Technical Paper No. 370

Subsistence Harvests and Uses of Wild Resources in Chistochina, Alaska, 2009

By

Malla Kukkonen

and

Garrett Zimpelman

Final Report to the Wrangell-St. Elias National Park and Preserve, National Park Service to fulfill obligations under agreements H8W0706001 and J8W07090002. This study was funded by the National Park Service and conducted under a cooperative agreement with the National Park Service through the Pacific Northwest Cooperative Ecosystems Studies Unit.

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

Symbols and Abbreviations

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

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Measures (fisheries)

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

Mathematics, statistics

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

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

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

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TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Appendix **Page**

ABSTRACT

This report presents information about subsistence uses of fish, wildlife, and plant resources in Chistochina, which is located in Southcentral Alaska. The previous baseline harvest assessment studies in Chistochina took place in 1982 and 1987. The Alaska Department of Fish and Game Division of Subsistence conducted this project in collaboration with Wrangell-St. Elias National Park and Preserve as part of a multiyear study to update subsistence harvest information for communities in the Copper River Basin. Information on uses of wild resources was collected through systematic household surveys, which also included a mapping component. Surveys were conducted with the informed consent of the community and households. Also as a part of the informed consent process, researchers presented preliminary project findings to the community for review. In total, 27 households were interviewed, which represented 82% of year-round resident households. The project documented the continuing importance of subsistence hunting, fishing, and gathering to the residents of Chistochina. In 2009, every Chistochina household used wild resources and 96% households participated in subsistence harvest activities.

Key words: Harvest survey, subsistence uses, subsistence fishing, subsistence hunting, Chistochina, Ahtna, Athabascan, Wrangell-St. Elias National Park and Preserve.

CHAPTER 1: INTRODUCTION

PROJECT BACKGROUND

This report provides updated information about the uses of the fish, wildlife, and plant resources by the residents of Chistochina, which is a community located in the upper Copper River Basin in Southcentral Alaska (Figure 1-1). This is the third harvest assessment survey conducted by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence in Chistochina. Previous studies were conducted in 1982 (Stratton and Georgette 1984) and 1987 (McMillan and Cuccarese 1988). In addition, a harvest mapping study was conducted in 20 communities in the Copper River Basin area between 1983 and 1984 (Stratton and Georgette 1985).

The National Park Service (NPS), through Alaska Regional Natural Resources Project Funds, provided financial assistance to ADF&G to conduct this study. This study was funded through a cooperative agreement with the Wrangell-St. Elias National Park and Preserve (WRST) and the Alaska Department of Fish and Game. The Division of Subsistence conducted this project in collaboration with Wrangell-St. Elias National Park and Preserve. This report presents information from research that was conducted in 2010 for the 2009 study year. As a whole, when complete, this study will have broad applicability in resource management and land use planning, and will provide updated baseline information about demographics, economics, and subsistence activities in this area of Alaska. Figure 1-1 portrays the study area and participating communities, including communities scheduled to be surveyed in future years. In 2011, research was conducted in Copper Center, Mentasta, Mentasta Pass, and Slana for the 2010 study year. Project year 3 will include the communities of Chitina, Kenny Lake, Gakona, and McCarthy. Research in these communities will be conducted in 2013 for the 2012 study year.

Table 1-1 reports the population of Chistochina in 2000, 2009, and 2010 based on the 2000 and 2010 U.S. Census estimates and findings of this project. Population estimates are fairly similar and reflect a relatively stable population. The residents of Chistochina rely on subsistence hunting, fishing, and gathering for nutrition and to support their way of life. The residents use a variety of resources, including salmon and other fishes, large land mammals (caribou, and moose), small land mammals (small game and furbearers)[1], birds, and wild plants (ADF&G Community Subsistence Information System [CSIS[2]]; Stratton and Georgette 1984; McMillan and Cuccarese 1988). Table 1-2 presents a list, including the Linnaean taxonomic names, of resources used in Chistochina.

Final Report Organization

ADF&G researchers prepared this final report. Similar to other reports generated from a multiphase study, this report summarizes the results of systematic household surveys, mapping interviews, and community meetings. The first chapter of the report introduces the project and provides the background for the study. Chapter two presents the study findings and compares them to previous research by ADF&G in Chistochina. The third and final chapter discusses the study findings and conclusions.

1. The category of small land mammals includes both small game, which are typically eaten, and furbearers which are typically harvested only for their fur.
2. ADF&G CSIS: http://www.adfg.alaska.gov/sb/CSIS/. Hereinafter cited as CSIS.

ADF&G provided a draft report to the National Park Service, the Cheesh`na Tribal Council, Ahtna Incorporated, and ADF&G area biologists for their review and comment. After receipt of comments, the report was finalized. ADF&G mailed a short (4-page) summary of the study findings to every household in Chistochina (Appendix D).

STUDY OBJECTIVES

This study had the following objectives:

1. Design a survey instrument to collect updated baseline information about subsistence hunting, fishing, gathering, and other topics in a way that is compatible with information collected in previous rounds of household interviews.
2. Train local residents in administration of the systematic household survey.
3. Conduct household surveys to record the following types of information:
    a. Demographic information.
    b. Involvement in use, harvest, and sharing of fishes, wildlife, and wild plants in 2009.
    c. Estimates of amount of resources harvested in 2009.
    d. Information about employment and cash income in 2009.
    e. Assess changes in subsistence harvest and use patterns.
    f. Location of hunting and harvests of subsistence resources in 2009.
4. Collaboratively review and interpret study findings with the study community.
5. Produce a final report.
6. Communicate study findings to the community and the public.

Table 1-1.–Population of Chistochina, 2000, 2009, and 2010.

Census year 2000				Study findings for 2009				Census year 2010			
Total population		Alaska Native population		Total population		Alaska Native population		Total population		Alaska Native population	
Households	Population	People	Percentage of total	Households	Population	People	Percentage of total	Households	Population	People	Percentage of total
37	93	59	63.4%	33	87	56	64.8%	36	93	50	53.8%

Sources U.S. Census 2001, 2011, and Division of Subsistence household surveys, 2010.

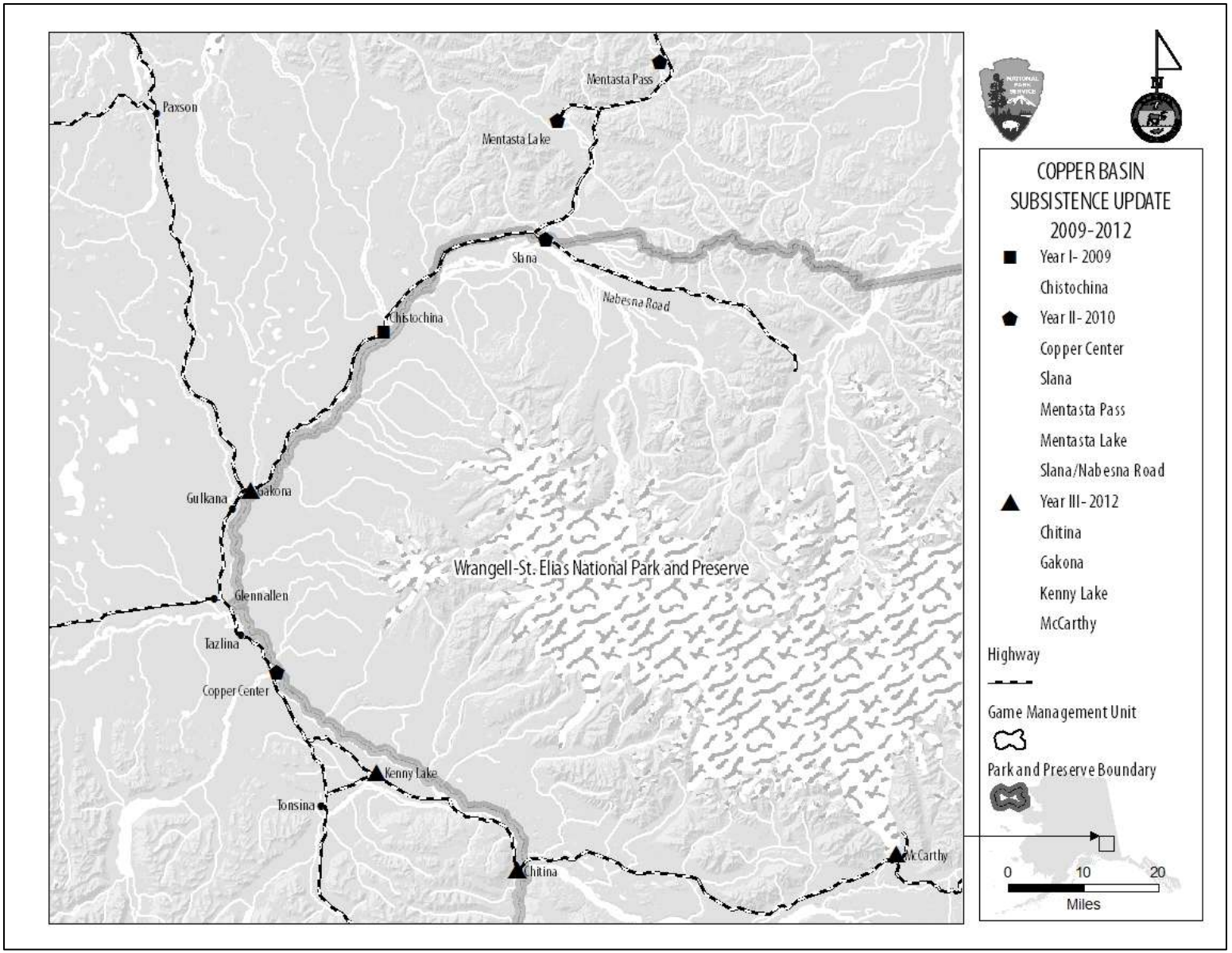

Figure 1-1.–Map of the study area.

Table 1-2.–Resources used in Chistochina, 2009.

Common name(s)[a]	Linnaean taxonomic name
Fish	
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Chinook salmon	*Oncorhynchus tshawytscha*
Pink salmon	*Oncorhynchus gorbuscha*
Sockeye salmon	*Oncorhynchus nerka*
Landlocked salmon	*Oncorhynchus nerka*
Unknown salmon	*Oncorhynchus* spp.
Pacific cod (gray)	*Gadus macrocephalus*
Lingcod	*Ophiodon elongatus*
Pacific halibut	*Hippoglossus stenolepis*
Rockfish	*Sebastes* spp.
Burbot	*Lota lota*
Dolly Varden	*Salvelinus malma*
Lake trout	*Salvelinus namaycush*
Arctic grayling	*Thymallus arcticus*
Northern pike	*Esox lucius*
Rainbow trout	*Oncorhynchus mykiss*
Round whitefish	*Prosopium cylindraceum*
Unknown whitefish	Various spp.
Land mammals	
Caribou	*Rangifer tarandus*
Moose	*Alces alces*
Beaver	*Castor canadensis*
Coyote	*Canis latrans*
Red fox–cross phase	*Vulpes vulpes*
Red fox–red phase	*Vulpes vulpes*
Snowshoe hare	*Lepis americanus*
River (land) otter	*Lontra canadensis*
Lynx	*Lynx canadensis*
Marten	*Martes americana*
Mink	*Mustela vison*
Porcupine	*Erethizon dorsatum*
Weasel	*Mustela nivalis*
Gray wolf	*Canis lupus*
Wolverine	*Gulo gulo*
Birds and eggs	
Migratory birds, ducks	
Canvasback	*Clangula hyemalis*
Goldeneyes	*Bucephala* spp.
Mallard	*Anas platyrhynchos*
Northern pintail	*Anas acuta*
Black scoter	*Melanitta nigra*
Migratory birds, geese	
Snow goose	*Chen caerulescens*

-continued-

Table 1-2.–Page 2 of 2.

Common name(s)[a]	Linnaean taxonomic name
Birds and eggs, continued	
Upland game birds	
Spruce grouse	*Dendragapus canadensis*
Ptarmigan	*Lagopus* spp.
Marine invertebrates	
Pacific razor clam	*Siliqua patula*
King crab	*Paralithodes* spp.; *Lithodes* spp.
Vegetation	
Berries	
Blueberry	*Vaccinium* spp.
Low bush cranberry	*Vaccinium vitis idaea*
High bush cranberry	*Viburnum edule*
Crowberry	*Empetrum nigrum*
Raspberry	*Rubus idaeus*
Salmonberry	*Rubus chamaemorus*
Other wild berries	Various spp.
Other plants	
Hudson's Bay tea	*Ledum palustre*
Wild rose hips	*Rosa acicularis*
Other wild greens	Various spp.
Mushrooms	Various spp.
Fireweed	*Epilobium angustifolium*
Wood	Various spp.
Roots	
Roots	Various spp.

Source ADF&G Division of Subsistence household surveys, 2010.

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

RESEARCH METHODS

ETHICAL PRINCIPLES FOR THE CONDUCT OF RESEARCH

The study is guided by the research principles adopted by the Alaska Federation of Natives in 1993 and the Interagency Arctic Research Policy Committee on June 28, 1990 (see Miraglia 1998). These principles stress community approval of research designs, informed consent, anonymity of study participants, community review of draft study findings, and the provision of study findings to each study community upon completion of the research.

PROJECT PLANNING AND APPROVALS

After approval of the task agreement, project staff from ADF&G and WRST met in November 2009 to refine project objectives, methods, schedules, and responsibilities. To meet the information needs of the participating organizations and to coordinate research, several questions related to NPS management needs were added to the Division of Subsistence standard household harvest survey instrument. Also, spatial harvest and search area data would be collected using the Division's standard method of collecting subsistence map data by recording on a paper map the locations where members of participating households hunted, fished, and gathered wild resources during the 2009 study year. WRST in turn would coordinate with Cheesh`na Tribal Council (CTC), the federally recognized tribal government in Chistochina, and provide personnel to assist ADF&G in fieldwork. WRST geographic information system

(GIS) staff would also digitize the collected mapping data and produce the harvest and use maps for the report. ADF&G would send one researcher, Jory Stariwat, to Chistochina to conduct the research by working with the community.

In February 2010, NPS staff met with the CTC and their staff to discuss the project, and CTC passed a motion supporting the project. Later in February NPS and CTC held a community meeting to present the project to the community. NPS also worked with CTC to identify a local research assistant (LRA) to work with ADF&G. The LRA was paid directly by ADF&G. Fieldwork in Chistochina took place in February–March 2010.

Table 1-3 lists all project staff. The list includes those individuals involved in project management, field research, data entry, data analysis, map production, and report writing.

Table 1-3.–Project staff, Chistochina.

Task	Name	Organization
Project design and management	Bill Simeone	ADF&G Division of Subsistence
	Barbara Cellarius	WRST National Park and Preserve
Data management lead	David Koster	ADF&G Division of Subsistence
Field research lead	Jory Stariwat	ADF&G Division of Subsistence
Programmer	Garrett Zimpelman	ADF&G Division of Subsistence
Survey design	Davin Holen	ADF&G Division of Subsistence
Editorial review lead	Lisa Ka'aihue	ADF&G Division of Subsistence
Data entry	Jennifer Bond	ADF&G Division of Subsistence
Cartography	Joshua Scott	WRST National Park and Preserve
	Jason Sprung	WRST National Park and Preserve
	Davin Holen	ADF&G Division of Subsistence
	Bronwyn Jones	ADF&G Division of Subsistence
Field research staff	Jory Stariwat	ADF&G Division of Subsistence
	Barbara Cellarius	WRST National Park and Preserve
	Robbin La Vine	ADF&G Division of Subsistence
	Benjamin Balivet	ADF&G Division of Subsistence
	Donna Boston	Cheesh'na Tribal Council

Systematic Household Surveys

The primary method for collecting subsistence harvest and use information for this project was a systematic household survey. A key goal was to structure the survey instrument so as to collect demographic, resource harvest and use, and economic data that were compatible with information collected in previous rounds of household surveys in the study community. Following discussion by e-mail and telephone with WRST, ADF&G finalized the Chistochina survey instrument in January 2010. Appendix A is an example of the survey instrument used in this project. Barbara Cellarius in turn took the lead in obtaining approval for the survey from the Office of Management and Budget (OMB).

Stariwat traveled to Chistochina in February 2010, where he was later joined by Barbara Cellarius for part of the trip. They conducted the mapping portion of the interview sessions while Donna Boston, the LRA, explained and administered the survey to local residents. She also arranged the interviews.

The study goal was to interview one representative from each year-round household in Chistochina. Similar to the Division of Subsistence's previous baseline studies, the Chistochina study area for this study was consistent with U.S. Census Bureau's census designated place (CDP) definition for Chistochina. Researchers were able to interview a total of 27 Chistochina households. They received no response from 4 households currently residing in the community, and 2 households declined to be

interviewed. Thus the sample achievement for Chistochina was 82% (Table 1-4). Participation in the survey was voluntary and all responses are confidential at both the individual and household levels.

Table 1-4.–Sample achievement, Chistochina, 2009.

Initial estimate of households	35
New households	2
Moved or nonresident households[a]	4
Revised estimate of households	33
Interview goal	33
Households interviewed	27
Households failed to contact	4
Households declined to be interviewed	2
Total households attempted to interview	29
Refusal rate	6.9%
Final estimate of permanent households	33.0
Percentage of total households interviewed	81.8%
Interview weighting factor[b]	1.2
Sampled population	71.0
Estimated population	86.8

Source ADF&G Division of Subsistence household surveys, 2010.

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

b. The multiplier used to determine the estimated harvest values (e.g., reported harvests x weighting factor = estimated harvests for the community).

Mapping of Locations of Subsistence Hunting, Fishing, and Gathering, 2009

In addition to harvest and use information collected on the survey form, researchers asked respondents to indicate the locations of their hunting, fishing, and gathering activities during the 2009 study year. Specifically, interviewers asked the respondents to mark on maps the locations of each harvest, species harvested, the amount harvested, and the month of harvest. To capture and analyze the data, ADF&G and WRST staff applied the mapping method standard to all ADF&G subsistence harvest update projects. Points were used for harvest locations, and polygons (circled areas) were used for search areas. Lines were used to indicate trap lines. However, due to anonymity, these lines are buffered in the small land mammal and furbearer harvest area map published in this report.

These data update findings from a mapping study conducted by Stratton and Georgette (1985), which was accomplished through individual interviews with over 200 local hunters and fishers in 20 communities in the Copper River Basin area between 1983 and 1984. The qualitative interviews collected information about resource harvest areas used and effort between 1964 and 1984. The 113 maps produced by the 1985 mapping study are available from the ADF&G Division of Habitat in the 1986 *Southcentral Regional Habitat Guide*.[3] The discussion and conclusion section of this report includes as much temporal comparison as possible of harvest and effort from Stratton's and Georgette's earlier research to the data gathered during this project.

3. Digital copies of the *Alaska Habitat Management Guides* narrative documents and color atlases published in 1985–1986 can be accessed at http://www.arlis.org/docs/vol1/C/AHMG/index.html.

The maps used for this project were produced by Davin Holen from the Division of Subsistence using ArcGIS 10 software[4] on 11″ x 17″ paper. They consisted of 3 sets of paper maps: 1 set of grayscale high resolution U. S. Geological Survey (USGS) topographic maps at 1:100,000, one set of similar grayscale maps set at 1:500,000, and one set of similar high resolution color maps set at 1:250,000. There were 2 different maps in each set: one for fishing (water based) activities, and one for hunting, trapping, and plant gathering (land based) activities. During each mapping session, researchers recorded the household's identification number, the date of the mapping interview, and the interviewer's initials on each map.

Participation in the mapping component of the survey was voluntary and was conducted by ADF&G and WRST researchers at the same time as the survey. All responses are confidential at the household level and only a community summary map for the various species searched and harvested is included in this report.

Population Estimates and Other Demographic Information

As noted previously, a goal of the research was to collect demographic information about all year-round households of Chistochina. Because not all households were interviewed, a population estimate was calculated by multiplying the average household size of interviewed households by the total number of year-round households, as identified by Division of Subsistence researchers in consultation with community officials and other knowledgeable respondents (Table 1-1).

Community Review Meeting

ADF&G and WRST staff presented preliminary survey findings at a meeting in Chistochina on November 17, 2011. This meeting was organized in collaboration with the Cheesh'na Tribal Council and community leadership. Five community members attended the review meeting, as did Robbin La Vine and Ben Balivet of ADF&G, and Barbara Cellarius of WRST.

DATA ANALYSIS AND REVIEW

SURVEY DATA ENTRY AND ANALYSIS

All data were coded for data entry by Division of Subsistence staff in Anchorage. Responses were coded following standardized conventions used by the Division to facilitate data entry. The Division's information management staff set up standard Microsoft SQL Server database structures that included rules, constraints, and referential integrity to ensure that data were entered completely and accurately. Data entry screens were produced using Microsoft Access 2010. Daily incremental backups of the database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than one hour of data entry would be lost in the unlikely event of a catastrophic failure. All survey data were entered twice and each set compared in order to minimize data entry errors.

Once data were entered and validated, information was processed with the use of Statistical Package for the Social Sciences (SPSS) software, version 19. Initial processing included the performance of standardized logic checks of the data. Logic checks are often needed in complex data sets where rules, constraints, and referential integrity do not capture all of the possible inconsistencies that may appear. Harvest data collected in their respective units (numbers of individuals, gallons, buckets, etc.) were converted to pounds usable weight using standard conversion factors (Appendix B).

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

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.

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

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

where:

$$\bar{h}_i = \frac{h_i}{n_i} \text{ (mean harvest per returned survey)} \tag{2}$$

and 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 the community.

The 95% confidence limit (CL) is used to express the relative precision of the estimate; that is to say that if the population were repeatedly, randomly sampled and the estimated harvests and confidence limits were calculated for each sample, researchers are confident that 95% of the calculated confidence intervals would overlap (enclose, bound, etc.) the true harvest value of the population (McDonald 2009:112–117). Once the standard error was calculated, the CL was determined by multiplying the SE by a constant that reflected the level of significance desired, based on a normal distribution. The constant for 95% confidence limits is 1.96. Though there are numerous ways to express the formula below, it contains the components of an SD, V, and SE.

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

where:

s = sample standard deviation,

n = sample size,

N = population size, and

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

The value reported for the 95% confidence limit is the percentage of the estimate that may be added to, and subtracted from, the estimate in order to get the maximum and minimum values of the confidence interval for the given estimate. If the estimated harvest weight is known, the limits are applied to the estimated harvest weight. If the harvest weight is *not* known, then the limits are applied to the harvest amount (i.e., the estimated number of units of a given resources that were harvested). 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 mean of the sample.

The corrected, final data from the household survey will be added to the CSIS. This publicly accessible database, available through the ADF&G website, includes community-level study findings.

Map Data Entry and Analysis

ADF&G information management staff checked maps for consistency with data recorded on the survey forms. They also removed extraneous marks from the maps to ensure the digitizing process would occur with minimal error. The map design included tick marks, similar to registration marks, used to pinpoint geographical features and thus provide accuracy during the digitizing process. Each map could then be aligned by the WRST GIS staff, who digitized the polygons, points, and lines that researchers had drawn by hand on the paper maps during the interviews. The final wild resource harvest area maps included in this report were produced by ADF&G Division of Subsistence staff.

CHAPTER 2: STUDY FINDINGS

COMMUNITY BACKGROUND

The Ahtna and the Copper River Basin

The Copper River Basin, located in Southcentral Alaska, is surrounded by 4 mountain ranges and traversed by the 286 mile-long Copper River, a large glacial river that originates from the Copper Glacier located in the northeast side of Mount Wrangell in the Wrangell-St. Elias National Park and Preserve (Kammerer 1990). Ecologically the Copper River Basin is a transitional zone between maritime and continental ecosystems, extending from the eastern edges of Prince William Sound in the Gulf of Alaska to the continental inlands of Southcentral Alaska (Holen 2010:7). The Copper River, whose drainage covers over 24,000 square miles, is world famous for its prized salmon runs, which include Chinook, sockeye, and coho salmon.

The Copper River Basin is the traditional territory of Athabascan-speaking Alaska Natives known as the Ahtna. The Ahtna are believed to have inhabited the area for at least one thousand years, with their territory comprising 23,000 square miles throughout the Copper River valley floor, upper portions of the Susitna River drainage, and the surrounding mountains. Geographically the Ahtna of the Copper River Basin are divided into 3 groups—the Upper, Lower, and Western Ahtna. Distinguishable also by their differing dialects, the Ahtna can be divided into 4 dialectical groups—Upper Ahtna, Central Ahtna, Lower Ahtna, and Western Ahtna. The Ahtna are additionally further identified through belonging to 8 regional autonomous bands with specified geographic territories for subsistence (de Laguna and McClellan 1981:641–643; Simeone and Kari *n.d.* [2004]:5–6; Holen 2010:7, 12–13, 15).

Following the geographic division, the 3 Ahtna groups had differing subsistence harvest patterns: the Lower Ahtna were more focused on salmon in their diet while the Upper and Western Ahtna harvested more land mammals and nonsalmon fish. Despite the geographically rough boundaries separating the different Ahtna groups, they interacted with their neighbors through shared hunting grounds and trading for subsistence resources. Records also show territorial conflicts as well as social engagements (de Laguna and McClellan 1981; Holen 2010:12–13). In the late nineteenth century, the most important Ahtna item in the interband trading networks was copper. It was collected in an area nearly exclusively controlled by the Lower Ahtna and used, for example, in knives, arrowheads, and jewelry (Stratton and Georgette 1984:18–19).

The sustained, seasonal-round based life of the Ahtna people and their environment was first disrupted with the arrival of Russian explorers looking for furs in the late eighteenth century. With the exception of the 1819 establishment and 1848 closure of a small trading post in Taral, in the Lower Ahtna territory, the Ahtna persistently resisted Russian incursions into their territory (de Laguna and McClellan 1981:643; Reckord 1983b:13–18; Holen 2010:20). Nevertheless, some trading took place between the 2 groups and new items, such as guns and iron implements, were introduced to the Copper River Basin area (Stratton and Georgette 1984:20).

Until the late nineteenth century, a majority of the Ahtna lived in winter villages along the Copper River and its tributaries, while the Western Ahtna led a more seminomadic lifestyle. Population figures collected in 1818 by the Russian American Company recorded 567 people living in the Copper River Basin (de Laguna and McClellan 1981:644–648; Holen 2010:14). Between 1836 and 1839, a smallpox epidemic killed almost half of the Ahtna in the area, diminishing the population to only 300 people. The total Ahtna population reached a low of 297 people in 1910. It is notable that until the 1960s, the Ahtna

population was never reported to be much higher than 500 people (de Laguna and McClellan 1981:643–644; Holen 2010:14).

The Yukon River gold rush of 1898 and the 1899 Euro-American "purchase" of access to the copper source in the Lower Ahtna lands through a simple trading action drastically altered life in the Copper River valley (Holen 2010:26). Intensive settling of prospectors, miners, business entrepreneurs, and government personnel brought the development of roads, new trading posts, mines, and schools. Consequently, the development of new transportation routes on the old Ahtna trails in the Copper River Basin led to the biggest changes in the area's settlement patterns, as well as an economy that mixed cash and subsistence activities for the first time (de Laguna and McClellan 1981:643; Reckord 1983b:59–68; Stratton and Georgette 1984:20).

From 1899 to 1902, the U.S. Army constructed a telegraph line between the communities of Valdez in Prince William Sound and Eagle along the Yukon River. By 1904, a longer trail connected Valdez and Fairbanks (de Laguna and McClellan 1981:643–644; Stratton and Georgette 1984:21). With these trails, access to the whole Copper River Basin was opened, and roadhouses sprang up at about a day's journey apart when traveling on foot. Many of the modern day communities in the Copper River Basin continue to exist in these same locations. Over time, these trails were improved for wagon travel, and later on for motorized vehicles, which continue to take people into the area on paved highways (Stratton and Georgette 1984:21).

The construction of the Copper River and Northwestern Railway between Cordova and the Kennicott copper mines on the south side of the Wrangell Mountains began in 1908 and was completed in 1911. The new mode of transportation brought hundreds of people into the Chitina River valley. Several communities in the area boomed and many Ahtna families, who had been living in traditional villages and camps until then, were eventually attracted to these new centers of commerce by the availability of imported technology, other trade goods, and temporary wage employment opportunities (Reckord 1983b:59–68; Stratton and Georgette 1984:21; Fall and Stratton 1984:9–10). The exposure of the Ahtna to the Euro-American culture expanded rapidly as many activities such as medicine, education, and law enforcement, previously performed by the Ahtna themselves were taken over by the newcomers. During the mining period, the Ahtna continued to trade furs and sell leather products to the newcomers; however, they also got involved in the new "frontier economy" and worked, for example, as guides and laborers earning cash for their services (Reckord 1983b:59–68; Stratton and Georgette 1984:22).

The mining frenzy in the Copper River Basin diminished by 1920. Resident populations declined, but dependency on fish and game resources increased (Stratton and Georgette 1984:22). Trapping continued to be the major economic activity for the Ahtna through the 1920s, until fur prices fell significantly in 1929 with the beginning of the Great Depression (Reckord 1983b:68–70; Holen 2010:28). The beginning of the Second World War prompted a new wave of development in the area, including the building of the Glenn Highway, the Alaska Highway, and other transportation routes and new airfields, particularly for military use. The completion of the highway system made travel to and from Anchorage easier, and with the improved communications as well as wage employment opportunities, more Euro-Americans began to arrive in the Copper River Basin again (Reckord 1983b:71–72; Stratton and Georgette 1984:23).

The 1950s brought increased pressure by government agents on Alaska Native families to send their children to school. As a result, communities along the road system saw an influx of Alaska Native family settlement. These moves disrupted the seasonal movements associated with trapping and other subsistence activities, and many Alaska Native families had to stop furbearer trapping as they moved into larger communities with schools (Reckord 1983b:73–74; Stratton and Georgette 1984:23). Alaska Statehood in 1959 brought yet another new dimension to the Copper River Basin economy and development. The State of Alaska assumed management of large segments of the newly titled lands and waters and provided new employment opportunities for Copper River Basin residents. After statehood,

the state and federal government provided more than one-third of the employment opportunities for area residents (Stratton and Georgette 1984:23; Holen 2010:28).

The discovery of oil in Prudhoe Bay in the late 1960s was the catalyst of a series of developments that continues to affect the lives of all Alaska residents. The formation of the Alaska Federation of Natives in 1966 to halt state land selection for oil development and lobby for a final settlement of land title to Alaska Native lands led to the Alaska Native Claims Settlement Act (ANCSA) in 1971. In addition to monetary compensation, the settlement gave fee simple title to 40 million acres to be administered by 220 village and 13 regional for-profit Native corporations. Under ANCSA, Ahtna Inc. is the Native regional corporation for shareholders of Ahtna descent (Holen 2010:29). The corporation has 15 operating subsidiaries, which are involved in a number of activities, including construction services, government contracting, and oil and gas pipeline maintenance. The regional corporation headquarters are located in Glennallen, and the current number of shareholders is over 1,600.[5] In addition, several independent, not-for-profit sociopolitical organizations work in the area to support the health and well-being of the Ahtna people. These include Copper River Native Association (CRNA) and the Mount Sanford Tribal Consortium (MSTC) to mention a few by name (Holen 2010:29). In addition most communities in the area have a tribal council and a health clinic, which provide essential services for community residents.

The oil boom of the 1970s led to yet another boom period in the economy of the Copper River Basin. The construction of the Trans Alaska Pipeline between 1974 and 1977 brought new wage employment opportunities and more newcomers to the region. This economic growth spurt, like so many before it, was temporary. However, some employment opportunities in the maintenance of the pipeline and the right-of-way remained, which encouraged a number of the newcomers to stay (Reckord 1983b:73–74; Stratton and Georgette 1984:24). Wage employment opportunities have also come about in the service sector, with local businesses proving services to tourists and to hunters and fishers who travel every year to the region to enjoy its prized natural resources and vast scenery.

The Alaska National Interest Lands Conservation Act (ANILCA) of 1980 designated over 100 million acres in Alaska as national parks, preserves, monuments, and wildlife refuges. The Ahtna were affected by the creation of the Wrangell-St. Elias National Park and Preserve (WRST), which is located on the eastern shore of the Copper River and encompasses 13.2 million acres of land. It is the largest national park in the United States but also an area where the Ahtna of the Copper River basin traditionally hunted and fished for various wild resources.[6] There are 23 resident zone communities, including Chistochina, in the WRST area, and under current federal regulations, qualified local rural residents may subsistence hunt, fish, and trap in both the national park and the preserve. In addition, sport fishing under state regulations is allowed in both the park and the preserve. Sport hunting and trapping under state regulations, however, are not allowed in the national park, only in the preserve. The use of airplanes for subsistence activities is allowed in the preserve but not in the national park. The use of off-road vehicles, snowmachines, and motorboats for subsistence uses is permitted in both the park and preserve.[7]

Regardless of the seasonal influx of tourists, hunters, and fishers into the Copper River Basin during late spring, summer and early fall months, the population of the region remains relatively stable. During the years between 1938 and 1970, the Ahtna population did not grow over 500 people. Currently, there are around 3,000 people living in the Copper River Basin, of whom approximately 650 are of Ahtna descent (Holen 2010:14). The Ahtna today predominantly reside in communities along the road system. Chitina and Copper Center are the home of mainly Lower Ahtna populations, and Gulkana, Gakona, Chistochina, and Mentasta are the centers of modern Upper and Central Ahtna populations. The Western Ahtna have

5. Ahtna, Incorporated: www.ahtna-inc.com. (Accessed January 13, 2012.)
6. NPS.gov, Wrangell-St. Elias National Park and Preserve: http://www.nps.gov/wrst/index.htm. (Accessed May 3, 2012.)
7. NPS.gov, Wrangell-St. Elias National Park and Preserve: http://www.nps.gov/wrst/parkmgmt/subsistence-access.htm. (Accessed February 24, 2012.)

resided in Cantwell since they moved down the Denali Highway in the 1930s to be in the vicinity of the railroad that provided employment and supplies (Holen 2010:30–31).

The Community of Chistochina

Like many other communities in the Copper River Basin, the original village site of Chistochina, located on a bluff near the Copper River, was most likely an old Ahtna fish camp. Similar to many Copper River Basin communities, modern Chistochina however owes its beginning to the construction of the Valdez–Eagle trail and the establishment of a telegraph station at the site of Chistochina in 1902. A roadhouse subsequently followed. An Ahtna family settled permanently at the village site in the 1940s and they were later joined by friends and family. After the construction of area highways in the 1960s, a new village was relocated near the Glenn Highway, as well as a lodge and a school (Reckord 1983a:131–133; Stratton and Georgette 1984:142).

Today, the village of Chistochina is located at Mile 32.7 on the Tok Cutoff of the Glenn Highway, about 42 miles northeast of Glennallen. The community is surrounded by several waterways, including the Copper and Chistochina rivers, and Sinona and Boulder creeks.[8] The community has a school, a trading post, a health clinic, a bed and breakfast, and houses the office of the Mount Sanford Tribal Consortium, which provides a variety of services for the residents of Chistochina and Mentasta. A central meeting point in the community is the Chistochina Community Hall, which is actively used for various community meetings and other events. The economy of the area continues to be highly subsistence based, with seasonal cash employment opportunities consisting mostly of firefighting, highway maintenance, and construction. With substantial reliance on subsistence, modern Chistochina continues to be a traditional Athabascan community in the Copper River Basin. As discussed earlier, Chistochina is an unincorporated community, and in this report, the study area for Chistochina is consistent with the U.S Census Bureau's CDP definition for Chistochina.

DEMOGRAPHY, CASH EMPLOYMENT, AND MONETARY INCOME

DEMOGRAPHY

According to the federal census, Chistochina had 93 residents in 2000 and 2010 (U. S. Census Bureau 2001; U. S. Census Bureau 2011; Table 1-1). The household survey conducted for this study in 2009 found an estimated population of 87 residents, of which 65% (56 residents) were Alaska Native (Table 1-1). Prior to the study, the Division of Subsistence researchers in consultation with community officials and other knowledgeable community residents, made an initial estimate of 35 year-round households in Chistochina. While conducting the household surveys, researchers found 2 new households and 4 additional households that were not eligible to participate in the survey (the households had moved or were considered to be nonresident). After adding the new households to the initial year-round household estimate, and then subtracting the ineligible households, researchers revised the estimated number of year-round households to 33 in 2009 (Table 1-1). Of these, 27 households (82%) were interviewed (Table 2-1). For the community overall, the calculated mean number of years of residency in Chistochina was 25 years, and the maximum 78 years (Table 2-1). For household heads specifically, the mean length of residency was approximately 31 years and the maximum 78 years. The largest age cohort for males was 45–49 years of age, and for females it was 40–44 years of age (Table 2-2 and Figure 2-1). Other age categories were fairly evenly distributed, with the exception of age cohorts between 0–4 years of age, 20–

8. Alaska Community Database Community Information Summaries (CIS): http://commerce.alaska.gov/dca/commdb/CIS.cfm?Comm_Boro_Name=Chistochina. (Accessed January 26, 2012.)

24 years of age, and 80–84 years of age, where the study only found female residents. It is also notable that young adults (20–24) were not as well represented in the sample.

Table 2-1.–Demographic and sample characteristics, Chistochina, 2009.

Characteristics	Chistochina
Sampled households	27
Eligible households	33
Percentage sampled	81.8%
Household size	
Mean	2.6
Minimum	1.0
Maximum	8.0
Age	
Mean	40.2
Minimum[a]	2.0
Maximum	84.0
Median	43.0
Sex	
Estimated male	
Number	40.3
Percentage	46.5%
Estimated female	
Number	46.4
Percentage	53.5%
Alaska Native	
Estimated households[b]	
Number	25.7
Percentage	77.8%
Estimated population	
Number	56.2
Percentage	64.8%
Length of residency	
Total population	
Mean	25.2
Minimum[a]	0.0
Maximum	78.0
Heads of household	
Mean	30.8
Minimum[a]	2.0
Maximum	78.0

Source ADF&G Division of Subsistence household surveys, 2010.

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

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

Table 2-2.–Population profile, Chistochina, 2009.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	0.0	0.0%	0.0%	1.2	2.6%	2.6%	1.2	1.4%	1.4%
5–9	4.9	12.1%	12.1%	4.9	10.5%	13.2%	9.8	11.3%	12.7%
10–14	4.9	12.1%	24.2%	3.7	7.9%	21.1%	8.6	9.9%	22.5%
15–19	1.2	3.0%	27.3%	2.4	5.3%	26.3%	3.7	4.2%	26.8%
20–24	0.0	0.0%	27.3%	2.4	5.3%	31.6%	2.4	2.8%	29.6%
25–29	1.2	3.0%	30.3%	2.4	5.3%	36.8%	3.7	4.2%	33.8%
30–34	2.4	6.1%	36.4%	2.4	5.3%	42.1%	4.9	5.6%	39.4%
35–39	2.4	6.1%	42.4%	1.2	2.6%	44.7%	3.7	4.2%	43.7%
40–44	4.9	12.1%	54.5%	6.1	13.2%	57.9%	11.0	12.7%	56.3%
45–49	6.1	15.2%	69.7%	3.7	7.9%	65.8%	9.8	11.3%	67.6%
50–54	1.2	3.0%	72.7%	2.4	5.3%	71.1%	3.7	4.2%	71.8%
55–59	1.2	3.0%	75.8%	1.2	2.6%	73.7%	2.4	2.8%	74.6%
60–64	3.7	9.1%	84.8%	1.2	2.6%	76.3%	4.9	5.6%	80.3%
65–69	3.7	9.1%	93.9%	3.7	7.9%	84.2%	7.3	8.5%	88.7%
70–74	1.2	3.0%	97.0%	1.2	2.6%	86.8%	2.4	2.8%	91.5%
75–79	1.2	3.0%	100.0%	3.7	7.9%	94.7%	4.9	5.6%	97.2%
80–84	0.0	0.0%	100.0%	2.4	5.3%	100.0%	2.4	2.8%	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	**40.3**	**100.0%**	**100.0%**	**46.4**	**100.0%**	**100.0%**	**86.8**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2010.

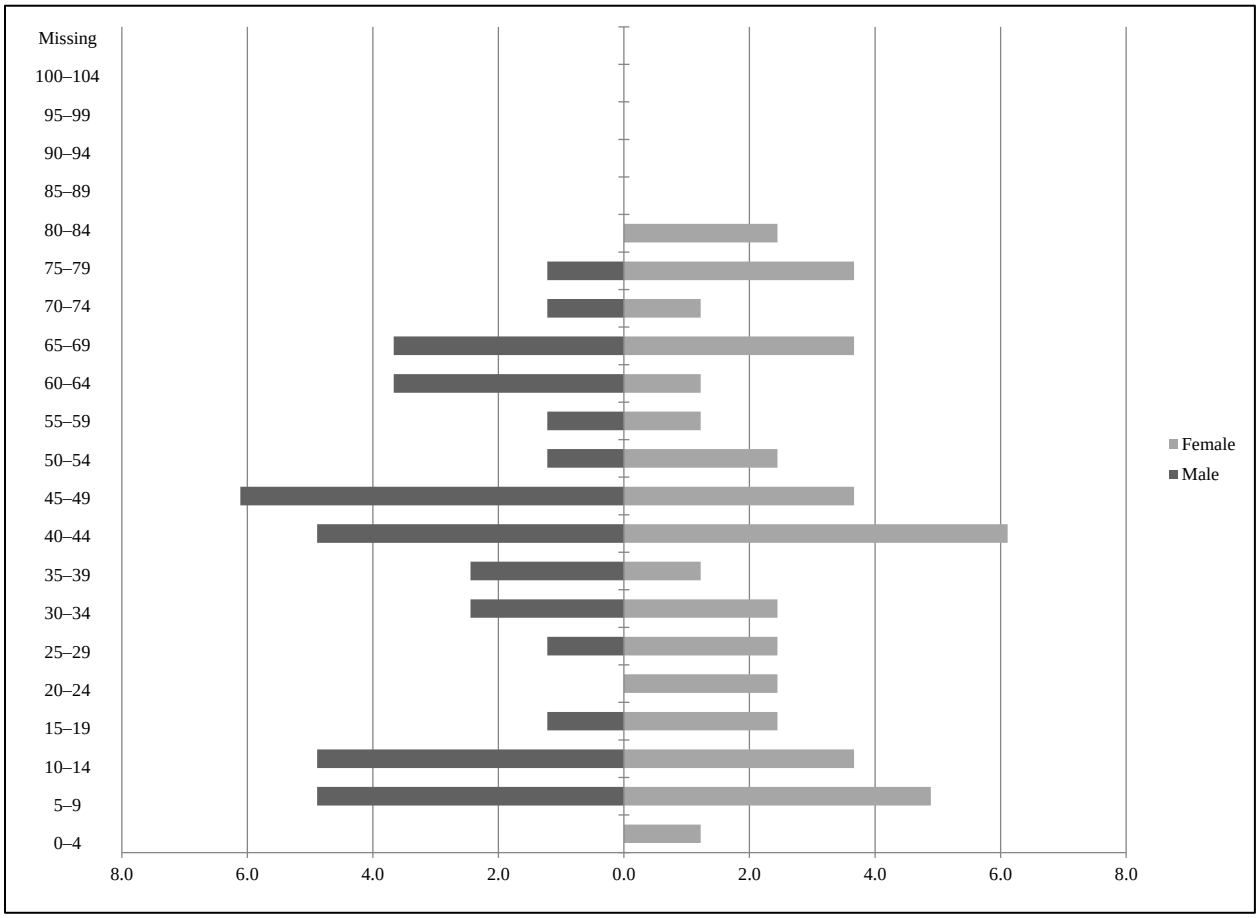

Figure 2-1.–Population profile, Chistochina, 2009.

Of the Chistochina household heads interviewed, approximately 54% were born in Alaska. Most (approximately 20%) of the Alaska-born household heads were born in Chistochina, followed by Chisana, Anchorage, and Northway Village (Table 2-3). When summed up, a substantial portion (approximately 41%) of the Chistochina household heads were born in the other communities and areas within or adjacent to Wrangell-St. Elias National Park and Preserve.[9] In comparison, approximately 44% of the household heads were born in locations outside the state of Alaska, and approximately 2% were foreign born.

9. The communities are Batzulnetas, Chisana, Chistochina, Gulkana, Mentasta Lake, Nabesna River, Northway Village, and Tok.

Table 2-3.–Birthplaces of household heads, Chistochina, 2009.

Birthplace	Percentage
Anchorage	4.3%
Batzulnetas	2.2%
Chisana	6.5%
Chistochina	19.6%
Gulkana	2.2%
Koyukuk	2.2%
Mentasta Lake	2.2%
Nabesna River	2.2%
Northway Village	4.3%
Palmer	2.2%
Tanana	2.2%
Tok	2.2%
Yes Bay	2.2%
Other U.S.	43.5%
Foreign	2.2%

Source ADF&G Division of Subsistence household surveys, 2010.

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

CASH EMPLOYMENT CHARACTERISTICS AND MONETARY INCOME

Like in many rural Alaska villages, most cash employment in Chistochina is seasonal; in 2009, 56% of employed adults worked year-round (Table 2-5). In 2009, most (55%) of the jobs in Chistochina were with local and tribal governments. Other important employment sectors during the study year were services, at 21%, and construction, at 11% (Table 2-4). Due to insufficient income data collection, this study does not provide income information in percentages by individual industry.

Table 2-4.–Employment by industry, Chistochina, 2009.

Industry	Jobs	Households	Individuals
Estimated total number	**38**	**18**	**32**
State government total	**2.6%**	**5.6%**	**3.1%**
Handlers, equipment cleaners, helpers, and laborers	2.6%	5.6%	3.1%
Local and tribal governments total	**55.3%**	**72.2%**	**59.4%**
Executive, administrative, managerial	10.5%	22.2%	12.5%
Teachers, librarians, and counselors	2.6%	5.6%	3.1%
Health diagnosing and treating practitioners	2.6%	5.6%	3.1%
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	2.6%	5.6%	3.1%
Health technologists, and technicians	2.6%	5.6%	3.1%
Administrative support occupations, including clerical	7.9%	16.7%	9.4%
Service occupations	10.5%	11.1%	6.3%
Construction and extractive occupations	7.9%	16.7%	9.4%
Handlers, equipment cleaners, helpers, and laborers	7.9%	11.1%	9.4%
Construction total	**10.5%**	**22.2%**	**12.5%**
Mechanics and repairers	2.6%	5.6%	3.1%
Handlers, equipment cleaners, helpers, and laborers	7.9%	16.7%	9.4%
Transportation, communication, and utilities total	**2.6%**	**5.6%**	**3.1%**
Construction and extractive occupations	2.6%	5.6%	3.1%
Retail trade total	**5.3%**	**11.1%**	**6.3%**
Technologists and technicians, except health	2.6%	5.6%	3.1%
Marketing and sales occupations	2.6%	5.6%	3.1%
Finance, insurance, and real estate total	**2.6%**	**5.6%**	**3.1%**
Executive, administrative, managerial	2.6%	5.6%	3.1%
Services total	**21.1%**	**22.2%**	**21.9%**
Executive, administrative, managerial	7.9%	11.1%	9.4%
Writers, artists, entertainers, and athletes	2.6%	5.6%	3.1%
Technologists and technicians, except health	2.6%	5.6%	3.1%
Handlers, equipment cleaners, helpers, and laborers	2.6%	5.6%	3.1%
Miscellaneous occupations	5.3%	5.6%	6.3%

Source ADF&G Division of Subsistence household surveys, 2010.

The study found 67 adults over the age of 16 in Chistochina in 2009, and the calculated average length of employment for all Chistochina adults was approximately 24 weeks or 6 months (Table 2-5). Of the 67 adults in Chistochina, the study found 39 employed. For the employed adults, the mean length of employment was more, approximately 10 months. On the household level, 67% (or 22 of the 33 households) were employed at some point during the study year. For all 33 households in the community, the average number of jobs during the study year was about 1. The corresponding number for the 22 employed households was approximately 2 (Table 2-5). Most jobs were located in Chistochina but some respondents commuted to Glennallen, Gulkana, and Slana for employment. A few respondents were employed outside the Copper River Basin area.

It is noteworthy that Chistochina residents had an unusual seasonal employment opportunity in 2009 because a mineral exploration company offered nearby seasonal employment for community members from the summer well into the fall. This employment opportunity has since diminished.

Table 2-5.–Employment characteristics, Chistochina, 2009.

Characteristic	Chistochina
All adults	
Number	67
Mean weeks employed	23.6
Employed adults	
Number	39
Percentage	58.2%
Jobs	
Number	46
Mean	1.2
Minimum	1
Maximum	3
Months employed	
Mean	9.7
Minimum	2
Maximum	12
Percentage employed year-round	56.3%
Mean weeks employed	41.9
Households	
Number	33
Employed	
Number	22
Percentage	66.7%
Jobs per employed household	
Mean	2.1
Minimum	1
Maximum	5
Employed adults	
Mean	
Employed households	1.8
All households	1.2
Minimum	1
Maximum	3

Source ADF&G Division of Subsistence household surveys, 2010.

LEVELS OF PARTICIPATION IN THE HARVESTS AND USES OF WILD RESOURCES

Table 2-6 and Figure 2-2 report the estimated levels of individual participation in the harvest and processing of wild resources by all Chistochina residents in 2009. Approximately 93% of residents attempted to harvest resources in 2009. With reference to specific resource categories, 85% of all residents gathered plants and berries, 49% fished, 30% hunted for birds, and 45% hunted for large land mammals. Fewer (39%) residents were involved in small land mammal hunting or trapping. In comparison, 86% of all Chistochina residents processed some resources in 2009. Most residents (70%) participated in processing plants and berries, followed by 63% of the population participating in fish processing. A little less (62%) participated in large land mammal processing, and 31% participated in processing birds.

The study also asked about participation in building fish wheels, sewing skins or cloth and cooking wild foods. A small number (9%) of Chistochina residents said they had participated in building fish wheels, but more (35%) had been involved in sewing skins or cloth. In comparison, nearly all (96%) residents had cooked wild foods (Table 2-6).

Table 2-6.–Participation in subsistence harvesting and processing activities, Chistochina, 2009.

Total number of people	**86.8**
Birds	
Hunt	
Number	25.7
Percentage	29.6%
Process	
Number	26.9
Percentage	31.0%
Fish	
Fish	
Number	42.8
Percentage	49.3%
Process	
Number	55.0
Percentage	63.4%
Large land mammals	
Hunt	
Number	39.1
Percentage	45.1%
Process	
Number	53.8
Percentage	62.0%
Small land mammals	
Hunt or trap	
Number	34.2
Percentage	39.4%
Process	
Number	31.8
Percentage	36.6%

-continued-

Table 2-6.–Page 2 of 2.

Plants	
Gather	
Number	73.3
Percentage	84.5%
Process	
Number	61.1
Percentage	70.4%
Any resource	
Attempt to harvest	
Number	80.7
Percentage	93.0%
Process	
Number	74.6
Percentage	85.9%
Building fish wheels	
Number	7.3
Percentage	8.5%
Sewing skins or cloth	
Number	30.6
Percentage	35.2%
Cooking wild foods	
Number	83.1
Percentage	95.8%

Source ADF&G Division of Subsistence household surveys, 2010.

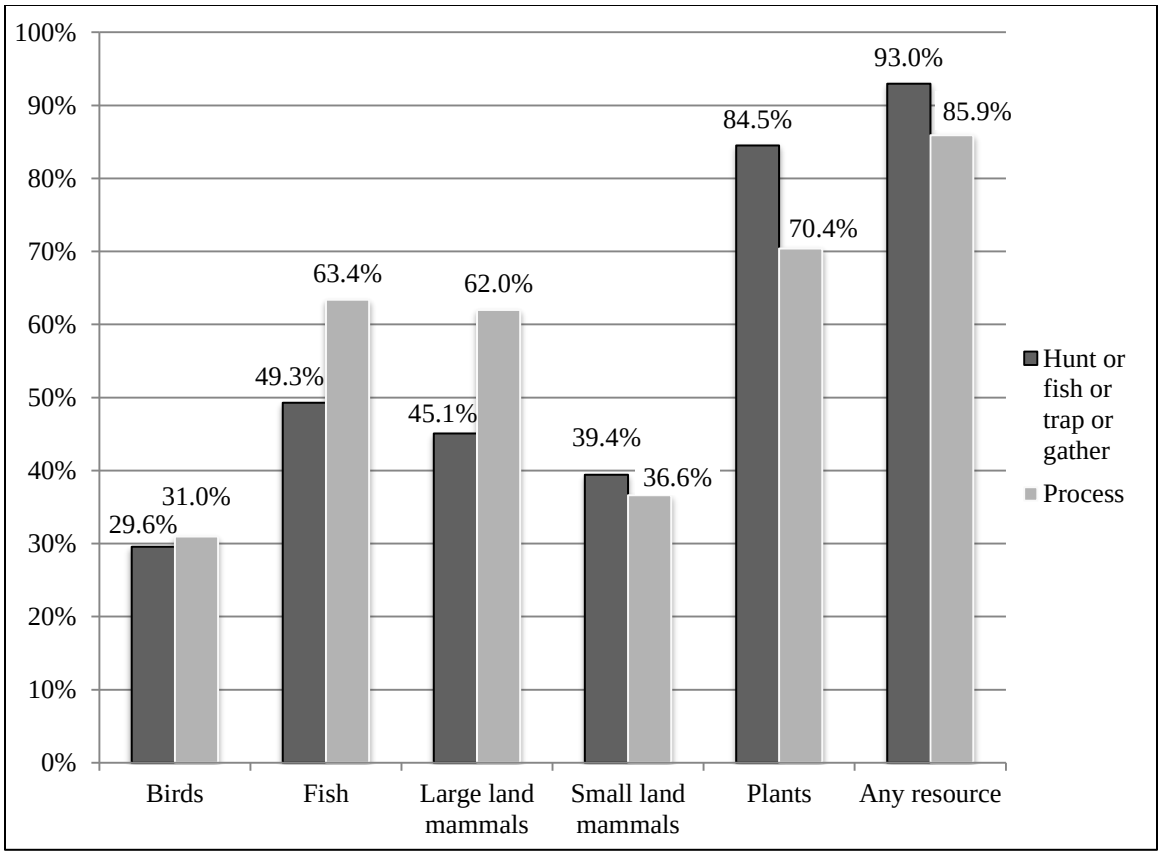

Figure 2-2.–Individual levels of participation in subsistence harvesting and processing activities, Chistochina, 2009.

RESOURCE HARVEST AND USE PATTERNS

Table 2-7 summarizes resource harvest and use characteristics for Chistochina in 2009, at the household level. All households used wild resources in 2009, while 96% attempted to harvest a resource and 93% harvested a resource. The average total harvest was an estimated 522 lb usable weight per household, or 199 lb per capita. On average, households attempted to harvest 10 kinds of resources, harvested 9 kinds of resources and used an average of 11 kinds of resources. The maximum number of resources used by any household was 34. In addition, households gave away an average of 3 kinds of resources and received 5 resources. A little over one-half (56%) of the households reported sharing resources with other households. In comparison, 85% reported receiving a resource, which indicates that wild resources were shared widely in the community.

Table 2-7.–Resource harvest and use characteristics, Chistochina, 2009.

Characteristic	Chistochina
Mean number of resources used per household	11.2
Minimum	1
Maximum	34
95% confidence limit (±)	12.1%
Median	10
Mean number of resources attempted to harvest per household	9.9
Minimum	0
Maximum	34
95% confidence limit (±)	13.2%
Median	8
Mean number of resources harvested per household	8.5
Minimum	0
Maximum	32
95% confidence limit (±)	14.4%
Median	7
Mean number of resources received per household	4.5
Minimum	0
Maximum	29
95% confidence limit (±)	22.0%
Median	3
Mean number of resources given away per household	3.1
Minimum	0
Maximum	15
95% confidence limit (±)	22.7%
Median	1
Household harvest, pounds	
Minimum	0.0
Maximum	1,899.0
Mean	522.1
Median	484.2
Total harvest weight, pounds	17,228.9
Community per capita harvest, pounds	198.5
Percentage using any resource	100%
Percentage attempting to harvest any resource	96%
Percentage harvesting any resource	93%
Percentage receiving any resource	85%
Percentage giving away any resource	56%
Number of households in sample	27
Number of resources available	104

Source ADF&G Division of Subsistence household surveys, 2010.

SPECIES USED AND SEASONAL ROUND

Residents of Chistochina harvest a wide variety of species throughout the year and they often target specific species during certain seasons of the year, following a cyclical harvest pattern. Chistochina residents are highly mobile, traveling around the Copper River Basin to harvest resources. Residents use motorized vehicles, such as airplanes, highway vehicles, snowmachines, and four-wheelers, to reach their hunting, fishing and gathering areas.

Table 2-8 summarizes the estimated harvest and uses of fish, game, and plant resources. Table 2-9 lists the top 10 resources harvested, in terms of pounds per capita, and the 10 most used resources by

Chistochina households during the study year 2009. Residents of Chistochina harvested an estimated total of 17,229 lb, or 199 lb per capita of wild resources (Table 2-8). Sockeye salmon, Chinook salmon, and moose were the top 3 most harvested resources in pounds per capita. In comparison, the top 3 most used resources in Chistochina households were blueberries, wood, and sockeye salmon (Table 2-9).

The discussion about various wild resources used starts with salmon as it composed the highest percentage of the total harvest in 2009. During the study year, 85% of the households in Chistochina used salmon and 52% harvested salmon, most of which was sockeye (Table 2-8). A large percentage of Chistochina households (85%) used a fish species and a substantial percentage (59%) reported receiving fish, especially salmon, during the study year (Table 2-8). Most of the salmon were caught with fish wheels, which are set along the Copper River in proximity to the community. The fish wheels are often also shared by community members.

Chinook and sockeye salmon are usually the first to arrive in June, and both species continue their runs up the Copper River into July. Coho salmon, which are present in the Copper River but not as far as Chistochina, begin to arrive in the Chitina area in late-July, mid-August and continue to run through September. Some Chistochina residents fish for salmon species such as coho salmon with fish wheels and rod and reel in other communities along the Copper River or in locations outside the watershed. During the summer months, many residents also engage in rod and reel fishing in the various lakes around Chistochina, especially for nonsalmon fish, such as lake trout and burbot. In the winter months, residents commonly ice fished for other nonsalmon fish, such as Arctic grayling at Copper and Tanada lakes.

Large land mammal hunting is a traditional and popular fall activity that often stretches into the winter. Most of the hunting takes place using highway vehicles or four-wheelers. Respondents reported that in 2009 there were few moose or caribou nearby, and despite 67% of households attempting to harvest large land mammals, only 15% were successful. Fewer households (48%) participated in small land mammal harvesting in 2009, but 44% were successful. Most small land mammal hunting or trapping took place during the winter, and in numbers of animals taken, the species most harvested were snowshoe hares, martens, beavers, and lynx (Table 2-8).

Migratory birds travel through the area in fall and spring, stopping to rest along the Copper River. During the study year, 19% of the households used migratory birds and 11% harvested them. Upland game birds, such as grouse and ptarmigan, were harvested by Chistochina residents along the Chistochina River and Boulder Creek throughout the year. During the study year, 59% of the Chistochina households used upland game birds and 52% reported successful hunting (Table 2-8). Harvesting vegetation, particularly berries in the summer, is an important activity for Chistochina residents. During the study year, 81% of households reported harvesting, and 85% reported using berries. Another commonly used vegetation resource is firewood, which is used for heating homes. During the study year, 67% of households harvested firewood and 74% used firewood (Table 2-8). In terms of monetary resources, Chistochina households spent an average of $3,482 on home heating during the study year 2009 (Table 2-10).

Table 2-8.–Estimated harvests and uses of fish, game and plant resources, Chistochina, 2009.

Resource	Percentage of households					Harvest weight, pounds[a]			Harvest amount[b]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
All resources	**100.0%**	**96.3%**	**92.6%**	**85.2%**	**55.6%**	**17,228.9**	**522.1**	**198.5**			**100.5**	**18.4**
Fish	**85.2%**	**66.7%**	**66.7%**	**59.3%**	**33.3%**	**12,766.3**	**386.9**	**147.1**		**ind**	**72.2**	**22.0**
Salmon	85.2%	55.6%	51.9%	55.6%	25.9%	11,370.9	344.6	131.0	1,511.9		45.8	24.2
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	33.3%	11.1%	7.4%	25.9%	3.7%	321.2	9.7	3.7	36.7	ind	1.1	62.1
Chinook salmon	59.3%	44.4%	40.7%	29.6%	14.8%	2,925.6	88.7	33.7	149.1	ind	4.5	43.8
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	70.4%	51.9%	48.1%	40.7%	22.2%	8,118.0	246.0	93.5	1,320.0	ind	40.0	25.9
Landlocked salmon	3.7%	3.7%	3.7%	0.0%	3.7%	6.1	0.2	0.1	6.1	ind	0.2	87.6
Unknown salmon	7.4%	0.0%	0.0%	7.4%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	66.7%	59.3%	55.6%	40.7%	22.2%	1,395.4	42.3	16.1			26.4	36.9
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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0
Cod	7.4%	7.4%	7.4%	3.7%	0.0%	14.7	0.4	0.2	3.7	ind	0.1	64.3
Pacific cod (gray)	7.4%	7.4%	7.4%	3.7%	0.0%	14.7	0.4	0.2	3.7	ind	0.1	64.3
Pacific tomcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Flounders	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Starry flounder	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Greenlings	7.4%	0.0%	0.0%	7.4%	3.7%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lingcod	7.4%	0.0%	0.0%	7.4%	3.7%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Halibut	29.6%	7.4%	7.4%	25.9%	7.4%	207.9	6.3	2.4	207.9	lb	6.3	61.2
Arctic lamprey	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Rockfish	7.4%	3.7%	3.7%	7.4%	3.7%	9.8	0.3	0.1	2.4	ind	0.1	87.6
Sculpin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Burbot	37.0%	29.6%	29.6%	14.8%	11.1%	340.3	10.3	3.9	141.8	ind	4.3	54.4
Char	40.7%	37.0%	33.3%	14.8%	18.5%	288.9	8.8	3.3	168.7	ind	5.1	39.4
Dolly Varden	11.1%	14.8%	11.1%	7.4%	7.4%	39.6	1.2	0.5	44.0	ind	1.3	62.4
Lake trout	40.7%	33.3%	33.3%	14.8%	18.5%	249.3	7.6	2.9	124.7	ind	3.8	37.3

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Table 2-8.–Page 2 of 5.

Resource	Percentage of households					Harvest weight, pounds[a]			Harvest amount[b]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Fish, continued												
Arctic grayling	40.7%	44.4%	40.7%	11.1%	11.1%	79.6	2.4	0.9	113.7	ind	3.4	27.2
Northern Pike	14.8%	14.8%	14.8%	7.4%	7.4%	294.3	8.9	3.4	105.1	ind	3.2	55.5
Longnose 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	14.8%	11.1%	7.4%	14.8%	3.7%	18.8	0.6	0.2	13.4	ind	0.4	79.8
Cutthroat 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	11.1%	11.1%	7.4%	11.1%	3.7%	18.8	0.6	0.2	13.4	ind	0.4	79.8
Unknown trout	3.7%	0.0%	0.0%	3.7%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Whitefishes	29.6%	14.8%	14.8%	25.9%	7.4%	141.2	4.3	1.6	113.7	ind	3.4	56.6
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	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	11.1%	7.4%	7.4%	7.4%	3.7%	77.0	2.3	0.9	77.0	ind	2.3	76.9
Unknown whitefish	18.5%	7.4%	7.4%	18.5%	3.7%	64.2	1.9	0.7	36.7	ind	1.1	89.3
Land mammals	**85.2%**	**81.5%**	**48.1%**	**59.3%**	**44.4%**	**3,469.3**	**105.1**	**40.0**			**14.5**	**27.9**
Large land mammals	74.1%	66.7%	14.8%	59.3%	33.3%	2,200.0	66.7	25.4			0.1	41.2
Bison	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black bear	0.0%	3.7%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brown bear	0.0%	7.4%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	11.1%	14.8%	0.0%	11.1%	3.7%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Deer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Goat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	70.4%	63.0%	14.8%	55.6%	33.3%	2,200.0	66.7	25.4	4.9	ind	0.1	41.2
Dall sheep	0.0%	7.4%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	48.1%	48.1%	44.4%	11.1%	25.9%	1,269.3	38.5	14.6			14.4	35.6
Beaver	18.5%	14.8%	14.8%	3.7%	7.4%	495.0	15.0	5.7	33.0	ind	1.0	50.2
Coyote	7.4%	7.4%	7.4%	0.0%	0.0%	0.0	0.0	0.0	13.4	ind	0.4	72.9
Fox	14.8%	11.1%	11.1%	3.7%	0.0%	0.0	0.0	0.0	19.6	ind	0.6	57.1
Red fox	14.8%	11.1%	11.1%	3.7%	0.0%	0.0	0.0	0.0	19.6	ind	0.6	57.1
Red fox–cross phase	7.4%	3.7%	3.7%	3.7%	0.0%	0.0	0.0	0.0	2.4	ind	0.1	87.6
Red fox–red phase	11.1%	11.1%	11.1%	0.0%	0.0%	0.0	0.0	0.0	17.1	ind	0.5	56.6

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Table 2-8.–Page 3 of 5.

Resource	Percentage of households					Harvest weight, pounds[a]			Harvest amount[b]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Land mammals, continued												
Hare	33.3%	29.6%	29.6%	7.4%	14.8%	559.8	17.0	6.5	279.9	ind	8.5	57.5
Snowshoe hare	33.3%	29.6%	29.6%	7.4%	14.8%	559.8	17.0	6.5	279.9	ind	8.5	57.5
River (land) otter	3.7%	3.7%	3.7%	0.0%	0.0%	0.0	0.0	0.0	1.2	ind	0.0	87.6
Lynx	11.1%	11.1%	11.1%	0.0%	0.0%	132.0	4.0	1.5	33.0	ind	1.0	64.0
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	14.8%	11.1%	11.1%	3.7%	0.0%	0.0	0.0	0.0	57.1	ind	1.7	63.1
Mink	7.4%	3.7%	3.7%	3.7%	0.0%	0.0	0.0	0.0	1.2	ind	0.0	87.6
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	33.3%	33.3%	29.6%	7.4%	3.7%	82.5	2.5	1.0	18.3	ind	0.6	34.0
Squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red (tree) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Weasel	3.7%	0.0%	0.0%	3.7%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolf	7.4%	3.7%	3.7%	3.7%	0.0%	0.0	0.0	0.0	14.7	ind	0.4	87.6
Wolverine	3.7%	3.7%	3.7%	0.0%	0.0%	0.0	0.0	0.0	2.4	ind	0.1	87.6
Birds and eggs	**59.3%**	**55.6%**	**51.9%**	**11.1%**	**14.8%**	**96.9**	**2.9**	**1.1**			**3.4**	**29.8**
Migratory birds	18.5%	14.8%	11.1%	7.4%	11.1%	37.2	1.1	0.4			0.6	48.6
Ducks	14.8%	11.1%	7.4%	7.4%	3.7%	13.9	0.4	0.2	14.7	ind	0.4	75.9
Canvasback	3.7%	3.7%	3.7%	0.0%	0.0%	2.7	0.1	0.0	2.4	ind	0.1	87.6
Eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spectacled eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Goldeneye	3.7%	3.7%	3.7%	0.0%	0.0%	2.0	0.1	0.0	2.4	ind	0.1	87.6
Mallard	3.7%	7.4%	3.7%	0.0%	0.0%	7.3	0.2	0.1	7.3	ind	0.2	87.6
Northern pintail	3.7%	7.4%	3.7%	0.0%	0.0%	2.0	0.1	0.0	2.4	ind	0.1	87.6
Scoter	7.4%	0.0%	0.0%	7.4%	3.7%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black scoter	7.4%	0.0%	0.0%	7.4%	3.7%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Teal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Green-winged teal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown ducks	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Geese	7.4%	7.4%	7.4%	0.0%	7.4%	23.2	0.7	0.3	6.1	ind	0.2	60.9
Brant	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 2-8.–Page 4 of 5.

Resource	Percentage of households					Harvest weight, pounds[a]			Harvest amount[b]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Birds and eggs, continued												
Cacklers	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/parvipes)	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
Emperor geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snow geese	3.7%	3.7%	3.7%	0.0%	3.7%	11.0	0.3	0.1	3.7	ind	0.1	87.6
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	3.7%	3.7%	3.7%	0.0%	3.7%	12.2	0.4	0.1	2.4	ind	0.1	87.6
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
Other birds	59.3%	55.6%	51.9%	11.1%	14.8%	59.8	1.8	0.7	92.7	ind	2.8	25.7
Upland game birds	59.3%	55.6%	51.9%	11.1%	14.8%	59.8	1.8	0.7	92.7	ind	2.8	25.7
Grouse	59.3%	55.6%	51.9%	11.1%	14.8%	47.1	1.4	0.5	67.3	ind	2.0	23.2
Spruce grouse	59.3%	55.6%	51.9%	11.1%	14.8%	47.1	1.4	0.5	67.3	ind	2.0	23.2
Ptarmigan	18.5%	18.5%	18.5%	3.7%	3.7%	12.7	0.4	0.1	25.4	ind	0.8	41.7
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
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 and 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	gal	0.0	0.0
Unknown eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0
Marine invertebrates	**11.1%**	**3.7%**	**3.7%**	**7.4%**	**0.0%**	**36.7**	**1.1**	**0.4**			**0.4**	**87.6**
Clams	7.4%	3.7%	3.7%	3.7%	0.0%	36.7	1.1	0.4	12.2	lb	0.4	87.6
Freshwater clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	lb	0.0	0.0
Razor clams	7.4%	3.7%	3.7%	3.7%	0.0%	36.7	1.1	0.4	12.2	lb	0.4	87.6
Crabs	3.7%	0.0%	0.0%	3.7%	0.0%	0.0	0.0	0.0			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	3.7%	0.0%	0.0%	3.7%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0
Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0

-continued-

Table 2-8.–Page 5 of 5.

Resource	Percentage of households					Harvest weight, pounds[a]			Harvest amount[b]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
Marine invertebrates, continued												
Octopus	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
Squid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**96.3%**	**96.3%**	**92.6%**	**29.6%**	**29.6%**	**859.7**	**26.1**	**9.9**			**10.0**	**15.8**
Berries	85.2%	85.2%	81.5%	18.5%	29.6%	803.6	24.4	9.3	200.9	gal	6.1	14.2
Blueberry	77.8%	81.5%	74.1%	18.5%	22.2%	303.1	9.2	3.5	75.8	gal	2.3	14.9
Lowbush cranberry	66.7%	70.4%	66.7%	11.1%	29.6%	175.2	5.3	2.0	43.8	gal	1.3	16.2
Highbush cranberry	40.7%	40.7%	40.7%	7.4%	14.8%	93.9	2.8	1.1	23.5	gal	0.7	24.3
Crowberry	3.7%	3.7%	3.7%	0.0%	0.0%	4.9	0.1	0.1	1.2	gal	0.0	87.6
Raspberry	29.6%	37.0%	29.6%	7.4%	7.4%	177.7	5.4	2.0	44.4	gal	1.3	36.1
Salmonberry	3.7%	3.7%	3.7%	3.7%	3.7%	9.8	0.3	0.1	2.4	gal	0.1	87.6
Other wild berry	3.7%	7.4%	3.7%	0.0%	0.0%	39.1	1.2	0.5	9.8	gal	0.3	87.6
Plants/greens/mushrooms	22.2%	22.2%	22.2%	3.7%	3.7%	56.1	1.7	0.6	19.0	gal	0.6	64.1
Hudson's Bay tea	7.4%	7.4%	7.4%	3.7%	3.7%	0.8	0.0	0.0	0.8	gal	0.0	71.6
Wild rose hips	11.1%	11.1%	11.1%	0.0%	0.0%	49.6	1.5	0.6	12.4	gal	0.4	70.6
Other wild greens	3.7%	3.7%	3.7%	0.0%	0.0%	1.2	0.0	0.0	1.2	gal	0.0	87.6
Unknown mushrooms	14.8%	18.5%	14.8%	3.7%	3.7%	4.3	0.1	0.0	4.3	gal	0.1	56.3
Fireweed	3.7%	3.7%	3.7%	0.0%	0.0%	0.3	0.0	0.0	0.3	gal	0.0	87.6
Wood	74.1%	66.7%	66.7%	14.8%	7.4%	0.0	0.0	0.0	109.4	cord	3.3	17.0
Roots	3.7%	3.7%	3.7%	0.0%	0.0%	0.0	0.0	0.0	1.2	qrt	0.0	87.6

Source ADF&G Division of Subsistence household surveys, 2010.

a. Resources that have a value greater than zero for the percentage of households harvesting, but that give a total harvest weight equal to zero are not typically eaten and therefore no conversion has been made from the amount harvested to edible weight. For example, 67% of households harvested wood but a value of zero is given for the total harvest weight.

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

Table 2-9.–Top 10 resources harvested and used, Chistochina, 2009.

Harvested				Used			
Number	Rank	Resource	Pounds per capita	Number	Rank	Resource	Percentage of households using
1	1.	Sockeye salmon	93.5	1	1.	Blueberry	77.8%
2	2.	Chinook salmon	33.7	2	2.	Wood	74.1%
3	3.	Moose	25.4	3	3.	Sockeye salmon	70.4%
4	4.	Snowshoe hare	6.5	4	3.	Moose	70.4%
5	5.	Beaver	5.7	5	5.	Lowbush cranberry	66.7%
6	6.	Burbot	3.9	6	6.	Chinook salmon	59.3%
7	7.	Coho salmon	3.7	7	6.	Spruce grouse	59.3%
8	8.	Blueberry	3.5	8	8.	Lake trout	40.7%
9	9.	Northern pike	3.4	9	8.	Arctic grayling	40.7%
10	10.	Lake trout	2.9	10	8.	Highbush cranberry	40.7%

Source ADF&G Division of Subsistence household surveys, 2010.

Table 2-10.–Use of firewood for heating, Chistochina, 2009.

	Mean annual cost of home heating	Household use of wood for heating by percentage category											
		0%		1–25%		26–50%		51–75%		76–99%		100%	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Chistochina	$3,482.4	9	33.3	1	3.7	10	37.0	1	3.7	2	7.4	4	14.8

Source ADF&G Division of Subsistence household surveys, 2010.

HARVEST QUANTITIES

Table 2-8 reports estimated wild resource harvests and uses by Chistochina residents in 2009 and is organized first by general category and then by species. All edible resources are reported in pounds usable weight (see Appendix B for conversion factors[10]). The "harvest" category includes resources harvested by any member of the surveyed household during the study year. The "use" category includes all resources taken, given away, or used by a household, and resources acquired from other harvesters, either as gifts, by barter or trade, through hunting partnerships, or as meat given to hunting guides by their clients. Purchased foods are not included but resources such as firewood are included as they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing between households, which results in a wider distribution of wild foods.

The total estimated harvest for all subsistence resources during 2009 for Chistochina was 17,229 lb, or 199 lb per capita (Table 2-8). In terms of pounds harvested, salmon constituted the largest portion of the subsistence harvest, which totaled 11,371 lb, or 131 lb per capita (Table 2-8 and Figure 2-3). The most common single resource harvested was sockeye salmon, at an estimated 8,118 lb, or 94 lb per capita harvested (Table 2-8). Most salmon were harvested as fresh, not as spawning or post-spawn fish. Nearly all salmon were caught with fish wheels, with only a few being caught with rod and reel. The majority of fish wheels used by Chistochina residents were located near the community along the Copper River but residents also traveled to Gakona and Copper Center to fish for salmon with fish wheels. In 2009, Chistochina residents harvested 2,926 lb of Chinook salmon (34 lb per capita) and 321 lb of coho salmon (4 lb per capita).

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

Land mammals (Table 2-8 and Figure 2-3) were the other major sources of wild foods for Chistochina residents in 2009, with an estimated 3,469 total lb harvested, or 40 lb per capita. In terms of total pounds harvested, large land mammals made up 13%, and small land mammals 7% of the total pounds harvested (Figure 2-3). The total harvest of large land mammals was 2,200 lb, or 25 lb per capita, while the total harvest of small land mammals for food consumption was 1,269 lb, or 15 lb per capita (Table 2-8). It is noteworthy that moose was the only large land mammal species successfully harvested by Chistochina residents in 2009; all harvest efforts for caribou, sheep, and bears were unsuccessful. The study also found that while 70% of Chistochina households reported to have used moose during 2009, only 15% were successful in harvesting the species. This indicates that the resource was widely shared in the community. In terms of pounds per capita harvested, moose ranked third on the list of top 10 resources harvested, and fourth on the top 10 list of percentage of Chistochina households using resources (Table 2-9).

In 2009 nearly one-half (48%) of Chistochina households said they had used small land mammals, and a little bit less (44%) successfully harvested some (Table 2-8). In terms of total pounds harvested, snowshoe hares made up the largest portion totaling at 560 lb (or 7 lb per capita harvested) followed by beavers (495 lb, or 6 lb per capita harvested) (Table 2-8 and Figure 2-4). It is also noteworthy that 33% of Chistochina households used porcupines and 30% were successful in harvesting them regardless of the total pounds harvested being substantially less than snowshoe hares or beavers.

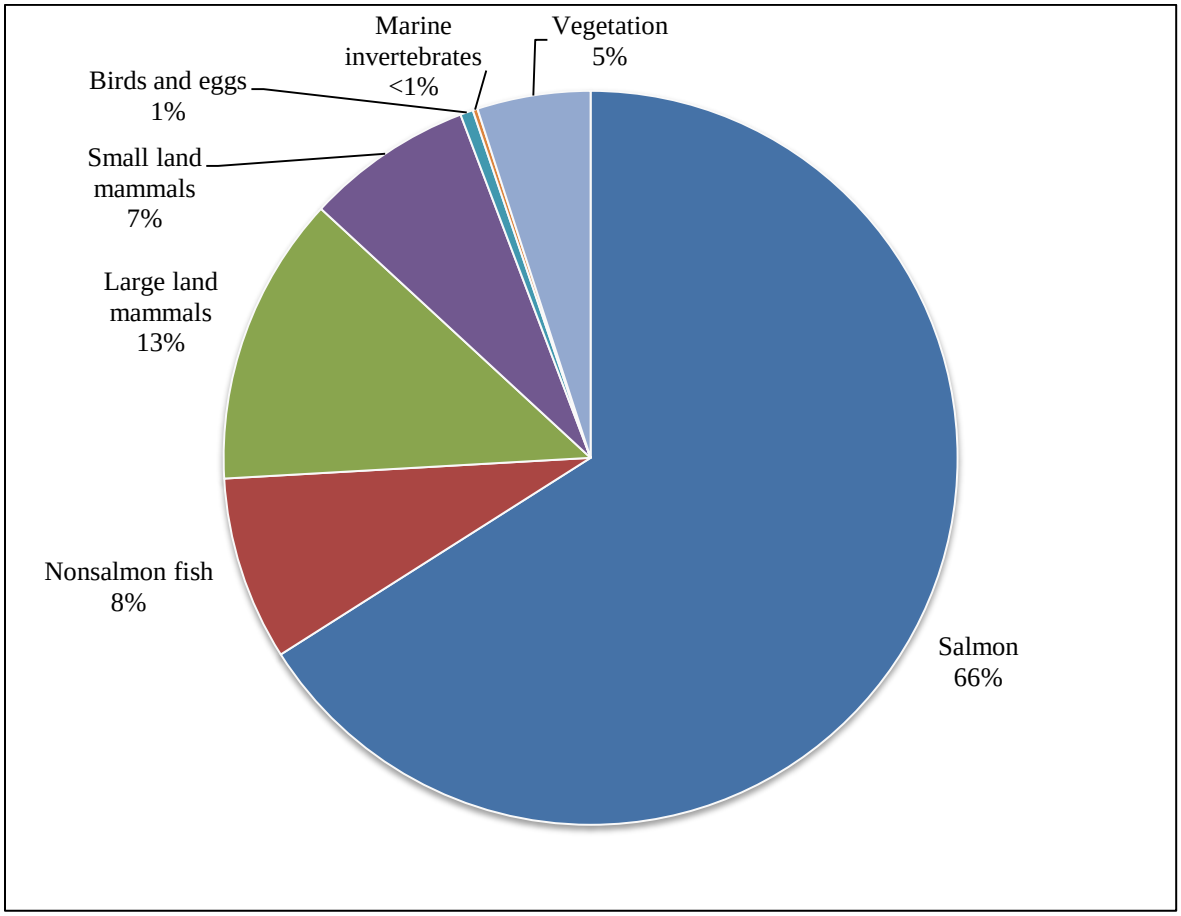

Figure 2-3.–Chistochina composition of wild resource harvests, pounds usable weight, 2009.

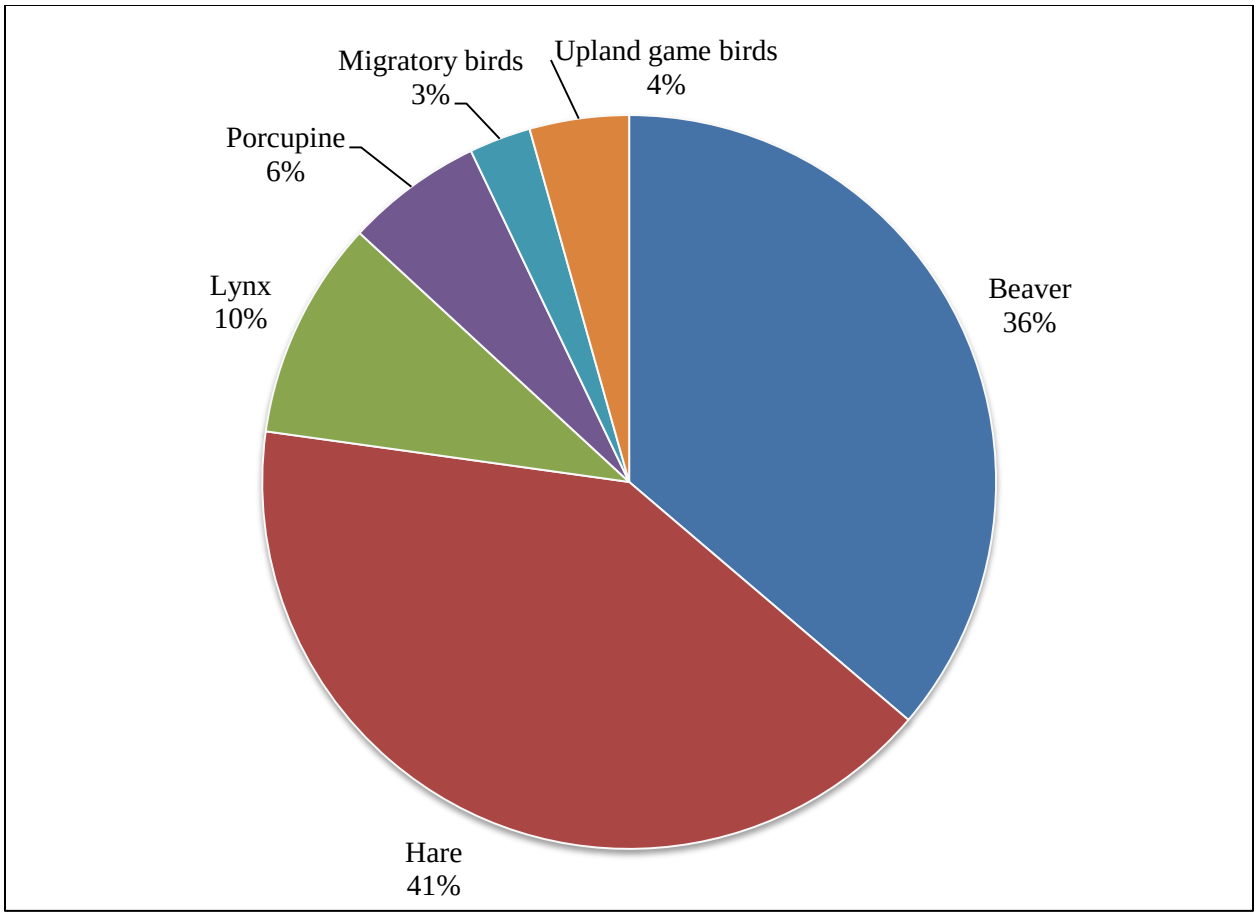

Figure 2-4.–Chistochina composition of small land mammal and bird harvests, pounds usable weight, 2009.

Nonsalmon fishing was another major activity in 2009 with an overall harvest of 1,395 lb, or 16 lb per capita (Table 2-8). The largest harvests in terms of weight included burbot (340 lb, or 4 lb per capita), northern pike (294 lb, or 3 lb per capita) and lake trout (249 lb, or 3 lb per capita). Of these 3 resources, only 15% of households used northern pike, while 41% reported using lake trout and 37% burbot. About 41% of households also reported using Arctic grayling, even though the per capita harvest was just a little less than 1 lb. In addition, 30% of the households used halibut and whitefish while only 7% attempted to harvest halibut and 15% attempted to harvest whitefish. This indicates that both resources were shared widely in the community. The per capita harvest for each of these resources was an estimated 2 lb. Figure 2-5 shows the composition of nonsalmon fish harvest in pounds usable weight in Chistochina in 2009.

Wild plants and berries were also important wild resources used in Chistochina in 2009 (Table 2-8). Nearly all (96%) of the households used vegetation and 93% harvested vegetation. The total harvest was 860 lb, or 10 lb per capita, with blueberries, lowbush cranberries and highbush cranberries being the most used species (Table 2-9). The largest berry harvests in terms of total pounds included blueberries (303 lb, or 4 lb per capita), raspberries (178 lb, or 2 lb per capita) and lowbush cranberries (175 lb, or 2 lb per capita).

In terms of total pounds harvested, birds and marine invertebrates contributed the least to the total harvest of wild resources by the community of Chistochina in 2009 (Figure 2-3). Regardless, over one-half (52%) of Chistochina households reported harvesting birds and 60% said they had used some during 2009 (Table 2-8). In comparison only a very small number (4%) of Chistochina households reported harvesting

marine invertebrates while 11% said they had used some. With the exception of the rarely used freshwater clams, considerable travel was necessary to harvest marine invertebrates.

In 2009, the Chistochina household total harvest of birds was 97 lb, or 1 lb per capita. Most of the bird harvest (60 lb, or less than 1 lb per capita) was upland game birds, including spruce grouse and ptarmigan. Some migratory birds were also harvested, particularly geese (less than 1 lb per capita) and ducks (less than 1 lb per capita). No eggs were harvested during 2009 (Table 2-8). In comparison the total harvest of marine invertebrates was composed of razor clams and totaled at 37 lb, or less than 1 lb per capita (Table 2-8).

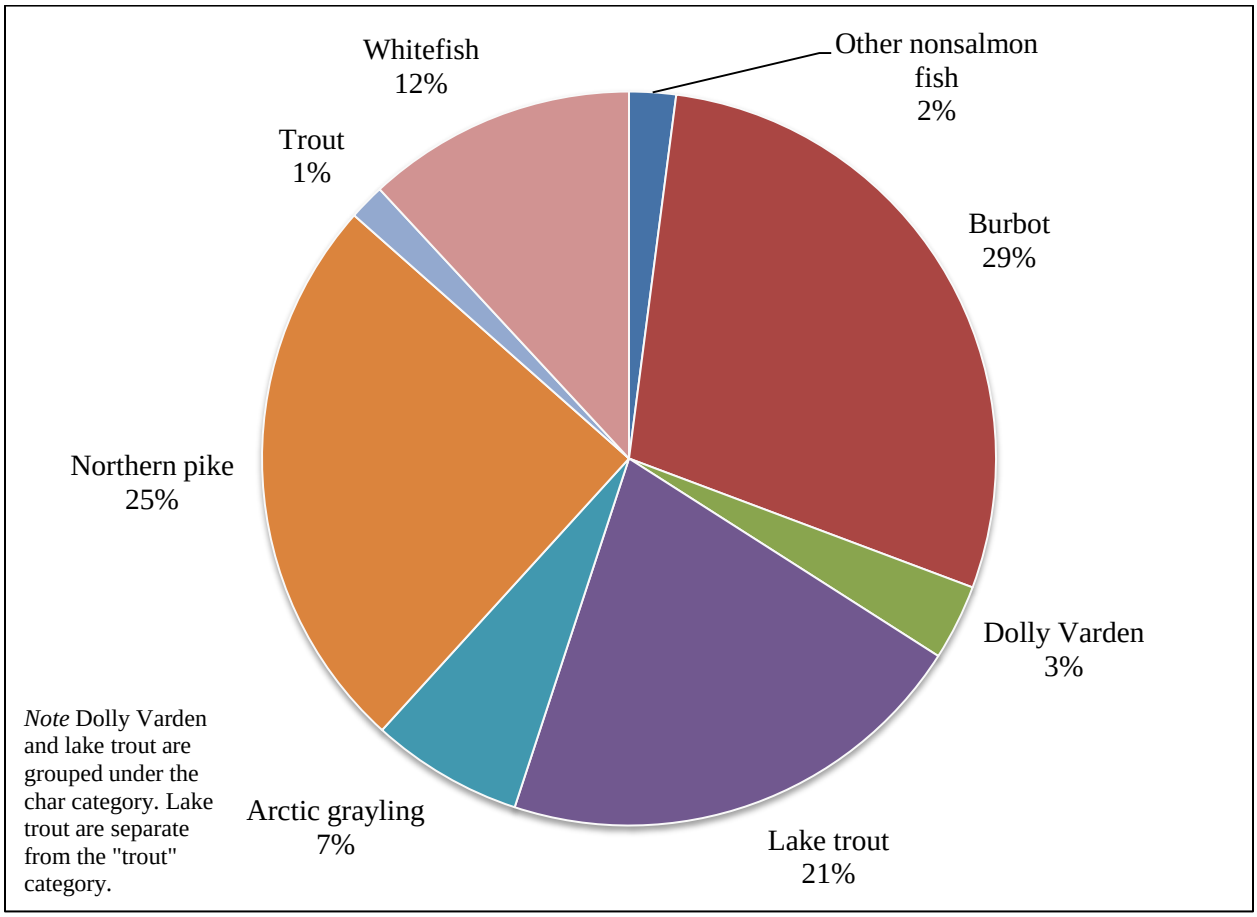

Figure 2-5.–Chistochina composition of nonsalmon fish harvest, pounds usable weight, 2009.

SHARING AND RECEIVING WILD RESOURCES

In Chistochina in 2009, the maximum number of resources used by a household was 34, and the average number of resources harvested per household was 9 resources (Table 2-7). Estimates of sharing indicated that 85% of households received wild resources from other households and 56% of households gave some resources away. Households received an average of 5 resources and gave away an average of 3 resources (Table 2-7). Vegetation was the most used resource category and overall resources in the category were among the most commonly shared with 30% of households giving away and 30% of households receiving some vegetation resources (Table 2-8).

Fish and land mammals were the 2 resource categories from which most (59%) Chistochina households reported receiving some resources. In comparison, 44% of Chistochina households reported giving away some land mammal resources while 33% reported giving away some fish resources (Table 2-8). This indicates that land mammals were the most shared resource category in Chistochina during the study year 2009. At the species level, moose was the most widely shared land mammal species with 56% of households receiving and 33% giving away moose (Table 2-8). One explanation for the large use percentage of moose is that the community had an agreement with local hunting guides who provided meat to residents. It should also be noted that community members attempted to harvest a potlatch moose.[11]

With regards to nonsalmon fish species, it is noteworthy that 26% of Chistochina households reported receiving both halibut and whitefish, while only 7% reported giving away either species. With only 7% of Chistochina households reporting halibut harvest, and 15% reporting whitefish harvest, it is likely that at least some of these resources were received from outside the community (Table 2-8). In addition to already mentioned resource categories, estimates of sharing suggest that Chistochina residents shared some migratory and upland game birds within the community but also with households in other communities. In comparison, it is likely that some Chistochina residents received marine invertebrates from outside the community (Table 2-8).

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

SALMON

For Chistochina residents, salmon comprised 66% of the wild resource harvest in pounds in 2009 (Figure 2-3). Most (8,118 lb or 71%) of this harvest was sockeye salmon (Figure 2-6, Table 2-8). Chinook salmon made up 26% (2,926 lb) of the salmon harvest, coho salmon 3% (321 lb), and landlocked salmon, less than 1%. The landlocked salmon harvested by Chistochina residents in 2009 were sockeye salmon, which are present in Copper Lake.

During the study year, Chistochina residents harvested most (93% of the total harvest) of their salmon with fish wheels. Only about 7% of the salmon harvest was caught with rod and reel (Table 2-11). The respondents noted that the community has a history of sharing fish wheels, and that some of the fish wheels continue to be shared. The respondents also commented that the joint use of a fish wheel is a way of sharing even though the study did not specifically ask about that kind of sharing.

11. According to Haynes and Simeone (2007:74–77), potlatches are an Athabascan tradition to memorialize certain life changing transitions as well as to meditate certain conflicts with a ritual distribution of gifts. Nowadays these gifts can, for example, be money, beaded items such as mittens, blankets, or rifles. A potlatch may take place after a life changing event such as a young person's first successful harvest of food or to honor and memorialize the death of an individual. One of the primary obligations of the hosts of the potlatch is to provide food for the guests and families will harvest and prepare wild resources especially for the potlatch. Potlatches were once considered as primarily social events in some anthropological literature, but in the more recent research they are described to have spiritual or religious overtones as well.

In 2009, Chinook and sockeye salmon arrived in the Copper River around Chistochina in early June and Chistochina residents continued to fish for both species through the summer. Most of the coho salmon was harvested with rod and reel, and because no household reported fishing for coho salmon in other communities along the Copper River, it is likely that the fishing took place outside the watershed. Several respondents commented that they had been seeing less salmon in the Copper River in the past few years, and that the quality of the fish was deteriorating. Some respondents pointed out that the salmon seemed smaller, less oily, and appeared to have mushier flesh than before. Based on the respondents' comments on the survey, it seems that Chistochina respondents were nevertheless able to harvest what they needed for subsistence salmon in 2009.

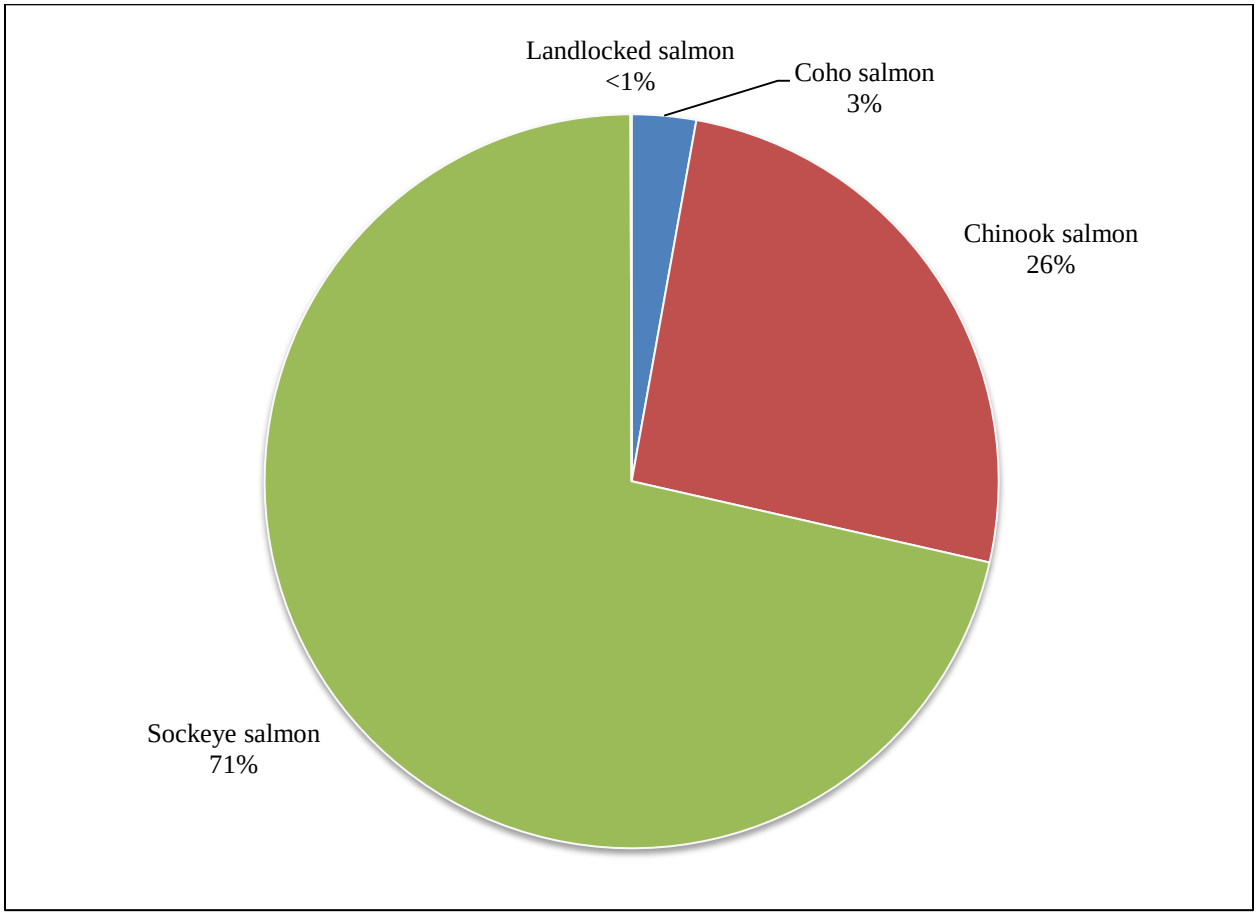

Figure 2-6.–Chistochina composition of salmon harvest, pounds usable weight, 2009.

Table 2-11.–Estimated percentages of salmon harvested by gear type, resource and total harvest, Chistochina, 2009.

				Subsistence methods											
		Removed from commercial catch		Dip net		Fish wheel		Other subsistence gear		Any subsistence gear		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	Gear type	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Resource	0.0%	0.0%	0.0%	0.0%	93.4%	93.4%	0.0%	0.0%	93.4%	93.4%	6.6%	6.6%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	93.4%	93.4%	0.0%	0.0%	93.4%	93.4%	6.6%	6.6%	100.0%	100.0%
Chum salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	36.6%	42.6%	2.4%	2.8%
	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%	2.4%	2.8%	2.4%	2.8%
Chinook salmon	Gear type	0.0%	0.0%	0.0%	0.0%	9.7%	25.3%	0.0%	0.0%	9.7%	25.3%	12.2%	31.8%	9.9%	25.7%
	Resource	0.0%	0.0%	0.0%	0.0%	91.8%	91.8%	0.0%	0.0%	91.8%	91.8%	8.2%	8.2%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	9.1%	23.6%	0.0%	0.0%	9.1%	23.6%	0.8%	2.1%	9.9%	25.7%
Pink salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye salmon	Gear type	0.0%	0.0%	0.0%	0.0%	90.3%	73.8%	0.0%	0.0%	90.3%	73.8%	45.1%	36.9%	87.3%	71.4%
	Resource	0.0%	0.0%	0.0%	0.0%	96.6%	96.6%	0.0%	0.0%	96.6%	96.6%	3.4%	3.4%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	84.3%	68.9%	0.0%	0.0%	84.3%	68.9%	3.0%	2.4%	87.3%	71.4%
Landlocked salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.1%	0.8%	0.4%	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%	0.4%	0.1%	0.4%	0.1%
Unknown salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2010.

During the study year 2009, Chistochina respondents reported harvesting Chinook and sockeye salmon along the Copper River close to Chistochina but also farther downriver in the communities of Gakona and Copper Center (figures 2-7 and 2-8). It is important to note that Chistochina respondents also pointed out that many local people traditionally identified salmon species according to the home-stream[12] of the salmon rather than by their English names. This may have caused some confusion in survey respondents' identification of the numbers of each salmon species harvested during the study year.

NONSALMON FISH

In 2009, Chistochina residents harvested an estimated total of 1,395 lb, or 16 lb per capita of nonsalmon fish (Table 2-8). In terms of total pounds taken, most of the harvest was burbot, followed by northern pike, lake trout, and whitefish (Table 2-8 and Figure 2-5). Table 2-12 lists the number and pounds of each nonsalmon fish species harvested by Chistochina residents in 2009 in percentages by gear type. Chistochina residents harvested most (67%) of their nonsalmon fish with a rod and reel. For example, all halibut, Pacific cod, and rockfish, which are marine fish and caught outside the local area, were caught with rod and reel (Table 2-12). Most Arctic grayling, northern pike, lake trout, and rainbow trout were also harvested using rod and reel. The majority of whitefish and burbot were fished with other gear, which included, for example, ice fishing equipment. It is also possible that some whitefish were caught with spears in the fall spear fishery (Table 2-12).

In the study year 2009, Chistochina residents concentrated their nonsalmon fish harvests in Copper and Tanada lakes. For example, residents harvested lake trout and burbot from these lakes during the winter months (figures 2-9 and 2-11). In comparison, Arctic grayling harvest locations were centered in Jack Lake and near the end of the Nabesna Road (Figure 2-10). As for round whitefish, residents reported harvesting whitefish in Copper Lake and Mentasta Lake (Figure 2-12).

[12] For further details on the Ahtna lexical elaboration for varieties of fish and salmon see Simeone and Kari (2002:13–19).

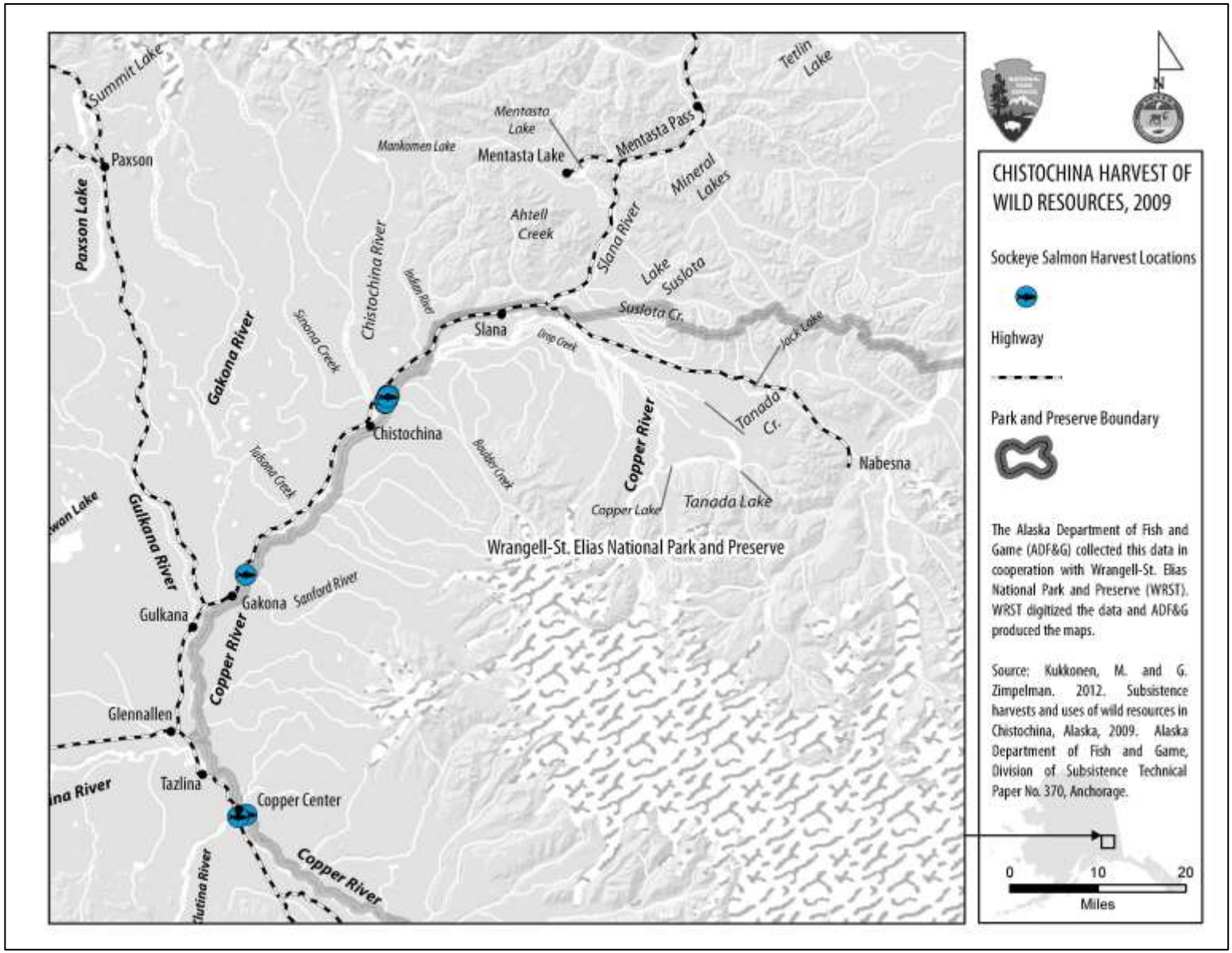

Figure 2-7.–Sockeye salmon harvest locations, Chistochina, 2009.

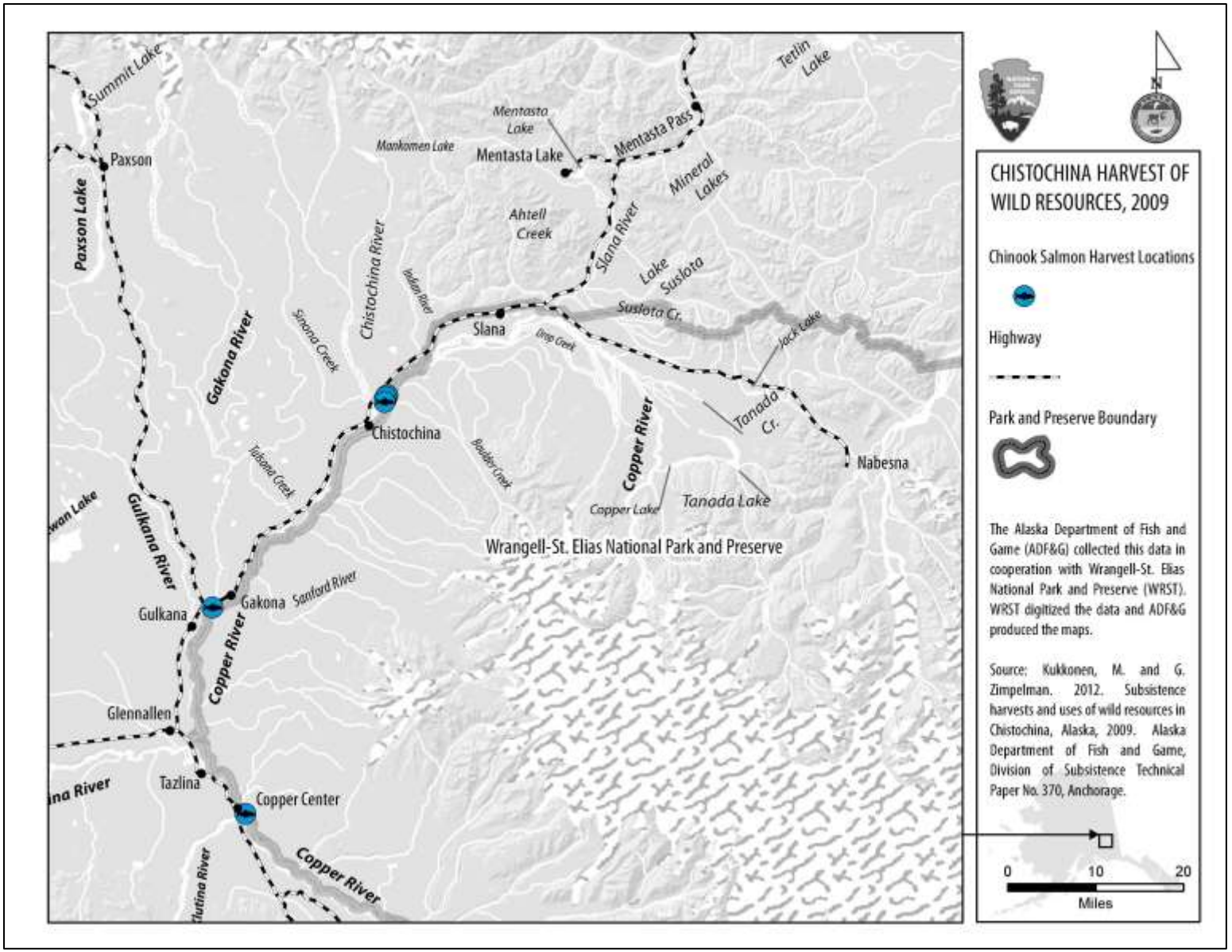

Figure 2-8.–Chinook salmon harvest locations, Chistochina, 2009.

Table 2-12.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total harvest, Chistochina, 2009.

Resource	Percentage base	Removed from commercial catch		Subsistence methods									
				Gillnet or seine		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	Gear type	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Resource	0.0%	0.0%	1.5%	1.5%	31.9%	31.9%	33.4%	33.4%	66.6%	66.6%	100.0%	100.0%
	Total	0.0%	0.0%	1.5%	1.5%	31.9%	31.9%	33.4%	33.4%	66.6%	66.6%	100.0%	100.0%
Herring	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Herring sac roe	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Herring spawn on kelp	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	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%
	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%
Smelt	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Pacific cod (gray)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.6%	0.4%	1.1%
	Resource	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%	0.4%	1.1%	0.4%	1.1%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Starry flounder	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%

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Table 2-12.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods: Gillnet or seine		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	35.9%	22.4%	23.9%	14.9%
	Resource	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%	23.9%	14.9%	23.9%	14.9%
Arctic lamprey	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	1.1%	0.3%	0.7%
	Resource	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%	0.3%	0.7%	0.3%	0.7%
Sculpin	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Burbot	Gear type	0.0%	0.0%	9.1%	13.6%	38.3%	57.4%	37.0%	55.3%	5.9%	8.8%	16.3%	24.4%
	Resource	0.0%	0.0%	0.9%	0.9%	75.0%	75.0%	75.9%	75.9%	24.1%	24.1%	100.0%	100.0%
	Total	0.0%	0.0%	0.1%	0.2%	12.2%	18.3%	12.4%	18.5%	3.9%	5.9%	16.3%	24.4%
Dolly Varden	Gear type	0.0%	0.0%	18.2%	10.2%	0.0%	0.0%	0.8%	0.5%	7.2%	4.0%	5.1%	2.8%
	Resource	0.0%	0.0%	5.6%	5.6%	0.0%	0.0%	5.6%	5.6%	94.4%	94.4%	100.0%	100.0%
	Total	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%	0.3%	0.2%	4.8%	2.7%	5.1%	2.8%
Lake trout	Gear type	0.0%	0.0%	9.1%	11.3%	20.7%	25.8%	20.2%	25.2%	11.4%	14.2%	14.3%	17.9%
	Resource	0.0%	0.0%	1.0%	1.0%	46.1%	46.1%	47.1%	47.1%	52.9%	52.9%	100.0%	100.0%
	Total	0.0%	0.0%	0.1%	0.2%	6.6%	8.2%	6.7%	8.4%	7.6%	9.5%	14.3%	17.9%
Arctic grayling	Gear type	0.0%	0.0%	45.5%	19.8%	0.0%	0.0%	2.1%	0.9%	18.6%	8.1%	13.1%	5.7%
	Resource	0.0%	0.0%	5.4%	5.4%	0.0%	0.0%	5.4%	5.4%	94.6%	94.6%	100.0%	100.0%
	Total	0.0%	0.0%	0.7%	0.3%	0.0%	0.0%	0.7%	0.3%	12.4%	5.4%	13.1%	5.7%
Northern pike	Gear type	0.0%	0.0%	9.1%	15.9%	0.0%	0.0%	0.4%	0.7%	17.9%	31.3%	12.1%	21.1%
	Resource	0.0%	0.0%	1.2%	1.2%	0.0%	0.0%	1.2%	1.2%	98.8%	98.8%	100.0%	100.0%
	Total	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.1%	0.2%	11.9%	20.8%	12.1%	21.1%

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Table 2-12.–Page 3 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods: Gillnet or seine		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Longnose sucker	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Cutthroat trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Rainbow trout	Gear type	0.0%	0.0%	9.1%	7.9%	0.0%	0.0%	0.4%	0.4%	2.1%	1.8%	1.5%	1.3%
	Resource	0.0%	0.0%	9.1%	9.1%	0.0%	0.0%	9.1%	9.1%	90.9%	90.9%	100.0%	100.0%
	Total	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	1.4%	1.2%	1.5%	1.3%
Unknown trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Broad whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Least cisco	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Humpback whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	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%
	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%
Round whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	27.8%	17.3%	26.5%	16.5%	0.0%	0.0%	8.8%	5.5%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	8.8%	5.5%	8.8%	5.5%	0.0%	0.0%	8.8%	5.5%
Unknown whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	13.2%	14.4%	12.6%	13.8%	0.0%	0.0%	4.2%	4.6%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	4.2%	4.6%	4.2%	4.6%	0.0%	0.0%	4.2%	4.6%

Source ADF&G Division of Subsistence household surveys, 2010.

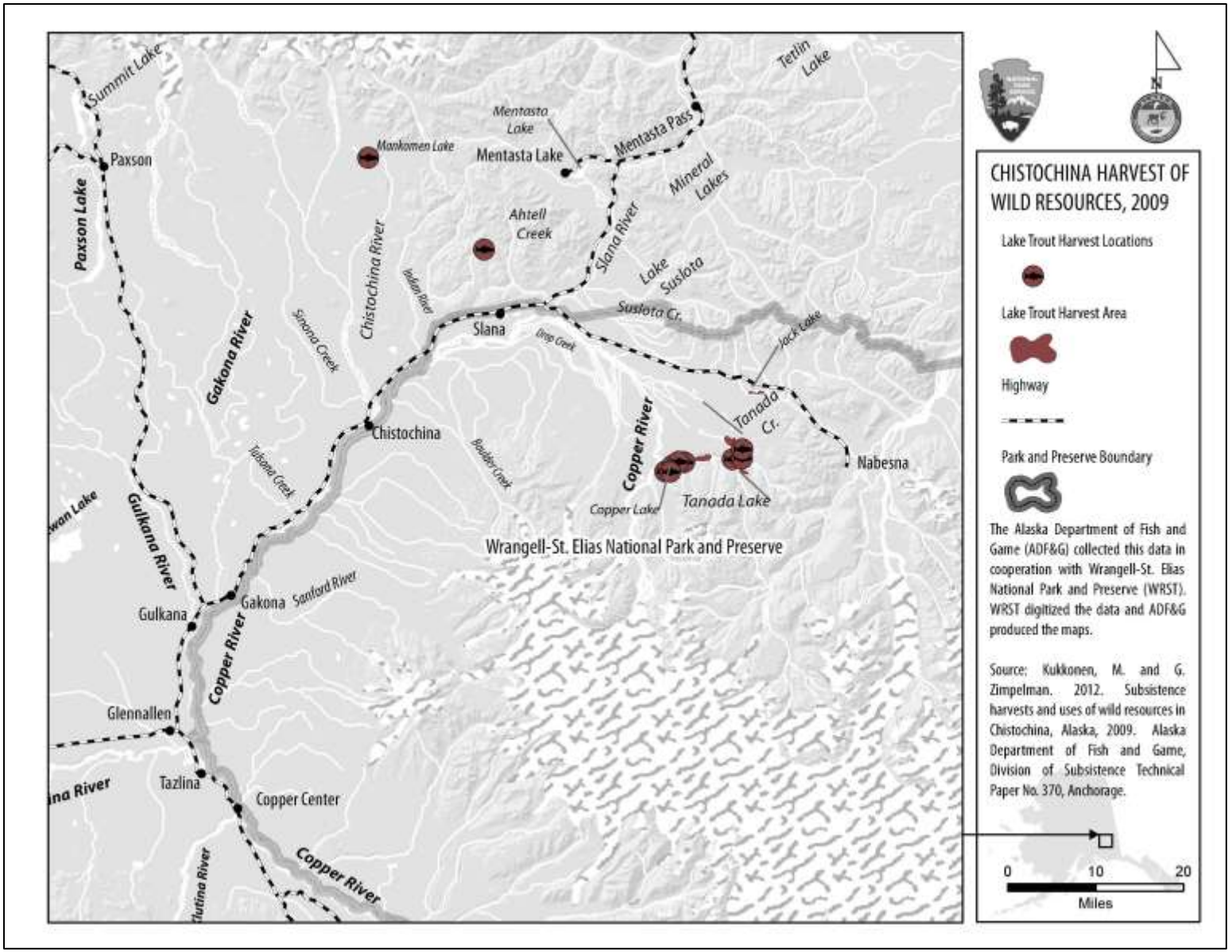

Figure 2-9.–Lake trout harvest locations, Chistochina, 2009.

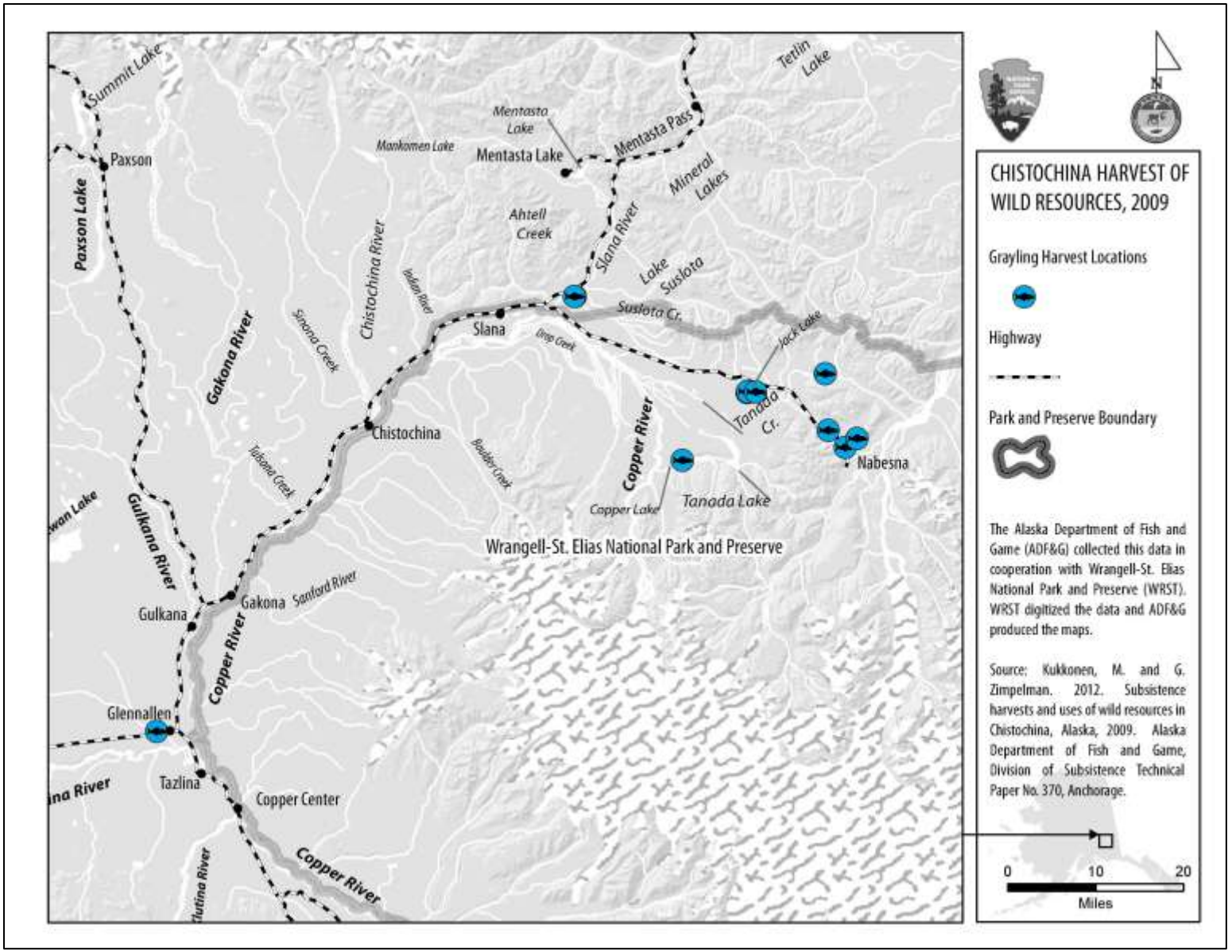

Figure 2-10.–Arctic grayling harvest locations, Chistochina, 2009.

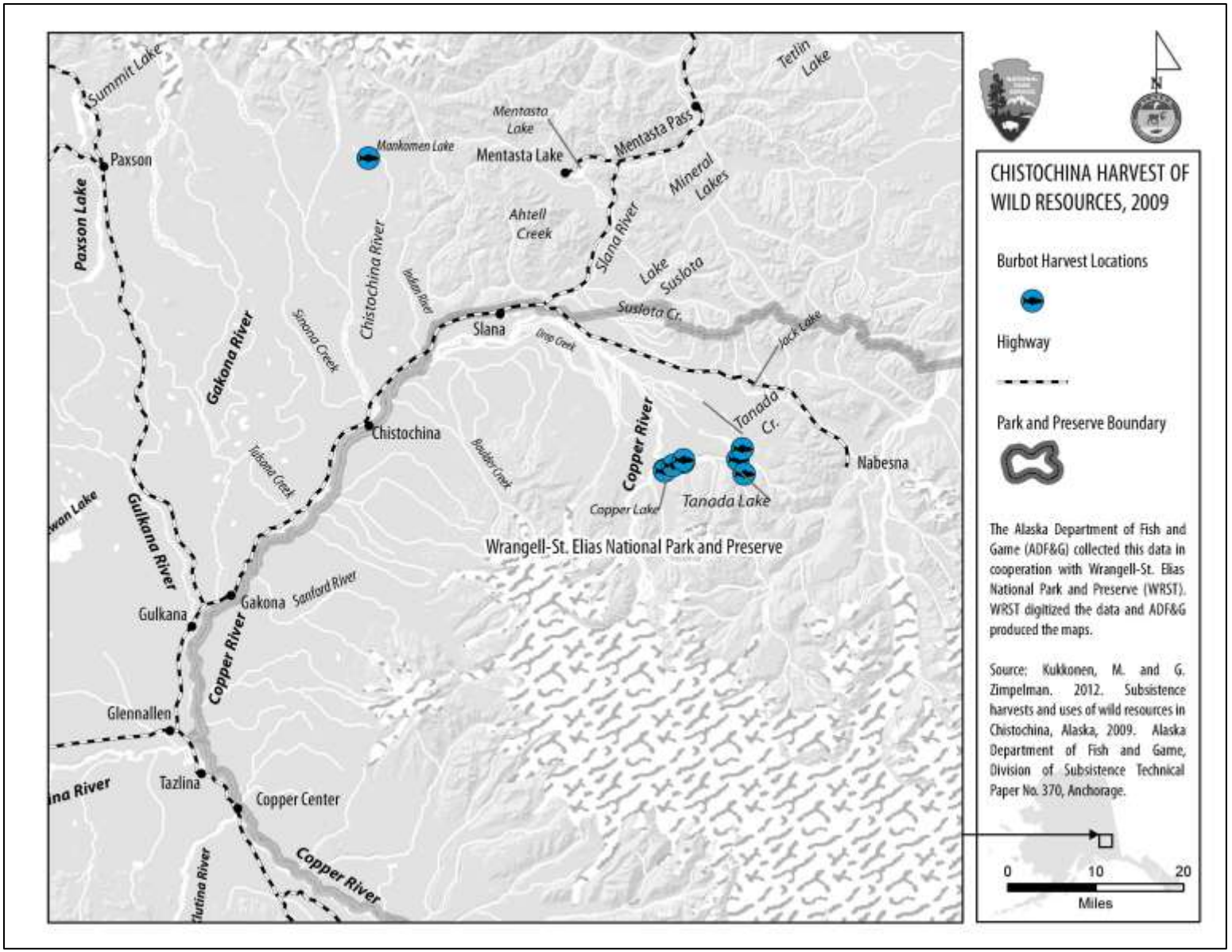

Figure 2-11.–Burbot harvest locations, Chistochina, 2009.

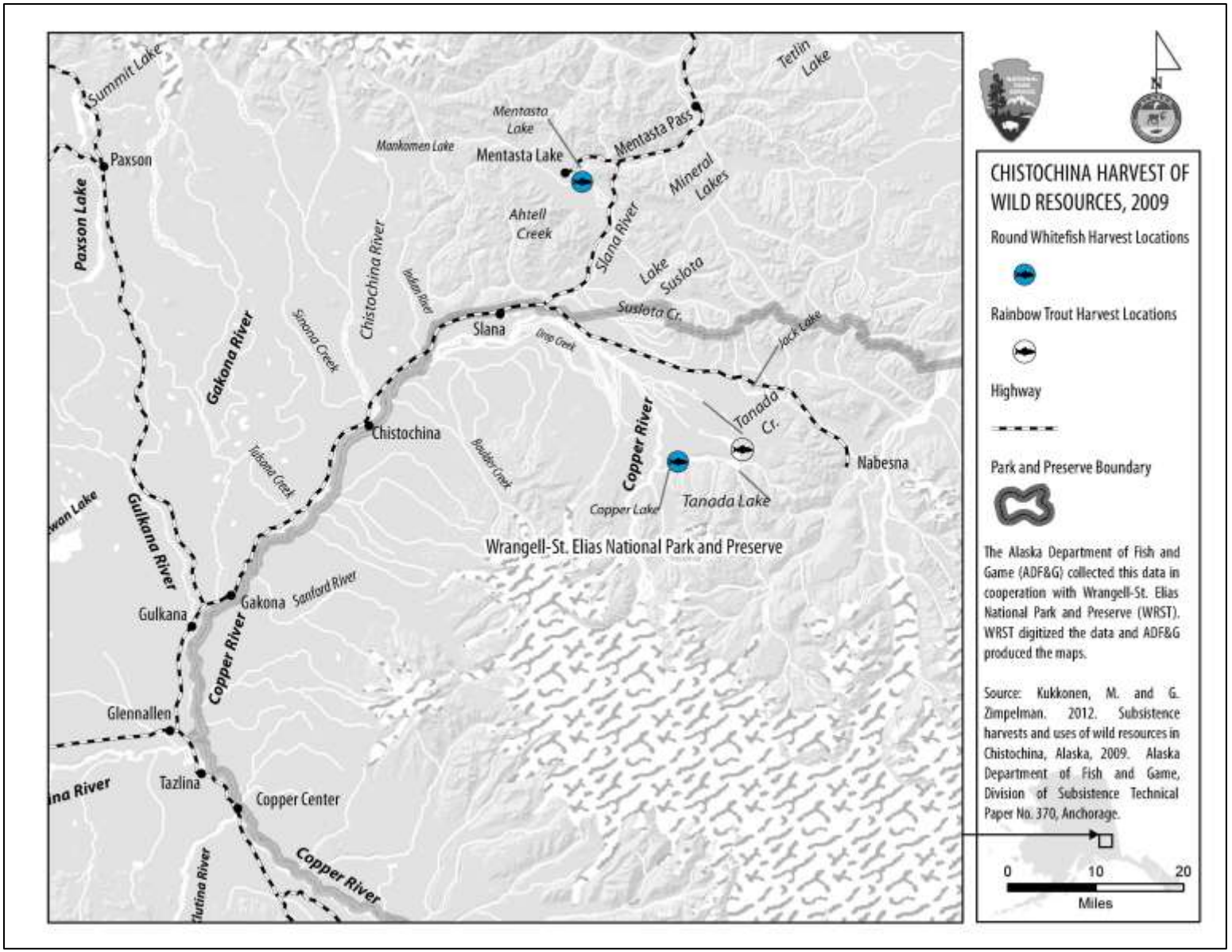

Figure 2-12.–Whitefish and rainbow trout harvest locations, Chistochina, 2009.

LARGE LAND MAMMALS

In 2009, large land mammals, specifically moose, made up 13% of the total Chistochina harvest by weight (Figure 2-3). A large percentage (63%) of households attempted to harvest moose, but only 15% were successful (Table 2-8). Nevertheless, 70% of households used moose during the study year (Table 2-8). In terms of pounds harvested in 2009, moose ranks third on the list of top 10 resources harvested (Table 2-9). Respondents reported considerable effort invested in hunting moose but that most had stopped trying after depleting their financial resources. Some Chistochina respondents commented that warm fall weather had made moose inactive and kept them far from the community in 2009. According to the study, all successful moose hunting took place in September 2009 (Table 2-13). As Figure 2-13 shows, the estimated number of moose harvested by Chistochina residents produced by this study corresponds closely with the Chistochina residents' reported moose harvest numbers available from the Division of Wildlife Conservation moose harvest permit database for the study year 2009.

Table 2-13.–Estimated large land mammal harvest by month and sex, Chistochina, 2009.

Harvest month	Black bears			Caribou			Moose		
	Male	Female	Unknown	Male	Female	Unknown	Male	Female	Unknown
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown month	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	0.0	0.0	0.0	0.0	0.0	0.0	**4.9**	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2010.

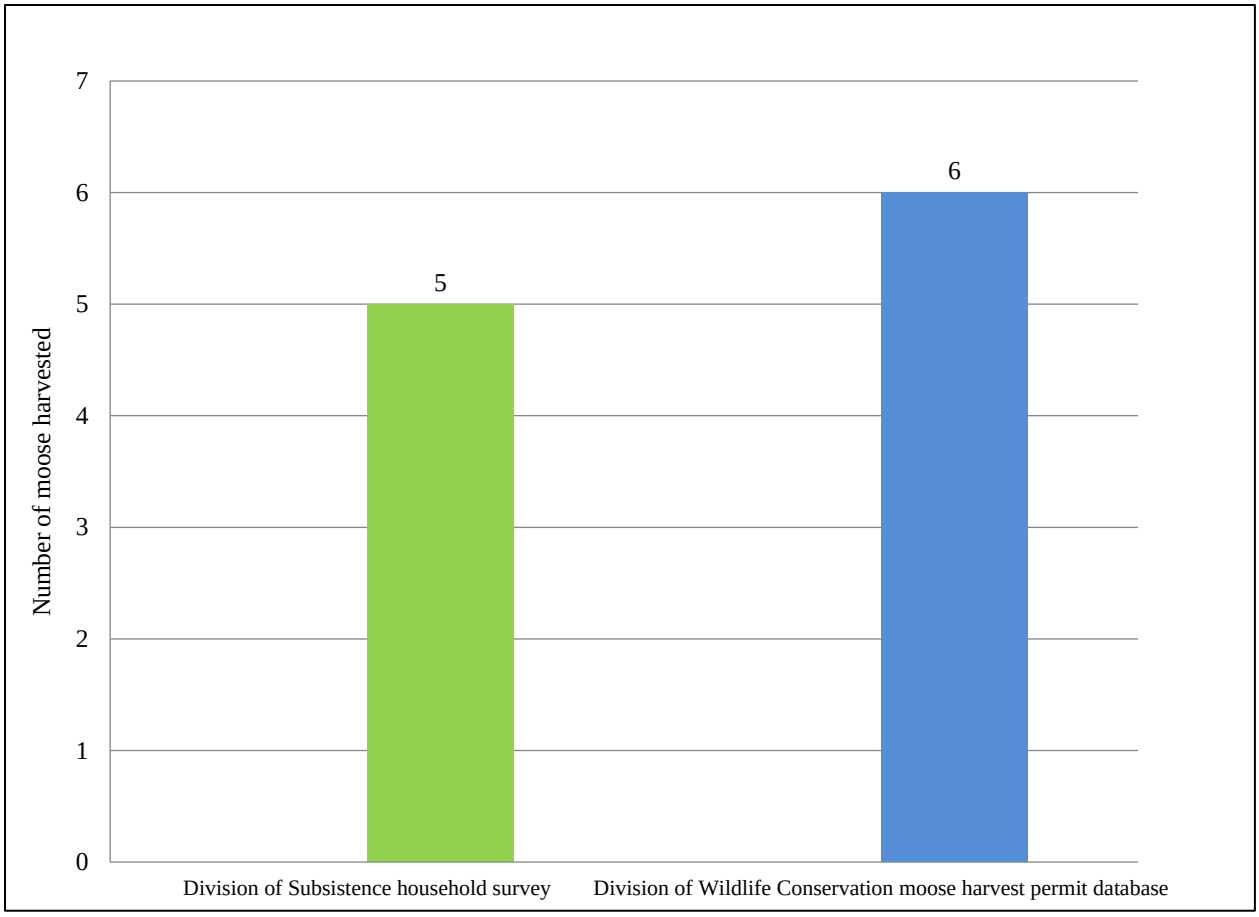

Figure 2-13.–Moose harvest number comparison by data source, Chistochina, 2009.

Respondents also noted that not only were their harvests of moose down compared to recent years, but also their harvests of caribou. In 2009, approximately 15% of Chistochina residents reported attempting to harvest caribou but none were successful. The few households (11%) that reported using caribou during the study year had received the resource (Table 2-8). Respondents commented that in the past few years the unsuccessful harvesting was mainly due to the lack of animals in the area during hunting season. A small percentage of respondents reported attempting to harvest brown bears, black bears, and Dall sheep, but none were successful (Table 2-8).

Chistochina residents used large areas for hunting and searching of large land mammals. Much of the hunting was done using motorized vehicles, such as airplanes, highway vehicles, four-wheelers, and snowmachines, depending on the time of the year. In 2009, the search areas for moose largely followed the Tok Cutoff Road corridor, toward the communities of Slana, Mentasta Lake, and Tok but also toward Gakona. Popular search areas also included the Nabesna Road corridor and an area around Tanada Lake (Figure 2-14). During the study year, caribou search areas included the Nabesna Road corridor and a separate search area along the Denali Highway east of Paxson (Figure 2-15).

SMALL LAND MAMMALS

As listed in Table 2-8, the total harvest of small land mammals by Chistochina residents in 2009 for wild foods was 1,269 lb, or 15 lb per capita. Most of the harvest was snowshoe hares (560 lb, or 7 lb per capita) and beavers (495 lb, or 6 lb per capita). Porcupine was also used by 33% of Chistochina households even though the total pounds harvested was substantially less than snowshoe hares or beavers. The harvest of small land mammals for wild foods comprised approximately 7% of the total harvest in

2009 (Figure 2-3). The harvest and search areas for small land mammals in 2009 included a large area northwest of Chistochina (partly along the Gakona River and Sinona Creek), and several smaller areas northeast of Chistochina along the Tok Cutoff Road corridor toward Slana, as well as along the Nabesna Road corridor (Figure 2-16). In addition, there was one smaller search area in between Tanada and Copper lakes.

BIRDS

In 2009, Chistochina residents harvested migratory waterfowl close to the community and toward the end of the Nabesna Road. Upland game birds were harvested along the Chistochina River and Boulder Creek, as well as along the Nabesna Road closer to Slana (Figure 2-17). No gathering of bird eggs took place during the study year. The total harvest of birds was an estimated 97 lb, or 1 lb per capita (Table 2-8). The total harvest of upland game birds was 60 lb, or less than 1 lb per capita. All of the migratory bird harvest was geese and ducks, such as mallards, and the total harvest was estimated at 37 lb, or less than 1 lb per capita (Table 2-8).

MARINE INVERTEBRATES

The harvest of marine invertebrates by Chistochina residents in 2009 was very small, at a total of 37 lb, or less than 1 lb per capita (Figure 2-3, Table 2-8). Most of the marine invertebrates used during the study year were razor clams. Only 4% of households reported trying to harvest marine invertebrates while 7% reported receiving them (Table 2-8). Chistochina residents must travel considerable distances to harvest most marine invertebrates and it is likely that a few Chistochina households received some of the marine invertebrates from other communities.

VEGETATION

The most used category of subsistence resources in Chistochina during the study year 2009 was vegetation, with 93% of the households harvesting, and 96% using a resource in this category (Table 2-8). Most wild plants were harvested close to the community of Chistochina (Figure 2-18). In comparison, the harvest and search areas for berries ranged greatly—from the vicinity of Chistochina, all the way to Slana along the highway and farther along the Nabesna Road corridor (Figure 2-17). According to Chistochina respondents, people often pick berries as they search for moose and caribou. In 2009, Chistochina residents harvested 860 lb, or 10 lb per capita of vegetation, consisting mostly of berries (Table 2-8). The harvest of blueberries placed eighth in terms of pounds per capita harvested in 2009 and ranked first in terms of percentage of households using the resource (Table 2-9). Residents of Chistochina harvested 804 lb of berries, or 9 lb per capita, and 56 lb of other plants, or less than 1 lb per capita (Table 2-8). Most of the other plants harvested were wild rose hips, which are commonly used to make jam. The study also asked respondents about their use of firewood and 67% of households reported harvesting firewood and 74% using firewood (Table 2-8). According to the study, 9 Chistochina households did not use any wood for heating, 10 households said they used 26–50% of wood for heating, and 4 households relied entirely on wood for heating (Table 2-10).

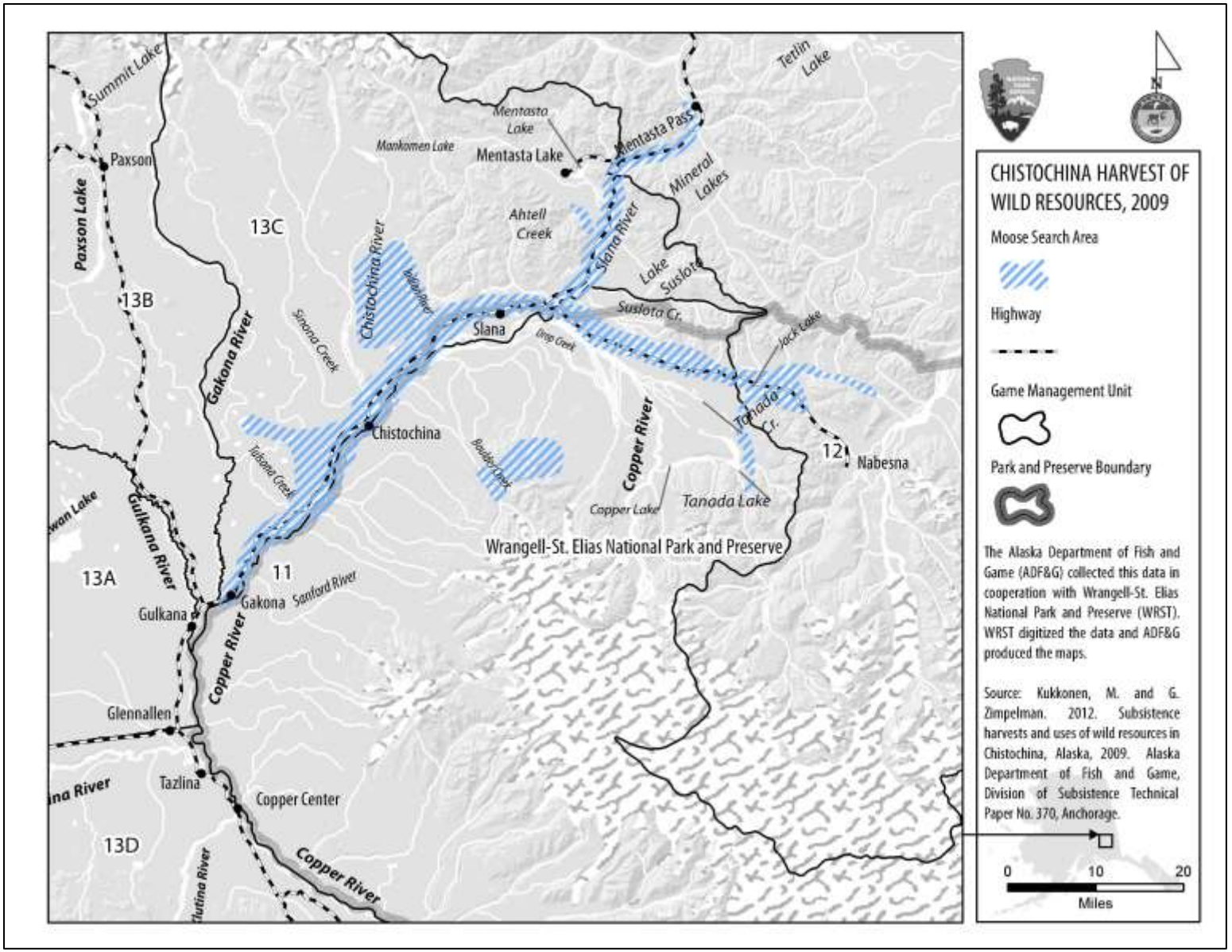

Figure 2-14.–Moose search areas, Chistochina, 2009.

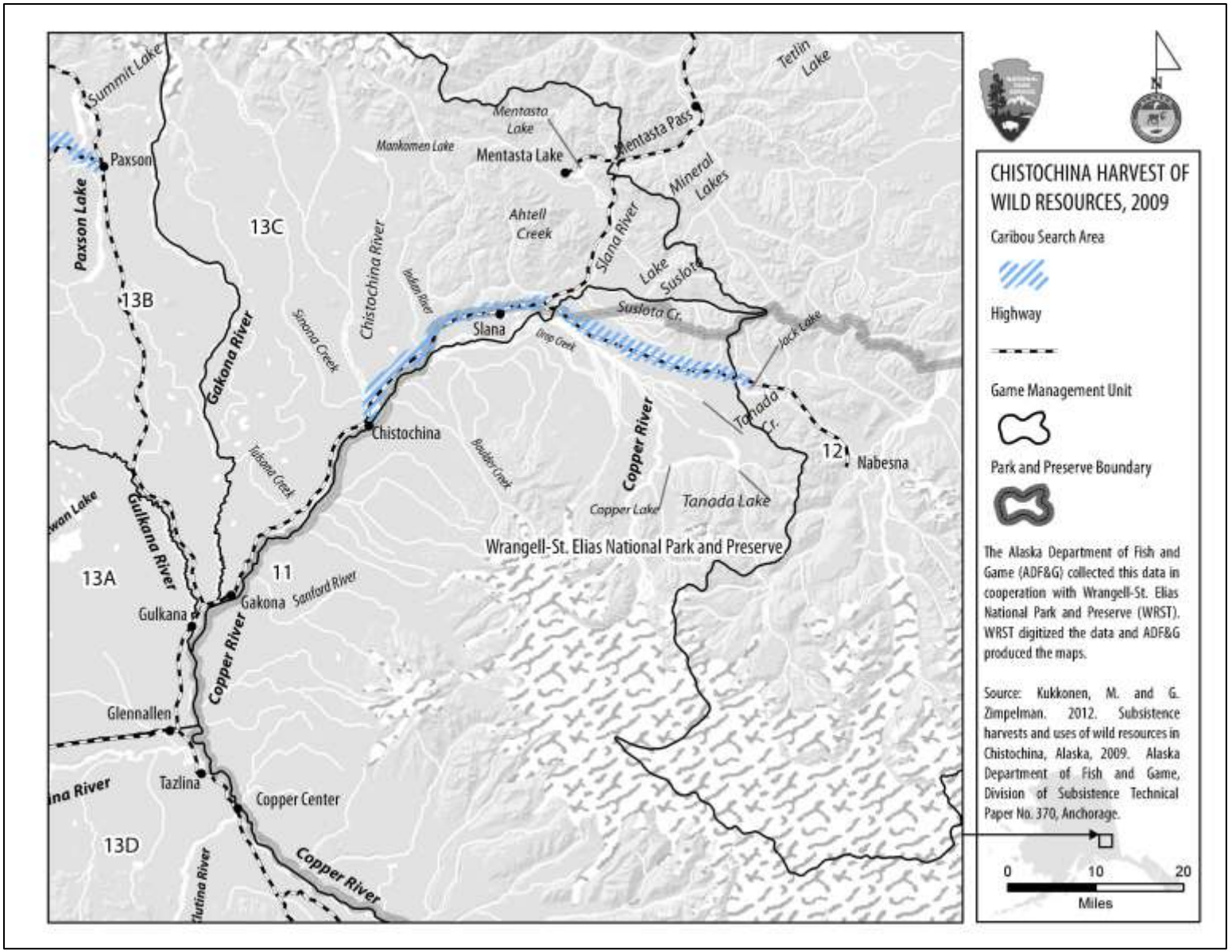

Figure 2-15.–Caribou search areas, Chistochina, 2009.

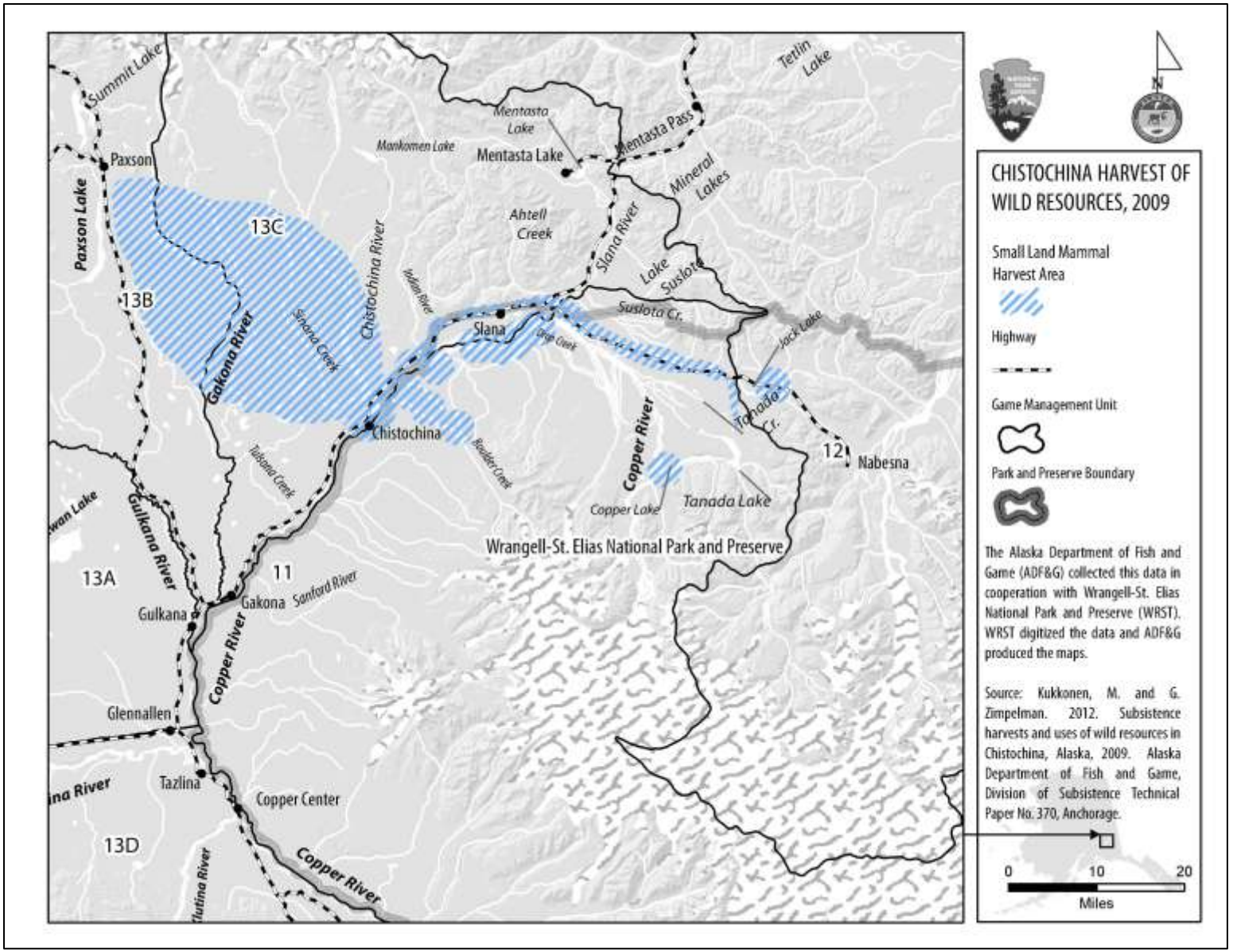

Figure 2-16.–Small land mammals search areas, Chistochina, 2009.

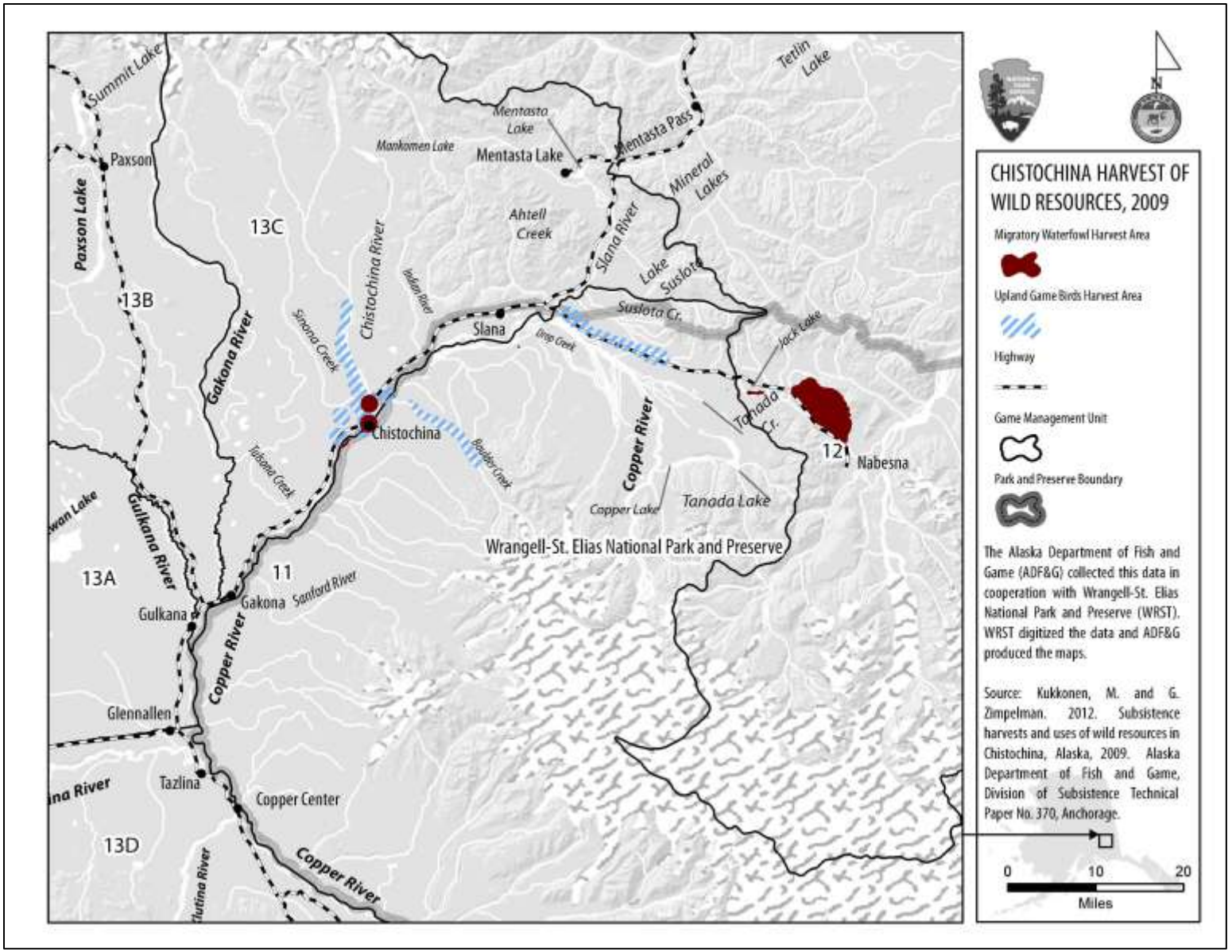

Figure 2-17.–Migratory waterfowl and upland game bird harvest areas, Chistochina, 2009.

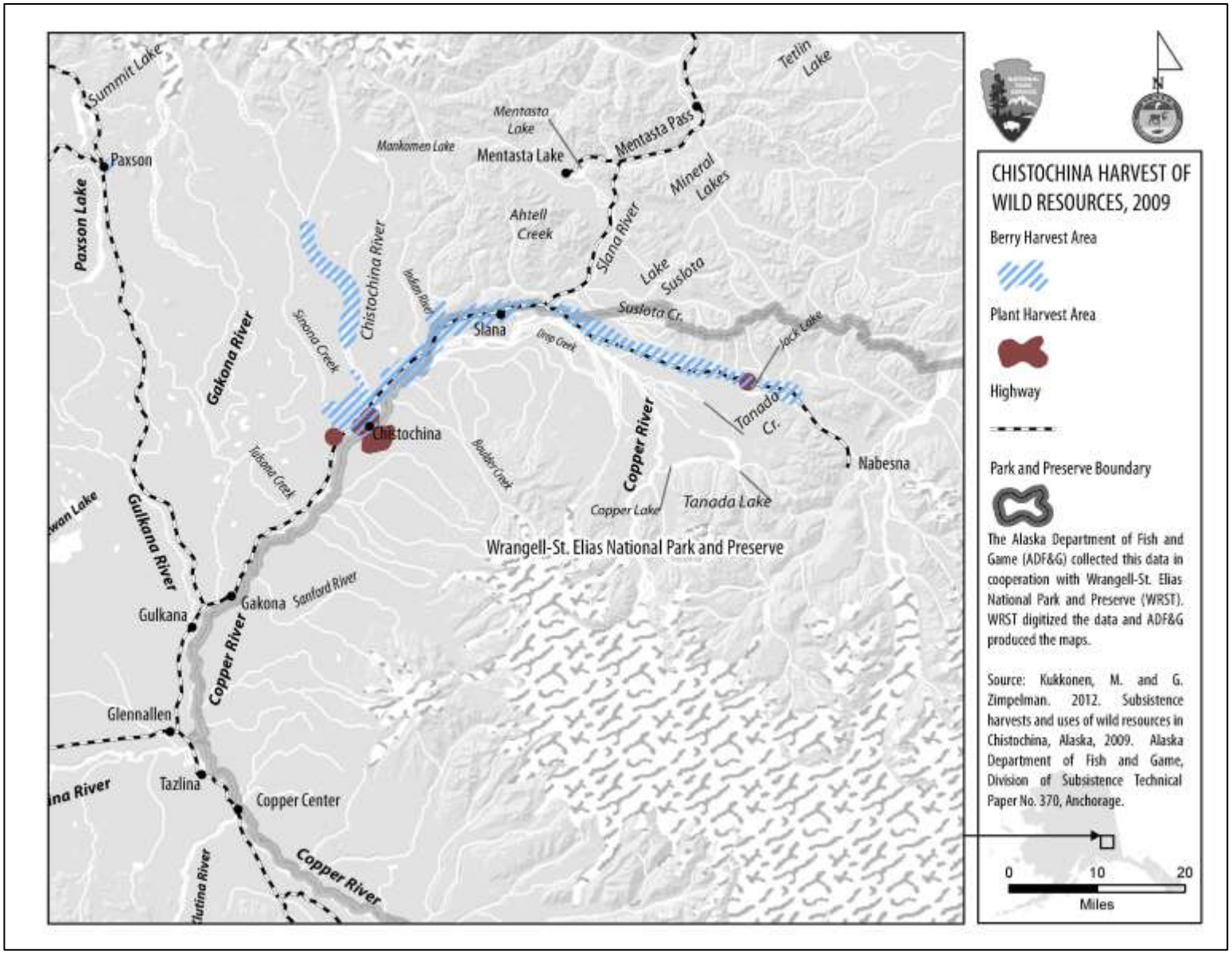

Figure 2-18.–Plant and berry harvesting areas, Chistochina, 2009.

COMPARING HARVESTS AND USES IN 2009 WITH PREVIOUS YEARS

The majority of Chistochina respondents said that their harvests and uses of wild resources in 2009 were about the same or less as in the recent past (the last 5 years). Figure 2-19 portrays respondents' assessments for each major resource category. For example, of the households that answered the question about their uses of wild resources in 2009 in comparison to the previous 5 years, about 44% of households reported that their use of large land mammals was less in 2009 than in previous years. Overall, a larger percentage of Chistochina households reported to have used either about the same or less of wild resources in 2009. The only resource categories that more than 5% of Chistochina respondents reported to have used more in 2009 than previous years were plants, berries, and greens (26%); small land mammals (15%); salmon (11%) and large land mammals (7%). In comparison, 44% of Chistochina households reported to have used less large land mammals, 41% less salmon, and 30% less nonsalmon fish (Figure 2-18). Plants, greens, and berries was the only resource category where the percentage of households reporting to have used less or alternatively more of the resource was the same at 26% (Figure 2-19).

Table 2-14 lists the reasons Chistochina respondents gave for changes in harvests and uses by resource category. This was an open-ended question, and respondents could provide more than one reason for changes. Project staff grouped the responses into categories, such as competition for resources, regulations hindering or helping residents to harvest resources, sharing of harvests, effects of weather on animals and subsistence activities, changes in the animal populations, personal reasons such as work and health, and other outside effects on residents' opportunities to engage in subsistence activities.

Of the surveyed households that answered the question in the 2009 survey, the availability of animals and less sharing were the reasons most cited for less uses of wild resources overall (Table 2-14). Personal reasons were cited as the main reasons for less use of all resources, but particularly for nonsalmon fish, large and small land mammals, migratory waterfowl, and marine invertebrates. Work interference was given as a reason for less use of migratory waterfowl, small land mammals, and nonsalmon fish. Competition over resources was only mentioned as a reason for less use of upland game birds and large land mammals. Regulations, in comparison, were cited as a reason for less use of nonsalmon fish, large land mammals, and migratory waterfowl. It is worth noting that none of the respondents answering this question cited fuel–equipment cost as the major reason for less use of wild resources in 2009 (Table 2-14). A reason for this could be the unusual seasonal employment opportunity that community members had in 2009 with a mineral exploration company operating in the area.

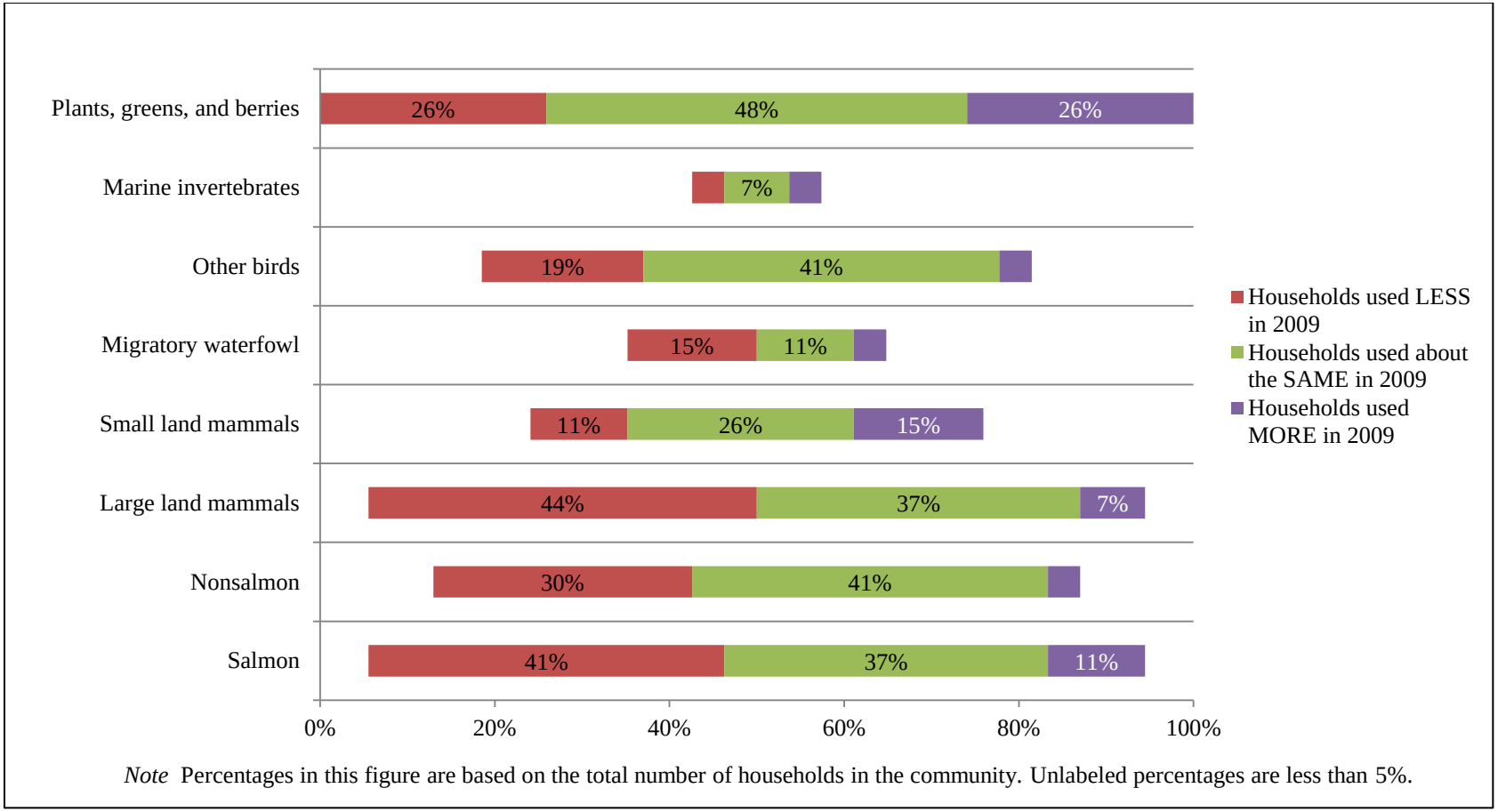

Figure 2-19.–Household use of resources compared to recent years, Chistochina, 2009.

Table 2-14.–Change in household use of resources compared to recent years, Chistochina, 2009.

Resource category	Valid responses[a]	Households reporting less use[b]	Fewer animals available		Poor Weather		Work interfered		Competition		Regulations		Less sharing		Other personal reasons		Fuel–Equipment too expensive	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Salmon	27	11	5	45%	0	0%	1	9%	1	9%	1	9%	4	36%	0	0%	0	0%
Nonsalmon	24	11	8	73%	1	9%	0	0%	0	0%	0	0%	2	18%	0	0%	0	0%
Large land mammals	20	8	2	25%	0	0%	2	25%	0	0%	1	13%	3	38%	1	13%	0	0%
Small land mammals	24	12	1	8%	0	0%	2	17%	1	8%	2	17%	6	50%	0	0%	0	0%
Migratory waterfowl	14	3	1	33%	0	0%	1	33%	0	0%	0	0%	2	67%	0	0%	0	0%
Other birds	8	4	0	0%	0	0%	2	50%	0	0%	1	25%	3	75%	0	0%	0	0%
Marine invertebrates	17	5	2	40%	0	0%	1	20%	1	20%	0	0%	1	20%	0	0%	0	0%
Plants, greens, and berries	4	1	0	0%	0	0%	0	0%	0	0%	0	0%	1	100%	0	0%	0	0%
All resources	**27**	**7**	**6**	**86%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**1**	**14%**	**0**	**0%**	**0**	**0%**

Source ADF&G Division of Subsistence household surveys, 2010

a. Valid responses include only households that used the resource and responded to the question about use.

b. Percentages in this table are based on the number of households reporting less use, not the number of valid responses.

Changes in the resource harvest by Chistochina residents can also be discerned through comparisons with findings from other study years. For Chistochina, comprehensive subsistence household harvest data have been collected for 1982, 1987, and 2009 (Table 2-15, figures 2-20 and 2-21). Household surveys documenting only migratory bird and waterfowl harvests took place in 2000. Figure 2-20 summarizes the percentage of the annual harvest for each major resource category from the 3 comprehensive studies. In terms of total pounds harvested, the harvests of large land mammals, birds and eggs and vegetation were higher in 1982 than in 2009 (Table 2-15). The 1987 study found only the harvests of vegetation and small land mammals to be smaller than the harvests of other wild resources in 1982. With the exceptions of salmon and small land mammals, there has been an overall decline in harvests in all resource categories since the 1982 study. In 2009, the harvests of salmon and small land mammals were higher than in previous study years. According to respondents, this was because of the absence of moose and caribou in the area during the hunting season, resulting in increased reliance on salmon. The increase in small land mammal harvest in 2009 can be attributed to the significant amount of snowshoe hares that Chistochina residents caught during the study year. A probable reason for the increased harvest of snowshoe hares is that 2009 was likely the peak year of the most recent high in the snowshoe hare population in the Copper River Basin (Becky Schwanke, Area Biologist, Glennallen, ADF&G, personal communication to Robbin LaVine, Subsistence Research Specialist II, Anchorage, ADF&G, March 5, 2012).

Table 2-15.–Total estimated community harvests, pounds usable weight, Chistochina, 1982, 1987, 2009.

Resource category	Harvests by percent usable weight			Harvests by pounds usable weight			Per capita harvests by pounds usable weight		
	1982	1987	2009	1982	1987	2009	1982	1987	2009
Salmon	37.2%	49.5%	66.0%	3,554	10,197	11,371	42.8	129.6	131.0
Nonsalmon fish	7.9%	10.7%	8.1%	758	2,199	1,395	9.1	27.9	16.1
Large land mammals	37.5%	32.1%	12.8%	3,579	6,598	2,200	43.1	83.8	25.4
Small land mammals	4.3%	1.6%	7.4%	408	322	1,269	4.9	4.1	14.6
Birds and eggs	1.3%	0.9%	0.6%	128	186	97	1.5	2.4	1.1
Marine invertebrates	0.0%	0.2%	0.2%	0	34	37	0.0	0.4	0.4
Vegetation	11.7%	5.1%	5.0%	1,118	1,048	860	13.5	13.3	9.9
All resources	**100.0%**	**100.0%**	**100.0%**	**9,545**	**20,584**	**17,229**	**114.8**	**261.5**	**198.5**

Sources 1982 and 1987: ADF&G Division of Subsistence, Community Subsistence Information System (CSIS), http://www.adfg.alaska.gov/sb/CSIS/; 2009: ADF&G Division of Subsistence household surveys, 2010.

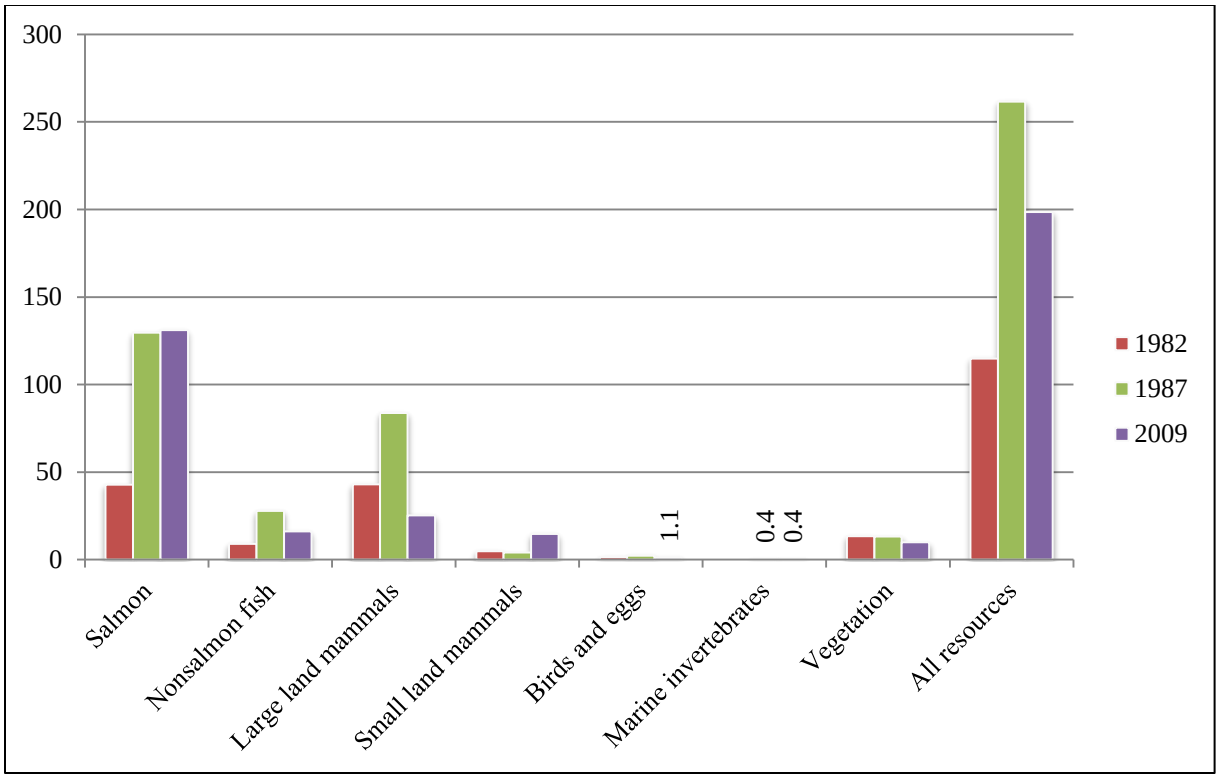

Figure 2-20.–Time comparison of per capita harvests in pounds edible weight, Chistochina, 1982, 1987, and 2009.

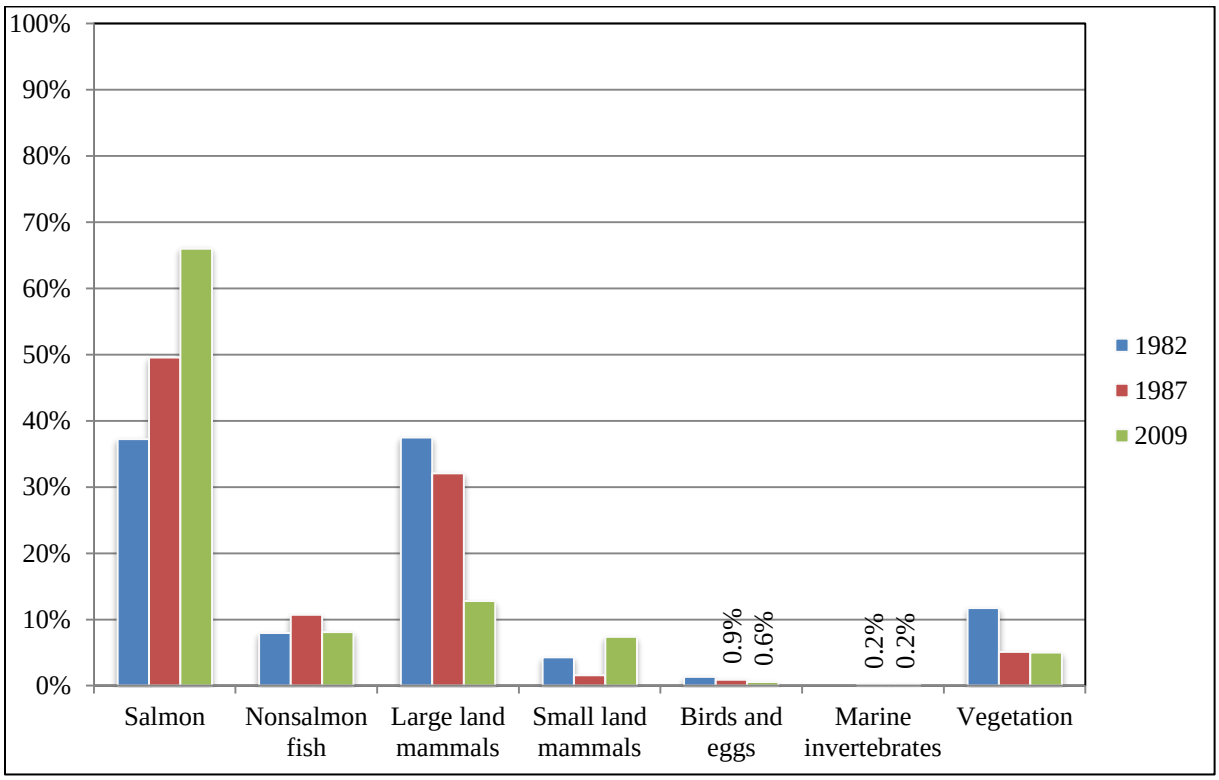

Figure 2-21.–Time comparison of categorical harvests as percentages of the total harvest in pounds edible weight, Chistochina, 1982, 1987, and 2009.

In 1982, the total harvest of wild resources in pounds usable weight in Chistochina was 9,545 lb (115 lb per capita), 20,584 lb (262 lb per capita) in 1987, and 17,229 lb (199 lb per capita) in 2009 (Table 2-15). In terms of the per capita harvest, the 3 study years show a steady increase in the harvest of salmon (Figure 2-20). Nonsalmon fish, large land mammals, and birds and eggs are resource categories in which the total harvests first increased (from 1982 to 1987) and then declined (from 1987 to 2009) during the 3 study years. Small land mammals is the only resource category that has had a reverse, first decreasing and then an increasing harvest trend, while marine invertebrates and vegetation have held steady throughout the 3 study years (Figure 2-20). The respondents commented that 2009 was a bad berry year, which might explain why the harvest of vegetation was down.

Figure 2-21 and Table 2-15 show the gradual decline in percentages in the proportion of large land mammals in the overall harvest of wild resources. In 1982, the harvest of large land mammals was 38% of the harvest. In 1987 it had declined to 32%, and in 2009 it was only 13%. It is possible that changes in regulations have attributed to this decline. Despite being the resource used by most households in Chistochina in the 2009 study, the total harvest of vegetation has also been in small decline since 1982. In 1982, vegetation constituted 12% of the total harvest, in 1987 it dropped to 5%, and in 2009 it was 5% of the total harvests (Table 2-15).

Salmon, however, shows an opposite trend, with the proportion of the total harvest climbing from 37% in 1982 to 50% in 1987, and to 66% in 2009 (Table 2-15, Figure 2-21). This demonstrates a gradual increase in the reliance on salmon, which continues to be the main staple of the wild food harvest for Chistochina residents. Small land mammals are the only other resource category that has seen increase in total amount harvested since the previous study. In 1982, small land mammals constituted 4% of total harvest, declining to 2% in 1987 but rising to 7% in 2009 (Table 2-15). As mentioned earlier, the increase in small land mammal harvest can be attributed to the large number of snowshoe hares taken by Chistochina residents during the study year.

The 1982 study identified the range of total household wild food harvest: from a low of less than 100 lb to a maximum of over 1,400 lb (Stratton and Georgette 1984:148). Similarly, the range of total resource harvest per household in 2009 varied extremely: from 0 to 1,899 lb (Table 2-7). In the 1987 study, the range was described to be less extreme, but unfortunately the study does not provide a numerical range to compare to (McMillan and Cuccarese 1988:73).

Figure 2-22 presents the use and harvest of all wild resource categories in percentages in the 3 study years. The only resource category showing increase in both harvest and use in all 3 study years is salmon. In comparison, vegetation is the only resource category that has steadily seen an increase in total harvest levels in all 3 study years. At the same time, the use of vegetation first declined in 1987 and increased again in 2009 when compared to the 1982 values. Large land mammals is the resource category with the most drastic decline in harvest levels, while its reported use has been high in the community in all 3 study years. Small land mammals and birds and eggs are the 2 resource categories where both the harvest and use levels first declined in 1987 and then increased in 2009 when compared to the 1982 values. In comparison, nonsalmon fish is the only resource category with an increase in total harvest levels and use in 1987, followed by a decline in both harvest and use in 2009 when compared to the 1982 values. The harvest and use of marine invertebrates has remained very small in all 3 study years.

The number of resources harvested per household increased to 9 in 2009 from about 6 in 1987 and 7 in 1982 (Table 2-7; McMillan and Cuccarese 1988:70; Stratton and Georgette 1984:144). In 2009, the mean number of resources used per household increased to 11 from about 8 in 1987 and 11 in 1982 (Table 2-7; McMillan and Cuccarese 1988:70; Stratton and Georgette 1984:144). In terms of sharing, the percentage of Chistochina households receiving a resource during the study period continued to increase: in 1987, 75% of households reported receiving a resource, and in 2009, the percentage was 85. In terms of numbers of resources received, the mean increased from 2 resources in 1987 to 5 in 2009. The mean number of resources given away remained about the same for 1987 and 2009, at 3 resources (Table 2-7;

McMillan and Cuccarese 1988:70). Unfortunately, the numbers or percentages for sharing are not available for the 1982 study year.

Salmon continued to be among the most shared resources when comparing the 1987 and 2009 studies—56% of Chistochina households received salmon in 2009 (Table 2-8) and 50% received salmon in 1987 (McMillan and Cuccarese 1987:74). In the 2009 study 59% of households reported receiving land mammals while the corresponding number in the 1987 study was 39%. According to the 2009 study, 56% of Chistochina households received moose but only 11% received caribou (Table 2-8). In 1987, the corresponding numbers were more evenly distributed with 25% receiving moose and 21% receiving caribou (McMillan and Cuccarese 1987:74).

While the number of households receiving moose and caribou has increased, so has the number of households attempting to harvest moose—in 1987, one-half (50%) of Chistochina households attempted to harvest moose and in 2009, 63% attempted to harvest moose. However, the number of successful moose hunters has gone down, from 29% in 1987 to 15% in 2009. Comparing these numbers indicates that while more Chistochina residents invest their time and financial resources in harvesting moose, fewer residents are successful. Regardless, the few successful hunters are sharing their moose with a larger number of people. With regard to this study, it needs to be added that Chistochina respondents commented that in 2009, moose were scarce near Chistochina and were seen only in small numbers. Another reason for the low moose harvest numbers could be that most Chistochina residents did not participate in the 2009 community subsistence harvest administered by Ahtna Inc.[13] The reason given by residents for not participating was that only a portion of Game Management Unit (GMU) 12 was open for hunting.

The decline in numbers of households attempting to harvest, and successfully harvesting a large land mammal species is even more significant with caribou—54% of Chistochina households reported attempting to harvest caribou, and 36% harvested caribou in 1987 (McMillan and Cuccarese 1987:74). In 2009, only 15% of households attempted to harvest caribou, but none were successful (Table 2-8). This decline in caribou harvest could be linked to changes in regulations. Since the early 1990s caribou hunting in GMUs 11 and 12 has been limited, or entirely closed, due to population concerns with the Mentasta and Chisana herds. Chistochina respondents also commented that caribou, which are a traditional resource for them, typically do not appear in the area until after the season has closed.

13. According to regulations, ADF&G may issue community-based subsistence harvest permits for big game species where the Alaska Board of Game (BOG) has established a community harvest hunt area. The BOG established the Gulkana, Cantwell, Chistochina, Gakona, Mentasta, Tazlina, Chitina, and Kluti-Kaah (Copper Center) Community Subsistence Harvest Area for moose and caribou in 2009. The Community Subsistence Harvest (CSH) permit program allows communities or groups of 25 or more people to apply annually for a CSH permit in an established Community Subsistence Harvest Area. The community or group may choose to apply for only a moose or a caribou harvest permit, or they may apply for both. The communities or groups may select individual hunters from their group's members to hunt wild resources on behalf of the community or group (ADF&G 2011:1).

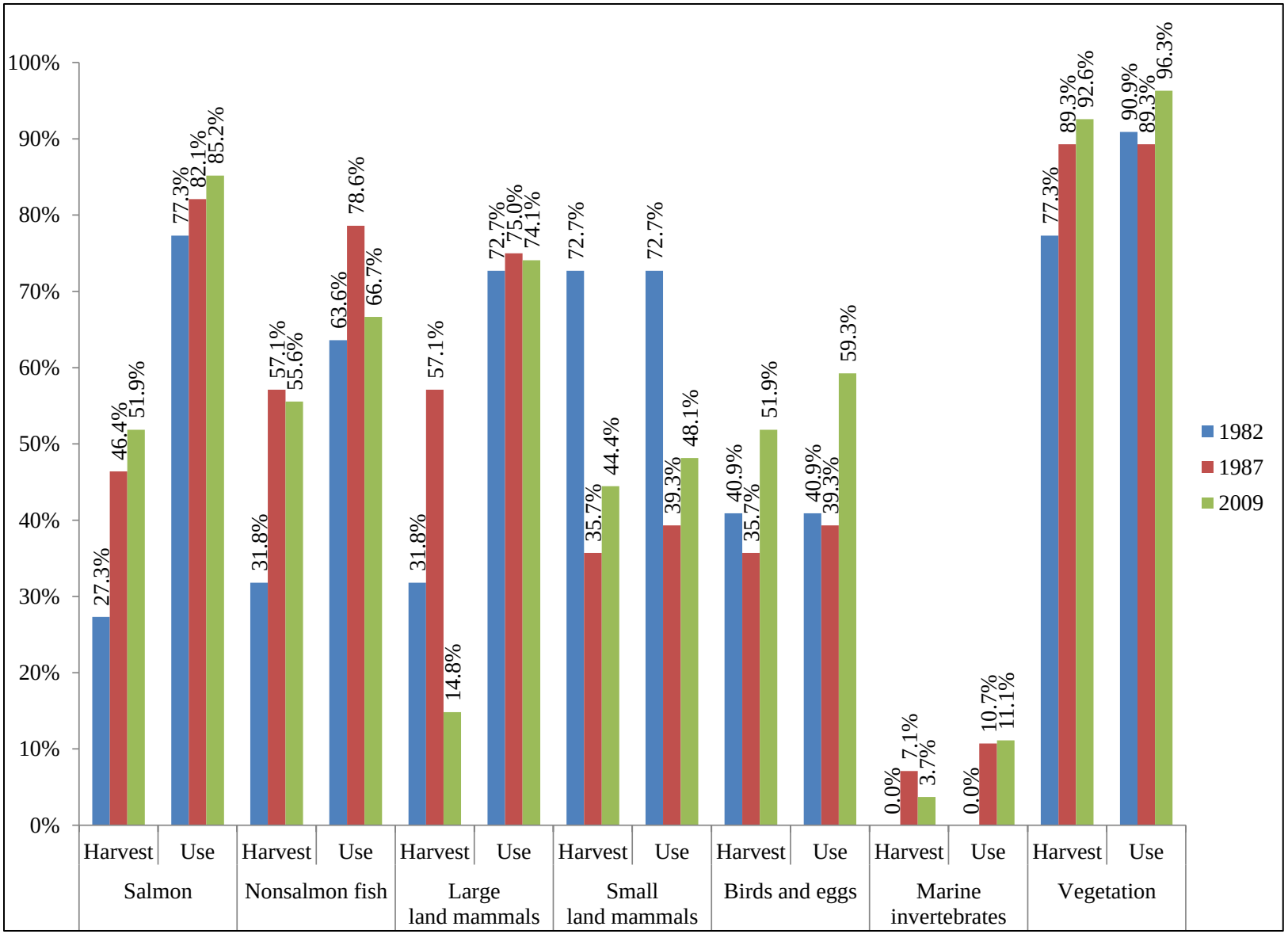

Figure 2-22.–Comparison of harvest and uses of wild resources, Chistochina, 1982, 1987, 2009.

CURRENT AND HISTORICAL HARVEST AREAS

Stratton and Georgette (1985) mapped the community resource use areas in the Copper River Basin area between 1983 and 1984. The maps produced for their report depict areas used between 1964 and 1984 for hunting, fishing, trapping, and gathering in 20 communities, including Chistochina. A total of 113 maps at the 1:250,000 scale are available at the Department of Fish and Game offices as part of the 1986 *Southcentral Regional Habitat Management Guide*.

The map collection in the 1986 Southcentral Regional Habitat Management Guide contains 4 historical harvest and use area maps for Chistochina. With the exception of upland game birds, the maps include the harvest and use areas for all the resource categories also mapped in the 2009 study. Changes in the resource harvest and use areas by Chistochina residents can be discerned through limited comparisons of the 1986 maps, which depict harvest and use areas for 20 years, and the maps produced from this survey, which only reflect harvest and use areas for the study year 2009.

To a large extent, the harvest and use areas have remained the same in 2009 but there are a few distinct changes in the areas (see Appendix C for additional harvest and use area maps). The most striking difference is that the historical maps show more activity for moose, caribou, sheep, and furbearer harvesting on the south side of Chistochina and around the Boulder Creek area. The 2009 study found Chistochina residents' moose and caribou harvest and use areas concentrated along the Tok Cutoff Road corridor and the Nabesna Road corridor. The only more remote area for caribou harvest was east of Paxson along the Denali Highway, and there was only one distinctly remote moose harvest and use area around Boulder Creek southeast of Chistochina in the 2009 maps. In comparison, the historical maps showed several remote harvest areas for both moose and caribou.

Compared to the historical maps, significantly less used areas, particularly for sheep and caribou harvest, in the 2009 study were the areas around Nabesna and along the Nabesna River, Jacksina Creek, Copper Lake, and Tanada Peak. Instead, the 2009 study showed more focused search and harvest effort on the nearest areas along the Nabesna Road. As discussed earlier, a reason for the more roads focused caribou search and hunting areas is that hunting opportunities in Game Management Units 11 and 12 have been limited or entirely closed due to resource conservation concerns since the early 1990s. During the study year 2009, GMU 11 was closed for caribou hunting under both state and federal regulations, and only a limited portion of GMU 12 was open for caribou hunting under both state and federal regulations. It is possible that the 2009 caribou search and use areas reflect the more limited hunting opportunities in most of GMU 12 during the study year. Regardless, it is evident that for Chistochina residents the Nabesna Road corridor continues to be an important harvest and search area for a variety of wild resources.

The historical maps show very few salmon fishing areas along the Copper River, and all of them are around the communities of Chistochina or Slana. This could be because historically much of the salmon harvest was done either with a community fish wheel or a shared fish wheel. The 2009 study found Chistochina residents using a community fish wheel in Chistochina, but several respondents also traveled downriver to Gakona and Copper Center for salmon fishing. In comparison, nonsalmon fish harvest areas are more widely spread in the historical maps: there are several nonsalmon fish harvest areas southwest and northeast from Chistochina in the small water bodies along the Tok Cutoff Road corridor. In the 2009 maps, nonsalmon fishing is highly concentrated to Copper and Tanada lakes.

The 2009 study found vegetation harvest and use areas to be large. According to Chistochina respondents, this is because people harvest berries while they search and hunt for large land mammals. In the historical maps, vegetation use areas instead appeared as small pockets near Chistochina and along the Nabesna Road corridor. There were some vegetation use farther away along the Chistochina River, and a few use sites appeared all the way around Unknown Lake and Eagle Creek. It is possible that historically Chistochina hunters used these more distant areas for berry picking while hunting as well. The presence of several smaller pockets, instead of large areas, however implies that at least some of the smaller pocket areas were specifically used for harvesting vegetation.

LOCAL CONCERNS REGARDING RESOURCES

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys. Some households did not present any additional information during the survey interviews, so not all households are represented in the summary. In addition, respondents expressed their concerns about wild resources in the community review meeting. These concerns have been included in the summary.

FISH

Salmon and nonsalmon fish comprised the majority of the wild foods harvested by Chistochina residents in 2009. Several households said that the salmon runs have been declining in recent years, and that the run in 2009 was poor. Respondents also said that the salmon they harvested were increasingly skinny and less oily. Some commented that for the past few years the flesh of the salmon had been mushier than before. Only a few respondents expressed any thoughts on the reasons for the declining salmon runs; a few respondents blamed high water levels in the Copper River and salmon passing through the area before the fishing season opened for the smaller salmon runs. In the community review meeting, a few participants commented on having knowledge of people stealing fish from fish wheels. Others pointed out their concern regarding seagulls that have been eating fish from the wheels. For Chistochina respondents, the harvest of nonsalmon fish did not seem to have similar problems, since only one respondent said that 2009 had been a bad year for nonsalmon fishing. Fishing regulations and the rising costs of all fishing activities were, however, pointed out by several households as reasons for smaller harvest amounts.

LARGE LAND MAMMALS

In 2009, the entire harvest of large land mammals by Chistochina residents was comprised of moose, and only a few Chistochina respondents were successful at harvesting them. The few successful households commented that the moose they had harvested had very little fat. Several households said that large game animals had become scarce in the area and that the regulations, particularly for caribou hunting, were "out of sync" with the natural seasons. Other respondents pointed out that there was increased competition for large game as hunters from outside the area come to hunt in the Copper River Basin. Multiple households said that regulations limit their moose hunting severely. One household pointed out that the weather in August was too warm for moose hunting, especially for processing the meat; the first 3 weeks of September would be ideal instead. In the community review meeting, a participant also blamed the warm fall weather, at least in part, for the low moose harvest numbers. The rising price of gas was mentioned as a challenge for harvesting. One participant noted that when the economy is good, more people go out hunting large land mammals. Another participant explained that during the last few open seasons caribou rarely showed up at the right spot during hunting seasons. This was assumed to help explain relatively low harvest numbers of caribou compared to previous years. Another participant expressed an opinion that there is an intragroup conflict between different types of subsistence harvesters because some harvesters have higher income and do not need to hunt for food.

SMALL LAND MAMMALS

The hunting of small land mammals, particularly for snowshoe hares, was a popular and successful activity for Chistochina respondents in 2009. Of the total pounds of land mammals harvested, snowshoe hares made up the second largest portion in 2009. The respondents' comments on the availability of small land mammals in the area were mixed: some said there had been less in the area and some said more. One respondent noted that the soft snow made it difficult to check and maintain trap lines.

MIGRATORY WATERFOWL AND UPLAND GAME BIRDS

Chistochina residents harvested very few migratory birds in 2009. One household mentioned that they did not hunt for migratory waterfowl because of confusing regulations. The hunting of upland game birds,

however, was a more popular activity, and a few households said there were more birds around in 2009. In comparison, some said they had seen fewer birds.

VEGETATION

Chistochina residents continued to harvest a substantial amount of vegetation in 2009, berries in particular. The overall consensus among surveyed households was that berries were hard to find in 2009 and that overall it had been a bad berry year. Only a few households mentioned harvesting less of any specific kind of berry, but a few mentioned they would have liked to get more. In contrast, several households commented that wood had been more difficult to find in the area. The problem of more restricted access to traditional wood harvesting areas due to changes in land ownership status was brought up as a reason for the challenging wood harvest. Access maps were mentioned as a desired tool for the residents to better track changing land access issues.

SUMMARY

The household survey findings demonstrated that residents of Chistochina harvested a wide variety of wild resources in 2009. Residents invested a great deal of time and effort in harvesting fish, land mammals, birds, and wild plants. Per capita harvests in 2009 were lower than in 1987 but higher than in 1982. When compared to the 1987 study, there seem to be continuing trends of increasing salmon, and small land mammal harvest, and declining large land mammal harvest. Nonsalmon fish and birds and eggs show a decline in harvest levels as well. When comparing to the 1982 study, large land mammals and vegetation are the only 2 resource categories with a decline in total harvest. At the same time, salmon is the only resource category that has seen continuous increase in harvest and use since the 1982 study. The use of large land mammals, marine invertebrates, and vegetation has remained about the same in Chistochina in all 3 studies. Other resource categories have seen more fluctuation in use since the 1982 study. Chistochina respondents pointed out that some fishing and hunting regulations are do not coincide with natural seasons, which made hunting for caribou, for example, very challenging. At the same time, more sharing, especially of moose, was taking place in the community. Shifts and changes in wild resource harvest and use areas have taken place since the 1980s as more hunting focused on the Tok Cutoff Road corridor and the Nabesna Road corridor. The rising price of gas continues to be a challenge to all subsistence activities.

CHAPTER 3: DISCUSSION AND CONCLUSIONS

SUBSISTENCE HARVEST PATTERNS AND TRENDS

OVERVIEW OF FINDINGS FOR CHISTOCHINA, 2009

Table 3-1 summarizes selected findings regarding demography, cash economy, and wild resource uses in Chistochina in 2009. The study found the population of Chistochina to be 87 with the majority of residents being Alaska Native (65%). Most of the household heads (57%) were born in Alaska. The 3 population estimates included in this study for years 2000, 2009 and 2010 are very similar and show only small fluctuations in the total Chistochina population as well as in the Native population between years 2000 and 2010 (Table 1-1). The average length of residency for Chistochina household heads was about 31 years and for all residents about 25 years (Table 3-1). The residents of Chistochina rely on subsistence hunting, fishing, and gathering for nutrition and to support their way of life. They continue to utilize a variety of resources, including salmon and other fish, large land mammals, small land mammals, birds, and wild plants in their diet.

Table 3-1.–Selected study findings for Chistochina, 2009.

Demography	
Population	86.8
Percentage Alaska Native	64.8%
Percentage of household heads born in Alaska	54.3%
Average length of residency, household heads (years)	31
Average length of residency, all residents (years)	25
Cash economy	
Average number of months employed	10
Percentage of employed adults working year-round	56.3%
Resource harvests and uses	
Per capita harvest (pounds usable weight)	198.5
Average household harvest (pounds usable weight)	522.1
Average number of resources used per household	11.2
Average number of resources attempted to harvest per household	9.9
Average number of resources harvested per household	8.5
Average number of resources received per household	4.5
Average number of resources given away per household	3.1
Percentage of households using any resource	100.0%
Percentage of households attempting to harvest any resource	96.3%
Percentage of households harvesting any resource	92.6%
Percentage of households receiving any resource	85.2%
Percentage of households giving away any resource	55.6%

Source ADF&G Division of Subsistence household surveys, 2010.

During the 2009 study year, 56% of employed adults in Chistochina had year-round employment in the cash sectors of the local economy (Table 3-1). The average number of months of employment for all Chistochina adults in 2009 was about 10 (Table 3-1). Due to insufficient income data collection, this study does not discuss per capita income or the average household income in 2009.

In terms of pounds useable weight, the subsistence harvest estimates for Chistochina in 2009 were lower than in 1987 but higher than in 1982. The 2009 estimated per capita harvest was 199 lb and the average harvest at the household level was 522 lb (Table 3-1). The calculated average household in Chistochina is small: an average of 3 residents per household. Therefore, the harvest amount of wild foods is substantial, especially considering that the average American family purchases about 218 lb of meat, fish, and poultry per person per year.[14] In comparison to other communities in Alaska, Wolfe and Fall (2012) estimated that the 2010 average rural resident wild resource harvest in Alaska was 316 lb per person, and the average harvest in rural Southcentral Alaska communities was 180 lb per person. During the study year 2009, Chistochina residents harvested notably less than the 2010 calculated rural resident average per capita but more than the estimated per capita average for rural Southcentral areas. The rural location of the community, availability of most wild resources relatively close to the community, and traditional subsistence lifestyle are likely explanations for the continuing reliance on wild foods.

Harvests in Chistochina were also diverse: on average households harvested a total of 9 different kinds of resources and used an average of 11 different resources (Table 3-1). In terms of total pounds harvested, the 2 most important resource categories for Chistochina residents continued to be salmon and land mammals (Figure 2-3). Nonsalmon fish were also important and the harvesting of nonsalmon fish is an important summer, fall, and winter activity for residents, who either fish with rod and reel or go ice fishing. Berries and plants continue to be important as well, and made up 5% of the total harvest in terms of pounds usable weight in 2009 (Figure 2-3). As noted earlier, households also gave away or shared an average of 3 different resources with other households, while receiving an average of 5 different resources (Table 3-1). All Chistochina households used wild resources during the study year, with 93% of individuals participating in harvesting any resource, and 86% of individuals participating in processing resources (Table 2-6).

CONCLUSION

This study documented the continuing importance of subsistence hunting, fishing, and gathering to the residents of Chistochina. In the 2009 data year, 96% of households in Chistochina participated in subsistence activities and all used wild resources. Subsistence harvests were moderate yet diverse in 2009, and contributed a considerable portion of the community's food supply. Sockeye salmon, moose, nonsalmon fish, small land mammals, and wild plants were the primary subsistence foods as measured in usable pounds, but many households also used both migratory and upland birds. Also the harvest and use of firewood was extensive in the community during the study year. In addition to their own harvests, most households also received subsistence resources through extensive sharing networks.

Results of the household survey suggest a long-term trend toward lower subsistence harvests of large land mammals. According to the respondents, this is due to decreased resource abundance and the timing of hunting seasons, not because of decreased hunting effort. Harvests of moose and caribou by households of Chistochina were generally lower in 2009 than in recent years, as well as compared to the 1980s (Stratton and Georgette 1982; McMillan and Cuccarese 1987). Reasons local households cited for these changes included reduced resource abundance, including changes in the location of moose and caribou, less sharing, work interference, competition, and regulations. Causes of changes in subsistence harvests and uses are complex and require additional research in collaboration with communities. Although harvests of large land mammals have changed over time, most households in Chistochina related that their overall harvest and reliance on wild resources has remained constant over time.

Given the importance of subsistence resources and observations of changing harvest and use patterns, it is not surprising that residents of Chistochina expressed concerns about their future opportunities to hunt,

14. U.S Census Bureau, Statistical Abstract of the United States: 2012. http://www.census.gov/compendia/statab/cats/health_nutrition/food_consumption_and_nutrition.html. (Accessed March 2, 2012.)

fish, and gather wild resources in a manner consistent with their traditions and at levels that meet their harvest goals. Subsistence uses of healthy fish and wildlife populations meaningfully link people to their past, are vital to the present health of the community, and encourage optimism about the future. In addition, providing opportunities for subsistence hunting and fishing is a mandate of state and federal law. Community residents expressed a desire to continue subsistence activities, not only for themselves, but also for their children and future generations. The intent of this report to provide information that will help the community work toward their goal of sustaining their way of life.

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REFERENCES CITED

ADF&G. 2011. Copper Basin Moose: Community Subsistence Harvest Permit Program 2012–2013. Alaska Department of Fish and Game. http://www.adfg.alaska.gov/static/license/huntlicense/pdfs/csh_moose_2012_2013.pdf

Cochran, W. G. 1977. Sampling techniques. 3rd edition. John Wiley & Sons, New York.

de Laguna, F., and C. McClellan. 1981. Ahtna. Pages 641-663 *in* W. C. Sturtevant, editor. Handbook of the North American Indians, volume 6: Subarctic. Smithsonian Institution, Washington, D.C.

Fall, J. A., and L. Stratton 1984. The harvest and use of Copper River salmon: a background report. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 96, Anchorage. http://www.subsistence.adfg.state.ak.us/techpap/tp096.pdf

Haynes, T. L., and W. E. Simeone 2007. Upper Tanana ethnographic overview and assessment, Wrangell St. Elias National Park and Preserve. Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 325, Juneau. http://www.subsistence.adfg.state.ak.us/techpap/tp325.pdf

Holen, D. 2010. Dip nets, fish wheels, and motor homes: the Atna', traditional ecological knowledge, and the political ecology of the Copper River fishery, Alaska. Lambert Academic Publishing Saarbrücken.

Kammerer, J. C. 1990. Water fact sheet: largest rivers in the United States U.S. Geological Survey, Department of the Interior, Open File Report 87-242, http://pubs.usgs.gov/of/1987/ofr87-242/pdf/ofr87242.pdf

McDonald, J. H. 2009. Handbook of biological statistics, Second Edition. Sparky House Publishing, Baltimore, MD.

McMillan, P. O., and S. V. Cuccarese 1988. Alaska over-the-horizon backscatter radar system: characteristics of contemporary subsistence use patterns in the Copper River Basin and Upper Tanana Area. Volume I: synthesis. Draft report. Prepared for Hart Crowser, Inc. Arctic Environmental Information and Data Center, University of Alaska Anchorage in cooperation with the Alaska Department of Fish and Game and U. S. National Park Service, Anchorage.

Miraglia, R. 1998. Traditional ecological knowledge handbook: A training manual and reference guide for designing, conducting, and participating in research projects using Traditional ecological knowledge. Prepared as part of *Exxon Valdez* Oil Spill Trustee Council Restoration Project 97052B. Alaska Department of Fish and Game, Division of Subsistence, Anchorage.

Reckord, H. 1983a. That's the way we live: Subsistence in the Wrangell-St. Elias National Park and Preserve University of Alaska Anthropology and Historic Preservation, Alaska Cooperative Park Studies Unit Occasional Paper No. 34, Fairbanks.

Reckord, H. 1983b. Where raven stood: cultural resources of the Ahtna region Occasional paper no. 25, Anthropology and Historic Preservation of the Alaska Cooperative Park Studies Unit, University of Alaska, Fairbanks.

Simeone, W. E., and J. Kari *n.d.* [2004]. The harvest and use of non-salmon fish species in the Copper River Basin, Alaska. Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 292, Juneau. http://www.subsistence.adfg.state.ak.us/techpap/tp292.pdf

Stratton, L., and S. Georgette 1984. Use of fish and game by communities in the Copper River Basin, Alaska: a report on a 1983 household survey. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 107, Anchorage. http://www.subsistence.adfg.state.ak.us/techpap/tp107.pdf

Stratton, L., and S. Georgette 1985. Copper Basin resource use map index and methodology Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 124, Anchorage http://www.subsistence.adfg.state.ak.us/techpap/tp124.pdf

U. S. Census Bureau. 2001. Profiles of general demographic characteristics, Alaska: 2000. U.S. Department of Commerce Washington, D. C.

U. S. Census Bureau. 2011. 2010 Census. U.S. Census Bureau, Washington, D.C. http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml

Wolfe, R. J., and J. A. Fall. 2012. Subsistence in Alaska: A year 2010 update. Alaska Department of Fish and Game, Division of Subsistence, Anchorage.

APPENDIX A: CHISTOCHINA SURVEY FORM

COMPREHENSIVE SUBSISTENCE SURVEY

CHISTOCHINA, ALASKA

January to December, 2009

OMB# 1024-0224(NPS# 10-001)
Expiration date: June 30, 2011

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

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

HOUSEHOLD ID:		
COMMUNITY ID:	CHISTOCHINA	89
RESPONDENT ID:		
INTERVIEWER:		
INTERVIEW DATE:		
START TIME:		
STOP TIME:		
DATA CODED BY:		
DATA ENTERED BY:		
SUPERVISOR:		

Batzulnetas at Tanada Creek, Upper Copper River

COOPERATING ORGANIZATIONS

CHEESH-NA' TRIBAL COUNCIL P.O. BOX 241 GAKONA, AK 99586	WRANGELL-ST. ELIAS NATIONAL PARK AND PRESERVE P.O. BOX 439 COPPER CENTER, AK 99573-0439	DIVISION OF SUBSISTENCE ALASKA DEPT OF FISH & GAME 333 RASPBERRY ROAD ANCHORAGE, AK 99518
907-822-3503	907-822-5234	907-267-2353

HOUSEHOLD MEMBERS

HOUSEHOLD ID

Between JANUARY and DECEMBER, 2009...
...who lived in your household?

ID#	IS THIS PERSON ANSWERING QUESTIONS ON THIS SURVEY? (circle)	MALE OR FEMALE? (circle)	ALASKA NATIVE? (circle)	IN WHAT YEAR WAS THIS PERSON BORN? (year)	WHERE WERE PARENTS LIVING WHEN THIS PERSON WAS BORN? (ak city or state)	HOW IS THIS PERSON RELATED TO HOUSEHOLD HEAD 1? (relation)	HOW MANY YEARS HAS THIS PERSON LIVED IN CHISTOCHINA? (number)	WHAT IS THE HIGHEST LEVEL OF EDUCATION ATTAINED? (number)
HEAD 1	Y N	M F	Y N				YRS	YRS
01								
Enter spouse or partner next. If household has a SINGLE HEAD, leave HEAD 2 blank.								
HEAD 2	Y N	M F	Y N				YRS	YRS
02								
Enter children (oldest to youngest), grandchildren, grandparents, brothers, sisters, or anyone else living full-time in this household.								
03	Y N	M F	Y N				YRS	YRS
04	Y N	M F	Y N				YRS	YRS
05	Y N	M F	Y N				YRS	YRS
06	Y N	M F	Y N				YRS	YRS
07	Y N	M F	Y N				YRS	YRS
08	Y N	M F	Y N				YRS	YRS
09	Y N	M F	Y N				YRS	YRS
10	Y N	M F	Y N				YRS	YRS
11	Y N	M F	Y N				YRS	YRS
12	Y N	M F	Y N				YRS	YRS
13	Y N	M F	Y N				YRS	YRS
14	Y N	M F	Y N				YRS	YRS
15	Y N	M F	Y N				YRS	YRS

PERMANENT HH MEMBERS: 01 **CHISTOCHINA: 89**

HOUSEHOLD MEMBER PARTICIPATION

HOUSEHOLD ID

Between JANUARY and DECEMBER, 2009...
...did this person...

PERSON	Fish		Large Land Mammals		Small Land Mammals Furbearers		Birds & Eggs		Plants/Berries/Wood	
ID# FROM Page 2	Process (circle)	Fish For (circle)	Process (circle)	Hunt (circle)	Process (circle)	Hunt/Trap (circle)	Process (circle)	Hunt/Gather (circle)	Process (circle)	Gather (circle)
Head 1	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
Head 2	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
03	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
04	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
05	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
06	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
07	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
08	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
09	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
10	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
11	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
12	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
13	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
14	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
15	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N

PERMANENT HH MEMBERS: 01 CHISTOCHINA: 89

HOUSEHOLD MEMBER PARTICIPATION

HOUSEHOLD ID

Between JANUARY and DECEMBER, 2009...
...did this person...

PERSON ID# FROM Page 2	Build Fish Wheels (circle)	Sew Skins/Cloth (circle)	Cook Wild Foods (circle)
Head 1	Y N	Y N	Y N
Head 2	Y N	Y N	Y N
03	Y N	Y N	Y N
04	Y N	Y N	Y N
05	Y N	Y N	Y N
06	Y N	Y N	Y N
07	Y N	Y N	Y N
08	Y N	Y N	Y N
09	Y N	Y N	Y N
10	Y N	Y N	Y N
11	Y N	Y N	Y N
12	Y N	Y N	Y N
13	Y N	Y N	Y N
14	Y N	Y N	Y N
15	Y N	Y N	Y N

PERMANENT HH MEMBERS: 01 **CHISTOCHINA: 89**

HARVESTS: COMMERCIAL SALMON FISHING

HOUSEHOLD ID

Do members of your household USUALLY participate in COMMERCIAL SALMON FISHING ?..... Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household participate in commercial salmon fishing?..... Y N

IF NO, go to the next harvest page.
If YES, continue on this page...

Please estimate the number of salmon ALL MEMBERS OF YOUR HOUSEHOLD REMOVED FROM COMMERCIAL HARVEST FOR PERSONAL USE OR SHARING in 2009. INCLUDE the fish you gave away, ate fresh, fed to dogs, lost to spoilage, caught as incidental catch while fishing for another species, or got by helping others. If harvested with others, report ONLY YOUR SHARE of the catch.

	IN 2009 DID MEMBERS OF YOUR HH...		IN 2009, HOW MANY _____ WERE REMOVED FOR YOUR OWN USE?	IN 2009, HOW MANY _____ DID YOU REMOVE FROM THE CATCH & GIVE AWAY TO CREW OR OTHERS?		ID NUMBER FROM PAGE 2	
	COMMERCIAL FISH FOR _____?	CATCH AS INCIDENTAL CATCH _____?		CREW	OTHERS	PERMIT HOLDER	CREW
	(circle)	*(circle)*	*(number)*	*(number)*		*(number)*	*(number)*
CHINOOK (KING) SALMON	Y N	Y N	IND	IND	IND		
113000000							
SOCKEYE (RED) SALMON	Y N	Y N	IND	IND	IND		
115000000							
COHO (SILVER) SALMON	Y N	Y N	IND	IND	IND		
112000000							
CHUM (DOG) SALMON	Y N	Y N	IND	IND	IND		
111000000							
PINK (HUMPIES) SALMON	Y N	Y N	IND	IND	IND		
114000000							
UNKNOWN SALMON	Y N	Y N	IND	IND	IND		
119000000							

COMMERCIAL SALMON FISHING: 03 **CHISTOCHINA: 89**

HARVESTS: COMMERCIAL NON-SALMON FISHING

HOUSEHOLD ID

Do members of your household USUALLY participate in COMMERCIAL NON-SALMON FISHING ?..... Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household participate in commercial non-salmon fishing?..... Y N

IF NO, go to the next harvest page.
If YES, continue on this page....

Please estimate the number of commercially harvested non-salmon fish ALL MEMBERS OF YOUR HOUSEHOLD REMOVED FROM COMMERCIAL HARVEST FOR PERSONAL USE OR SHARING in 2009. INCLUDE the fish you gave away, ate fresh, fed to dogs, lost to spoilage, caught as incidental catch while fishing for another species, or got by helping others. If harvested with others, report ONLY YOUR SHARE of the

	IN 2009 DID MEMBERS OF YOUR HH...		IN 2009, HOW MANY _____ WERE REMOVED FOR YOUR OWN USE?	IN 2009, HOW MANY _____ DID YOU REMOVE FROM THE CATCH & GIVE AWAY TO CREW OR OTHERS?		ID NUMBER FROM PAGE 2	
	COMMERCIAL FISH FOR _____?	CATCH AS INCIDENTAL CATCH _____?		CREW	OTHERS	PERMIT HOLDER	CREW
	(circle)	*(circle)*	*(number)*	*(number)*		*(number)*	*(number)*
HALIBUT	Y N	Y N	LBS	LBS	LBS		
121800000							
HERRING	Y N	Y N	GAL	GAL	GAL		
120200000							
HERRING SPAWN ON KELP	Y N	Y N	GAL	GAL	GAL		
120306000							
HERRING SAC ROE	Y N	Y N	GAL	GAL	GAL		
120304000							
PACIFIC COD (GRAY)	Y N	Y N	IND	IND	IND		
121004000							
PACIFIC TOM COD	Y N	Y N	IND	IND	IND		
121008000							
SCULPIN	Y N	Y N	IND	IND	IND		
123000000							
STARRY FLOUNDER	Y N	Y N	IND	IND	IND		
121406000							
SMELT	Y N	Y N	GAL	GAL	GAL		
120400000							
ROCKFISH	Y N	Y N	IND	IND	IND		
122800000							
LAMPREY	Y N	Y N	IND	IND	IND		
122000000							
LINGCOD	Y N	Y N	IND	IND	IND		
121606000							

COMMERCIAL NON-SALMON FISHING: 03 **CHISTOCHINA: 89**

HARVESTS: COMMERCIAL MARINE INVERTEBRATE HARVEST

HOUSEHOLD ID

Do members of your household USUALLY participate in COMMERCIAL MARINE INVERTEBRATE HARVEST ?..... Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household participate in commercial marine invertebrate harvest?..... Y N

IF NO, go to the next harvest page.
If YES, continue on this page...

Please estimate the commercially harvested marine invertebrates ALL MEMBERS OF YOUR HOUSEHOLD REMOVED FROM COMMERCIAL HARVEST in 2009. INCLUDE the marine invertebrates you gave away, ate fresh, fed to dogs, lost to spoilage, caught as incidental catch while fishing for another species, or got by helping others. If harvested with others, report ONLY YOUR SHARE of the catch.

	IN 2009 DID MEMBERS OF YOUR HH...		IN 2009, HOW MANY _____ WERE REMOVED FOR YOUR OWN USE?	IN 2009, HOW MANY _____ DID YOU REMOVE FROM THE CATCH & GIVE AWAY TO CREW OR OTHERS?		ID NUMBER FROM PAGE 2	
	COMMERCIAL FISH FOR _____?	CATCH AS INCIDENTAL CATCH _____?		CREW	OTHERS	PERMIT HOLDER	CREW
	(circle)	(circle)	(number)	(number)		(number)	(number)
TANNER CRAB	Y N	Y N	LBS	LBS	LBS		
501012000							
DUNGENESS CRAB	Y N	Y N	LBS	LBS	LBS		
501004000							
SHRIMP	Y N	Y N	GAL	GAL	GAL		
503400000							
SQUID	Y N	Y N	GAL	GAL	GAL		
503800000							
OCTOPUS	Y N	Y N	IND	IND	IND		
502200000							
	Y N	Y N					
	Y N	Y N					
	Y N	Y N					
	Y N	Y N					
	Y N	Y N					
	Y N	Y N					
	Y N	Y N					
	Y N	Y N					

COMMERCIAL MARINE INVERTEBRATE HARVEST: 03 **CHISTOCHINA: 89**

HARVESTS: SALMON (NON-COMMERCIAL)

HOUSEHOLD ID

Do members of your household USUALLY harvest SALMON ?.....Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household USE or TRY TO HARVEST salmon?.....Y N

IF NO, go to the next harvest page.
If YES, continue on this page...

Please estimate how many salmon ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2009, including with a rod and reel. INCLUDE salmon you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with others, report ONLY YOUR SHARE of the catch. Do not include fish caught and released.

	IN 2009 DID MEMBERS OF YOUR HH...				IN 2009, HOW MANY _____ DID YOUR HOUSEHOLD...				
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?	...CATCH WITH A FISH WHEEL?	...CATCH WITH A DIPNET?	...CATCH WITH ROD AND REEL?	...CATCH WITH OTHER GEAR?	UNITS
	(circle)				(number taken by each gear type)				(ind, lbs)
CHINOOK (KING) SALMON 113000000	Y N	Y N	Y N	Y N					IND
SOCKEYE (RED) SALMON 115000000	Y N	Y N	Y N	Y N					IND
COHO (SILVER) SALMON 112000000	Y N	Y N	Y N	Y N					IND
CHUM (DOG) SALMON 111000000	Y N	Y N	Y N	Y N					IND
PINK (HUMPIES) SALMON 114000000	Y N	Y N	Y N	Y N					IND
LANDLOCKED SALMON *Kokanee* 116000000	Y N	Y N	Y N	Y N					IND
UNKNOWN SALMON 119000000	Y N	Y N	Y N	Y N					IND

These columns should include all the harvests: salmon HARVESTED by members of this household in 2009.

SALMON

Between JANUARY and DECEMBER, 2009...
...Did your household use LESS, SAME, or MORE salmon than in recent years?..... X L S M
X = DO NOT USE

If SAME or DO NOT USE, skip the next question.

If different (LESS or MORE), how and why was your use different? _____

Between JANUARY and DECEMBER, 2009...
...WHERE did members of your household HARVEST salmon? *On MAP, mark all harvest locations for page subject.*

SALMON : 04 **CHISTOCHINA: 89**

HARVESTS: OTHER FISH (NON-COMMERCIAL)

HOUSEHOLD ID

Do members of your household USUALLY harvest OTHER FISH ?..... Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household USE or TRY TO HARVEST other fish?..... Y N

IF NO, go to the next harvest page
If YES, continue on this page...

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2009, including with a rod and reel. INCLUDE other fish you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with others, report ONLY YOUR SHARE of the catch. Do not include fish caught and released

	IN 2009 DID MEMBERS OF YOUR HH...				IN 2009, HOW MANY _____ DID YOUR HOUSEHOLD...			
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?	...CATCH WITH GILL NET OR SEINE?	...CATCH WITH ROD AND REEL?	...CATCH WITH OTHER GEAR?	UNITS
	(circle)				*(number taken by each gear type)*			*(ind, lbs)*
RAINBOW TROUT 128204000	Y N	Y N	Y N	Y N				IND
LAKE TROUT 125010000	Y N	Y N	Y N	Y N				IND
CUTTHROAT TROUT 126202000	Y N	Y N	Y N	Y N				IND
TROUT *Unknown* 126200000	Y N	Y N	Y N	Y N				IND
DOLLY VARDEN 125006000	Y N	Y N	Y N	Y N				IND
GRAYLING 125200000	Y N	Y N	Y N	Y N				IND
PIKE 125400000	Y N	Y N	Y N	Y N				IND
BURBOT *Ling Cod* 124800000	Y N	Y N	Y N	Y N				IND
ROUND WHITEFISH 126412000	Y N	Y N	Y N	Y N				IND
HUMPBACK WHITEFISH 126408000	Y N	Y N	Y N	Y N				IND
BROAD WHITEFISH 126404000	Y N	Y N	Y N	Y N				IND
LEAST CISCO 126406060	Y N	Y N	Y N	Y N				IND
UNKNOWN WHITEFISH 126400000	Y N	Y N	Y N	Y N				IND
SUCKER 126000000	Y N	Y N	Y N	Y N				IND

Continue on next page

These columns should include all the harvests: other fish HARVESTED by members of this household in 2009.

OTHER FISH: 06 **CHISTOCHINA: 89**

HARVESTS: OTHER FISH (NON-COMMERCIAL) HOUSEHOLD ID

...continued

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2009 , including with a rod and reel. INCLUDE other fish you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with others, report ONLY YOUR SHARE of the catch. Do not include fish caught and released.

	IN 2009 DID MEMBERS OF YOUR HH... (circle)				IN 2009, HOW MANY _____ DID YOUR HOUSEHOLD... (number taken by each gear type)			
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?	...CATCH WITH GILL NET OR SEINE?	...CATCH WITH ROD AND REEL?	...CATCH WITH OTHER GEAR?	UNITS (ind, lbs)
HALIBUT 121800000	Y N	Y N	Y N	Y N				LBS
HERRING 120200000	Y N	Y N	Y N	Y N				GAL
PACIFIC COD (GRAY) 121004000	Y N	Y N	Y N	Y N				IND
PACIFIC TOM COD 121008000	Y N	Y N	Y N	Y N				IND
STARRY FLOUNDER 121406000	Y N	Y N	Y N	Y N				IND
SMELT 120400000	Y N	Y N	Y N	Y N				GAL
ROCKFISH 122600000	Y N	Y N	Y N	Y N				IND
LAMPREY 122000000	Y N	Y N	Y N	Y N				IND
LINGCOD 121606000	Y N	Y N	Y N	Y N				IND
	Y N	Y N	Y N	Y N				

These columns should include all the harvests: other fish HARVESTED by members of this household in 2009.

OTHER FISH

Between JANUARY and DECEMBER, 2009...
...Did your household use LESS, SAME, or MORE other fish than in recent years?..... X L S M

X = DO NOT USE

If the SAME or DO NOT USE, skip the next question.

If different (LESS or MORE), how and why was your use different? _____

Between JANUARY and DECEMBER, 2009...
...WHERE did members of your household HARVEST other fish? *On MAP, mark all harvest locations for page subject.*

OTHER FISH: 06 **CHISTOCHINA: 89**

HARVESTS: MARINE INVERTEBRATES/SHELLFISH

HOUSEHOLD ID

Do members of your household USUALLY harvest MARINE INVERTEBRATES/SHELLFISH ?.....Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household USE or TRY TO HARVEST marine invertebrates/shellfish ?.....Y N

IF NO, go to the next harvest page.

If YES, continue on this page...

Please estimate how many marine invertebrates/shellfish ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2009. INCLUDE marine invertebrates/shellfish you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with others, report ONLY YOUR SHARE of the catch.

	IN 2009 DID MEMBERS OF YOUR HH... (circle)				IN 2009, HOW MANY _____ DID YOUR HOUSEHOLD HARVEST? (number taken)	UNITS (ind, lbs,gal)
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?		
DUNGENESS CRAB	Y N	Y N	Y N	Y N		LBS
501004000						
KING CRAB	Y N	Y N	Y N	Y N		LBS
501008000						
TANNER CRAB	Y N	Y N	Y N	Y N		LBS
501012000						
RAZOR CLAMS	Y N	Y N	Y N	Y N		GAL
500612000						
FRESHWATER CLAMS	Y N	Y N	Y N	Y N		GAL
500604000						
	Y N	Y N	Y N	Y N		
	Y N	Y N	Y N	Y N		
	Y N	Y N	Y N	Y N		
	Y N	Y N	Y N	Y N		
					These columns should include all the harvests: marine invertebrates/shellfish HARVESTED by members of this household in 2009.	

MARINE INVERTEBRATES/SHELLFISH

Between JANUARY and DECEMBER, 2009...
...Did your household use LESS, SAME, or MORE marine invertebrates/shellfish than in recent years?.... X L S M

X = DO NOT USE

If the SAME or DO NOT USE, skip the next question.

If different (LESS or MORE), how and why was your use different?

Between JANUARY and DECEMBER, 2009...
...WHERE did members of your household HARVEST marine invertebrates/shellfish?

On MAP, mark all harvest locations for page subject.

MARINE INVERTEBRATES/SHELLFISH: 08 **CHISTOCHINA: 89**

HARVESTS: LARGE LAND MAMMALS

HOUSEHOLD ID

Do members of your household USUALLY hunt for LARGE LAND MAMMALS?.....Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household USE or TRY TO HARVEST large land mammals?.....Y N

IF NO, go to the next harvest page.
If YES, continue on this page....

Please estimate how many large land mammals ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2009. INCLUDE large land mammals you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the catch.

	IN 2009 DID MEMBERS OF YOUR HH...					IN 2009, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?												
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?	SEX	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS
	(circle)					(enter number by sex and month of take)													(ind)
MOOSE	Y N	Y N	Y N	Y N	M														IND
211800000					F														
					?														
211800001					M														
211800002					F														
211800009					?														
CARIBOU	Y N	Y N	Y N	Y N	M														IND
211000000					F														
					?														
211000001					M														
211000002					F														
211000009					?														
BLACK BEAR	Y N	Y N	Y N	Y N															IND
210600000																			
BROWN BEAR	Y N	Y N	Y N	Y N															IND
210800000																			
DALL SHEEP	Y N	Y N	Y N	Y N															IND
212200000																			
GOAT	Y N	Y N	Y N	Y N															IND
211600000																			
DEER	Y N	Y N	Y N	Y N															IND
211200000																			
BISON	Y N	Y N	Y N	Y N															IND
210400000																			

LARGE LAND MAMMALS

Between JANUARY and DECEMBER, 2009...
...Did your household use LESS, SAME, or MORE large land mammals than in recent years?..... X L S M

X = DO NOT USE

If the SAME or DO NOT USE, skip the next question.

If different (LESS or MORE), how and why was your use different? _____

Between JANUARY and DECEMBER, 2009...
...WHERE did members of your household HUNT FOR large land mammals?
...WHERE did members of your household HARVEST large land mammals?

On MAP, mark all harvest locations for page subject.
Circle all search areas on MAP

LARGE LAND MAMMALS: 10 **CHISTOCHINA: 89**

HARVESTS: SMALL LAND MAMMALS OR FURBEARERS

HOUSEHOLD ID

Do members of your household USUALLY hunt or trap for SMALL LAND MAMMALS OR FURBEARERS for subsistence?..Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household USE or TRY TO HARVEST small land mammals or furbearers?.....Y N

IF NO, go to the next harvest page.
If YES, continue on this page...

Please estimate how many small land mammals or furbearers ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2009. INCLUDE small land mammals or furbearers you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting or trapping with others, report ONLY YOUR SHARE of the catch.

	IN 2009 DID MEMBERS OF YOUR HH... (circle)				SEX	IN 2009, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST? (enter number by month of take)												UNITS
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	(ind)
BEAVER 220200000	Y N	Y N	Y N	Y N															IND
PORCUPINE 222600000	Y N	Y N	Y N	Y N															IND
SNOWSHOE HARE 221004000	Y N	Y N	Y N	Y N															IND
RED FOX 220804000	Y N	Y N	Y N	Y N															IND
CROSS FOX 220804020	Y N	Y N	Y N	Y N															IND
WOLF 223200000	Y N	Y N	Y N	Y N															IND
WOLVERINE 223400000	Y N	Y N	Y N	Y N															IND
LAND OTTER 221200000	Y N	Y N	Y N	Y N															IND
MUSKRAT 222400000	Y N	Y N	Y N	Y N															IND
	Y N	Y N	Y N	Y N															IND

Continue on next page

SMALL LAND MAMMALS: 14 **CHISTOCHINA: 89**

HARVESTS: SMALL LAND MAMMALS OR FURBEARERS

HOUSEHOLD ID

....continued

Please estimate how many small land mammals or furbearers ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2009. INCLUDE small land mammals or furbearers you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting or trapping with others, report ONLY YOUR SHARE of the catch.

	IN 2009 DID MEMBERS OF YOUR HH...					IN 2009, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?												
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?	SEX	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS
	(circle)					*(enter number by month of take)*													*(ind)*
WEASEL 223000000	Y N	Y N	Y N	Y N															IND
LYNX 221600000	Y N	Y N	Y N	Y N															IND
MARTEN 222000000	Y N	Y N	Y N	Y N															IND
COYOTE 220400000	Y N	Y N	Y N	Y N															IND
MINK 222200000	Y N	Y N	Y N	Y N															IND
MARMOT 221800000	Y N	Y N	Y N	Y N															IND
GROUND SQUIRREL 222800000	Y N	Y N	Y N	Y N															IND
TREE SQUIRREL 222804000	Y N	Y N	Y N	Y N															IND
	Y N	Y N	Y N	Y N															IND

SMALL LAND MAMMALS OR FURBEARERS

Between JANUARY and DECEMBER, 2009...

...Did your household use LESS, SAME, or MORE small land mammals or furbearers than in recent years X L S M

X = DO NOT USE

If the SAME or DO NOT USE, skip the next question.

If different (LESS or MORE), how and why was your use different? _____

Between JANUARY and DECEMBER, 2009...

...WHERE did members of your household HUNT OR TRAP FOR small land mammals or furbearers?

...WHERE did members of your household HARVEST small land mammals or furbearers?

On MAP, mark all harvest locations for page subject.
Circle all search areas on MAP

SMALL LAND MAMMALS: 14 **CHISTOCHINA: 89**

HARVESTS: MIGRATORY WATERFOWL

HOUSEHOLD ID

Do members of your household USUALLY hunt for MIGRATORY WATERFOWL?.....Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household USE or TRY TO HARVEST migratory waterfowl?.....Y N

IF NO, go to the next harvest page.
If YES, continue on this page...

Please estimate how many migratory waterfowl ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2009. INCLUDE migratory waterfowl you gave away, ate fresh, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the catch.

	IN 2009 DID MEMBERS OF YOUR HH...				IN 2009, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?											
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN
	(circle)																
CANADA GEESE (CACKLERS) 410404040	Y N	Y N	Y N	Y N													
CANADA GEESE (BIG LESSER) 410404080	Y N	Y N	Y N	Y N													
CANADA GEESE (UNKNOWN) 410404000	Y N	Y N	Y N	Y N													
WHITE-FRONTED GEESE *Specklebelly* 410410000	Y N	Y N	Y N	Y N													
SPECTACLED EIDER 410206060	Y N	Y N	Y N	Y N													
BRANT (SEA GEESE) 410402000	Y N	Y N	Y N	Y N													
EMPEROR GEESE 410406000	Y N	Y N	Y N	Y N													
SNOW GEESE 410408000	Y N	Y N	Y N	Y N													
GEESE (UNKNOWN) 410400000	Y N	Y N	Y N	Y N													
TUNDRA SWAN (WHISTLING) 410604000	Y N	Y N	Y N	Y N													
SANDHILL CRANE 410802000	Y N	Y N	Y N	Y N													
MALLARD 410214000	Y N	Y N	Y N	Y N													
NORTHERN PINTAIL 410220000	Y N	Y N	Y N	Y N													

Continue on next page

MIGRATORY WATERFOWL: 15 **CHISTOCHINA: 89**

HARVESTS: MIGRATORY WATERFOWL

HOUSEHOLD ID

...continued

	IN 2009 DID MEMBERS OF YOUR HH... (circle)				IN 2009, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?											
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN
GOLDENEYE	Y N	Y N	Y N	Y N													
410210000																	
GREEN WINGED TEAL	Y N	Y N	Y N	Y N													
410232060																	
CANVASBACK	Y N	Y N	Y N	Y N													
410204000																	
BLACK SCOTER (BLACK DUCK)	Y N	Y N	Y N	Y N													
410228020																	
DUCKS (UNKNOWN)	Y N	Y N	Y N	Y N													
410200000																	
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													

MIGRATORY WATERFOWL

Between JANUARY and DECEMBER, 2009...

...Did your household use LESS, SAME, or MORE migratory waterfowl than in recent years?..... X L S M

X = DO NOT USE

If the SAME or DO NOT USE go on to next page.

If different (LESS or MORE), how and why was your use different? _____

Between JANUARY and DECEMBER, 2009...

...WHERE did members of your household HARVEST migratory waterfowl? *On MAP, mark all harvest locations for migratory waterfowl.*

...WHERE did members of your household HUNT FOR migratory waterfowl? *Circle all search areas on MAP*

MIGRATORY WATERFOWL: 15 **CHISTOCHINA: 89**

HARVESTS: OTHER BIRDS

HOUSEHOLD ID

Do members of your household USUALLY hunt for OTHER BIRDS?.....Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household USE or TRY TO HARVEST other birds?.....Y N

IF NO, go to the next harvest page.
If YES, continue on this page...

Please estimate how many other birds ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2009. INCLUDE other birds you gave away, ate fresh, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the catch.

	IN 2009 DID MEMBERS OF YOUR HH...				IN 2009, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?											
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN
	(circle)																
PTARMIGAN	Y N	Y N	Y N	Y N													
421804000																	
SPRUCE GROUSE	Y N	Y N	Y N	Y N													
421802020																	
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													

OTHER BIRDS

Between JANUARY and DECEMBER, 2009...
...Did your household use LESS, SAME, or MORE other birds than in recent years?..... X L S M
X = DO NOT USE

If the SAME or DO NOT USE go on to next page.

If different (LESS or MORE), how and why was your use different? _____

Between JANUARY and DECEMBER, 2009...
...WHERE did members of your household HUNT FOR other birds?
...WHERE did members of your household HARVEST other birds?

On MAP, mark all harvest locations for other birds.
Circle all search areas on MAP

OTHER BIRDS: 15 **CHISTOCHINA: 89**

HARVESTS: BIRD EGGS

HOUSEHOLD ID

Do members of your household USUALLY look for BIRD EGGS?..... Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household USE or TRY TO GATHER bird eggs?..... Y N

IF NO, go to the next harvest page.
If YES, continue on this page...

Please estimate how many bird eggs ALL MEMBERS OF YOUR HOUSEHOLD GATHERED in 2009. INCLUDE bird eggs you gave away, ate fresh, lost to spoilage, or got by helping others. If looking with others, report ONLY YOUR SHARE of the eggs.

	IN 2009 DID MEMBERS OF YOUR HH... (circle)				IN 2009, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD GATHER?											
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN
GULL EGGS 431212000	Y N	Y N	Y N	Y N													
GEESE EGGS 430400000	Y N	Y N	Y N	Y N													
DUCK EGGS 430200000	Y N	Y N	Y N	Y N													
EGGS (UNKNOWN) 430000000	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													
	Y N	Y N	Y N	Y N													

EGGS

Between JANUARY and DECEMBER, 2009...
...Did your household use LESS, SAME, or MORE eggs than in recent years?..... X L S M

X = DO NOT USE

If the SAME or DO NOT USE go on to next page.

If different (LESS or MORE), how and why was your use different? _____

Between JANUARY and DECEMBER, 2009...
...WHERE did members of your household GATHER bird eggs?
...WHERE did members of your household LOOK FOR bird eggs?

On MAP, mark all harvest locations for bird eggs.
Circle all search areas on MAP

BIRD EGGS: 15 **CHISTOCHINA: 89**

HARVESTS: PLANTS AND BERRIES INCLUDING WOOD

HOUSEHOLD ID

Do members of your household USUALLY harvest PLANTS AND BERRIES INCLUDING WOOD?..... Y N

Between JANUARY and DECEMBER, 2009...
...Did members of your household USE or TRY TO HARVEST plants and berries including wood?..... Y N

IF NO, go to the next harvest page.
If YES, continue on this page....

Please estimate how many plants and berries including wood ALL MEMBERS OF YOUR HOUSEHOLD HARVESTING in 2009. INCLUDE plants and berries including wood you gave away, ate fresh, lost to spoilage, or got by helping others. If harvesting with others, report ONLY YOUR SHARE of the harvest.

	IN 2009 DID MEMBERS OF YOUR HH... (circle)				IN 2009, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST? (number)	UNITS/NOTES (each, gallons, buckets, etc.)
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?		
BLUEBERRY	Y N	Y N	Y N	Y N		
601002000						
LOW BUSH CRANBERRY	Y N	Y N	Y N	Y N		
601004000						
HIGH BUSH CRANBERRY	Y N	Y N	Y N	Y N		
601006000						
RASPBERRY	Y N	Y N	Y N	Y N		
601020000						
OTHER BERRIES *(List)*	Y N	Y N	Y N	Y N		
601000000						
HUDSON BAY TEA *Labrador Tea*	Y N	Y N	Y N	Y N		
602018000						
MUSHROOMS	Y N	Y N	Y N	Y N		
602040000						
OTHER PLANTS *(List)*	Y N	Y N	Y N	Y N		
602000002						
WOOD *Firewood*	Y N	Y N	Y N	Y N		
604000000						
WOOD *(Specify Use)*	Y N	Y N	Y N	Y N		
604000002						
	Y N	Y N	Y N	Y N		
	Y N	Y N	Y N	Y N		
	Y N	Y N	Y N	Y N		

PLANTS AND BERRIES

Between JANUARY and DECEMBER, 2009...
...Did your household use LESS, SAME, or MORE plants and berries than in recent years?..... X L S M
X = DO NOT USE

If the SAME or DO NOT USE go on to next page.

If different (LESS or MORE), how and why was your use different? _____

Between JANUARY and DECEMBER, 2009...
...WHERE did members of your household harvest plants and berries including wood? *On MAP, mark all harvest areas for page subject.*

PLANTS AND BERRIES: 17 **CHISTOCHINA: 89**

ASSESSMENTS

HOUSEHOLD ID

WILD RESOURCES

Between JANUARY and DECEMBER, 2009...

...Did your household use LESS, SAME, or MORE wild resources overall as in recent years? ..... X L S M

X = DO NOT USE

If the SAME or DO NOT USE, skip the next question.

If different (LESS or MORE), how and why was your use different? _____

_____

_____

...Are there any resources your household avoided harvesting due to poor resource health? If *YES*, which resources did you avoid?

_____

_____

Wild Harvest Assessment

In your opinion, in 2009 did your household get enough wild foods to meet its needs? Y N

Transportation

During 2009, did members of your household use the following when harvesting or attempting to harvest wild foods?

	circle	
boat	Y N	
snowmachine	Y N	
4-wheeler/ORV	Y N	
airplane	Y N	
dogsled	Y N	

Does your household own, borrow, lease, or charter this equipment?

Circle only responses that the respondent answered yes to above.

	Own	Borrow	Lease	Charter	
boat	Y N	Y N	Y N	Y N	
snowmachine	Y N	Y N	Y N	Y N	
4-wheeler/ORV	Y N	Y N	Y N	Y N	
airplane	Y N	Y N	Y N	Y N	
dogsled	Y N	Y N	Y N	Y N	

Comments: _____

_____

_____

Heating

What proportion of your household's heating comes from firewood?

circle	
0%	
1-25%	
26-50%	
51-75%	
76-99%	
100%	

In the past 5 years has your harvest area for firewood changed? *circle* Y N

If yes, please explain why? _____

_____

_____

How much do you spend annually to heat your home? $ _____

JOBS FOR EACH PERSON IN THE HOUSEHOLD, 16 YEARS OLD AND OLDER — HOUSEHOLD ID

Between JANUARY and DECEMBER, 2009…
…Did any members of your household earn money from a JOB or from SELF EMPLOYMENT? ..... Y N

For each member of this household born before 1994, please list EACH JOB held between JANUARY and DECEMBER, 2009.
For household members who did not have a job, write: "RETIRED," "UNEMPLOYED," "STUDENT," "HOMEMAKER," etc.
There should be at least ONE ROW for each member of this household born BEFORE 1994.

We ask about jobs and income because we are trying to understand all parts of the community economy. Many people use wages from jobs to support subsistence activities. If one person has more than one job, list each job on a separate line. (One person may have several lines.)

REMEMBER COMMERCIAL FISHING & TRAPPING IF APPLICABLE.

	WHO HAD THIS JOB? *person*	WHAT KIND OF WORK DID HE/SHE DO IN THIS JOB? *job title*	FOR WHOM DID HE/SHE WORK IN THIS JOB? *employer, SIC*	JOB LOCATION? *community*	IN 2009, WHAT MONTHS DID HE OR SHE WORK IN THIS JOB? *circle each month worked*	WORK SCHEDULE… FULL TIME / PART TIME / SHIFT - FULL TIME / ON-CALL, VARIES / SHIFT - PART TIME *circle one*	IN 2009, HOW MUCH DID HE/SHE EARN IN THIS JOB? *gross income*
1ST JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
1 6 9101010000		SOC				SCHEDULE	
2ND JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
2 6 9101010000		SOC				SCHEDULE	
3RD JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
3 6 9101010000		SOC				SCHEDULE	
4TH JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
4 6 9101010000		SOC				SCHEDULE	
5TH JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
5 6 9101010000		SOC				SCHEDULE	
6TH JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
6 6 9101010000		SOC				SCHEDULE	
7TH JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
7 6 9101010000		SOC				SCHEDULE	
8TH JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
8 6 9101010000		SOC				SCHEDULE	
9TH JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
9 6 9101010000		SOC				SCHEDULE	
10TH JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
10 6 9101010000		SOC				SCHEDULE	
11TH JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
11 6 9101010000		SOC				SCHEDULE	
12TH JOB					J F M A M J J A S O N D	FT PT SF OC SP	$ / YR
12 6 9101010000		SOC				SCHEDULE	

If a person is SELF-EMPLOYED (selling carvings, crafts, bread, etc), list that as a separate job. Enter "sewer," "carver," "baker," etc. as JOB TITLE. Work schedule usually will be "ON CALL." For gross income from self employment ("profit"), enter revenue MINUS expenses.

If a person is UNEMPLOYED, specify retired, unemployed, disabled, student, or homemaker as the JOB TITLE.

TRAPPING for barter or sale IS a job.
COMMERCIAL FISHING is recorded as "ON-CALL, VARIES" for work schedule.

WORK SCHEDULE
1 - Fulltime (35+ hours/week)
2 - Parttime (<35 hours/week)
3 - Shift (2 wks on/2 off, etc.)

GROSS INCOME is the same as TAXABLE INCOME on a W-2 form.

EMPLOYMENT: 23 — CHISTOCHINA: 89

OTHER INCOME

THIS PAGE IS ONLY FOR INCOME THAT IS NOT EARNED FROM WORKING

HOUSEHOLD ID

Between JANUARY and DECEMBER, 2009...

...Did any members of your household receive a dividend from the Permanent Fund or a Native Corporation?..... Y N

IF NO, go to the next section on this page.

If YES, continue below...

		DID ANYONE IN YOUR HH RECEIVE INCOME FROM ____ IN 2009? (circle one)	TOTAL AMOUNT ALL MEMBERS OF YOUR HH RECEIVED IN 2009? (dollars)
DIVIDENDS	ALASKA PERMANENT FUND DIVIDEND 32	Y N	$ /YR
DIVIDENDS	NATIVE CORPORATION DIVIDENDS 13	Y N	$ /YR

ALASKA PFD IN 2009

1 PFD = $1,305	
2 PFDs = $2,610	
3 PFDs = $3,915	
4 PFDs = $5,220	
5 PFDs = $6,525	
6 PFDs = $7,830	
7 PFDs = $9,135	
8 PFDs = $10,440	
9 PFDs = $11,745	
10 PFDs = $13,050	
11 PFDs = $14,355	

AHTNA INC. DIVIDENDS IN 2009

1	share=	$2.79
100	shrs=	$279
150	shrs=	$419
200	shrs=	$558

Between JANUARY and DECEMBER, 2009...

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

IF NO, go to the next page.

If YES, continue below...

		RECEIVED IN 2009? (circle one)	TOTAL AMOUNT IN 2009? (dollars)	scratch paper for calculations
JOB BENEFITS	UNEMPLOYMENT 12	Y N	$ /YR	$_____ per week for _____ weeks = $_____ per month for _____ months =
JOB BENEFITS	WORKERS' COMPENSATION 8	Y N	$ /YR	$_____ per week for _____ weeks = $_____ per month for _____ months =
ASSISTANCE	FOOD STAMPS (QUEST CARD) 11	Y N	$ /YR	$_____ per week for _____ weeks = $_____ per month for _____ months =
ASSISTANCE	ADULT PUBLIC ASSISTANCE 3	Y N	$ /YR	$_____ per week for _____ weeks = $_____ per month for _____ months =
ELDER BENEFITS	ALASKA SENIOR BENEFITS (LONGEVITY) 6	Y N	$ /YR	Depends on Income: $125 per month for 12 months = $1,500 per elder; $175 per month for 12 months = $2,100 per elder; $250 per month for 12 months = $3,000 per elder
ELDER BENEFITS	PENSION & RETIREMENT 5	Y N	$ /YR	$_____ per week for _____ weeks = $_____ per month for _____ months =
ELDER BENEFITS	SOCIAL SECURITY 7	Y N	$ /YR	$_____ per week for _____ weeks = $_____ per month for _____ months =
CHILD BENEFITS	SUPPLEMENTAL SECURITY 10	Y N	$ /YR	$_____ per week for _____ weeks = $_____ per month for _____ months =
CHILD BENEFITS	FOSTER CARE 41	Y N	$ /YR	$_____ per week for _____ weeks = $_____ per month for _____ months =
CHILD BENEFITS	CHILD SUPPORT 15	Y N	$ /YR	$_____ per week for _____ weeks = $_____ per month for _____ months =
OTHER	ENERGY ASSISTANCE 9	Y N	$ /YR	
OTHER	OTHER *(describe)*	Y N	$ /YR	

OTHER INCOME: 24 **CHISTOCHINA: 89**

COMMENTS HOUSEHOLD ID

DO YOU HAVE ANY QUESTIONS, COMMENTS, OR CONCERNS?

INTERVIEW SUMMARY:

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

COMMENTS: 30 **CHISTOCHINA: 89**

APPENDIX B: CONVERSION FACTORS

Resource	Conversion to pounds
Chum salmon	4.88
Coho salmon	5.10
Chinook salmon	11.09
Pink salmon	2.99
Sockeye salmon	4.29
Landlocked salmon	1.50
Spawning sockeye salmon	2.00
Herring	6.00
Herring sac roe	7.00
Herring spawn on kelp	7.00
Smelt	6.00
Capelin (grunion)	3.25
Unknown smelt	3.25
Pacific (gray) cod	3.20
Walleye pollock (whiting)	1.40
Unknown cod	3.20
Flounder	3.00
Unknown flounder	3.00
Lingcod	4.00
Unknown greenling	1.00
Pacific halibut	23.50
Black rockfish	1.50
Rougheye (red) rockfish	4.00
Unknown rockfish	2.00
Sablefish (black cod)	3.10
Slimy sculpin (bullhead)	0.50
Unknown shark	9.00
Unknown sole	1.00
Stickleback (needlefish)	0.20
Wolffish	0.50
Alaska blackfish	0.07
Burbot	1.00
Arctic char	1.40
Dolly Varden	1.40
Dolly Varden–freshwater	1.40
Dolly Varden–saltwater	1.40
Lake trout	1.40
Arctic grayling	0.70
Northern pike	2.80
Sheefish	5.50
Unknown sturgeon	34.00

-continued-

Resource	Conversion to pounds
Longnose sucker	1.50
Rainbow trout	1.40
Steelhead trout	1.40
Unknown trout	1.40
Broad whitefish	4.00
Least cisco	0.40
Humpback whitefish	1.75
Round whitefish	1.00
Black bear	58.00
Brown bear	340.00
Caribou	150.00
Moose	540.00
Dall sheep	104.00
Beaver	8.75
Coyote [a]	0.00
Red fox	0.00
Red fox–crossphase	0.00
Arctic hare	5.60
Snowshoe hare	2.00
River otter	0.00
Lynx	4.00
Alaska marmot	5.00
American marten	0.00
Mink	0.00
Muskrat	0.75
Porcupine	8.00
Arctic ground (parka) squirrel	0.50
Red (tree) squirrel	0.50
Weasel	0.00
Gray wolf	0.00
Wolverine	0.00
Harbor seal	56.00
Harbor seal–freshwater	56.00
Harbor seal–saltwater	56.00
Unknown seal	56.00
Sea otter	0.00
Steller sea lion	200.00
Walrus	560.00
Beluga whale	831.00
Bufflehead	0.40
Canvasback	1.10
Gadwall	0.80
Unknown goldeneye	0.80

-continued-

Resource	Conversion to pounds
Mallard	1.00
Merganser	0.60
Northern pintail	0.80
Scaup	0.90
Unknown scaup	0.90
Scoter	0.90
Black scoter	0.90
Northern shoveler	0.60
Green-winged teal	0.30
Wigeon	0.70
American wigeon	0.70
Unknown wigeon	0.70
Unknown duck	0.78
Brant	1.20
Cackling Canada goose	1.20
Dusky Canada goose	3.60
Lesser Canada goose[b]	1.20
Unknown Canada goose	1.96
Snow goose	2.30
White-fronted goose	2.40
Unknown goose	2.40
Tundra (whistling) swan	6.00
Unknown swan	6.00
Sandhill crane	8.40
Common snipe	0.10
Unknown loon	3.00
Tern	1.00
Arctic tern	1.00
Grouse	0.70
Unknown ptarmigan	0.70
Duck eggs	0.15
Unknown duck eggs	0.15
Goose eggs	0.30
Unknown goose eggs	0.30
Swan eggs	0.30
Unknown swan eggs	0.30
Seabird and loon eggs	0.30
Gull eggs	0.30
Unknown gull eggs	0.30
Tern eggs	0.05
Unknown tern eggs	0.05
Unknown eggs	0.15
Butter clam	3.00

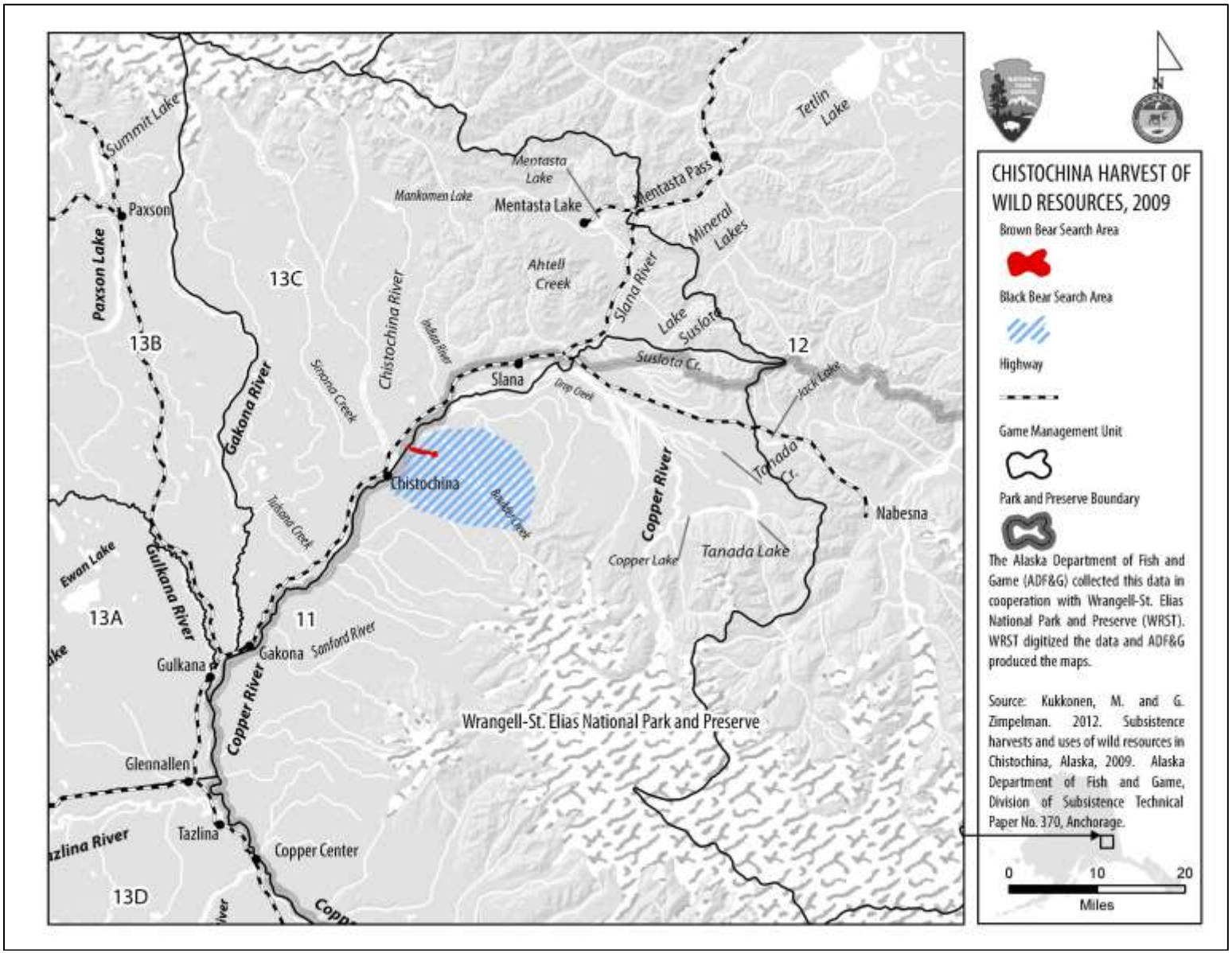
-continued-

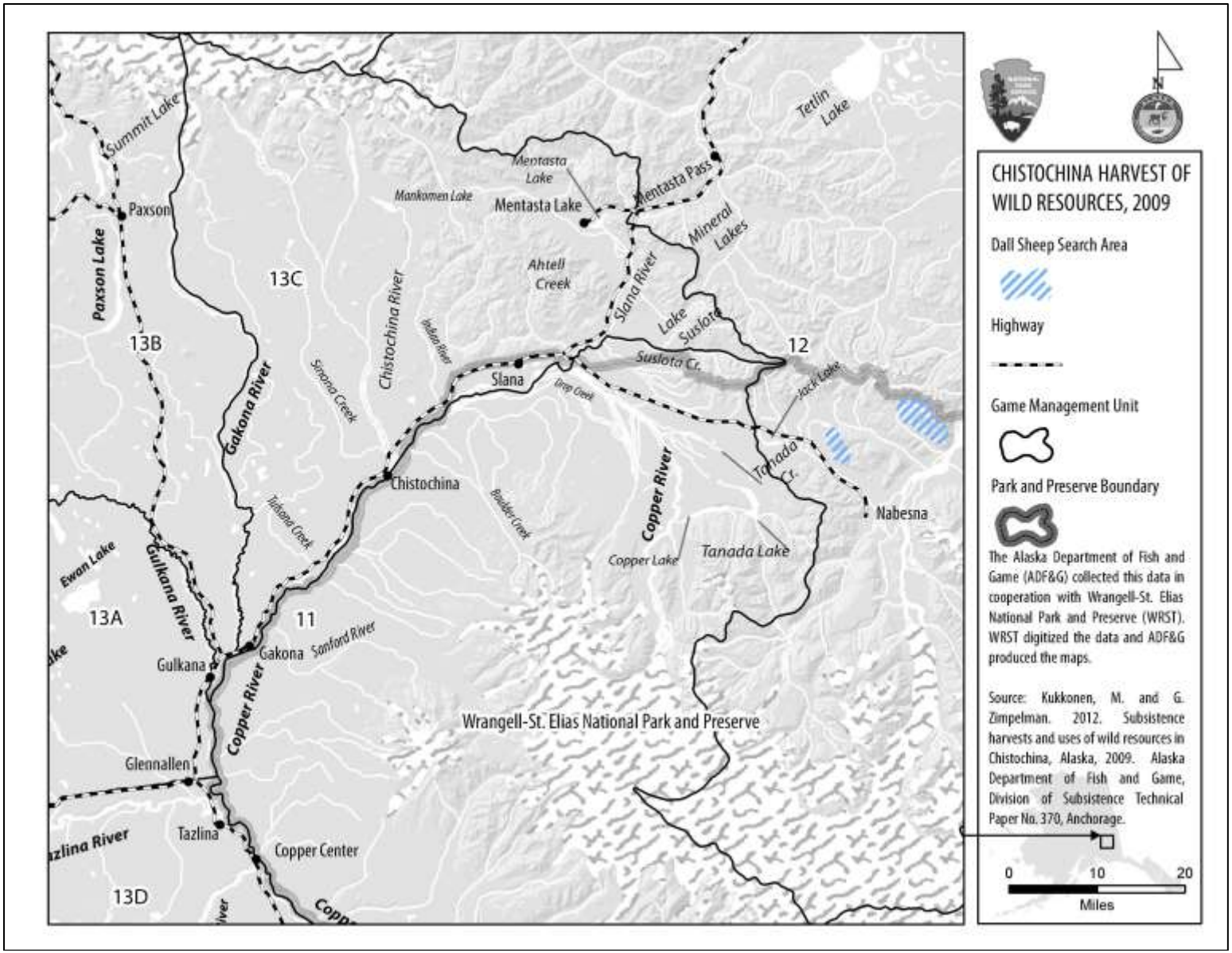
Resource	Conversion to pounds
Freshwater clam	3.00
Gaper (horse) clam	3.00
Pacific littleneck (steamer) clam	3.00
Arctic surfclam (pinkneck clam)	3.00
Pacific razor clam	3.00
Softshell clams	3.00
Unknown clams	3.00
Cockle	3.00
Unknown cockle	3.00
Dungeness crab	0.70
King crab	2.30
Red king crab	1.00
Tanner crab	1.60
Unknown Tanner crab	1.60
Unknown crab	1.57
Unknown mussel	1.50
Octopus	4.00
Scallop	1.00
Unknown scallop	1.00
Shrimp	0.04
Shrimp	1.00
Berries	4.00
Plants / greens / mushrooms	4.00
Wood	0.00

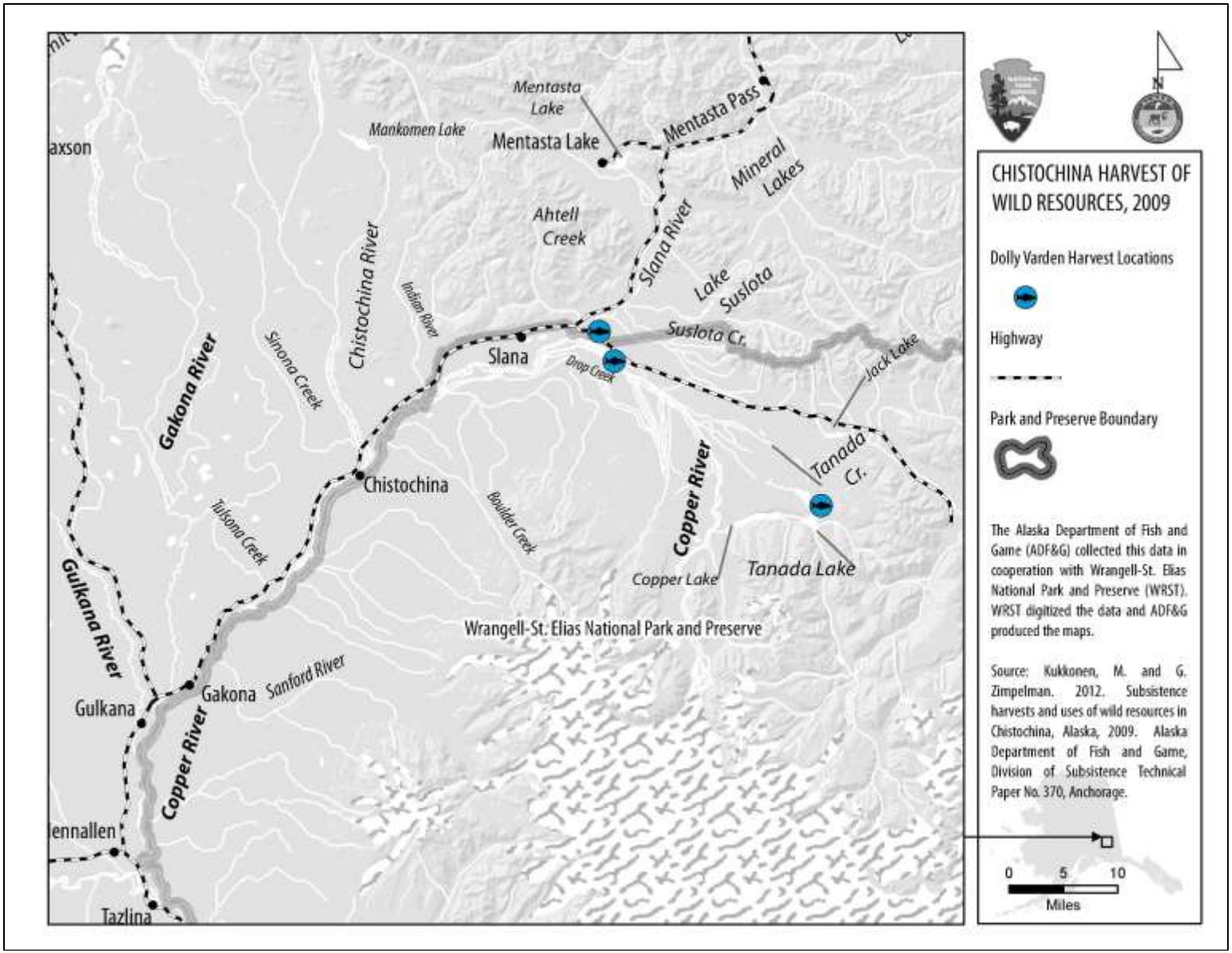
a. Although the resources with a conversion factor of 0 are a portion of the total harvest of wild resources, they are given a conversion factor of 0 because they are not usually consumed.

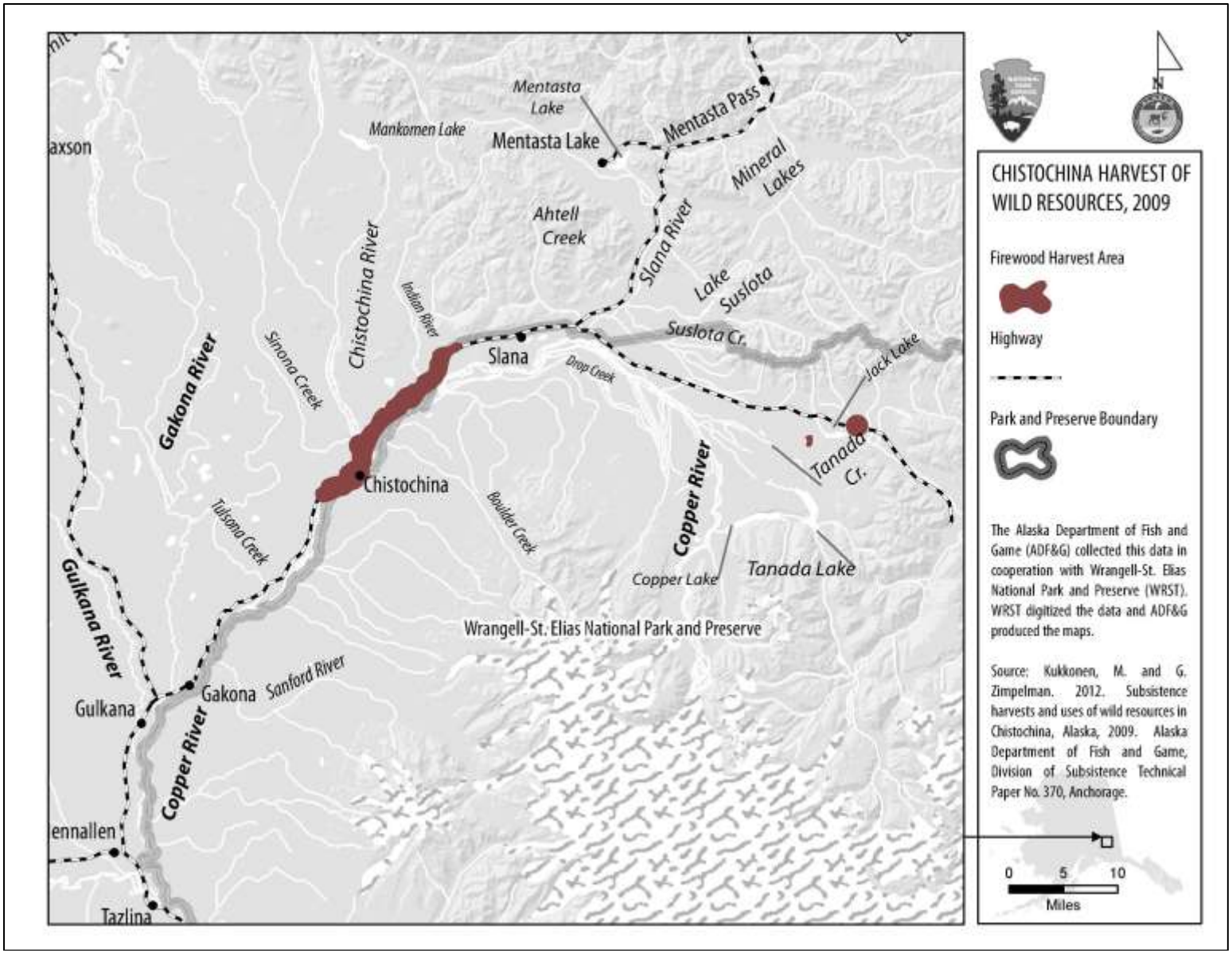
b. Both *Branta canadensis taverner* and *B. canadensis parvipes*.

APPENDIX C: ADDITIONAL HARVEST AND USE AREA MAPS


CHISTOCHINA HARVEST OF WILD RESOURCES, 2009
Brown Bear Search Area
Black Bear Search Area
Highway
Game Management Unit
Park and Preserve Boundary
The Alaska Department of Fish and Game (ADF&G) collected this data in cooperation with Wrangell-St. Elias National Park and Preserve (WRST). WRST digitized the data and ADF&G produced the maps.
Source: Kukkonen, M. and G. Zimpelman. 2012. Subsistence harvests and uses of wild resources in Chistochina, Alaska, 2009. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 370, Anchorage.
0
10
20
Miles
Summit Lake
Paxson
Paxson Lake
13B
13C
13D
13A
11
12
Mankomen Lake
Mentasta Lake
Mentasta Pass
Tetlin Lake
Mineral Lakes
Ahtell Creek
Slana River
Lake Suslota
Suslota Cr.
Slana
Chistochina River
Gakona River
Sinona Creek
Indian River
Drop Creek
Jack Lake
Tanada Cr.
Nabesna
Chistochina
Boulder Creek
Copper River
Copper Lake
Tanada Lake
Tahkona Creek
Ewan Lake
Gulkana River
Gulkana
Gakona
Sanford River
Wrangell-St. Elias National Park and Preserve
Glennallen
Tazlina
Tazlina River
Copper Center


CHISTOCHINA HARVEST OF WILD RESOURCES, 2009
Dall Sheep Search Area
Highway
Game Management Unit
Park and Preserve Boundary
The Alaska Department of Fish and Game (ADF&G) collected this data in cooperation with Wrangell-St. Elias National Park and Preserve (WRST). WRST digitized the data and ADF&G produced the maps.
Source: Kukkonen, M. and G. Zimpelman. 2012. Subsistence harvests and uses of wild resources in Chistochina, Alaska, 2009. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 370, Anchorage.
0
10
20
Miles
Summit Lake
Paxson
Paxson Lake
13B
13C
13A
13D
11
12
Gakona River
Chistochina River
Mankomen Lake
Mentasta Lake
Mentasta Pass
Tetlin Lake
Mineral Lakes
Ahtell Creek
Slana River
Lake Suslota
Suslota Cr.
Slana
Jack Lake
Tanada Cr.
Nabesna
Chistochina
Copper River
Boulder Creek
Copper Lake
Tanada Lake
Ewan Lake
Gulkana River
Gulkana
Gakona
Sanford River
Wrangell-St. Elias National Park and Preserve
Glennallen
Tazlina
Copper Center


Mentasta Lake
Mentasta Pass
Mankomen Lake
Mentasta Lake
Mineral Lakes
Ahtell Creek
Slana River
Chistochina River
Indian River
Lake Suslota
Suslota Cr.
Slana
Drop Creek
Jack Lake
Gakona River
Simona Creek
Tanada Cr.
Chistochina
Boulder Creek
Copper River
Tiekona Creek
Gulkana River
Copper Lake
Tanada Lake
Wrangell-St. Elias National Park and Preserve
Gulkana
Gakona
Sanford River
Copper River
Tazlina
CHISTOCHINA HARVEST OF WILD RESOURCES, 2009
Dolly Varden Harvest Locations
Highway
Park and Preserve Boundary
The Alaska Department of Fish and Game (ADF&G) collected this data in cooperation with Wrangell-St. Elias National Park and Preserve (WRST). WRST digitized the data and ADF&G produced the maps.
Source: Kukkonen, M. and G. Zimpelman. 2012. Subsistence harvests and uses of wild resources in Chistochina, Alaska, 2009. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 370, Anchorage.
0 5 10
Miles


Mentasta Lake
Mentasta Pass
Mankomen Lake
Mentasta Lake
axson
Mineral Lakes
Ahtell Creek
Chistochina River
Slana River
Indian River
Lake Suslota
Suslota Cr.
Slana
Drop Creek
Jack Lake
Gakona River
Simona Creek
Tanada Cr.
Chistochina
Tulsona Creek
Boulder Creek
Copper River
Gulkana River
Copper Lake
Tanada Lake
Wrangell-St. Elias National Park and Preserve
Gulkana
Gakona
Sanford River
Copper River
ennallen
Tazlina
CHISTOCHINA HARVEST OF WILD RESOURCES, 2009
Firewood Harvest Area
Highway
Park and Preserve Boundary
The Alaska Department of Fish and Game (ADF&G) collected this data in cooperation with Wrangell-St. Elias National Park and Preserve (WRST). WRST digitized the data and ADF&G produced the maps.
Source: Kukkonen, M. and G. Zimpelman. 2012. Subsistence harvests and uses of wild resources in Chistochina, Alaska, 2009. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 370, Anchorage.
0 5 10
Miles

APPENDIX D: SUMMARY OF STUDY FINDINGS

Subsistence Harvests and Uses of Wild Resources in Chistochina, Alaska, 2009

An Overview of Study Findings

Division of Subsistence
Alaska Department of Fish and Game

November 2012

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) in collaboration with Wrangell-St. Elias National Park and Preserve on subsistence harvests of all resources by residents of Chistochina. Funding for this study was provided by the National Park Service through Alaska Regional Natural Resources Project Funds. The study period covers January 1 to December 31, 2009. This study is part of a multiphase study to update the subsistence harvest information for several communities in the Copper River Basin. Year one of this multiyear study documented subsistence uses and harvests as well as demographic and other economic data for the study year of 2009 in Chistochina.

Methods

The primary data gathering method was systematic household surveys using a modified version of the ADF&G Division of Subsistence standard data gathering instrument. The surveys were conducted face-to-face with community residents. The goal was to interview representatives of all households in Chistochina. In total, 27 households were interviewed, approximately 82% of the year-round resident households. With the help of a local research assistant, household interviews were conducted to collect harvest and use information for all wild resources. Each household had accompanying mapping conducted as well, for each resource, including use area and/or harvest location, amount of harvest, and month of harvest. Participation was voluntary, and individual as well as household-level data are confidential, as are mapped harvest locations. In addition, subsistence users were asked to discuss their observations about resource use and abundance, and their concerns relating to subsistence resources and their continuing opportunities to harvest subsistence resources.

Findings

In 2009, all Chistochina households used wild resources, 96% of the households attempted to harvest a resource, and 93% of the households successfully harvested wild resources. Subsistence harvests were lower than in previous study year (1987), but continue to be diverse. The mean total harvest was 522 pounds usable weight per household, or 199 pounds per person. On average, this per person harvest is about 0.6 pounds of wild resources per day.

Figure 1 shows the composition of wild resource harvests in pounds usable weight by category for 2009. The composition of the harvest varied by resource category with salmon and large land mammals (specifically moose) making up the largest portions of the harvest. Many households also harvested and used wood but firewood and some furbearers typically not eaten are excluded from the weightcalculations. Table 1 shows the top ten specific resources harvested and used by Chistochina households in 2009.

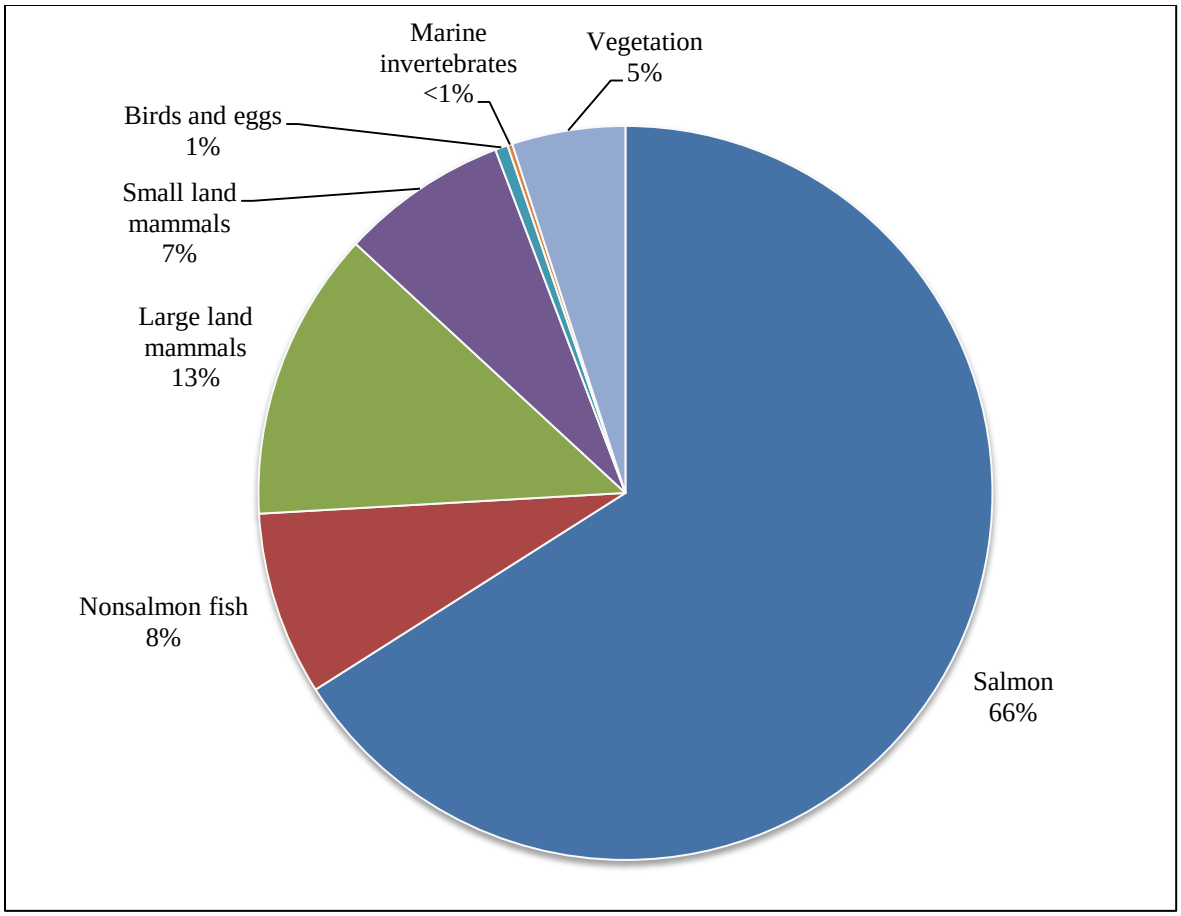


Figure 1.–Chistochina composition of wild resource harvests, pounds usable weight, 2009.

Table 1.–Top ten resources harvested and used, Chistochina, 2009.

Harvested				Used			
Number	Rank	Resource	Pounds per capita	Number	Rank	Resource	Percentage of households using
1	1.	Sockeye salmon	93.5	1	1.	Blueberry	77.8%
2	2.	Chinook salmon	33.7	2	2.	Wood	74.1%
3	3.	Moose	25.4	3	3.	Sockeye salmon	70.4%
4	4.	Snowshoe hare	6.5	4	3.	Moose	70.4%
5	5.	Beaver	5.7	5	5.	Lowbush cranberry	66.7%
6	6.	Burbot	3.9	6	6.	Chinook salmon	59.3%
7	7.	Coho salmon	3.7	7	6.	Spruce grouse	59.3%
8	8.	Blueberry	3.5	8	7.	Lake trout	40.7%
9	9.	Northern pike	3.4	9	7.	Arctic grayling	40.7%
10	10.	Lake trout	2.9	10	7.	Highbush cranberry	40.7%

Source ADF&G Division of Subsistence household survey, 2010.

Although the bulk of the subsistence harvest in 2009 was salmon and moose, almost all households used nonsalmon fish, and vegetation, and many used small land mammals and birds. During the study year, Chistochina households on average used 11 different resources and harvested 9 kinds of resources. The maximum number of resources used by any household was 34. In addition, households gave away an average of 3 kinds of resources and received 5 kinds of resources. In 2009, most Chistochina households (59%) received some resources from the categories of fish and land mammals, while 44% of households reported sharing resources from the category of land mammals. At the species level, moose was the most widely shared land mammal species; 56% of households reported receiving some moose and 33% giving some away. Sharing of the resources bound households 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 a vital component of the Chistochina economy and way of life in 2009, as they have been for the people living in the area for centuries.

Similar comprehensive subsistence resource use and harvest studies were conducted in Chistochina in 1982, and 1987. In 2009, the total pounds harvested, and the per capita pounds used, were higher than in 1982 but lower than in 1987 (Table 2). When comparing the 2009 total harvests to the 1987 study, there seems to be continuing trends of increasing salmon, and small land mammal harvest, and declining large land mammal harvest. Nonsalmon fish and birds and eggs show a decline in harvest levels as well. In comparison, marine invertebrate harvest has increased slightly but continues to be very small in number of total pounds harvested. When comparing the 2009 total harvest to the 1982 study, large land mammals and vegetation are the only 2 resource categories with a decline in total harvest. At the same time, salmon is the only resource category that has seen continuous increase in harvest and use since the 1982 study.

Table 2.–Total estimated community harvests, pounds usable weight, Chistochina, 1982, 1987, 2009.

Resource category	Harvests by percent usable weight			Harvests by pounds usable weight			Per capita harvests by pounds usable weight		
	1982	1987	2009	1982	1987	2009	1982	1987	2009
Salmon	37.2%	49.5%	66.0%	3,554	10,197	11,371	42.8	129.6	131.0
Nonsalmon fish	7.9%	10.7%	8.1%	758	2,199	1,395	9.1	27.9	16.1
Large land mammals	37.5%	32.1%	12.8%	3,579	6,598	2,200	43.1	83.8	25.4
Small land mammals	4.3%	1.6%	7.4%	408	322	1,269	4.9	4.1	14.6
Birds and eggs	1.3%	0.9%	0.6%	128	186	97	1.5	2.4	1.1
Marine invertebrates	0.0%	0.2%	0.2%	0	34	37	0.0	0.4	0.4
Vegetation	11.7%	5.1%	5.0%	1,118	1,048	860	13.5	13.3	9.9
All resources	**100.0%**	**100.0%**	**100.0%**	**9,545**	**20,584**	**17,229**	**114.8**	**261.5**	**198.5**

Sources 1982 and 1987: ADF&G Division of Subsistence, Community Subsistence Information System (CSIS), http://www.adfg.alaska.gov/sb/CSIS/; 2009: ADF&G Division of Subsistence household survey, 2010.

Continuing Research

The Division of Subsistence, in collaboration with Wrangell St. Elias Park and Preserve staff and local communities, will continue research for this project. Study year two covered the communities of Copper Center, Mentasta Lake, Mentasta Pass, Slana, and Slana–Nabesna Road for subsistence harvests from January 1 through December 31, 2010. During study year three, subsistence harvest and use surveys will be conducted in Chitina, Gakona, Kenny Lake, and McCarthy to cover subsistence harvests from January 1 through December 31, 2012.

For More Information

Complete results for this project appear in: *M. Kukkonen and G. Zimpelman. 2012. Subsistence harvests and uses of wild resources in Chistochina, Alaska, 2009. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 370, Anchorage.*

Technical Paper series reports are available through the Alaska Resources Library and Information Services (ARLIS), the Alaska State Library, and on the Internet: *www.adfg.alaska.gov/sf/publications*.