5.3%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Harbor Seal (saltwater)	2.6%	0.0%	0.0%	2.6%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Sea Otter	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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Whale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Belukha	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Birds and Eggs	50.0%	47.4%	47.4%	23.7%	39.5%	624.2	14.5	3.8			8.1%
Migratory Birds	42.1%	39.5%	39.5%	13.2%	23.7%	399.7	9.3	2.4	268.2 Ind	6.2	9.5%
Ducks	36.8%	34.2%	34.2%	7.9%	23.7%	130.8	3.0	0.8	156.2 Ind	3.6	7.3%
Bufflehead	5.3%	5.3%	5.3%	0.0%	5.3%	5.9	0.1	0.0	14.7 Ind	0.3	1.4%
Goldeneye	7.9%	7.9%	7.9%	0.0%	7.9%	19.0	0.4	0.1	23.8 Ind	0.6	1.4%

Table 6-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Nondalton, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Unknown Goldeneye	7.9%	7.9%	7.9%	0.0%	7.9%	19.0	0.4	0.1	23.8 Ind	0.6	1.4%
Mallard	31.6%	28.9%	28.9%	2.6%	21.1%	66.8	1.6	0.4	66.8 Ind	1.6	4.0%
Northern Pintail	13.2%	13.2%	13.2%	0.0%	13.2%	29.9	0.7	0.2	37.3 Ind	0.9	2.2%
Northern Shoveler	2.6%	2.6%	2.6%	0.0%	2.6%	4.1	0.1	0.0	6.8 Ind	0.2	0.0%
Wigeon	2.6%	2.6%	2.6%	2.6%	2.6%	0.8	0.0	0.0	1.1 Ind	0.0	0.0%
American Wigeon	2.6%	2.6%	2.6%	2.6%	2.6%	0.8	0.0	0.0	1.1 Ind	0.0	0.0%
Unknown Ducks	5.3%	5.3%	5.3%	2.6%	2.6%	4.4	0.1	0.0	5.7 Ind	0.1	1.6%
Geese	21.1%	21.1%	21.1%	2.6%	13.2%	207.8	4.8	1.3	101.8 Ind	2.4	5.7%
Canada Geese	13.2%	13.2%	13.2%	2.6%	10.5%	145.3	3.4	0.9	75.8 Ind	1.8	4.4%
Dusky Canada Geese	2.6%	2.6%	2.6%	0.0%	2.6%	81.5	1.9	0.5	22.6 Ind	0.5	0.0%
Lesser Canada Geese (taverner/parvi	13.2%	13.2%	13.2%	2.6%	10.5%	63.8	1.5	0.4	53.2 Ind	1.2	3.1%
Unknown Canada 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	7.9%	7.9%	7.9%	0.0%	2.6%	57.0	1.3	0.3	23.8 Ind	0.6	2.1%
Unknown Geese	2.6%	5.3%	2.6%	0.0%	2.6%	5.4	0.1	0.0	2.3 Ind	0.1	2.6%
Swan	15.8%	15.8%	13.2%	2.6%	7.9%	61.1	1.4	0.4	10.2 Ind	0.2	2.3%
Tundra Swan (whistling)	15.8%	15.8%	13.2%	2.6%	7.9%	61.1	1.4	0.4	10.2 Ind	0.2	2.3%
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%
Seabirds & Loons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Loons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Loon	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	44.7%	42.1%	42.1%	7.9%	26.3%	224.5	5.2	1.4	320.8 Ind	7.5	5.5%
Upland Game Birds	44.7%	42.1%	42.1%	7.9%	26.3%	224.5	5.2	1.4	320.8 Ind	7.5	5.5%
Grouse	42.1%	39.5%	39.5%	7.9%	23.7%	152.9	3.6	0.9	218.5 Ind	5.1	5.0%
Ptarmigan	28.9%	28.9%	28.9%	0.0%	21.1%	71.6	1.7	0.4	102.3 Ind	2.4	3.9%
Unknown Ptarmigan	28.9%	28.9%	28.9%	0.0%	21.1%	71.6	1.7	0.4	102.3 Ind	2.4	3.9%
Bird Eggs	13.2%	0.0%	0.0%	13.2%	5.3%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Duck Eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown 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%
Unknown 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%
Seabird & Loon Eggs	13.2%	0.0%	0.0%	13.2%	5.3%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Gull Eggs	13.2%	0.0%	0.0%	13.2%	5.3%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Marine Invertebrates	13.2%	7.9%	7.9%	13.2%	2.6%	66.4	1.5	0.4			2.4%

Table 6-3. Estimated Harvest and Use of Fish, Game, and Plant Resources, Nondalton, 2004

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested*		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Clams	13.2%	7.9%	7.9%	10.5%	2.6%	54.3	1.3	0.3	18.1 Gal	0.4	2.2%
Butter Clams	5.3%	2.6%	2.6%	2.6%	2.6%	17.0	0.4	0.1	5.7 Gal	0.1	0.0%
Freshwater Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Horse Clams (Gaper)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Pacific Littleneck Clams (Steamers)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Pinkneck 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	13.2%	7.9%	7.9%	10.5%	2.6%	37.3	0.9	0.2	12.4 Gal	0.3	1.7%
Unknown Clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Cockles	2.6%	0.0%	0.0%	2.6%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Unknown Cockles	2.6%	0.0%	0.0%	2.6%	0.0%	0.0	0.0	0.0	0.0 Gal	0.0	0.0%
Crabs	10.5%	2.6%	2.6%	7.9%	0.0%	3.6	0.1	0.0	2.3 Ind	0.1	0.0%
Dungeness Crab	7.9%	0.0%	0.0%	7.9%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
King Crab	2.6%	0.0%	0.0%	2.6%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Tanner Crab	2.6%	0.0%	0.0%	2.6%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Tanner Crab, Bairdi	2.6%	0.0%	0.0%	2.6%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Tanner Crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0 Ind	0.0	0.0%
Unknown Crab	5.3%	2.6%	2.6%	2.6%	0.0%	3.6	0.1	0.0	2.3 Ind	0.1	0.0%
Mussels	2.6%	2.6%	2.6%	0.0%	2.6%	8.5	0.2	0.1	5.7 Gal	0.1	0.0%
Unknown Mussels	2.6%	2.6%	2.6%	0.0%	2.6%	8.5	0.2	0.1	5.7 Gal	0.1	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%
Unknown 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	97.4%	92.1%	92.1%	39.5%	55.3%	3,012.3	70.1	18.4			11.4%
Berries	97.4%	89.5%	92.1%	34.2%	55.3%	2,666.0	62.0	16.2	666.5 Gal	15.5	13.5%
Plants/Greens/Mushrooms	36.8%	34.2%	31.6%	13.2%	10.5%	346.3	8.1	2.1	86.6 Gal	2.0	8.6%
Wood	68.4%	65.8%	65.8%	7.9%	13.2%	0.0	0.0	0.0	138.6 Crd	3.2	8.8%

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

Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys, 2005

Table 6-4. Top Ten Resouces Harvested and Used, Nondalton, 2004

Harvest			Use		
Rank	Resource	Lbs per Capita	Rank	Resource	% of HHs Using
1	Sockeye salmon	203.8	1	Berries	97.4%
2	Moose	55.9	2	Sockeye Salmon	92.1%
3	Caribou	16.6	3	Lake trout	63.2%
4	Berries	16.3	3	Rainbow trout	63.2%
5	Spawning sockeye	15.1	5	Grayling	55.3%
6	Humpback whitefish	7.1	5	Humpback whitefish	55.3%
7	Beaver	4.5	7	Caribou	52.6%
8	Rainbow trout	4.5	8	Spawning sockeye	47.4%
9	Pike	3.4	9	Porcupine	44.7%
10	Dolly Varden	3.0	10	Grouse	42.1%
			10	Black bear	42.1%

Source: ADF&G, Division of Subsistence, Household Survey, 2005

Table 6-5. Estimated Percentages of Salmon Harvest by Gear Type, Resource, and Total Salmon Harvest, Nondalton, 2004

Resource	Percent Base	Removed from Commercial Catch		Subsistence Methods								Rod and Reel		Any Method	
				Setnet		Seine		Other		Subsistence Gear Any Method					
		No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
Salmon	geartype	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	resource	0.4%	0.5%	76.0%	74.4%	19.0%	20.3%	0.0%	0.0%	95.1%	94.7%	4.5%	4.8%	100.0%	100.0%
	total	0.4%	0.5%	76.0%	74.4%	19.0%	20.3%	0.0%	0.0%	95.1%	94.7%	4.5%	4.8%	100.0%	100.0%
Chum 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%
Coho Salmon	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	1.7%	0.1%	0.1%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%
Chinook Salmon	geartype	9.1%	20.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.5%	0.1%	0.2%
	resource	60.0%	60.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	40.0%	40.0%	100.0%	100.0%
	total	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%
Pink 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%
Sockeye Salmon	geartype	90.9%	79.5%	82.8%	91.2%	98.0%	99.1%	0.0%	0.0%	85.8%	92.9%	92.5%	94.2%	86.2%	92.9%
	resource	0.4%	0.4%	73.1%	73.1%	21.6%	21.6%	0.0%	0.0%	94.7%	94.7%	4.9%	4.9%	100.0%	100.0%
	total	0.4%	0.4%	63.0%	67.8%	18.6%	20.1%	0.0%	0.0%	81.6%	87.9%	4.2%	4.5%	86.2%	92.9%
Landlocked 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%
Spawning Sockeye	geartype	0.0%	0.0%	17.2%	8.8%	2.0%	0.9%	0.0%	0.0%	14.2%	7.1%	5.5%	2.6%	13.7%	6.9%
	resource	0.0%	0.0%	95.4%	95.4%	2.7%	2.7%	0.0%	0.0%	98.2%	98.2%	1.8%	1.8%	100.0%	100.0%
	total	0.0%	0.0%	13.1%	6.6%	0.4%	0.2%	0.0%	0.0%	13.5%	6.8%	0.3%	0.1%	13.7%	6.9%
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: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 6-6. Estimated Percentages of Non-Salmon Fish Harvest by Gear Type, Resource, and Total Harvest, Nondalton, 2004[1]

Resource	Percent Base	Removed from Commercial Gear	Subsistence Gear							Rod and Reel	Any Method
			Set Net	Seine	Hand Line Gear	Dip Net	Ice Fishing	Other Subsistence Gear	Any Subsistence Gear		
Non-Salmon Fish	geartype	100.0%	100.0%	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%	100.0%	100.0%
	resource	0.1%	16.1%	0.0%	7.6%	0.0%	37.0%	0.0%	60.8%	38.6%	100.0%
	total	0.1%	16.1%	16.1%	7.6%	0.0%	37.0%	0.0%	60.8%	38.6%	100.0%
Smelt	geartype	0.0%	45.4%	0.0%	0.0%	0.0%	0.0%	0.0%	12.1%	0.0%	7.3%
	resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	total	0.0%	7.3%	7.3%	0.0%	0.0%	0.0%	0.0%	7.3%	0.0%	7.3%
Lingcod	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	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%
Halibut	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.5%	6.0%
	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%	6.0%	6.0%
Burbot	geartype	0.0%	0.0%	0.0%	0.0%	0.0%	4.9%	0.0%	3.0%	0.4%	2.2%
	resource	0.0%	0.0%	0.0%	0.0%	0.0%	82.4%	0.0%	82.4%	6.5%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	0.0%	1.8%	0.1%	2.2%
Arctic Char	geartype	0.0%	0.0%	0.0%	3.7%	0.0%	0.8%	0.0%	0.9%	0.7%	0.9%
	resource	0.0%	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	66.7%	33.3%	100.0%
	total	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	0.0%	0.6%	0.3%	0.9%
Dolly Varden	geartype	0.0%	1.1%	0.0%	9.3%	0.0%	8.9%	0.0%	6.8%	11.7%	8.7%
	resource	0.0%	2.0%	0.0%	8.2%	0.0%	37.8%	0.0%	48.0%	52.0%	100.0%
	total	0.0%	0.2%	0.2%	0.7%	0.0%	3.3%	0.0%	4.2%	4.5%	8.7%
Dolly Varden-saltwater	geartype	100.0%	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%
Lake Trout	geartype	0.0%	9.7%	0.0%	0.0%	0.0%	8.5%	0.0%	7.8%	10.0%	8.6%
	resource	0.0%	18.2%	0.0%	0.0%	0.0%	36.8%	0.0%	55.0%	45.0%	100.0%
	total	0.0%	1.6%	1.6%	0.0%	0.0%	3.2%	0.0%	4.7%	3.9%	8.6%
Grayling	geartype	0.0%	2.7%	0.0%	3.7%	0.0%	17.9%	0.0%	12.0%	9.5%	11.0%
	resource	0.0%	3.9%	0.0%	2.6%	0.0%	60.1%	0.0%	66.6%	33.4%	100.0%
	total	0.0%	0.4%	0.4%	0.3%	0.0%	6.6%	0.0%	7.3%	3.7%	11.0%
Unknown Pike	geartype	0.0%	11.0%	0.0%	0.0%	0.0%	11.1%	0.0%	9.7%	10.0%	10.0%
	resource	0.0%	17.6%	0.0%	0.0%	0.0%	40.9%	0.0%	58.5%	38.6%	100.0%
	total	0.0%	1.8%	1.8%	0.0%	0.0%	4.1%	0.0%	5.9%	3.9%	10.0%
Sucker	geartype	0.0%	5.9%	0.0%	1.6%	0.0%	8.2%	0.0%	6.8%	0.0%	4.1%
	resource	0.0%	23.0%	0.0%	3.0%	0.0%	74.1%	0.0%	100.0%	0.0%	100.0%
	total	0.0%	0.9%	0.9%	0.1%	0.0%	3.1%	0.0%	4.1%	0.0%	4.1%
Rainbow Trout	geartype	0.0%	1.8%	0.0%	7.5%	0.0%	13.2%	0.0%	9.4%	19.7%	13.3%
	resource	0.0%	2.1%	0.0%	4.3%	0.0%	36.5%	0.0%	42.9%	57.1%	100.0%
	total	0.0%	0.3%	0.3%	0.6%	0.0%	4.9%	0.0%	5.7%	7.6%	13.3%
Steelhead	geartype	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	resource	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Unknown Trout	geartype	0.0%	0.0%	0.0%	64.9%	0.0%	0.8%	0.0%	8.6%	3.2%	6.5%
	resource	0.0%	0.0%	0.0%	76.3%	0.0%	4.4%	0.0%	80.7%	19.3%	100.0%
	total	0.0%	0.0%	0.0%	5.0%	0.0%	0.3%	0.0%	5.2%	1.3%	6.5%
Humpback Whitefish	geartype	0.0%	22.1%	0.0%	9.3%	0.0%	25.8%	0.0%	22.7%	18.6%	21.0%
	resource	0.0%	16.9%	0.0%	3.4%	0.0%	45.4%	0.0%	65.8%	34.2%	100.0%
	total	0.0%	3.6%	3.6%	0.7%	0.0%	9.5%	0.0%	13.8%	7.2%	21.0%
Round Whitefish	geartype	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
	resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

[1] This table lists only those resources for which there was a harvest in the 2004 study year.

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 6-7. Assessment of Household's Harvest and Use of Resources in 2004 Compared to Other Recent Years, Nondalton

Resource	Estimated Households	No Response		Valid Responses		Less		Same		More	
		no	pct	no	pct	no	pct	no	pct	no	pct
Salmon	43	4.5	10.5%	38.5	89.5%	14.7	38.2%	14.7	38.2%	9.1	23.5%
Non-Salmon Finfish	43	10.2	23.7%	32.8	76.3%	10.2	31.0%	15.8	48.3%	6.8	20.7%
Marine Invertebrates	43	32.8	76.3%	10.2	23.7%	2.3	22.2%	6.8	66.7%	1.1	11.1%
Large Land Mammals	43	6.8	15.8%	36.2	84.2%	29.4	81.3%	5.7	15.6%	1.1	3.1%
Furbearers	43	20.4	47.4%	22.6	52.6%	7.9	35.0%	12.4	55.0%	2.3	10.0%
Marine Mammals	43	32.8	76.3%	10.2	23.7%	1.1	11.1%	7.9	77.8%	1.1	11.1%
Birds and Eggs	43	21.5	50.0%	21.5	50.0%	4.5	21.1%	15.8	73.7%	1.1	5.3%
Wild Plants	43	3.4	7.9%	39.6	92.1%	10.2	25.7%	22.6	57.1%	6.8	17.1%
Overall	43	3.4	7.9%	39.6	92.1%	14.7	37.1%	22.6	57.1%	2.3	5.7%
Any Resource	43	1.1	2.6%	41.9	97.4%	35.1	83.8%	33.9	81.1%	14.7	35.1%

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 6-8. Nondalton: Reasons for Change in Harvests and Uses in Recent Years

			Percentage of Responses by Category[1]							
Resource Category	Use Less or More	Estimated Number of Households[2]	No Reason Given	Competition	Regulations	People are Sharing Less	Weather	Animal Population Changes[3]	Personal Reasons (Work/Health)	Other Outside Effects
Salmon	Less	14.7	0.0%	15.4%	0.0%	0.0%	7.7%	23.1%	61.5%	0.0%
Salmon	More	9.1	0.0%	0.0%	0.0%	0.0%	25.0%	75.0%	25.0%	12.5%
Non-Salmon Finfish	Less	10.2	11.1%	0.0%	0.0%	11.1%	33.3%	11.1%	33.3%	11.1%
Non-Salmon Finfish	More	6.8	0.0%	0.0%	0.0%	0.0%	16.7%	83.3%	16.7%	33.3%
Marine Invertebrates	Less	2.3	50.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%
Marine Invertebrates	More	1.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Large Land Mammals	Less	29.4	0.0%	19.2%	3.8%	15.4%	0.0%	80.8%	15.4%	7.7%
Large Land Mammals	More	1.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Furbearers	Less	7.9	0.0%	0.0%	0.0%	14.3%	57.1%	14.3%	57.1%	14.3%
Furbearers	More	2.3	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%
Marine Mammals	Less	1.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Marine Mammals	More	1.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Birds and Eggs	Less	4.5	0.0%	0.0%	0.0%	25.0%	25.0%	50.0%	50.0%	0.0%
Birds and Eggs	More	1.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Wild Plants	Less	10.2	0.0%	0.0%	0.0%	0.0%	22.2%	22.2%	55.6%	0.0%
Wild Plants	More	6.8	0.0%	0.0%	0.0%	0.0%	33.3%	50.0%	16.7%	0.0%
Overall	Less	14.7	15.4%	0.0%	0.0%	7.7%	7.7%	46.2%	46.2%	7.7%
Overall	More	2.3	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%
Any Resource	Less	35.1	6.5%	19.4%	3.2%	19.4%	29.0%	71.0%	54.8%	12.9%
Any Resource	More	14.7	0.0%	0.0%	0.0%	0.0%	38.5%	84.6%	38.5%	30.8%

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

[2] Estimated number of households citing a change in uses. For number of valid responses, see Table 6-7. Estimated total households in community = 43

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

Source: Alaska Department of Fish and Game, Division of Subsistence, Households Surveys, 2005

Table 6-9. Nondalton Wild Resource Harvests by Resource Category, All Study Years

	Pounds Usable Weight Per Capita						
	1973	1980	1981	1983	2001	2003	2004
Salmon	506.5	832.7	507.2	768.7			219.4
Non-Salmon Fish	40.3	27.2	36.1	174.6		11.8	33.9
Large Land Mammals	219.1	145.9	159.1	179.5	369.1		74.4
Small Land Mammals	31.1	29.0	31.9	19.6			7.4
Birds and Eggs	5.6	1.7	4.1	8.7			3.8
Vegetation				23.6			18.4
All Resources	802.6	1036.4	738.3	1174.8			357.3

Blank cells indicate that data are unavailable.

Table 6-10. Composition of Wild Resource Harvests by Category, Nondalton, All Study Years

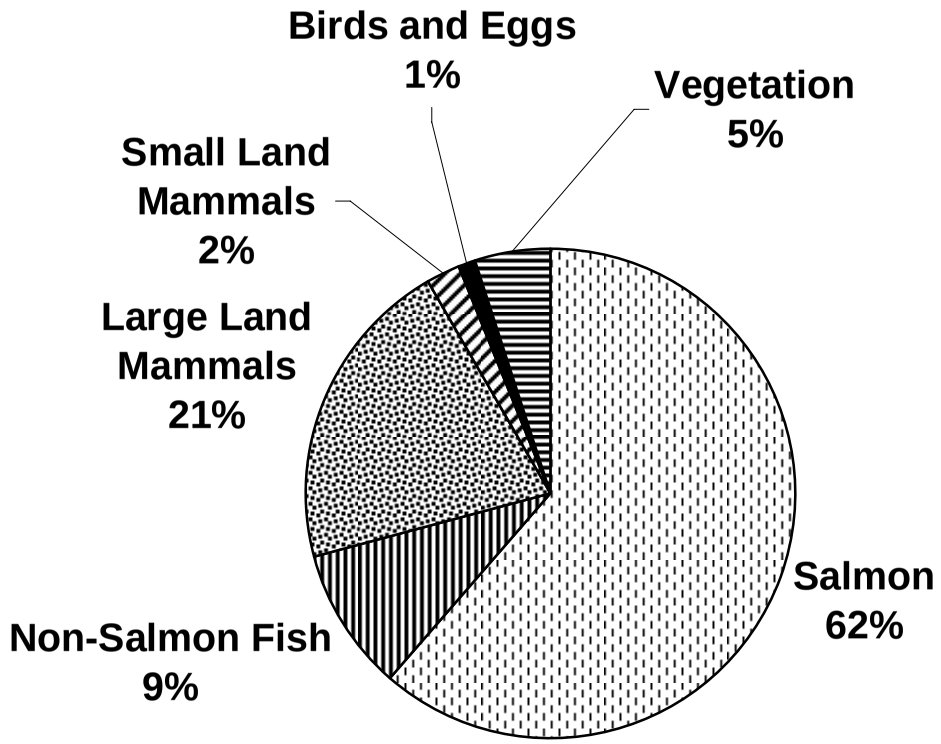
	Percentage of Total Harvest						
	1973	1980	1981	1983			2004
Salmon	63.1%	80.3%	68.7%	65.4%			61.4%
Non-Salmon Fish	5.0%	2.6%	4.9%	14.9%			9.5%
Large Land Mammals	27.3%	14.1%	21.5%	15.3%			20.8%
Small Land Mammals	3.9%	2.8%	4.3%	1.7%			2.1%
Birds and Eggs	0.7%	0.2%	0.6%	0.7%			1.1%
Vegetation				2.0%			5.1%
All Resources	100.0%	100.0%	100.0%	100.0%			100.0%

Table 6-11 Place Names and Use Areas Described by Nondalton Key Respondents

Location on Map	Place Name or Description of Use
1	Telequana Lake
2	Chulitna River
3	Nicovena
4	Long Lake
5	Chulitna River
6	Currant Creek
7	Dall Sheep Hunting Area
8	Duthca
9	Tazimna Lakes
10	Ground Hog Mountain
11	Trapping Camps
12	Frying Pan Lake
13	Whitefish Lake
14	Chilchitna
15	Hoholitna
16	Bonanza Hills
17	Jola lake

Source: Key Respondent Interviews, Nondalton 2005

Figure 6-2. Composition of Wild Resource Harvest Nondalton, 2004, by Resource Category



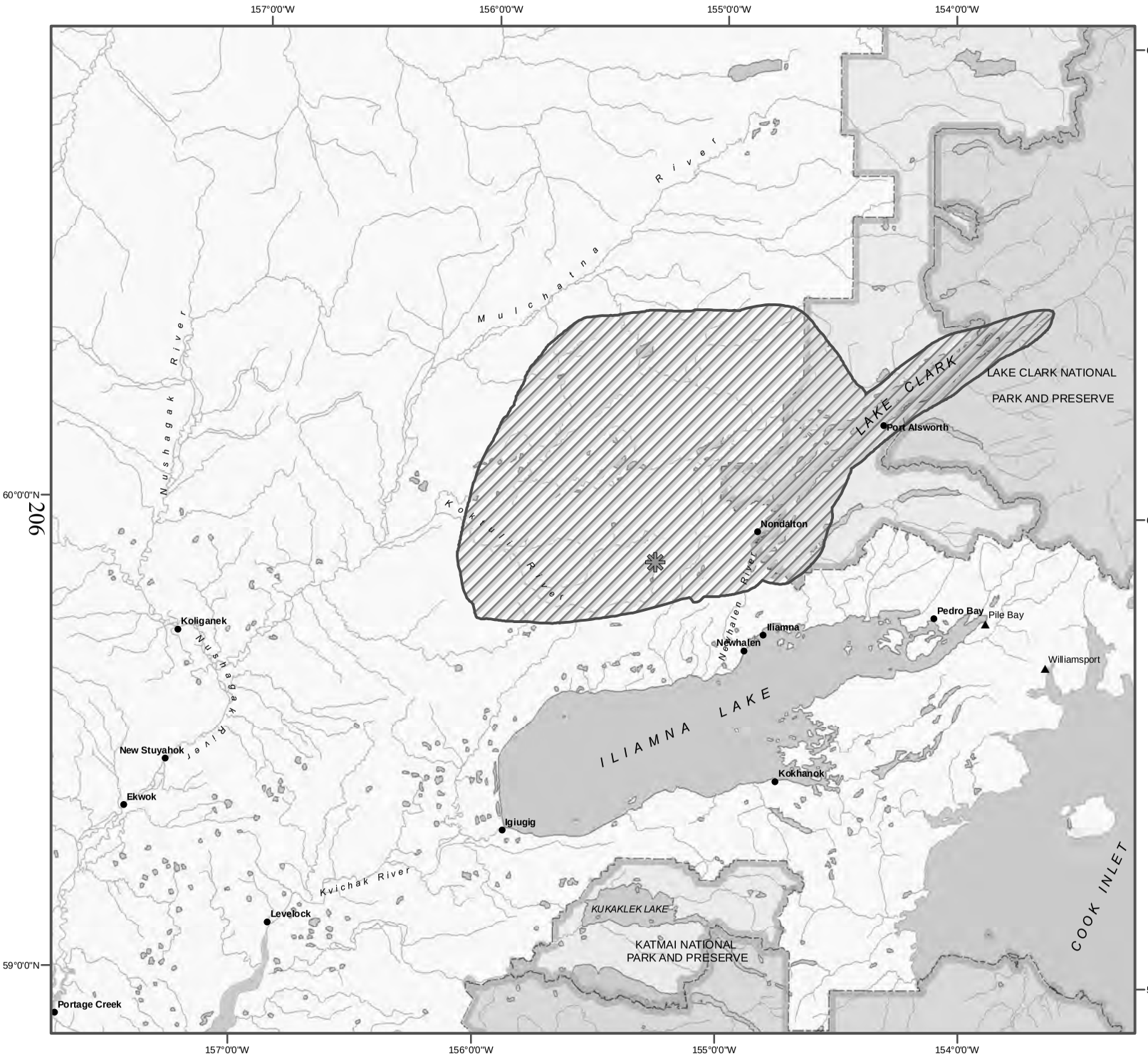


Figure 6-3

- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Moose Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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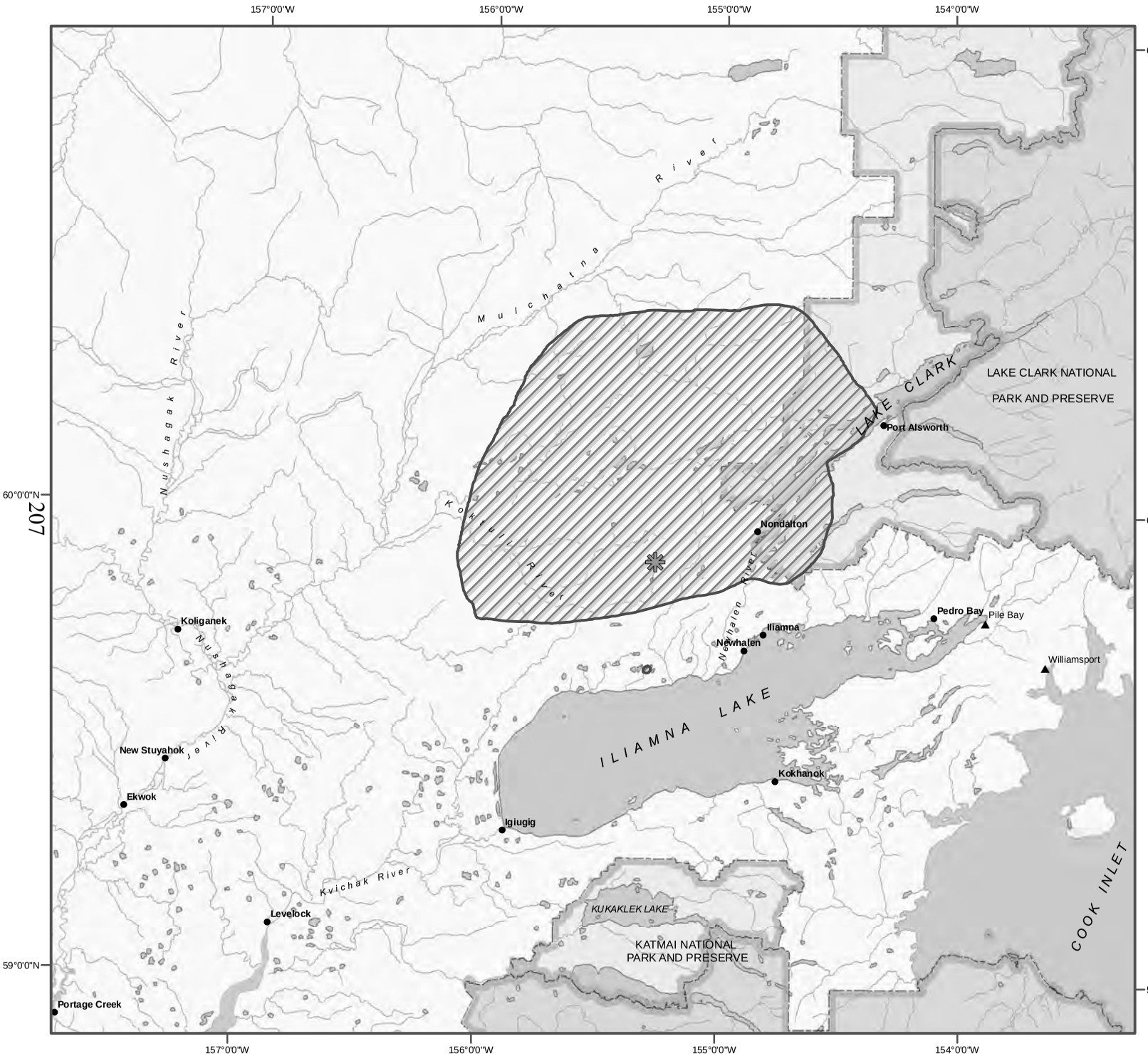

Figure 6-4

- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Caribou Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

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907-276-8222 907-276-6117 (fax) srba@alaska.net

Figure 6-5. Nondalton Households' Assessment of Harvest and Uses of Wild Resources in 2004 Compared to Other Recent Years

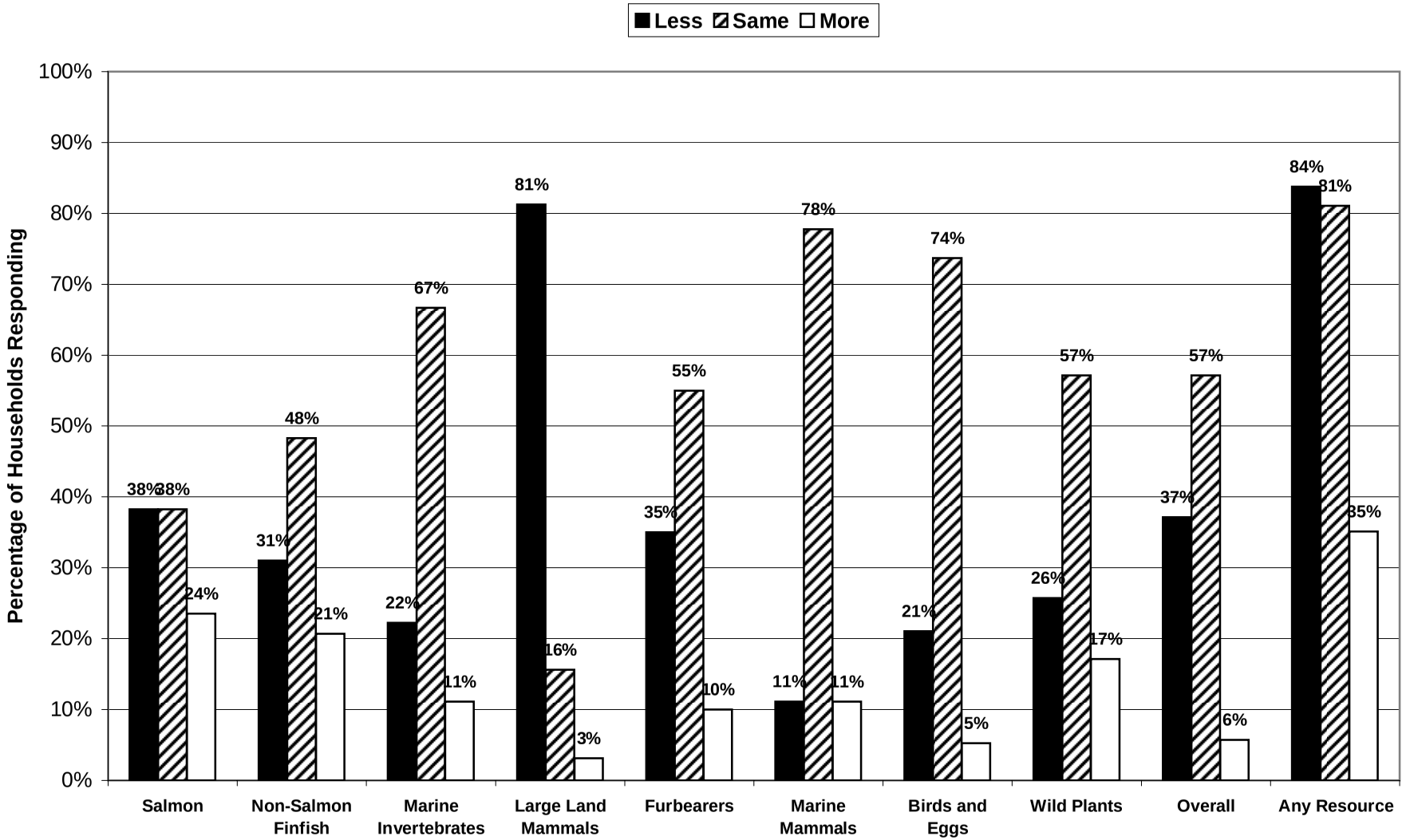


Figure 6-6. Reasons Cited by Nondalton Households for Lower Uses of Any Resource in 2004 Compared to Other Recent Years

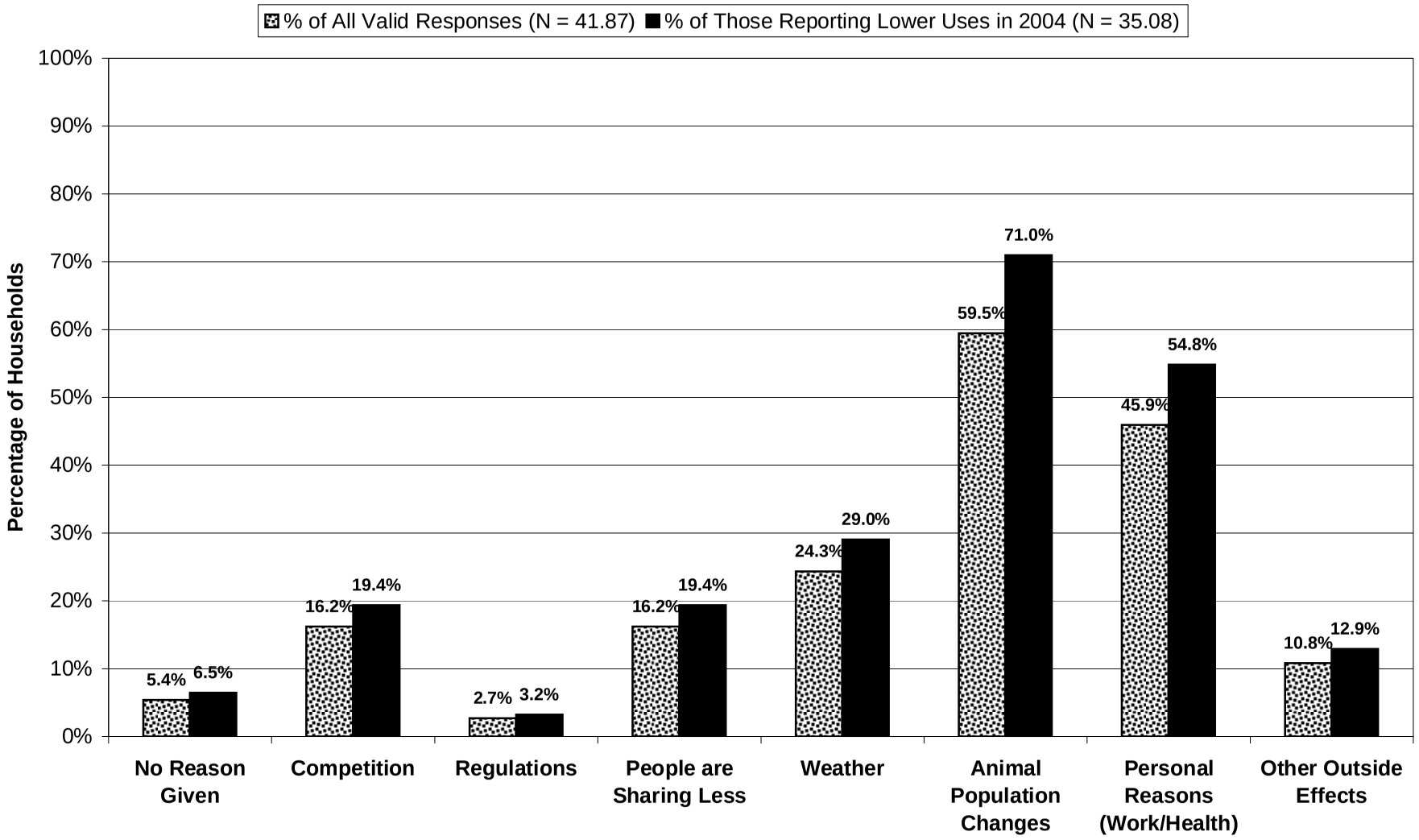
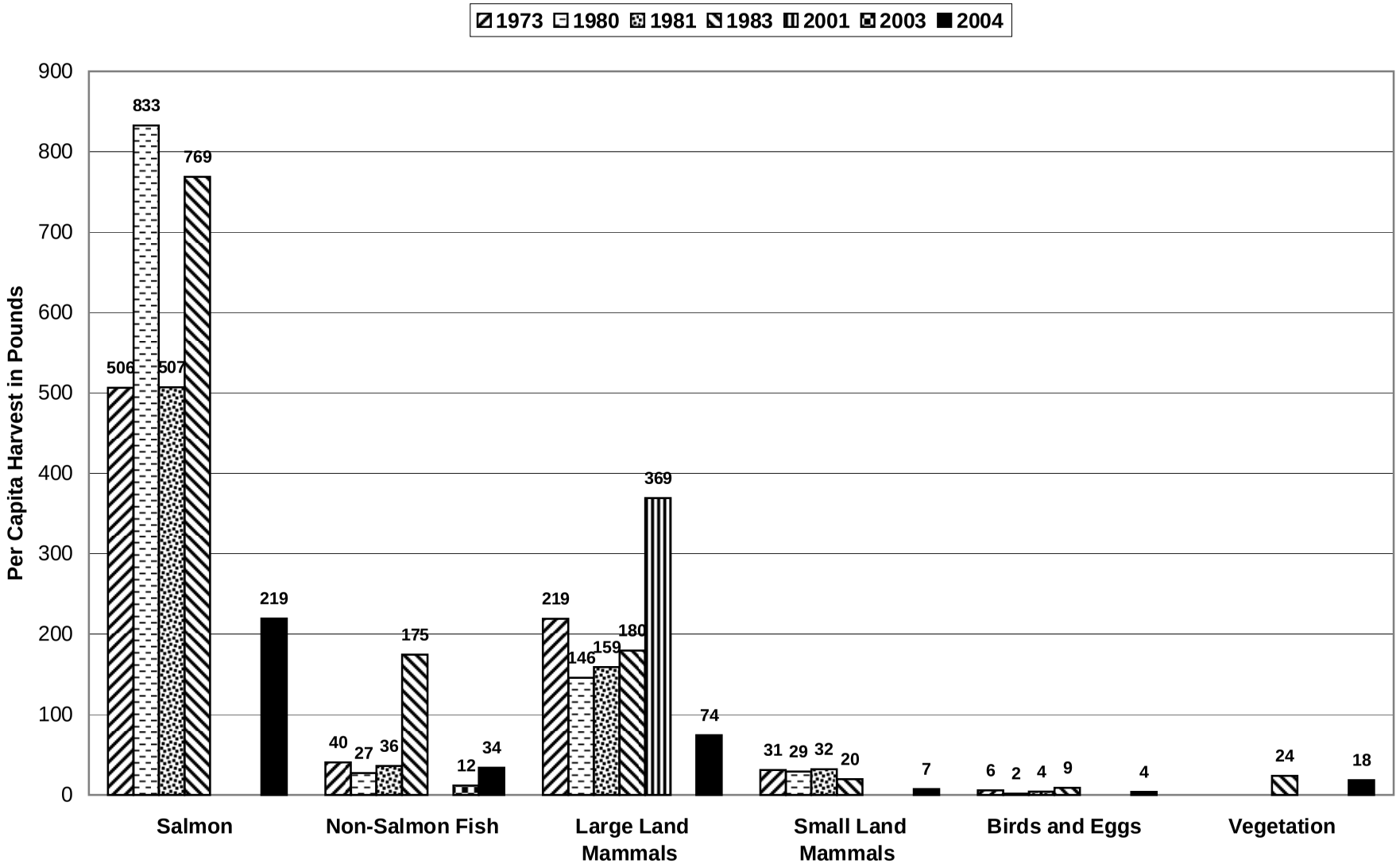


Figure 6-7. Nondalton Wild Resource Harvests Over Time by Resource Category



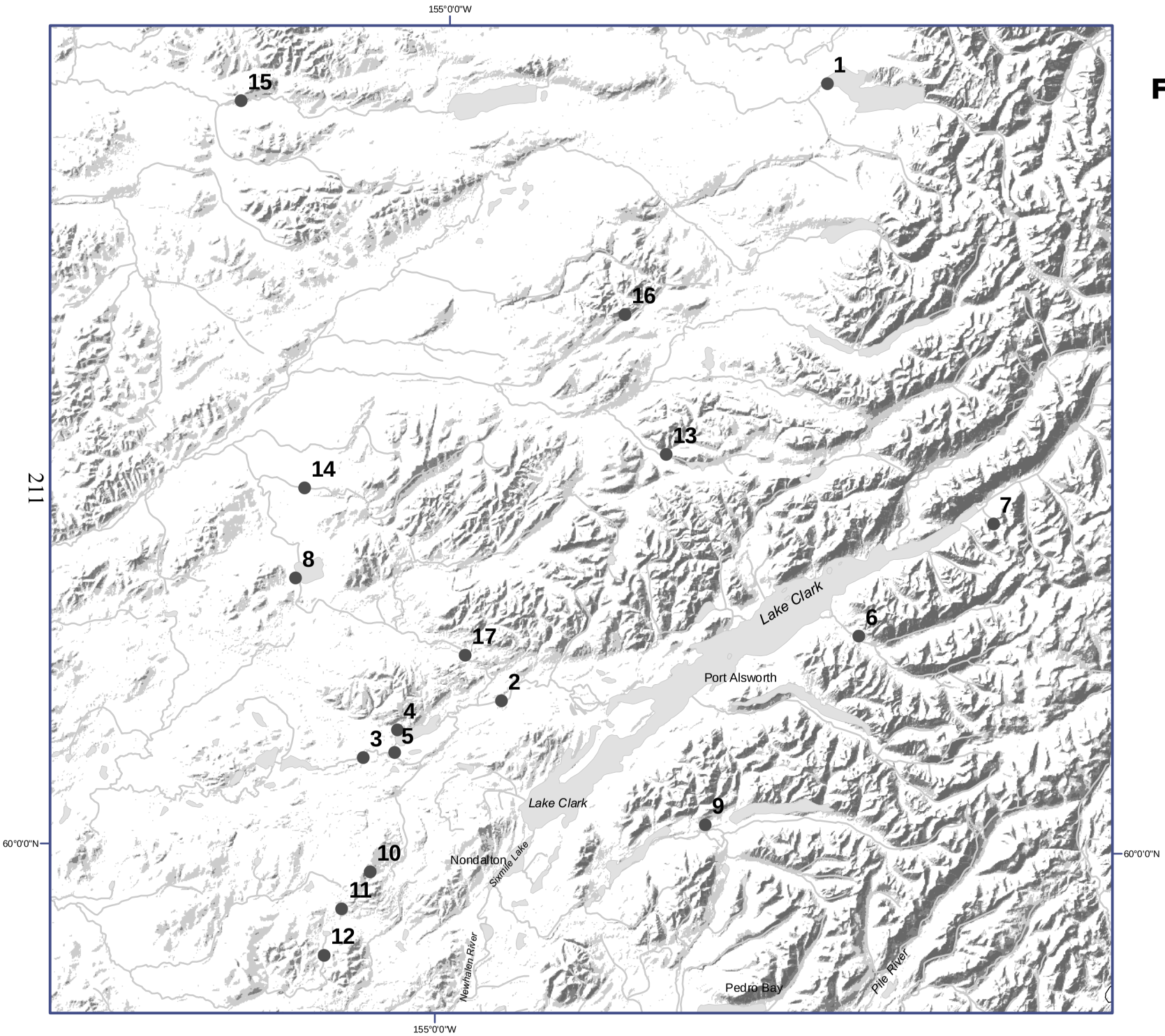
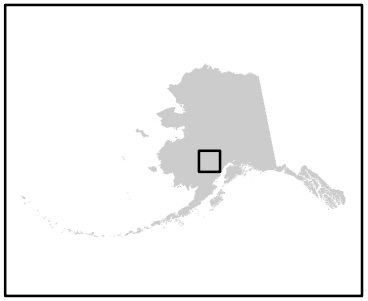


Figure 6-8

Nondalton Place Names

See Table 6-11 for more detail



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Miles

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004 for background on sample sizes and mapping methods.

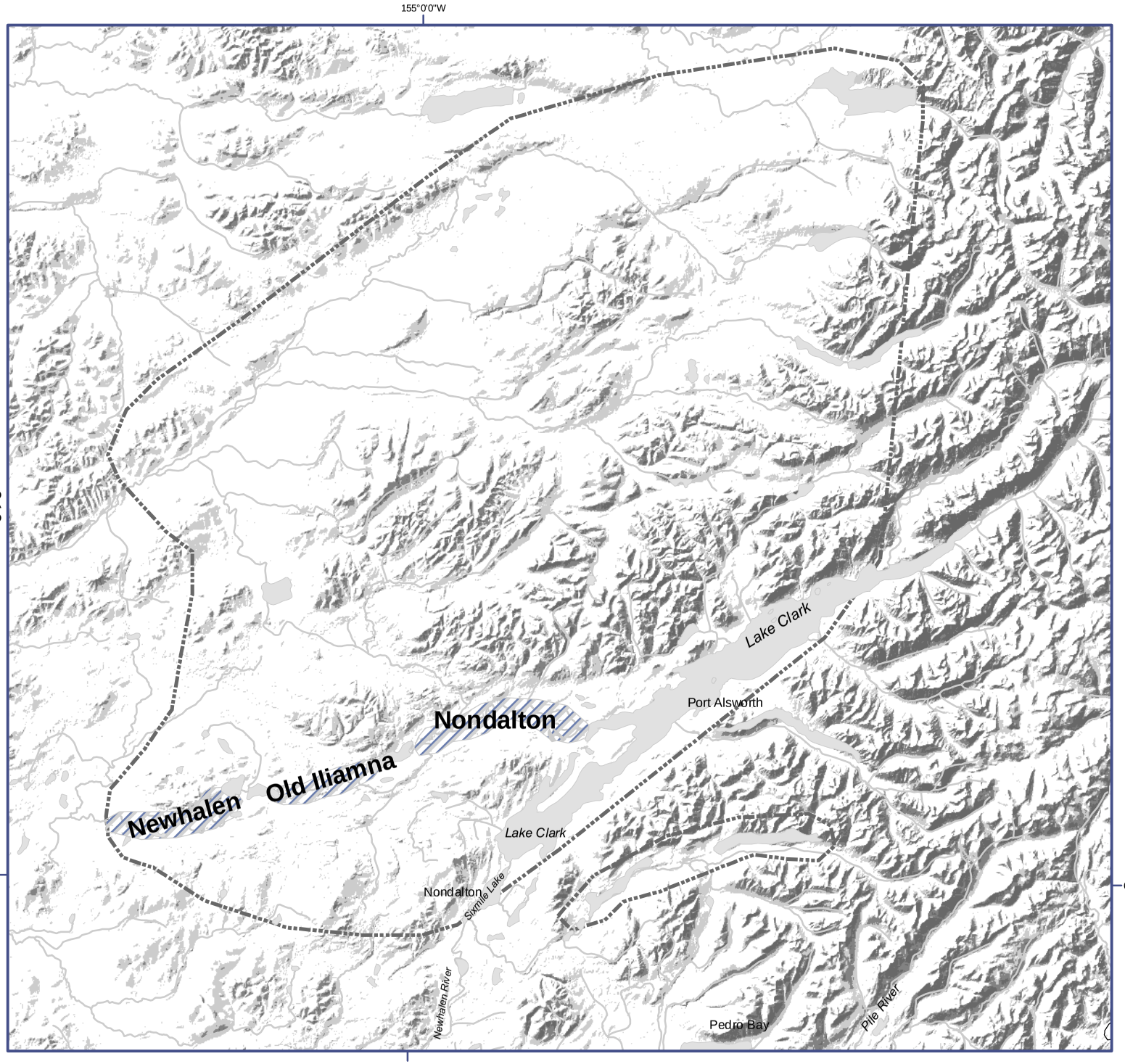
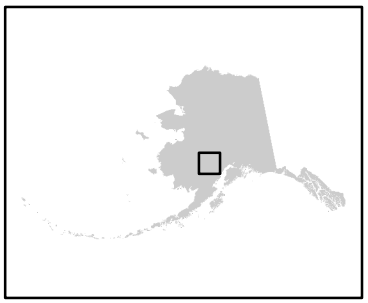


Figure 6-9

Extent of Historical Trapping Territory

Chulitna Basin Trapping Division



SCALE: 1:750,000

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Miles

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004 for background on sample sizes and mapping methods.

CHAPTER SEVEN: DISCUSSION AND CONCLUSIONS

SUBSISTENCE HARVEST PATTERNS AND TRENDS, 1960s to 2004

Overview of Findings for the Study Communities, 2004

Table 7-1 summarizes selected findings from this study on demography, cash economy, and wild resource uses for each study community, for the 2004 study year. The population of 4 of the study communities (Iliamna, Newhalen, Nondalton, and Pedro Bay) was primarily Alaska Native in 2004, and a majority of household heads had been born in Alaska. About 18% of Port Alsworth's population was Alaska Native, and most household heads had moved to the community from another state. Comparing study findings with federal census data shows that since 1980, the portion of the total population in the 5 study communities that is Alaska Native has remained between 70% and 80%, with an increase in Iliamna and Port Alsworth and a decrease in Pedro Bay (Table 7-2). Excluding Port Alsworth, the portion of the population of the other 4 study communities since 1980 was as follows: 81% in 1980, 87% in 1990, 82% in 2000, and 85% in 2004.

According federal census data, the population of the 5 study communities grew from 415 in 1960 to 637 in 2000 (Table 7-2). Estimates from the Alaska Department of Labor and Workforce Development (ADLWD) for July 1, 2004 suggest little change in total population since 2000 (641), but a decline in population since 2000 for Iliamna, Pedro Bay, and Nondalton, and an increase at Newhalen and Port Alsworth. Population estimates for December 31, 2004 from this study, which focus specifically on year-round residents, show a lower total population (540) than either the federal census for 2000 (637) or the ADLWD estimate for July 1, 2004 (641). The division household surveys resulted in lower population estimates compared to those of the ADLWD for all study communities except Pedro Bay. (See Chapter One for a discussion for possible reasons for these differences in population estimates, and Chapter Four for a discussion of the population estimates for Pedro Bay.)

Figure 7-1 illustrates subsistence harvest estimates for each study community in 2004 in pounds usable weight per person. Newhalen had the highest harvest with 692 pounds per person, followed by Iliamna (469 pounds per person), Nondalton (358 pounds per person), Pedro Bay 306 pounds per person, and Port Alsworth (133 pounds per person). These are substantial harvests, especially considering that the average American family purchases about 222 pounds of meat, fish, and poultry per person per year (Fall 1990:77). Harvests were also diverse: in Newhalen, there were 12 different resources used by more than half the community's households. In Pedro Bay, 10 kinds of wild resources were used by over 50% of the households, followed by Nondalton (9 resources), Iliamna (8 resources), and Port Alsworth (8 resources) Table 7-1).

Figure 7-2 shows the composition by resource category of each community's harvest in 2004. Salmon ranked first in each community, ranging from 82% of the harvest in usable pounds in Pedro Bay, to 79% in Iliamna, 73% in Newhalen, 67% in Port Alsworth, and 61% in Nondalton. Land mammals (mostly moose and caribou, but also black bears and sheep in some communities as well as small game such as porcupines, hare, and beaver) ranked second in four communities:

23% of the harvest in Nondalton, 19% in Port Alsworth, 15% in Newhalen, and 10% in Pedro Bay. In Iliamna, large land mammals made up 7% of the harvest, ranking third after salmon and nonsalmon fish (7%). Nonsalmon fish were the third most abundant resource category in terms of usable pounds in the other four study communities, and wild plants were in fourth place in all five communities. Birds and eggs, marine mammals, and marine invertebrates made small contributions to the total resource harvests as measured in usable pounds.

Regarding the cash sector of the local economies of each community in the 2004 study year, Iliamna, as the subregional hub, had the largest percentage of employed adults working year-round (79%) and the greatest average number of months employed for people with jobs (10.5) (Table 7-1). Port Alsworth, with its service businesses and as the headquarters for the Lake Clark National Park, ranked second in terms of year-round employment: 67% of working adults worked year-round, and the average person with a job worked 9.8 months. In the other 3 communities, only about half or less of adults with jobs worked year-round (53% in Pedro Bay, 28% in Newhalen, and 20% in Nondalton). In Pedro Bay the average length of employment in 2004 was 8.3 months; in Newhalen, the average was 7.6 months, and in Nondalton, the average was 6.5 months. Cash incomes in 2004 reflected the availability of year-round jobs. The highest per capita income was at Iliamna at $15,531 per person, followed by Port Alsworth ($13,393), Pedro Bay ($11,259), Newhalen ($10,778), and Nondalton ($5,228). For comparison, the per capita income for the state of Alaska in 2000 was $22,660 (ADLWD 2006).

Total Harvest Levels in 2004 and Comparisons with Other Years

All 147 households in the 5 study communities of Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth used subsistence foods in the 2004 study year. Most residents engaged in subsistence activities (Fig. 7-3): 36% hunted (an estimated 196 people); 76% fished (412 people); 19% trapped (105 people); 81% gathered wild plants (439 people); 91% were involved in at least one harvest activity (491 people); and 90% processed subsistence resources (439 people). For the 5 communities combined, the subsistence harvest in 2004 was 315.8 pounds per person, or just under one pound per person per day. Although the bulk was salmon, followed by large land mammals and other fish, almost all households used 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 2004, as they have been for centuries.

Nevertheless, as participants in this study emphasized, subsistence harvests and uses are changing. For example, although total harvest levels were substantial in 2004, harvest levels in usable pounds per person are declining, according to Division of Subsistence surveys (Fig. 7-4). In Nondalton, previous harvest estimates ranged from 738 to 1,175 pounds per person, compared to 357 in 2004 (21 years after the last comprehensive survey). Per capita harvests averaged 636 pounds in Pedro Bay in 1973 and 865 pounds in 1982, compared to 397 pounds in 1996 and 306 pounds in 2004. There is only one previous estimate for Port Alsworth -- 361 pounds per person in 1983, compared to 133 pounds per person in 2004. The 2004 study year estimate for Iliamna

of 469.4 pounds per person was below the estimates for 1991, similar to the estimate for 1983, but much higher than that for 1973.[1] Only in Newhalen was the harvest estimate for 2004 (692 pounds per person) not substantially different than any of the previous years' estimates (633 pounds per person in 1973, 767 pounds per person in 1983 and 747 pounds per person in 1991).

Subsistence harvests vary from year to year for multiple reasons, but the study results raise a question about a possible trend towards lower harvests in these Kvichak watershed communities. To address this question, the following sections discuss subsistence harvest trends in the 5 study communities for 3 key resources: sockeye salmon, moose, and caribou. Together, these 3 resources accounted for between 78% (in Port Alsworth) and 92% (in Pedro Bay) of the estimated subsistence harvests in 2004 (Fig. 7-5; Table 7-3, Table 7-4, and Table 7-5). Changes in harvests of these 3 resources have a strong effect on overall subsistence harvest patterns.

Sockeye Salmon[2]

By virtually all measures, sockeye salmon are the most important subsistence resource in Kvichak watershed communities. In the 2004 study year, sockeye salmon ranked first among all wild resources in all 5 study communities in usable pounds harvested. Sockeye salmon harvests (combining harvests of fresh and spawned/spawning fish) ranged from 61% (Nondalton) and 82% (Pedro Bay) of the total subsistence harvests in 2004. Virtually every household (all but one in the 5 communities combined) used sockeyes and 80% or more in each community harvested them (Table 7-3).

Although sockeye salmon continue to be vitally important to the way of life of Kvichak watershed communities, data from household surveys and subsistence fishing permits suggest that an overall decline in subsistence harvests of Kvichak sockeye has occurred since the early 1960s and 1970s. There are differences between communities, however. Figure 7-6 illustrates estimated subsistence harvests of salmon in pounds usable weight per person (virtually but not entirely all of which was sockeye salmon) in the study communities for all years for which household harvest survey data are available. Salmon harvests in Nondalton, Pedro Bay, and Port Alsworth in 2004 were lower than any previous survey year. On the other hand, harvests in Iliamna and Newhalen were within the range of other study years.

Estimates of subsistence harvests of Kvichak sockeye salmon based on ADF&G subsistence permit returns, available since 1963, provide a longer, annual timeline for discerning trends in the fishery.[3] Table 7-6 reports estimated subsistence harvests since 1963 plus estimated

[1] Demographic change in the community might account for low harvest in 1973 compared to other years.
[2] This section is based largely on a report on trends in the Kvichak watershed subsistence salmon fishery prepared by the Division of Subsistence for the Alaska Board of Fisheries in 2001 (Fall et al. 2001). Subsistence permit data and data on escapements have been updated through 2004. The reader should consult the earlier report for more background on the Kvichak subsistence salmon fishery and for household case studies pertaining to the fishery in 2000, a year of poor escapements and record low subsistence sockeye harvests.
[3] Since the 1960s, state subsistence regulations have required that subsistence fishers in the Bristol Bay Management Area, including the Kvichak watershed, obtain a subsistence permit, keep a record of daily catches on the back of the permit, and return the permit and harvest record to ADF&G at the end of the calendar year. Presently, ADF&G staff consider the permit records to provide a reliable estimate of subsistence salmon harvests, but records for the early years of the program (1960s and 1970s) are likely incomplete.

escapements of sockeye salmon into the Kvichak system for each year.[4] Table 7-7 reports estimated subsistence sockeye harvests by community of residence of the permit holders from 1963 through 2004 plus averages for each decade, for the most recent 5, 10, and 20 years, and for the entire 42 years of the permit fishery.

Since 1963, estimated subsistence sockeye salmon harvests in the Kvichak watershed have averaged 67,904 fish annually.[5] However, the recent (2000 – 2004) average harvest was 38,904 salmon, while the previous 5-year average (1995 – 1999) was 56,088 salmon. The recent 10-year average (1995 – 2004) was 47,496 sockeyes and the previous 10-year average (1985 – 1994) was 72,090 sockeyes (Table 7-7, Fig. 7-7). These comparisons suggest a trend towards lower subsistence sockeye salmon harvests in the Kvichak watershed.

Subsistence sockeye salmon harvests for each of the 5 study communities based on permit returns generally also display a downward trend (Table 7-7). For example, the long-term (42-year) average harvest for Nondalton is 20,396 sockeye salmon; the recent 5-year average is 8,366 sockeye and the recent 10-year average is 10,607 sockeye. For Pedro Bay, the long-term average harvest is 7,252 sockeye compared to a recent 5-year average of 2,712 and a recent 10-year average of 3,815 sockeye. For Port Alsworth, the long-term (1973 – 2004) average harvest is 3,325 sockeye, compared to a recent 5-year average of 2,037 sockeye and a recent 10-year average of 2,565 sockeye. For Iliamna-Newhalen,[6] the long-term average is 14,306 sockeye; the recent 5-year average is 9,622 sockeye and the recent 10-year average is 14,443 sockeyes. Although the recent 10-year average harvest for Iliamna-Newhalen is similar to the long-term average, subsistence harvests for these communities averaged 20,100 sockeye salmon in the 1980s and 19,688 sockeye salmon in the 1990s.

Average sockeye salmon harvests per permit have also declined in the Kvichak watershed subsistence fishery (Table 7-8, Fig. 7-8). The average harvest for the fishery overall since 1983[7] is 323 sockeye salmon. For Bristol Bay residents who participated in the fishery, the average subsistence harvest since 1983 is 363 sockeye salmon. For local participants, the recent 5-year average is 219 sockeye salmon per permit, compared to an average for the previous 5-years of 330 salmon, and the recent 10-year average is 273 salmon per permit compared to the previous 10 years of 412 salmon

Table 7-9 shows estimates of the per capita harvests of sockeye salmon (in numbers of fish) in the Kvichak watershed subsistence fishery for the 5 study communities since 1963.[8] Long-term averages for the study communities range from about 58 salmon per person in Port Alsworth to 77 salmon in Iliamna/Newhalen, 108 salmon per person in Nondalton, and 154 salmon per

[4] These estimates do not include escapements into the Alagnak (Branch) River.
[5] This estimate includes harvests by all permit holders, some of whom are nonlocal residents. However, a large majority of the permit holders are residents of local communities, including the 5 study communities and 3 others (Kokhanok, Igiugig, and Levelock) (see Table 7-8).
[6] Iliamna and Newhalen are combined in this analysis because they share a zip code and it is not possible to separate participants in the fishery into one or the other community in the database.
[7] Data on the number of permits issued are only available since 1983.
[8] For this analysis, estimated subsistence sockeye salmon harvests are based on subsistence permit returns (see also Table 7-7). To estimate community populations for each year, an equal portion of the total change in population from one census to the next (1960, 1970, 1980, 1990, 2000, and 2004) is added or subtracted for each year.

person in Pedro Bay. In comparison, per capita sockeye salmon harvests have been lower over the last 5 and 10 years compared to long-term averages for all 5 study communities. For the 5 study communities combined, the long-term average is 94 salmon per person, compared to an average of 51 salmon over the last 10 years and 39 salmon over the last 5 years (Fig. 7-9).

Reasons for changes in subsistence salmon harvests from year to year, and over the long-term are complex. Also, factors that influence harvest levels may vary from community to community, and from family to family. Although this report cannot explore these multiple reasons in depth, it is instructive to examine a few possible explanations for changing subsistence sockeye salmon harvests in the Kvichak watershed, in general, and the 5 study communities in particular.

One potential cause of lower overall subsistence sockeye harvests is a change in communities' demographic characteristics. In the case of the Kvichak subsistence sockeye salmon fishery, however, demography does not appear to be a factor in creating changes in harvest levels. As shown in Table 7-2 (see above), the combined population of the communities of the Kvichak watershed grew from 596 in 1960 to 930 in 2004. Also, the percentage of the total population that is Alaska Native has been steady since over the last two decades: 81% in 1980, 81% in 1990, and 79% in 2000.

A decline in local participation in the subsistence fishery does not account for reduced harvests. The number of subsistence salmon permits issued for fishing in the Kvichak River watershed has been relatively stable since the early 1990s, when nonlocal residents were again allowed to obtain permits (Fig. 7-10). The recent 10-year average was 201 permits, with 206 issued for 2004.[9] For local residents, the annual average since 1983 is 167 subsistence permits issued; the recent 10-year average is 169 permits and the recent 5-year average is 169 permits (Table 7-8).

As discussed in Fall et al. (2003:40-47), an obvious potential explanation for declines in subsistence harvests is a reduction in local salmon abundance, which can be measured by changes in salmon escapement.[10] Changes in salmon escapement do not provide a straightforward explanation of changes in subsistence harvests, however. For example, subsistence fishers might respond to scarcities by fishing longer until their harvest goals are met, or they might shift harvest locations (if possible).

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[9] The drop in permits issued in 2002 (180) and 2003 (175) reflects in part a prohibition by the National Park Service against subsistence fishing in the waters of Lake Clark National Park and Preserve except by federally qualified local rural residents, which began in May 2001. This NPS prohibition did not affect local participation in the fishery (ADF&G 2003:71).

[10] Other potential explanations mentioned in Fall et al. (2001:39-40) include "social factors" such as competition with other user groups, a factor that may be exacerbated in years of low abundance. Local fishers have expressed concerns about what they perceive to be a growing sport fishery and possible consequent damage to salmon spawning streams and presence of sport fishers at traditional subsistence harvest sites. No evidence that this factor has reduced subsistence harvest was offered however. Environmental factors such as loss of harvests to bears have been mentioned by local respondents, but are unlikely to affect total harvest levels. Based on key respondent interviews, there also appears to be more concern than in the past with observed abnormalities in salmon that could result in lowered harvests if they persist or increase in frequency. Other potential explanations for lower harvests are the absence of dog teams compared to the 1960s and a shift in preservation methods away from drying and smoking to more reliance on freezing (which requires more storage space and the expense of electricity).

Figure 7-11 (see also Table 7-6) illustrates annual sockeye escapements, in millions of salmon, and subsistence harvests, in thousands of salmon, from 1963 to 2004. Fall et al. (2003:44) concluded that there is no clear annual co-variation between subsistence harvests and escapements in the Kvichak system for several reasons:

> One explanation for why Kvichak sockeye salmon subsistence harvests and escapements do not co-vary every year is the large difference in scale between the Kvichak sockeye run and the subsistence harvests. The subsistence harvest, while extremely significant for local communities and larger than any other in Bristol Bay, is a small portion of the total Kvichak sockeye run even in years of relatively poor returns. Subsistence harvesters have set goals that they attempt to achieve in years of lower abundance by fishing more days. Thus subsistence harvests over time are far less volatile than sockeye salmon escapements into the Kvichak system, which are characterized by a five-year cycle with wide fluctuations from year to year (Cross et al. 1997:4).

Nevertheless, it appears that in years when escapements into the Kvichak system drop below about 2 million sockeye salmon, subsistence harvest rates, as measured by the average number of fish harvested per day fished, drop (Table 7-6). Over the long term, the average harvest per day for this fishery has been around 40 salmon. However, in years when the escapement fell to about 2 million or fewer salmon, the daily harvest rate dropped to around 30 fish per day (e.g. 1996, 1997, 1998, 2000, 2001, 2002, and 2003). This relationship does not exist in years of average to high abundance because daily harvest goals are likely not set by absolute harvest capacity but by processing capacity.

As shown in Table 7-6 and Figure 7-11, sockeye salmon escapements in the Kvichak system from 2000 to 2003 were very low. In 2000, subsistence fishers reported to ADF&G that they were experiencing difficulties in achieving subsistence harvest goals. Division of Subsistence staff interviewed representatives of about 29 households in six Kvichak watershed communities (Igiugig, Iliamna, Kokhanok, Levelock, Newhalen, and Nondalton) about their subsistence harvests in 2000 (Fall et al. 2001). Systematic interviewing did not occur in 2001, 2002, or 2003, but less formal interaction between division staff and local fishers suggested that similar assessments pertain to those years as well:

> Generally, subsistence fishers reported that returns of sockeye salmon were late in 2000. Also, once the runs began, fish returned in “bunches” or “spurts” unlike the steadier runs of prior years. Consequently, fishers needed to keep their nets in the water longer to achieve their harvest goals. However, some fishers reported in 2000 that even with the increased effort, fishing was so “slow” that they eventually stopped fishing before reaching their harvest goals. They intended to compensate for poor salmon harvests with more fishing over the winter for nonsalmon fish (although recent warm winters have inhibited these harvests as well), and more caribou and moose harvests (Fall et al. 2003:9-10, drawing from Fall et al. 2001).

In 2004, sockeye salmon escapements into the Kvichak system increased to 7.332 million fish. Subsistence harvests also increased, to 53,225 sockeye salmon, as did the average harvest per permit (277 sockeyes for local resident permit holders). This suggests that salmon abundance was sufficient in 2004 to support subsistence uses and achievement of harvest goals with the usual effort. Survey results are consistent with this conclusion. The same percentage of households in the 5 study communities assessed their salmon harvests and uses in 2004 as higher than in other recent years as assessed them as lower (26% and 25%, respectively). Most who had higher uses attributed the change to better salmon abundance (16% of all households; 60% of those with higher uses). In contrast, most who had lower uses in 2004 cited personal reasons for the change (16% of all households; 62% with lower uses; Fig. 7-12).

These findings suggest that the recent 5-year average harvests of in the Kvichak subsistence sockeye fishery (2000 through 2004) do not indicate a continuing decline in harvest goals in local communities, but rather a failure to reach harvest goals due to poor escapements and consequent low salmon abundance. Total harvests in the range of 50,000 to 60,000 sockeye salmon appear to be a better estimate of the level of subsistence harvest that meets local goals. This is an average of about 250 to 300 salmon per permit and about 50 to 60 salmon per person (and about 200 to 250 usable pounds per person, at an estimated local population of 1,000 people). This compares to a long-term (42 year) average for the fishery of about 68,000 sockeye salmon, and average annual harvests in the 1970s and 1980s of close to 80,000 sockeye salmon.

In summary, poor sockeye salmon escapements in 2000 to 2003 resulted in subsistence salmon harvests well below the goals of local families. Nevertheless, even with eliminating those years, harvest data suggest a downward trend, a trend perhaps most notable in Nondalton. This is not to say that subsistence harvests of sockeye salmon are low or unimportant -- as just noted, in years in the recent past with adequate escapements, local communities harvest several hundred pounds per person. Further study of the reasons (environmental, economic, social, and cultural) for changing patterns of subsistence salmon fishing in Kvichak watershed communities is needed for a better understanding of trends in the contemporary fishery.

Moose[11]

Moose contributed between 5% (Port Alsworth) and 16% (Nondalton) of the total subsistence harvest in the study communities in 2004 (Fig. 7-5). Most households used moose, from 55% in Port Alsworth, to 60% in Newhalen, 68% in Nondalton, 77% in Iliamna, and 78% in Pedro Bay (Table 7-4). The estimated total moose harvest in the 5 communities was 34, and ranged from one moose in Port Alsworth to about 17 moose in Nondalton.

Local oral traditions report that moose were virtually absent in the area until the mid-20th century. Wildlife surveys found moose to be scarce in GMU 9 until the 1950s. Moose numbers increased in the 1950s and 1960s, but due to overbrowsing, populations declined in the 1970s. Since the 1980s, according to ADF&G (Hicks 2000), moose populations in GMU 9B have been stable. (See Holen et al. 2005:49-50, 119-134 for more background on local, traditional knowledge about moose.)

[11] Holen et al. (2005) includes discussion of moose harvest trends. This is an update of that discussion.

As discussed in Holen et al. (2005:68-69), harvest ticket data underestimate moose hunting and moose harvests by local residents of the study area. For example, for the 2001/2002 regulatory year, harvest ticket data suggest that just 24 residents of GMU 9B communities (including 20 from the 5 study communities) hunted moose, with a reported harvest of 6 animals (4 by residents of the 5 study communities). In contrast, household surveys estimated a total of 167 moose hunters in the GMU 9B communities in 2001/2002 (including 114 in the 5 study communities, with a harvest of 161 moose (116 by residents of the five study communities.)

In total, moose harvests were much lower in the 5 study communities in 2004 (34) compared to the previous estimate for 2001/2002 (116). Most of this change took place at Nondalton. Hunters there took an estimated 95 moose in 2001/2002 (0.62 moose per person), compared to 17 moose (0.10 per person) in 2004. The moose harvest estimate for Nondalton for 2004 was the lowest of any Division of Subsistence survey year (Table 7-10, Table 7-11).

A majority of households said that their uses and harvests of large land mammals (generally referring to moose and caribou) in 2004 were lower than other recent years (52%), generally, the last 5 years, with only 3% saying uses had gone up and the remainder (45%) saying uses had remained the same (Fig. 7-13). By far, the leading explanation offered by survey respondents for lower uses of large game was changes in the resource population (36% of all respondents; 70% of respondents with lower uses of large game), generally referring to reduced populations or movements of animals outside of communities' hunting areas. Personal reasons (10% of all respondents; 20% of those with lower uses) ranked second as an explanation, followed by less sharing (9% of all responses; 18% of those with lower uses). The latter primarily referred to the reduction in the amount of game meat left in local communities by nonlocal sport hunters.

Caribou[12]

Caribou contributed between 1% (Pedro Bay) to 9% (Newhalen) of the total wild resource harvests in the study communities in 2004 (Fig. 7-5). Except for Pedro Bay, a majority of the households used caribou in 2004 (Table 7-5). There were caribou hunters in all 5 communities, with the most from Newhalen and Nondalton. According to these survey results, about 51 households in the 5 study communities had at least one member who hunted caribou in 2004. (The number of individuals who hunted caribou is not available from the survey.) The estimated total harvest by residents of the 5 study communities was 79 caribou, ranging from 1 for Pedro Bay, to 3 for Iliamna, 7 for Port Alsworth, 18 for Nondalton, and 50 for Newhalen.

The estimated size of the Mulchatna Caribou Herd was 14,231 animals in October 1974. Between 1981 and 1996, this herd increased at an annual rate of 17%. The population peaked in 1996 at about 200,000 caribou and has since been in decline. Population estimates were 175,000 caribou in July 1999; 147,000 caribou in June 2002; and 85,000 caribou in July 2004. Signs of stress in the herd included an outbreak of foot rot in 1998 and low calf:cow ratios. Much of the herd's range shows signs of heavy use, and the herd has, since about 1990, expanded into new winter and summer ranges to the north and west into areas of excellent habitat that had not had significant numbers of caribou in over 100 years (Woolington 2005:21-22,29,32).

[12] Holen et al. (2005) includes a discussion of trends in caribou harvests. This is an update of that discussion.

The number of hunters of Mulchatna caribou as estimated from ADF&G harvest tickets increased from 1,464 in 1991/92 to 4,140 in 1999/2000, and has since declined; based on harvest ticket returns, there were 3,080 hunters in 2003/04. In the peak hunter year of 1999/2000, 54% were non-Alaska residents; 36% were nonlocal Alaska residents; and 7% were local residents (residents of communities within the herd's range).[13] Reported harvests peaked at 4,770 caribou in1998/1999, and dropped to 3,175 caribou in 2003/04 (Woolington 2005:34-35).

These estimates based on harvest ticket data underestimate local participation in the Mulchatna Caribou Herd hunt and harvests by local residents. For example, for 2001/2002, harvest ticket data identified 20 residents of the 5 study communities who hunted caribou, and 14 who were successful. In contrast, household surveys for 2001/2002 estimated 120 caribou hunters in the 5 communities, 77 successful hunters, and a harvest of 138 animals (Holen et al. 2005:43).

As shown in Table 7-12 and Table 7-13, caribou harvests in the study communities were generally lower in 2004 (total of 79 animals harvested) than in 2001 (138 harvested), the last year for which comprehensive survey data are available. Caribou harvests in Newhalen and Iliamna were down substantially from estimated harvests in 1991. Iliamna hunters harvested 107 caribou in 1991 compared to 3 in 2004, and Newhalen hunters harvested 154 in 1991 compared to 50 in 2004. Nondalton's harvests of 23 caribou in 2001 and 18 in 2004 were much lower than the range of annual harvests of between 78 and 203 caribou from 1973 to 1983.

As discussed in the section on moose, above, 52% of respondents in the combined 5 study communities said that uses of large land mammals in 2004 were lower than in other recent years. Most cited changes in resource populations as the cause. As reviewed in the chapters on each study community, local hunters have reported that caribou have been mostly absent from traditional hunting areas, a change they attributed primarily to poor range conditions.

COMMENTS RELATED TO THE STUDY FINDINGS

In November 2005, project researchers held meetings in the 5 study communities to review and discuss the research findings. Table 7-14 summarizes the attendance of these meetings. There was good attendance and participation in all 5 meetings. Community residents in attendance strongly recommended that this final report include a full summary of their discussion points from the review meetings. Respecting this recommendation, project staff prepared the following summary of the comments offered at these meetings.[14] These comments can be grouped into 3 categories: comments related directly to subsistence harvests and use that are applicable to interpreting the study results, including local knowledge of fish and wildlife resources; comments related to potential land use plans in the area, most specifically the proposed Pebble Project; and general resource observations and concerns. All the comments reflect people's desires for a continuing opportunity to live a subsistence way of life.

[13] These percentages do not equal 100% because the residency of about 3% of hunters is unknown.

[14] Please note that listing these comments in this report is not intended to suggest they reflect the views of the Alaska Department of Fish and Game, the National Park Service, or Stephen R. Braund & Associates.

Resource Harvests and Uses

- Subsistence foods are healthier for people than foods bought in stores and need to be protected. Local community residents do not want to have to rely on processed foods.
- Sport fishermen who practice catch and release often treat spawning red salmon as "trash," but local residents conduct directed harvests on these fish and they are a valued subsistence food.
- The management of sockeye salmon escapement into the Kvichak system needs to be improved. Fifteen years ago, the Kvichak escapement was too high. The fish overcrowded the streams and then the run crashed.
- Although residents harvest large amounts of salmon, the first returning fish each year are shared with everyone in need.
- Residents of Newhalen are catching more Chinook salmon in their nets than ever before.
- People who are not local residents or Alaska Native are killing seals in Iliamna Lake. They say the skin is worth the risk of getting caught, as it has a pattern that is distinct from that of saltwater harbor seals.
- Why should residents buy sport fishing licenses when the money goes to enforce regulations that deny subsistence users rights to their traditional resources?
- There is a large amount of sharing going on between villages as well as within each community. For example, Newhalen residents share with Nondalton and Kokhanok.
- More analysis needs to be made to document how people share with elders.
- Community residents are interested in learning if salmon runs that have been depleted in certain local lakes could be restored by stocking them.
- The decrease in resource harvests in Pedro Bay is due to multiple factors – and this could be noted for all communities – including restrictive subsistence regulations, environmental changes, fewer moose available, more tourists/nonlocal residents, and a changing population.
- People have become more interested in harvesting medicinal plants in the past few years.
- In all the area communities, the amount of game meat given to local residents by sport hunters in 2004 was much lower than in previous years. For example, in Port Alsworth, only one family received any meat that had been donated by sport hunters in 2004. In contrast, in other years in the recent past, almost all the meat shared in the community was obtained through donations by sport hunters.
- Warming weather has inhibited winter subsistence activities. Water bodies do not freeze and the snow is not hard-packed enough for travel.

Potential Land Use Plans

- Mining advocates are saying, "With mining jobs, their people won't need subsistence," as if subsistence were welfare.
- There are seal haulouts in Iliamna Lake that could be affected by barge traffic. Local residents avoid those areas during the pupping season of the seals, and when the seal pups are small. Barge traffic is believed to affect pupping.
- Local residents also avoid the areas where seals are feeding such as the mouth of the Iliamna River during the pupping season.

- There are sockeye and Chinook salmon in the Upper Koktuli River, but their presence is not adequately acknowledged by developers in discussions of the potential effects of the mine.
- There is no consensus within communities on the potential Pebble Project. Some residents are strongly opposed and others in support, while still others have not yet reached a position on whether the mine should be developed.
- The proposed road would increase emissions and reduce air and surface water quality. This is in addition to the dust from trucks that local residents were told would run on the road every 10 minutes.
- Mining advocates say, "Subsistence won't change." [But] there has already been a net loss. Subsistence has changed already. The subsistence lifestyle has changed. Every year they (people working on mine planning) are here longer. The mine is already here.

Iliamna and Newhalen: Current Resource Concerns

- The movements of the few caribou that are in the area have been disturbed in recent years by helicopter traffic.
- Nonlocal hunters are overharvesting caribou from the Mulchatna Herd.
- Lichen are too thin to support the formerly large herd of caribou near the Mulchatna River – the lichen are thicker up around the Nushagak River. It may be 10 years before the caribou return.

Nondalton: Current Resource Concerns

- Caribou numbers are down significantly over the past 5-8 years, affecting subsistence harvests greatly. Local residents can't compete with fly-in hunters
- Caribou movements are disturbed by helicopter traffic noise, causing the caribou to move farther away from Nondalton.
- Nonlocal hunters overharvest caribou and moose, waste parts of the carcass, and displace local people.
- Community residents continue to use their traditional trapping and hunting areas around Groundhog Mountain, which could be impacted by a mine.

Pedro Bay: Current Resource Concerns

- The Dolly Varden in the Iliamna River are being overharvested by sport fishermen. In addition, motorized boats are disturbing stream habitat.
- Pile River Valley moose are adversely affected by increasing wolf and bear populations.

Port Alsworth: Current Resource Concerns

- Wolf and bear populations are impacting the number of local moose.
- Sockeye salmon returns have fluctuated widely over the last 5 years.
- Donations of meat from nonlocal hunters have diminished in recent years.
- Recent warm winters and poor snow conditions make travel for trapping difficult. The failure of Lake Clark and Sixmile Lake to freeze impedes caribou movements in the area.

CONCLUSION

This study has documented the continuing importance of subsistence hunting, fishing, and gathering to the residents of the southwest Alaska communities of Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth. In the 2004 study year, virtually every person in the 5 communities participated in subsistence activities and used wild resources. Subsistence harvests were large and diverse in 2004, supplying a large portion of each community's food supply. Sockeye salmon, other fish, caribou, moose, and wild plants 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. People shared their traditional knowledge of wild resources and harvest areas while engaged in subsistence activities.

Most 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 towards lower harvests of salmon, although this trend varies by community and family. Harvests of moose and caribou by residents of the 5 study communities were generally lower in 2004 than in other years for which household survey data area available. Reasons local residents cite for these changes include reduced resource populations, shifts in the locations of moose and caribou, competition with nonlocal sport hunters, and a warming climate. Causes of changes in subsistence harvests and uses are complex and require additional research that must involve collaboration with local communities.

Given the importance of subsistence resources and observations of changing harvest and use patterns, it is not surprising that residents of all 5 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 link people meaningfully to their past, are vital to the present health of each community, and encourage optimism about the future. Local residents' desire to continue subsistence activities is not only for themselves, but also for their children and future generations. The intention of this report has been to provide information that will assist the communities to work towards their goal of sustaining their way of life.

Table 7-1. Comparison of Selected Study Findings for Kvichak Watershed Comprehensive Subsistence Baseline Update, 2004

	Iliamna	Newhalen	Nondalton	Pedro Bay	Port Alsworth
Demography					
Population	73	125	164	69	109
Percent Alaska Native	67.4%	96.0%	89.7%	71.2%	17.5%
Percent of HH Head Born in Alaska	56.0%	89.1%	86.2%	70.0%	20.0%
Average Length of Residency, HH Heads (yrs)	30	35	35	26	15
Cash Economy					
Percent of Jobs Located in Community	87.5%	54.5%	66.1%	89.8%	93.1%
Average Number of Months Employed	10.5	7.6	6.5	8.3	9.8
Percent of Employed Adults Working Year-Round	79.2%	28.3%	20.3%	52.6%	67.4%
Average Household Income	$51,372	$43,543	$19,951	$36,905	$48,703
Per Capita Income	$15,531	$10,778	$5,228	$11,259	$13,393
Resource Harvest and Use					
Per Capita Harvest, Lbs Usable Weight	469.4	691.5	357.7	305.5	132.8
Average HH Harvest, Lbs Usable Weight	1,552.7	2,793.8	1,364.8	1,001.3	483.0
Number of Resources Used by 50% or More of HHs	8.0	12.0	9.0	10.0	8.0
Average # of Resources Used per HH	11.4	14.8	13.7	10.8	11.0
Average # of Resources Attempted to Harvest per HH	9.5	13.2	11.6	7.8	9.2
Average # of Resources Harvested per HH	8.4	12.2	10.8	6.7	7.4
Average # of Resources Received per HH	4.8	5.6	5.4	5.7	4.5
Average # of Resources Given Away per HH	3.2	8.1	6.3	3.5	3.4
Percent of Total Harvest taken by Top 25%	20.4%	48.3%	41.5%	31.0%	46.9%
Percent of HHs taking 70 percent of harvest	46.2%	40.0%	31.6%	33.3%	36.4%
Per Capita Harvest of lowest 50 percent of HHs	149.9	253.6	100.5	95.6	36.3
Percent of Total Harvest taken by Lowest 50% of HHs	31.9%	36.7%	28.1%	31.3%	27.3%
Average # of Resources Used by Lowest 50 % of HHs	9.9	10.9	8.8	10.5	7.7
Average # of Resources Used by Top 25% of HHs	9.0	24.2	28.2	19.0	17.0

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 7-2. Population of the Study Communities and the Kvichak Watershed, 1960 - 2004

	1960	1970	1980			1990			2000			7/1/2004 [1]	12/31/2004		
	Total	Total	Total	Alaska Native		Total	Alaska Native		Total	Alaska Native		Total	Total	Alaska Native	
				Number	Percent		Number	Percent		Number	Percent			Number	Percent
Iliamna	47	58	94	38	40.4%	94	62	66.0%	102	59	57.8%	90	73	49	67.4%
Newhalen	110	88	87	82	94.3%	160	151	94.4%	160	146	91.3%	184	125	120	96.1%
Nondalton	205	184	173	161	93.1%	178	159	89.3%	221	199	90.0%	206	164	147	89.6%
Pedro Bay	53	65	33	31	93.9%	42	38	90.5%	50	32	64.0%	47	69	49	71.2%
Port Alsworth			22			55	1	1.8%	104	23	22.1%	114	109	19	17.5%
Study Communities	415	395	409	312	76.3%	529	411	77.7%	637	459	72.1%	641	540	385	71.2%
Igiugig	36	36	33	25	75.8%	33	26	78.8%	53	44	83.0%	55			
Kokhonak	57	88	83	80	96.4%	152	137	90.1%	174	158	90.8%	167			
Levelock	88	74	79	69	87.3%	105	87	82.9%	122	116	95.1%	58			
Pope-Vannoy Landing									8	4	50.0%	9			
Other Kvichak Watershed	181	198	195	174	89.2%	290	250	86.2%	357	322	90.2%	289			
Total	596	593	604	486	80.5%	819	661	80.7%	994	781	78.6%	930			

Blank cells indicate data not available and do not necessarily mean no population.

[1] Data in this column derive from Alaska Department of Labor and Workforce Development estimates and differ from the ADF&G survey results in Table 7-1 and in the columns for 12/31/04 in this table.

Sources:

For 1960, 1970, 1980 (total only), and 1990: Alaska Department of Labor 1991
For Alaska Native population in 1980: U.S. Census Bureau 1984
For 2000: U.S. Census Bureau 2001
For 7/1/2004: Alaska Department of Labor and Workforce Development 2006
For 12/31/04: Alaska Department of Fish and Game, Division of Subsistence, Household Survey 2005

Table 7-3. Harvests and Uses of Sockeye Salmon,[1] Study Communities, 2004

	Percentage of Households					Estimated Harvest (Fish)			Estimated Harvest (Usable lbs)			Percent of Total
	Using	Fishing	Harvesting	Receiving	Giving	Total	Per HH	Per Person	Total	Per HH	Per Person	Community Harvest
Iliamna	100.0%	100.0%	100.0%	30.8%	30.8%	6,874.2	312.46	94.47	26,909.1	1,223.1	369.8	78.8%
Newhalen	100.0%	92.0%	92.0%	32.0%	64.0%	16,488.3	531.88	131.65	61,071.6	1,970.1	487.6	70.5%
Nondalton	92.1%	86.8%	86.8%	52.6%	55.3%	9,033.4	210.08	55.06	35,913.2	835.2	218.9	61.2%
Pedro Bay	100.0%	88.9%	83.3%	61.1%	72.2%	4,343.5	206.83	63.10	17,220.3	820.0	250.2	81.9%
Port Alsworth	100.0%	81.8%	81.8%	45.5%	36.4%	2,226.8	74.23	20.41	9,553.1	318.4	87.6	65.9%

[1]Note: includes fresh sockeyes and spawning sockeyes
Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2004

Table 7-4. Harvests and Uses of Moose, Study Communities, 2004

	Percentage of Households					Estimated Harvest (Animals)			Estimated Harvest (Usable lbs)			Percent of Total
	Using	Hunting	Harvesting	Receiving	Giving	Total	Per HH	Per Person	Total	Per HH	Per Person	Community Harvest
Iliamna	76.9%	46.2%	15.4%	61.5%	30.8%	3.4	0.15	0.05	1,827.7	83.1	25.1	5.4%
Newhalen	60.0%	32.0%	20.0%	56.0%	36.0%	8.7	0.28	0.07	4,687.2	151.2	37.4	5.4%
Nondalton	68.4%	44.7%	15.8%	63.2%	36.8%	17.0	0.39	0.10	9,165.8	213.2	55.9	15.6%
Pedro Bay	77.8%	72.2%	16.7%	61.1%	22.2%	3.5	0.17	0.05	1,890.0	90.0	27.5	9.0%
Port Alsworth	54.5%	36.4%	4.5%	45.5%	9.1%	1.4	0.05	0.01	736.4	24.6	6.8	5.1%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2004

Table 7-5. Harvests and Uses of Caribou, Study Communities, 2004

	Percentage of Households					Estimated Harvest (Animals)			Estimated Harvest (Usable lbs)			Percent of Total
	Using	Hunting	Harvesting	Receiving	Giving	Total	Per HH	Per Person	Total	Per HH	Per Person	Community Harvest
Iliamna	76.9%	46.2%	7.7%	69.2%	23.1%	3.4	0.15	0.05	507.7	23.1	7.0	1.5%
Newhalen	88.0%	52.0%	44.0%	68.0%	60.0%	49.6	1.60	0.40	7,440.0	240.0	59.4	8.6%
Nondalton	52.6%	31.6%	13.2%	47.4%	28.9%	18.1	0.42	0.11	2,715.8	63.2	16.6	4.6%
Pedro Bay	27.8%	5.6%	5.6%	27.8%	5.6%	1.2	0.06	0.02	175.0	8.3	2.5	0.8%
Port Alsworth	86.4%	31.8%	9.1%	86.4%	22.7%	6.8	0.23	0.06	1,022.7	34.1	9.4	7.1%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2004

Table 7-6. Kvichak Sockeye Salmon Total Run, Escapement, and Subsistence Harvests

Year	Total Run	Escapement	Subsistence Harvest	Subsistence Harvest as Total Run	Subsistence Harvest as Escapement	Subsistence Catch per Day Fished
1963		339,000	56,600		16.70%	
1964		957,000	79,000		8.25%	
1965	42,112,000	24,326,000	69,500	0.17%	0.29%	
1966	7,944,000	3,775,000	70,700	0.89%	1.87%	
1967	5,017,000	3,216,000	63,600	1.27%	1.98%	
1968	2,945,000	2,581,000	68,600	2.33%	2.66%	
1969	12,155,000	8,394,204	74,200	0.61%	0.88%	
1970	30,517,000	13,935,306	105,600	0.35%	0.76%	
1971	6,152,000	2,387,392	61,600	1.00%	2.58%	
1972	1,352,000	1,009,962	50,200	3.71%	4.97%	
1973	248,000	226,554	39,100	15.77%	17.26%	
1974	4,582,000	4,433,844	98,100	2.14%	2.21%	
1975	14,746,000	13,140,450	115,500	0.78%	0.88%	
1976	3,423,000	1,965,282	75,900	2.22%	3.86%	
1977	2,081,000	1,341,144	72,000	3.46%	5.37%	
1978	7,965,000	4,149,288	83,900	1.05%	2.02%	
1979	24,637,000	11,218,434	65,500	0.27%	0.58%	
1980	35,248,000	22,505,268	72,600	0.21%	0.32%	
1981	6,989,000	1,754,358	75,600	1.08%	4.31%	
1982	2,993,000	1,134,840	61,300	2.05%	5.40%	
1983	20,105,000	3,569,982	96,500	0.48%	2.70%	41.0
1984	23,014,000	10,490,670	100,500	0.44%	0.96%	44.8
1985	13,394,000	7,211,046	86,500	0.65%	1.20%	44.6
1986	1,966,000	1,179,322	59,900	3.05%	5.08%	38.5
1987	9,593,000	6,065,880	72,000	0.75%	1.19%	52.8
1988	6,720,000	4,065,216	77,100	1.15%	1.90%	37.3
1989	19,774,000	8,317,500	71,400	0.36%	0.86%	40.9
1990	17,521,000	6,970,020	76,600	0.44%	1.10%	40.7
1991	8,032,000	4,222,788	66,786	0.83%	1.58%	48.4
1992	10,445,000	4,725,864	72,148	0.69%	1.53%	38.8
1993	9,313,000	4,025,166	74,123	0.80%	1.84%	41.1
1994	22,232,000	8,337,840	64,343	0.29%	0.77%	41.1
1995	27,431,000	10,038,720	54,679	0.20%	0.54%	38.3
1996	3,458,000	1,450,578	54,872	1.59%	3.78%	32.0
1997	1,683,000	1,503,732	59,508	3.54%	3.96%	27.2
1998	3,412,000	2,296,074	53,656	1.57%	2.34%	29.7
1999	12,947,000	6,196,914	57,723	0.45%	0.93%	39.8
2000	2,862,000	1,827,780	36,990	1.29%	2.02%	29.6
2001	1,430,000	1,095,348	32,808	2.29%	3.00%	32.3
2002	704,000	703,884	33,001	4.69%	4.69%	31.7
2003	1,723,000	1,686,804	38,495	2.23%	2.28%	35.8
2004	7,332,000	5,500,134	53,225	0.73%	0.97%	31.2
Average	10,904,925	5,339,800	67,904	0.62%	1.27%	

Sources: Cross et al. 1997; ADF&G 1985, 2000a, 2000b; Schroeder et al. 1987

Table 7-7. Subsistence harvest of sockeye salmon by community, in numbers of fish, Kvichak River drainage, Bristol Bay, 1963 - 2004 [a] [b]

Year	Levelock	Igiugig	Pedro Bay	Kokhanok	Iliamna-Newhalen	Nondalton	Port Alsworth	All Local Communities	Other [1]	Total
1963	600		14,000	7,000	10,000	25,000		56,600		56,600
1964	1,000	4,000	12,000	8,000	19,000	35,000		79,000		79,000
1965	1,000	3,300	9,800	10,200	9,700	35,500		69,500		69,500
1966	600	1,200	6,000	10,500	6,600	45,800		70,700		70,700
1967	1,400	3,400	9,900	10,200	9,100	29,600		63,600		63,600
1968	1,400	4,800	9,800	10,200	8,700	33,700		68,600		68,600
1969	1,000	5,100	4,200	15,000	4,900	44,000		74,200		74,200
1970	1,600	11,200	11,200	22,300	16,400	42,900		105,600		105,600
1971	1,600	6,500	10,100	12,800	8,500	22,100		61,600		61,600
1972	1,600	2,200	4,000	8,300	10,000	24,100		50,200		50,200
1973	4,800	2,200	2,900	9,200	10,200	8,500	1,300	39,100		39,100
1974	8,600	6,200	14,400	21,500	16,400	29,500	1,500	98,100		98,100
1975	5,300	6,400	8,300	18,000	26,700	48,700	2,100	115,500		115,500
1976	5,300	6,800	4,400	17,100	16,300	20,500	5,500	75,900		75,900
1977	2,600	6,000	5,600	14,300	11,400	27,200	4,900	72,000		72,000
1978	8,900	8,800	11,200	23,700	11,000	17,300	3,000	83,900		83,900
1979	4,400	6,600	3,500	16,200	15,900	14,700	4,200	65,500		65,500
1980	6,100	8,100	7,400	22,600	11,100	11,300	6,000	72,600		72,600
1981	6,600	5,400	9,700	16,500	15,400	15,200	6,800	75,600		75,600
1982	5,400	1,900	8,200	16,600	13,500	11,200	4,500	61,300		61,300
1983	4,800	3,300	10,400	20,100	23,800	29,400	4,700	96,500		96,500
1984	8,100	6,300	12,100	24,400	15,900	29,100	4,600	100,500		100,500
1985	6,600	3,400	12,900	21,900	22,300	14,900	4,500	86,500		86,500
1986	6,400	1,600	6,700	18,300	17,000	6,600	3,300	59,900		59,900
1987	5,700	[c]	7,300	16,500	27,500	11,800	3,200	72,000		72,000
1988	3,500	[c]	5,500	14,400	29,800	20,700	3,200	77,100	[d]	77,100
1989	5,100	1,200	6,700	13,000	24,700	18,500	2,200	71,400	[d]	71,400
1990	4,700	2,200	6,600	12,400	18,800	27,300	3,200	75,200	1,400	76,600
1991	1,029	1,712	9,739	17,184	29,094	4,163	2,755	65,676	1,110	66,786
1992	4,374	1,056	6,932	11,477	29,633	13,163	2,954	69,589	2,559	72,148
1993	4,699	1,397	6,226	18,810	19,067	17,890	3,254	71,343	2,780	74,123
1994	1,467	1,201	8,747	15,771	15,553	15,246	3,074	61,059	3,284	64,343
1995	3,756	497	5,359	14,412	20,134	4,188	2,892	51,238	3,441	54,679
1996	1,120	2,309	5,219	14,011	14,787	11,856	3,263	52,565	2,307	54,872
1997	1,062	2,067	5,501	8,722	19,513	17,194	2,348	56,407	3,101	59,508
1998	2,454	1,659	3,511	10,418	16,165	13,136	2,678	50,021	3,635	53,656
1999	1,276	1,608	5,005	10,725	14,129	17,864	4,282	54,889	2,834	57,723
2000	1,467	1,981	1,815	7,175	6,679	11,953	3,200	34,270	2,720	36,990
2001	908	779	2,118	9,447	8,132	7,566	1,958	30,908	1,901	32,808
2002	625	2,138	2,687	9,847	9,417	5,508	1,201	31,423	1,578	33,001
2003	737	1,081	2,135	9,771	13,824	8,016	1,370	36,934	1,591	38,495
2004	1,000	1,026	4,803	11,869	21,652	8,789	2,455	51,594	1,631	53,225
42-Year Average, 1963 - 2004	3,349	3,554	7,252	14,306	15,914	20,396	3,325	67,050	2,391	67,904
Recent 20-Year Average (1985 - 2004)	2,899	1,606	5,775	13,307	18,894	12,817	2,864	58,001	2,391	59,793
Recent 10-Year Average (1995 - 2004)	1,441	1,515	3,815	10,640	14,443	10,607	2,565	45,025	2,474	47,496
1963 - 69 Average	1,000	3,633	9,386	10,157	9,714	35,514		68,886		68,886
1970 - 79 Average	4,470	6,290	7,560	16,340	14,280	25,550	3,214	76,740		76,740
1980 - 89 Average	5,830	3,900	8,690	18,430	20,100	16,870	4,300	77,340		77,340
1990 - 99 Average	2,594	1,571	6,284	13,393	19,688	14,200	3,070	60,799	2,645	63,444
Average, 2000 - 2004 (recent 5-year average)	947	1,401	2,712	9,622	11,941	8,366	2,037	37,026	1,884	38,904
Average, 1995 - 1999 (previous 5-year average)	1,934	1,628	4,919	11,658	16,946	12,848	3,093	53,024	3,064	56,088

[a] Harvests are extrapolated for all permits issued, based on those returned. Harvest estimates from before 1991 are rounded to the nearest hundred fish. This table reports harvest estimates as they have appeared in Annual Management Reports.

[b] Harvest estimates prior to 1990 are based on the community where the permit was issued; estimates from 1990 to the present are based on community of residence and include fish caught only in the Kvichak District.

[c] No permits issued.

[d] No permits issued. Only residents of the Naknek/Kvichak watershed could obtain subsistence permits.

[1] Subsistence harvests by non-Kvichak River watershed residents.

Source: Weiland et al. 2003:112 for 2000 to 2002; ADF&G 2000a:120 for 1979 to 1999; ADF&G 1985 for 1965 to 1978; Schroeder et al. 1987:365 for 1963 and 1964

Table 7-8. Subsistence Harvests of Sockeye Salmon, Number of Permits Issued, and Average Harvest per Permit by All Permittees and Local Residents, 1983 - 2004

	All Subsistence Permits			Bristol Bay Residents Only			Other Alaska Residents[1]		
	Estimated Harvests	Permits Issued	Harvest per Permit	Estimated Harvests	Permits Issued	Harvest per Permit	Estimated Harvests	Permits Issued	Harvest per Permit
1983	88,372	175	505.0	87,914	173	508.2	458	2	229.0
1984	101,456	169	600.3	100,432	166	605.0	1,024	3	341.3
1985	83,776	255	328.5	77,804	181	429.9	5,972	74	80.7
1986	58,777	182	323.0	57,988	174	333.3	789	8	98.6
1987	72,000	161	447.2	71,679	160	448.0	321	1	321.0
1988	77,100	168	458.9	75,532	163	463.4	1,568	5	313.6
1989	71,400	169	422.5	70,034	164	427.0	1,366	5	273.2
1990	76,600	182	420.9	75,202	165	455.8	1,398	17	82.2
1991	66,786	171	390.6	65,676	146	449.8	1,110	25	44.4
1992	72,148	202	357.2	69,589	169	411.8	2,559	33	77.5
1993	74,123	234	316.8	71,343	199	358.5	2,780	35	79.4
1994	64,343	209	307.9	61,059	168	363.4	3,284	41	80.1
1995	54,679	201	272.0	51,238	157	326.4	3,441	44	78.2
1996	54,872	211	260.1	52,565	169	311.0	2,307	42	54.9
1997	59,508	192	309.9	56,407	155	363.9	3,101	37	83.8
1998	53,656	205	261.7	50,021	163	306.9	3,635	42	86.5
1999	57,723	216	267.2	54,889	159	345.2	2,834	57	49.7
2000	36,990	212	174.5	34,270	170	201.6	2,720	42	64.8
2001	32,808	207	158.5	30,907	176	175.6	1,901	31	61.3
2002	33,001	180	183.3	31,423	155	202.7	1,578	25	63.1
2003	38,495	175	220.0	36,904	157	235.1	1,591	18	88.4
2004	53,225	206	258.4	51,594	186	277.4	1,631	20	81.6
22-year average	62,811	195	322.7	60,658	167	363.1	2,153	28	78.0
Average, 1985 - 1994	71,705	193	371.0	69,591	169	412.0	2,115	24	86.7
Average, 1995 - 2004	47,496	201	236.9	45,022	165	273.4	2,474	36	69.1
Average, 1995 - 1999	56,088	205	273.6	53,024	161	330.2	3,064	44	69.0
Average, 2000 - 2004	38,904	196	198.5	37,020	169	219.3	1,884	27	69.3

[1] Non -local residents were ineligible to be issued permits from 1983 to 1984 and 1986 to 1989.

Source: Division of Subsistence, ADF&G, Alaska Subsistence Fisheries Database

Table 7-9. Estimated Per Capita Sockeye Salmon Harvests, Study Communities, 1963 - 2004

	Iliamna/Newhalen			Nondalton			Pedro Bay			Port Alsworth			All Five Study Communities		
	Harvest	Population	Fish Per Person	Harvest	Population	Fish Per Person	Harvest	Population	Fish Per Person	Harvest	Population	Fish Per Person	Harvest	Population	Fish Per Person
1963	10,000	157	63.7	25,000	205	122.0	14,000	53	264.2				49,000	415	118.1
1964	19,000	155	122.2	35,000	202	173.3	12,000	55	219.3				66,000	412	160.1
1965	9,700	154	63.0	35,500	199	178.4	9,800	56	173.7				55,000	409	134.4
1966	6,600	152	43.3	45,800	196	233.7	6,000	58	103.2				58,400	406	143.7
1967	9,100	151	60.4	29,600	193	153.4	9,900	60	165.4				48,600	404	120.4
1968	8,700	149	58.3	33,700	190	177.4	9,800	62	159.2				52,200	401	130.3
1969	4,900	148	33.2	44,000	187	235.3	4,200	63	66.4				53,100	398	133.5
1970	16,400	146	112.3	42,900	184	233.2	11,200	65	172.3				70,500	395	178.5
1971	8,500	150	56.9	22,100	183	120.8	10,100	62	163.4				40,700	394	103.2
1972	10,000	153	65.4	24,100	182	132.6	4,000	59	68.3				38,100	393	96.8
1973	10,200	157	65.2	8,500	181	47.0	2,900	55	52.3	1,300	22	59.1	22,900	415	55.2
1974	16,400	160	102.5	29,500	180	164.3	14,400	52	275.9	1,500	22	68.2	61,800	414	149.3
1975	26,700	164	163.3	48,700	179	272.8	8,300	49	169.4	2,100	22	95.5	85,800	413	207.7
1976	16,300	167	97.6	20,500	177	115.6	4,400	46	96.1	5,500	22	250.0	46,700	412	113.3
1977	11,400	171	66.9	27,200	176	154.3	5,600	43	131.5	4,900	22	222.7	49,100	411	119.3
1978	11,000	174	63.2	17,300	175	98.7	11,200	39	284.3	3,000	22	136.4	42,500	411	103.5
1979	15,900	178	89.6	14,700	174	84.4	3,500	36	96.7	4,200	22	190.9	38,300	410	93.5
1980	11,100	181	61.3	11,300	173	65.3	7,400	33	224.2	6,000	22	272.7	35,800	409	87.5
1981	15,400	188	81.8	15,200	174	87.6	9,700	34	286.1	6,800	25	268.8	47,100	421	111.9
1982	13,500	196	69.0	11,200	174	64.4	8,200	35	235.6	4,500	29	157.3	37,400	433	86.4
1983	23,800	203	117.3	29,400	175	168.5	10,400	36	291.3	4,700	32	147.3	68,300	445	153.5
1984	15,900	210	75.6	29,100	175	166.3	12,100	37	330.6	4,600	35	130.7	61,700	457	135.0
1985	22,300	218	102.5	14,900	176	84.9	12,900	38	344.0	4,500	39	116.9	54,600	469	116.4
1986	17,000	225	75.6	6,600	176	37.5	6,700	38	174.5	3,300	42	78.9	33,600	481	69.9
1987	27,500	232	118.5	11,800	177	66.9	7,300	39	185.8	3,200	45	71.0	49,800	493	101.0
1988	29,800	239	124.5	20,700	177	116.9	5,500	40	136.8	3,200	48	66.1	59,200	505	117.2
1989	24,700	247	100.1	18,500	178	104.2	6,700	41	163.0	2,200	52	42.6	52,100	517	100.8
1990	18,800	254	74.0	27,300	178	153.4	6,600	42	157.1	3,200	55	58.2	55,900	529	105.7
1991	29,094	255	114.2	4,163	182	22.8	9,739	43	227.5	2,755	60	46.0	45,751	540	84.8
1992	29,633	256	115.9	13,163	187	70.5	6,932	44	159.0	2,954	65	45.6	52,682	551	95.7
1993	19,067	256	74.4	17,890	191	93.7	6,226	44	140.2	3,254	70	46.7	46,437	561	82.7
1994	15,553	257	60.5	15,246	195	78.1	8,747	45	193.5	3,074	75	41.2	42,620	572	74.5
1995	20,134	258	78.0	4,188	200	21.0	5,359	46	116.5	2,892	80	36.4	32,573	583	55.9
1996	14,787	259	57.1	11,856	204	58.2	5,219	47	111.5	3,263	84	38.7	35,125	594	59.2
1997	19,513	260	75.2	17,194	208	82.6	5,501	48	115.6	2,348	89	26.3	44,556	605	73.7
1998	16,165	260	62.1	13,136	212	61.8	3,511	48	72.5	2,678	94	28.4	35,490	615	57.7
1999	14,129	261	54.1	17,864	217	82.4	5,005	49	101.7	4,282	99	43.2	41,280	626	65.9
2000	6,679	262	25.5	11,953	221	54.1	1,815	50	36.3	3,200	104	30.8	23,647	637	37.1
2001	8,132	265	30.7	7,566	217	34.8	2,118	49	43.0	1,958	107	18.4	19,774	638	31.0
2002	9,417	268	35.1	5,508	214	25.8	2,687	49	55.4	1,201	109	11.0	18,813	639	29.4
2003	13,824	271	51.0	8,016	210	38.2	2,135	48	44.7	1,370	112	12.3	25,345	640	39.6
2004	21,652	274	79.0	8,789	206	42.7	4,803	47	102.2	2,455	114	21.5	37,699	641	58.8
average	15,914	208	76.5	20,396	189	107.7	7,252	47	153.7	3,325	57	57.9	46,095	488	94.4
5-year	11,941	268	44.6	8,366	214	39.2	2,712	49	55.9	2,037	109	18.7	25,056	639	39.2
10-year	14,443	264	54.8	10,607	211	50.3	3,815	48	79.4	2,565	99	25.9	31,430	622	50.5

Table 7-10. Estimated Harvests of Moose, Kvichak Watershed (GMU 9B) Communities, 1973 - 2004

Community	Estimated Harvest of Moose																														
	1973							1980	1981	1982	1983					1988			1991	1992				1996					2001			2004
2004 Study Communities:																															
Iliamna	4										4								16										9			3
Newhalen	13										0																		9			9
Nondalton	28							25	31		33																		95			17
Pedro Bay	8									4														4					2			4
Port Alsworth											11																		1			1
Other GMU 9B communities:																															
Igiugig	4										4									8									2			
Kokhanok	14										14									43									26			
Levelock	20															24				27									16			

Source: Scott et al. 2001; Holen et al. 2005; ADF&G Division of Subsistence, Household Survey, 2005

Table 7-11. Estimated Percapita Harvests of Moose, Kvichak Watershed (GMU 9B) Communities, 1973 - 2004

Community	Estimated Number of Moose Harvested per Capita																														
	1973							1980	1981	1982	1983				1988			1991	1992				1996					2001			2004
2004 study communities:																															
Iliamna	0.06										0.03							0.16										0.10			0.05
Newhalen	0.18										0.00							0.10										0.06			0.07
Nondalton	0.18							0.14	0.16		0.12																	0.62			0.10
Pedro Bay	0.19									0.06													0.07					0.04			0.05
Port Alsworth											0.15																	0.01			0.01
Other GMU 9B Study Communities:																															
Igiugig	0.10										0.05								0.18									0.07			
Kokhanok	0.18										0.10								0.25									0.20			
Levelock	0.26														0.22				0.25									0.26			

Source: Scott et al. 2001; Holen et al. 2005; ADF&G Division of Subsistence, Household Survey, 2005

Table 7-12. Estimated Harvests of Caribou, Kvichak Watershed (GMU 9B) Communities, 1973 - 2004

Community	Estimated Harvest of Caribou																														
	1973						1980	1981	1982	1983				1988			1991	1992				1996				2001			2004
2004 Study Communities:																															
Iliamna	15									16							107									40			3	
Newhalen	32									24							154									71			50	
Nondalton	108						78	81		203																23			18	
Pedro Bay	0								6													15				0			1	
Port Alsworth										6																4			7	
Other GMU 9B Communities:																															
Igiugig	64									7							62									23				
Kokhanok	12									1							137									20				
Levelock	36													86			86									28				

Source: Scott et al. 2001; Holen et al. 2005; ADF&G Division of Subsistence, Household Survey, 2005

Table 7-13. Estimated Per Capita Harvests of Caribou, Kvichak Watershed (GMU 9B) Communities, 1973 - 2004

Community	Estimated Number of Caribou Harvested per Capita																												
	1973							1980	1981	1982	1983					1988			1991	1992				1996				2001			2004
2004 Study Communities																														
Iliamna	0.24										0.12								1.09									0.44			0.05
Newhalen	0.44										0.19								0.98									0.48			0.40
Nondalton	0.71							0.46	0.41		0.72																	0.15			0.11
Pedro Bay	0.00									0.10														0.23				0.00			0.02
Port Alsworth											0.09																	0.27			0.06
Other GMU 9B Communities:																															
Igiugig	1.66										0.11									1.33								0.85			
Kokhanok	0.14										0.01									0.79								0.15			
Levelock	0.46															0.79				0.78								0.45			

Source: Scott et al. 2001; Holen et al. 2005; ADF&G Division of Subsistence, Household Survey, 2005

Table 7-14. Community Meetings to Review Study Findings

Community	Date	Attendance[a]	
		Community Residents	Total
Iliamna	11/3/2004	7	11
Newhalen	11/2/2004	12	17
Nondalton	11/4/2004	26	32[b]
Pedro Bay	11/2/2004	19	24
Port Alsworth	11/4/2004	8	12

[a] Brian Davis and Davin Holen of ADF&G, Karen Gaul of NPS, and Michael Wyngaard of S.R. Braund and Associates attended all the meetings. Ted Krieg of ADF&G attended the meetings in Pedro Bay, Newhalen, and Nondalton. Michelle Ravenmoon of NPS attended the meetings in Nondalton and Port Alsworth, and Buck Mangipane of NPS attended the meeting in Port Alsworth.

[b] This meeting was held in conjunction with a Dena'ina language workshop. 15 of the participants were attendees of the workshop and not residents of Nondalton.

Figure 7-1. Harvests of Wild Resources in Pounds Usable Weight per Person, Study Communities, 2004

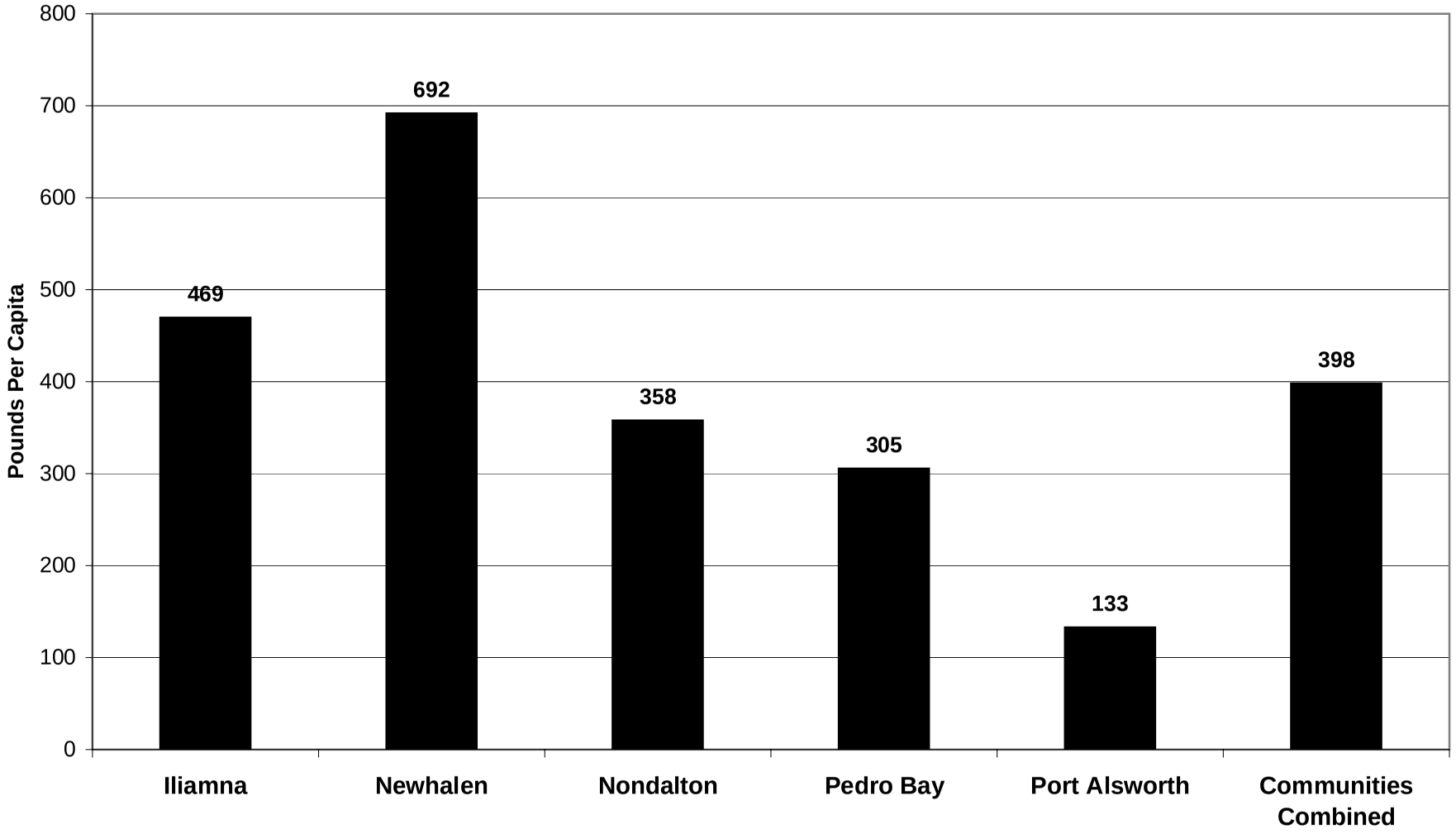


Figure 7-2. Community Harvest Composition by Resource Category, 2004

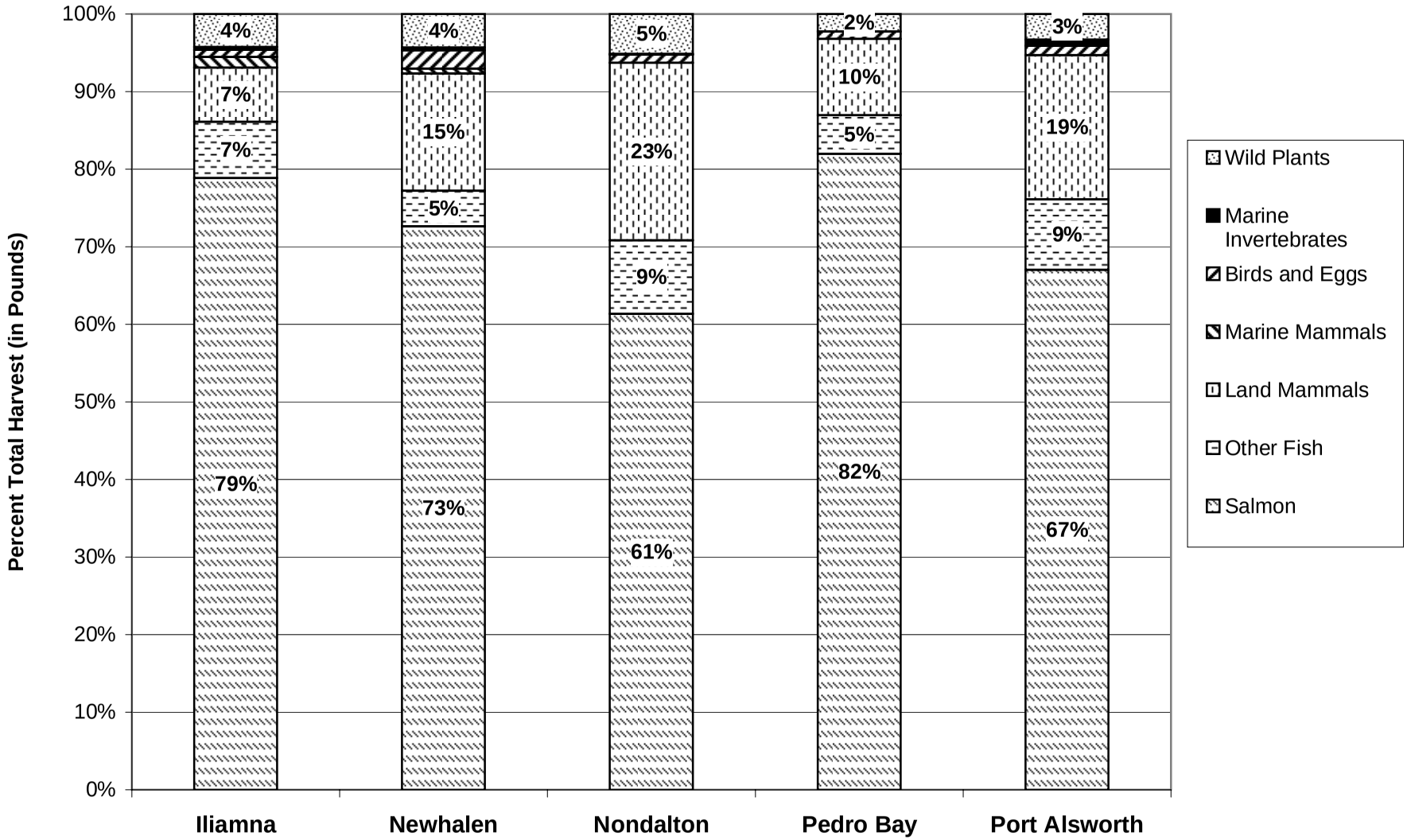


Figure 7-3. Individual Involvement in Subsistence Activities, All Study Communities Combined, 2004

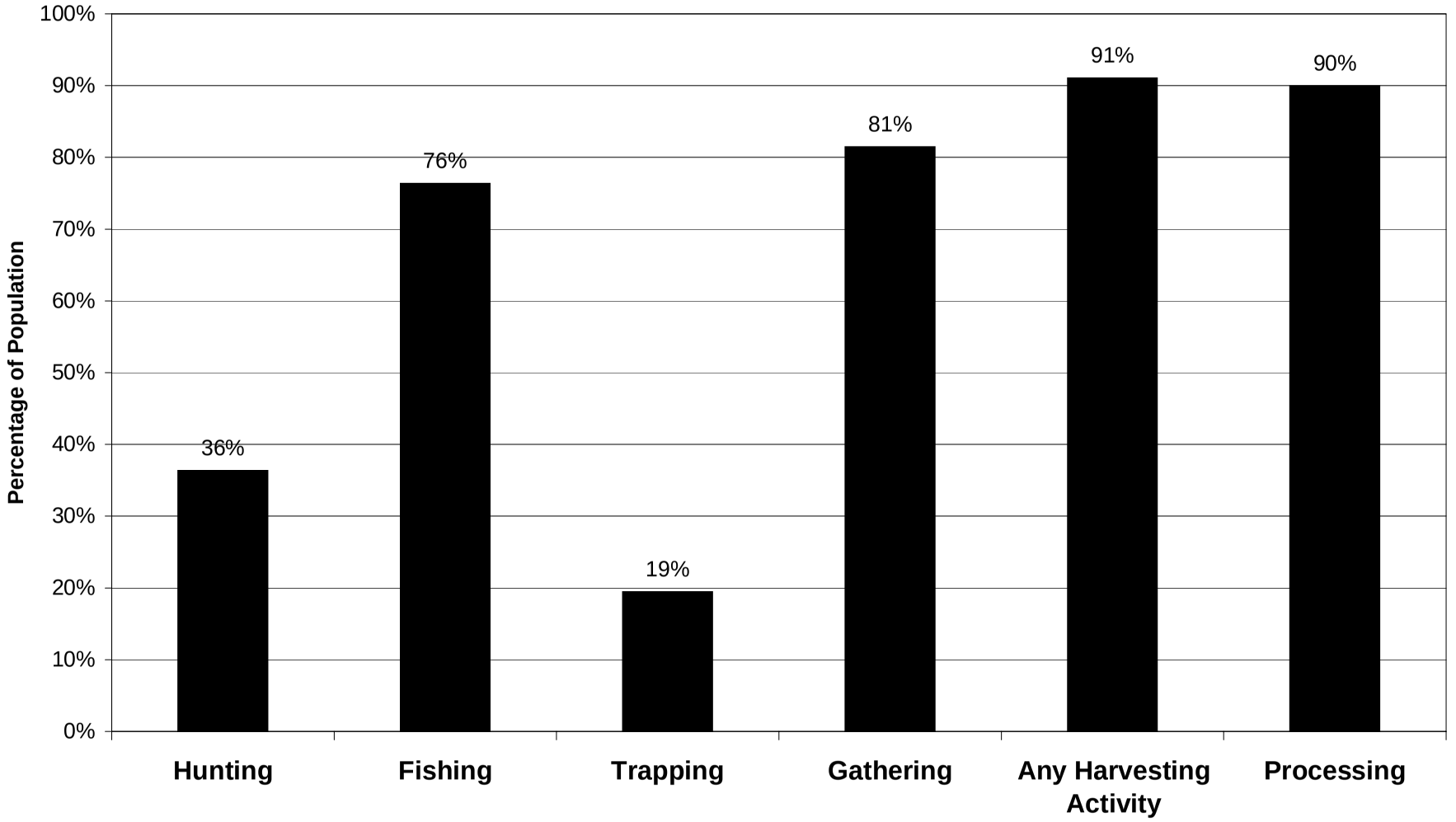


Figure 7-4. Harvests of Wild Resources, Study Communities, All Study Years

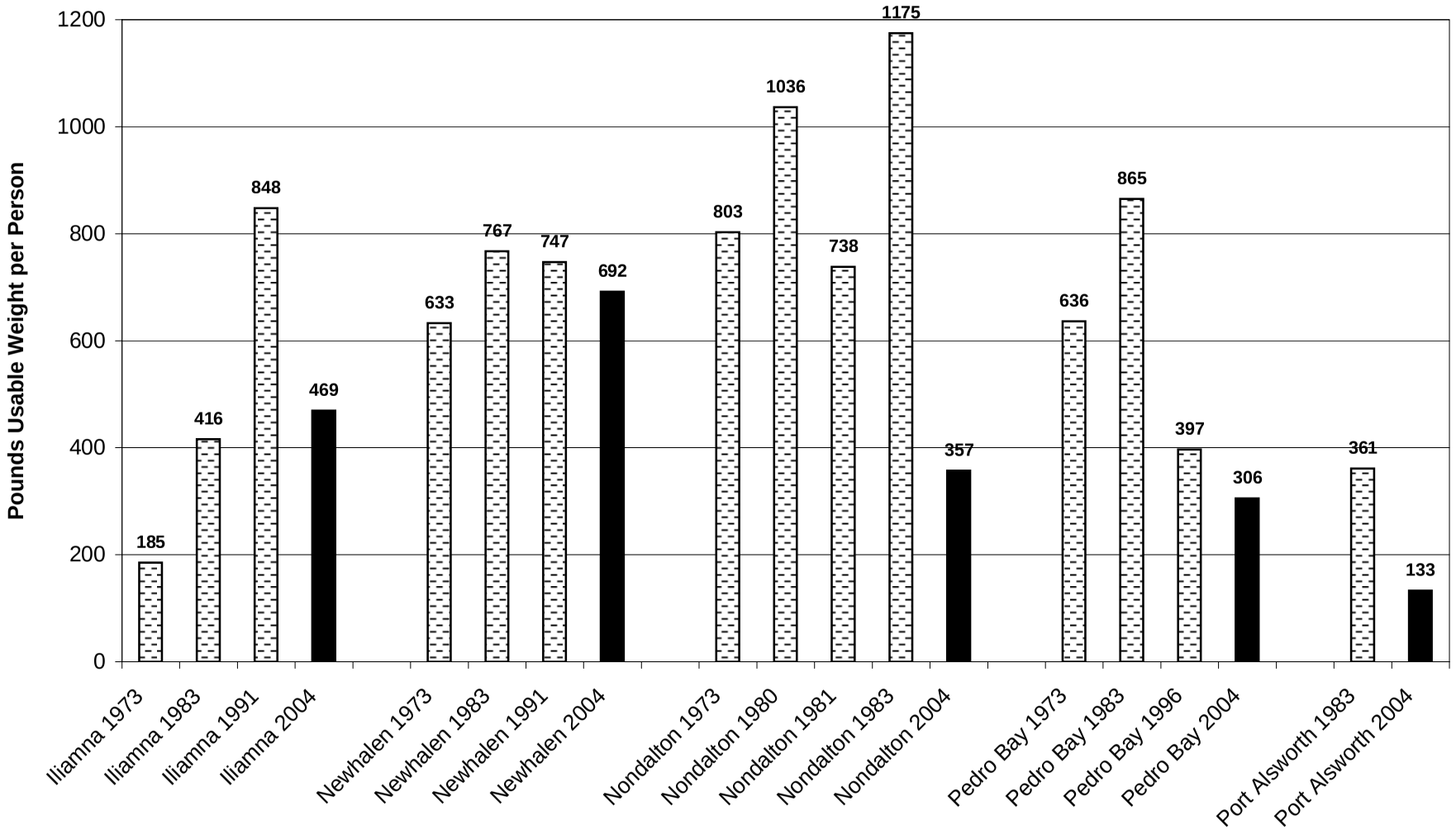


Figure 7-5. Percentage of Total Harvest Composed of Sockeye Salmon, Moose, and Caribou, Study Communities, 2004

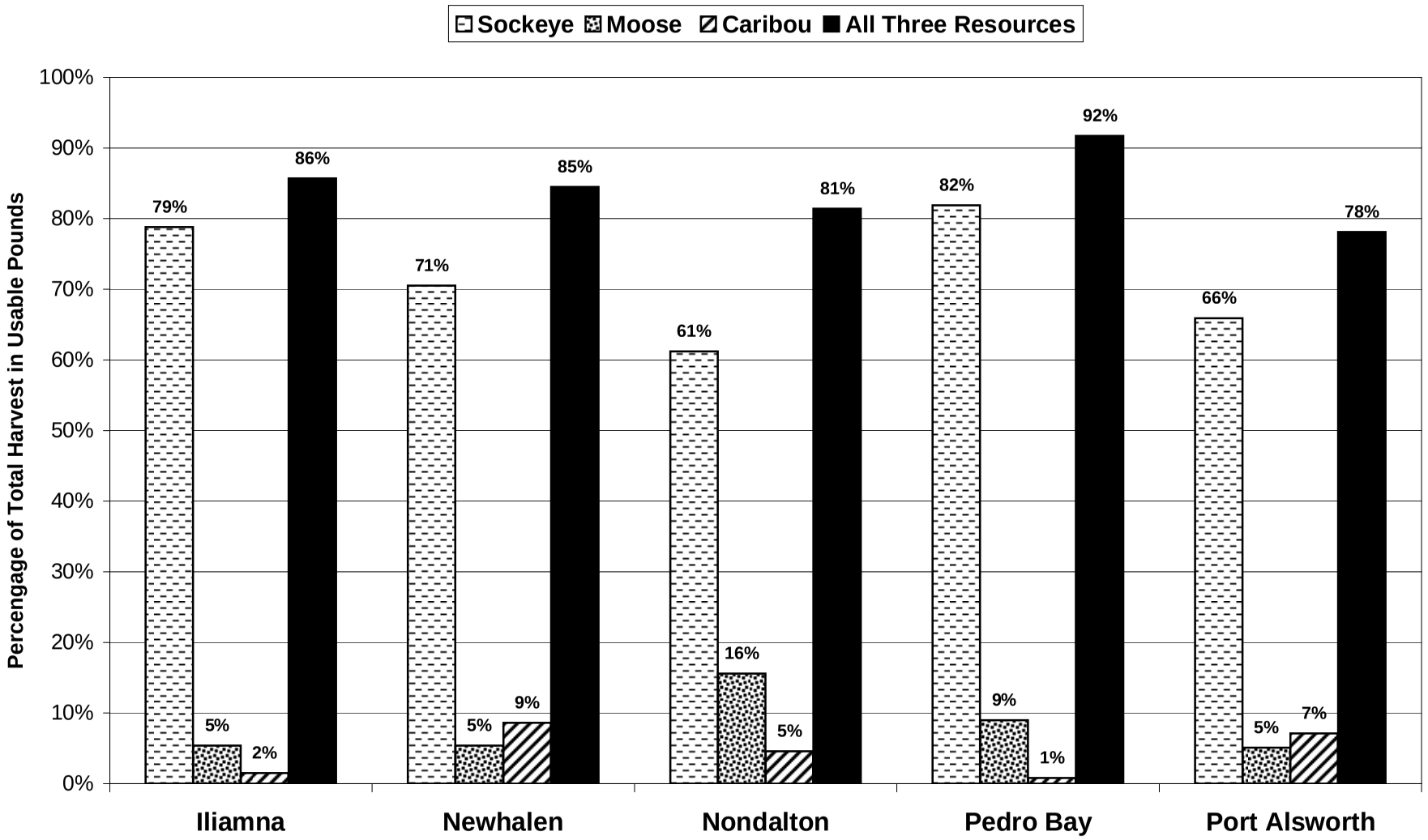


Figure 7-6. Harvests of Salmon, Study Communities, All Study Years

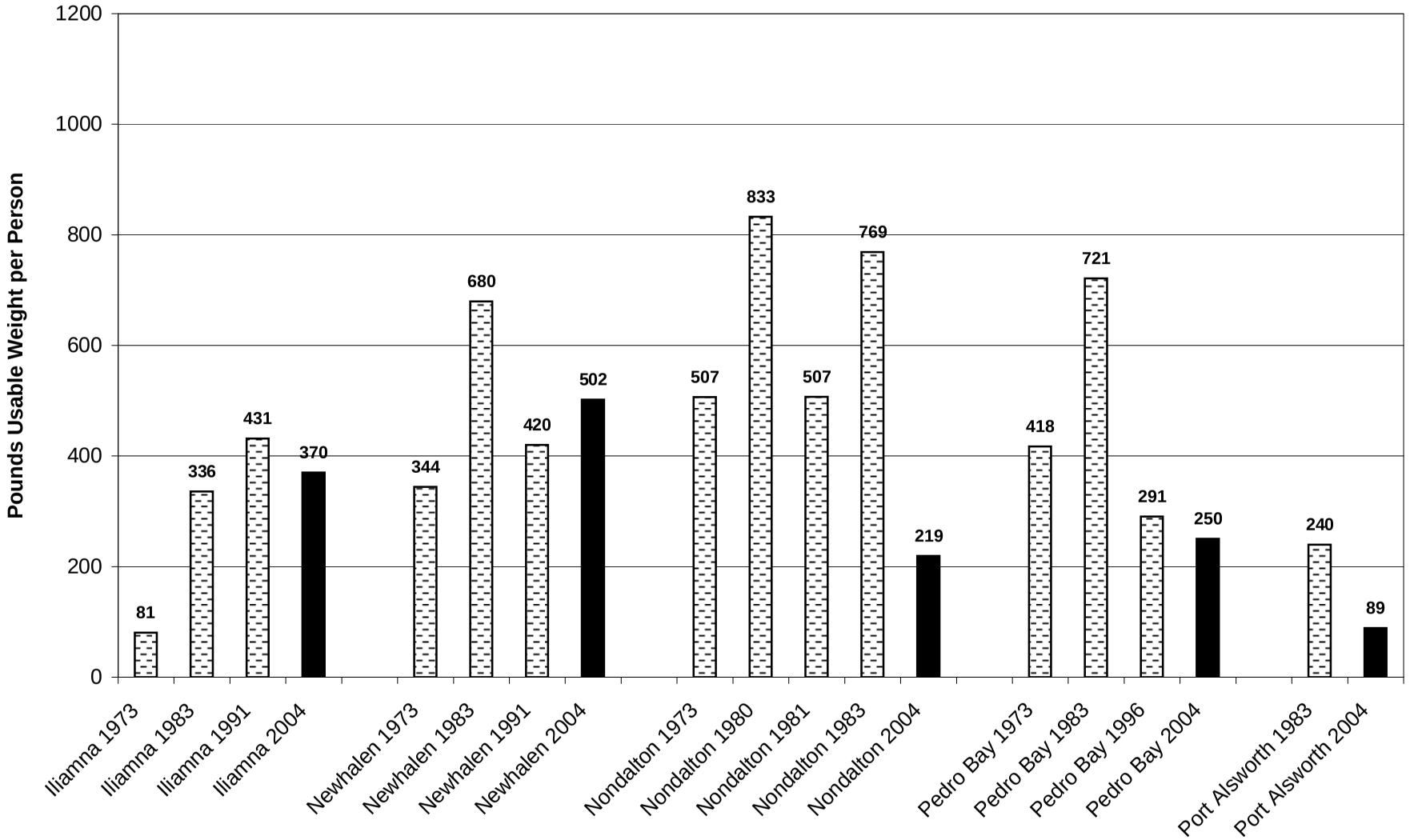


Figure 7-7. Estimated Subsistence Harvests of Sockeye Salmon, Kvichak Watershed, 1963 - 2004

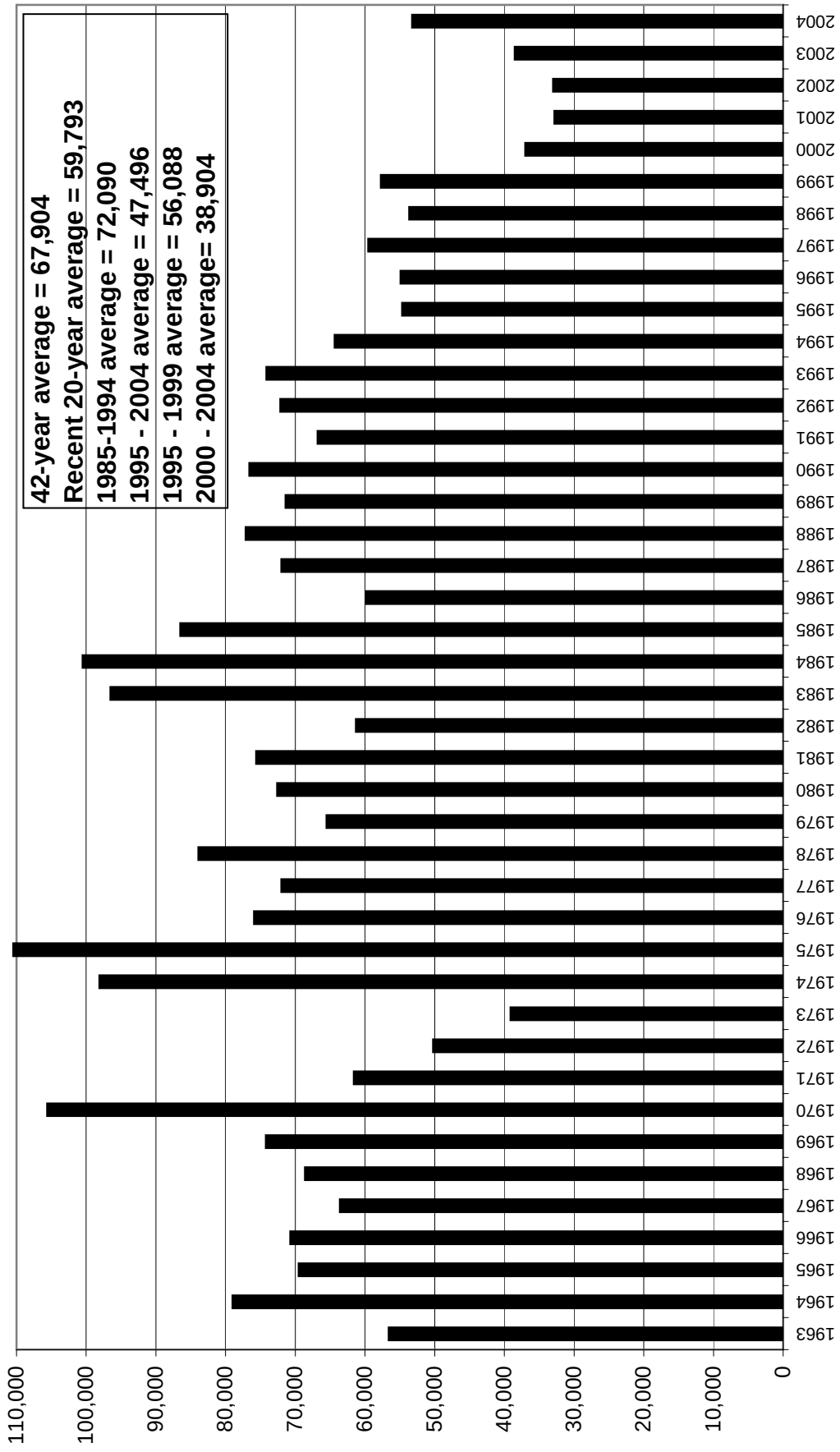


Figure 7-8. Average Subsistence Sockeye Salmon Harvest per Permit, Local Community Residents, Kvichak Watershed, 1983 - 2004

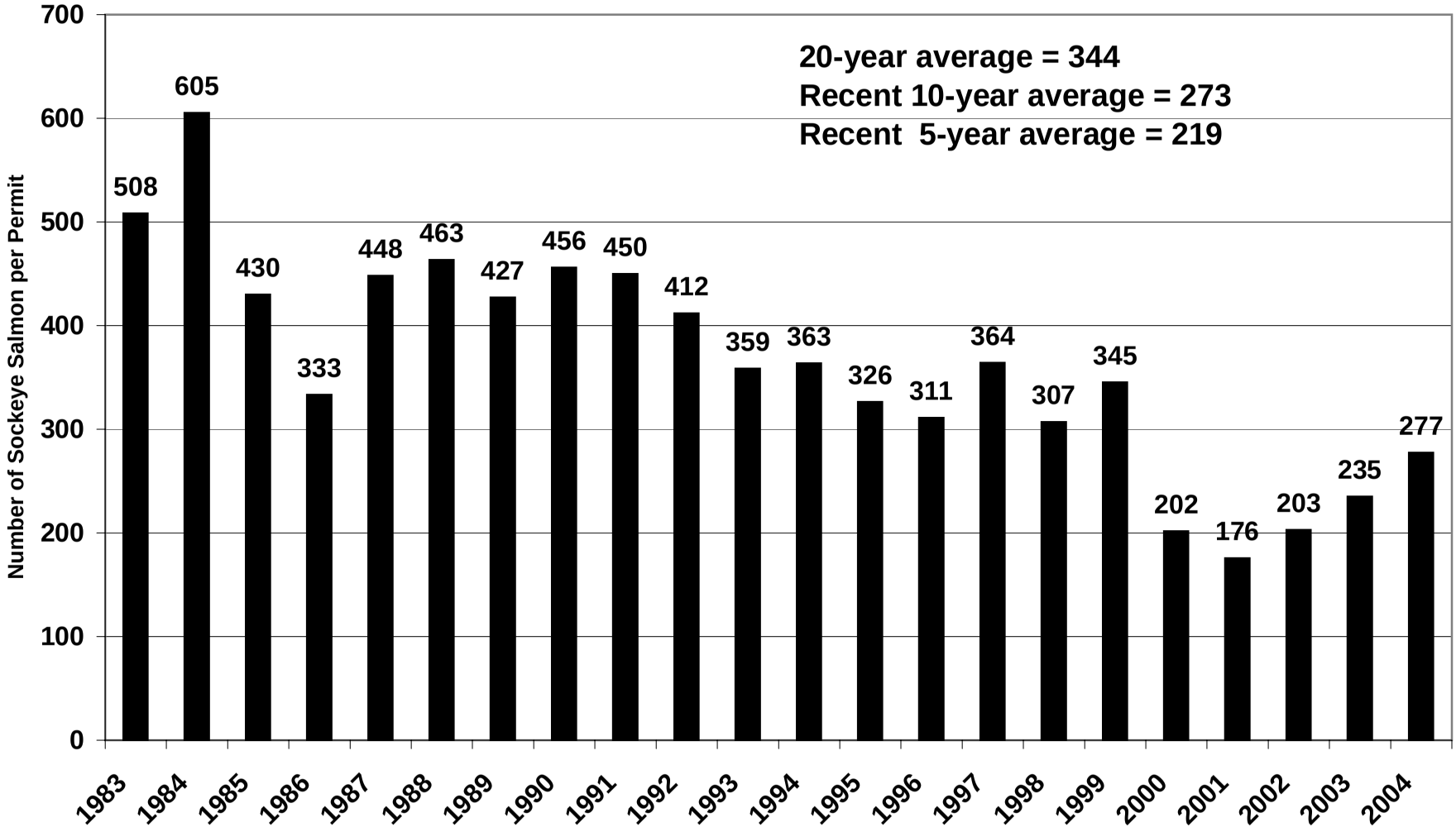


Figure 7-9. Per Capita Subsistence Sockeye Salmon Harvests, Study Communities, 1963 - 2004

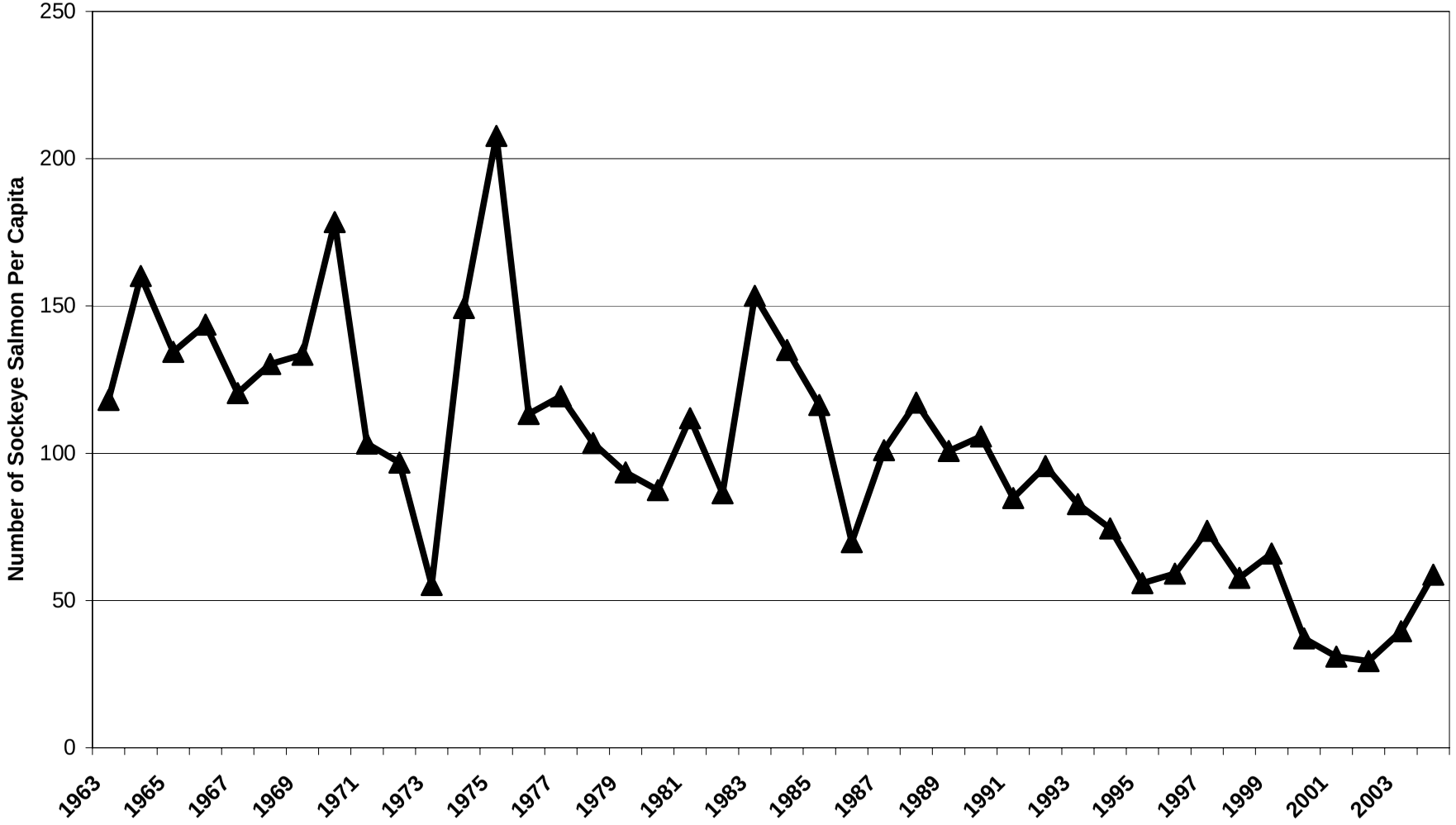


Figure 7-10. Number of Subsistence Salmon Permits Issued, Kvichak Watershed, Bristol Bay Area, 1983 - 2004

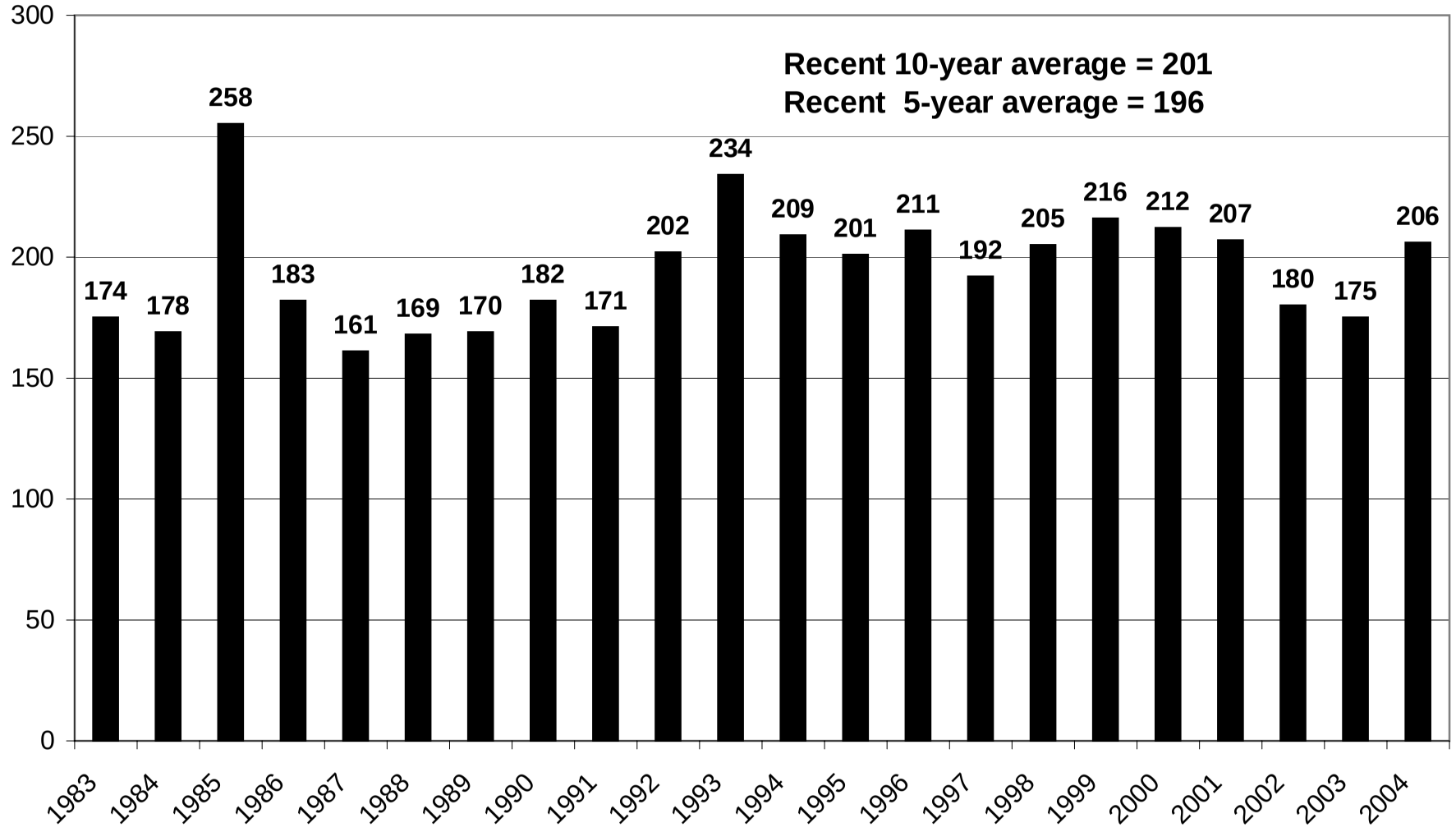


Figure 7-11. Kvichak Sockeye: Escapement Compared to Subsistence Harvests, 1963 - 2004

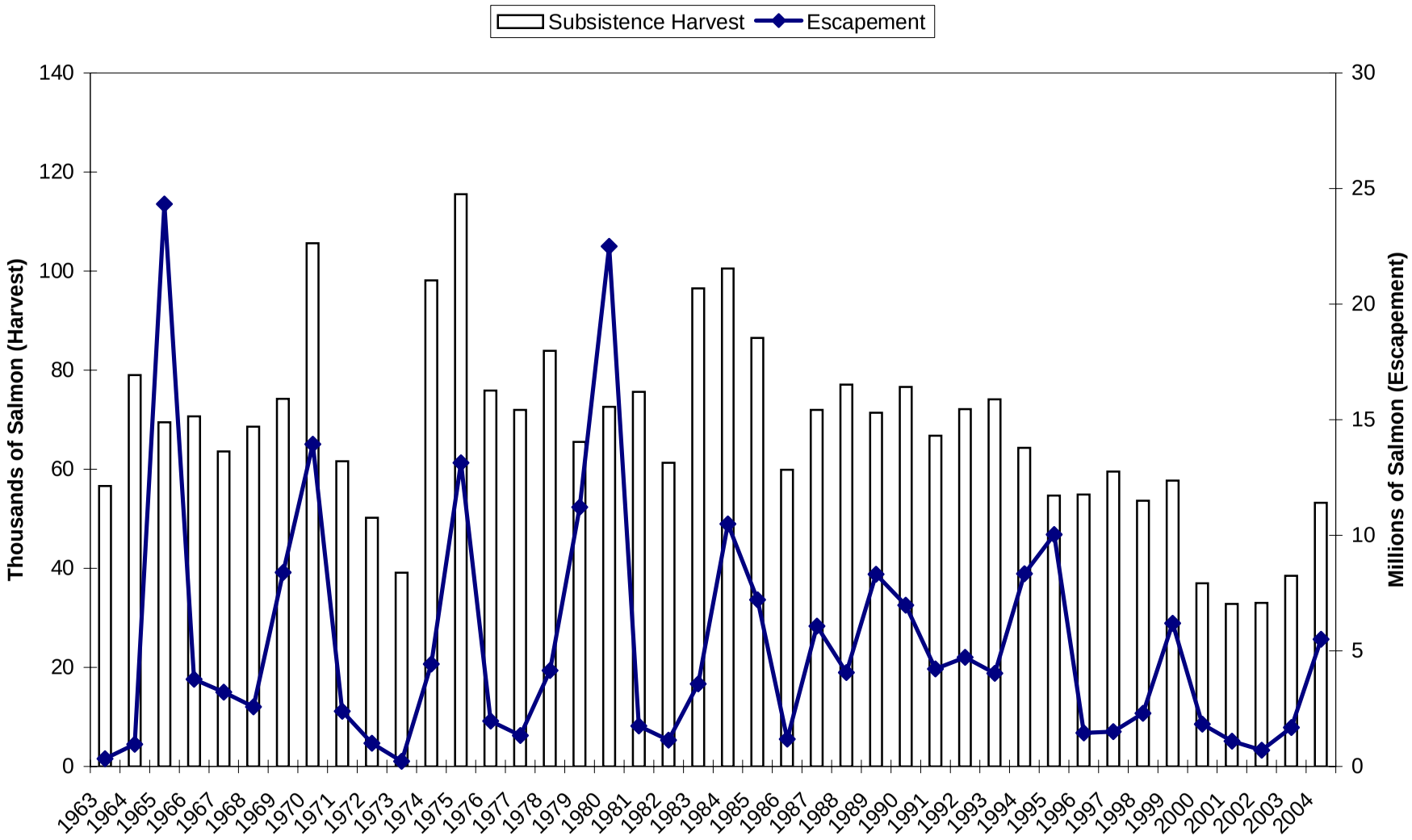


Figure 7-12. Households' Assessments of Harvests and Uses of Salmon in 2004 Compared to Other Recent Years, All Study Communities Combined

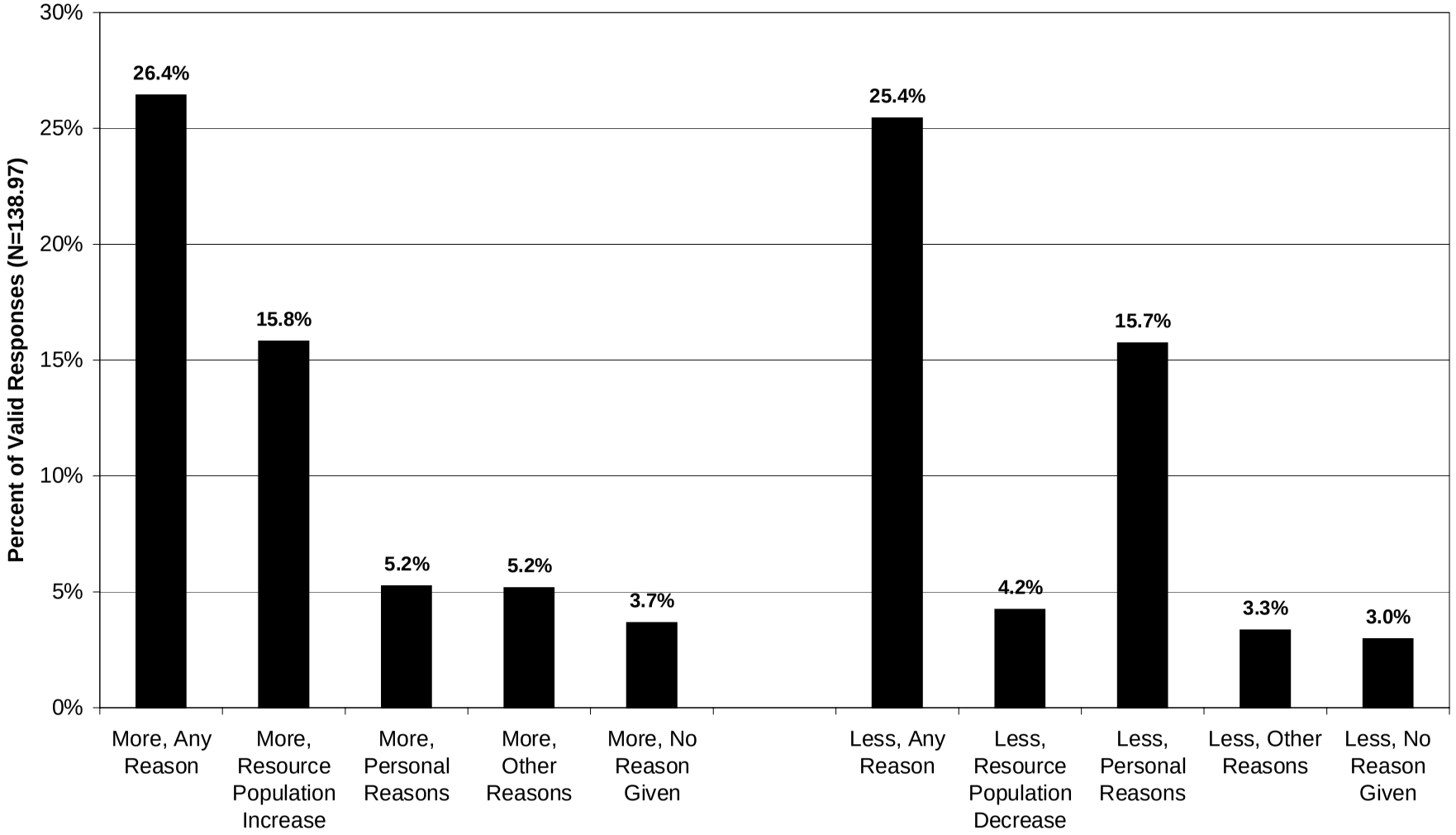
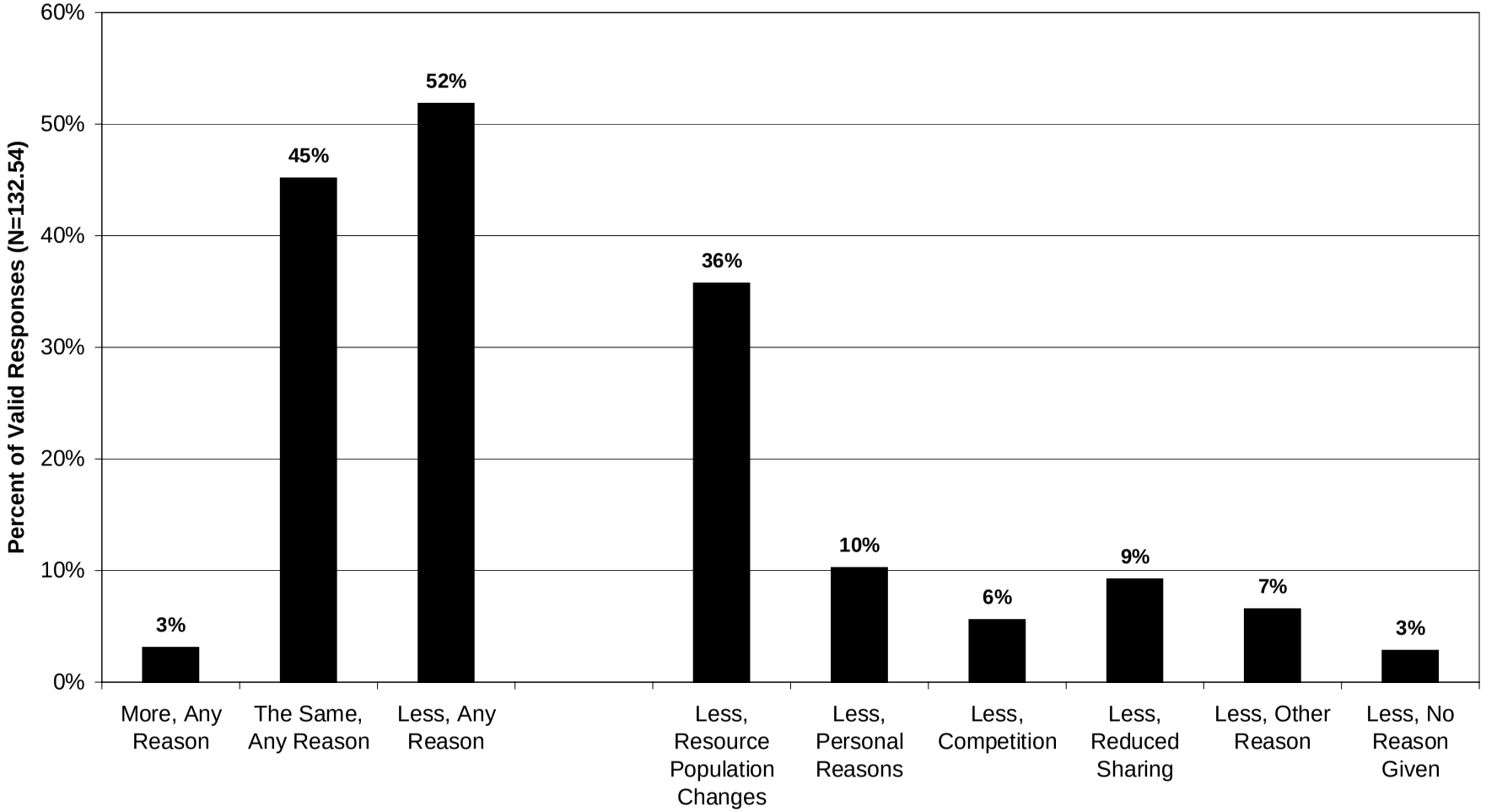


Figure 7-13. Households' Assessments of Harvests and Uses of Large Land Mammals in 2004 Compared to Other Recent Years, All Study Communities Combined



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APPENDIX A

SURVEY INSTRUMENT

KVICHAK WATERSHED COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2004

HH ID: _____ START TIME: _____ INTERVIEWER: _____

COMMUNITY: _____ STOP TIME: _____ DATE: _____

ID # OF PERSON RESPONDING TO SURVEY: _____ CODER: _____

FIELD SUPERVISOR: _____

HOUSEHOLD INFORMATION - WHO WERE MEMBERS OF THIS HOUSEHOLD BETWEEN JANUARY 1 AND DECEMBER 31, 2004 ?

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

Stephen R. Braund
&
Associates

COMMUNITY ID:_____ HH ID:_____ DEMOGRAPHY (0,1)

COMMERCIAL FISHING - SALMON.

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMMERCIAL SALMON FISHING BETWEEN JANUARY 1 AND DECEMBER 31, 2004? YES ____ NO ____

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 #'S OF FISHERS		
SPECIES	Y/N	INCIDENTAL*	#	#	#	UNITS	PERMIT HOLDER	CREW	**NOTES:**
CHINOOK SALMON						IND			
113000001						1			
CHUM SALMON						IND			
111000001						1			
SOCKEYE SALMON						IND			
115000001						1			
PINK SALMON						IND			
114000001						1			
COHO SALMON						IND			
112000001						1			
UNKNOWN SALMON						IND			
119000001						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, 2004?

Yes: _____; No:_____ **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 #'S OF FISHERS		
SPECIES	Y/N	INCIDENTAL	#	#	#	UNITS	PERMIT HOLDER	CREW	**NOTES:**
HERRING						GAL			
120200001						4			
SPAWN ON KELP						GAL			
120306001						4			
HERRING SAC ROE						GAL			
120304001						4			
STURGEON						IND			
125899001						1			
LINGCOD						IND			
121606001						1			
PACIFIC COD (GRAY)						IND			
121004001						1			
SABLEFISH (BLACK COD)						IND			
122800001						1			
UNKNOWN FLOUNDER						IND			
121499001						1			
SOLE						IND			
123699001						1			
HALIBUT						LBS			
121800001						2			
BLACK ROCKFISH*						IND			
122602001						1			
RED ROCKFISH**						IND			
122604001						1			
UNKNOWN ROCKFISH						IND			
122699001						1			

* BLACK ROCKFISH = DARK DUSKY, BLACK, LIGHT DUSKY, SILVERGRAY, WIDOW, YELLOWTAIL, "SEA BASS" OR "BLACK BASS".

** RED ROCKFISH = YELLOWEYE (RED SNAPPER), ROUGHEYE, PACIFIC OCEAN PERCH, DARK BLOTCHED, HARLEQUIN, NORTH, COPPER, QUILLBACK, ROSETHORN, REDSTRIPE, CANARY, SHORTRAKER, BLACKQUILL, RED BANDED, TIGER, AND "IDIOTFISH" OR "SHORTSPINE THORNYHEAD".

COMMERCIAL FISHING - NON-SALMON FISH

SPECIES	COMMERCIAL FISHED? Y/N	COMMERCIAL FISHED? INCIDENTAL	REMOVED FOR OWN USE #	GAVE AWAY TO CREW #	GAVE AWAY TO OTHERS #	UNITS	ID #'S OF FISHERS PERMIT HOLDER	ID #'S OF FISHERS CREW	NOTES:
GREENLING						IND			
121699001						1			
WOLF EEL (WOLFFISH)						IND			
124200001						1			
SHARK						IND			
123299001						1			
WALLEYE POLLOCK (WHITING)						IND			
121012001						1			
SEA RUN DOLLY VARDEN									
125006021									

NOTES:

KVICHAK WATERSHED COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2004

COMMERCIAL FISHING - MARINE INVERTEBRATES

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMM. FISHING FOR MARINE INVERTEBRATES BETWEEN JANUARY 1 AND DECEMBER 31, 2004?

Yes:_____; No:_____ **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 #'S OF FISHERS		
SPECIES	Y/N	INCIDENTAL	#	#	#	UNITS	Y/N	PERMIT HOLDER	CREW	**NOTES:**
RAZOR CLAMS						GAL				
500612001						4				
PACIFIC LITTLENECK CLAMS (STEAMERS)						GAL				
500608001						4				
DUNGENESS CRAB						IND				
501004001						1				
KING CRAB						IND				
501008991						1				
TANNER CRAB						IND				
501012991						1				
OCTOPUS						IND				
502200001						1				
SHRIMP						LBS				
503400001						2				
SCALLOPS						LBS				
502699001						2				

NOTES: _____

NON-COMMERCIAL FISHING: SALMON.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE SALMON BETWEEN JANUARY 1 AND DECEMBER 31, 2004? YES: ____ NO: ____
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	**NOTES/LOCATIONS OFF MAP**
SOCKEYE SALMON											
115000000											
SPAWNING REDS								IND			
117050000								1			
CHUM SALMON								IND			
111000000								1			
CHINOOK SALMON								IND			
113000000								1			
PINK SALMON								IND			
114000000								1			
COHO SALMON								IND			
112000000								1			
LANDLOCKED SALMON								IND			
116000000								1			
UNKNOWN SALMON								IND			
119000000								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? _____

Mark a point for each use area and mark an * next to the code for actual resources harvested.

COMMUNITY ID:_____ HH ID:_____ SALMON (4A)

KVICHAK WATERSHED COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2004

NON-COMMERCIAL FISHING: NON-SALMON FINFISH.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE FISH OTHER THAN SALMON BETWEEN JANUARY 1AND DECEMBER 31, 2004?

Yes:_____; No:_____

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

SPECIES	USED?	TRIED TO HARVEST	ROD & REEL	DIP NET	HAND LINE*	SET NET	ICE FISHING	SEINE	OTHER GEAR		UNITS	RECEIVED	GAVE AWAY	NOTES
	Y/N	Y/N	#	#	#	#	#	#	TYPE	#		Y/N	Y/N	
DOLLY VARDEN											IND			
125006000											1			
ARCTIC CHAR											IND			
125000000											1			
LAKE TROUT											IND			
125010000											1			
RAINBOW TROUT											IND			
126204000											1			
STEELHEAD											IND			
126206000											1			
TROUT, UNKNOWN											IND			
126299000											1			
GRAYLING														
125200000														
NORTHERN PIKE											IND			
125499000											1			
ROUND WHITEFISH**											IND			
126412000											1			
HUMPBACK WHITEFISH											GAL			
126408000											4			
BROAD WHITEFISH											GAL			
126404000											4			
LEAST CISCO***											GAL			
126406060											4			
BULLHEAD SCULPIN											GAL			
12304000											4			
BURBOT											IND			
124800000											1			
BLACKFISH											IND			
124600000											1			
LONGNOSE SUCKER											IND			
126000000											1			

COMMUNITY ID:_____ HH ID:_____

KVICHAK WATERSHED COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2004

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	NOTES
SMELT											GAL			
120100000											1			
STICKLEBACKS											IND			
123800000											1			
Ocean Species														
HALIBUT											LBS			
121800000											1			
ROCKFISH											IND			
122600000											2			
LINGCOD											IND			
121606000											1			
COD, UNKNOWN											IND			
121099000											1			
FLOUNDER											IND			
121400000											1			
SPAWN ON KELP											IND			
120306000											1			

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? _____

* Hand line used in open water.
**Sometimes called candlefish in this area.
***Sometimes called freshwater herring in this area.

Mark a point for each use area and the code along with the number harvested at that location.

COMMUNITY ID:_____ HH ID:_____ NON-SALMON FINFISH (6A)

KVICHAK WATERSHED COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2004

NON-COMMERCIAL FISHING: MARINE INVERTEBRATES [SHELLFISH].

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE MARINE INVERTEBRATES
BETWEEN JANUARY 1 AND DECEMBER 31, 2004? YES: _____ NO: _____

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	NOTES/LOCATION OFF MAP
FRESHWATER CLAMS				GAL			
500604002				4			
BUTTER CLAMS				GAL			
500602002				4			
RAZOR CLAMS				GAL			
500612002				4			
LITTLENECK CLAMS (STEAMERS)				GAL			
500608002				4			
PINKNECK (SURF) CLAMS				GAL			
500610002				4			
HORSE CLAMS (GAPER)				GAL			
500606002				4			
UNKNOWN CLAMS				GAL			
500699002				4			
DUNGENESS CRAB				IND			
501004002				1			
KING CRAB				IND			
501008992				1			
TANNER CRAB, BAIRDI (SNOW CRAB)				IND			
501012022				1			
UNKNOWN CRABS				IND			
501099002				1			
COCKLES				GAL			
500899002				4			
SCALLOPS				LBS			
502699002				2			
MUSSELS				GAL			
502099002				4			

Mark a point for each use area and mark an * next to the code for actual resources harvested.

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? _____

KVICHAK WATERSHED COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2004

LARGE LAND MAMMALS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE LARGE LAND MAMMALS BETWEEN JANUARY 1 AND DECEMBER 31, 2004? YES: ____ NO: ____

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

			HARVESTED						
	USED?	TRIED TO HARVEST	FOR FOOD/ FOOD & FUR	FUR ONLY	TOTAL	UNITS	RECEIVED	GAVE AWAY	
SPECIES	Y/N	Y/N	#	#	#		Y/N	Y/N	**NOTES/LOCATION OFF MAP**
BLACK BEAR						IND			
210600000						1			
BROWN BEAR						IND			
210800000						1			
CARIBOU						IND			
211000000						1			
MOOSE						IND			
211800000						1			
DALL SHEEP						IND			
212200000						1			
						IND			
						1			
						IND			
						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? _____

Mark a point for each harvest location and a polygon for hunting effort on map.

COMMUNITY ID:_____ HH ID:_____ LARGE LAND MAMMALS (10A)

MARINE MAMMALS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE MARINE MAMMALS BETWEEN JANUARY 1 AND DECEMBER 31, 2004? YES: _____ NO: _____
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	**NOTES/LOCATIONS OFF MAP**
FRESHWATER SEAL							IND			
300806000							1			
HARBOR SEAL							IND			
300806040							1			
STELLER SEA LION							IND			
301200000							1			
BELUGA WHALE							IND			
301602000							1			
SEA OTTER							IND			
301000000							1			
							IND			
							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? _____

Mark a point for each harvest location on map.

COMMUNITY ID:_____ HH ID:_____ MARINE MAMMALS (12A)

SMALL LAND MAMMALS/FURBEARERS.

KVICHAK WATERSHED COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2004

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE SMALL LAND MAMMALS/FURBEARERS BETWEEN JANUARY 1AND DECEMBER 31, 2004? YES:____ NO:____

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

		TRIED TO	NUMBER HARVESTED					GAVE			
	USED?	HARVEST	FOOD	FUR ONLY	TOTAL		RECEIVED	AWAY	NUMBER	AVERAGE	
SPECIES	Y/N	Y/N	#	#	#	UNITS	Y/N	Y/N	SOLD	PRICE	**NOTES/LOCATION OFF MAP**
RED FOX						IND					
220804000						1					
BEAVER						IND					
220200000						1					
COYOTE						IND					
220400000						1					
SNOWSHOE HARE						IND					
221004000						1					
LAND OTTER						IND					
221200000						1					
LYNX						IND					
221600000						1					
MARMOT						IND					
221800000						1					
MARTEN						IND					
222000000						1					
MINK						IND					
222200000						1					
MUSKRAT						IND					
222400000						1					
PORCUPINE						IND					
222600000						1					
WEASEL						IND					
223000000						1					
WOLF						IND					
223200000						1					
WOLVERINE						IND					
223400000						1					
TREE SQUIRREL (RED)						IND					
222804000						1					
PARKA SQUIRREL (GROUND)						IND					
222802000						1					

Was your household's harvest and use of small land mammals typical of recent LESS_____ SAME_____ MORE_____

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

Draw a line to represent the trap line or a polygon for hunting area. Write the resource name on the map.

BIRDS AND EGGS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE BIRDS OR EGGS BETWEEN JANUARY 1 AND DECEMBER 31, 2004? YES: ____ NO: ____

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

SPECIES	USED?	TRIED TO HARVEST	NUMBER HARVESTED BY SEASON (MONTHS)				UNIT	RECEIVED	GAVE AWAY
			SPRING	SUMMER	FALL	WINTER			
	Y/N	Y/N	A M J	J A	S O N	D J F M		Y/N	Y/N
GOLDENEYE (COPPERHEAD)							IND		
410210990							1		
BUFFLEHEAD (BUTTERBALL)							IND		
410202000							1		
GOLDEN EYE (COPPERHEAD)							IND		
430299000							1		
MALLARD							IND		
410214000							1		
PINTAIL							IND		
410220000							1		
AMERICAN WIGEON							IND		
410236020							1		
SHOVELER							IND		
410230000							1		
DUCKS, UNKNOWN							IND		
410299000							1		
WHITE-FRONTED GEESE							IND		
410410000							1		
SNOW GOOSE							IND		
410408000							1		
CANADA GEESE, LESSER							IND		
410404080							1		
CANADA GEESE, DUSKY							IND		
410404060							1		
CANADA GEESE, UNKNOWN							IND		
410404990							1		
UNKNOWN GEESE							IND		
410499000							1		
TUNDRA SWAN (WHISTLING)							IND		
410604000							1		
SANDHILL CRANE							IND		
410802000							1		

SPECIES	USED?	TRIED TO HARVEST	NUMBER 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
LOONS							IND		
411216990							1		
GROUSE							IND		
421802000							1		
PTARMIGAN							IND		
421804990							1		
GEESE EGGS							IND		
430499000							1		
DUCK EGGS, UNKNOWN							IND		
430299000							1		
GULL EGGS									
431212000									

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? _____

Draw a point or polygon for harvest location areas for each of the following categories on map and mark the code: migratory waterfowl, upland birds, and eggs.

COMMUNITY ID:_____ HH ID:_____ BIRDS (15A)

WILD PLANTS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE WILD PLANTS (INCLUDING FIREWOOD) BETWEEN JANUARY 1 AND DECEMBER 31, 2004? YES: ____ NO: ____

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	NOTES/LOCATION OFF MAP
BERRIES				GAL			
601000000				4			
PLANTS/GREENS/MUSHROOMS				GAL			
602000000				4			
				GAL			
				4			
WOOD				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?

Draw a polygon for harvest use areas on map and mark the code.

Was your household's overall harvest and use of subsistence resources typical (LESS_____ SAME_____ MORE_____

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

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, 2004.
FOR THOSE NOT EMPLOYED, PLEASE SPECIFY RETIRED, UNEMPLOYED, DISABLED, STUDENT, OR HOMEMAKER.

PERSON ID #	JOB #	JOB TITLE	SOC	EMPLOYER TYPE	SIC	LOCATION	WHICH MONTHS WORKED IN 2004	HOURS/ WEEK	WORK ** SCHEDULE	PERSONAL GROSS INCOME***
							J F M A M J J A S O N D			
							J F M A M J J A S O N D			
							J F M A M J J A S O N D			
							J F M A M J J A S O N D			
							J F M A M J J A S O N D			
							J F M A M J J A S O N D			
							J F M A M J J A S O N D			
							J F M A M J J A S O N D			
							J F M A M J J A S O N D			
							J F M A M J J A S O N D			

*** PERSON ID # = PERSON NUMBER FROM FIRST PAGE OF SURVEY.**

**** WORK SCHEDULE = (1) FULLTIME (35+ HOURS/WK) (2) PARTTIME (<35 HOURS/WEEK) (3) SHIFT (2 WEEKS ON/2 OFF, 1 WEEK ON/1 OFF, ETC.) (4) COMMERCIAL FISHING, AND OTHER IRREGULAR, AS REQUIRED POSITIONS (5) SHIFT - PART TIME**

***** COMMERCIAL FISHING AND BUSINESS OWNERS - ADJUSTED GROSS AFTER EXPENSES. IF LESS THAN ZERO, ENTER 0.**

NOTES:_____

_____

_____

_____

OTHER INCOME.

ANSWER ALL THAT APPLY. INDICATE ANNUAL AMOUNT FOR THE PERIOD OF JANUARY 1 AND DECEMBER 31, 2004?.
IT IS OKAY TO LEAVE BLANK IF NOT APPLICABLE OR TO STATE SOME AMOUNT. MARK A -8 IF AMOUNT IS UNKNOWN AND IT EXISTED.

			AID TO FAMILIES WITH			DIVIDENDS/INTEREST (14)	$	
AK PERMANENT FUND* (32)	$		DEPENDENT CHILDREN (02)	$		ADULT PUBLIC ASSISTANCE (03)	$	
SOCIAL SECURITY (07)	$		PENSION/RETIREMENT (05)	$		LONGEVITY BONUS (06)	$	
SUPP. SECURITY INCOME (SSI) (10)	$		WORK COMP/INSURANCE (08)	$		($250/MONTH)		
NATIVE CORP. DIVIDEND (13)	$		FOOD STAMPS (11)	$		ENERGY ASSISTANCE (09)	$	
						UNEMPLOYMENT (12)	$	
						OTHER: _____ (_____)	$	

*[AK PERMANENT FUND 2004: 1- $919.84 2- $1839.68 3- $2759.52 4- $3679.36 5- $4599.20 6- $5519.01 7- $6438.88 8- $7358.72 9- $8278.56 10- $919.84]

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

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

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

INTERVIEW SUMMARY: _____

APPENDIX B

KEY INFORMANT INTERVIEW
KVICHAK WATERSHED SUBSISTENCE BASELINE UPDATE 2004

Name of community:

Date:

Name of interviewer:

Name of respondent:

Age of respondent:

How long have you lived in this community?

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

Notes:

1. What is your yearly subsistence activity like, and how has it changed over time?

2. Have you noticed changes in the environment that you think may have affected fishing or hunting over time?

3. Do people have to travel further from the village to get fish, caribou, moose or other subsistence food?

4. In the past if there was a decline in animals or fish, for example the caribou herd was smaller, what did you do?

5. Traditionally, is there a method(s) used to care for the subsistence resources? Can you give examples.

6. Are there specific hunting and fishing areas that are used more frequently than others?

7. Are there camp sites used for hunting, or fishing that have been abandoned over the years?

8. Where are they located?

9. When were they abandoned and why?

10. Do you think that humans have affected subsistence resources over the years? Why?

11. Do you think there are more people using subsistence resources now? Do you think this has affected the availability of subsistence resources?

12. Where are these areas located?

13. How have regulations influenced your fishing and hunting (gear restrictions, etc.)?

14. Do subsistence regulations make it more or less difficult to access subsistence resources?

Appendix C

Conversion Factors for Kvichak Watershed, 2005

Resource	Reported Units	Conversion to LBS
Chum Salmon	Ind	4.88
Coho Salmon	Ind	5.10
Chinook Salmon	Ind	11.09
Pink Salmon	Ind	2.99
Sockeye Salmon	Ind	4.29
Landlocked Salmon	Ind	1.50
Spawning Sockeye	Ind	2.00
Herring	Gal	6.00
Herring Sac Roe	Gal	7.00
Herring Spawn on Kelp	Gal	7.00
Smelt	Ind	0.25
Smelt	Gal	6.00
Pacific Cod (gray)	Ind	3.20
Walleye Pollock (whiting)	Ind	1.40
Unknown Cod	Ind	3.20
Flounder	Ind	3.00
Unknown Flounder	Ind	3.00
Lingcod	Ind	4.00
Unknown Greenling	Ind	1.00
Halibut	Ind	23.50
Halibut	Lbs	1.00
Black Rockfish	Ind	1.50
Red Rockfish	Ind	4.00
Sablefish (black cod)	Ind	3.10
Bullhead Sculpin	Ind	0.50
Unknown Shark	Ind	9.00
Unknown Sole	Ind	1.00
Stickleback (needlefish)	Ind	0.20
Wolffish	Ind	0.50
Blackfish	Ind	0.07
Burbot	Ind	1.00
Char	Ind	1.40
Dolly Varden	Ind	1.40
Lake Trout	Ind	1.40
Grayling	Ind	0.70
Unknown Pike	Ind	2.80
Sheefish	Ind	5.50
Unknown Sturgeon	Ind	34.00
Sucker	Ind	1.50
Rainbow Trout	Ind	1.40
Steelhead	Ind	1.40
Broad Whitefish	Ind	4.00
Least Cisco	Ind	0.40
Humpback Whitefish	Ind	1.75
Round Whitefish	Ind	1.00
Black Bear	Ind	58.00
Brown Bear	Ind	340.00
Caribou	Ind	150.00

Conversion Factors for Kvichak Watershed, 2005

Resource	Reported Units	Conversion to LBS
Moose	Ind	540.00
Dall Sheep	Ind	104.00
Beaver	Ind	8.75
Snowshoe Hare	Ind	2.00
Lynx	Ind	4.00
Marmot	Ind	5.00
Muskrat	Ind	0.75
Porcupine	Ind	8.00
Parka Squirrel (ground)	Ind	0.50
Tree Squirrel	Ind	0.50
Harbor Seal	Ind	56.00
Harbor Seal (saltwater)	Ind	56.00
Steller Sea Lion	Ind	200.00
Belukha	Ind	831.00
Bufflehead	Ind	0.40
Unknown Goldeneye	Ind	0.80
Mallard	Ind	1.00
Merganser	Ind	0.60
Northern Pintail	Ind	0.80
Scaup	Ind	0.90
Northern Shoveler	Ind	0.60
Green Winged Teal	Ind	0.30
American Wigeon	Ind	0.70
Dusky Canada Geese	Ind	3.60
Lesser Canada Geese (taverner/parvipes)	Ind	1.20
Snow Geese	Ind	2.30
White-fronted Geese	Ind	2.40
Tundra Swan (whistling)	Ind	6.00
Sandhill Crane	Ind	8.40
Unknown Loon	Ind	3.00
Tern	Ind	1.00
Arctic Tern	Ind	1.00
Grouse	Ind	0.70
Unknown Ptarmigan	Ind	0.70
Unknown Duck Eggs	Ind	0.15
Unknown Geese Eggs	Ind	0.30
Gull Eggs	Ind	0.30
Tern Eggs	Ind	0.05
Butter Clams	Gal	3.00
Butter Clams	Quart	0.75
Freshwater Clams	Gal	3.00
Horse Clams (Gaper)	Gal	3.00
Pacific Littleneck Clams (Steamers)	Gal	3.00
Pinkneck Clams	Gal	3.00
Razor Clams	Gal	3.00
Unknown Clams	Gal	3.00
Unknown Cockles	Gal	3.00
Dungeness Crab	Ind	0.70
King Crab	Ind	2.30

Conversion Factors for Kvichak Watershed, 2005

Resource	Reported Units	Conversion to LBS
Tanner Crab, Bairdi	Ind	1.60
Unknown Tanner Crab	Ind	1.60
Unknown Mussels	Gal	1.50
Octopus	Ind	4.00
Unknown Scallops	Lbs	1.00
Shrimp	Ind	0.04
Shrimp	Lbs	1.00
Berries	Gal	4.00
Plants/Greens/Mushrooms	Lbs	1.00
Plants/Greens/Mushrooms	Gal	4.00

Source: TP 202, EVOS survey, LLM survey, Kvichak FWF survey, and CPDB

APPENDIX D

APPENDIX TABLES

Table 2A-1 Estimated Salmon Harvest by Gear Type, Iliamna, 2004

Resource	Harvest Units	Removed from Commercial Catch		Subsistence Methods								Rod and Reel		Any Method	
				Setnet		Seine		Other		Subsistence Gear Any Method					
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon		89.69	4.08	6730.31	305.92	0.00	0.00	0.00	0.00	6730.31	305.92	59.23	2.69	6879.23	312.69
	Lbs	388.89	17.68	26292.01	1195.09	0.00	0.00	0.00	0.00	26292.01	1195.09	254.10	11.55	26935.01	1224.32
Chum Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coho Salmon		5.08	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.08	0.23
	Lbs	25.89	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.89	1.18
Chinook Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pink Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sockeye Salmon		84.62	3.85	5603.23	254.69	0.00	0.00	0.00	0.00	5603.23	254.69	59.23	2.69	5747.08	261.23
	Lbs	363.00	16.50	24037.86	1092.63	0.00	0.00	0.00	0.00	24037.86	1092.63	254.10	11.55	24654.96	1120.68
Landlocked Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spawning Sockeye		0.00	0.00	1127.08	51.23	0.00	0.00	0.00	0.00	1127.08	51.23	0.00	0.00	1127.08	51.23
	Lbs	0.00	0.00	2254.15	102.46	0.00	0.00	0.00	0.00	2254.15	102.46	0.00	0.00	2254.15	102.46
Unknown Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 2A-2 Estimated Harvest of Non-Salmon Fish by Gear Type, Iliamna, 2004

		Removed From Commercial Catch		Subsistence Gear																	
				Set Net		Seine		Handline		Dip Net		Ice Fishing		Other Subsistence Gear		Any Subsitence Method		Rod and Reel		Any Method	
Resource	Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	lbs	0.00	0.00	550.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	1232.85	56.04	0.00	0.00	1782.85	81.04	695.03	31.59	2477.88	112.63
Herring	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Sac Roe	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Smelt	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Cod (gray)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walleye Pollock (whiting)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Cod	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Flounder	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lingcod	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Greenling	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.62	3.85	84.62	3.85
Black Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Red Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sablefish (black cod)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bullhead Sculpin	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Shark	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sole	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stickleback (needlefish)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wolffish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blackfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Burbot	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.31	1.92	0.00	0.00	42.31	1.92	0.00	0.00	42.31	1.92
Arctic Char	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	331.69	15.08	0.00	0.00	331.69	15.08	132.68	6.03	464.37	21.11
Dolly Varden-saltwater	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lake Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	104.25	4.74	0.00	0.00	104.25	4.74	87.66	3.98	191.91	8.72
Grayling	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	106.62	4.85	0.00	0.00	106.62	4.85	136.23	6.19	242.85	11.04
Unknown Pike	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	326.95	14.86	0.00	0.00	326.95	14.86	71.08	3.23	398.03	18.09
Unknown Sturgeon	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sucker	lbs	0.00	0.00	253.85	11.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	253.85	11.54	0.00	0.00	253.85	11.54
Rainbow Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	232.18	10.55	0.00	0.00	232.18	10.55	165.85	7.54	398.03	18.09
Steelhead	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.23	2.69	0.00	0.00	59.23	2.69	0.00	0.00	59.23	2.69
Broad Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Least Cisco	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humpback Whitefish	lbs	0.00	0.00	296.15	13.46	0.00	0.00	0.00	0.00	0.00	0.00	29.62	1.35	0.00	0.00	325.77	14.81	0.00	0.00	325.77	14.81
Round Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.92	0.77	16.92	0.77

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 2A-3 Estimated Amounts of Resources Removed from Commercial Harvests, Iliamna, 2004

Resource	Removed from Catch		Percent of	
	Amount	Pounds	Species Harvest	Community Harvest
			(lbs)	(lbs)
All Resources	89.69	388.89	1.14%	1.14%
Fish	89.69	388.89	1.32%	1.14%
Salmon	89.69	388.89	1.44%	1.14%
Chum Salmon	0.00	0.00	0.00%	0.00%
Coho Salmon	5.08	25.89	100.00%	0.08%
Chinook Salmon	0.00	0.00	0.00%	0.00%
Pink Salmon	0.00	0.00	0.00%	0.00%
Sockeye Salmon	84.62	363.00	1.47%	1.06%
Unknown Salmon	0.00	0.00	0.00%	0.00%
Non-Salmon Fish	0.00	0.00	0.00%	0.00%
Herring	0.00	0.00	0.00%	0.00%
Herring Roe	0.00	0.00	0.00%	0.00%
Herring Sac Roe	0.00	0.00	0.00%	0.00%
Herring Spawn on Kelp	0.00	0.00	0.00%	0.00%
Cod	0.00	0.00	0.00%	0.00%
Pacific Cod (gray)	0.00	0.00	0.00%	0.00%
Walleye Pollock (whiting)	0.00	0.00	0.00%	0.00%
Flounder	0.00	0.00	0.00%	0.00%
Unknown Flounder	0.00	0.00	0.00%	0.00%
Greenling	0.00	0.00	0.00%	0.00%
Lingcod	0.00	0.00	0.00%	0.00%
Unknown Greenling	0.00	0.00	0.00%	0.00%
Halibut	0.00	0.00	0.00%	0.00%
Rockfish	0.00	0.00	0.00%	0.00%
Black Rockfish	0.00	0.00	0.00%	0.00%
Red Rockfish	0.00	0.00	0.00%	0.00%
Unknown Rockfish	0.00	0.00	0.00%	0.00%
Sablefish (black cod)	0.00	0.00	0.00%	0.00%
Shark	0.00	0.00	0.00%	0.00%
Unknown Shark	0.00	0.00	0.00%	0.00%
Sole	0.00	0.00	0.00%	0.00%
Unknown Sole	0.00	0.00	0.00%	0.00%
Wolffish	0.00	0.00	0.00%	0.00%
Char	0.00	0.00	0.00%	0.00%
Dolly Varden	0.00	0.00	0.00%	0.00%
Dolly Varden-saltwater	0.00	0.00	0.00%	0.00%
Sturgeon	0.00	0.00	0.00%	0.00%
Unknown Sturgeon	0.00	0.00	0.00%	0.00%
Marine Invertebrates	0.00	0.00	0.00%	0.00%
Clams	0.00	0.00	0.00%	0.00%
Pacific Littleneck Clams (Steamers)	0.00	0.00	0.00%	0.00%
Razor Clams	0.00	0.00	0.00%	0.00%
Crabs	0.00	0.00	0.00%	0.00%
Dungeness Crab	0.00	0.00	0.00%	0.00%
King Crab	0.00	0.00	0.00%	0.00%
Tanner Crab	0.00	0.00	0.00%	0.00%
Unknown Tanner Crab	0.00	0.00	0.00%	0.00%
Octopus	0.00	0.00	0.00%	0.00%
Scallops	0.00	0.00	0.00%	0.00%
Unknown Scallops	0.00	0.00	0.00%	0.00%
Shrimp	0.00	0.00	0.00%	0.00%

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 2A-4 Percentage of Households Harvesting Non-Salmon Fish by Gear Type and Species, Iliamna, 2004

Resource	Removed from Commercial Gear	Subsistence Gear							Rod and Reel	Any Method
		Set Net	Seine	Hand Line	Dip Net	Ice Fishing	Other Subsistence Method	Any Subsistence Method		
Non-Salmon Fish	0.0%	7.7%	0.0%	0.0%	0.0%	61.5%	0.0%	61.5%	69.2%	76.9%
Herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Herring Sac Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Herring Spawn on Kelp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Smelt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific Cod (gray)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Walleye Pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lingcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Halibut	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%	7.7%
Black Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Red Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bullhead Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wolffish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blackfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Burbot	0.0%	0.0%	0.0%	0.0%	0.0%	15.4%	0.0%	15.4%	0.0%	15.4%
Arctic Char	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dolly Varden	0.0%	0.0%	0.0%	0.0%	0.0%	53.8%	0.0%	53.8%	46.2%	76.9%
Dolly Varden-saltwater	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lake Trout	0.0%	0.0%	0.0%	0.0%	0.0%	38.5%	0.0%	38.5%	38.5%	46.2%
Grayling	0.0%	0.0%	0.0%	0.0%	0.0%	30.8%	0.0%	30.8%	38.5%	53.8%
Unknown Pike	0.0%	0.0%	0.0%	0.0%	0.0%	30.8%	0.0%	30.8%	7.7%	38.5%
Unknown Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sucker	0.0%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%	0.0%	7.7%
Rainbow Trout	0.0%	0.0%	0.0%	0.0%	0.0%	46.2%	0.0%	46.2%	38.5%	61.5%
Steelhead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Trout	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%	0.0%	7.7%	0.0%	7.7%
Broad Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Least Cisco	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Humpback Whitefish	0.0%	7.7%	0.0%	0.0%	0.0%	7.7%	0.0%	15.4%	0.0%	15.4%
Round Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%	7.7%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 3A-1 Estimated Salmon Harvest by Gear Type, Newhalen, 2004

Resource	Harvest Units	Removed from Commercial Catch		Subsistence Methods						Subsistence Gear Any Method		Rod and Reel		Any Method	
				Setnet		Seine		Other							
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon		634.88	20.48	15919.12	513.52	124.00	4.00	14.88	0.48	16058.00	518.00	21.08	0.68	16713.96	539.16
	Lbs	3543.28	114.30	58919.85	1900.64	248.00	8.00	75.89	2.45	59243.74	1911.09	102.49	3.31	62889.50	2028.69
Chum Salmon		74.40	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.40	2.40
	Lbs	363.07	11.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	363.07	11.71
Coho Salmon		0.00	0.00	7.44	0.24	0.00	0.00	14.88	0.48	22.32	0.72	14.88	0.48	37.20	1.20
	Lbs	0.00	0.00	37.94	1.22	0.00	0.00	75.89	2.45	113.83	3.67	75.89	2.45	189.72	6.12
Chinook Salmon		114.08	3.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	114.08	3.68
	Lbs	1265.15	40.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1265.15	40.81
Pink Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sockeye Salmon		446.40	14.40	11815.96	381.16	0.00	0.00	0.00	0.00	11815.96	381.16	6.20	0.20	12268.56	395.76
	Lbs	1915.06	61.78	50690.47	1635.18	0.00	0.00	0.00	0.00	50690.47	1635.18	26.60	0.86	52632.12	1697.81
Landlocked Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spawning Sockeye		0.00	0.00	4095.72	132.12	124.00	4.00	0.00	0.00	4219.72	136.12	0.00	0.00	4219.72	136.12
	Lbs	0.00	0.00	8191.44	264.24	248.00	8.00	0.00	0.00	8439.44	272.24	0.00	0.00	8439.44	272.24
Unknown Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 3A-2 Estimated Harvest of Non-Salmon Fish by Gear Type, Newhalen, 2004

Resource	Units	Removed From Commercial Catch		Subsistence Gear														Rod and Reel		Any Method	
				Set Net		Seine		Handline		Dip Net		Ice Fishing		Other Subsistence Gear		Any Subsitence Method					
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	lbs	0.00	0.00	52.08	1.68	0.00	0.00	34.72	1.12	0.00	0.00	3104.09	100.13	0.00	0.00	3190.89	102.93	789.38	25.46	3980.28	128.40
Herring	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Sac Roe	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Smelt	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Cod (gray)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walleye Pollock (whiting)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Cod	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.97	0.13	3.97	0.13
Unknown Flounder	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lingcod	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Greenling	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.80	2.80	86.80	2.80
Black Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Red Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.48	0.08	2.48	0.08
Sablefish (black cod)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bullhead Sculpin	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Shark	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sole	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stickleback (needlefish)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.49	0.05	0.00	0.00	1.49	0.05	0.00	0.00	1.49	0.05
Wolffish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blackfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Burbot	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctic Char	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.51	0.95	0.00	0.00	29.51	0.95	0.00	0.00	29.51	0.95
Dolly Varden	lbs	0.00	0.00	0.00	0.00	0.00	0.00	34.72	1.12	0.00	0.00	1038.13	33.49	0.00	0.00	1072.85	34.61	230.89	7.45	1303.74	42.06
Dolly Varden-saltwater	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lake Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.54	2.86	0.00	0.00	88.54	2.86	10.42	0.34	98.95	3.19
Grayling	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	364.56	11.76	0.00	0.00	364.56	11.76	17.36	0.56	381.92	12.32
Unknown Pike	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	187.49	6.05	0.00	0.00	187.49	6.05	6.94	0.22	194.43	6.27
Unknown Sturgeon	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sucker	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	lbs	0.00	0.00	52.08	1.68	0.00	0.00	0.00	0.00	0.00	0.00	781.20	25.20	0.00	0.00	833.28	26.88	303.80	9.80	1137.08	36.68
Steelhead	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.68	0.28	0.00	0.00	8.68	0.28	5.21	0.17	13.89	0.45
Unknown Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	413.17	13.33	0.00	0.00	413.17	13.33	121.52	3.92	534.69	17.25
Broad Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Least Cisco	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99	0.03	0.00	0.00	0.99	0.03	0.00	0.00	0.99	0.03
Humpback Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	125.86	4.06	0.00	0.00	125.86	4.06	0.00	0.00	125.86	4.06
Round Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.48	2.08	0.00	0.00	64.48	2.08	0.00	0.00	64.48	2.08

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 3A-3 Estimated Amounts of Resources Removed from Commercial Harvests, Newhalen, 2004

Resource	Removed from Catch		Percent of	
	Amount	Pounds	Species Harvest	Community Harvest
			(lbs)	(lbs)
All Resources	637.36	3550.72	4.10%	4.10%
Fish	634.88	3543.28	5.30%	4.09%
Salmon	634.88	3543.28	5.63%	4.09%
Chum Salmon	74.40	363.07	100.00%	0.42%
Coho Salmon	0.00	0.00	0.00%	0.00%
Chinook Salmon	114.08	1265.15	100.00%	1.46%
Pink Salmon	0.00	0.00	0.00%	0.00%
Sockeye Salmon	446.40	1915.06	3.64%	2.21%
Unknown Salmon	0.00	0.00	0.00%	0.00%
Non-Salmon Fish	0.00	0.00	0.00%	0.00%
Herring	0.00	0.00	0.00%	0.00%
Herring Roe	0.00	0.00	0.00%	0.00%
Herring Sac Roe	0.00	0.00	0.00%	0.00%
Herring Spawn on Kelp	0.00	0.00	0.00%	0.00%
Cod	0.00	0.00	0.00%	0.00%
Pacific Cod (gray)	0.00	0.00	0.00%	0.00%
Walleye Pollock (whiting)	0.00	0.00	0.00%	0.00%
Flounder	0.00	0.00	0.00%	0.00%
Unknown Flounder	0.00	0.00	0.00%	0.00%
Greenling	0.00	0.00	0.00%	0.00%
Lingcod	0.00	0.00	0.00%	0.00%
Unknown Greenling	0.00	0.00	0.00%	0.00%
Halibut	0.00	0.00	0.00%	0.00%
Rockfish	0.00	0.00	0.00%	0.00%
Black Rockfish	0.00	0.00	0.00%	0.00%
Red Rockfish	0.00	0.00	0.00%	0.00%
Unknown Rockfish	0.00	0.00	0.00%	0.00%
Sablefish (black cod)	0.00	0.00	0.00%	0.00%
Shark	0.00	0.00	0.00%	0.00%
Unknown Shark	0.00	0.00	0.00%	0.00%
Sole	0.00	0.00	0.00%	0.00%
Unknown Sole	0.00	0.00	0.00%	0.00%
Wolffish	0.00	0.00	0.00%	0.00%
Char	0.00	0.00	0.00%	0.00%
Dolly Varden	0.00	0.00	0.00%	0.00%
Dolly Varden-saltwater	0.00	0.00	0.00%	0.00%
Sturgeon	0.00	0.00	0.00%	0.00%
Unknown Sturgeon	0.00	0.00	0.00%	0.00%
Marine Invertebrates	2.48	7.44	2.38%	0.01%
Clams	2.48	7.44	2.38%	0.01%
Pacific Littleneck Clams (Steamers)	0.00	0.00	0.00%	0.00%
Razor Clams	2.48	7.44	2.38%	0.01%
Crabs	0.00	0.00	0.00%	0.00%
Dungeness Crab	0.00	0.00	0.00%	0.00%
King Crab	0.00	0.00	0.00%	0.00%
Tanner Crab	0.00	0.00	0.00%	0.00%
Unknown Tanner Crab	0.00	0.00	0.00%	0.00%
Octopus	0.00	0.00	0.00%	0.00%
Scallops	0.00	0.00	0.00%	0.00%
Unknown Scallops	0.00	0.00	0.00%	0.00%
Shrimp	0.00	0.00	0.00%	0.00%

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 3A-4 Percentage of Households Harvesting Non-Salmon Fish by Gear Type and Species, Newhalen, 2004

Resource	Removed from Commercial Gear	Subsistence Gear							Rod and Reel	Any Method
		Set Net	Seine	Hand Line	Dip Net	Ice Fishing	Other Subsistence Method	Any Subsistence Method		
Non-Salmon Fish	0.0%	4.0%	0.0%	4.0%	0.0%	76.0%	0.0%	80.0%	36.0%	88.0%
Herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Herring Sac Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Herring Spawn on Kelp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Smelt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific Cod (gray)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Walleye Pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	4.0%
Unknown Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lingcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Halibut	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.0%	8.0%
Black Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Red Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	4.0%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bullhead Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	4.0%	0.0%	4.0%
Wolffish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blackfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Burbot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Arctic Char	0.0%	0.0%	0.0%	0.0%	0.0%	8.0%	0.0%	8.0%	0.0%	8.0%
Dolly Varden	0.0%	0.0%	0.0%	4.0%	0.0%	72.0%	0.0%	76.0%	20.0%	80.0%
Dolly Varden-saltwater	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lake Trout	0.0%	0.0%	0.0%	0.0%	0.0%	16.0%	0.0%	16.0%	8.0%	24.0%
Grayling	0.0%	0.0%	0.0%	0.0%	0.0%	64.0%	0.0%	64.0%	8.0%	72.0%
Unknown Pike	0.0%	0.0%	0.0%	0.0%	0.0%	28.0%	0.0%	28.0%	4.0%	32.0%
Unknown Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rainbow Trout	0.0%	4.0%	0.0%	0.0%	0.0%	48.0%	0.0%	48.0%	24.0%	56.0%
Steelhead	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	4.0%	4.0%	8.0%
Unknown Trout	0.0%	0.0%	0.0%	0.0%	0.0%	32.0%	0.0%	32.0%	8.0%	32.0%
Broad Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Least Cisco	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	4.0%	0.0%	4.0%
Humpback Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	12.0%	0.0%	12.0%	0.0%	12.0%
Round Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	16.0%	0.0%	16.0%	0.0%	16.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 4A-1 Estimated Salmon Harvest by Gear Type, Pedro Bay, 2004

Resource	Harvest Units	Removed from Commercial Catch		Subsistence Methods						Subsistence Gear Any Method		Rod and Reel		Any Method	
				Setnet		Seine		Other							
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon		0.00	0.00	3903.67	185.89	0.00	0.00	58.33	2.78	3962.00	188.67	383.83	18.28	4345.83	206.94
	Lbs	0.00	0.00	15939.89	759.04	0.00	0.00	116.67	5.56	16056.55	764.60	1175.65	55.98	17232.20	820.58
Chum Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coho Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.33	0.11	2.33	0.11
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.90	0.57	11.90	0.57
Chinook Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pink Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sockeye Salmon		0.00	0.00	3551.33	169.11	0.00	0.00	0.00	0.00	3551.33	169.11	175.00	8.33	3726.33	177.44
	Lbs	0.00	0.00	15235.22	725.49	0.00	0.00	0.00	0.00	15235.22	725.49	750.75	35.75	15985.97	761.24
Landlocked Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spawning Sockeye		0.00	0.00	352.33	16.78	0.00	0.00	58.33	2.78	410.67	19.56	206.50	9.83	617.17	29.39
	Lbs	0.00	0.00	704.67	33.56	0.00	0.00	116.67	5.56	821.33	39.11	413.00	19.67	1234.33	58.78
Unknown Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 4A-2 Estimated Harvest of Non-Salmon Fish by Gear Type, Pedro Bay, 2004

Resource	Units	Removed From Commercial Catch		Subsistence Gear														Rod and Reel		Any Method	
				Set Net		Seine		Handline		Dip Net		Ice Fishing		Other Subsistence Gear		Any Subsitence Method					
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	lbs	0.00	0.00	4.90	0.23	0.00	0.00	0.00	0.00	0.00	0.00	287.47	13.69	33.15	1.58	325.51	15.50	727.53	34.64	1053.05	50.15
Herring	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Sac Roe	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Smelt	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Cod (gray)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walleye Pollock (whiting)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Cod	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.20	3.20	67.20	3.20
Unknown Flounder	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lingcod	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Greenling	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.50	4.17	87.50	4.17
Black Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Red Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.33	0.44	9.33	0.44
Sablefish (black cod)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bullhead Sculpin	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Shark	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sole	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stickleback (needlefish)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wolffish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blackfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Burbot	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctic Char	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	lbs	0.00	0.00	4.90	0.23	0.00	0.00	0.00	0.00	0.00	0.00	227.03	10.81	33.15	1.58	265.08	12.62	331.57	15.79	596.65	28.41
Dolly Varden-saltwater	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lake Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.90	0.23	0.00	0.00	4.90	0.23	13.07	0.62	17.97	0.86
Grayling	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Pike	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.33	0.78	0.00	0.00	16.33	0.78	49.00	2.33	65.33	3.11
Unknown Sturgeon	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sucker	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.20	1.87	0.00	0.00	39.20	1.87	160.07	7.62	199.27	9.49
Steelhead	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.80	0.47	9.80	0.47
Unknown Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Broad Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Least Cisco	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humpback Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Round Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 4A-3 Estimated Amounts of Resources Removed from Commercial Harvests, Pedro Bay, 2004

Resource	Removed from Catch		Percent of	
	Amount	Pounds	Species Harvest	Community Harvest
			(lbs)	(lbs)
All Resources	0.00	0.00	0.00%	0.00%
Fish	0.00	0.00	0.00%	0.00%
Salmon	0.00	0.00	0.00%	0.00%
Chum Salmon	0.00	0.00	0.00%	0.00%
Coho Salmon	0.00	0.00	0.00%	0.00%
Chinook Salmon	0.00	0.00	0.00%	0.00%
Pink Salmon	0.00	0.00	0.00%	0.00%
Sockeye Salmon	0.00	0.00	0.00%	0.00%
Unknown Salmon	0.00	0.00	0.00%	0.00%
Non-Salmon Fish	0.00	0.00	0.00%	0.00%
Herring	0.00	0.00	0.00%	0.00%
Herring Roe	0.00	0.00	0.00%	0.00%
Herring Sac Roe	0.00	0.00	0.00%	0.00%
Herring Spawn on Kelp	0.00	0.00	0.00%	0.00%
Cod	0.00	0.00	0.00%	0.00%
Pacific Cod (gray)	0.00	0.00	0.00%	0.00%
Walleye Pollock (whiting)	0.00	0.00	0.00%	0.00%
Flounder	0.00	0.00	0.00%	0.00%
Unknown Flounder	0.00	0.00	0.00%	0.00%
Greenling	0.00	0.00	0.00%	0.00%
Lingcod	0.00	0.00	0.00%	0.00%
Unknown Greenling	0.00	0.00	0.00%	0.00%
Halibut	0.00	0.00	0.00%	0.00%
Rockfish	0.00	0.00	0.00%	0.00%
Black Rockfish	0.00	0.00	0.00%	0.00%
Red Rockfish	0.00	0.00	0.00%	0.00%
Unknown Rockfish	0.00	0.00	0.00%	0.00%
Sablefish (black cod)	0.00	0.00	0.00%	0.00%
Shark	0.00	0.00	0.00%	0.00%
Unknown Shark	0.00	0.00	0.00%	0.00%
Sole	0.00	0.00	0.00%	0.00%
Unknown Sole	0.00	0.00	0.00%	0.00%
Wolffish	0.00	0.00	0.00%	0.00%
Char	0.00	0.00	0.00%	0.00%
Dolly Varden	0.00	0.00	0.00%	0.00%
Dolly Varden-saltwater	0.00	0.00	0.00%	0.00%
Sturgeon	0.00	0.00	0.00%	0.00%
Unknown Sturgeon	0.00	0.00	0.00%	0.00%
Marine Invertebrates	0.00	0.00	0.00%	0.00%
Clams	0.00	0.00	0.00%	0.00%
Pacific Littleneck Clams (Steamers)	0.00	0.00	0.00%	0.00%
Razor Clams	0.00	0.00	0.00%	0.00%
Crabs	0.00	0.00	0.00%	0.00%
Dungeness Crab	0.00	0.00	0.00%	0.00%
King Crab	0.00	0.00	0.00%	0.00%
Tanner Crab	0.00	0.00	0.00%	0.00%
Unknown Tanner Crab	0.00	0.00	0.00%	0.00%
Octopus	0.00	0.00	0.00%	0.00%
Scallops	0.00	0.00	0.00%	0.00%
Unknown Scallops	0.00	0.00	0.00%	0.00%
Shrimp	0.00	0.00	0.00%	0.00%

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 4A-4 Percentage of Households Harvesting Non-Salmon Fish by Gear Type and Species, Pedro Bay, 2004

Resource	Removed from Commercial Gear	Subsistence Gear							Rod and Reel	Any Method
		Set Net	Seine	Hand Line	Dip Net	Ice Fishing	Other Subsistence Method	Any Subsistence Method		
Round Whitefish	0.0%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	2.6%
Non-Salmon Fish	0.0%	5.6%	0.0%	0.0%	0.0%	38.9%	5.6%	44.4%	50.0%	61.1%
Herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Herring Sac Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Herring Spawn on Kelp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Smelt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific Cod (gray)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Walleye Pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	5.6%
Unknown Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lingcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Halibut	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	5.6%
Black Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Red Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	5.6%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bullhead Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wolffish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blackfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Burbot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Arctic Char	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dolly Varden	0.0%	5.6%	0.0%	0.0%	0.0%	38.9%	5.6%	44.4%	44.4%	61.1%
Dolly Varden-saltwater	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lake Trout	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	5.6%	5.6%	11.1%
Grayling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Pike	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	5.6%	16.7%	16.7%
Unknown Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rainbow Trout	0.0%	0.0%	0.0%	0.0%	0.0%	16.7%	0.0%	16.7%	27.8%	38.9%
Steelhead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	5.6%
Unknown Trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Broad Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Least Cisco	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Humpback Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 5A-1 Estimated Salmon Harvest by Gear Type, Port Alsworth, 2004

Resource	Harvest Units	Removed from Commercial Catch		Subsistence Methods						Subsistence Gear Any Method		Rod and Reel		Any Method	
				Setnet		Seine		Other							
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon		259.09	8.64	1945.91	64.86	0.00	0.00	0.00	0.00	1945.91	64.86	45.00	1.50	2250.00	75.00
	Lbs	1111.50	37.05	8394.31	279.81	0.00	0.00	0.00	0.00	8394.31	279.81	206.30	6.88	9712.12	323.74
Chum Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coho Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.36	0.55	16.36	0.55
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.45	2.78	83.45	2.78
Chinook Salmon		0.00	0.00	6.82	0.23	0.00	0.00	0.00	0.00	6.82	0.23	0.00	0.00	6.82	0.23
	Lbs	0.00	0.00	75.61	2.52	0.00	0.00	0.00	0.00	75.61	2.52	0.00	0.00	75.61	2.52
Pink Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sockeye Salmon		259.09	8.64	1939.09	64.64	0.00	0.00	0.00	0.00	1939.09	64.64	28.64	0.95	2226.82	74.23
	Lbs	1111.50	37.05	8318.70	277.29	0.00	0.00	0.00	0.00	8318.70	277.29	122.85	4.10	9553.05	318.44
Landlocked Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spawning Sockeye		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 5A-2 Estimated Harvest of Non-Salmon Fish by Gear Type, Port Alsworth, 2004

Resource	Units	Removed From Commercial Catch		Subsistence Gear														Rod and Reel		Any Method	
				Set Net		Seine		Handline		Dip Net		Ice Fishing		Other Subsistence Gear		Any Subsitence Method					
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	lbs	0.00	0.00	205.36	6.85	0.00	0.00	0.00	0.00	0.00	0.00	186.14	6.20	3.05	0.10	394.55	13.15	919.43	30.65	1313.98	43.80
Herring	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Sac Roe	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Smelt	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Cod (gray)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walleye Pollock (whiting)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Cod	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Flounder	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lingcod	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Greenling	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	136.36	4.55	136.36	4.55
Black Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Red Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sablefish (black cod)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bullhead Sculpin	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Shark	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sole	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stickleback (needlefish)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wolffish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blackfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Burbot	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.27	2.91	0.00	0.00	87.27	2.91	2.73	0.09	90.00	3.00
Arctic Char	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.45	0.38	11.45	0.38
Dolly Varden	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.18	2.67	80.18	2.67
Dolly Varden-saltwater	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lake Trout	lbs	0.00	0.00	38.18	1.27	0.00	0.00	0.00	0.00	0.00	0.00	9.55	0.32	0.00	0.00	47.73	1.59	183.27	6.11	231.00	7.70
Grayling	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.05	0.10	3.05	0.10	63.95	2.13	67.00	2.23
Unknown Pike	lbs	0.00	0.00	7.64	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.64	0.25	400.91	13.36	408.55	13.62
Sheefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sturgeon	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sucker	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Steelhead	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Broad Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Least Cisco	lbs	0.00	0.00	16.36	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.36	0.55	0.00	0.00	16.36	0.55
Humpback Whitefish	lbs	0.00	0.00	143.18	4.77	0.00	0.00	0.00	0.00	0.00	0.00	81.14	2.70	0.00	0.00	224.32	7.48	40.57	1.35	264.89	8.83
Round Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.18	0.27	0.00	0.00	8.18	0.27	0.00	0.00	8.18	0.27

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 5A-3 Estimated Amounts of Resources Removed from Commercial Harvests, Port Alsworth, 2004

Resource	Removed from Catch		Percent of	
	Amount	Pounds	Species Harvest	Community Harvest
			(lbs)	(lbs)
All Resources	259.09	1111.50	7.67%	7.67%
Fish	259.09	1111.50	10.08%	7.67%
Salmon	259.09	1111.50	11.44%	7.67%
Chum Salmon	0.00	0.00	0.00%	0.00%
Coho Salmon	0.00	0.00	0.00%	0.00%
Chinook Salmon	0.00	0.00	0.00%	0.00%
Pink Salmon	0.00	0.00	0.00%	0.00%
Sockeye Salmon	259.09	1111.50	11.64%	7.67%
Unknown Salmon	0.00	0.00	0.00%	0.00%
Non-Salmon Fish	0.00	0.00	0.00%	0.00%
Herring	0.00	0.00	0.00%	0.00%
Herring Roe	0.00	0.00	0.00%	0.00%
Herring Sac Roe	0.00	0.00	0.00%	0.00%
Herring Spawn on Kelp	0.00	0.00	0.00%	0.00%
Cod	0.00	0.00	0.00%	0.00%
Pacific Cod (gray)	0.00	0.00	0.00%	0.00%
Walleye Pollock (whiting)	0.00	0.00	0.00%	0.00%
Flounder	0.00	0.00	0.00%	0.00%
Unknown Flounder	0.00	0.00	0.00%	0.00%
Greenling	0.00	0.00	0.00%	0.00%
Lingcod	0.00	0.00	0.00%	0.00%
Unknown Greenling	0.00	0.00	0.00%	0.00%
Halibut	0.00	0.00	0.00%	0.00%
Rockfish	0.00	0.00	0.00%	0.00%
Black Rockfish	0.00	0.00	0.00%	0.00%
Red Rockfish	0.00	0.00	0.00%	0.00%
Unknown Rockfish	0.00	0.00	0.00%	0.00%
Sablefish (black cod)	0.00	0.00	0.00%	0.00%
Shark	0.00	0.00	0.00%	0.00%
Unknown Shark	0.00	0.00	0.00%	0.00%
Sole	0.00	0.00	0.00%	0.00%
Unknown Sole	0.00	0.00	0.00%	0.00%
Wolffish	0.00	0.00	0.00%	0.00%
Char	0.00	0.00	0.00%	0.00%
Dolly Varden	0.00	0.00	0.00%	0.00%
Dolly Varden-saltwater	0.00	0.00	0.00%	0.00%
Sturgeon	0.00	0.00	0.00%	0.00%
Unknown Sturgeon	0.00	0.00	0.00%	0.00%
Marine Invertebrates	0.00	0.00	0.00%	0.00%
Clams	0.00	0.00	0.00%	0.00%
Pacific Littleneck Clams (Steamers)	0.00	0.00	0.00%	0.00%
Razor Clams	0.00	0.00	0.00%	0.00%
Crabs	0.00	0.00	0.00%	0.00%
Dungeness Crab	0.00	0.00	0.00%	0.00%
King Crab	0.00	0.00	0.00%	0.00%
Tanner Crab	0.00	0.00	0.00%	0.00%
Unknown Tanner Crab	0.00	0.00	0.00%	0.00%
Octopus	0.00	0.00	0.00%	0.00%
Scallops	0.00	0.00	0.00%	0.00%
Unknown Scallops	0.00	0.00	0.00%	0.00%
Shrimp	0.00	0.00	0.00%	0.00%

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 5A-4 Percentage of Households Harvesting Non-Salmon Fish by Gear Type and Species, Port Alsworth, 2004

Resource	Removed from Commercial Gear	Subsistence Gear							Rod and Reel	Any Method
		Set Net	Seine	Hand Line	Dip Net	Ice Fishing	Other Subsistence Method	Any Subsistence Method		
Round Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Salmon Fish	0.0%	4.5%	0.0%	0.0%	0.0%	27.3%	4.5%	31.8%	54.5%	63.6%
Herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Herring Sac Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Herring Spawn on Kelp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Smelt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific Cod (gray)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Walleye Pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lingcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Halibut	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.1%	9.1%
Black Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Red Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bullhead Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wolffish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blackfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Burbot	0.0%	0.0%	0.0%	0.0%	0.0%	13.6%	0.0%	13.6%	4.5%	18.2%
Arctic Char	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	4.5%
Dolly Varden	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	18.2%	18.2%
Dolly Varden-saltwater	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lake Trout	0.0%	4.5%	0.0%	0.0%	0.0%	9.1%	0.0%	13.6%	45.5%	54.5%
Grayling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	4.5%	27.3%	31.8%
Unknown Pike	0.0%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	40.9%	45.5%
Sheefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rainbow Trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Steelhead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Broad Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Least Cisco	0.0%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	0.0%	4.5%
Humpback Whitefish	0.0%	4.5%	0.0%	0.0%	0.0%	22.7%	0.0%	27.3%	13.6%	40.9%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 6A-1 Estimated Salmon Harvest by Gear Type, Nondalton, 2004

Resource	Harvest Units	Removed from Commercial Catch		Subsistence Methods						Subsistence Gear Any Method		Rod and Reel		Any Method	
				Setnet		Seine		Other							
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon		37.34	0.87	6877.74	159.95	1720.00	40.00	0.00	0.00	8597.74	199.95	409.63	9.53	9044.71	210.34
	Lbs	183.28	4.26	26794.97	623.14	7301.06	169.79	0.00	0.00	34096.04	792.93	1725.47	40.13	36004.78	837.32
Chum Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coho Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.66	0.13	5.66	0.13
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.86	0.67	28.86	0.67
Chinook Salmon		3.39	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.26	0.05	5.66	0.13
	Lbs	37.65	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.10	0.58	62.75	1.46
Pink Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sockeye Salmon		33.95	0.79	5694.11	132.42	1686.05	39.21	0.00	0.00	7380.16	171.63	379.08	8.82	7793.18	181.24
	Lbs	145.63	3.39	24427.71	568.09	7233.17	168.21	0.00	0.00	31660.88	736.30	1626.25	37.82	33432.76	777.51
Landlocked Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spawning Sockeye		0.00	0.00	1183.63	27.53	33.95	0.79	0.00	0.00	1217.58	28.32	22.63	0.53	1240.21	28.84
	Lbs	0.00	0.00	2367.26	55.05	67.89	1.58	0.00	0.00	2435.16	56.63	45.26	1.05	2480.42	57.68
Unknown Salmon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

Table 6A-2 Estimated Harvest of Non-Salmon Fish by Gear Type, Nondalton, 2004

Resource	Units	Removed From Commercial Catch		Subsistence Gear																	
				Set Net		Seine		Handline		Dip Net		Ice Fishing		Other Subsistence Gear		Any Subsitence Method		Rod and Reel		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	lbs	7.92	0.18	896.32	20.84	0.00	0.00	425.02	9.88	0.00	0.00	2057.44	47.85	0.00	0.00	3378.78	78.58	2145.36	49.89	5561.48	129.34
Herring	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Sac Roe	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Smelt	lbs	0.00	0.00	407.37	9.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	407.37	9.47	0.00	0.00	407.37	9.47
Pacific Cod (gray)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walleye Pollock (whiting)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Cod	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flounder	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Flounder	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lingcod	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.05	0.21	9.05	0.21
Unknown Greenling	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	332.68	7.74	332.68	7.74
Black Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Red Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Rockfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sablefish (black cod)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bullhead Sculpin	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Shark	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sole	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stickleback (needlefish)	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wolffish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blackfish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Burbot	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.71	2.34	0.00	0.00	100.71	2.34	7.92	0.18	122.21	2.84
Arctic Char	lbs	0.00	0.00	0.00	0.00	0.00	0.00	15.84	0.37	0.00	0.00	15.84	0.37	0.00	0.00	31.68	0.74	15.84	0.37	47.53	1.11
Dolly Varden	lbs	0.00	0.00	9.51	0.22	0.00	0.00	39.61	0.92	0.00	0.00	182.18	4.24	0.00	0.00	231.29	5.38	250.31	5.82	481.60	11.20
Dolly Varden-saltwater	lbs	7.92	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.92	0.18
Lake Trout	lbs	0.00	0.00	87.13	2.03	0.00	0.00	0.00	0.00	0.00	0.00	175.85	4.09	0.00	0.00	262.98	6.12	215.45	5.01	478.43	11.13
Grayling	lbs	0.00	0.00	23.76	0.55	0.00	0.00	15.84	0.37	0.00	0.00	367.54	8.55	0.00	0.00	407.14	9.47	204.36	4.75	611.51	14.22
Unknown Pike	lbs	0.00	0.00	98.22	2.28	0.00	0.00	0.00	0.00	0.00	0.00	228.13	5.31	0.00	0.00	326.35	7.59	215.45	5.01	557.64	12.97
Unknown Sturgeon	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sucker	lbs	0.00	0.00	52.62	1.22	0.00	0.00	6.79	0.16	0.00	0.00	169.74	3.95	0.00	0.00	229.14	5.33	0.00	0.00	229.14	5.33
Rainbow Trout	lbs	0.00	0.00	15.84	0.37	0.00	0.00	31.68	0.74	0.00	0.00	270.90	6.30	0.00	0.00	318.43	7.41	422.98	9.84	741.41	17.24
Steelhead	lbs	0.00	0.00	1.58	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	0.04	1.58	0.04	3.17	0.07
Unknown Trout	lbs	0.00	0.00	0.00	0.00	0.00	0.00	275.65	6.41	0.00	0.00	15.84	0.37	0.00	0.00	291.49	6.78	69.71	1.62	361.20	8.40
Broad Whitefish	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Least Cisco	lbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humpback Whitefish	lbs	0.00	0.00	198.03	4.61	0.00	0.00	39.61	0.92	0.00	0.00	530.71	12.34	0.00	0.00	768.34	17.87	400.01	9.30	1168.36	27.17
Round Whitefish	lbs	0.00	0.00	2.26	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.26	0.05	0.00	0.00	2.26	0.05

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 6A-3 Estimated Amounts of Resources Removed from Commercial Harvests, Nondalton, 2004

Resource	Removed from Catch		Percent of	
	Amount	Pounds	Species Harvest	Community Harvest
			(lbs)	(lbs)
All Resources	45.26	194.76	0.33%	0.33%
Fish	43.00	191.20	0.46%	0.33%
Salmon	37.34	183.28	0.51%	0.31%
Chum Salmon	0.00	0.00	0.00%	0.00%
Coho Salmon	0.00	0.00	0.00%	0.00%
Chinook Salmon	3.39	37.65	60.00%	0.06%
Pink Salmon	0.00	0.00	0.00%	0.00%
Sockeye Salmon	33.95	145.63	0.44%	0.25%
Unknown Salmon	0.00	0.00	0.00%	0.00%
Non-Salmon Fish	5.66	7.92	0.14%	0.01%
Herring	0.00	0.00	0.00%	0.00%
Herring Roe	0.00	0.00	0.00%	0.00%
Herring Sac Roe	0.00	0.00	0.00%	0.00%
Herring Spawn on Kelp	0.00	0.00	0.00%	0.00%
Cod	0.00	0.00	0.00%	0.00%
Pacific Cod (gray)	0.00	0.00	0.00%	0.00%
Walleye Pollock (whiting)	0.00	0.00	0.00%	0.00%
Flounder	0.00	0.00	0.00%	0.00%
Unknown Flounder	0.00	0.00	0.00%	0.00%
Greenling	0.00	0.00	0.00%	0.00%
Lingcod	0.00	0.00	0.00%	0.00%
Unknown Greenling	0.00	0.00	0.00%	0.00%
Halibut	0.00	0.00	0.00%	0.00%
Rockfish	0.00	0.00	0.00%	0.00%
Black Rockfish	0.00	0.00	0.00%	0.00%
Red Rockfish	0.00	0.00	0.00%	0.00%
Unknown Rockfish	0.00	0.00	0.00%	0.00%
Sablefish (black cod)	0.00	0.00	0.00%	0.00%
Shark	0.00	0.00	0.00%	0.00%
Unknown Shark	0.00	0.00	0.00%	0.00%
Sole	0.00	0.00	0.00%	0.00%
Unknown Sole	0.00	0.00	0.00%	0.00%
Wolffish	0.00	0.00	0.00%	0.00%
Char	5.66	7.92	0.78%	0.01%
Dolly Varden	5.66	7.92	1.62%	0.01%
Dolly Varden-saltwater	5.66	7.92	100.00%	0.01%
Sturgeon	0.00	0.00	0.00%	0.00%
Unknown Sturgeon	0.00	0.00	0.00%	0.00%
Marine Invertebrates	2.26	3.55	5.35%	0.01%
Clams	0.00	0.00	0.00%	0.00%
Pacific Littleneck Clams (Steamers)	0.00	0.00	0.00%	0.00%
Razor Clams	0.00	0.00	0.00%	0.00%
Crabs	2.26	3.55	100.00%	0.01%
Dungeness Crab	0.00	0.00	0.00%	0.00%
King Crab	0.00	0.00	0.00%	0.00%
Tanner Crab	0.00	0.00	0.00%	0.00%
Unknown Tanner Crab	0.00	0.00	0.00%	0.00%
Unknown Crab	2.26	3.55	100.00%	0.01%
Octopus	0.00	0.00	0.00%	0.00%
Scallops	0.00	0.00	0.00%	0.00%
Unknown Scallops	0.00	0.00	0.00%	0.00%
Shrimp	0.00	0.00	0.00%	0.00%

Source: Alaska Department of Fish and Game, Division of Subsistence Household Survey, 2005

Table 6A-4 Percentage of Households Harvesting Non-Salmon Fish by Gear Type and Species, Nondalton, 2004

Resource	Removed from Commercial Gear	Subsistence Gear							Rod and Reel	Any Method
		Set Net	Seine	Hand Line	Dip Net	Ice Fishing	Other Subsistence Method	Any Subsistence Method		
Non-Salmon Fish	2.6%	23.7%	0.0%	18.4%	0.0%	44.7%	0.0%	60.5%	52.6%	76.3%
Herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Herring Sac Roe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Herring Spawn on Kelp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Smelt	0.0%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	2.6%
Pacific Cod (gray)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Walleye Pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lingcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	2.6%
Unknown Greenling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Halibut	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.9%	7.9%
Black Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Red Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Rockfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bullhead Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Sole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wolffish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blackfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Burbot	0.0%	0.0%	0.0%	0.0%	0.0%	21.1%	0.0%	21.1%	5.3%	26.3%
Arctic Char	0.0%	0.0%	0.0%	2.6%	0.0%	2.6%	0.0%	2.6%	2.6%	5.3%
Dolly Varden	0.0%	2.6%	0.0%	5.3%	0.0%	13.2%	0.0%	15.8%	26.3%	31.6%
Dolly Varden-saltwater	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%
Lake Trout	0.0%	10.5%	0.0%	0.0%	0.0%	23.7%	0.0%	34.2%	36.8%	60.5%
Grayling	0.0%	2.6%	0.0%	2.6%	0.0%	34.2%	0.0%	36.8%	28.9%	55.3%
Unknown Pike	0.0%	5.3%	0.0%	0.0%	0.0%	15.8%	0.0%	21.1%	10.5%	28.9%
Unknown Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sucker	0.0%	13.2%	0.0%	2.6%	0.0%	2.6%	0.0%	18.4%	0.0%	18.4%
Rainbow Trout	0.0%	2.6%	0.0%	2.6%	0.0%	23.7%	0.0%	26.3%	47.4%	60.5%
Steelhead	0.0%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	2.6%	2.6%
Unknown Trout	0.0%	0.0%	0.0%	15.8%	0.0%	2.6%	0.0%	18.4%	5.3%	23.7%
Broad Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Least Cisco	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Humpback Whitefish	0.0%	7.9%	0.0%	2.6%	0.0%	28.9%	0.0%	36.8%	34.2%	55.3%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2005

APPENDIX F

SUBSISTENCE HARVESTS AND USES OF WILD RESOURCES IN ILIAMNA, NEWHALEN, NONDALTON, PEDRO BAY, AND PORT ALSWORTH, ALASKA, 2004

An Overview of Study Findings

Division of Subsistence
Alaska Department of Fish and Game

December 2006

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) on subsistence harvests of all resources by residents of Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth. The study period covers January 1 to December 31, 2004. Funding for this project was provided through a cooperative agreement with Lake Clark National Park and Preserve (NPS Agreement Number H9855040051; ADF&G Agreement Number COOP 05-022) and Stephen R. Braund and Associates (ADF&G Agreement Number IHP-05-049). Using local research assistants, household interviews were conducted to collect harvest and use information for all wild resources. Subsistence users also mapped areas where they harvested or attempted to harvest resources. In addition to the survey and mapping, 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.

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 people's homes. The goal was to interview representatives of all households in each of the five study communities. Of the175 households in the 5 communities, 116 interviews were completed (79 percent). 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 species.

Findings

Figure 1 illustrates subsistence harvest estimates for each study community in 2004 in pounds usable weight per person. Newhalen had the highest harvest with 692 pounds per person, followed by Iliamna (469 pounds per person), Nondalton (358 pounds per person), Pedro Bay 306 pounds per person, and Port Alsworth (133 pounds per person).

Figure 1. Harvests of Wild Resources in Pounds Usable Weight per Person, Study Communities, 2004

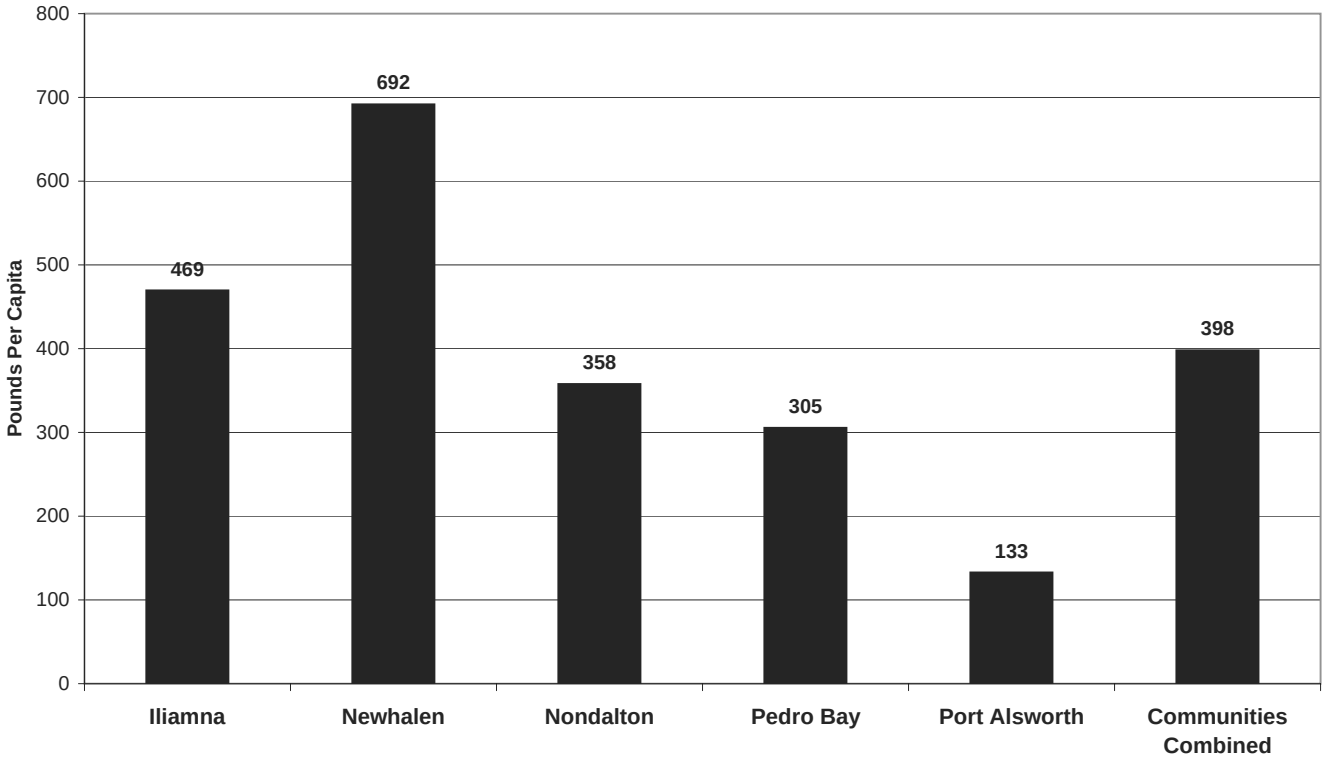


Figure 2 shows the composition by resource category of each community's harvest in 2004. Salmon ranked first in each community, ranging from 82% of the harvest in usable pounds in Pedro Bay, to 79% in Iliamna, 73% in Newhalen, 67% in Port Alsworth, and 61% in Nondalton. Land mammals (mostly moose and caribou, but also black bears and sheep in some communities as well as small game such as porcupines, hare, and beaver) ranked second in four communities: 23% of the harvest in Nondalton, 19% in Port Alsworth, 15% in Newhalen, and 10% in Pedro Bay. In Iliamna, large land mammals made up 7% of the harvest, ranking third after salmon and nonsalmon fish (7%). Nonsalmon fish were the third most abundant resource category in terms of usable pounds in the other four study communities, and wild plants were in fourth place in all five communities. Birds and eggs, marine mammals, and marine invertebrates made small contributions to the total resource harvests as measured in usable pounds.

Every household in the 5 study communities of Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth used subsistence foods in the 2004 study year. Most residents engaged in subsistence activities (Figure 3): 36% hunted (an estimated 196 people); 76% fished (412 people); 19% trapped (105 people); 81% gathered wild plants (439 people); 91% were involved in at least one harvest activity (491 people); and 90% processed subsistence resources (439 people). For the 5 communities combined, the subsistence harvest in 2004 was 316 pounds per person, or just under one pound per person per day. Although the bulk was salmon, followed by large land mammals and other fish, almost all households used 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 2004, as they have been for centuries.

Figure 2. Community Harvest Composition by Resource Category, 2004

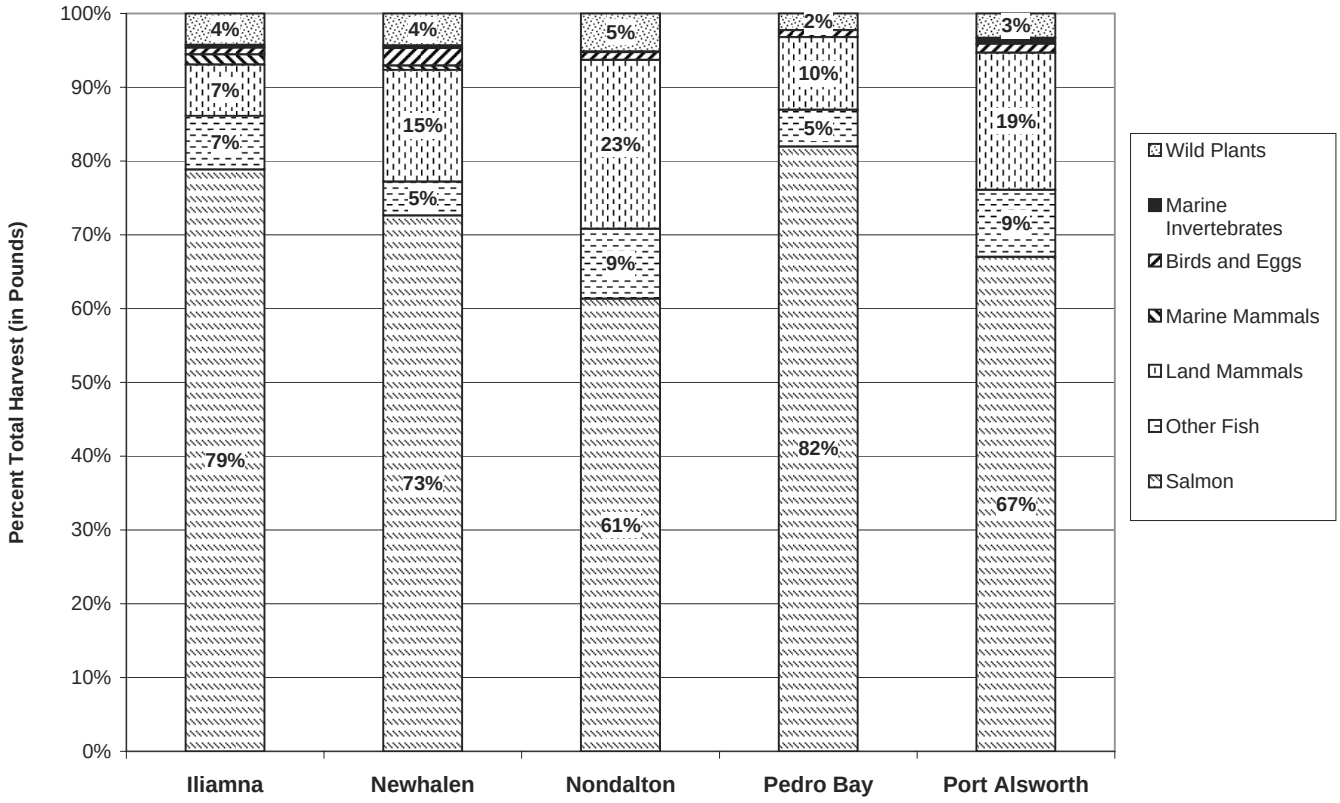
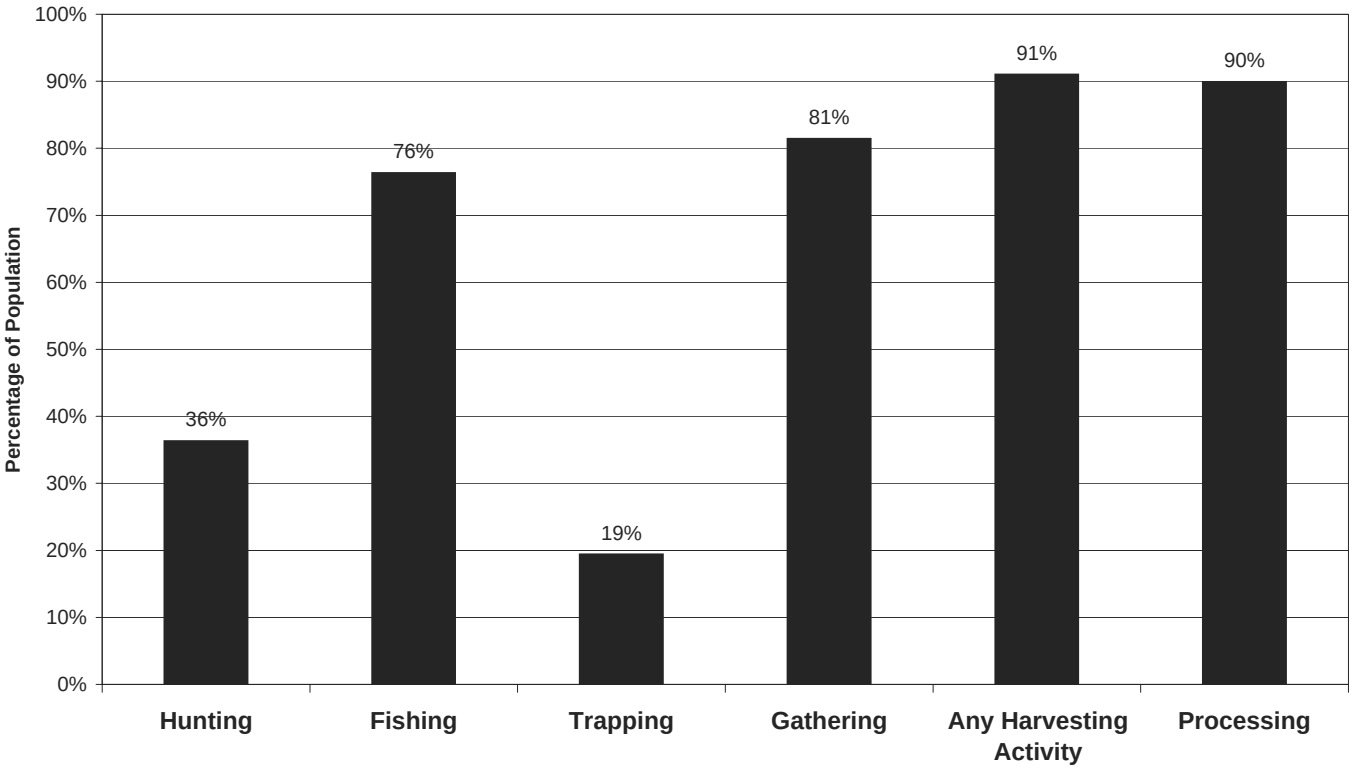


Figure 3. Individual Involvement in Subsistence Activities, All Study Communities Combined, 2004



Continuing Research

In March of 2006 the Division of Subsistence, in collaboration with local communities, continued the subsistence harvest and use surveys in the communities of Igiugig, Kokhanok, Koliganek, Levelock, and New Stuyahok. These results will be available in the fall of 2007. Additional baseline studies are being planned for other communities in the Bristol Bay Region within the next two years.

For More Information:

Complete results for this project appear in: James A. Fall, Davin L. Holen, Brian Davis, Theodore Krieg, and David Koster, 2006. *Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004* Technical Paper No. 302. Alaska Department of Fish and Game, Division of Subsistence. Juneau. The report is available by contacting the Division of Subsistence at P.O. Box 25526, Juneau, AK 99802 (907-465-4147). In addition a full text PDF version is available at the Division of Subsistence website at http://www.subsistence.adfg.state.ak.us/

Copies of the report have also been provided to the participating communities.

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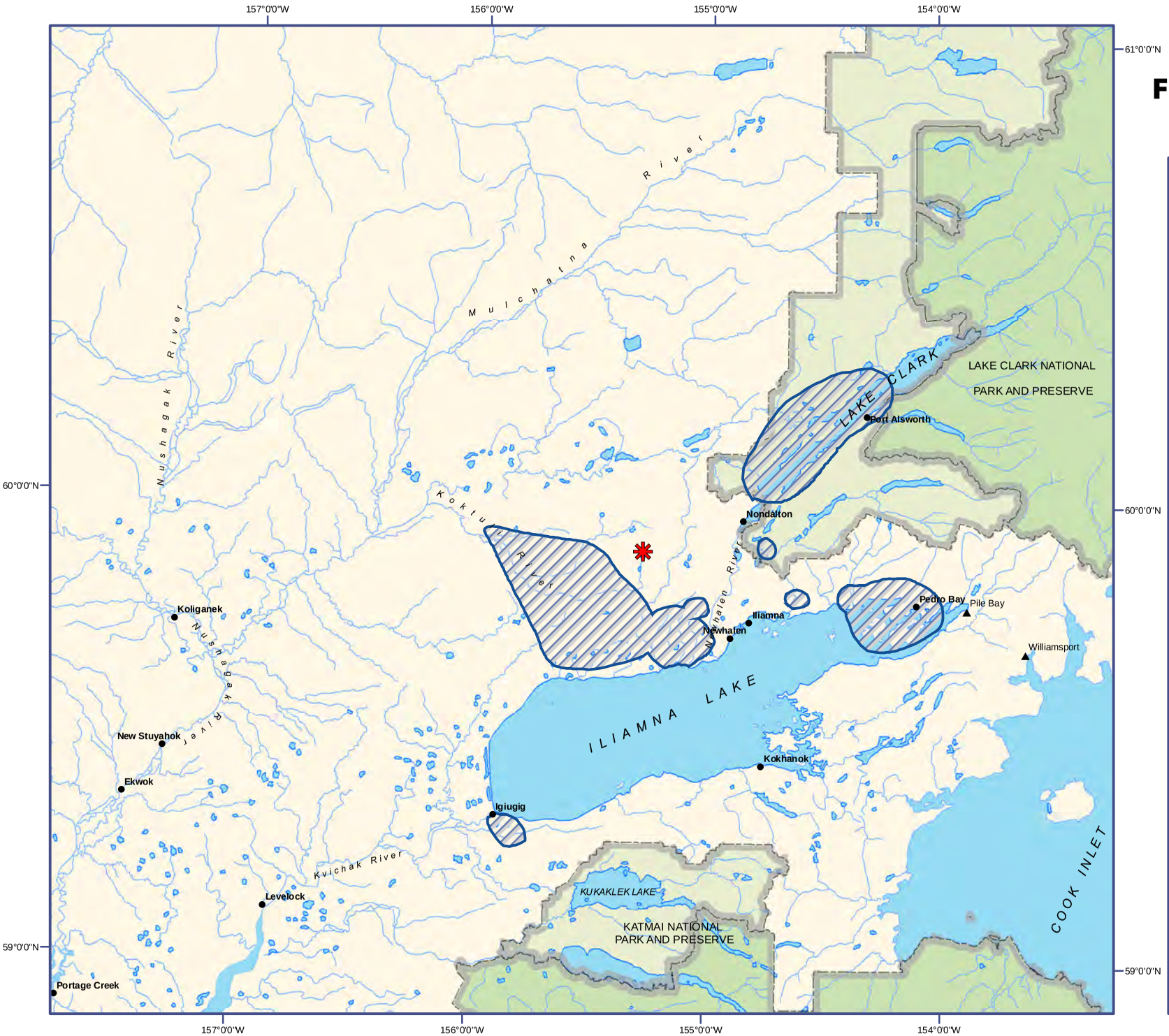

Figure 2-3

- Pebble Mine Site
- Communities
- Other Localities
- Iliamna Moose Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:
Division of Subsistence, ADF&G Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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Figure 2-4

- Pebble Mine Site
- Communities
- Other Localities
- Iliamna Caribou Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

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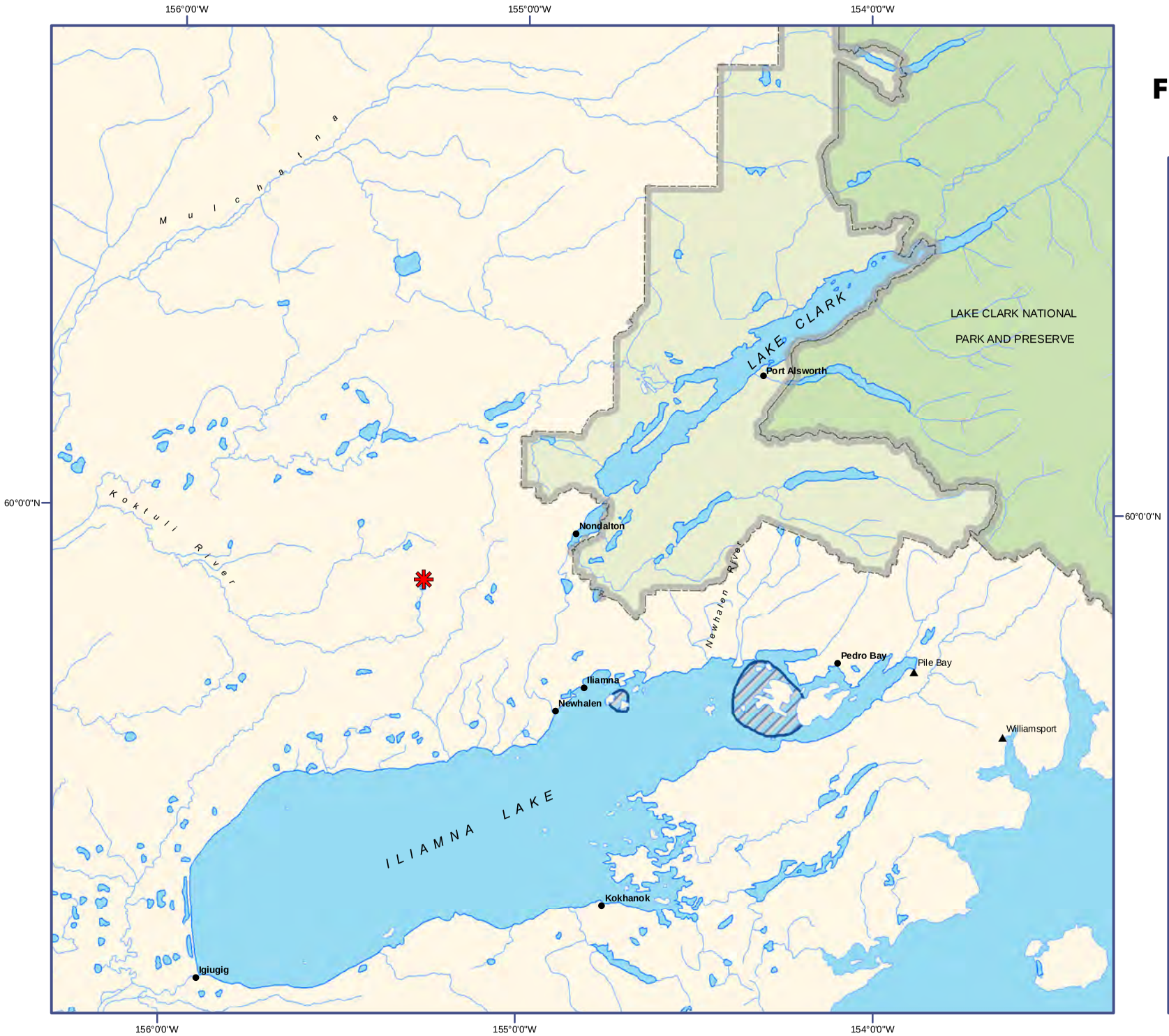

Figure 2-5

N

ALASKA DEPARTMENT OF FISH AND GAME

- Pebble Mine Site
- Communities
- Other Localities
- Iliamna Freshwater Seal Hunting 2004
- National Park
- National Preserve

SCALE: 1:840,000

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Pebble Mine Site

Communities

Other Localities

Iliamna Egg Gathering 2004

Iliamna Upland Bird Harvesting 2004

Iliamna Waterfowl Harvesting 2004

National Park

National Preserve

SCALE: 1:1,275,000

0 5 10 20

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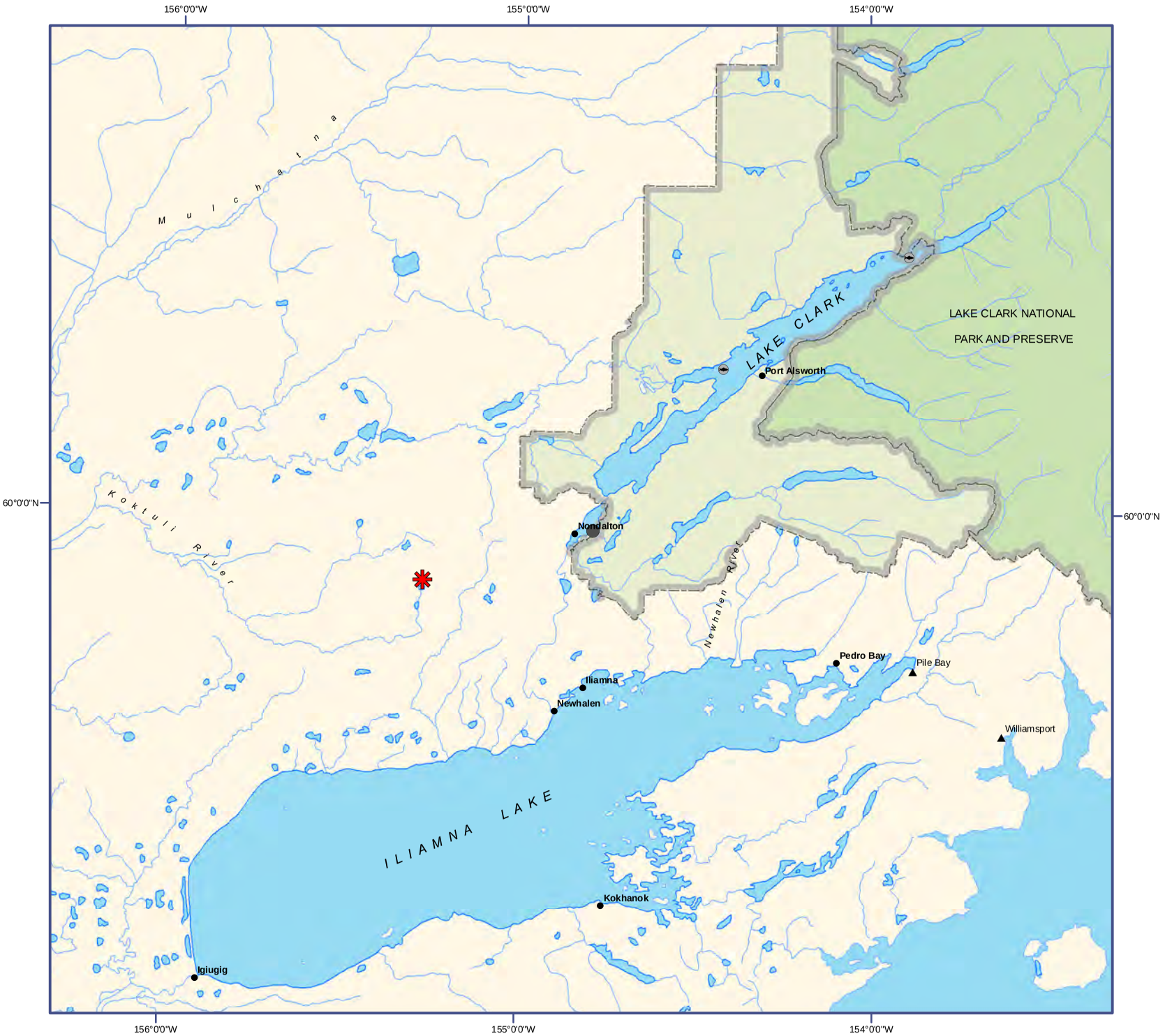

N

- Pebble Mine Site
- Communities
- Other Localities
- Iliamna Burbot Harvest 2004
- Iliamna Longnose Sucker Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

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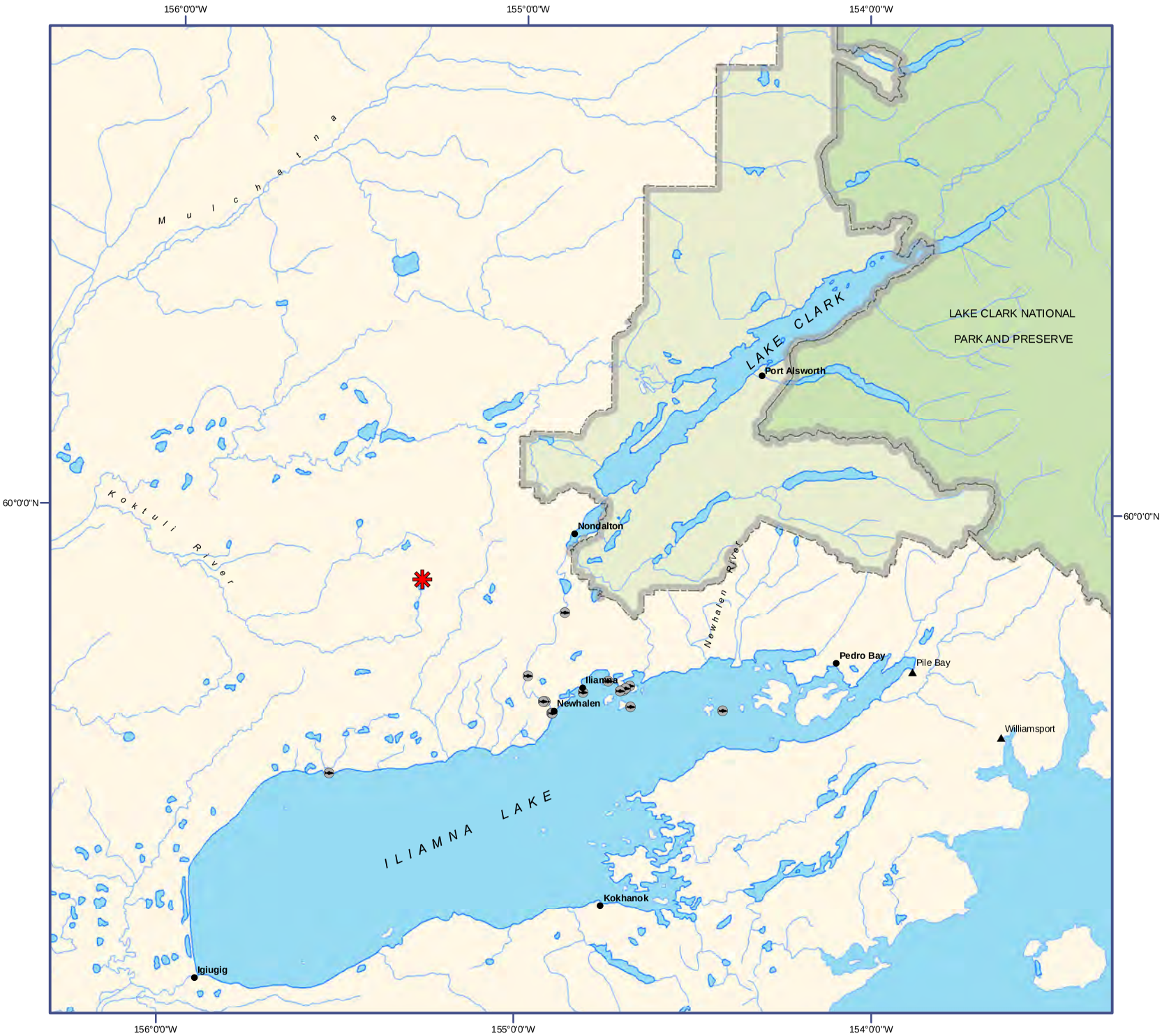

N

ALASKA DEPARTMENT OF FISH AND GAME

- Pebble Mine Site
- Communities
- Other Localities
- Iliamna Dolly Varden Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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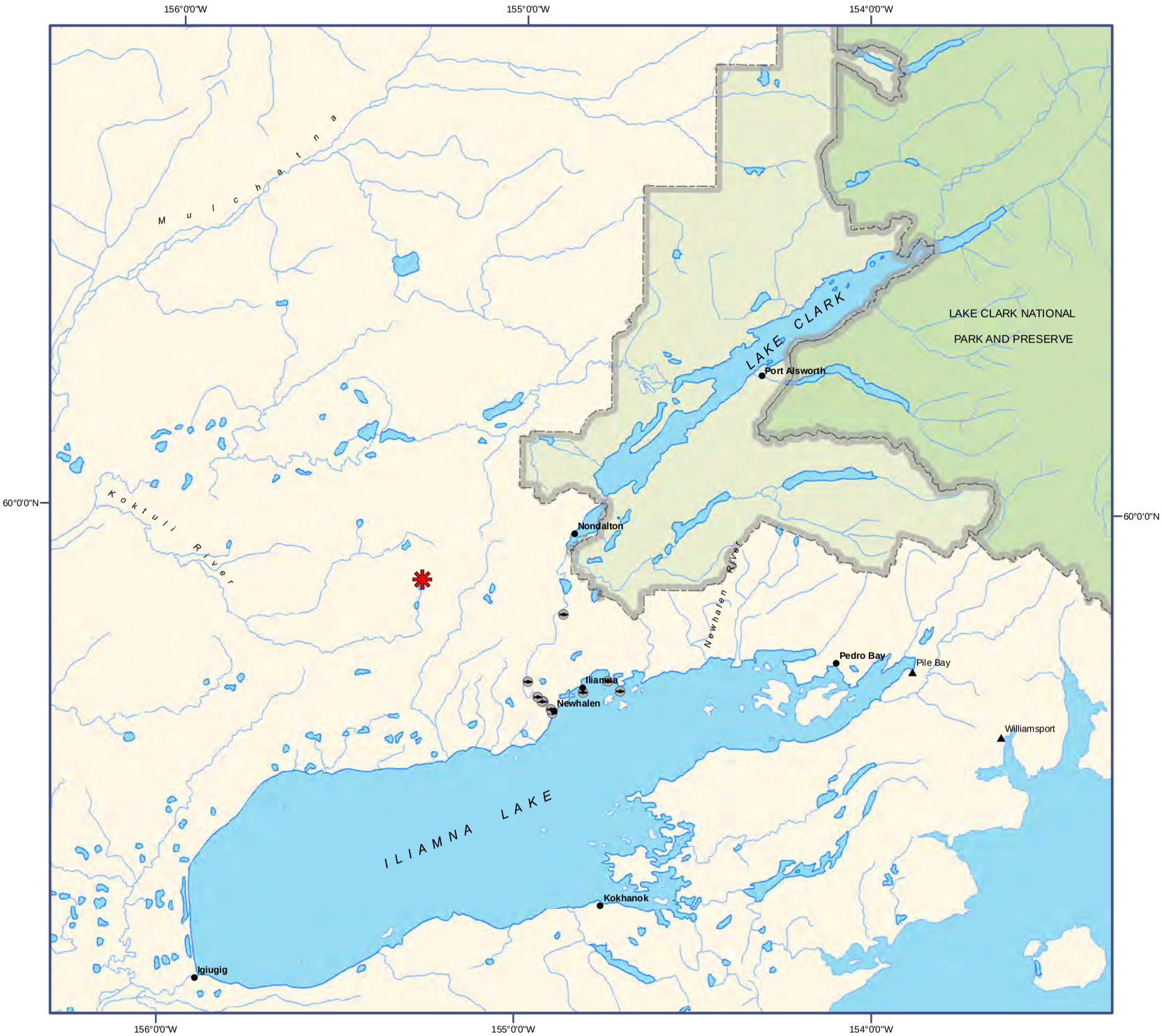

N

Pebble Mine Site

Communities

Other Localities

Iliamna Arctic Grayling Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

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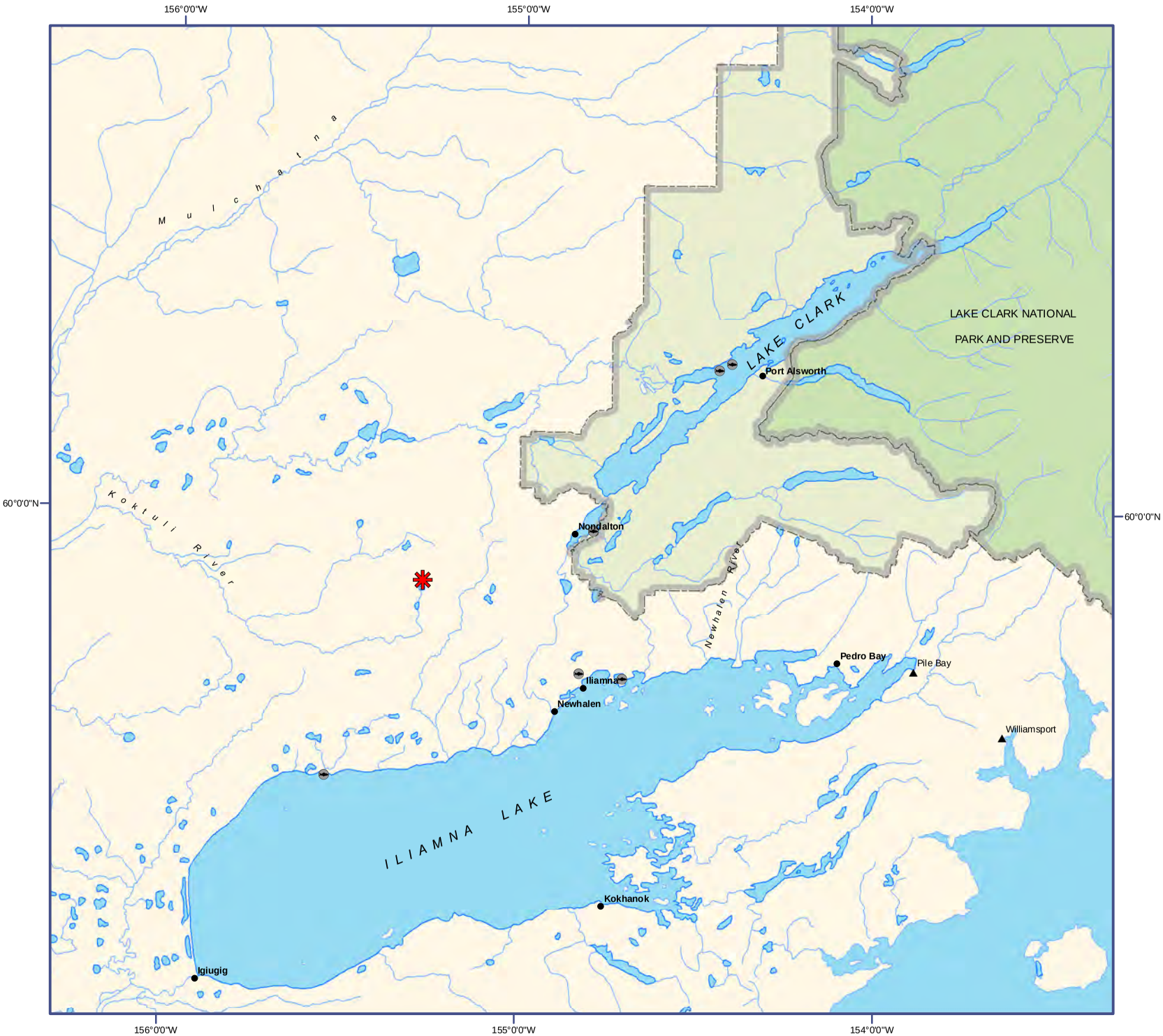

N

Pebble Mine Site

Communities

Other Localities

Iliamna Northern Pike Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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N

Pebble Mine Site

Communities

Other Localities

Iliamna Berry Gathering 2004

Iliamna Other Plant Gathering 2004

National Park

National Preserve

SCALE: 1:1,275,000

0 5 10 20

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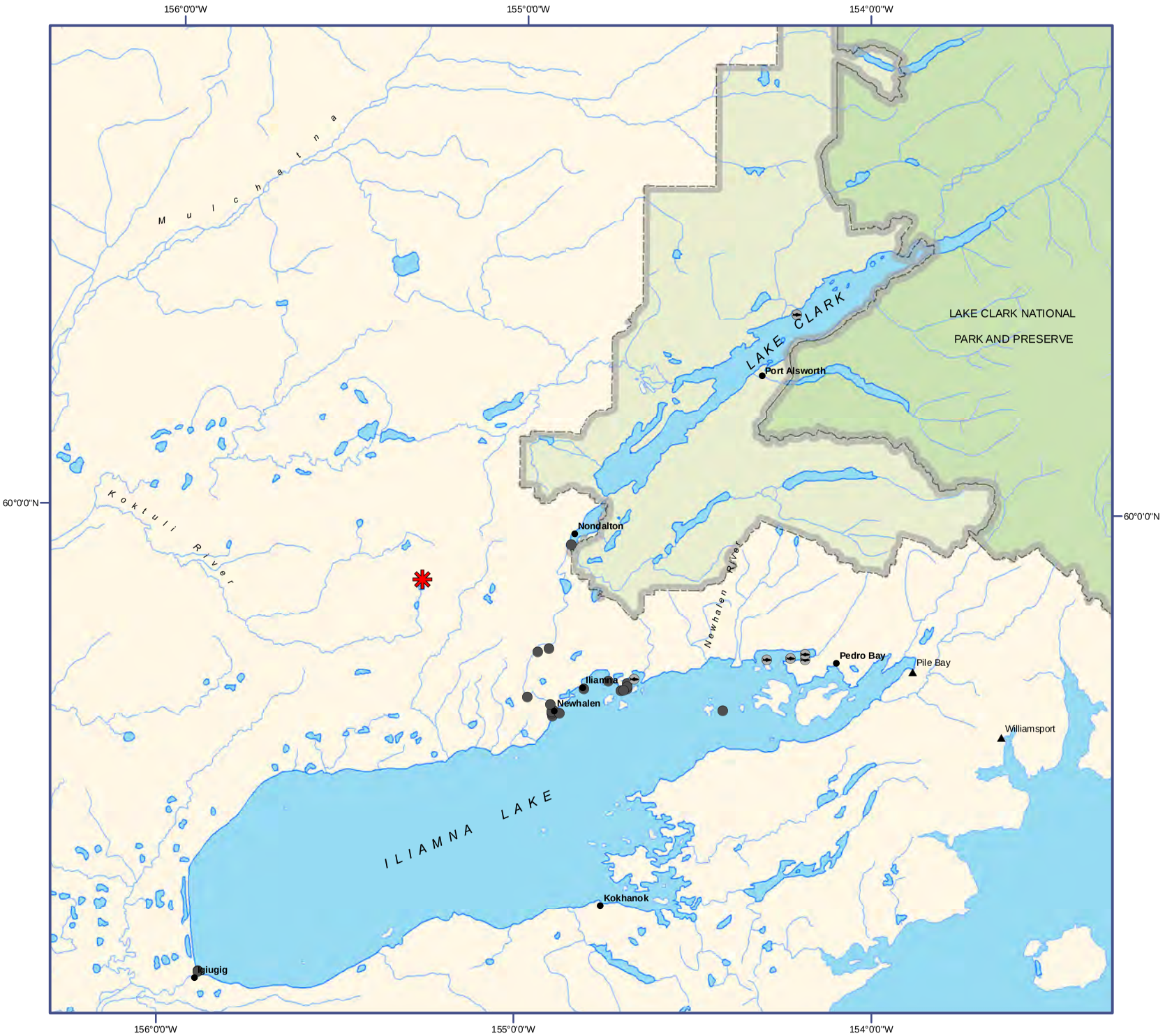

N

- Pebble Mine Site
- Communities
- Other Localities
- Iliamna Sockeye Salmon Harvest 2004
- Iliamna Spawning Sockeye Salmon Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

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N

Pebble Mine Site

Communities

Other Localities

Iliamna Small Land Mammal Hunting 2004

National Park

National Preserve

SCALE: 1:1,275,000

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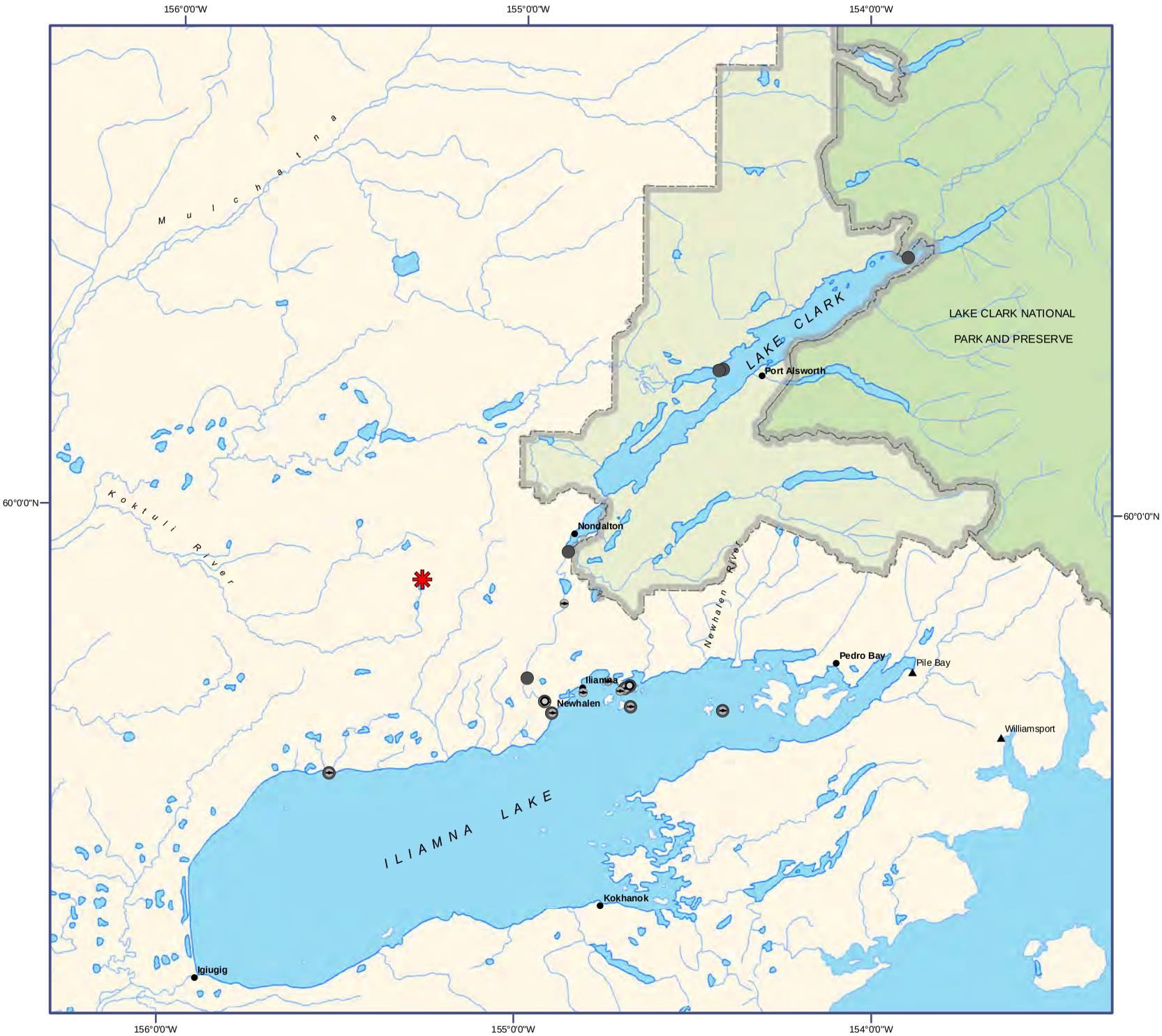

N

- Pebble Mine Site
- Communities
- Other Localities
- Iliamna Lake Trout Harvest 2004
- Iliamna Rainbow Trout Harvest 2004
- Iliamna Trout Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

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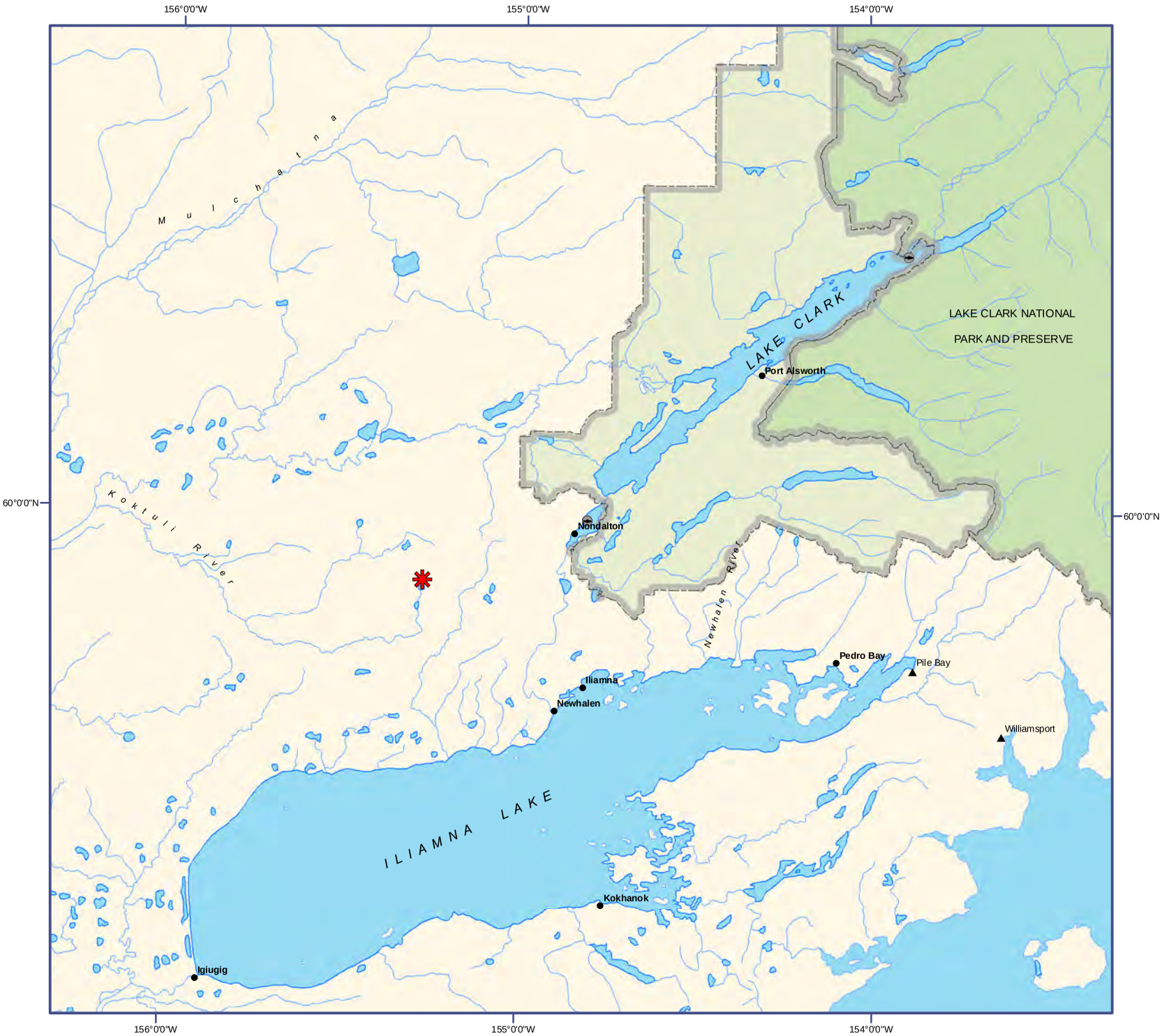

N

Pebble Mine Site

Communities

Other Localities

Iliamna Humpback Whitefish Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

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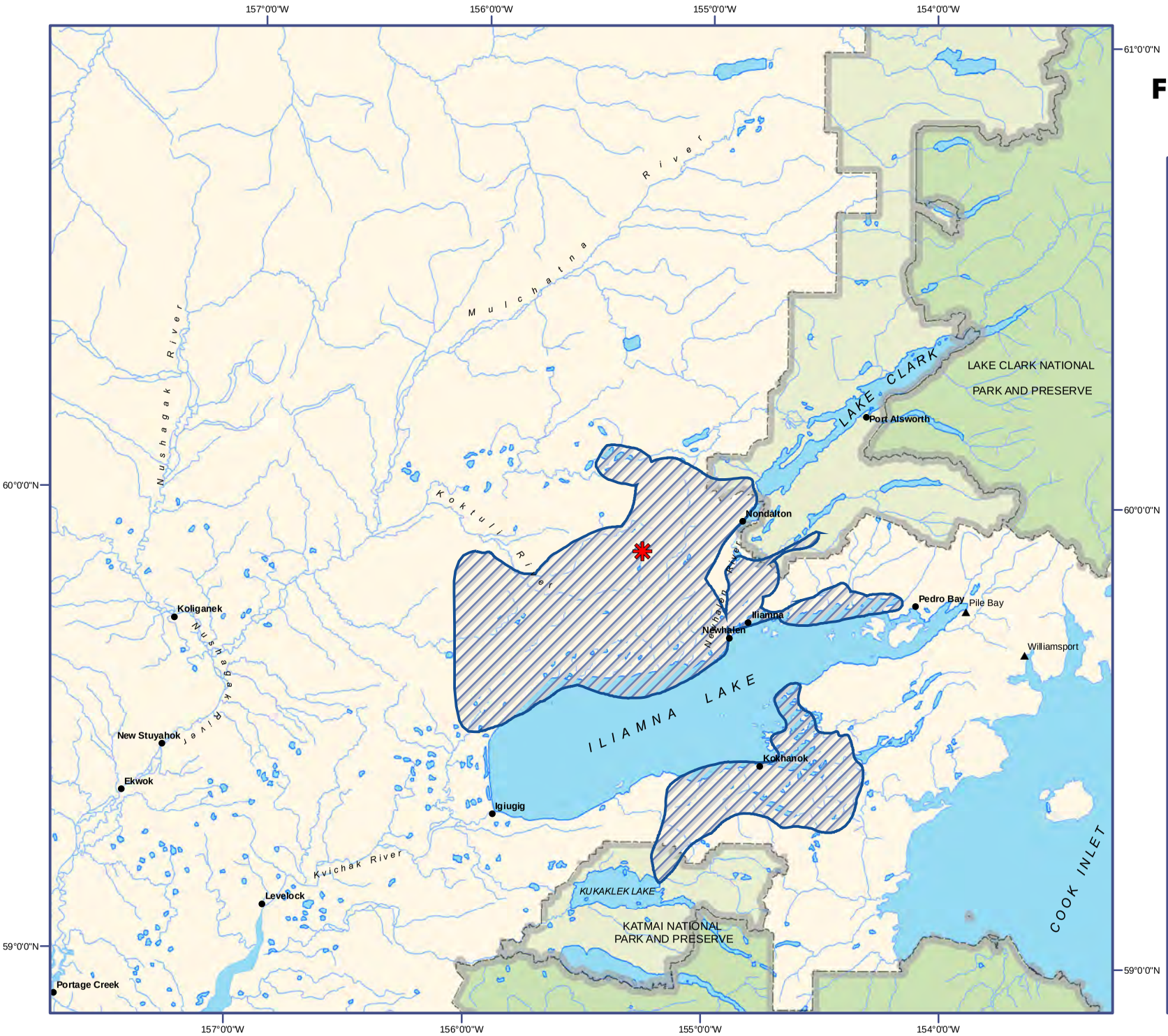

Figure 3-3

- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Moose Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

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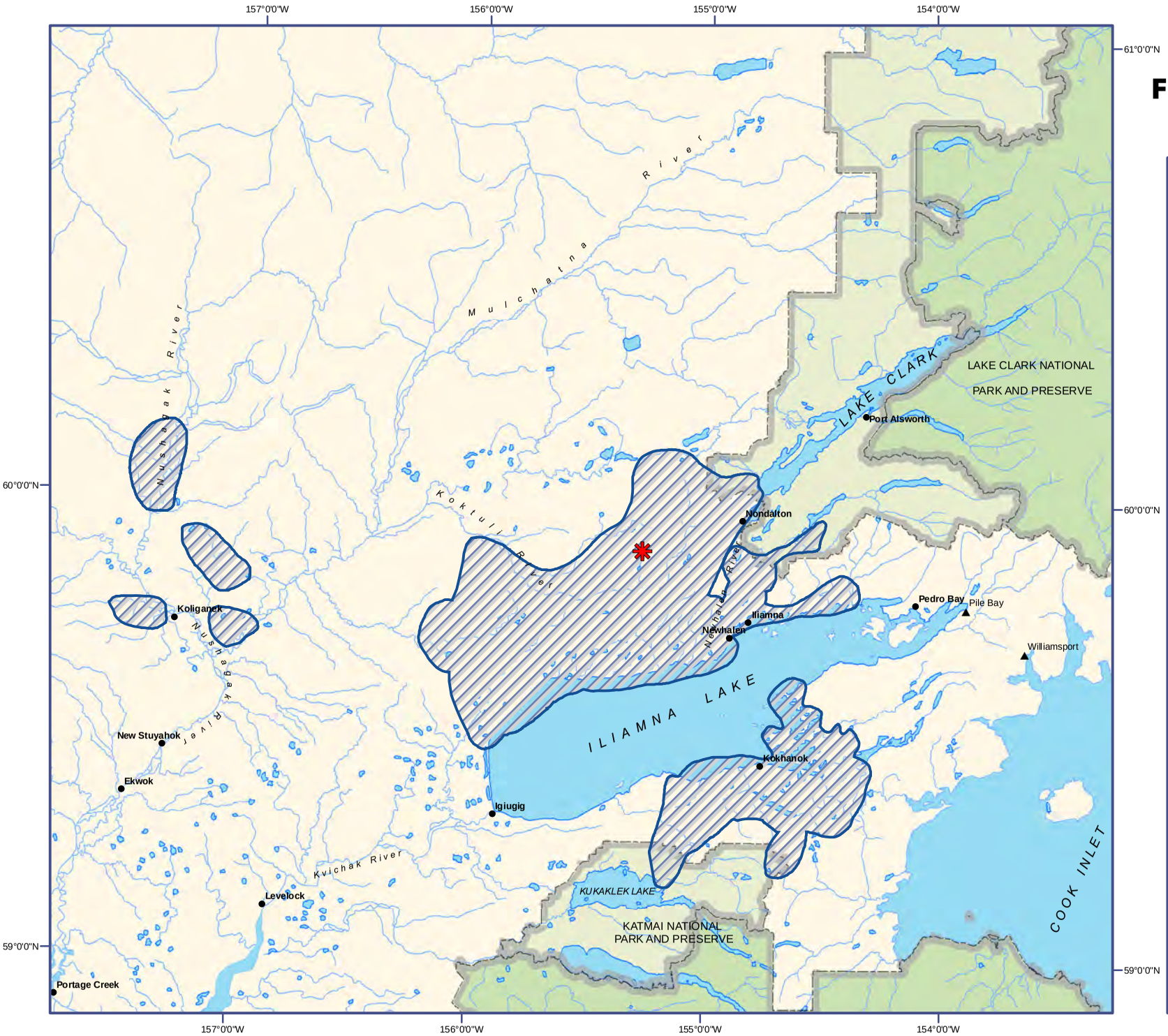

Figure 3-4

- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Caribou Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

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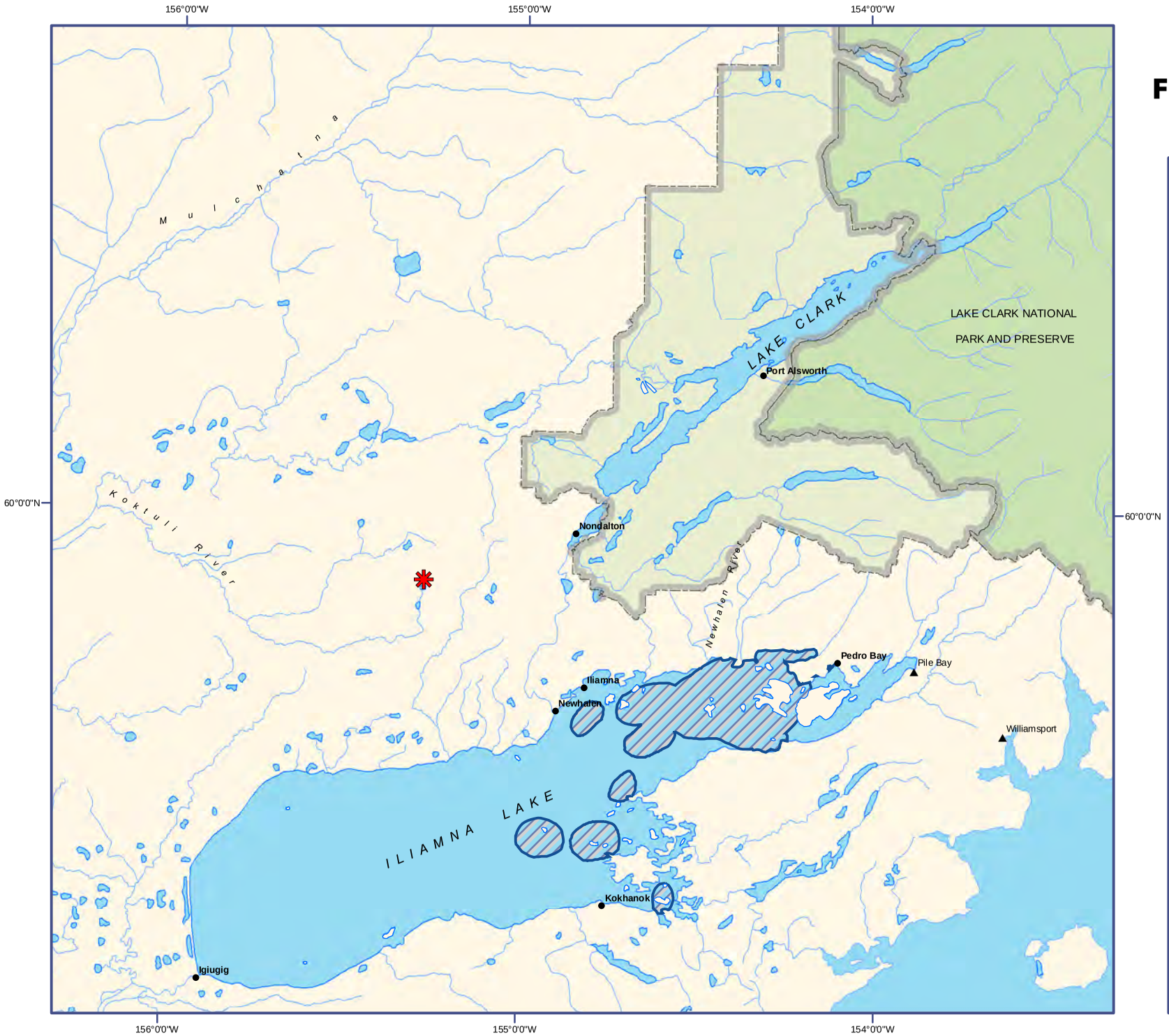

Figure 3-5

- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Freshwater Seal Hunting 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

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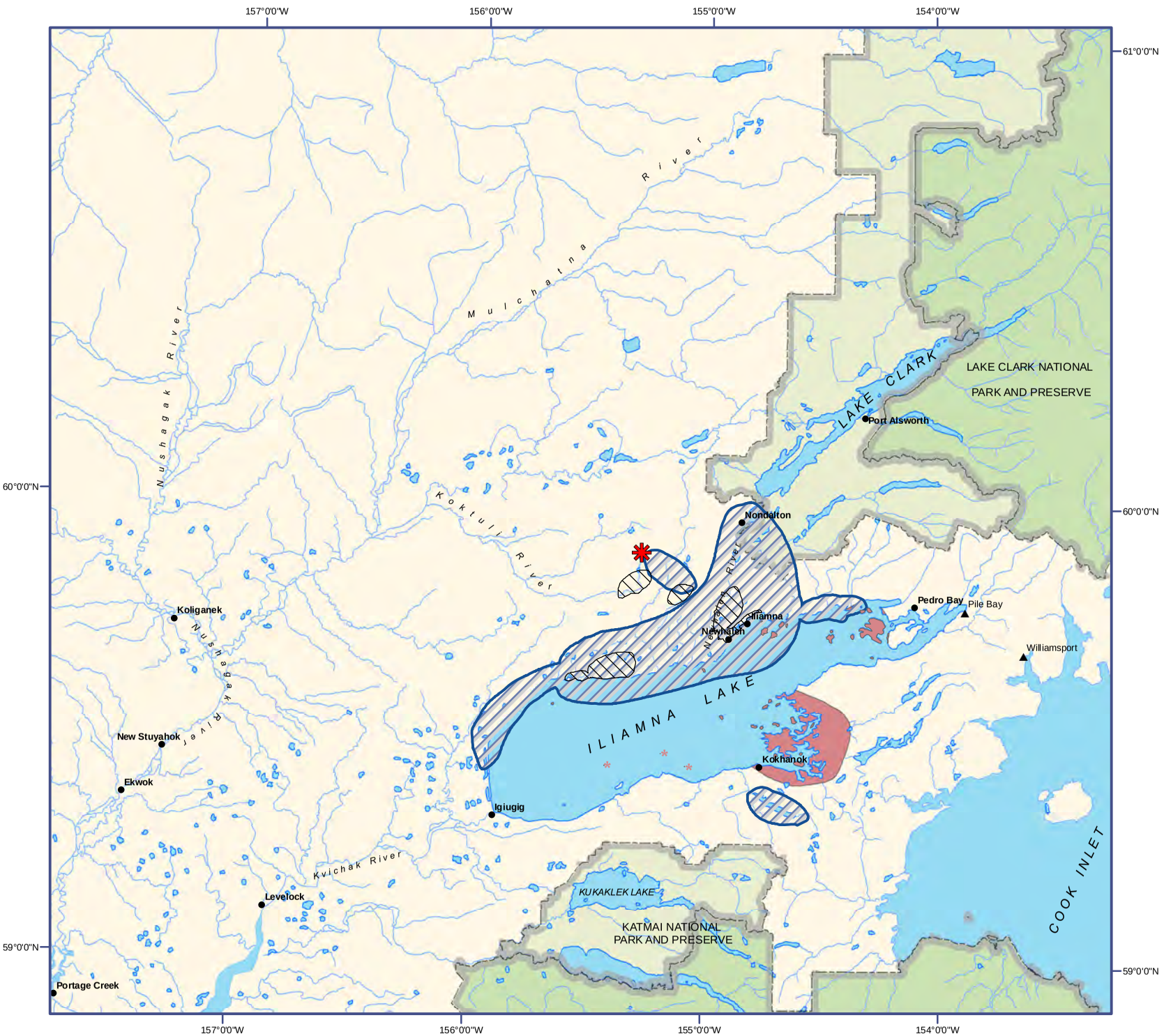

N

Pebble Mine Site

Communities

Other Localities

Newhalen Egg Gathering 2004

Newhalen Upland Bird Harvesting 2004

Newhalen Waterfowl Harvesting 2004

National Park

National Preserve

* Egg gathering also occurs on islands too small to appear on map, including these island groups.

SCALE: 1:1,275,000

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Pebble Mine Site

Communities

Other Localities

Newhalen Black Bear Hunting 2004

National Park

National Preserve

SCALE: 1:1,275,000

0 5 10 20

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Pebble Mine Site

Communities

Other Localities

Newhalen Brown Bear Hunting 2004

National Park

National Preserve

SCALE: 1:1,275,000

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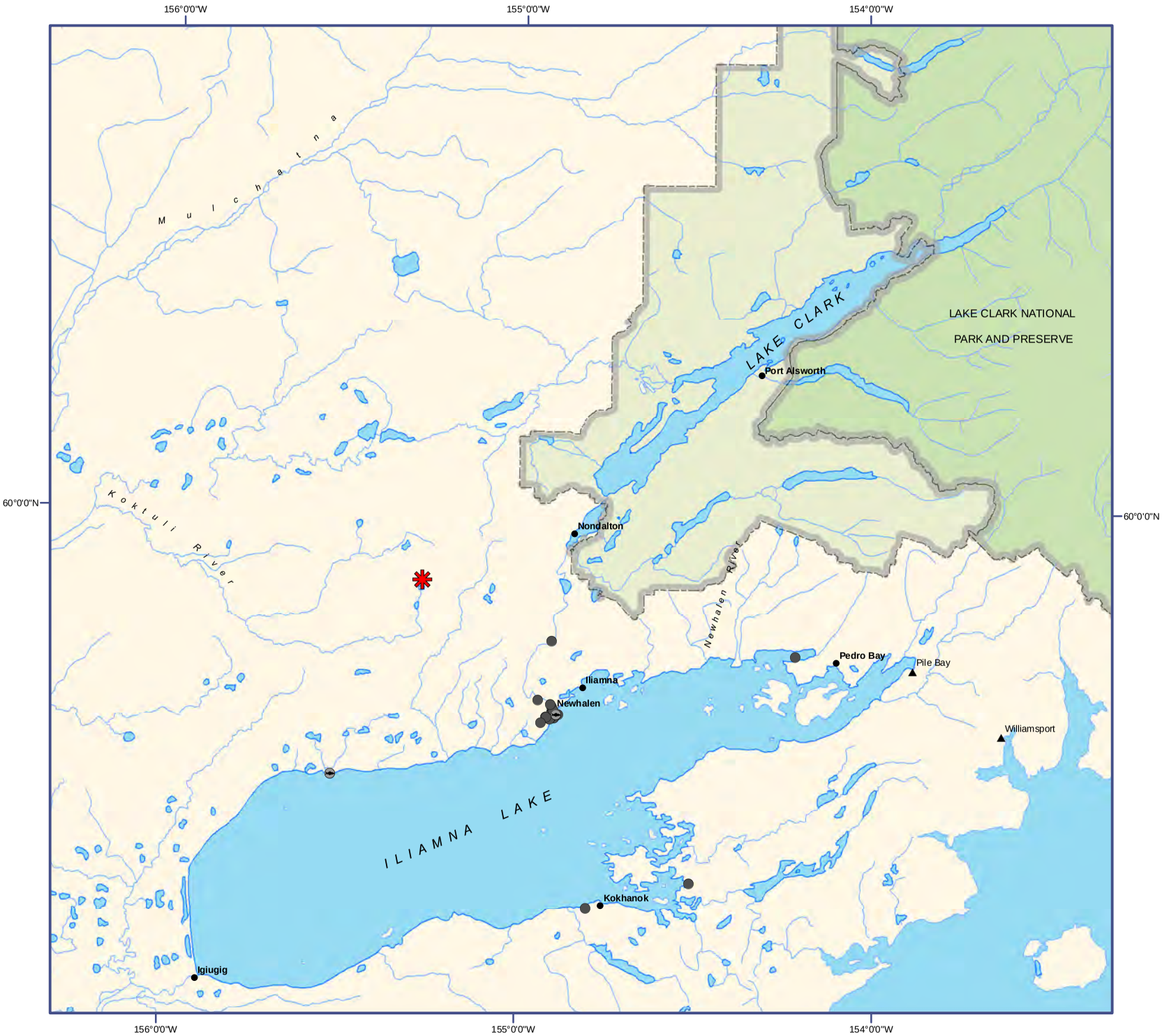

N

Pebble Mine Site

Communities

Other Localities

Newhalen Arctic Char Harvest 2004

Newhalen Dolly Varden Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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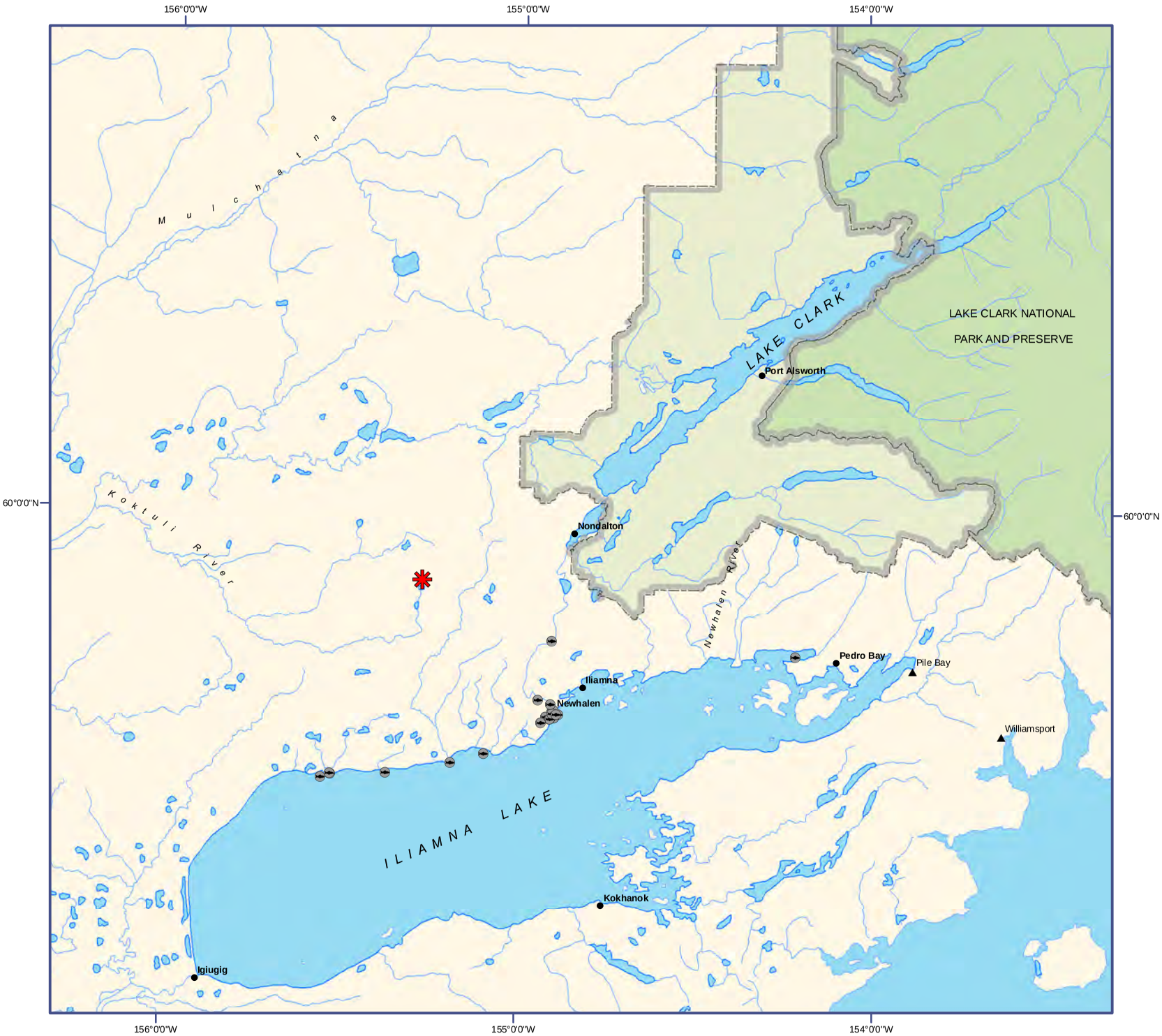

N

Pebble Mine Site

Communities

Other Localities

Newhalen Arctic Grayling Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

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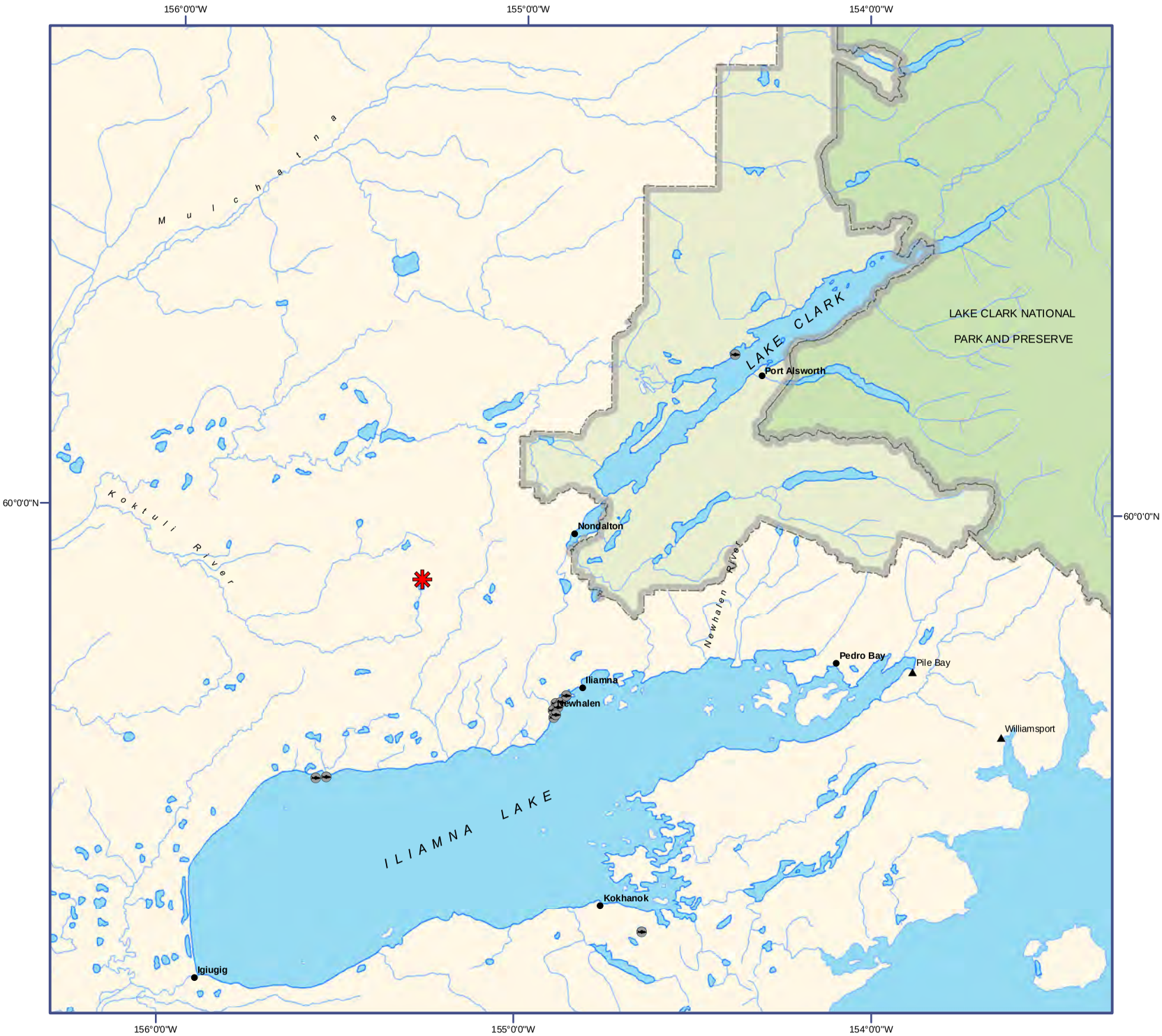

N

ALASKA DEPARTMENT OF FISH AND GAME

- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Northern Pike Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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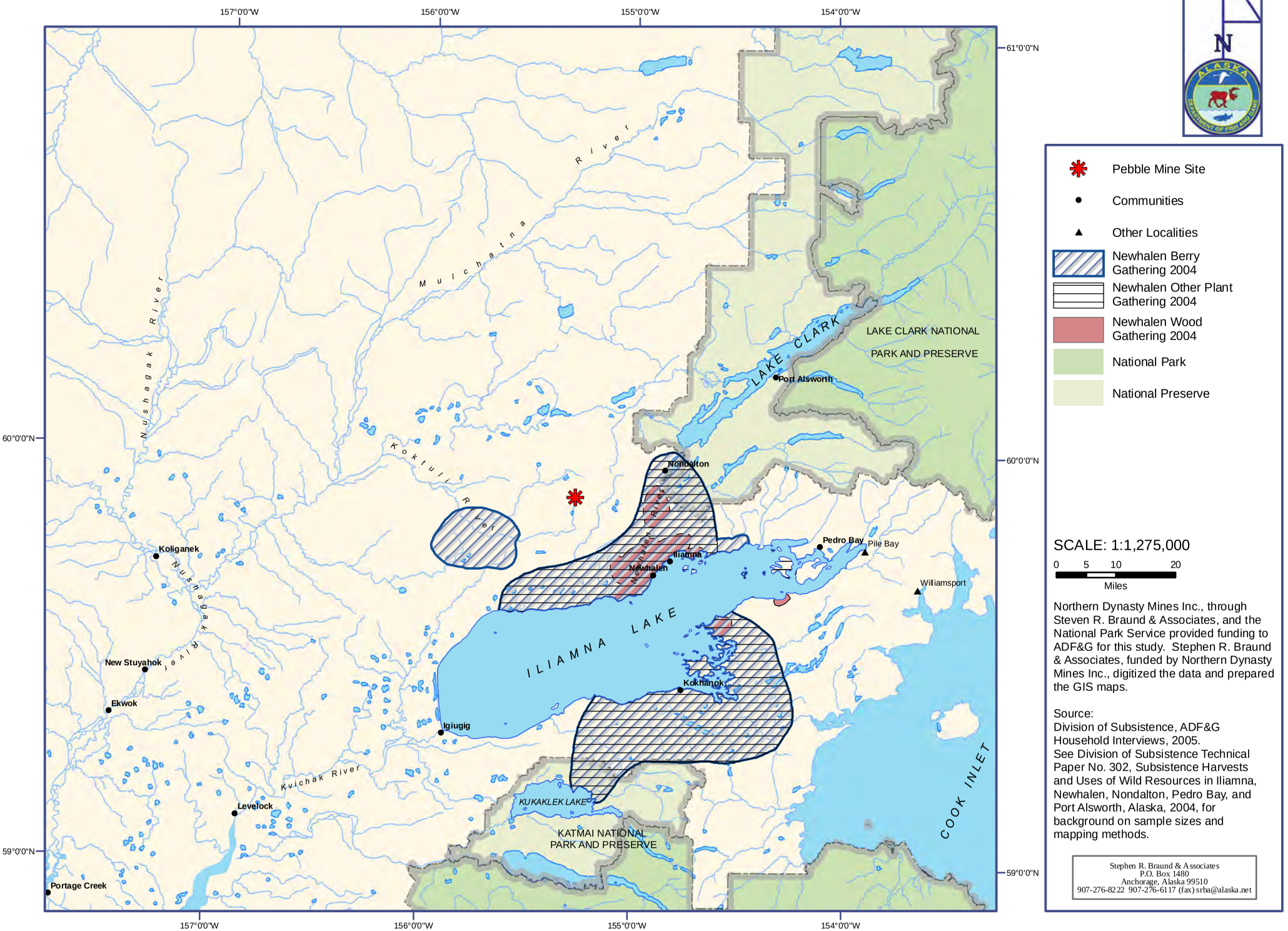

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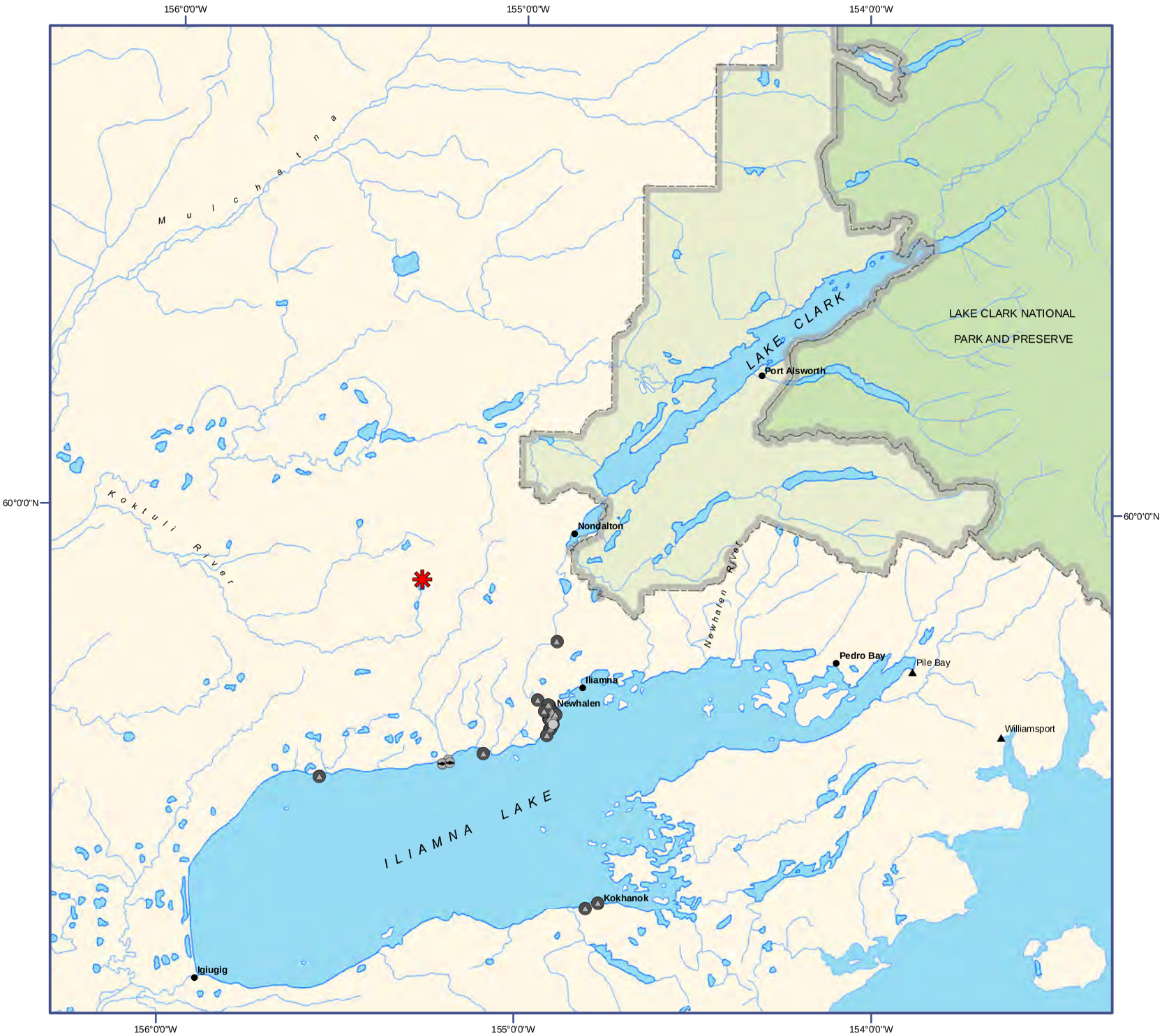

N

- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Chum Salmon Harvest 2004
- Newhalen Silver Salmon Harvest 2004
- Newhalen Sockeye Salmon Harvest 2004
- Newhalen Spawning Sockeye Salmon Harvest 2004
- National Park
- National Preserve

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Pebble Mine Site

Communities

Other Localities

Newhalen Sheep Hunting 2004

National Park

National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

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Pebble Mine Site

Communities

Other Localities

Newhalen Small Land Mammal Hunting 2004

National Park

National Preserve

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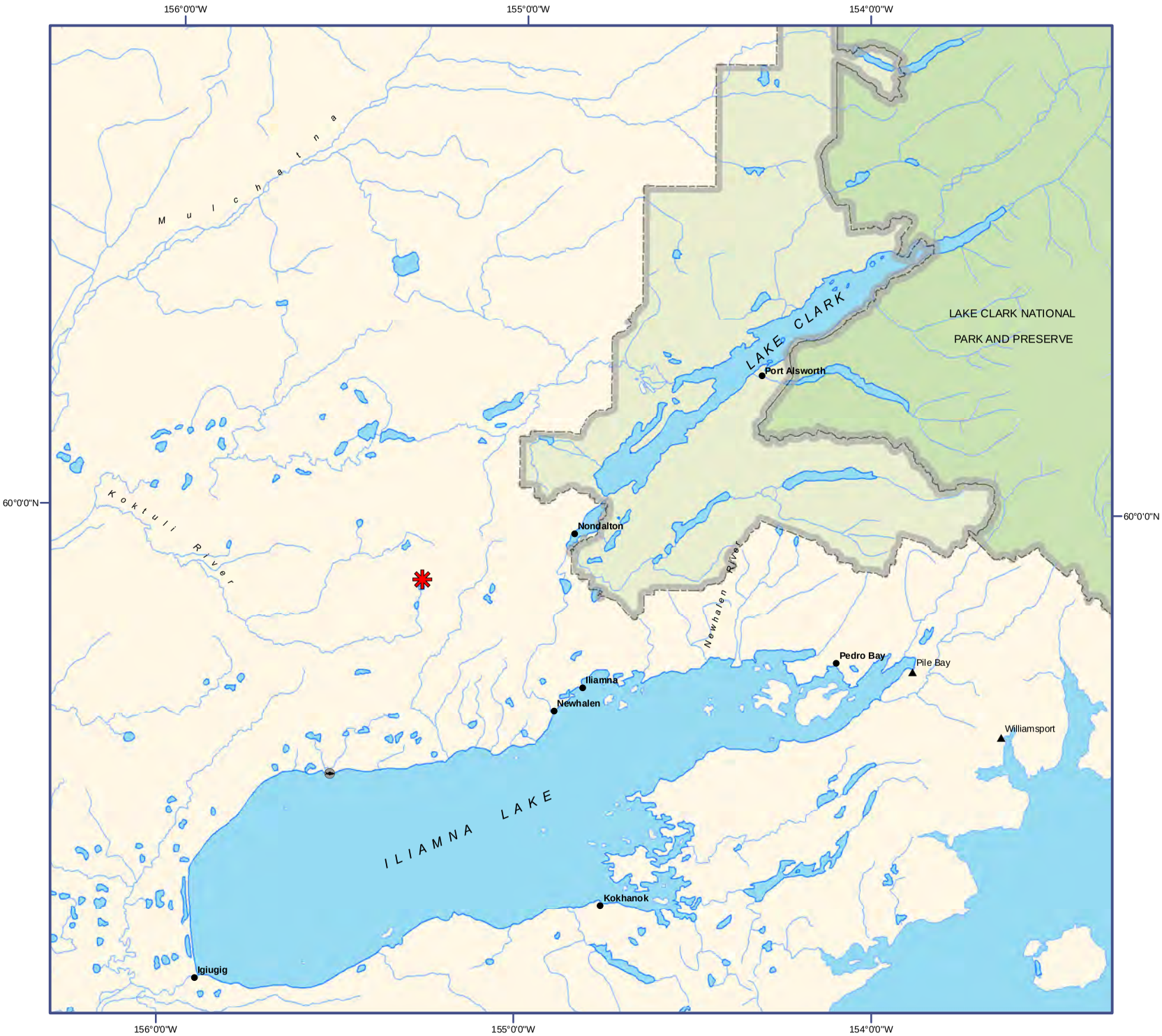

N

Pebble Mine Site

Communities

Other Localities

Newhalen Stickleback Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

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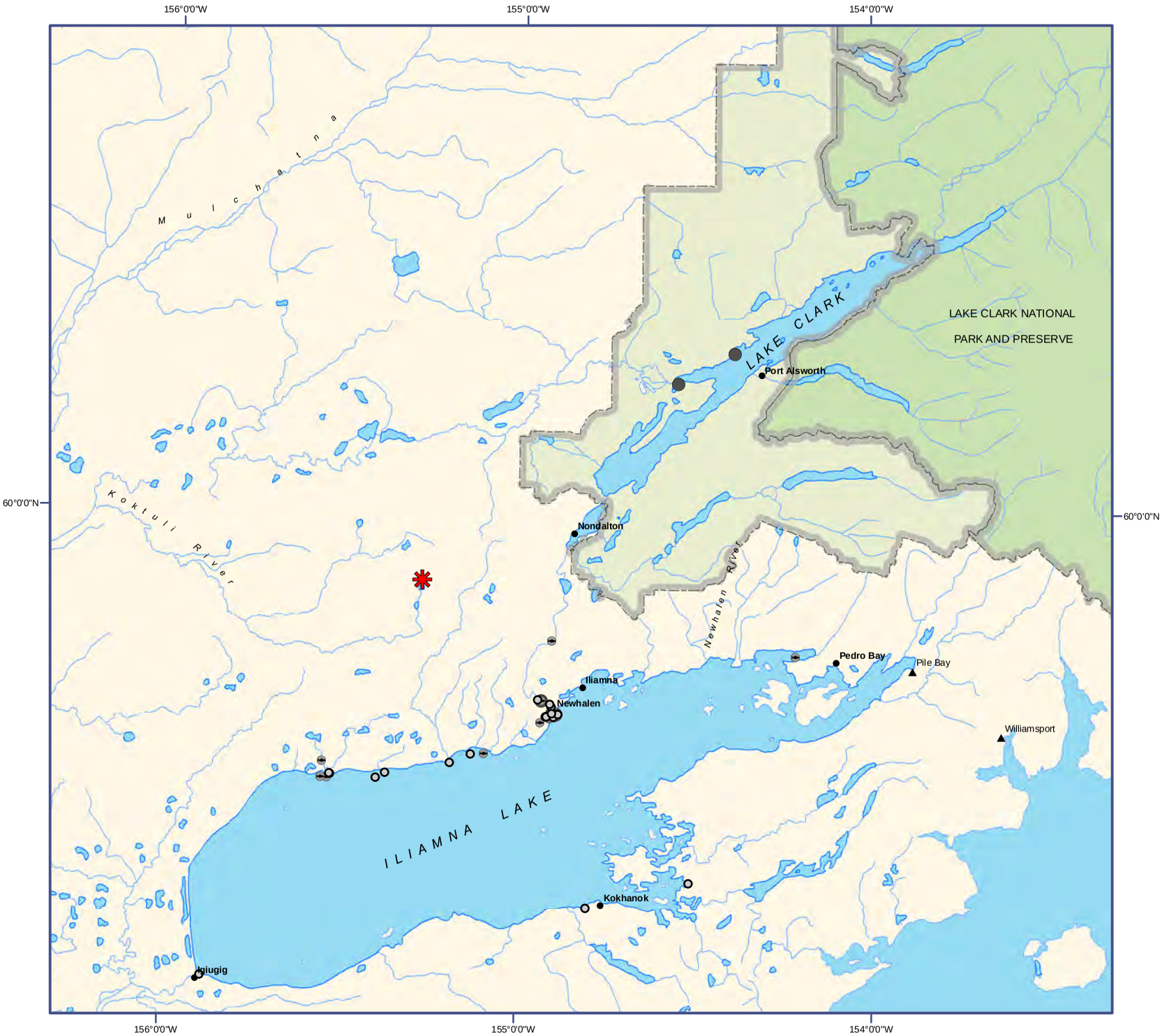

N

- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Lake Trout Harvest 2004
- Newhalen Rainbow Trout Harvest 2004
- Newhalen Trout Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

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Miles

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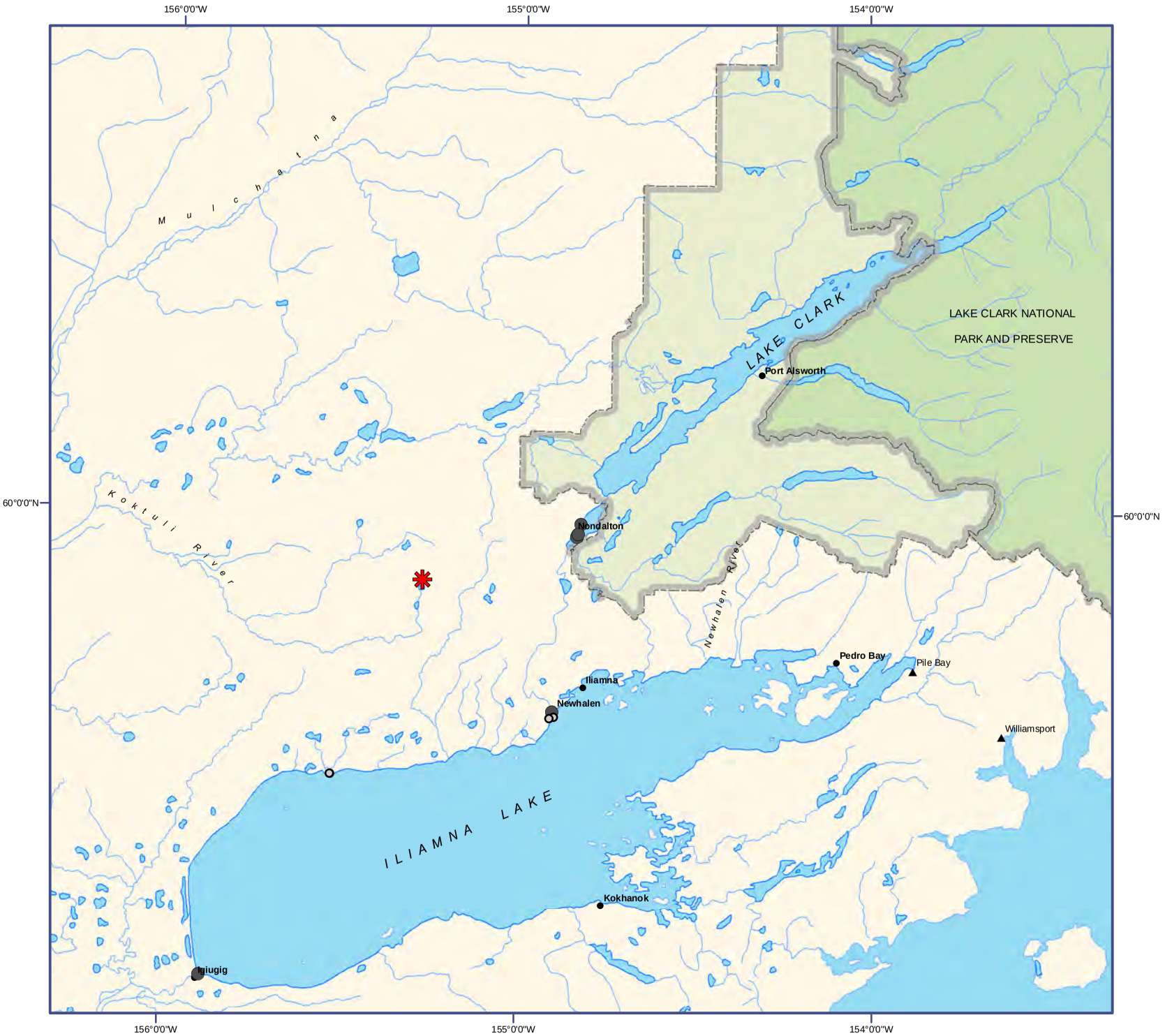

N

Pebble Mine Site

Communities

Other Localities

Newhalen Humpback Whitefish Harvest 2004

Newhalen Least Cisco Harvest 2004

Newhalen Round Whitefish Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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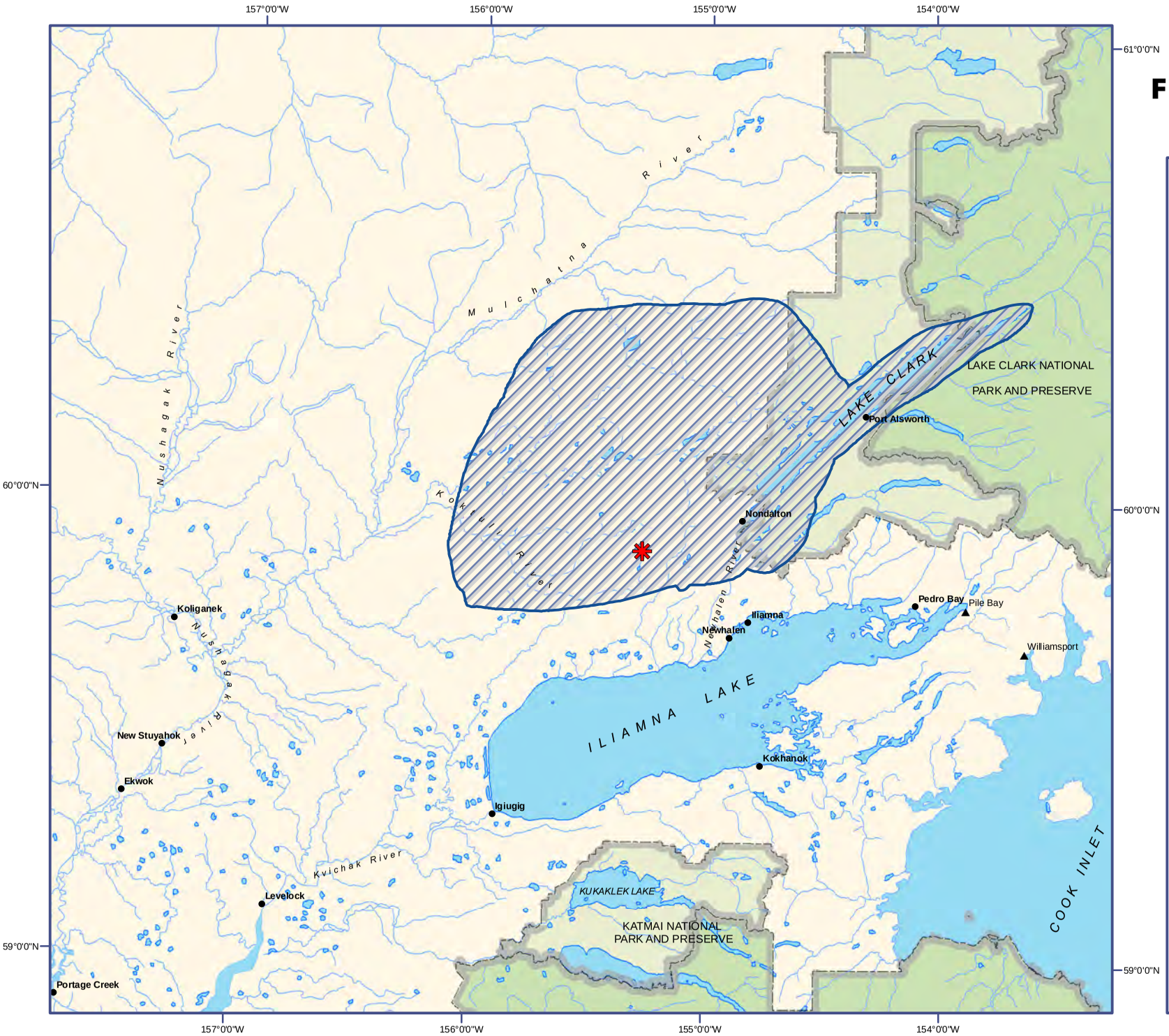

Figure 6-3

- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Moose Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

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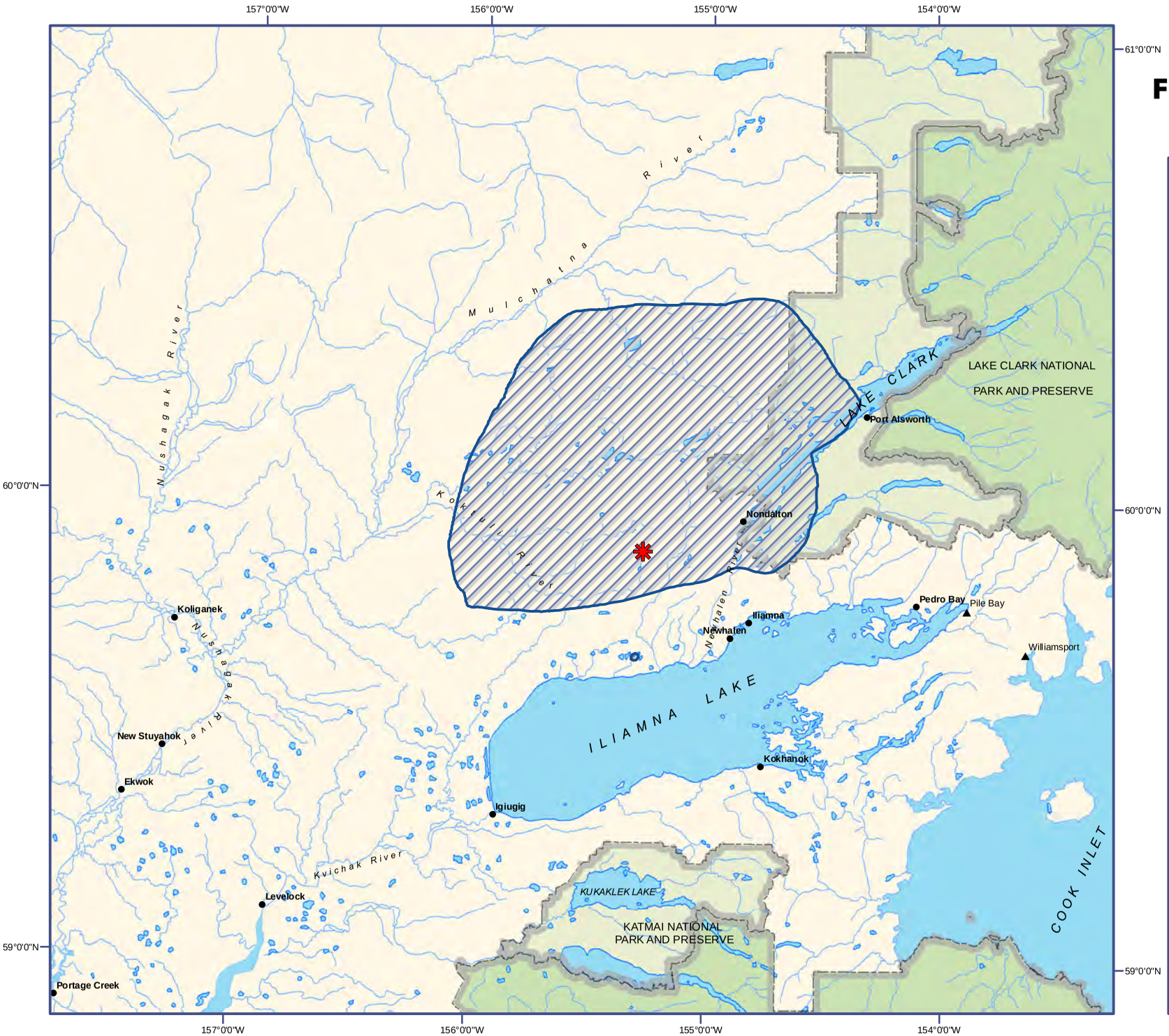

Figure 6-4

- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Caribou Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

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Pebble Mine Site

Communities

Other Localities

Nondalton Upland Bird Harvesting 2004

Nondalton Waterfowl Harvesting 2004

National Park

National Preserve

SCALE: 1:1,275,000

0 5 10 20

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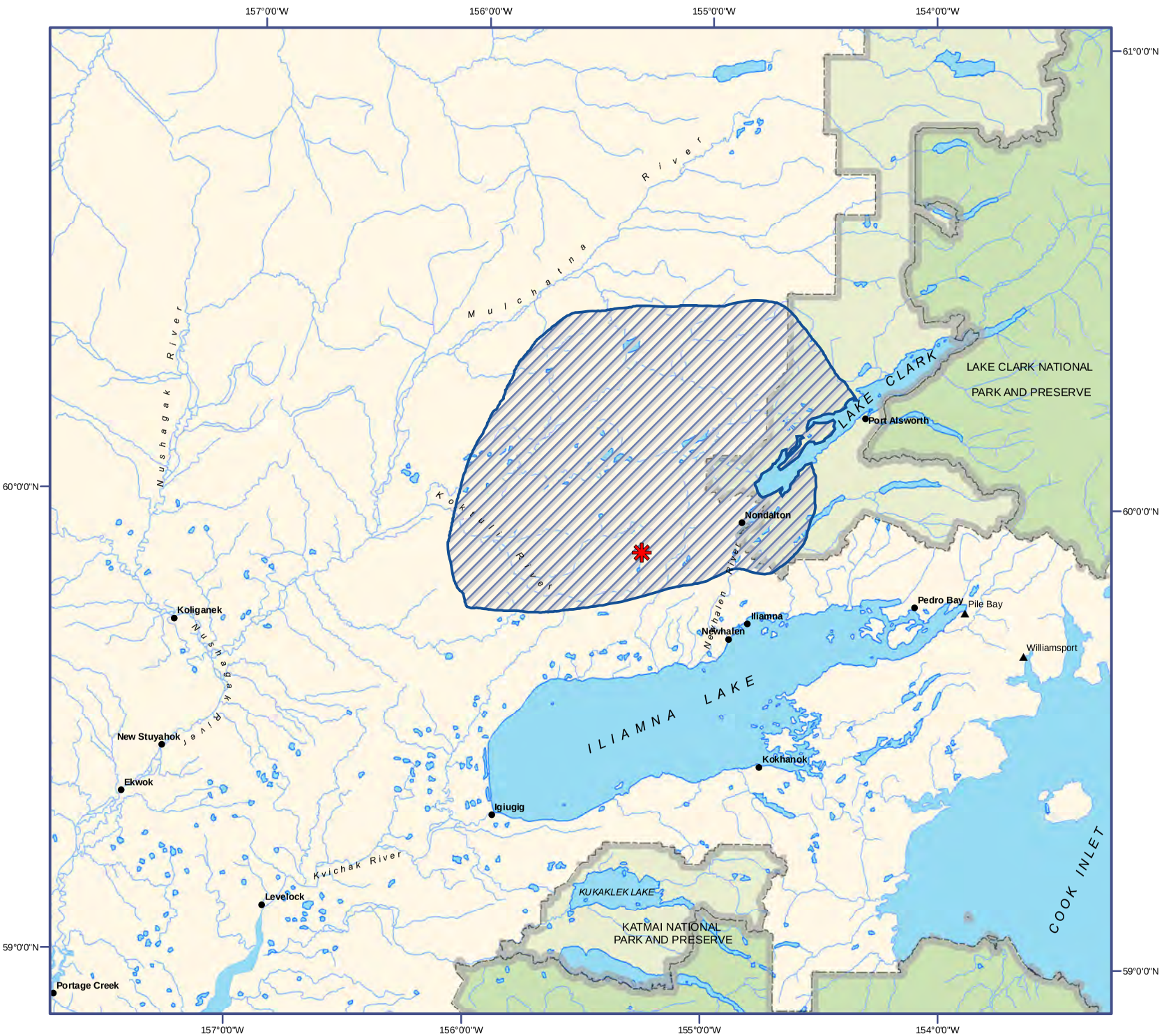

Pebble Mine Site

Communities

Other Localities

Nondalton Black Bear Hunting 2004

National Park

National Preserve

SCALE: 1:1,275,000

0 5 10 20

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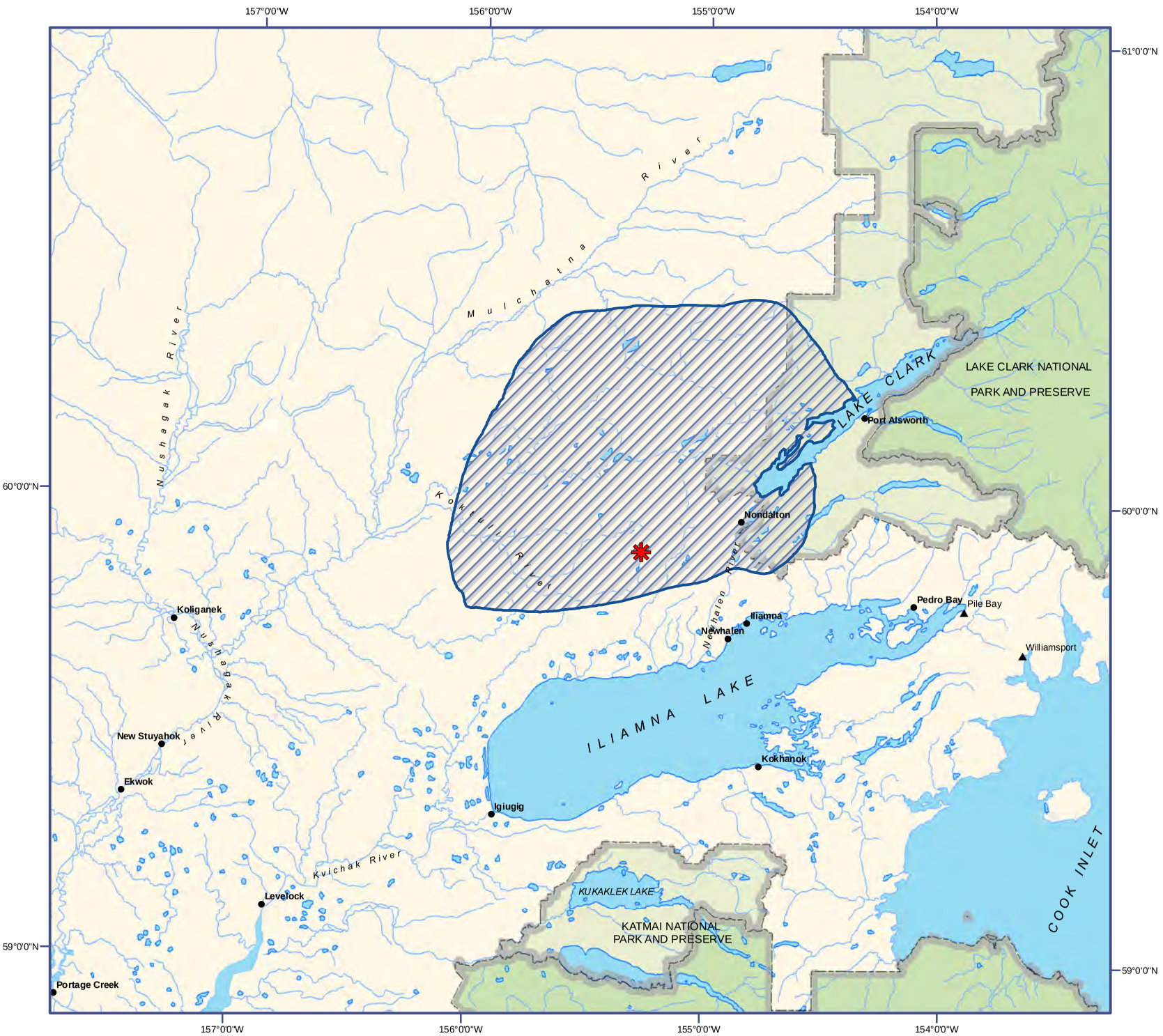

N

Pebble Mine Site

Communities

Other Localities

Nondalton Brown Bear Hunting 2004

National Park

National Preserve

SCALE: 1:1,275,000

0 5 10 20

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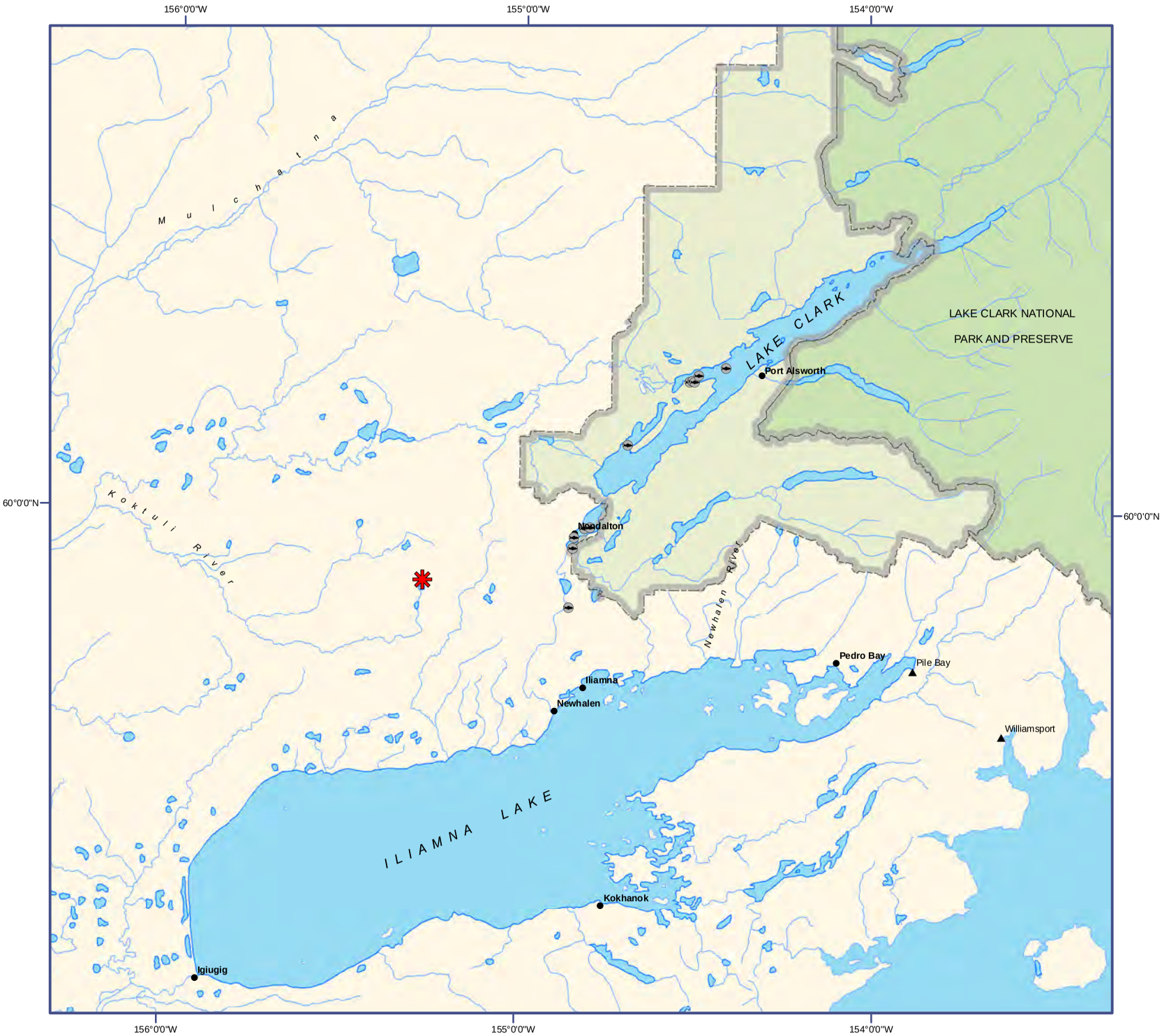

N

Pebble Mine Site

Communities

Other Localities

Nondalton Burbot Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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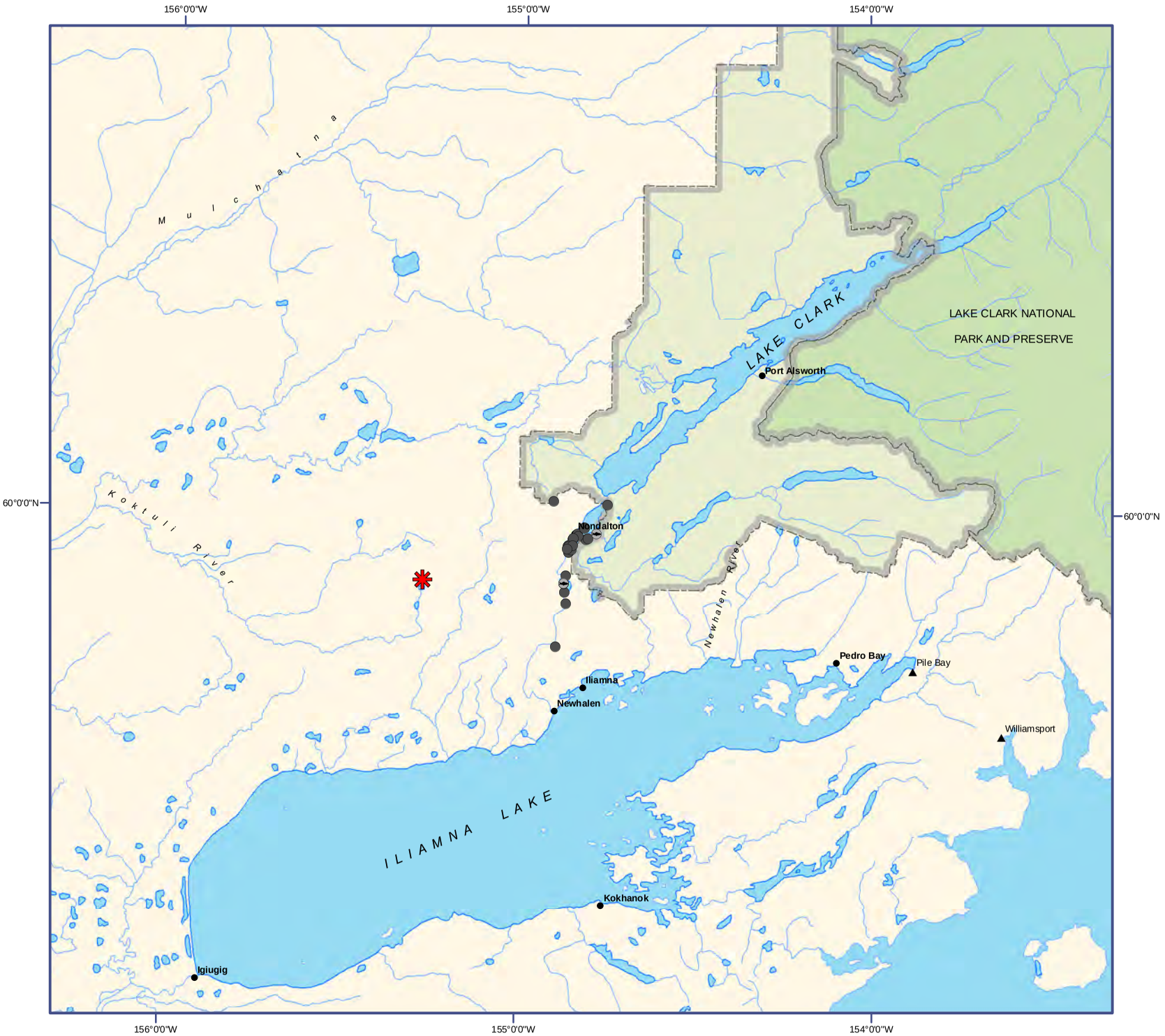

N

ALASKA DEPARTMENT OF FISH AND GAME

- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Arctic Char Harvest 2004
- Nondalton Dolly Varden Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

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N

- Pebble Mine Site
- Communities
- Nondalton Freshwater Seal Hunting 2004
- National Park
- National Preserve

SCALE:1:840,000

0 2 4 8 12

Miles

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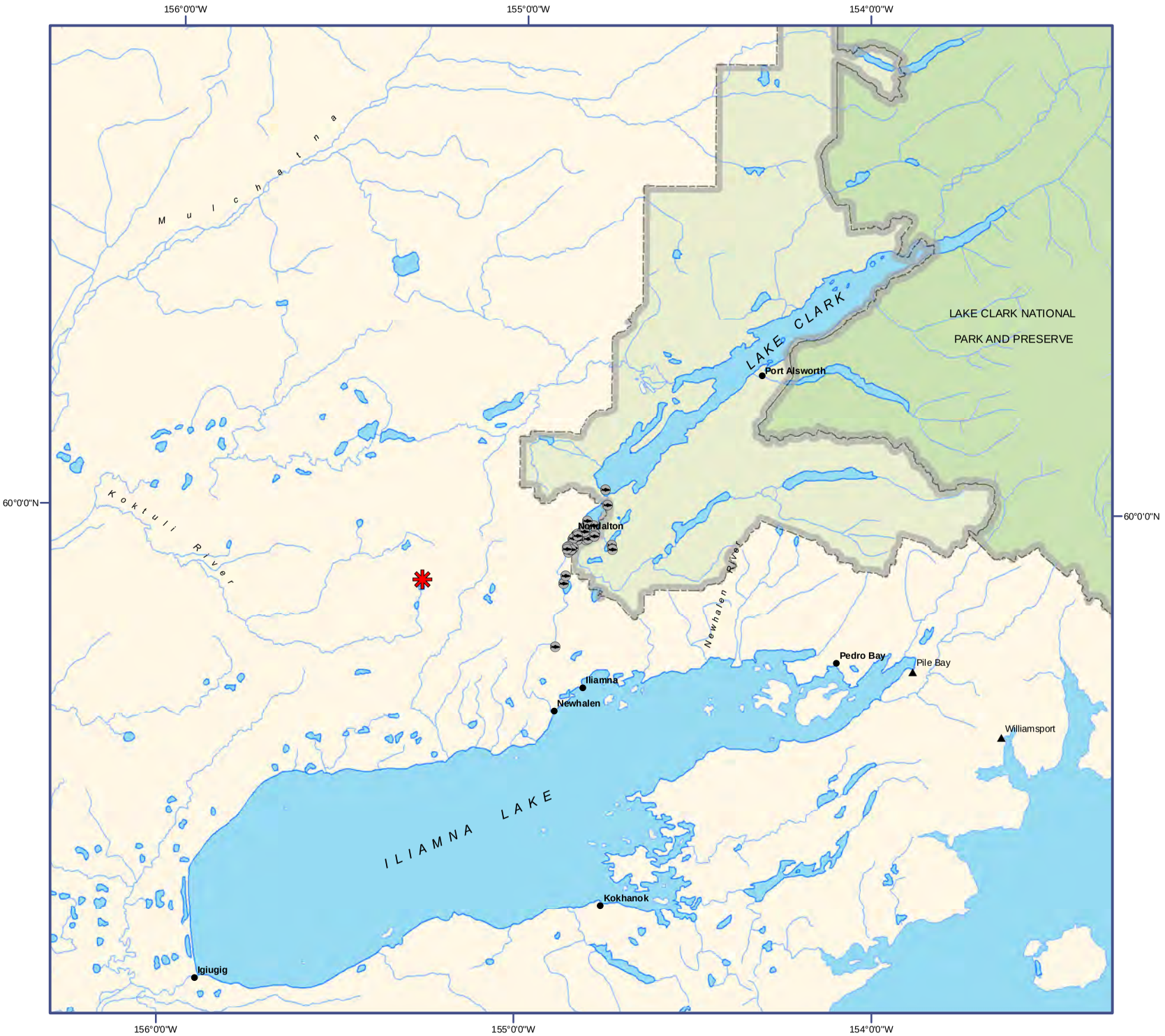

N

ALASKA DEPARTMENT OF FISH AND GAME

- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Arctic Grayling Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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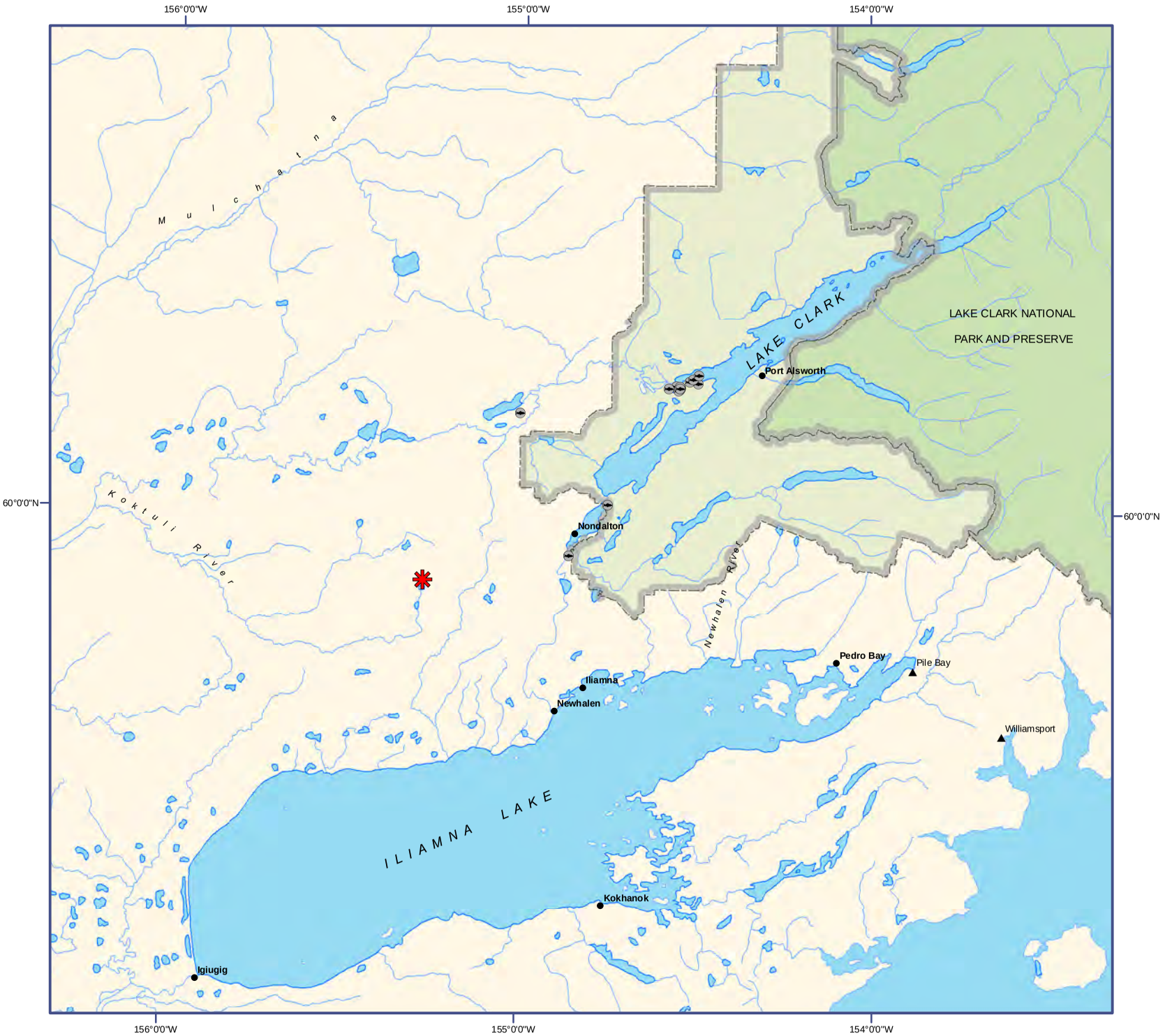

N

Pebble Mine Site

Communities

Other Localities

Nondalton Northern Pike Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

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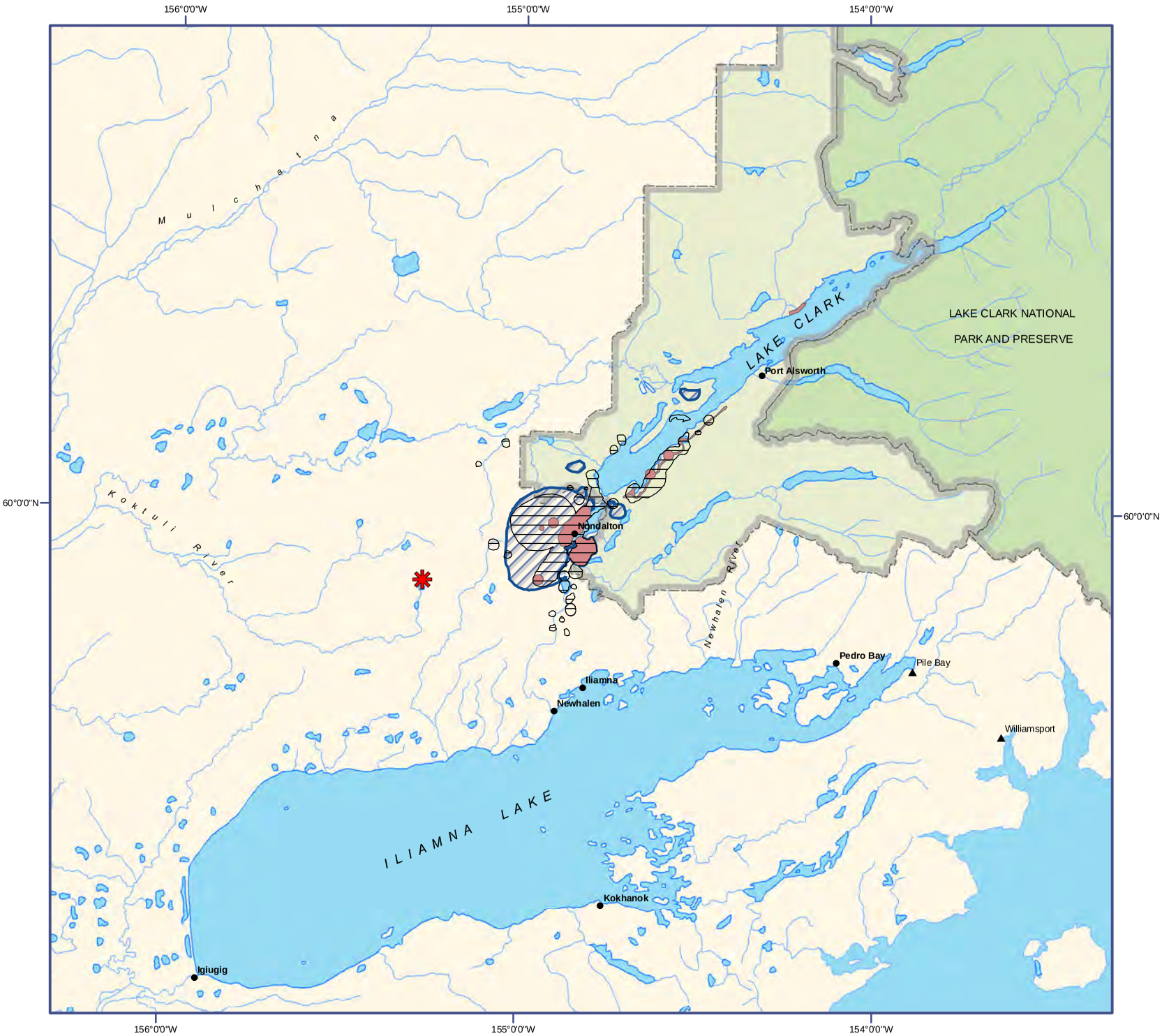

N

Pebble Mine Site

Communities

Other Localities

Nondalton Berry Gathering 2004

Nondalton Other Plant Gathering 2004

Nondalton Wood Gathering 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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N

- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Silver Salmon Harvest 2004
- Nondalton Sockeye Salmon Harvest 2004
- Nondalton Spawning Sockeye Salmon Harvest 2004
- National Park
- National Preserve

SCALE: 1:500,000

0 2.5 5 10

Miles

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Pebble Mine Site

Communities

Other Localities

Nondalton Sheep Hunting 2004

National Park

National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

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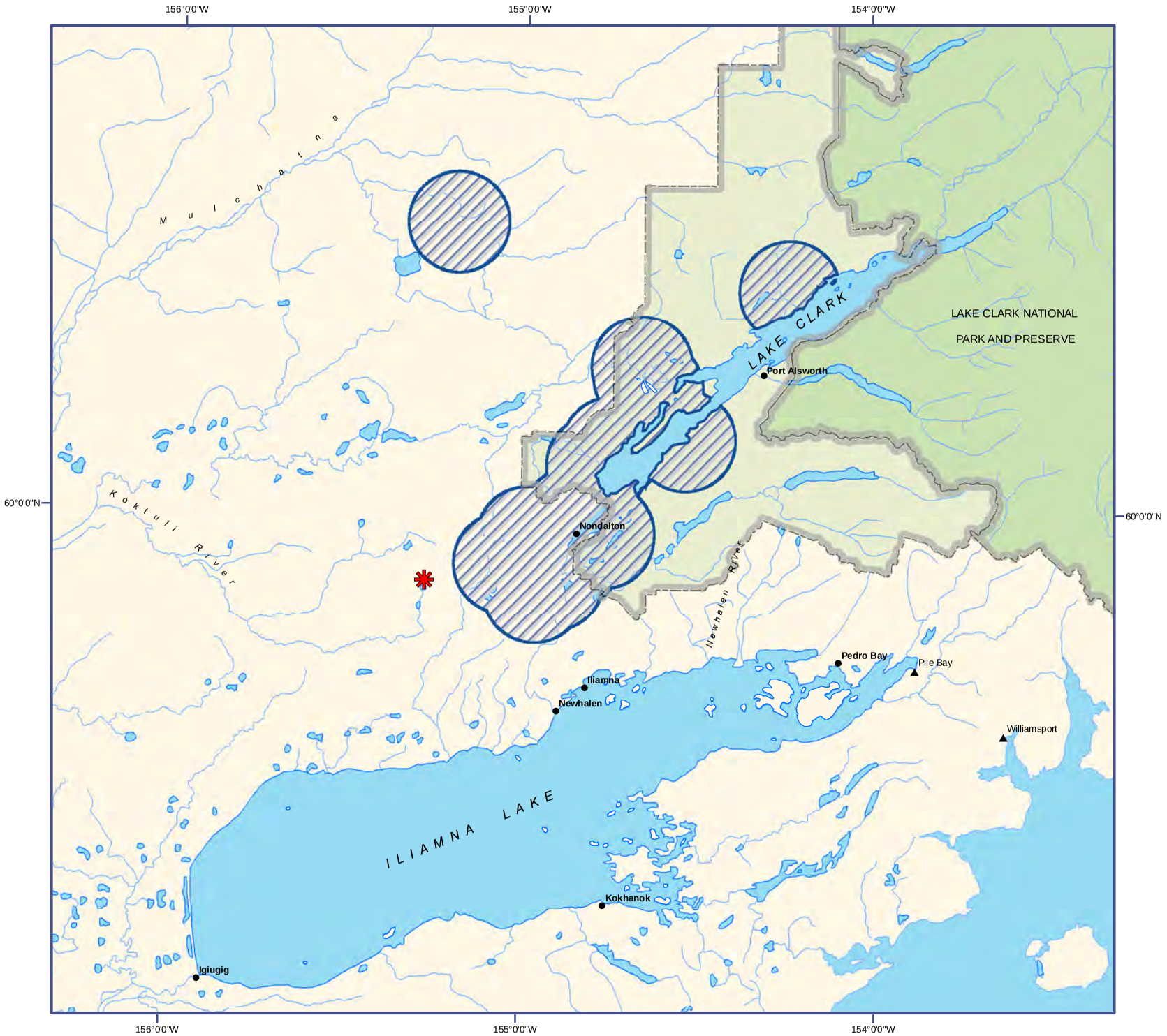

N

Pebble Mine Site

Communities

Other Localities

Nondalton Small Land Mammal Hunting 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

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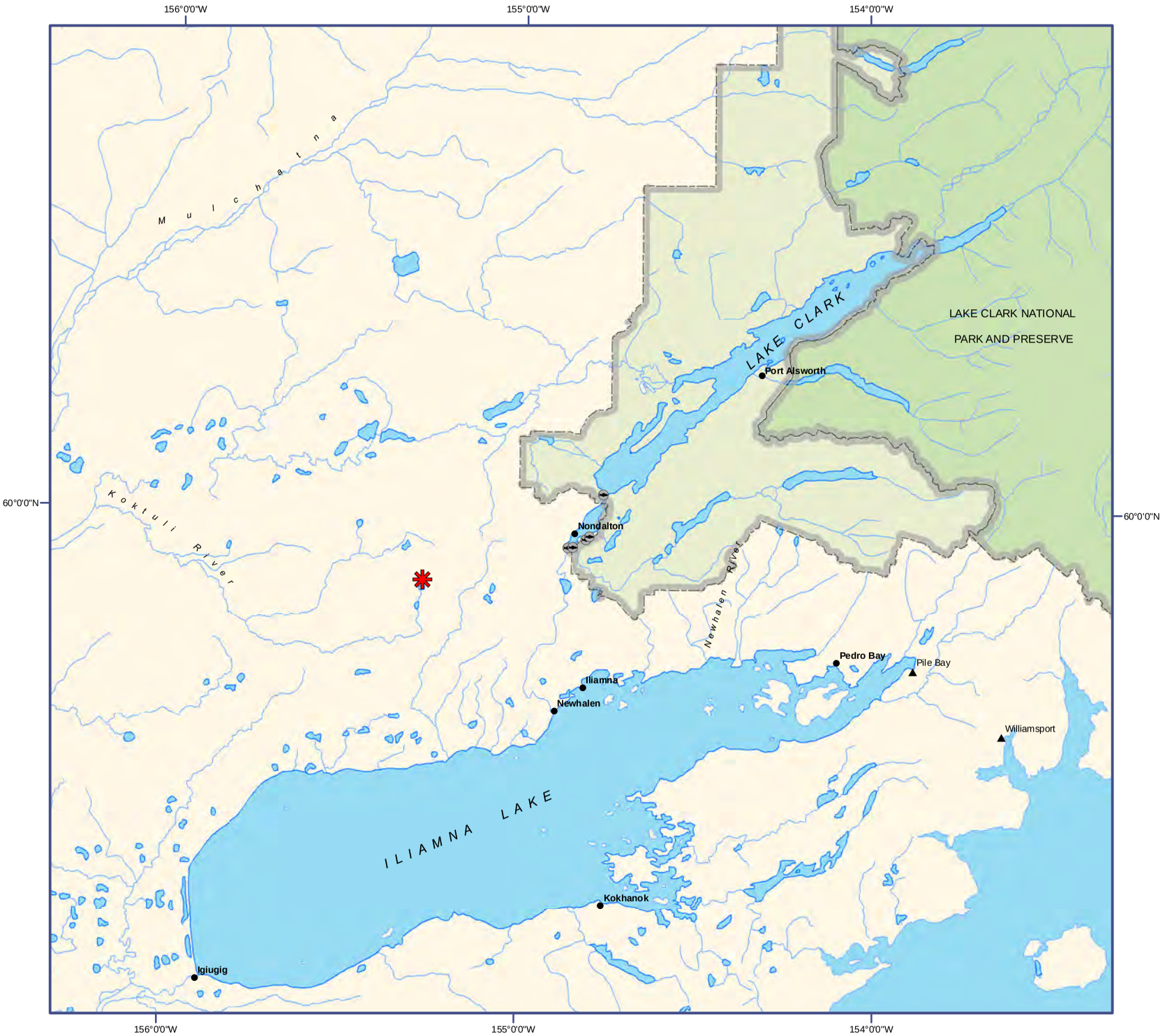

N

- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Longnose Sucker Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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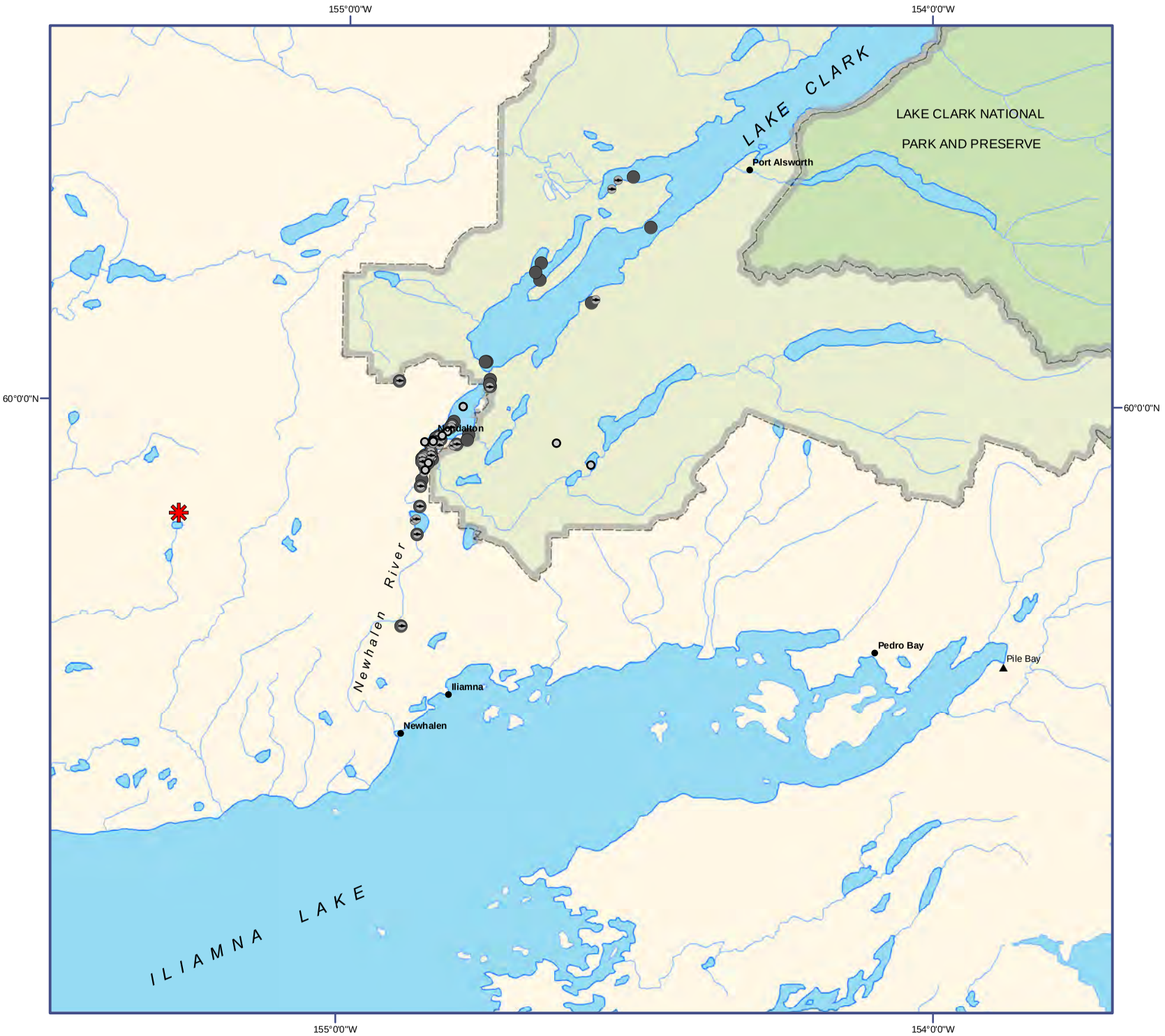

N

- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Lake Trout Harvest 2004
- Nondalton Rainbow Trout Harvest 2004
- Nondalton Trout Harvest 2004
- National Park
- National Preserve

SCALE: 1:500,000

0 2.5 5 10

Miles

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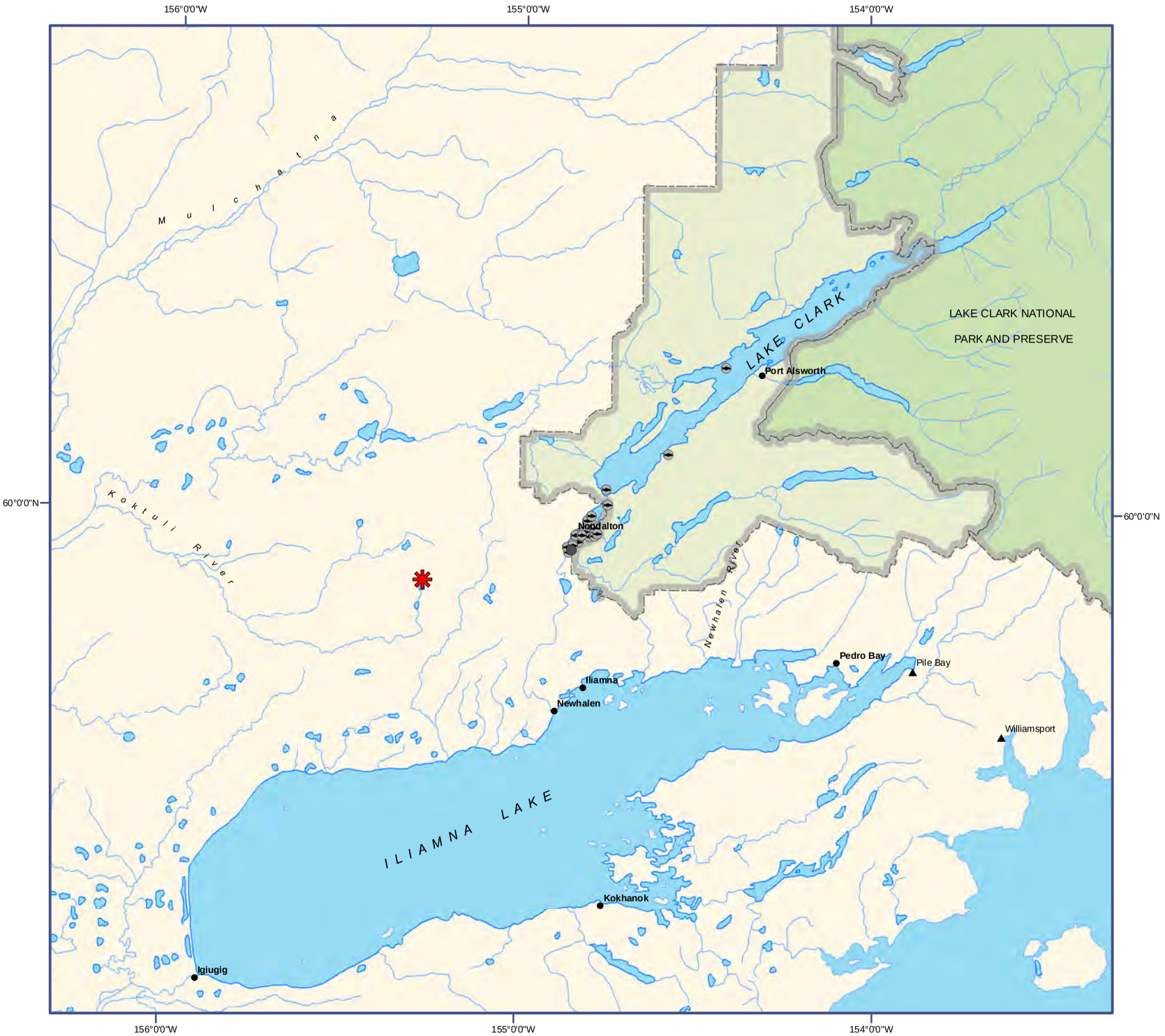

N

Pebble Mine Site

Communities

Other Localities

Nondalton Humpback Whitefish Harvest 2004

Nondalton Round Whitefish Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME

Figure 4-3

N

ALASKA DEPARTMENT OF FISH AND GAME

- Pebble Mine Site
- Communities
- Other Localities
- Pedro Bay Dolly Varden Harvest 2004
- National Park
- National Preserve

SCALE: 1:500,000

0 2.5 5 10

Miles

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME

Figure 4-4

N

ALASKA DEPARTMENT OF FISH AND GAME

- Pebble Mine Site
- Communities
- Other Localities
- Pedro Bay Moose Hunting 2004
- National Park
- National Preserve

SCALE: 1:500,000

0 2.5 5 10

Miles

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N

- Pebble Mine Site
- Communities
- Pedro Bay Egg Gathering 2004
- Pedro Bay Upland Bird Harvesting 2004
- National Park
- National Preserve

SCALE:1:500,000

0 2 4 8 12

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME

N

- Pebble Mine Site
- Communities
- Pedro Bay Freshwater Seal Hunting 2004
- National Park
- National Preserve

SCALE:1:500,000

0 2 4 8 12

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME

N

- Pebble Mine Site
- Communities
- Pedro Bay Lake Trout Harvest 2004
- National Park
- National Preserve

SCALE:1:500,000

0 2 4 8 12

Miles

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N

- Pebble Mine Site
- Communities
- Pedro Bay Least Cisco Harvest 2004
- National Park
- National Preserve

SCALE:1:500,000

0 2 4 8 12

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME

N

- Pebble Mine Site
- Communities
- Pedro Bay Northern Pike Harvest 2004
- National Park
- National Preserve

SCALE:1:500,000

0 2 4 8 12

Miles

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME

N

ALASKA DEPARTMENT OF FISH AND GAME

- Pebble Mine Site
- Communities
- Pedro Bay Arctic Cod, Halibut and Rockfish Harvest 2004
- National Park
- National Preserve

SCALE:1:840,000

0 2 4 8 12

Miles

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N

- Pebble Mine Site
- Communities
- Pedro Bay Berry Gathering 2004
- Pedro Bay Plant Gathering 2004
- Pedro Bay Wood Gathering 2004
- National Park
- National Preserve

SCALE:1:500,000

0 2 4 8 12

Miles

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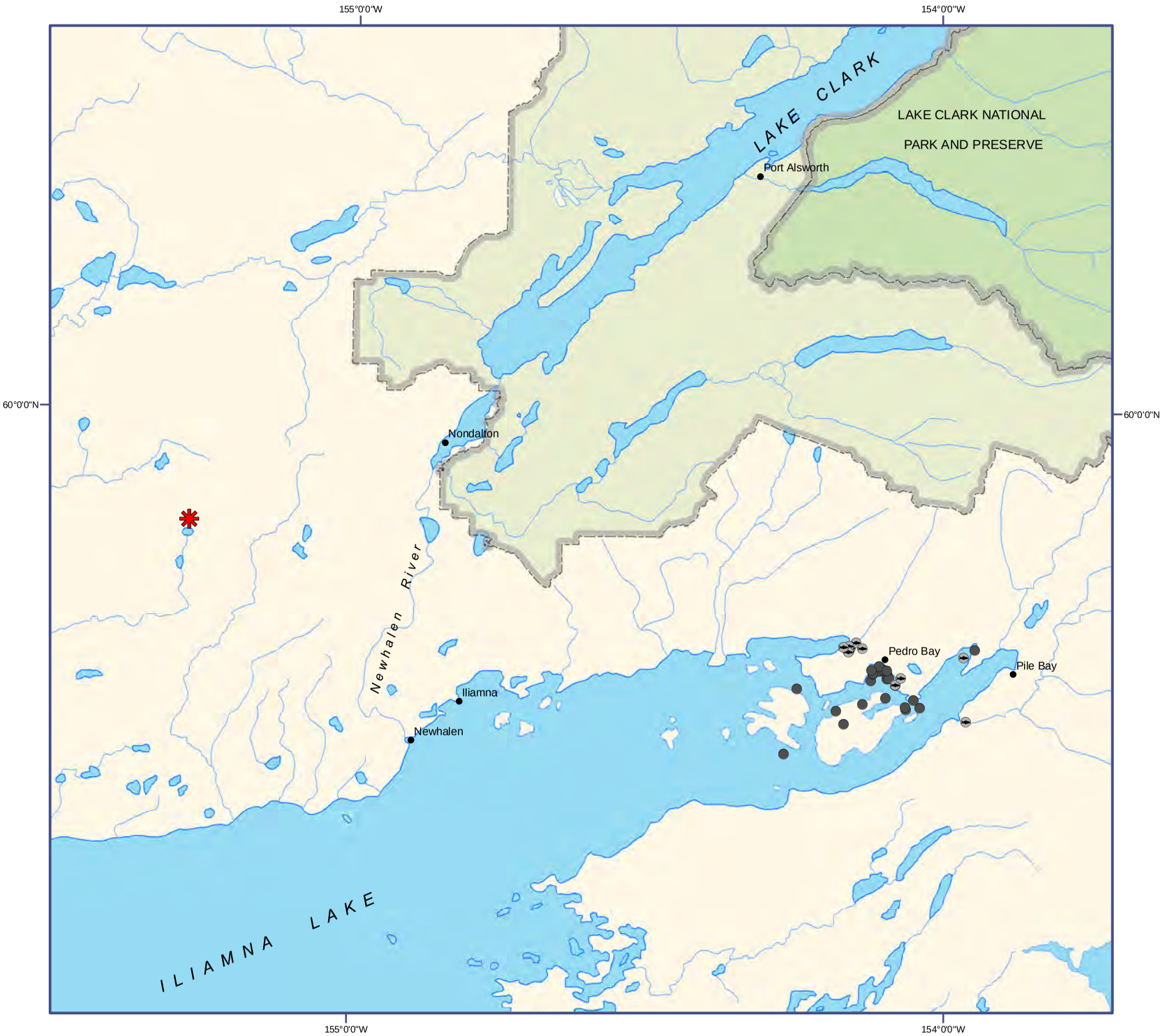

N

- Pebble Mine Site
- Communities
- Pedro Bay Sockeye Salmon Harvest 2004
- Pedro Bay Spawning Red Salmon Harvest 2004
- National Park
- National Preserve

SCALE:1:500,000

0 2 4 8 12

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME

N

- Pebble Mine Site
- Communities
- Pedro Bay Sheep Hunting 2004
- National Park
- National Preserve

SCALE:1:500,000

0 2 4 8 12

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N

- Pebble Mine Site
- Communities
- Pedro Bay Small Land Mammal Hunting 2004
- National Park
- National Preserve

SCALE:1:500,000

0 2 4 8 12

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Figure 5-3

- Pebble Mine Site
- Communities
- Other Localities
- Port Alsworth Sockeye Salmon Harvest 2004
- Port Alsworth Spawning Sockeye Salmon Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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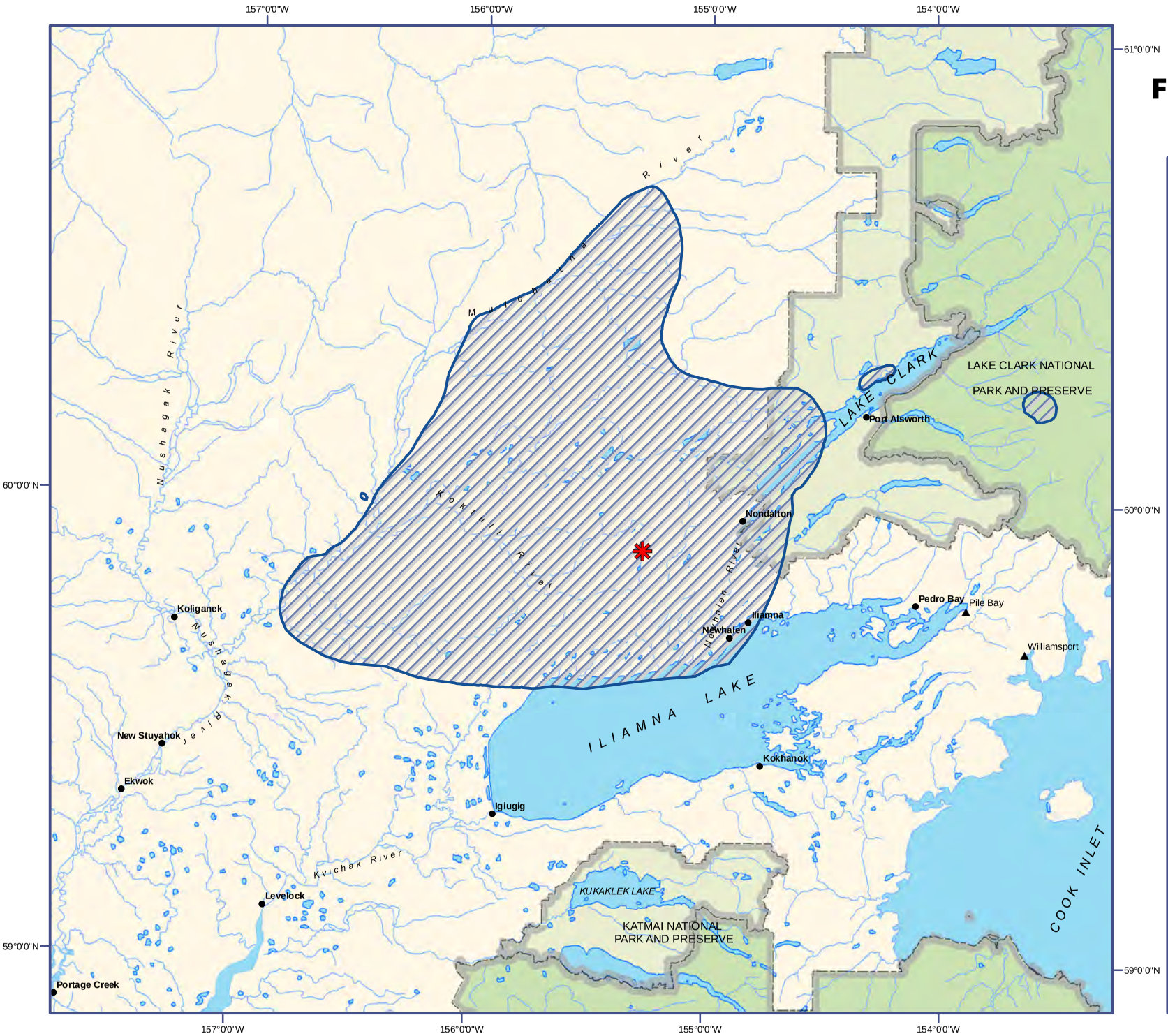

Figure 5-4

- Pebble Mine Site
- Communities
- Other Localities
- Port Alsworth Caribou Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20

Miles

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Pebble Mine Site

Communities

Port Alsworth Upland Bird Harvesting 2004

Port Alsworth Waterfowl Harvesting 2004

National Park

National Preserve

SCALE:1:1,275,000

0 3 6 12 18

Miles

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME

N

Pebble Mine Site

Communities

Port Alsworth Black Bear Hunting 2004

National Park

National Preserve

SCALE:1:1,275,000

0 3 6 12 18

Miles

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Pebble Mine Site

Communities

Port Alsworth Brown Bear Hunting 2004

National Park

National Preserve

SCALE:1:1,275,000

0 3 6 12 18

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME

N

- Pebble Mine Site
- Communities
- Port Alsworth Burbot Harvest 2004
- National Park
- National Preserve

SCALE:1:840,000

0 2 4 8 12

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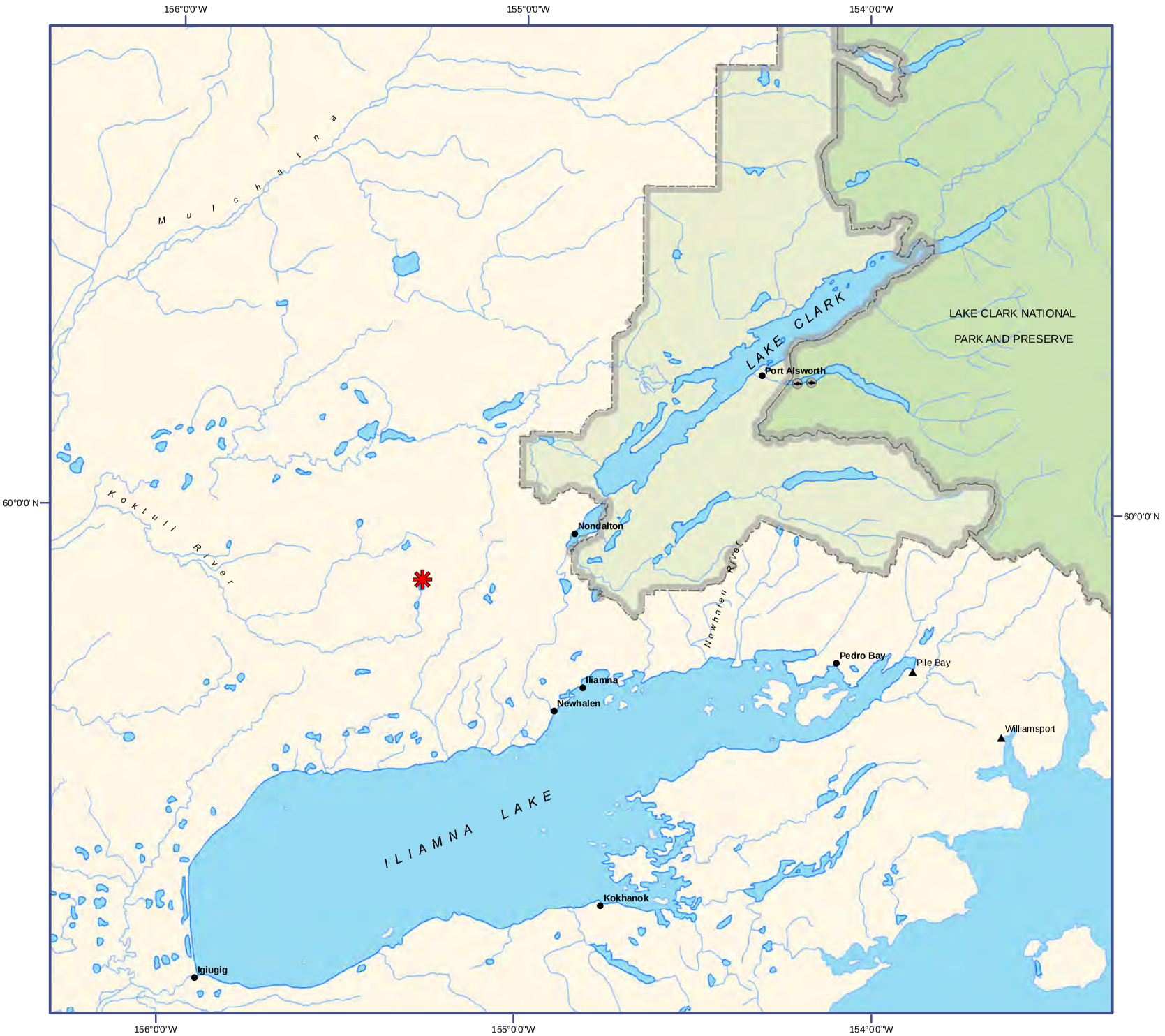

N

ALASKA DEPARTMENT OF FISH AND GAME

- Pebble Mine Site
- Communities
- Other Localities
- Port Alsworth Dolly Varden Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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N

ALASKA DEPARTMENT OF FISH AND GAME

- Pebble Mine Site
- Communities
- Port Alsworth Arctic Grayling Harvest 2004
- National Park
- National Preserve

SCALE:1:840,000

0 2 4 8 12

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME

Pebble Mine Site

Communities

Port Alsworth Moose Hunting 2004

National Park

National Preserve

SCALE:1:1,275,000

0 3 6 12 18

Miles

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N

- Pebble Mine Site
- Communities
- Port Alsworth Northern Pike Harvest 2004
- National Park
- National Preserve

SCALE:1:840,000

0 2 4 8 12

Miles

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Pebble Mine Site

Communities

Port Alsworth Berry Gathering 2004

Port Alsworth Wood Gathering 2004

National Park

National Preserve

SCALE:1:1,275,000

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Pebble Mine Site

Communities

Port Alsworth Sheep Hunting 2004

National Park

National Preserve

SCALE:1:1,275,000

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Pebble Mine Site

Communities

Port Alsworth Small Land Mammal Hunting 2004

National Park

National Preserve

SCALE:1:1,275,000

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Miles

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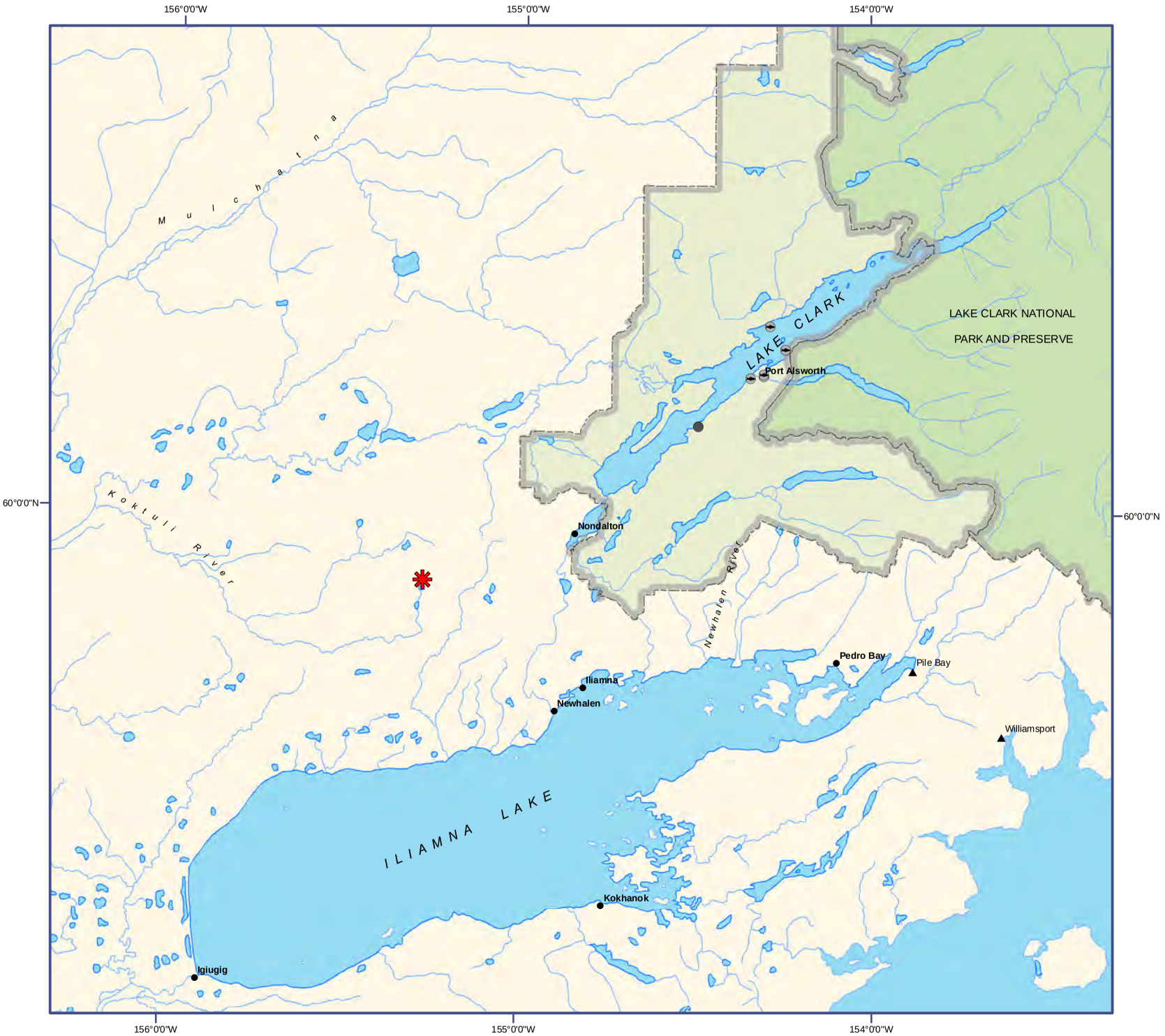

N

Pebble Mine Site

Communities

Other Localities

Port Alsworth Lake Trout Harvest 2004

Port Alsworth Rainbow Trout Harvest 2004

National Park

National Preserve

SCALE: 1:840,000

0 5 10 20

Miles

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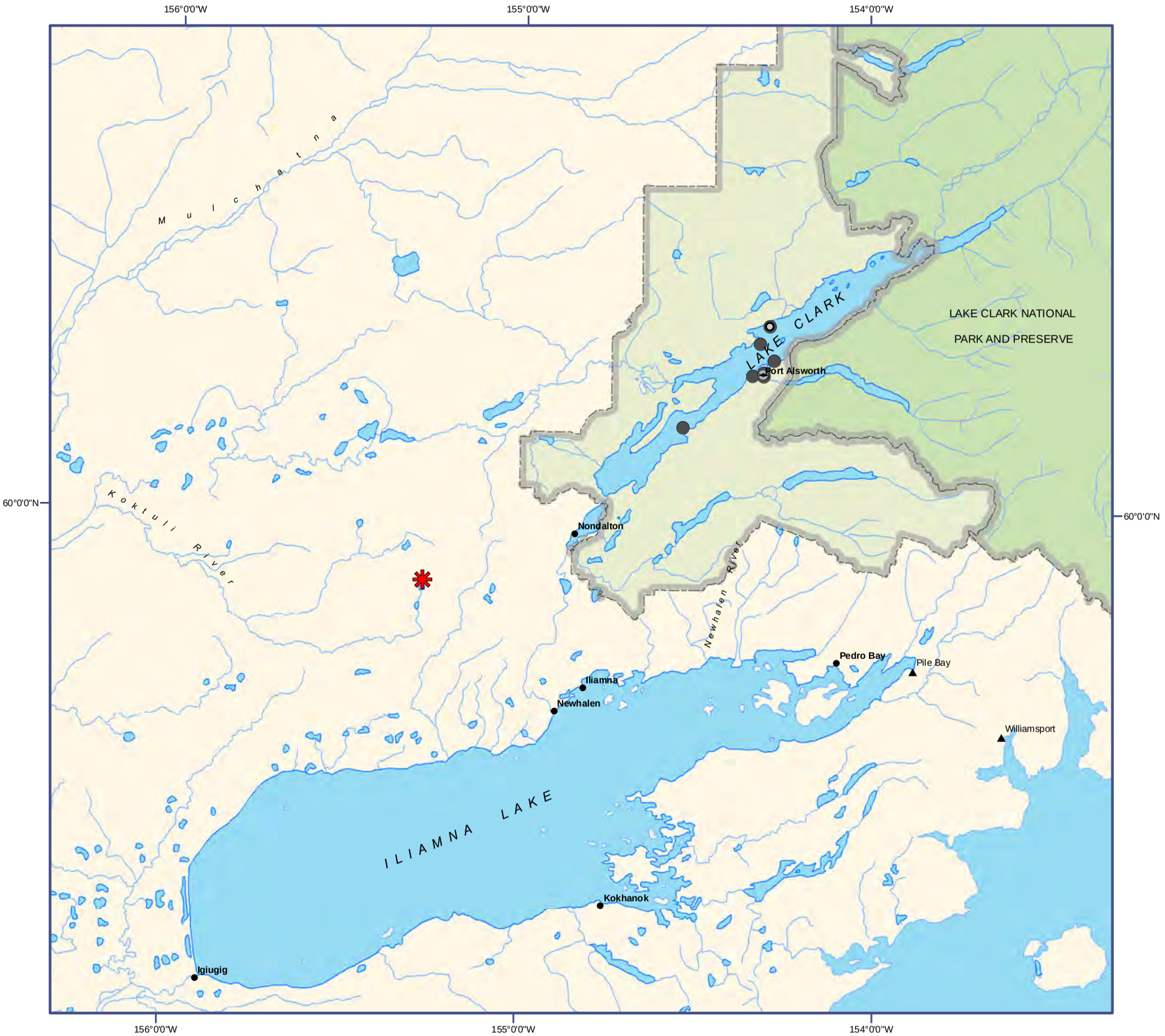

N

- Pebble Mine Site
- Communities
- Other Localities
- Port Alsworth Broad Whitefish Harvest 2004
- Port Alsworth Humpback Whitefish Harvest 2004
- Port Alsworth Least Cisco Harvest 2004
- National Park
- National Preserve

SCALE: 1:840,000

0 5 10 20

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