Technical Paper No. 429

Harvest and Use of Subsistence Resources in 4 Communities in the Nenana Basin, 2015

Edited by
Caroline L. Brown
and
Marylynne L. Kostick

Contributors: Brooke M. McDavid, Christopher R. McDevitt, Alida Trainor, and Jeff Park

June 2017

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

Symbols and Abbreviations

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

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Measures (fisheries)

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

Mathematics, statistics

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

TECHNICAL PAPER NO. 429

HARVEST AND USE OF SUBSISTENCE RESOURCES IN 4 COMMUNITIES IN THE NENANA BASIN, 2015

by

Caroline L. Brown, Brooke M. McDavid, Christopher R. McDevitt, Alida Trainor, and Jeff Park
Alaska Department of Fish and Game Division of Subsistence, Fairbanks

and

Marylynne L. Kostick
Alaska Department of Fish and Game Division of Subsistence, Anchorage

Alaska Department of Fish and Game
Division of Subsistence
1300 College Road
Fairbanks, Alaska 99709

June 2017

Development and publication of this manuscript were partially financed by the Alaska State Pipeline Coordinator's Section, Alaska Gasline Development Corporation, and ADF&G Division of Subsistence

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.

Caroline L. Brown, Brooke M. McDavid, Christopher R. McDevitt, Alida Trainor, and Jeff Park
Alaska Department of Fish and Game Division of Subsistence
1300 College Road, Fairbanks, AK 99701-1551 USA

and
Marylynne L. Kostick
Alaska Department of Fish and Game Division of Subsistence
333 Raspberry Road, Anchorage, AK 99518-1565 USA

This document should be cited as:
Brown, C.L., and M.L. Kostick, editors. 2017. Harvest and Use of Subsistence Resources in 4 Communities in the Nenana Basin, 2015. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 429, Fairbanks.

TABLE OF CONTENTS

Page

List of Tables vi

List of Figures vii

List of Plates xii

List of Appendices xii

List of Appendix Tables xiii

Abstract xv

1. Introduction 1

Caroline L. Brown, Brooke M. McDavid, and Christopher R. McDevitt

Project Background 1

Regional Background 3

Regulatory Context 4

Study Objectives 7

Research Methods 7

Ethical Principles for the Conduct of Research 7

Project Planning 7

Systematic Household Surveys 9

Household Survey Implementation 9

Mapping Locations of Subsistence Hunting, Fishing, and Gathering Activities 10

Key Respondent Interviews 11

Data Analysis and Review 11

Survey Data Entry and Analysis 11

Population Estimates and Other Demographic Information 13

Map Data Entry and Analysis 13

Food Security Analysis 14

Network Analysis 14

Final Report Organization 15

2. Denali Park 16

Brooke M. McDavid

Community Background 16

Seasonal Round....20
Population Estimates and Demographic Information....22
Summary of Harvest and Use Patterns....22
Individual Participation in the Harvesting and Processing of Wild Resources....22
Harvest and Use of Wild Resources at the Household Level....22
Harvest Quantities and Composition....27
Salmon....27
Nonsalmon Fish....37
Large Land Mammals....38
Small Land Mammals/Furbearers....41
Marine Mammals....41
Birds and Eggs....41
Marine Invertebrates....45
Vegetation....45
Production and Distribution of Wild Resources....49
Household Specialization in Resource Harvesting....49
Income and Cash Employment....51
Food Security....57
Comparing Harvests and Uses in 2015 with Previous Years....57
Harvest Assessments....57
Harvest Data....62
Current and Historical Harvest Areas....62
Local Comments and Concerns....64
Conclusions....66
Acknowledgements....66
3. Ferry....67
Chris McDevitt
Community Background....67
Seasonal Round....74
Population Estimates and Demographic Information....74
Summary of Harvest and Use Patterns....77
Individual Participation in the Harvesting and Processing of Wild Resources....77

Harvest and Use of Wild Resources at the Household Level 79
Harvest Quantities and Composition 79
Salmon 87
Nonsalmon Fish 88
Large Land Mammals 90
Small Land Mammals/Furbearers 90
Marine Mammals 91
Birds and Eggs 91
Marine Invertebrates 91
Vegetation 91
Production and Distribution of Wild Resources 93
Household Specialization in Resource Harvesting 93
Income and Cash Employment 94
Food Security 95
Comparing Harvests and Uses in 2015 with Previous Years 99
Harvest Assessments 99
Harvest Data 101
Current and Historical Harvest Areas 101
Local Comments and Concerns 102
Regulations 102
User Conflict 103
Development 104
Conclusions 104
Acknowledgements 105
4. Anderson 106
Alida Trainor
Community Background 106
Seasonal Round 109
Population Estimates and Demographic Information 111
Summary of Harvest and Use Patterns 114
Individual Participation in the Harvesting and Processing of Wild Resources 114
Harvest and Use of Wild Resources at the Household Level 114

Harvest Quantities and Composition 115
Salmon 116
Nonsalmon Fish 124
Large Land Mammals 129
Small Land Mammals/Furbearers 130
Marine Mammals 136
Birds and Eggs 136
Marine Invertebrates 137
Vegetation 137
Production and Distribution of Wild Resources 140
Household Specialization in Resource Harvesting 140
Income and Cash Employment 140
Food Security 148
Comparing Harvests and Uses in 2015 with Previous Years 149
Harvest Assessments 149
Harvest Data 152
Current and Historical Harvest Areas 156
Local Comments and Concerns 156
Acknowledgements 156
5. Nenana 157
Alida Trainor, Caroline L. Brown, Brooke M. McDavid, and Jeff Park
Community Background 157
Seasonal Round 160
Population Estimates and Demographic Information 163
Summary of Harvest and Use Patterns 169
Individual Participation in the Harvesting and Processing of Wild Resources 169
Harvest and Use of Wild Resources at the Household Level 169
Harvest Quantities and Composition 170
Salmon 178
Nonsalmon Fish 179
Large Land Mammals 185
Small Land Mammals/Furbearers 188

Marine Mammals 191
Birds and Eggs 191
Marine Invertebrates 192
Vegetation 192
Production and Distribution of Wild Resources 195
Household Specialization in Resource Harvesting 195
Income and Cash Employment 195
Food Security 202
Harvesting and Processing Networks 203
Inflow 205
Self Provisioning 206
Social Provisioning 206
Outflow 209
Comparing Harvests and Uses in 2015 with Previous Years 211
Harvest Assessments 211
Harvest Data 215
Current and Historical Harvest Areas 216
Local Comments and Concerns 217
Regulations 217
Environmental Changes 220
Acknowledgements 221
6. Discussion and Conclusions 222
Caroline L. Brown
Introduction 222
Regional Comparison 222
Historical Harvest Comparisons 225
Salmon 225
Moose 227
Conclusions 228
References Cited 230

LIST OF TABLES

Table **Page**

1-1.–Population estimates and ethnic composition, study communities, 2015. 3
1-2.–Project staff. 8
1-3.–Community meetings, study communities, 2015–2017. 9
1-4.–Sample achievement, study communities, 2015. 10
1-5.–Survey length, study communities, 2015. 10
2-1.–Resource harvest and use characteristics, Denali Park, 2015. 18
2-2.–Sample and demographic characteristics, Denali Park, 2015. 23
2-3.–Birthplaces of household heads, Denali Park, 2015. 24
2-4.–Estimated harvests and uses of fish, wildlife, and vegetation resources, Denali Park, 2015. 28
2-5.–Resources most commonly used by households, Denali Park, 2015. 33
2-6.–Comparison of selected findings, Denali Park, 2015. 52
2-7.–Estimated earned and other income, Denali Park, 2015. 53
2-8.–Employment by industry, Denali Park, 2015. 55
2-9.–Reported job schedules, Denali Park, 2015. 56
2-10.–Employment characteristics, Denali Park, 2015. 56
3-1.–Resource harvest and use characteristics, Ferry, 2015. 69
3-2.–Comparison of selected findings, Ferry, 2015. 70
3-3.–Sample and demographic characteristics, Ferry, 2015. 78
3-4.–Birthplaces of household heads, Ferry, 2015. 78
3-5.–Estimated harvests and uses of fish, wildlife, and vegetation resources, Ferry, 2015. 80
3-6.–Resources most commonly used by households, Ferry, 2015. 86
3-7.–Estimated earned and other income, Ferry, 2015. 95
3-8.–Employment characteristics, Ferry, 2015. 97
3-9.–Reported job schedules, Ferry, 2015. 98
3-10.–Employment by industry, Ferry, 2015. 98
4-1.–Resource harvest and use characteristics, Anderson, 2015. 107
4-2.–Sample and demographic characteristics, Anderson, 2015. 111
4-3.–Birthplaces of household heads, Anderson, 2015. 113
4-4.–Estimated harvests of fish, wildlife, and vegetation resources, Anderson, 2015. 117
4-5.–Resources most commonly used by households, Anderson, 2015. 123
4-6.–Estimated earned and other income, Anderson, 2015. 143
4-7.–Comparison of selected findings, Anderson, 2015. 144
4-8.–Employment by industry, Anderson, 2015. 146
4-9.–Employment characteristics, Anderson, 2015. 147
4-10.–Reported job schedules, Anderson, 2015. 148
5-1.–Resource harvest and use characteristics, Nenana, 2015. 158

LIST OF TABLES, CONTINUED

Table **Page**

5-2.–Comparison of selected findings, Nenana, 2015. 161
5-3.–Sample and demographic characteristics, Nenana, 2015. 165
5-4.–Birthplaces of household heads, Nenana, 2015. 168
5-5.–Estimated harvests and uses of fish, wildlife, and vegetation resources, Nenana, 2015. 171
5-6.–Top resources used by households, Nenana, 2015. 177
5-7.–Estimated harvests of fish for consumption by dogs, Nenana, 2015. 180
5-8.–Estimated earned and other income, Nenana, 2015. 197
5-9.–Employment by industry, Nenana, 2015. 199
5-10.–Employment characteristics, Nenana, 2015. 201
5-11.–Reported job schedules, Nenana, 2015. 202
6-1.–Comprehensive subsistence harvest data, Interior Alaska communities in proposed LNG pipeline corridor, 2011–2015. 225

LIST OF FIGURES

Figure **Page**

1-1.–Map of study communities, 2015. 2
2-1.–Denali Park Census Designated Place (ADLWD 2010). 17
2-2.–All resources search and harvest areas, Denali Park, 2015. 21
2-3.–Population estimates, Denali Park, 2010 and 2015. 24
2-4.–Population profile, Denali Park, 2015. 25
2-5.–Population estimates, Denali Park, 1990–2015. 25
2-6.–Percentages of individuals participating in harvesting and processing wild resources, Denali Park, 2015. 26
2-7.–Percentages of households attempting to harvest, harvesting, and using wild resources, Denali Park, 2014. 26
2-8.–Composition of harvest by resource category, Denali Park, 2015. 33
2-9.–Top resources harvested by edible weight, Denali Park, 2015. 34
2-10.–Composition of salmon harvest by edible weight, Denali Park, 2015. 35
2-11.–Salmon harvests by gear type, Denali Park, 2015. 35
2-12.–Salmon fishing areas, Denali Park, 2015. 36
2-13.–Composition of nonsalmon fish harvest by edible weight, Denali Park, 2015. 37
2-14.–Nonsalmon fish harvests by gear type, Denali Park, 2015. 38
2-15.–Nonsalmon fishing areas, Denali Park, 2015. 39
2-16.–Composition of large land mammal harvest by edible weight, Denali Park, 2015. 40

LIST OF FIGURES, CONTINUED

Figure **Page**

2-17.–Large land mammal hunting areas, Denali Park, 2015. 42
2-18.–Composition of small land mammal harvest by edible weight, Denali Park, 2015. 43
2-19.–Estimated small land mammal harvests for fur, Denali Park, 2015. 43
2-20.–Small land mammal hunting and trapping areas, Denali Park, 2015. 44
2-21.–Composition of bird harvest by edible weight, Denali Park, 2015. 45
2-22.–Bird hunting areas, Denali Park, 2015. 46
2-23.–Composition of marine invertebrate harvest by edible weight, Denali Park, 2015. 47
2-24.–Marine invertebrate search and harvest areas, Denali Park, 2015. 48
2-25.–Composition of vegetation harvest by edible weight, Denali Park, 2015. 49
2-26.–Berries and greens gathering areas, Denali Park, 2015. 50
2-27.–Household specialization, Denali Park, 2015. 51
2-28.–Top income sources, Denali Park, 2015. 53
2-29.–Comparison of median income estimates, Denali Park, 2015. 54
2-30.–Food insecure conditions, Denali Park, 2015. 58
2-31.–Comparison of food security categories, Denali Park, 2015. 58
2-32.–Food insecure conditions by month, Denali Park, 2015. 59
2-33.–Comparison of months when food did not last, Denali Park, 2015. 59
2-34.–Percentages of households reporting whether they got enough resources, Denali Park, 2015. .....
2-35.–Changes in household uses of resources compared to recent years, Denali Park, 2015. 61
2-36.–Composition of harvests by edible weight, Denali Park, 1987 and 2015. 63
2-37.–Comparison of per capita harvests by category, Denali Park, 1987 and 2015. 64
3-1.–Ferry Census Designated Place (ADLWD 2011). 68
3-2.–All resources search and harvest areas, Ferry, 2015. 75
3-3.–Population estimates, Ferry, 2015. 76
3-4.–Population estimates, Ferry, 1990–2015. 76
3-5.–Population profile, Ferry, 2015. 77
3-6.–Percentages of households attempting to harvest, harvesting, and using wild resources, Ferry, 2015. 79
3-7.–Composition of harvest by resource category, Ferry, 2015. 85
3-8.–Top resources harvested by edible weight, Ferry, 2015. 86
3-9.–Composition of salmon harvest by weight, Ferry, 2015. 87
3-10.–Salmon harvests by gear type, Ferry, 2015. 88
3-11.–Composition of nonsalmon fish harvest by edible weight, Ferry, 2015. 89
3-12.–Nonsalmon fish harvests by gear type, Ferry, 2015. 89
3-13.–Small land mammal harvests for fur, Ferry, 2015. 92
3-14.–Composition of bird harvest by edible weight, Ferry, 2015. 92

LIST OF FIGURES, CONTINUED

Figure **Page**

3-15.–Composition of vegetation harvest by edible weight, Ferry, 2015. 93
3-16.–Household specialization, Ferry, 2015. 94
3-17.–Comparison of median income estimates, Ferry, 2015. 96
3-18.–Top income sources, Ferry, 2015. 96
3-19.–Comparison of food security categories, Ferry, 2015. 99
3-20.–Changes in household uses of resources compared to recent years, Ferry, 2015. 100
3-21.–Percentages of households reporting whether they got enough resources, Ferry, 2015. 100
4-1.–Anderson City (ADLWD 2011). 108
4-2.–All resources search and harvest areas, Anderson, 2015. 110
4-3.–Population estimates, Anderson, 2010 and 2015. 112
4-4.–Population profile, Anderson, 2015. 112
4-5.–Population estimates, Anderson, 1970–2015. 113
4-6.–Percentages of individuals participating in harvesting and processing wild resources, Anderson, 2015. 114
4-7.–Percentages of households attempting harvest, harvesting, and using wild resources, Anderson, 2015. 115
4-8.–Composition of harvest by resource category, Anderson, 2015. 122
4-9.–Top resources harvested by weight, Anderson, 2015. 122
4-10.–Composition of salmon harvest by edible weight, Anderson, 2015. 123
4-11.–Salmon harvests by gear type, Anderson, 2015. 124
4-12.–Salmon fishing areas, Anderson, 2015 125
4-13.–Composition of nonsalmon fish harvest by edible weight, Anderson, 2015. 126
4-14.–Nonsalmon fish harvests by gear type, Anderson, 2015. 127
4-15.–Nonsalmon fishing areas, Anderson, 2015. 128
4-16.–Composition of large land mammal harvest by edible weight, 2015. 129
4-17.–Bears, caribou, and moose hunting areas, Anderson, 2015. 131
4-18.–Nonlocal deer and moose hunting areas, Anderson, 2015. 132
4-19.–Nonlocal caribou hunting areas, Anderson, 2015. 133
4-20.–Small land mammal harvests for fur, Anderson, 2015. 134
4-21.–Small land mammal hunting and trapping areas, Anderson, 2015. 135
4-22.–Composition of bird harvest by edible weight, Anderson, 2015. 136
4-23.–Bird hunting areas, Anderson, 2015. 138
4-24.–Marine invertebrate search and harvest areas, Anderson, 2015. 139
4-25.–Vegetation harvest by edible weight, Anderson, 2015 140
4-26.–Berries and greens gathering areas, Anderson, 2015. 141
4-27.–Household specialization, Anderson, 2015 142

LIST OF FIGURES, CONTINUED

Figure **Page**

4-28.–Comparison of median income estimates, Anderson, 2015.....145
4-29.–Top income sources, Anderson, 2015.....145
4-30.–Food insecure conditions, Anderson, 2015.....148
4-31.–Comparison of food security categories, Anderson, 2015.....148
4-32.–Food insecure conditions by month, Anderson, 2015. 150
4-33.–Comparison of months when food did not last, Anderson, 2015. 150
4-34.–Percentages of households reporting whether they got enough resources, Anderson, 2015. 151
4-35.–Changes in household uses of resources compared to recent years, Anderson, 2015. 151
4-36.–Estimated per capita harvests, Anderson, 1987 and 2015. 153
4-37.–Composition of harvests by edible weight, Anderson, 1987 and 2015. 154
4-38.–Per capita harvests by category, Anderson, 1987 and 2015.....155
5-1.–Nenana survey area, 2015.....159
5-2.–All resources search and harvest areas, Nenana, 2015. 164
5-3.–Population estimates, Nenana, 2010 and 2015. 166
5-4.–Population estimates, Nenana, 1939–2015.....167
5-5.–Population profile, Nenana, 2015. 167
5-6.–Percentages of households participating in harvesting and processing wild resources, Nenana, 2015. 169
5-7.–Percentage of households using, attempting to harvest, and harvesting wild resources, Nenana, 2015. 170
5-8.–Composition of harvest by resource category, Nenana, 2015. 176
5-9.–Top harvested resources by edible weight, Nenana, 2015.....177
5-10.–Composition of salmon harvest by edible weight, Nenana, 2015. 178
5-11.–Salmon harvests by gear type, Nenana, 2015. 180
5-12.–Salmon fishing areas, Nenana, 2015.....181
5-13.–Composition of nonsalmon fish harvest by edible weight, Nenana, 2015. 182
5-14.–Nonsalmon fish harvests by gear type, Nenana, 2015. 183
5-15.–Nonsalmon fishing areas, Nenana, 2015. 184
5-16.–Composition of large land mammal harvest by edible weight, Nenana, 2015. 185
5-17.–Large land mammal hunting areas, Nenana, 2015. 187
5-18.–Composition of small land mammal harvest by edible weight, Nenana. 2015. 188
5-19.–Small land mammal harvests for fur, Nenana, 2015. 189
5-20.–Small land mammal hunting and trapping areas, Nenana, 2015. 190
5-21.–Composition of bird and bird egg harvest by edible weight, Nenana, 2015. 191
5-22.–Bird hunting and bird egg gathering areas, Nenana, 2015. 193
5-23.–Composition of marine invertebrate harvest by edible weight, Nenana, 2015.....194

LIST OF FIGURES, CONTINUED

Figure **Page**

5-24.–Compostition of vegetation harvest by edible weight, Nenana, 2015. 194
5-25.–Berries and greens gathering areas, Nenana, 2015. 196
5-26.–Household specialization, Nenana, 2015. 197
5-27.–Top income sources, Nenana, 2015. 198
5-28.–Comparison of median income estimates, Nenana, 2015. 198
5-29.–Food insecure conditions, Nenana, 2015. 202
5-30.–Comparison of food security categories, Nenana, 2015. 203
5-31.–Food insecure conditions by month and by household security category, Nenana, 2015. 204
5-32.–Comparison of months when foods did not last, Nenana, 2015. 204
5-33.–Inflow of resources and services to surveyed households, Nenana, 2015. 208
5-34.–Comparison of inflow patterns for moose, salmon, other nonsalmon fish, and expenses and equipment, Nenana, 2015. 210
5-35.–Outflow of resources and equipment from surveyed households, Nenana, 2015. 212
5-36.–Outflow of resources and equipment from surveyed Native and non-Native households to community events and to households in other communities, Nenana, 2015. 213
5-37.–Percentages of households reporting whether they got enough resources, Nenana, 2015. 214
5-38.–Changes in household uses of resources compared to recent years, Nenana, 2015. 214
5-39.–Per capita harvests of nonsalmon fish, large land mammals, and small land mammals, Nenana, 2004 and 2015. 216
5-40.–Estimated harvests of chum and coho salmon, Nenana 1988–2015. 217
5-41.–Estimated harvests of Chinook and sockeye salmon, Nenana, 1988–2015. 218
6-1.–Comparison of food security categories, study communities, Alaska, and United States, 2015. 224
6-2.–Estimated total community harvests, Denali Park and Anderson, 1987 and 2015. 226
6-3.–Estimated per capita harvests, Denali Park and Anderson, 1987 and 2015. 226

LIST OF PLATES

Plate **Page**

2-1.–Overlooking Denali Park. 19

3-1.–Former Diebold cabin, built ca. 1910 in Ferry. 71

3-2.–Ferry Hills, directly east of the community. 71

3-4.–This train car, currently used as a cabin, was originally sent from the Panama Canal to aid in construction of the Alaska Railroad 72

3-3.–The former Ferry post office was built around 1910 and is currently used as a bar and lounge. 72

3-5.–A trestle bridge with a catwalk connects the two sides of Ferry. 73

3-6.–Eva Creek windfarm, southeast of Ferry. 74

3-7.–Wolf pelt being prepared by a Ferry resident. 91

4-1.–Anderson Road connects the community to the George Parks Highway.. 109

4-2.–Built in 1959, the local school continues to serve Anderson families. 109

LIST OF APPENDICES

Appendix **Page**

A.–Survey Instrument 236

B.–Ethnographic Interview Protocol 289

C.–Conversion Factors 295

D.–Additional Tables 302

LIST OF APPENDIX TABLES

Appendix Table **Page**

D1-1.–Resources used by study communities, 2015. 303
D2-1.–Population estimates, Denali Park, 2010 and 2015. 306
D2-2.–Birthplaces of population, Denali Park, 2015. 306
D2-3.–Population profile, Denali Park, 2015. 307
D2-4.–Individual participation in subsistence harvesting and processing activities, Denali Park, 2015. 308
D2-5.–Estimated salmon harvests by gear type, Denali Park, 2015. 309
D2-6.–Estimated nonsalmon fish harvests by gear type, Denali Park, 2015. 310
D2-7.–Estimated harvests of large land mammals by month and sex, Denali Park, 2015. 311
D2-8.–Estimated harvests of small land mammals by month, Denali Park, 2015. 311
D2-9.–Estimated bird harvests by season, Denali Park, 2015. 312
D2-10.–Use of firewood for home heating, Denali Park, 2015. 312
D2-11.–Comparison of median income estimates, Denali Park, 2015. 313
D2-12.–Changes in household uses of resources compared to recent years, Denali Park, 2015. 314
D2-13.–Reported impact to households that did not get enough of a resource, Denali Park, 2015. 314
D2-14.–Reasons for less household use of resources compared to recent years, Denali Park, 2015. 315
D2-15.–Reasons for more household uses of resources compared to recent years, Denali Park, 2015. 316
D2-16.–Resources of which households reported needing more, Denali Park, 2015. 317
D3-1.–Population estimates, Ferry, 2010 and 2015. 318
D3-2.–Population profile, Ferry, 2015. 318
D3-3.–Birthplaces of population, Ferry, 2015. 319
D3-4.–Estimated harvests of salmon by gear type, Ferry, 2015. 319
D3-5.–Estimated harvests of nonsalmon fish by gear type, Ferry, 2015. 320
D3-6.–Estimated large land mammal harvests by month and sex, Ferry, 2015. 321
D3-7.–Estimated small land mammal harvests by month, Ferry, 2015. 321
D3-8.–Estimated bird harvests by season, Ferry, 2015. 322
D3-9.–Use of firewood for home heating, Ferry, 2015. 322
D3-10.–Comparison of median income estimates, Ferry, 2015. 323
D3-11.–Changes in household uses of resources compared to recent years, Ferry, 2015. 324
D3-12.–Reasons for less household uses of resources compared to recent years, Ferry, 2015. 325
D3-13.–Reasons for more household uses of resources compared to recent years, Ferry, 2015. 326
D3-14.–Reported impact to households that did not get enough of a resource, Ferry, 2015. 327
D3-15.–Resources of which households reported needing more, Ferry, 2015. 328
D4-1.–Population estimates, Anderson, 2010 and 2015. 329
D4-2.–Population profile, Anderson, 2015. 329
D4-3.–Birthplaces of population, Anderson, 2015. 330

LIST OF APPENDIX TABLES, CONTINUED

Appendix Table **Page**

D4-4.–Individual participation in subsistence harvesting and processing activities, Anderson, 2015. 330
D4-5.–Estimated salmon harvests by gear type, Anderson, 2015. 331
D4-6.–Estimated nonsalmon fish harvests by gear type, Anderson, 2015. 332
D4-7.–Estimated large land mammal harvests by month and sex, Anderson, 2015. 333
D4-8.–Estimated small land mammal harvests by month, Anderson, 2015. 333
D4-9.–Estimated bird harvests by season, Anderson, 2015. 334
D4-10.–Use of firewood for home heating, Anderson, 2015. 334
D4-11.–Comparison of median income estimates, Anderson, 2015. 335
D4-12.–Changes in household uses of resources compared to recent years, Anderson, 2015. 336
D4-13.–Reported impact to households that did not get enough of a type of resource, Anderson, 2015. 336
D4-14.–Reasons for less household uses of resources compared to recent years, Anderson, 2015. 337
D4-15.–Resources of which households reported needing more, Anderson, 2015. 338
D4-16.–Reasons for more household uses of resources compared to recent years, Anderson, 2015. 339
D5-1.–Population estimates, Nenana, 2010 and 2015. 340
D5-2.–Population profile, Nenana, 2015. 340
D5-3.–Birthplaces of population, Nenana, 2015. 341
D5-4.–Individual participation in subsistence harvesting and processing activities, Nenana, 2015. 342
D5-5.–Estimated salmon harvests by gear type, Nenana, 2015. 343
D5-6.–Estimated nonsalmon fish harvests by gear type and resource, Nenana, 2015 344
D5-7.–Estimated large land mammal harvests by month and sex, Nenana, 2015. 345
D5-8.–Estimated small land mammal harvests by month, Nenana, 2015. 345
D5-9.–Estimated bird harvests by season, Nenana, 2015. 346
D5-10.–Use of firewood for home heating, Nenana, 2015. 346
D5-11.–Comparison of median income estimates, Nenana, 2015. 347
D5-12.–Changes in household uses of resources compared to recent years, Nenana, 2015. 348
D5-13.–Reasons for less household uses of resources compared to recent years, Nenana, 2015. 349
D5-14.–Resources of which households reported needing more, Nenana, 2015. 350
D5-15.–Reported impact to households that did not get enough of a type of resource, Nenana, 2015. 352
D5-16.–Reasons for more household uses of resources compared to recent years, Nenana, 2015. 353

ABSTRACT

This report summarizes research documenting the 2015 harvests and uses of subsistence resources in 4 Interior Alaska communities located within the Nenana River Basin. Household surveys and ethnographic interviews were conducted in Anderson, Denali Park, Ferry, and Nenana in early 2016 in order to 1) estimate annual harvests and uses of wild foods in a 12-month study period; 2) map areas used for hunting, fishing, and gathering; 3) collect demographic, income, and food security information; 4) evaluate trends in wild resource harvests; and 5) document traditional knowledge observations regarding wild resources. Results indicate that salmon, large land mammals, vegetation, and nonsalmon fish composed the majority of wild food harvests by edible weight for these communities in 2015, but that residents of the study communities used over 100 different resources. Historical harvest data available from 1987 for 2 of the 4 communities—Anderson and Denali Park—show declines in the total and per capita pounds of subsistence foods harvested when compared to 2015, which is consistent with trends seen across much of Interior Alaska. Respondents searched for and harvested subsistence resources both adjacent to their communities and in a variety of areas throughout Interior and Southcentral Alaska. Many respondents gave resources to or received resources from other households within and outside their communities. In ethnographic interviews, key respondents shared their knowledge and experiences related to their harvests and uses of subsistence resources including patterns of seasonal harvests, methods of harvesting and processing, land use patterns, changes in the community over time, concerns for the management of fish and wildlife populations, and concerns regarding the proposed development of a LNG pipeline. This project was primarily funded by a reimbursable services agreement with the Alaska State Pipeline Coordinators Section. Additional funding was provided by the Alaska Gasline Development Corporation and Alaska Department of Fish and Game Division of Subsistence. The results of this research can assist agencies and other interested parties in understanding the ways in which subsistence resources are used within these communities. Results may be also used as part of the National Environmental Policy Act review of the proposed Alaska LNG Project alternatives.

Key words: subsistence hunting, subsistence fishing, Anderson, Denali Park, Ferry, Nenana, Alaska LNG

1. INTRODUCTION

Caroline L. Brown, Brooke M. McDavid, and Christopher R. McDevitt

This report summarizes the results of research conducted on the 2015 harvests and uses of wild food by 4 communities in Alaska's Interior region: Denali Park, Ferry, Anderson, and Nenana[1]. This research took place in the third year of a 3-year study in 16 communities situated along the proposed Alaska Liquified Natural Gas Project (Alaska LNG) pipeline route from the northern coastal plain of Alaska through Interior Alaska to the Kenai Peninsula in Southcentral Alaska.

Three of the study communities (Ferry, Anderson, and Denali Park) are located within the boundaries of the Denali Borough (Figure 1-1). All of the study communities are located on the road system. Demographic characteristics and harvest levels vary among the study communities, as does the species composition of harvest. Population estimates for the study communities in 2015 ranged from 41 in Ferry to 584 in Nenana (Table 1-1). The Alaska Native population ranged from 0% in Ferry and Denali Park to 35% in Nenana. Division of Subsistence population estimates differed from those produced by the U.S. Census and the American Community Survey; these differences can be explained by a number of factors including survey timing, definitions of residency, and sampling strategies. All of the study communities have access to roughly the same resource base, although residents from some of the communities traveled extensively in pursuit of resources that were not available locally.

Project Background

This project was conducted cooperatively by Alaska Department of Fish and Game (ADF&G) Division of Subsistence, Native Village of Nenana, the Middle Nenana Fish & Game Advisory Committee, and the Anderson City Council. It was partially funded through a reimbursable services agreement with the State Pipeline Coordinator's Section (SPCS). Additional funding was provided by the Alaska Gasline Development Corporation and ADF&G Division of Subsistence. This is the fourth of 4 reports; the results of the project may be used as part of the National Environmental Policy Act review of the proposed Alaska LNG alternatives.

The Alaska LNG project, as proposed, includes a natural gas treatment plant at Point Thomson, an 800-mile pipeline, compressor stations along the route, and a liquefaction plant at Nikiski on Cook Inlet. Project partners anticipate that at least 5 offtake points will be built to help facilitate in-state gas delivery.

The goal of this research was to document baseline information about the contemporary harvest and uses of fish, wildlife, and plant resources by communities situated near the proposed Alaska LNG pipeline route, as well as traditional knowledge about these resources. Systematic documentation of this information is needed to help address long-term data gaps in the proposed development area. In some study communities, little comprehensive subsistence research has been conducted that documents the full range of wild resource harvests and uses; in others, data were very old and in need of updating. Maps of subsistence harvest areas were also limited.

Between 2011 and 2015, the division conducted comprehensive baseline subsistence research in 16 communities located along the proposed corridor of a natural gas pipeline. These communities were located in an area that stretched from the northern coastal plain of Alaska, through the eastern Interior to Delta Junction, and along the Alaska Highway to the Canadian border (Holen et al. 2012). This research was part of the Alaska Pipeline Project (APP). Early in 2013, the division conducted similar research in the communities of Manley Hot Springs and Minto related to a proposed road to Tanana (Brown et al. 2014). Subsistence surveys were also conducted in 2013 in communities in the Susitna River Basin (Holen et al.

1. The area surveyed for Nenana exceeded the community itself (approximately mile 300 – 305) to include an area that began near Mile Post 299 and continued north to approximately mile 320 in order to capture all of the households located along the highway but outside of the city limits, including the Four-Mile Road CDP just north of Nenana.

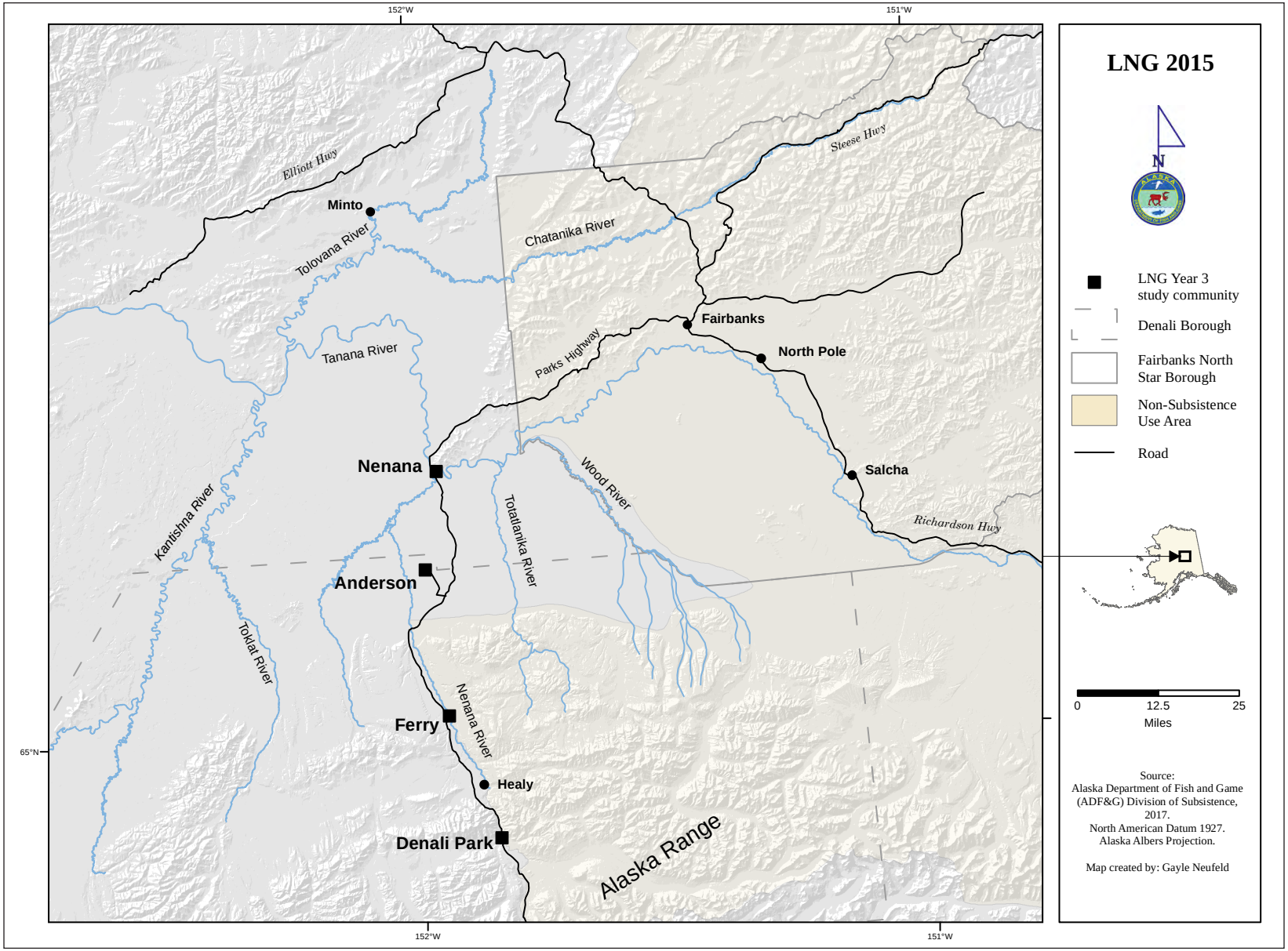


Figure 1-1.–Map of study communities, 2015.

Table 1-1.–Population estimates and ethnic composition, study communities, 2015.

	Anderson	Denali Park	Nenana	Ferry
Total population				
Households	79.0	92.0	243.0	18.0
Population	186.4	172.0	583.9	41.1
Alaska Native				
Households	1.58	0.00	101.55	0.00
Percentage	2.0%	0.0%	41.8%	0.0%
Population	3.16	0.00	203.10	0.00
Percentage	1.7%	0.0%	34.8%	0.0%

Source ADF&G Division of Subsistence household surveys, 2016.

2014). Finally, subsistence surveys were conducted in Tanana, Rampart, Stevens Village, Healy, Barrow, Nuiqsut, and Anaktuvak Pass in 2014 as part of the Alaska LNG Project (Brown et al. 2016). As a result of this recent research, a number of communities along the LNG pipeline route did not require inclusion in this study.

Regional Background

Humans have occupied the north-central foothills of the Alaska Range for over 11,000 years (Pearson 1999). Archaeologists working at numerous sites throughout the upper Nenana River valley, such as Dry Creek, Panguingue Creek, Walker Road, and Moose Creek, have unearthed numerous artifacts indicating human habitation. In addition, researchers have discovered the faunal remains of bison and sheep, as well as hearths and charcoal (Hoffecker et al. 1993:49; Pearson 1999:332). Archaeologists theorize that variations in tool manufacturing and design indicate that the sites were used by more than one Paleo-Arctic group (Pearson 1999:336). Their findings have resulted in the development of a theoretical timeline of occupation, namely distinguishing between 2 separate groups of Paleo-Indians: the Denali and Nenana complexes (Pearson 1999). The Moose and Dry Creek sites in particular have proven to be significantly rich in their contributions to understanding these early cultures. Upon its discovery in 1978, the Dry Creek site was designated as a National Historic Landmark by the National Park Service.[2]

The Wood River and Nenana-Toklat bands of Athabascan Indians, possibly descendents of these earlier Paleo-Indians, arrived in the area approximately 1,300–1,000 years ago. Subsistence needs and activities dictated the pattern of seasonal land usage among these and neighboring groups. As a result, distinct physical boundaries arose, which were based in large part on matrilineal organization and sociopolitical structures. Other neighboring groups included the Mouth of the Toklat Band to the southeast, and the Minto Band to the northwest (Shinkwin and Case 1984).

Many of the original Native inhabitants of the area occupied seasonal settlements that were characterized by a long-established pattern of moving around the land in pursuit of wild resources, which has been described by earlier researchers (Andrews 1975; Shinkwin and Case 1984). This pattern was still followed in 2015, though modified by the existence of permanent communities. More specific information in terms of species hunted and important harvest areas is provided in the Nenana chapter. In general, the seasonal round began in spring, before breakup, when families moved to spring camps to trap, fish for various nonsalmon species, and hunt migratory birds. Summers were devoted primarily to salmon fishing at fish camps, usually along the Tanana and mainstem Yukon rivers, where large quantities of salmon were caught and processed for consumption by both humans and dogs. Subsistence salmon fishing occurred from late May through early October. Extended family groups, typically representing several households, often undertook subsistence

2. National Park Service. 2015. "National Historic Landmarks in Alaska." Accessed February 6, 2017. https://www.nps.gov/nhl/find/statelists/ak.htm

salmon fishing together. Households and related individuals usually cooperated to harvest, process, preserve, and store salmon for subsistence uses. In the fall, families traveled to fall camps from which they fished for nonsalmon species and hunted for ducks and geese. In winter, subsistence activities took the form of moose and caribou hunting, small game trapping, and fishing under the ice. Winter was also the time for mending subsistence equipment, visiting, and storytelling. However, by the 1940s most of the region's indigenous residents had settled primarily into the communities of Nenana and Minto (Shinkwin and Case 1984). These seasonal activities continued in 2015; although fishing was usually based out of the permanent communities, some summer fish camps were still in operation.

The influx of miners, market hunters, and laborers, as well as the introduction of a cash economy, brought significant changes to the region (Shinkwin and Case 1984). In the early 20th century, parts of central Interior Alaska experienced a significant rise in population, following successful gold strikes made in and around Fairbanks and in the upper Kantishna country (Walker 2006). In addition, the construction of the Alaska Railroad (ARR) brought thousands of workers into the area.[3] Booming populations and industry led to other effects on the landscape and existing Native populations. A high demand for wild game meat created a thriving market for market hunters, who provided meat for the railroad and mining workers and ultimately contributed to the creation of Denali National Park in order to conserve wildlife species (Norris 2006:15). In the summer of 1923 at a celebration in Nenana, President Warren G. Harding pounded a "final" commemorative golden spike into a tie marking the completion of the Alaska Railroad. Over 470 miles of standard gauge track had been laid from Seward to Fairbanks, thereby providing relatively inexpensive transportation (compared to ships and riverboats), and easier access to the territory's natural resources.[4] The construction of a bridge across the Nenana River at Mile 371 of the railroad provided easier access to gold and coal fields on the river's east side. During this time, former railroad work camps became permanent settlements for miners, market hunters, and others.

The communities of Denali Park (formerly McKinley Park), Ferry, Anderson, and Nenana are located along the northern portion of the George Parks Highway, in the Nenana River drainage of Interior Alaska. All communities are located in Game Management Unit 20. They are situated amongst diverse habitat, from the river plain and boreal forest along the Tanana River, through the northern foothills of the mountains, to the uplands of the Alaska Range. They all experience a continental, subarctic climate with exceptionally cold winters and mild summer temperatures. Specific community histories can be found in each community's chapter.

A variety of similar, but not always identical, political boundaries are also part of this area. In addition to the borough boundaries mentioned above, these include service areas of Doyon, Limited (an Alaska Native corporation formed under the Alaska Native Claims Settlement Act [ANCSA]), Tanana Chiefs Conference (TCC; a nonprofit ANCSA corporation), 2 state advisory committees (Minto-Nenana Advisory Committee and Middle Nenana Advisory Committee), and the federal Eastern-Interior Regional Advisory Council. The project area includes both state and federal waters used for subsistence fishing, including waters within or adjacent to the Denali National Park.

Regulatory Context

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

3. Combs, John. "Alaska Engineering Commission (1914–1923)." Accessed April 3, 2017. http://www.alaskarails.org/historical/construction/menu.html

4. Combs, John. "Alaska Engineering Commission (1914–1923)." Accessed April 3, 2017. http://www.alaskarails.org/historical/construction/menu.html

In 1978, the Alaska State Legislature adopted priorities for subsistence uses of fish and game over other consumptive uses, including a subsistence fishing priority under AS 16.05.251(b) and a subsistence hunting priority under AS 16.05.255(b). In 1980, the U.S. Congress adopted a similar subsistence priority in the Alaska National Interest Lands Conservation Act (ANILCA). In 1986, after a court decision striking down state regulations that imposed a rural residency requirement on subsistence users, the Alaska Legislature adopted a statute reestablishing a rural subsistence priority consistent with ANILCA's so that the state could continue to manage all subsistence uses on state and federal land. In 1989, the Alaska Supreme Court ruled the rural subsistence priority unconstitutional in McDowell v. State of Alaska. In 1992, the Alaska Legislature adopted the current subsistence statute, AS 16.05.258. The Alaska Board of Fisheries (BOF) and the Alaska Board of Game (BOG) adopt and revise state subsistence regulations throughout Alaska. Fishing and hunting statutes and regulations affecting subsistence have been further refined by and in response to subsequent court rulings.

After the state's rural priority statute was ruled unconstitutional, the federal government began managing subsistence uses by rural residents on federal public lands and waters. Federal subsistence regulations are adopted by the Federal Subsistence Board. For example, Denali National Park has 4 designated resident zone communities: Cantwell, Lake Minchumina, Nikolai, and Telida. Residents of these communities are eligible as subsistence users of Denali National Park without a special subsistence use permit. The 2015 study communities for this project—Nenana, Anderson, Ferry, and Denali Park—are not considered eligible rural users of Denali National Park lands.

The practical consequence of this arrangement structure is that subsistence users must often consult both state and federal regulations for the lands on which they are hunting and fishing. This can be confusing, even for agency personnel. State regulations generally apply on most lands, and exclusively on state and private lands, which include ANCSA corporation lands. Federal subsistence regulations apply to federally qualified subsistence users on federal public lands. State and federal seasons and bag limits are often identical, but in some cases they differ significantly, such as with the example of Denali National Park noted above. On most federal public lands, unless preempted by federal law, all Alaska residents may hunt and fish under state regulations and bag limits. In certain national parks and monuments, hunting and fishing may be restricted to certain federally qualified subsistence users; for example, resident zone community residents.

The Migratory Bird Treaty Act of 1918 prohibited the take of migratory birds or their eggs, except as allowed by federal regulation. In 2003, the U.S. Department of the Interior Fish and Wildlife Service first adopted regulations establishing spring and summer subsistence hunts for migratory waterfowl by permanent Alaska residents of communities within eligible subsistence harvest areas. Subsistence migratory waterfowl hunting and egg harvesting are permitted by federal law during spring and summer, with defined seasons and bag limits (50 CFR 92). Federal law also permits a fall season for migratory waterfowl sport hunting with defined seasons and bag and possession limits (50 CFR 20.102).

The Interior Alaska study communities of Denali Park, Ferry, Anderson, and Nenana are variably dependent on boreal and riparian resources. Salmon was the most heavily harvested resource harvested by residents of each community. Moose, nonsalmon fish, and berries were also harvested at levels higher than other resources for the study communities. The following section reviews the regulatory context for these important Interior resources.

The 4 study communities primarily harvested salmon in 2 places, the Yukon River drainage and the Copper River, and in subsistence fisheries, personal use fisheries, or both. Recent sharp declines in Chinook salmon abundance have caused severe hardship for fishery-dependent communities in the Yukon fisheries management area (Brown et al. 2015). The Chinook salmon run initially failed in 2000 and has yet to fully rebound to pre-2000 numbers. The subsistence fishery experienced restrictions in 2008–2009 and 2011–2015. In 2014 the Yukon region's salmon fishers experienced the lowest subsistence harvest on record.

The highest priority in management of Yukon River salmon populations is biological sustainability of the resources based on principles of sustained yield. In the event that returning salmon numbers are not sufficient to meet established escapement goals that will allow for the maintenance of future generations of

salmon populations, consumptive uses of salmon may be restricted. Under conditions in which there is a harvestable surplus beyond these minimum escapement levels, consumptive uses of salmon are prioritized for different user groups.

Regulatory authority for Yukon River salmon management is shared by the Federal Subsistence Board (FSB) and the State of Alaska Board of Fisheries (BOF). On the Yukon River, ADF&G is responsible for implementing regulations in accordance with multiple species and tributary specific management plans (AS 16.05.020; 5 AAC 05.360, 5 AAC 05.362, 5 AAC 05.365, 5 AAC 05.367, 5 AAC 05.368, and 5 AAC 05.369) and also has inseason discretionary management authority over salmon in Alaskan navigable waters through ANILCA. Although Yukon River salmon fisheries are also managed in accordance with the Pacific Salmon Treaty, much of the harvest by study communities occurred in the Tanana River, which is considered a terminal fishery, or a fishery whose terminus is in Alaska and therefore not subject to transboundary treaty management.

Subsistence harvest of Pacific salmon species in the Yukon River is allowed without a permit except for in a few locations, most of which are accessible by road, such as along the Tanana River (5 AAC 01.230(b)). Fishing in the Yukon Area[5] is allowed at any time with the exceptions of those times outlined in 5 AAC 01.210 and 5 AAC 05.360 and unless otherwise noted for conservation purposes. Alaska regulations allow a variety of gear types to be used in the Yukon River drainage for subsistence salmon fishing and include specifications regarding the use of gillnets and fish wheels (5 AAC 01.220). With few exceptions, there are no federal or state bag possession limits for subsistence salmon harvests in the Yukon River.

By regulation, the subsistence salmon fishing season is open unless a subsistence fishing schedule closure is implemented (05 AAC 01.210). If closures to the fishery are necessary, they are implemented by emergency order prior to, during, and after commercial fishing periods, or closures to the fishery are implemented by emergency order for conservation purposes (see 5 AAC 01.230(e)(5)–(7), 5 AAC 01.310, 5 AAC 05.360, 5 AAC 05.367, and 5 AAC 05.369). In the Yukon River, a subsistence fishing schedule with periodic fishing closures (openings between these closures were often referred to as "windows" or "openers") was implemented by the BOF in 2001 and remains in place. Fall et al. (2013) describe these windows by district. On the Tanana River, restrictions to these subsistence windows in 2014 resulted in the closure of subsistence salmon fishing to protect Chinook salmon from June 29–July 6 in Subdistricts 6-A and 6-B and from June 29–July 7 in the Old Minto Area (Newland 2014). During the most recent period of decline for Yukon River Chinook salmon, the BOF implemented additional regulatory changes for the Yukon River. In 2011, area managers implemented a 2010 BOF decision to reduce the maximum stretched-mesh net size to 7.5 inches (Fall et al. 2013). Prior to this, Yukon Area fishers widely used 8-inch to 8.5-inch mesh nets to target Chinook salmon. This change was considered a conservation tool that should allow more of the older and larger Chinook salmon, especially females, to escape to the spawning grounds. At their 2013 Arctic-Yukon-Kuskokwim (AYK) meeting, the BOF required first pulse protection, or the prohibition of fishing on the first Chinook salmon pulse entering the river, in order to account for the uncertainty in the preseason Chinook salmon run projection (5 AAC 05.360(j)).

For those fishers in the study communities who use the Copper River for fishing, the BOF has classified the state fisheries in the Chitina Subdistrict as personal use (5 AAC 77.591), and the state fisheries in the Glennallen Subdistrict as subsistence (5 AAC 77.591, 5 AAC 01.647, and 5 AAC 24.360). Dip nets are the only allowable gear in the personal use fishery; dip nets or fish wheels may be used in the subsistence fishery. There are also federal subsistence fisheries in both the Chitina and Glennallen subdistricts, and rod and reel is allowed under federal regulations (50 CFR 100.27(e)(11) and 36 CFR 242.27(b)(1)). Fishers utilizing either fishery are subject to harvest and gear limitations defined in the fishing permits.

Variable moose densities in different parts of Interior Alaska have led to very different hunt structures. Most residents of the study communities hunt moose in GMU 20. Moose, including antlerless moose in some

5. The Yukon Area includes all waters of Alaska between the latitude of Point Romanoff and the latitude of the westernmost point of the Naskonset Peninsula, including those waters draining into the Bering Sea (5 AAC 05.100).

areas, can be hunted under general harvest opportunities or drawing hunts and with various combinations of antler or sex restrictions. Under federal regulations, Nenana residents are federally qualified to hunt in GMU 20A, 20B, and 20C; residents of Denali Park are federally qualified to hunt in GMU 20A and 20C. State and federal open and closed seasons and bag and possession limits for black bears, brown bears, and caribou are relatively similar and nonrestrictive, but in the case of caribou, seasons are dependent on herd size and health (5 AAC 85; 50 CFR 100.26). Trapping of furbearers in the region is regulated under Alaska state statutes and regulations with designated seasons and no bag limits (5 AAC 84) as well as under federal subsistence regulations (50 CFR 100.26).

Study Objectives

The project had the following objectives:

- Estimate annual harvests and uses of wild fish, game, and plant resources in a 12-month study period in 2015 by residents of the study communities
- Map areas used for hunting, fishing, and gathering during 12-month study period
- Collect demographic information including community size and composition, ethnicity, birthplace, and length of residency in study communities
- Document involvement in the cash economy, including jobs and other sources of cash income
- Evaluate trends in wild resource harvests
- Collect traditional knowledge observations regarding wild resources
- Conduct preliminary scoping of current issues related to hunting and fishing
- In Nenana only, collect resource distribution data and conduct network analysis

Research Methods

Ethical Principles for the Conduct of Research

The project was guided by the research principles outlined in the *Alaska Federation of Natives Guidelines for Research*[6] and by the National Science Foundation, Office of Polar Programs in its *Principles for the Conduct of Research in the Arctic*[7], the *Ethical Principles for the Conduct of Research in the North* (Association of Canadian Universities for Northern Studies 2003), as well as the Alaska confidentiality statute (AS 16.05.815). These principles stress community approval of research designs, informed consent, anonymity or confidentiality of study participants, community review of draft study findings, and the provision of study findings to each study community upon completion of the research.

Project Planning

Projects of this informational scope require the coordination of multiple staff along with the community tribal and city councils and other key individuals on the community level. Table 1-2 lists all the project staff associated with the design, implementation, and finalization of the research, including the local research assistants hired in each community to assist ADF&G staff with household identification and contact as well as to provide important insight into research methods and approaches.

Standard Division practice requires that staff obtain tribal or city council approval of research, when available, before working in any community. As a result, staff contacted each community in the fall or winter of 2015 to provide information about the research and answer any questions. Often, staff will travel

6. Alaska Federation of Natives. 2013. "Alaska Federation of Natives Guidelines for Research." Alaska Native Knowledge Network. Accessed April 14, 2017. http://www.ankn.uaf.edu/IKS/afnguide.html

7. National Science Foundation Interagency Social Science Task Force. 2012. "Principles for the Conduct of Research in the Arctic." Accessed April 14, 2017. http://www.nsf.gov/od/opp/arctic/conduct.jsp

Table 1-2.–Project staff.

Task	Name	Organization
Northern Regional Program Manager	James Simon	ADF&G Division of Subsistence
Principal Investigator	Caroline Brown	ADF&G Division of Subsistence
Administrative support	Pam Amundson	ADF&G Division of Subsistence
	Tamsen Coursey-Willis	ADF&G Division of Subsistence
	Deanne Lincoln	ADF&G Division of Subsistence
Data Management Lead	Marylynne L. Kostick	ADF&G Division of Subsistence
Programmer	Marylynne L. Kostick	ADF&G Division of Subsistence
Data Entry	Zayleen Kalalo	ADF&G Division of Subsistence
	Margaret Cunningham	ADF&G Division of Subsistence
	Vanessa C. Oquendo	ADF&G Division of Subsistence
Data Cleaning/Validation	Margaret Cunningham	ADF&G Division of Subsistence
Data Analysis	Marylynne L. Kostick	ADF&G Division of Subsistence
Cartography	Gayle Neufeld	ADF&G Division of Subsistence
Editorial Review Lead	Rebecca Dunne	ADF&G Division of Subsistence
Production Lead	Rebecca Dunne	ADF&G Division of Subsistence
Field Research Staff	Alida Trainor (Anderson lead)	ADF&G Division of Subsistence
	Christopher McDevitt (Ferry co-lead)	ADF&G Division of Subsistence
	Lisa Slayton (Ferry co-lead)	ADF&G Division of Subsistence
	Seth Wilson (Denali Park co-lead)	ADF&G Division of Subsistence
	Brooke McDavid (Denali Park co-lead)	ADF&G Division of Subsistence
	Jeff Park (Nenana lead)	ADF&G Division of Subsistence
	Anna Godduhn	ADF&G Division of Subsistence
	Brooke McDavid	ADF&G Division of Subsistence
	Kaarle Strailey	ADF&G Division of Subsistence
	Matt Springer	ADF&G Division of Subsistence
	Beth Mikow	ADF&G Division of Subsistence
	Daniel Gonzalez	ADF&G Division of Subsistence
Local Research Assistant	Erin Dynes	Ferry
	Nancy Eagleson	Denali Park
	Erica Watson	Denali Park
	Janet Deaver	Anderson
	Wyatt Coffey	Nenana
	Steven Big Joe	Nenana
	Jason Paul	Nenana
	Amanda Salmon	Nenana
	Lois Shumann	Nenana
	Sunya Sunnyboy	Nenana
	Jayme Thomas	Nenana

Source ADF&G Division of Subsistence, 2017.

Table 1-3.–Community meetings, study communities, 2015–2017.

Community	Community approval meeting	Fieldwork	Community data review meeting
Anderson	December 15, 2015	February 29–March 7, 2016	May 25, 2017
Ferry	Informal, 2015	March 29–April 1, 2016	n/a
Denali Park	November 4, 2015	April 1–April 7, 2016	February 7, 2017
Nenana	December 12, 2015	March 17–25 and April 4–8, 2016	May 25, 2017

Source ADF&G Division of Subsistence, 2017.

to communities to provide this information directly unless requested to provide it via mail or email. Table 1-3 outlines these community approval meetings as well as the dates of the subsequent fieldwork, and finally the dates of community review meetings. After the data collection and analyses were complete, ADF&G staff presented preliminary survey findings and associated search area and harvest maps at a community review meeting in each community except Ferry. These meetings allow community residents to review the data, ask questions about the analyses, and provide additional contextual information. After receipt of comments during the community meetings, report authors finalized individual chapters. ADF&G mailed a short (4-page) summary of the study findings to every household in the 4 study communities.

Systematic Household Surveys

The primary method for collecting subsistence harvest and use information in this project was a systematic household survey. In January 2016, following receipt of comments at the scoping meetings, ADF&G finalized the survey instrument. A key goal was to structure the survey instrument to collect demographic, resource harvest and use, and economic data that are comparable with information collected in other household surveys in the study communities and with data in the Community Subsistence Information System (CSIS)[8]. Appendix A is an example of the survey instrument used in this project. Appendix D, Table D1-1 lists the common and scientific names of all resources used by the study communities.

Household Survey Implementation

Prior to implementing surveys, the crew lead, often with the help of the community tribal or city council, hires local research assistants to work with the ADF&G crew. The crew lead along with local research assistants and other tribal or municipal staff members review and finalize a household list to serve as the basis for the sampling method. Once the sample is identified, surveys are usually conducted with household heads by teams of 2 individuals: 1 ADF&G Subsistence Resource Specialist or Fish and Wildlife Technician and 1 local research assistant. A brief description of the fieldwork in each community follows, highlighting some of the successes and challenges of this project in particular communities. Sample achievements and average survey lengths for each community can be found in tables 1-4 and 1-5.

In Anderson, Denali Park, and Nenana, household lists were unavailable, so staff identified all potential dwellings in the study areas from satellite imagery obtained through Google Earth.[9] Each potential dwelling was identified with a random map identification number that oriented it to a unique street address or plat number on a map. Map and household identification numbers were entered into an Excel spreadsheet for future recall and tracking during survey fieldwork. Researchers made trips to each community prior to fieldwork to visually "ground-truth" these maps in order to remove clearly vacant homes and buildings from the tracking list. Dwellings were disposed as vacant only if researchers could reasonably determine that a household did not or could not reside in the dwelling based upon evidence of human activity and condition of structure.

8. ADF&G Community Subsistence Information System: http://www.adfg.alaska.gov/sb/CSIS/. Hereafter, *ADF&G CSIS*.

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

Table 1-4.–Sample achievement, study communities, 2015.

Sample information	Community			
	Anderson	Denali Park	Nenana	Ferry
Number of dwelling units	87	92	269	19
Survey goal	79	92	243	18
Households surveyed	50	69	134	14
Households failed to be contacted	9	18	59	4
Households declined to be surveyed	20	5	50	0
Households moved or occupied by nonresident	8	0	46	1
Total households attempted to be surveyed	79	92	243	18
Refusal rate	28.6%	6.8%	27.2%	0.0%
Final estimate of permanent households	79	92	243	18
Percentage of total households surveyed	63.3%	75.0%	55.1%	77.8%
Survey weighting factor	1.58	1.33	1.81	1.29
Sampled population	118	129	322	32
Estimated population	186.4	172.0	583.9	41.1

Source ADF&G Division of Subsistence household surveys, 2016.

Fieldwork went smoothly in Denali Park, and there was a very low refusal rate. Most residents seemed to understand the importance of research for sound management of fish and game resources and were happy to complete the survey. Scheduling ethnographic interviews proved challenging, and researchers returned to conduct them at a later date.

Research objectives in Ferry were met in large part with the help of one knowledgeable local research assistant who worked with ADF&G staff for the duration of the survey. With the exception of a handful of abandoned and unoccupied dwellings, nearly all residents were contacted by ADF&G staff. Participating residents living in Ferry proper as well as residents of several outlying homesteads expressed genuine interest in the research and readily offered subsistence harvest information for their households.

Subsistence Division staff had a challenging time surveying in Anderson. Many residents worked in shifts at either Clear Air Force Base or at Usibelli Coal Mine in Healy. The unusual work schedules of many residents made it difficult to contact households. To compensate for this difficulty, research staff surveyed later in the evening and checked houses at various times each day in order to increase the possibility for contact. Some residents were reluctant to talk with research staff. Many were either distrustful of State employees or felt that subsistence research was irrelevant in Anderson.

Because Nenana was the largest of the 4 communities, and the survey length was increased due to the addition of network questions, researchers had to take 2 trips to Nenana to conduct surveys and 2 additional trips to conduct ethnographic interviews. The refusal rate was relatively high, and staff were unable to contact a large number of households.

Mapping Locations of Subsistence Hunting, Fishing, and Gathering Activities

During household interviews, the researchers asked respondents to indicate the locations of their fishing, hunting, and gathering activities during the study year. In addition, interviewers asked the respondents to

Table 1-5.–Survey length, study communities, 2015.

Community	Interview length (minutes)		
	Average	Minimum	Maximum
Anderson	41	3	189
Denali Park	32	10	86
Nenana	44	9	285
Ferry	44	16	90

Source ADF&G Division of Subsistence household surveys, 2016.

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

Harvest locations and fishing, hunting, and gathering areas were documented using an application designed on the ArcGIS Runtime SDK for iOS platform, a mapping data collection application for iPad. The point, polygon, or line was drawn on a U.S. Geological Survey topographic relief map downloaded on the iPad. The iPad allowed the user to zoom in and out to the appropriate scale, and the ability to document harvesting activities wherever they occurred in the state of Alaska. Once a feature was accepted, an attribute box was filled out by the researcher that noted the species harvested, amount, method of access to the resource, and month(s) of harvest. The data were uploaded via Wi-Fi to a server. Once data collection was complete, the data were downloaded into an ArcGIS file geodatabase. The application was developed by HDR, Inc., an environmental research firm located in Anchorage. Paper maps were also available to be used as a reference for respondents as well as by an LRA when an ADF&G researcher was not available for the interview. These maps were 11x17 inches at a scale of 1:250,000 and 1:500:000 and only documented use areas within the survey area. Very few paper maps were used, and research staff digitized marking on paper maps using the iPad application.

Once a survey was complete, researchers conducted a quality control exercise by matching the map data to the survey form to ensure all map data had been documented. This was completed in the field before the surveys were submitted to the community's lead researcher. Once the data had been uploaded, researchers also verified that the household data were logged into the server.

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

Key Respondent Interviews

While researchers were in the study communities, they consulted with tribal governments, community or city councils, LRAs, and other knowledgeable individuals to identify key respondents to interview. The purpose of the key respondent interviews was to provide additional context for the quantitative data and also to provide information for the community background section at the beginning of each chapter, the seasonal round sections, harvest-over-time analysis, and the community comments and concerns section at the end of each chapter. The number of key respondent interviews varied among communities. Key respondent interviews were semi-structured and directed by a key respondent interview protocol designed by the project principal investigator that was also used in earlier LNG study communities to ensure comparability (see Appendix B). In addition to gathering qualitative data through the key respondent interview protocol, ADF&G staff took notes during interviews to provide additional context for this report. Researchers analyzed key respondent interviews and interview notes in preparation for this report. Key respondents were informed that, to maintain anonymity, their names would not be included in this report.

Data Analysis and Review

Survey Data Entry and Analysis

All data were coded for data entry by Division of Subsistence staff in Anchorage. Surveys were reviewed and coded by the project leads in each community for consistency. Responses were coded following standardized conventions used by the Division of Subsistence to facilitate data entry. Information management staff within the Division of Subsistence set up database structures within Microsoft SQL Server at ADF&G in Anchorage to hold the survey data. The database structures included rules, constraints, and referential integrity to ensure that data were entered completely and accurately. Data entry screens were available on a secured internal network. Daily incremental backups of the database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than 1

hour of data entry would be lost in the unlikely event of a catastrophic failure. All survey data were entered twice and each set compared in order to minimize data entry errors.

Once data were entered and confirmed, information was processed with the use of Statistical Package for the Social Sciences (SPSS) software, version 21. Initial processing included the performance of standardized logic checks of the data. Logic checks are often needed in complex data sets where rules, constraints, and referential integrity do not capture all of the possible inconsistencies that may appear. Harvest data collected as numbers of animals, or in gallons or buckets, were converted to pounds usable weight using standard factors (see Appendix C for conversion factors[10]).

ADF&G staff also used SPSS for analyzing the survey information. Analyses included review of raw data frequencies, cross tabulations, table generation, estimation of population parameters, and calculation of confidence intervals for the estimates. Missing information was dealt with on a case-by-case basis according to standardized practices, such as minimal value substitution or using an averaged response for similarly-characterized households. Typically, missing data are an uncommon, randomly-occurring phenomenon in household surveys conducted by the division. In unusual cases where a substantial amount of survey information was missing, the household survey was treated as a "non-response" and not included in community estimates. ADF&G researchers documented all adjustments.

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

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

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

where:

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

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

h_i = the total harvest reported in returned surveys,

n_i = the number of returned surveys, and

S_i = the number of households in a community.

As an interim step, the standard deviation (SD) (or variance [V], which is the SD squared) was also calculated with the raw, unexpanded data. The standard error (SE), or SD of the mean, was also calculated for each community. This was used to estimate the relative precision of the mean, or the likelihood that an unknown value would fall within a certain distance from the mean. In this study, the relative precision of the mean is shown in the tables as a confidence limit (CL), expressed as a percentage. Once SE was calculated, the CL was determined by multiplying the SE by a constant that reflected the level of significance desired, based on a normal distribution. The value of the constant is derived from student's t distribution, and varies

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

slightly depending upon the size of the community. Though there are numerous ways to express the formula below, it contains the components of a SD, V, and SE:

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

where:

s = sample standard deviation,

n = sample size,

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

N = population size, and

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

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

The corrected final data from the household survey will be added to the Division of Subsistence Community Subsistence Information System (CSIS).[11] This publicly-accessible database includes community-level study findings.

Population Estimates and Other Demographic Information

As noted above, a goal of the research was to collect demographic information for all year-round households in each study community. For this study, "year-round" was defined as being domiciled in the community when the surveys took place and for at least 6 months during the study year 2015. Because not all households were interviewed, population estimates for each community were calculated by multiplying the average household size of interviewed households by the total number of year-round households, as identified by Division of Subsistence researchers in consultation with community officials and other knowledgeable respondents.

There may be several reasons for the differences among the population estimates for each community generated from the division's surveys and other demographic data developed by the 2010 federal census (U.S. Census Bureau 2011), the U.S. Census Bureau's American Community Survey (U.S. Census Bureau n.d.), and the Alaska Department of Labor and Workforce Development (ADLWD n.d.). Sampling of households, depending on when surveys are conducted or eligibility criteria for inclusion in the survey, may explain differences in the population estimates.

Map Data Entry and Analysis

As noted above, maps were generated based on data collected using an iPad or on 11x17-inch paper maps. All data were entered on the iPad, whether in the field during interviews or by ADF&G research staff while coding survey data. Map features were matched to the survey form to ensure that all harvest data were

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

recorded accurately. Once all data were entered, an ArcGIS file geodatabase was downloaded by ADF&G researchers from the server and maps showing harvest locations for each species created in ArcGIS 10.2 using a standard template for reports. Maps show harvest locations for fish species, harvest areas for plants, berries, wood, and birds, and hunting areas for land mammals. To ensure confidentiality harvest locations for large land mammals are not produced for the report. Maps were reviewed at a community review meeting to ensure accuracy as well identify any data the community would like to keep confidential.

Food Security Analysis

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

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

For this study, the food security protocol was modified by the addition of several questions designed to determine whether food insecurities, if any, were related to subsistence foods or store-bought foods. Additionally, the wording of some questions was changed slightly. As in Brazil (Pérez-Escamilla et al. 2004), the USDA term "balanced meals" was difficult to interpret for indigenous Alaska populations, and was replaced with the term "healthy meals" to reflect unique dietary and cultural circumstances in rural Alaska. In 2015, Division of Subsistence added filter questions to reduce the number of questions asked to food secure households. Households filtered as food secure were not asked about increasingly severe instances of food insecurity.

Network Analysis

This study provided the opportunity to collect additional networking data in Nenana. Many rural Alaska communities have mixed subsistence-cash economies built on dense networks of social and familial relationships. Studying these social networks allows for a more robust understanding of the roles and patterns of cooperation and exchange within the community and helps to document the importance of these networks as a defining feature of subsistence economies. Network data tracks the movement of subsistence and market resources into and out of households from other community households or communities. ADF&G has collected basic network data from several communities in rural Alaska (Brown et al. 2012, 2013; Ikuta et al. 2014; Magdanz et al. 2011), although no network data from road-connected communities have been previously collected.

Social networks contain actors, or nodes, that are connected by relationships, or ties. Resources are exchanged across these ties and can be analyzed in 2 directions: resources coming into the household (inflows) and resources leaving the household (outflows). In a complete network, all actors in the study population would be surveyed, and the inflow and outflow of resources would be known for each. A complete census was not achieved in Nenana, thus some households in the network were not surveyed but are present because they were named by others.

Information gathered in Nenana primarily focused on inflows to the surveyed households, but a brief series of outflow questions were also asked. The networks section of the survey included questions about the inflow of 13 subsistence resources to the responding household (Appendix A). For each resource category, respondents were asked to identify individuals within their households who harvested and processed the

resource, and who received a share of the resource for helping someone else. Then they were asked to identify which other households or communities shared resources with their households, as well as which households or communities harvested and processed those shared resources. Lastly, respondents identified others that bartered or traded[12] resources with them.

An additional set of inflow questions asked respondents about 4 other types of support they may have received: who paid for hunting and fishing supplies, who owned the equipment used to harvest wild foods, who paid for the household's expenses (e.g., utilities), and who purchased the household's groceries.

The types of relationships, or ties, reported in the inflow network can be further divided into self-provisioning or social-provisioning ties. Self-provisioning ties encompass a household's internal support and do not appear on a network diagram. Social provisioning ties exist between a surveyed household and another household. These ties indicate either a service or a resource flowing from one household to another. Results in the Nenana chapter will focus on social provisioning; however, comparing these 2 types of support can bring attention to patterns of self-provisioning and social provisioning.

Outflow questions asked respondents to whom they provided 4 types of resources: fish, game, berries or greens, and equipment. Answers could include households within or outside Nenana, as well as provisions to potlatches, holiday feasts, or other events.

The responses to these network questions could either identify an individual, household, or community. To avoid including different types of actors in the network and thus creating a 2-mode network, or a network that includes actors on multiple scales, individuals were aggregated into their corresponding households, and "other communities" were also treated as households for network mapping and analysis.

In previous network studies conducted by the Division of Subsistence, a household list has usually been provided by the village or tribal council to assist both researchers and respondents in efficiently recording network data. In Nenana, however, researchers created a series of community maps that divided the community into sectors, and they assigned unique identifiers to each household. The maps enabled respondents to identify households with which they collaborated without necessarily needing to provide the sources' names. This allowed further protection of confidentiality; however, not having a complete household list challenged some respondents' ability to locate households and thus be able to link a name to a household number.

Final Report Organization

This report summarizes the results of systematic household surveys and mapping interviews conducted by staff from ADF&G and LRAs, and it also summarizes resident feedback provided at community review meetings. The findings are organized by study community. Each chapter includes tables and figures that report findings on demographic characteristics, employment characteristics, individual participation in harvesting and processing of wild resources, and characteristics of resource harvests and uses—including the sharing of wild foods, food security, and harvest and use trends over time. The final chapter of the report provides a short, general overview of the harvests and uses of wild resources in the study communities.

With regard to the 2015 harvest and use data in each chapter, the content is consistent in each chapter because the data are based on the survey instrument. However, there are differences among the chapters in terms of documenting historical trends because each community has a different history of subsistence harvesting practices, and not all communities have had past comprehensive harvest surveys upon which to base comparisons.

12. Customary trade is defined as "the limited noncommercial exchange, for minimal amounts of cash, as restricted by the appropriate board, of fish or game resources." Barter is defined as "the exchange or trade of fish or game, or their parts, taken for subsistence uses" (16.05.940 (2) and (8)).

2. DENALI PARK

Brooke M. McDavid

In April 2016, 2 researchers surveyed 69 of 92 eligible households (75%) in the Denali Park Census Designated Place (CDP)[1], Alaska (Table 1-4; Figure 2-1). Expanding for 23 unsurveyed households, Denali Park's estimated total harvest of wild foods between January and December 2015 was 9,836 edible pounds (±19%; Table 2-1). The average harvest per household was 107 lb, and the average harvest per capita was 57 lb. Survey respondents reported using an average of 8 resources per household and harvesting 5 resources per household.

This chapter summarizes findings from household surveys, including demographic characteristics, responses to harvest assessment questions, harvest estimates, reported employment and income information, and responses to food security questions. Harvest numbers are expanded estimates. Results from this survey are available online in the ADFG Community Subsistence Information System (CSIS).[2] Additional tables appear in Appendix D.

In addition to the comprehensive survey, 2 interviews were conducted with 2 longtime residents of the community. By providing a better understanding of the seasonal round, local history, and subsistence activities in the area, the ethnographic interviews contextualize the quantitative harvest and use data collected in the surveys.

Community Background

Denali Park is situated along the Nenana River in Interior Alaska in the northern foothills of the Alaska Range (Figure 2-1). Denali Park CDP consists of Denali Park Village, residences spanning approximately 19 miles of the Parks Highway, and National Park Service permanent employee housing located 2 miles inside the park boundary on Denali Park Road. Denali Park households along the Parks Highway are seen from the west side of the Alaska Railroad and the Nenana River in Plate 2-1. In this photograph, the Yanert Fork extends into the distance, flanked by the mountains of the Alaska Range.

The habitat surrounding Denali Park is diverse and includes river plain, boreal forest, and the uplands of the Alaska Range. This region experiences a continental subarctic climate with exceptionally cold winters and mild summer temperatures. The land and resources in Interior Alaska, including the Nenana river basin, have been used by Athabascan peoples since prehistoric times. Specifically, the Tanana, Ahtna, and Dena'ina peoples all have historically used the region near Denali Park (Krauss 1982). Prehistoric sites documented within the vicinity of the community date the presence of humans in the area to more than 11,000 years ago (Bowers 1980; Norris 2006). Non-Native explorers began traveling near the region in the 18th century as trade networks were established along major river corridors such as the Yukon and Kuskokwim rivers. Russian explorers were the first to provide written documentation of what would later be verified as the tallest mountain in North America. However, at least 9 Native groups already had unique names for the mountain including *Denenaalee* (Koyukon) from which "Denali" is derived.[3]

At the time Alaska was purchased from Russia in 1867, much of its vast landscape remained unexplored by non-Natives. It was not until the 1890s that the Interior region near Denali Park began to receive attention, fueled by the search for gold (Norris 2006). Indeed, it was a prospector named William Dickey who first called the great mountain "Mount McKinley" after the then president-elect; the name was later officially adopted by the U.S. government. The U.S. Geological Survey and U.S. Army began formal expeditions in

1. Henceforth *Denali Park*, unless required for clarification
2. Alaska Department of Fish and Game (ADF&G) Division of Subsistence, Juneau. "Community Subsistence Information System: CSIS." https://www.adfg.alaska.gov/sb/CSIS. Henceforth *ADF&G CSIS.*
3. National Park Service. "Denali or Mount McKinley?" Accessed March 6, 2017. https://www.nps.gov/dena/learn/historyculture/denali-origins.htm

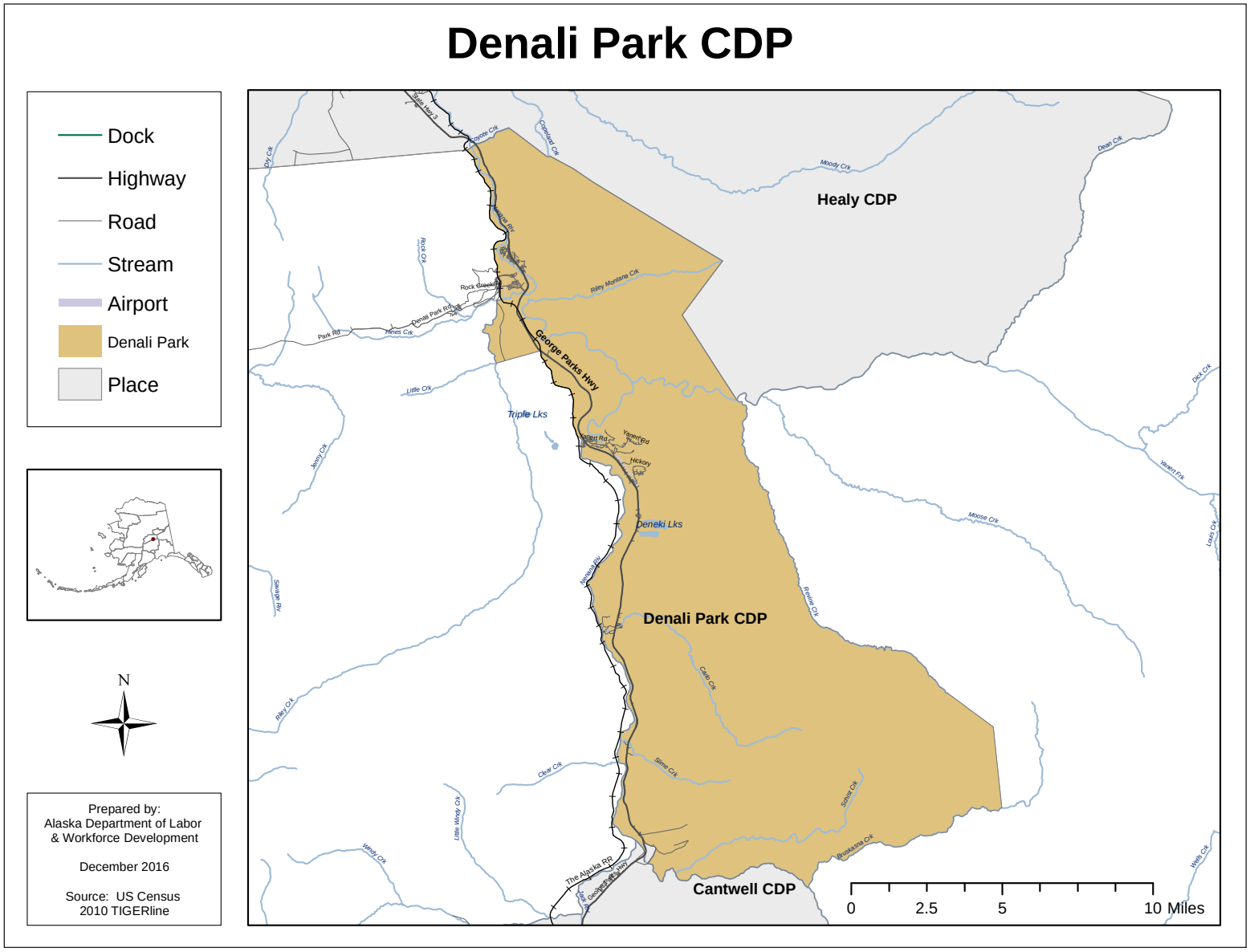


Figure 2-1.–Denali Park Census Designated Place (ADLWD 2010).

Table 2-1.–Resource harvest and use characteristics, Denali Park, 2015.

Characteristic	
Mean number of resources used per household	**7.9**
Minimum	0
Maximum	31
95% confidence limit (±)	8.3%
Median	7.0
Mean number of resources attempted to harvest per household	**5.7**
Minimum	0
Maximum	29
95% confidence limit (±)	10.3%
Median	4.0
Mean number of resources harvested per household	**5.4**
Minimum	0
Maximum	29
95% confidence limit (±)	10.4%
Median	4.0
Mean number of resources received per household	**2.9**
Minimum	0
Maximum	11
95% confidence limit (±)	10.3%
Median	2.0
Mean number of resources given away per household	**1.7**
Minimum	0
Maximum	9
95% confidence limit (±)	16.9%
Median	1.0
Household harvest (lb)	
Minimum	0
Maximum	1,109
Mean	106.9
Median	48.9
Total harvest weight (lb)	9,835.6
Community per capita harvest (lb)	57.2
Percentage using any resource	99%
Percentage attempting to harvest any resource	94%
Percentage harvesting any resource	93%
Percentage receiving any resource	90%
Percentage giving away any resource	54%
Number of households in sample	69
Number of resources asked about and identified voluntarily by respondents	140

Source ADF&G Division of Subsistence household surveys, 2016.

Plate 2-1.–Overlooking Denali Park.

the region around the turn of the century, and reports of abundant wildlife in the area drew the competing attention of market hunters and conservationists. In 1915, when a railroad route was planned from Seward to Fairbanks, conservationists feared that game populations would be decimated by increased access and a need to feed railroad construction camps.[4] Charles Sheldon and other advocates pushed for a protected area to be designated and finally in 1917, Congress established the 1.6 million acre Mount McKinley National Park (Norris 2006; Walker 2009).

The first Park Superintendent, Harry Karstens, built and established the first park headquarters, supervised the construction of housing for park staff and guests, and organized patrols to enforce the park's new game laws (Norris 2006; Walker 2009). Karstens also promoted tourism; the first visitors reached the park on the Alaska Railroad, which was completed in 1923. Over the next decade, park infrastructure slowly developed, and the park road was built (Norris 2006). In 1939, the McKinley Park Hotel opened, and gradually other seasonal businesses and roadhouses were established at the entrance of the park. Besides a few homesteaders, permanent residents were slow to settle in the immediate area (Denali Borough Planning Commission 2009).

The National Park was connected to the Richardson Highway via the Denali Highway in 1958, an airstrip was built in 1960, and the George Parks Highway[5] linking Anchorage to Fairbanks was completed in 1970 (Denali Borough Planning Commission 2009). This infrastructure greatly increased accessibility to the area. In 1980, with the passing of the Alaska Nation Interest Lands Conservation Act (ANILCA), the park boundaries were greatly expanded. [6] The newly added portions of the Park and Preserve were opened to subsistence hunting and fishing to those living in 4 resident zone communities (Cantwell, Lake Minchumina, Nikolai, and Telida) or through a special subsistence use permit.[7] In 1985, McKinley Park Village was founded as a state land sale subdivision (Denali Park Planning Commission 2009), and not long afterward the area was connected to the electricity grid. These developments led to some population growth, and more residents gradually joined homesteaders already living year round in the area (020817DEN2).

When Mount McKinley's name was officially changed to Denali in 2015, the names of McKinley Park CDP and McKinley Park Village were also changed. Denali Park has a fire station that doubles as a community hall. Most residents travel 18 miles north to Healy for services. The cluster of businesses in the Nenana

4. For further information on market hunting, see the Introduction chapter.
5. Henceforth, *Parks Highway*.
6. National Park Service. "Subsistence in Denali." Accessed March 9, 2017. https://www.nps.gov/articles/denali-subsistence.htm.
7. Denali Park is not a resident zone community.

Canyon by the park entrance, referred to as "Glitter Gulch" by locals, continues to cater to seasonal employees and the half-million or so annual visitors[8] to the park. These hotels and other businesses are shuttered during the winter. Although Denali National Park and Preserve is open year-round, buses only travel the park road from late May to early September each year.[9]

Seasonal Round

Figure 2-2 depicts the search and harvest areas for all wild food resources by Denali Park residents in 2015. Survey respondents utilized areas near to Denali Park, and they traveled to many places across the state to hunt, fish, and gather wild resources in 2015. The pattern of participation in these activities throughout the study year is similar to other communities situated along Alaska's highway system. Because many residents are employed throughout much of the year, they participate during their time off from work.

During the winter and early spring, residents of Denali Park hunt game birds and caribou. In the late spring some households may hunt migratory birds. Participation in subsistence activities peaks in summertime, when many residents travel to fish for salmon and marine fishes. Greens, berries, and mushrooms are harvested throughout the summer and into the fall season. Many residents also hunt for moose, sheep, and caribou during the fall. Some small mammal and furbearer harvest occurs throughout the year.

When asked about the type of activities residents generally participate in, one key respondent noted:

> I wouldn't say a lot, but there are a few folks who every year go out moose hunting. What a lot of people here do is go down to the Kenai [Peninsula] and fish, that's a real popular thing. And those are the folks we trade moose meat with, so it seems like there's not an avid hunting community here. I think more so in Cantwell because there's subsistence and more in Healy. I think it's just kind of philosophically this area is not as inclined to...You know, we hunt ptarmigan and spruce grouse in the fall and I got a caribou one year just up here but I don't really like to shoot much...It was the exception if you were not a hunter when we first moved here. But not so much now. But there's more people here too. I mean the park staff, the year-round park staff. When we first moved here was, it was maybe twenty-some people. The year round park staff now is over 100...And I would say there's not a lot of them that are hunters or that do much in the community as far as harvesting. And I also think most of them don't see themselves as living here long term so they don't invest in really getting to know the area, to know really where can you go fish for grayling and where are the good places for mushrooms and berries. (020817DEN1)

Another key respondent provided insight about how participation in salmon fishing might vary depending on income:

> There's two populations of subsistence fisherpeople, the poor ones and the rich ones. And the poor ones, they want their number of fish; whatever it takes to get that number of fish. And the crowd working at Usibelli, they just want to go down and get sockeyes. Especially those big fat Kenai sockeyes, too, because they're superior fish...So that red [sockeye salmon] harvest and the king [Chinook] salmon harvest does seem to be what people like, unless they're sport fishermen. (020817DEN2)

8. National Park Service. "Park Reports: Denali NP & PRES Reports." Accessed January 10, 2017. https://irma.nps.gov/Stats/Reports/Park/DENA

9. Private vehicles are not permitted to travel the park road past Savage River except during 4 days in September when those who have won permits through a lottery are allowed to do so. National Park Service. "Denali National Park & Preserve Alaska: Road Lottery." Accessed April 17, 2017. https://www.nps.gov/dena/planyourvisit/road-lottery.htm

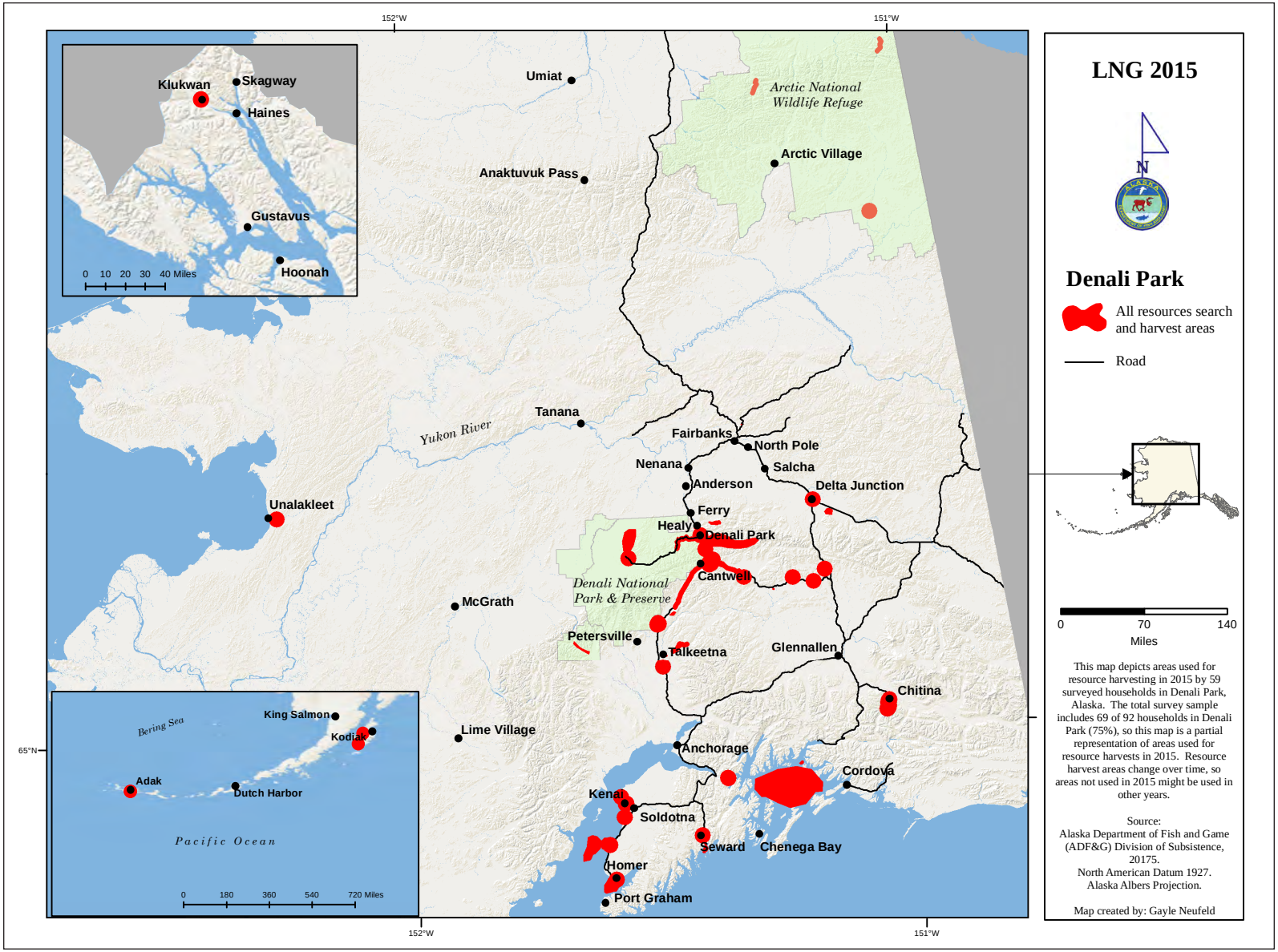


Figure 2-2.–All resources search and harvest areas, Denali Park, 2015.

Population Estimates and Demographic Information

Surveys conducted with 69 households recorded 129 residents in Denali Park in 2015 (Table 1-4; Table 2-2). Expanding for unsurveyed households, the total estimated population was 172 individuals in 92 households. In comparison to ADF&G estimates, the 2010 U.S. Census recorded a total population of 185 persons in 109 households in Denali Park CDP with an Alaska Native population of 3 persons (Figure 2-3; Table D2-1). The U.S. Census Bureau American Community Survey (ACS) estimated a 5-year average population of 514 individuals and 296 households between 2011 and 2015. The large difference in the ACS estimate may result from varying sampling methods. ADF&G population estimates do not include nonresident seasonal laborers and only account for permanent residents who lived in Denali Park for at least 6 months during 2015.

Denali Park households ranged in size from 1 to 5 individuals with an average of 2 residents per household (Table 2-2). The mean age was 42, but residents ranged in age from 81 to less than one year. The average length of residency was 13 years, and the maximum was 52. No respondents identified as Alaska Native. Nearly all (98%) heads of household reported being born outside of Alaska, including 7% born outside the U.S. (Table 2-3). The remaining 2% were born in either Healy or Denali Park. Similar to household heads, 88% of the population as a whole was born outside of Alaska, 11% in Denali Park, and 1% in Healy (Table D2-2). As shown in Figure 2-4, the majority of the population falls between ages 25 and 65 (also see Table D2-3). This population structure suggests there may be a decline in the future, because there are fewer young people to replace older residents. However, historical population data available from the U.S. Census and Alaska Department of Labor show that the population has remained relatively stable since the CDP was designated in 1990; it has varied between 150 and 200 people since then (Figure 2-5).

Summary of Harvest and Use Patterns

Individual Participation in the Harvesting and Processing of Wild Resources

Figure 2-6 and Appendix Table D2-4 report the expanded levels of individual participation in the harvest and processing of wild resources by all Denali Park residents in 2015. As shown in Figure 2-6, virtually the same percentages of individuals harvested and processed resources in each category. The only difference in percentages of people harvesting versus processing in any resource category was a 1% difference for small land mammals (3% of individuals harvesting, 4% processing). The resource category with the greatest level of individual participation in 2015 was vegetation (88%). One-half (50%) of individuals harvested and processed fish. Smaller percentages of individuals harvested and processed birds and eggs (10%) and large land mammals (7%). There was no participation reported for harvest or processing of marine mammals.

Harvest and Use of Wild Resources at the Household Level

Figure 2-7 shows the percentages of households that used, attempted to harvest, harvested, and shared wild foods. In 2015, vegetation was the most widely used resource by Denali Park residents (97%); 90% of households gathered, and 93% attempted to gather plants. Salmon, nonsalmon fish, and large land mammals were each used by similar proportions of households (65% to 78%). For these 3 resource categories, household use was much greater than harvest or attempted harvest. This variation suggests that some households obtain these resources through other means such as sharing, trade, or roadkill salvage. Other resources less commonly used by respondents included birds and eggs, marine invertebrates, and small land mammals. For all resource categories, attempted harvest and harvest percentages are similar; most households that tried to harvest any given resource were successful.

Table 2-1 summarizes resource harvest and use characteristics for Denali Park in 2015 at the household level. The average harvest was 107 edible pounds per household. During the study year, community households harvested an average of 5 kinds of resources and used an average of 8 kinds of resources. The maximum number of resources used by any household was 31. In addition, households gave away an average of 2 kinds of resources and received an average of 3 kinds of resources. Overall, as many as 140 resources were available for households to harvest; this included species that survey respondents identified but were not asked about in the survey instrument.

Table 2-2.–Sample and demographic characteristics, Denali Park, 2015.

Characteristics	Community Denali Park
Sampled households	69
Eligible households	92
Percentage sampled	75.0%
Sampled population	129
Estimated community population	172.0
Household size	
Mean	1.9
Minimum	1.0
Maximum	5.0
Age	
Mean	41.9
Minimum[a]	0
Maximum	81
Median	43
Length of residency	
Total population	
Mean	12.6
Minimum[a]	0
Maximum	52
Heads of household	
Mean	13.4
Minimum[a]	1
Maximum	52
Alaska Native	
Estimated households[b]	
Number	0.0
Percentage	0.0%
Estimated population	
Number	0.0
Percentage	0.0%

Source ADF&G Division of Subsistence household surveys, 2016.

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

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

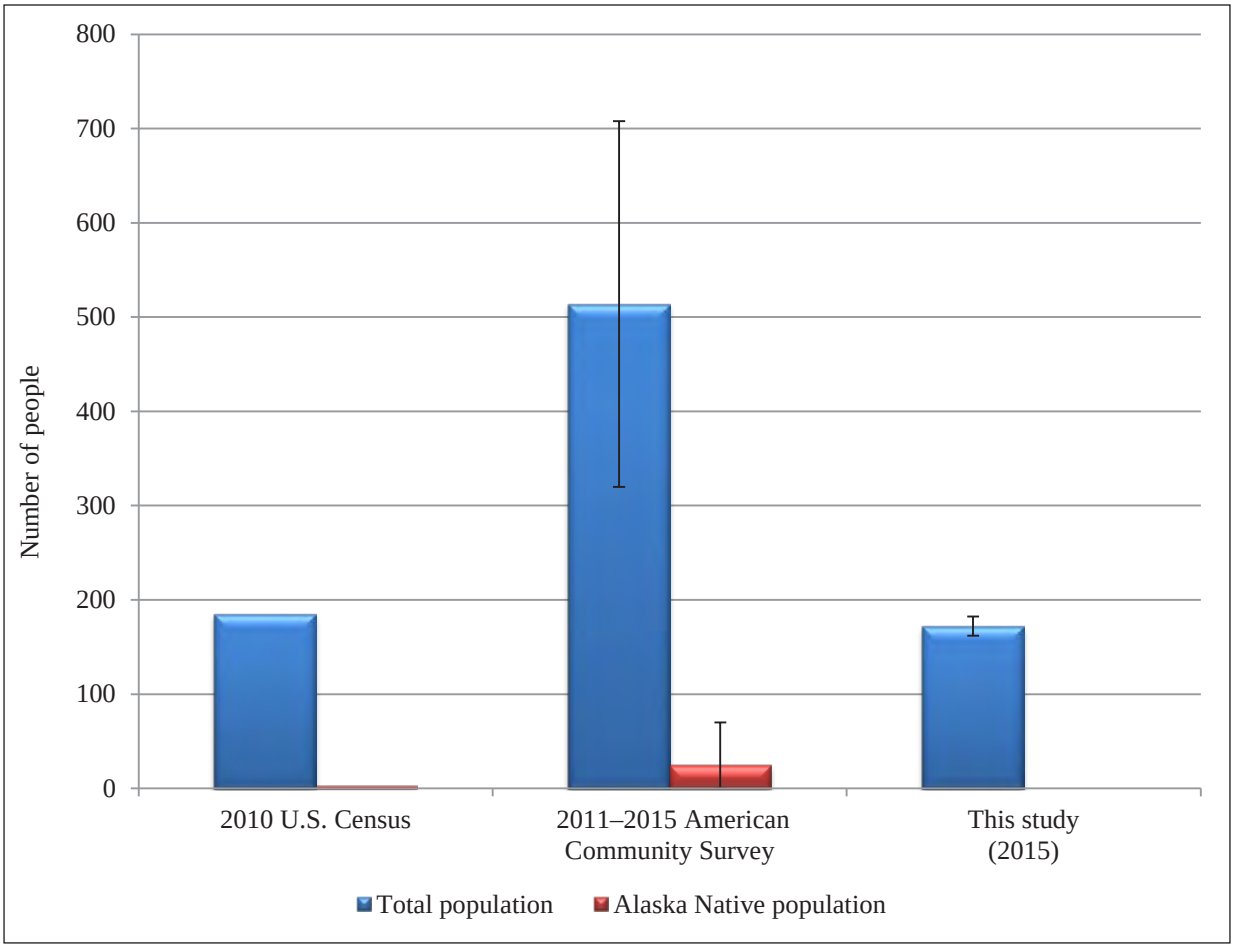


Figure 2-3.–Population estimates, Denali Park, 2010 and 2015.

Table 2-3.–Birthplaces of household heads, Denali Park, 2015.

Birthplace	Percentage
Healy	0.9%
Denali Park	0.9%
Other U.S.	91.0%
Foreign	7.2%

Source ADF&G Division of Subsistence household surveys, 2016.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

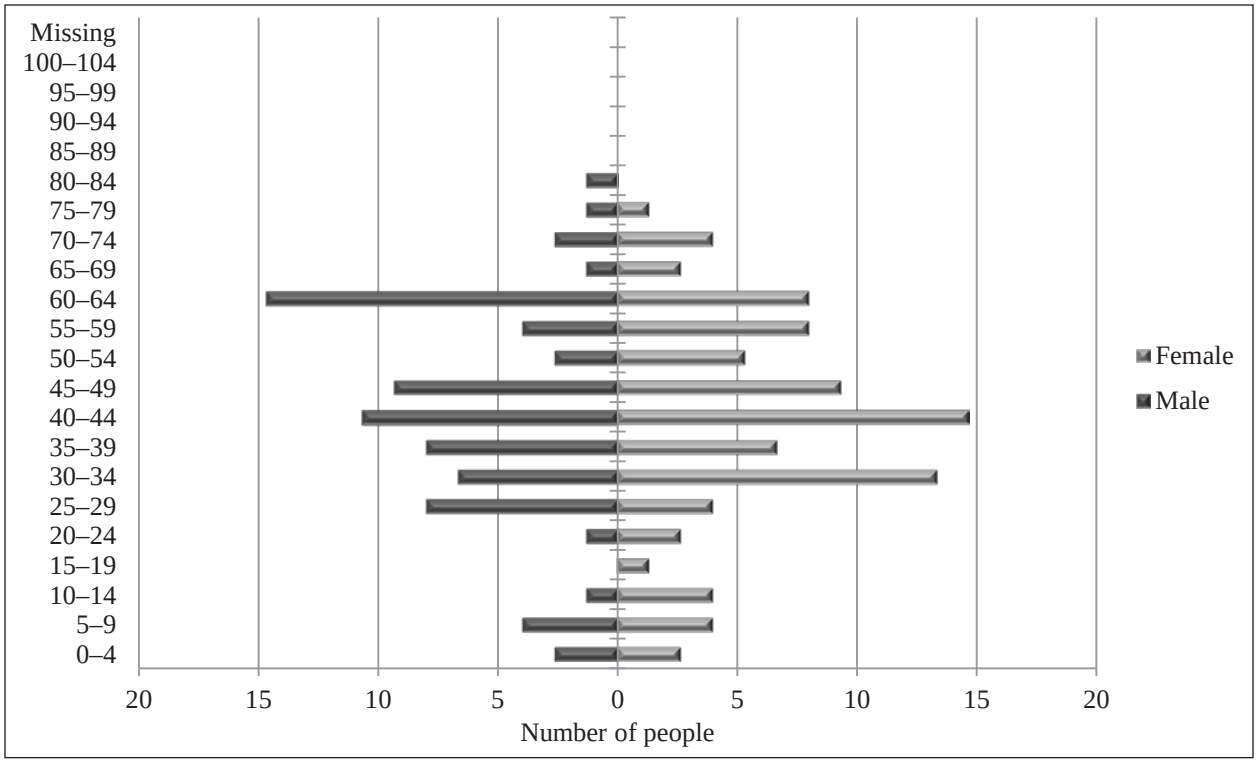


Figure 2-4.–Population profile, Denali Park, 2015.

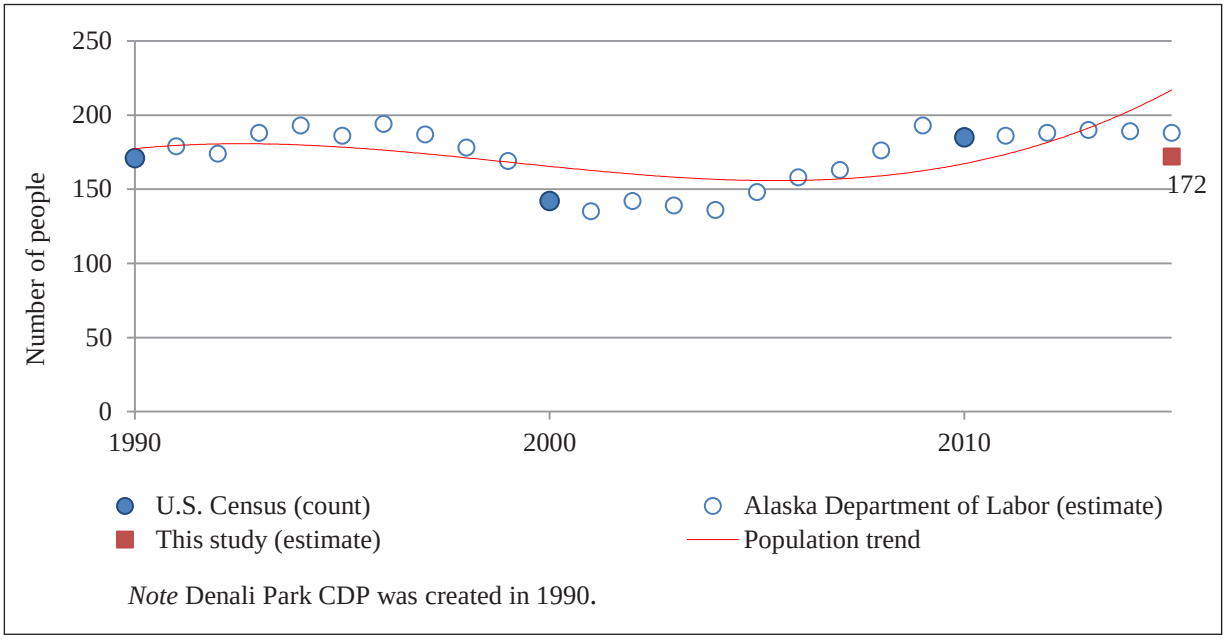


Figure 2-5.–Population estimates, Denali Park, 1990–2015.

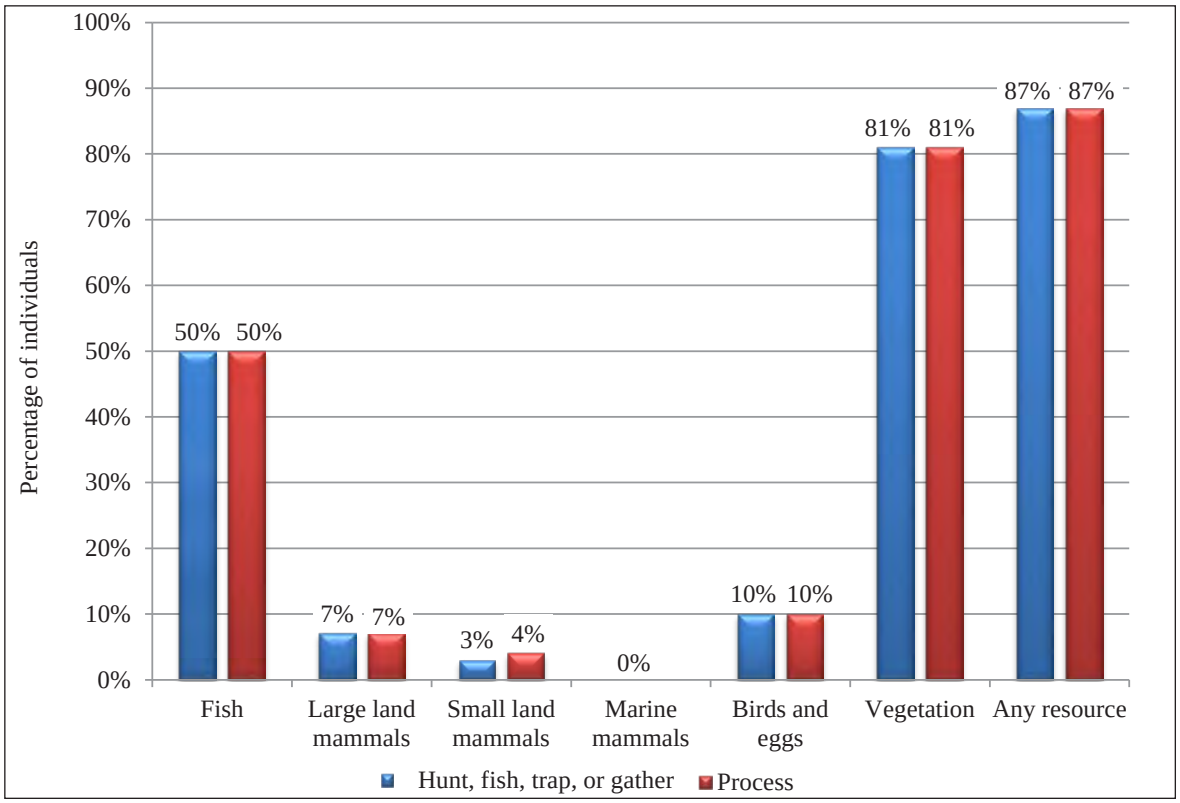


Figure 2-6.–Percentages of individuals participating in harvesting and processing wild resources, Denali Park, 2015.

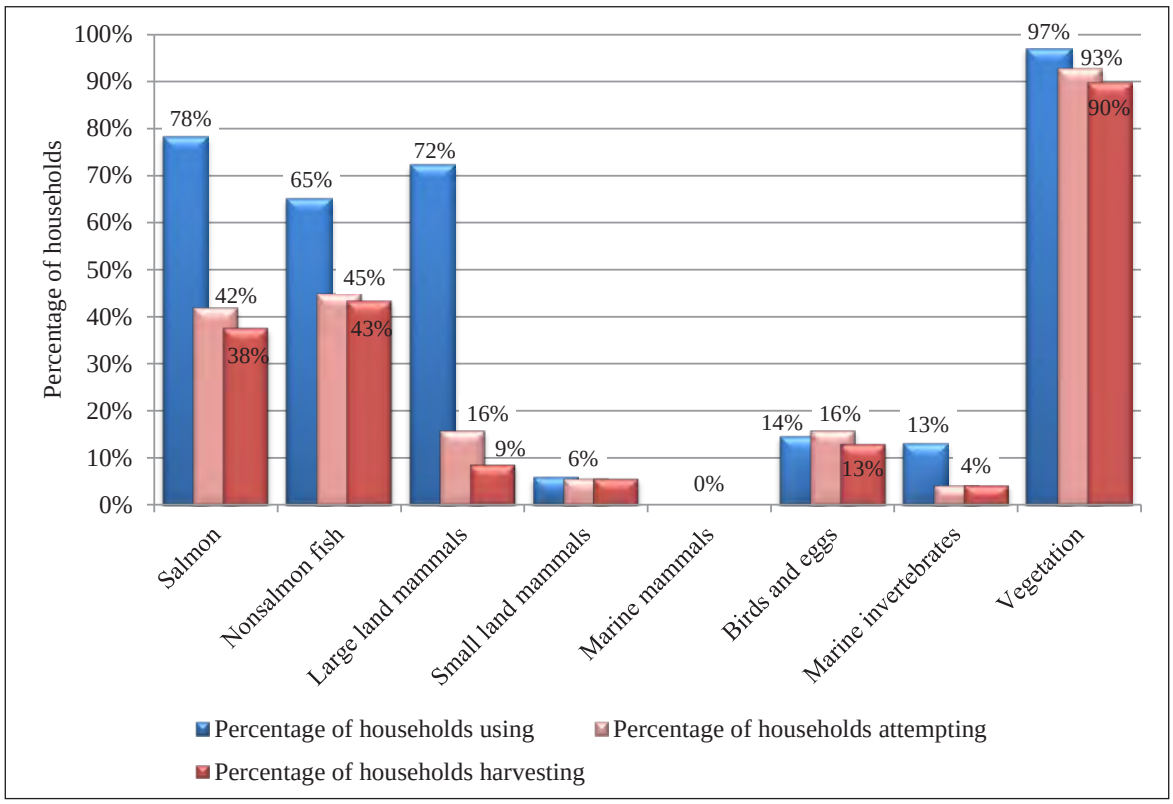


Figure 2-7.–Percentages of households attempting to harvest, harvesting, and using wild resources, Denali Park, 2014.

Harvest Quantities and Composition

Table 2-4 reports estimated wild resource harvests and uses by Denali Park residents in 2015 and is organized first by general category and then by species. All edible resources are reported in pounds edible weight (lb; see Appendix C for conversion factors). The harvest category includes resources harvested by any member of the surveyed household during the study year. The use category includes all resources taken, given away, or used by a household, and resources acquired from other harvesters, either as gifts, by barter or trade, through hunting partnerships, or as meat given by hunting guides and nonlocal hunters. The use category also includes meat acquired through roadkill salvage, but the harvest category does not. Purchased foods are not included, but firewood that was gathered or received is included as a wild resource in Table 2-4. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

Residents of Denali Park harvested 9,836 edible pounds of wild foods in 2015, amounting to approximately 57 lb per capita. An estimated 99% of Denali Park households used wild resources, 94% reported attempting to harvest, 93% reported harvesting, 90% reported receiving, and 54% reported giving away any resource.

Figure 2-8 shows the resource categories with the highest per capita harvests by edible pounds during the 2015 study year. Salmon made up the largest percentage of the per capita harvest (45%), accounting for almost one-half of the edible pounds per capita (26 lb; Table 2-4; Figure 2-8). Vegetation composed 21% of the total per capita harvest with approximately 12 lb per person harvested. Large land mammals and nonsalmon fish made up similar proportions of the harvest, totaling 17% (10 lb) and 15% (9 lb), respectively. The remaining resource categories—birds and eggs, marine invertebrates, and small land mammals—each amounted to 1% or less of the total harvest in 2015.

Table 2-5 lists the top ranked resources used by households. Blueberries, the most commonly used resource, were used by 94% of households. Seventy-four percent of households reported use of lowbush cranberries, 67% used sockeye salmon, and 61% used moose. Pacific halibut[10] was used by 46% of households. Less commonly used resources included caribou (29%), coho salmon (26%), Arctic grayling[11] (23%), Chinook salmon (19%), and rockfishes (17%).

The top species harvested by edible pounds per capita are shown in Figure 2-9. Sockeye salmon composed the largest percentage of the harvest (39%) during the 2015 study year. This was followed by halibut (12%) and blueberries (10%). Caribou, lowbush cranberries, bison, and coho salmon each made up less than 10% of the total harvest. Dall sheep, grayling, and shrimps each accounted for 1% of the harvest. The remaining 9% was represented by all other resources.

Salmon

During the study year, Denali Park residents harvested a total of 4,414 lb of salmon (Table 2-4). This amounts to 48 lb per household or 26 lb per capita. As shown in Figure 2-10, sockeye salmon made up the majority of the salmon harvest (86%); the 2015 sockeye salmon harvest was 3,813 lb for the entire community (41 lb per household or 22 lb per capita; Table 2-4). Sixty-seven percent of households reported using sockeye salmon, and 35% successfully harvested them. Sockeye salmon was the individual resource most commonly given away to others: 29% of households reported sharing it. Less commonly harvested species of salmon included coho, Chinook, pink, and chum salmon. Coho composed 9% of the salmon harvest by edible weight, amounting to 393 lb for the community and an average of only 2 lb per capita (Table 2-4; Figure 2-10). Pink, Chinook, and chum salmon each accounted for less than 2% of the total salmon harvest.

Figure 2-11 and Appendix Table D2-5 show the estimated harvest of salmon by gear type and resource. Dip nets were the most widely used gear type, bringing in approximately 778 salmon (3,742 lb) or 85% of the total salmon harvest. The majority of salmon caught by dip net was sockeye salmon (731 fish) but some pink (19), coho (17), and Chinook salmon (11) were also caught with dip nets. Dip nets are the only legal gear

10. Henceforth, *halibut*.

11. Henceforth, *grayling*.

Table 2-4.–Estimated harvests and uses of fish, wildlife, and vegetation resources, Denali Park, 2015.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**98.6**	**94.2**	**92.8**	**89.9**	**53.6**	**9,835.6**	**106.9**	**57.2**				**18.8**
Salmon	**78.3**	**42.0**	**37.7**	**56.5**	**29.0**	**4,413.9**	**48.0**	**25.7**				**20.8**
Chum salmon	5.8	2.9	2.9	2.9	1.4	31.5	0.3	0.2	6.7	ind	0.1	71.5
Coho salmon	26.1	17.4	15.9	14.5	4.3	393.4	4.3	2.3	73.0	ind	0.8	46.9
Chinook salmon	18.8	8.7	8.7	10.1	1.4	84.5	0.9	0.5	10.7	ind	0.1	45.4
Pink salmon	11.6	8.7	8.7	2.9	1.4	92.0	1.0	0.5	36.0	ind	0.4	57.7
Sockeye salmon	66.7	39.1	34.8	40.6	29.0	3,812.6	41.4	22.2	792.6	ind	8.6	20.7
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown salmon	8.7	0.0	0.0	8.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**65.2**	**44.9**	**43.5**	**34.8**	**11.6**	**1,494.1**	**16.2**	**8.7**				**30.4**
Pacific herring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring roe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Eulachon (hooligan, candlefish)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown smelts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific (gray) cod	7.2	4.3	4.3	4.3	1.4	55.5	0.6	0.3	17.3	ind	0.2	61.1
Pacific tomcod	1.4	1.4	1.4	0.0	0.0	1.1	0.0	0.0	5.3	ind	0.1	99.8
Walleye pollock (whiting)	1.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Starry flounder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Atka mackerel	1.4	1.4	1.4	0.0	0.0	5.3	0.1	0.0	5.3	ind	0.1	99.8
Lingcod	10.1	2.9	1.4	7.2	1.4	5.3	0.1	0.0	1.3	ind	0.0	99.8
Pacific halibut	46.4	20.3	20.3	27.5	10.1	1,123.9	12.2	6.5	1,123.9	lb	12.2	36.7
Unknown rockfishes	17.4	8.7	8.7	7.2	2.9	108.0	1.2	0.6	72.0	ind	0.8	60.1
Sablefish (black cod)	1.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Burbot	1.4	2.9	1.4	0.0	0.0	11.2	0.1	0.1	2.7	ind	0.0	99.8
Arctic char	1.4	1.4	1.4	1.4	1.4	1.2	0.0	0.0	1.3	ind	0.0	99.8
Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lake trout	4.3	4.3	4.3	0.0	0.0	53.3	0.6	0.3	13.3	ind	0.1	59.1
Arctic grayling	23.2	23.2	23.2	4.3	1.4	118.8	1.3	0.7	132.0	ind	1.4	36.2

-continued-

Table 2-4.–Page 2 of 5.

Resource	Percentage of households: Using	Attempting harvest	Harvesting	Receiving	Giving away	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±) harvest
Nonsalmon fish, continued												
Northern pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sheefish	1.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
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
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	2.9	2.9	2.9	0.0	1.4	1.9	0.0	0.0	1.4	ind	0.0	98.3
Steelhead	1.4	0.0	0.0	1.4	1.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown trouts	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	1.4	1.4	1.4	0.0	0.0	8.5	0.1	0.0	2.7	ind	0.0	99.8
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Round whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whitefishes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Large land mammals	**72.5**	**15.9**	**8.7**	**58.0**	**21.7**	**1,645.3**	**17.9**	**9.6**				**46.1**
Bison	2.9	1.4	1.4	1.4	2.9	600.0	6.5	3.5	1.3	ind	0.0	99.8
Black bear	1.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	29.0	5.8	5.8	18.8	10.1	906.7	9.9	5.3	6.7	ind	0.1	51.8
Mule deer	7.2	0.0	0.0	7.2	1.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mountain goat	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	60.9	7.2	0.0	49.3	14.5	0.0	0.0	0.0	0.0	ind	0.0	0.0
Dall sheep	2.9	1.4	1.4	1.4	2.9	138.7	1.5	0.8	1.3	ind	0.0	99.8
Small land mammals	**5.8**	**5.8**	**5.8**	**0.0**	**1.4**	**6.0**	**0.1**	**0.0**				**73.9**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coyote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red fox–cross phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red fox–red phase	1.4	1.4	1.4	0.0	1.4	0.0	0.0	0.0	1.3	ind	0.0	99.8
Snowshoe hare	4.3	4.3	4.3	0.0	0.0	4.0	0.0	0.0	5.3	ind	0.1	99.8
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

-continued-

Table 2-4.–Page 3 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Small land mammals, continued												
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red (tree) squirrel	1.4	1.4	1.4	0.0	0.0	2.0	0.0	0.0	4.0	ind	0.0	99.8
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sea otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**14.5**	**15.9**	**13.0**	**4.3**	**2.9**	**102.1**	**1.1**	**0.6**				**47.6**
Canvasback	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
Goldeneyes	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pintail	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Green-winged teal	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown ducks	1.4	1.4	1.4	1.4	0.0	1.7	0.0	0.0	1.3	ind	0.0	99.8
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada goose	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/cackling 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 goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
White-fronted goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

-continued-

Table 2-4.–Page 4 of 5.

Resource	Percentage of households: Using	Attempting harvest	Harvesting	Receiving	Giving away	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±) harvest
Birds and eggs, continued												
Unknown geese	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Tundra (whistling) swan	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
Spruce grouse	13.0	11.6	11.6	1.4	1.4	58.8	0.6	0.3	65.3	ind	0.7	49.1
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Ruffed grouse	1.4	1.4	1.4	1.4	0.0	2.1	0.0	0.0	2.7	ind	0.0	99.8
Unknown grouses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown ptarmigans	7.2	10.1	7.2	0.0	1.4	39.5	0.4	0.2	49.3	ind	0.5	49.6
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine invertebrates	**13.0**	**4.3**	**4.3**	**8.7**	**2.9**	**136.3**	**1.5**	**0.8**				**86.0**
Butter clams	1.4	1.4	1.4	0.0	0.0	3.2	0.0	0.0	1.1	gal	0.0	99.8
Freshwater clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific littleneck clams (steamers)	1.4	1.4	1.4	0.0	0.0	3.0	0.0	0.0	1.0	gal	0.0	99.8
Razor clams	1.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
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 crabs	2.9	1.4	1.4	1.4	0.0	6.1	0.1	0.0	2.7	ind	0.0	99.8
Unknown tanner crabs	2.9	0.0	0.0	2.9	1.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown crabs	1.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Octopus	1.4	1.4	1.4	0.0	0.0	10.7	0.1	0.1	2.7	ind	0.0	99.8
Shrimps	4.3	2.9	2.9	1.4	1.4	113.3	1.2	0.7	56.7	gal	0.6	88.6
Vegetation	**97.1**	**92.8**	**89.9**	**44.9**	**36.2**	**2,038.0**	**22.2**	**11.8**				**12.0**
Blueberry	94.2	89.9	89.9	18.8	23.2	1,019.5	11.1	5.9	254.9	gal	2.8	13.4
Lowbush cranberry	73.9	73.9	73.9	5.8	18.8	767.9	8.3	4.5	192.0	gal	2.1	19.1
Highbush cranberry	4.3	4.3	4.3	0.0	1.4	12.7	0.1	0.1	3.2	gal	0.0	84.6
Crowberry	14.5	14.5	14.5	0.0	2.9	27.2	0.3	0.2	6.8	gal	0.1	34.9
Currants	7.2	7.2	7.2	0.0	0.0	27.7	0.3	0.2	6.9	gal	0.1	56.9
Cloudberry	2.9	2.9	2.9	0.0	0.0	3.3	0.0	0.0	0.8	gal	0.0	82.0

-continued-

Table 2-4.–Page 5 of 5.

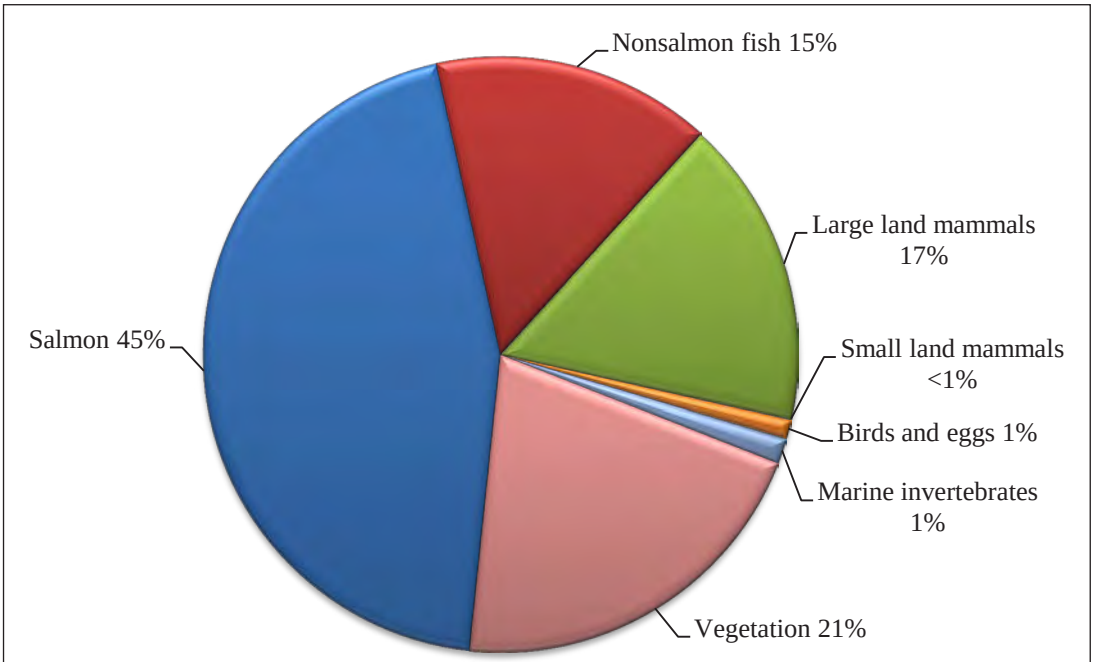
Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Vegetation, continued												
Raspberry	7.2	7.2	7.2	1.4	0.0	14.0	0.2	0.1	3.5	gal	0.0	49.4
Salmonberry	1.4	1.4	1.4	0.0	1.4	32.0	0.3	0.2	8.0	gal	0.1	99.8
Strawberry	1.4	1.4	1.4	0.0	0.0	5.3	0.1	0.0	1.3	gal	0.0	99.8
Dogwood berry	1.4	1.4	1.4	0.0	1.4	1.3	0.0	0.0	0.3	gal	0.0	99.8
Bearberry	4.3	4.3	4.3	0.0	1.4	20.0	0.2	0.1	5.0	gal	0.1	80.9
Other wild berry	1.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Goose tongue	1.4	1.4	1.4	0.0	1.4	2.7	0.0	0.0	2.7	gal	0.0	99.8
Fiddlehead ferns	2.9	2.9	2.9	1.4	0.0	3.0	0.0	0.0	3.0	gal	0.0	89.2
Nettles	1.4	1.4	1.4	0.0	0.0	0.7	0.0	0.0	0.7	gal	0.0	99.8
Hudson's Bay (Labrador) tea	5.8	5.8	5.8	0.0	0.0	0.8	0.0	0.0	0.8	gal	0.0	54.5
Lambs quarter	1.4	1.4	1.4	0.0	0.0	1.3	0.0	0.0	1.3	gal	0.0	99.8
Dandelion greens	1.4	1.4	1.4	0.0	1.4	1.3	0.0	0.0	1.3	gal	0.0	99.8
Sourdock	1.4	1.4	1.4	0.0	0.0	0.2	0.0	0.0	0.2	gal	0.0	99.8
Spruce tips	13.0	13.0	13.0	1.4	2.9	5.7	0.1	0.0	5.7	gal	0.1	39.3
Wild celery	1.4	1.4	1.4	0.0	0.0	0.7	0.0	0.0	0.7	gal	0.0	99.8
Wild rose hips	14.5	14.5	14.5	0.0	4.3	50.7	0.6	0.3	12.7	gal	0.1	54.6
Yarrow	4.3	4.3	4.3	0.0	0.0	3.8	0.0	0.0	3.8	gal	0.0	87.1
Other wild greens	14.5	14.5	14.5	0.0	1.4	8.0	0.1	0.0	8.0	gal	0.1	48.4
Unknown mushrooms	14.5	14.5	14.5	1.4	1.4	14.2	0.2	0.1	14.2	gal	0.2	36.0
Fireweed	13.0	13.0	13.0	0.0	1.4	9.0	0.1	0.1	9.0	gal	0.1	44.9
Plantain	1.4	1.4	1.4	0.0	0.0	0.2	0.0	0.0	0.2	gal	0.0	99.8
Stinkweed	1.4	1.4	1.4	0.0	0.0	0.3	0.0	0.0	0.3	gal	0.0	99.8
Puffballs	2.9	2.9	2.9	0.0	0.0	0.7	0.0	0.0	0.7	gal	0.0	70.0
Orange boletes	2.9	2.9	2.9	0.0	0.0	2.7	0.0	0.0	2.7	gal	0.0	70.0
Sea lovage	1.4	1.4	1.4	0.0	0.0	0.7	0.0	0.0	0.7	gal	0.0	99.8
Wild chives	1.4	1.4	1.4	0.0	0.0	0.7	0.0	0.0	0.7	gal	0.0	99.8
Bark	1.4	1.4	1.4	0.0	1.4							
Balsam poplar	2.9	2.9	2.9	0.0	0.0							
Other wood	53.6	37.7	37.7	24.6	5.8							

Source ADF&G Division of Subsistence household surveys, 2016.

Note Resources where the percentage using is greater than the combined received and harvest indicate use from resources obtained during a previous year.

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

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



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

Figure 2-8.–Composition of harvest by resource category, Denali Park, 2015.

Table 2-5.–Resources most commonly used by households, Denali Park, 2015.

Rank[a]	Resource	Percentage of households using
1.	Blueberry	94.2%
2.	Lowbush cranberry	73.9%
3.	Sockeye salmon	66.7%
4.	Moose	60.9%
5.	Pacific halibut	46.4%
6.	Caribou	29.0%
7.	Coho salmon	26.1%
8.	Arctic grayling	23.2%
9.	Chinook salmon	18.8%
10.	Unknown rockfishes	17.4%

Source ADF&G Division of Subsistence household surveys, 2016.

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

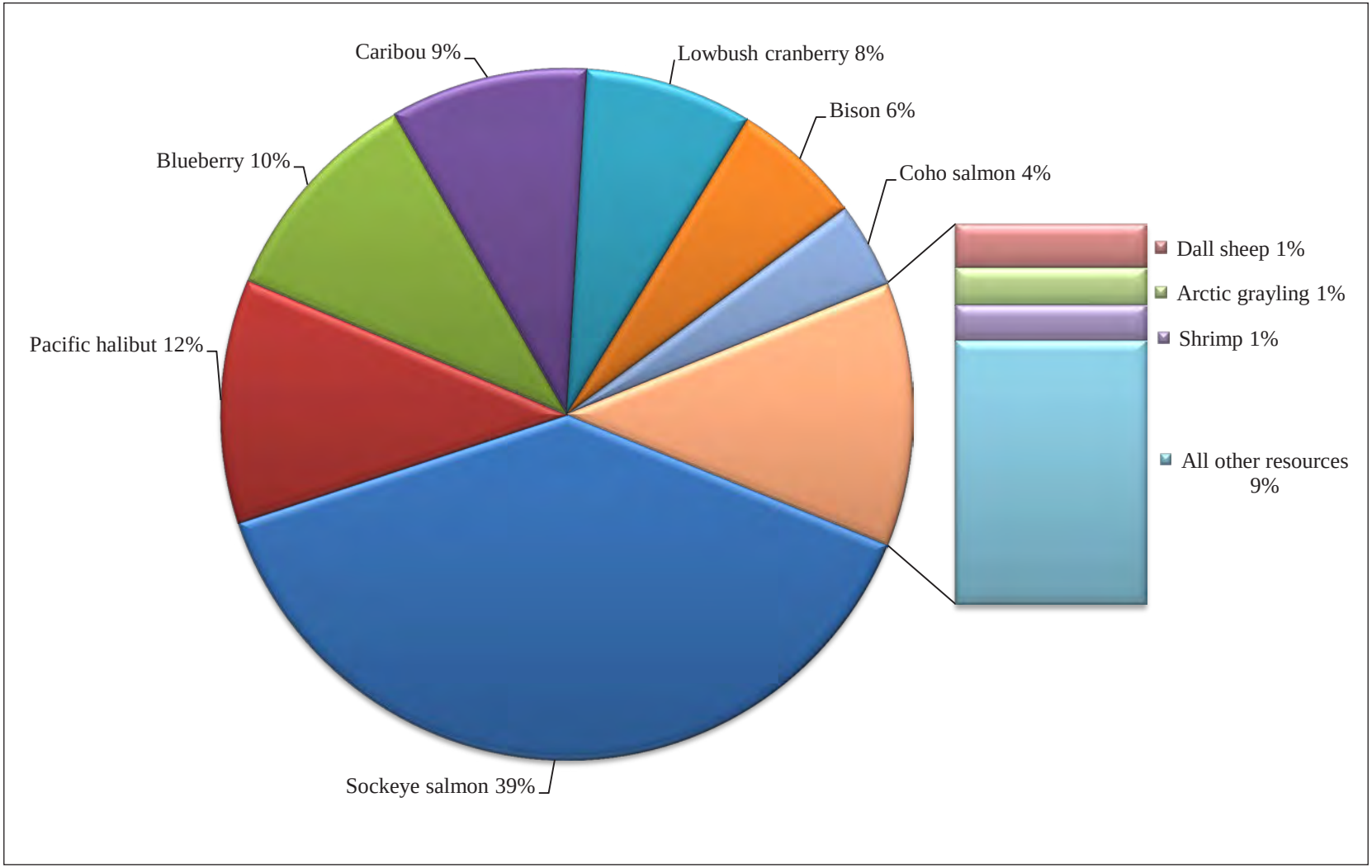


Figure 2-9.–Top resources harvested by edible weight, Denali Park, 2015.

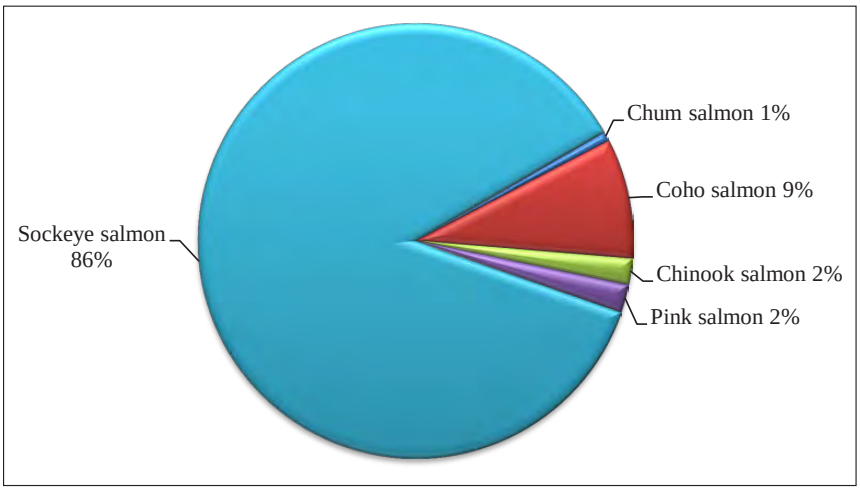


Figure 2-10.–Composition of salmon harvest by edible weight, Denali Park, 2015.

type in the Upper Copper River Personal Use fishery and the most common gear type in the Upper Cook Inlet Personal Use fishery, which is likely why they were the most popular gear type among Denali Park residents. The remaining salmon were caught using rod and reel, except for 1 sockeye salmon harvested with a gillnet. Coho and chum salmon were the only salmon species caught more frequently by rod and reel than by dip net. In 2015, no salmon were retained from a commercial fishery for personal use by Denali Park residents.

Figure 2-12 shows the areas where salmon were harvested by residents during 2015. There are no salmon locally available, so all salmon fishing requires travel outside of the community. Salmon fishing areas in Interior Alaska included the Chulitna and Susitna rivers and their tributaries near Talkeetna, which are accessible from the Parks Highway, as well as the Copper River at Chitina. A key respondent provided more detail about salmon available along the Parks Highway:

> People that sport fish just for themselves around here will go south and they'll go to mile 160, they'll go down to Honolulu [Creek] for sure, any of the tributaries there. I think there's even still some king salmon that come up into that region. And from the north, it's on Fish and Game's maps that there's a tiny little population of coho that come to Lignite Creek and Panguingue Creek but they're not the edible variety, they're not as fresh. (020817DEN2)

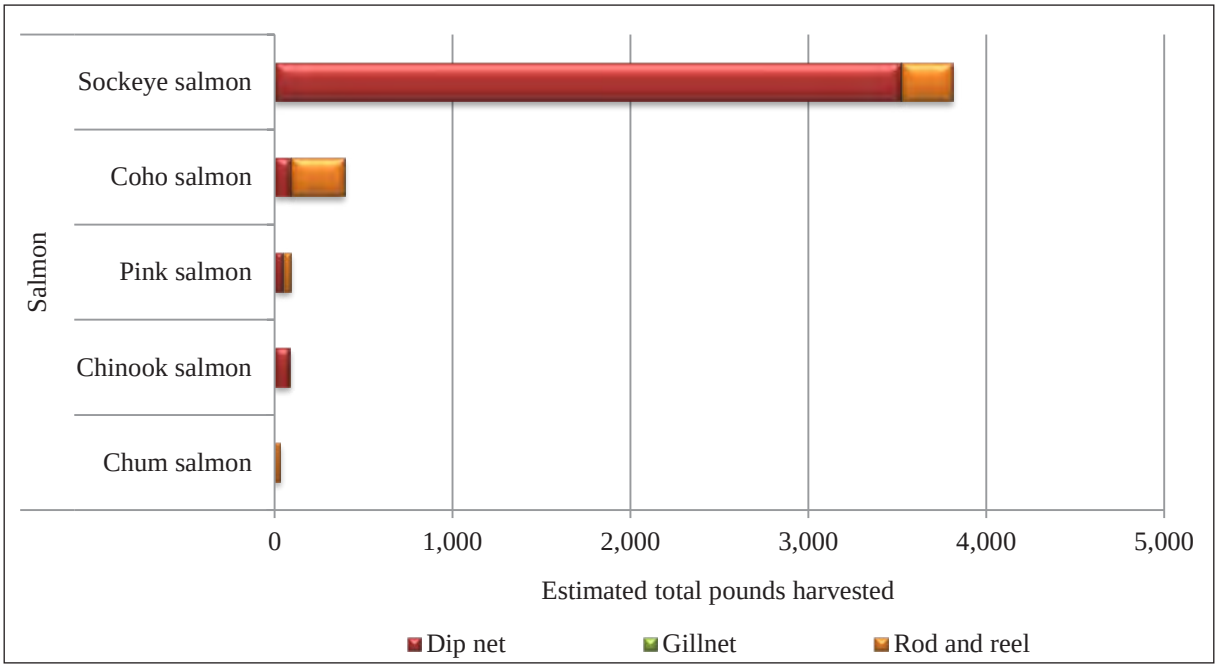


Figure 2-11.–Salmon harvests by gear type, Denali Park, 2015.

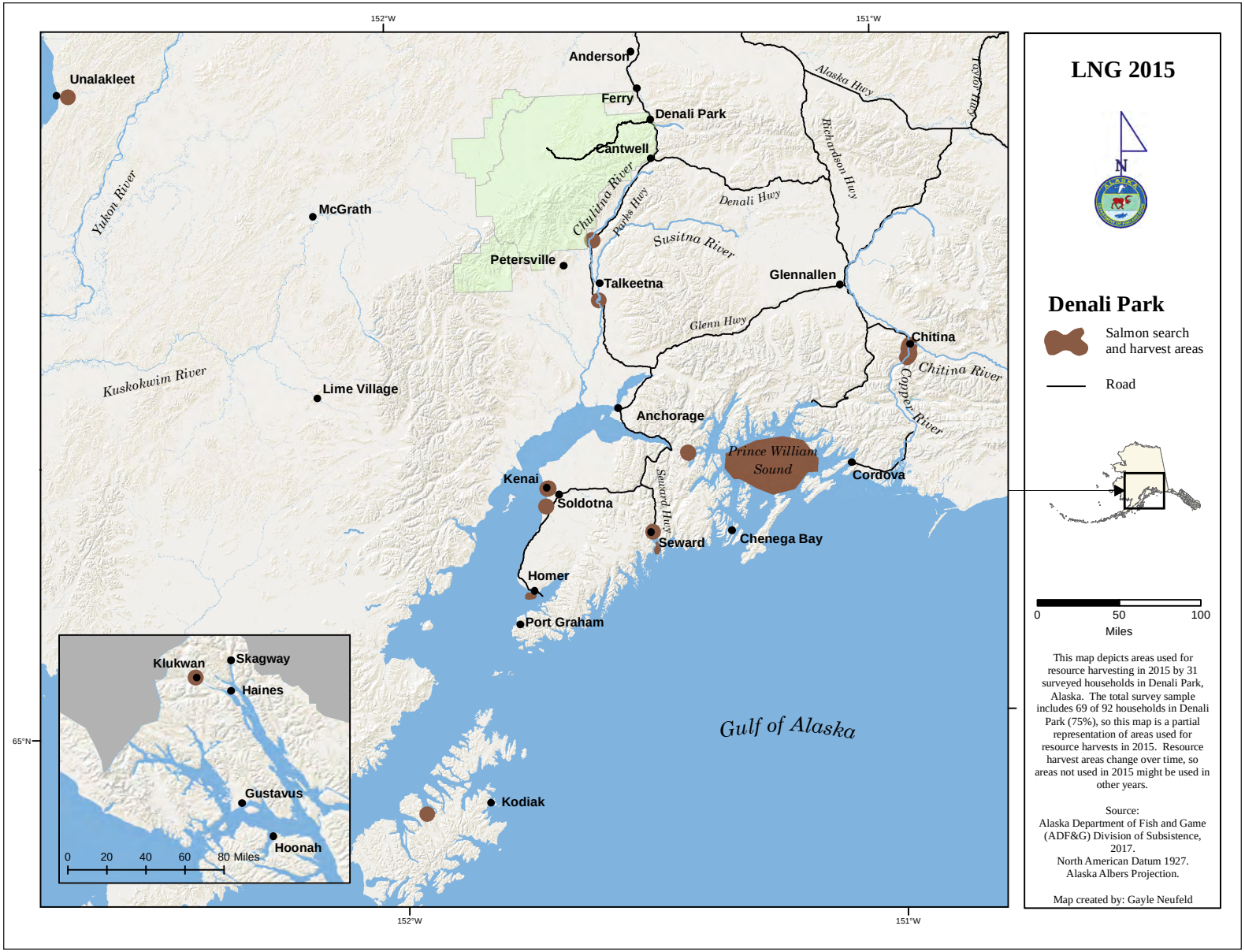


Figure 2-12.–Salmon fishing areas, Denali Park, 2015.

Denali Park residents who fished for salmon in coastal areas did so in a variety of places in Southcentral and Southeast Alaska, and at least one household went to Norton Sound. Denali Park residents did not report any use of salmon for dog food.

Nonsalmon Fish

During the study year, 65% of households in Denali Park reported using nonsalmon fish and 44% reported harvesting them (Table 2-4). The total nonsalmon fish harvest amounted to 1,494 edible pounds (16 lb per household or 9 lb per capita). For comparison, the edible weight of nonsalmon fish was about one-third (34%) of the salmon harvest. Halibut made up 75% (1,124 lb) of the nonsalmon harvest by edible weight (Table 2-4; Figure 2-13). One-fifth of households reported harvesting, and nearly one-half (47%) reported using it (Table 2-4). Halibut was one of the top resources residents received from others: 28% of households identified themselves as recipients. Grayling composed 8% of the nonsalmon harvest (119 edible pounds; Table 2-4; Figure 2-13). Although fewer households reported using grayling than halibut, slightly more households harvested grayling (23%; Table 2-4). This difference may be attributed to less sharing of grayling compared to halibut; only 4% of households reported receiving grayling and only 1% gave it away. Unknown rockfishes composed 7% of the nonsalmon harvest (108 lb). Seventeen percent of households used rockfishes, 9% harvested the resource, and 7% received it from others. Lake trout and Pacific gray cod each made up 4% of the nonsalmon harvest by edible pounds. Seven other types of nonsalmon fish were harvested by residents, but together they only amounted to approximately 2% of the total harvest (Table 2-4; Figure 2-13).

As estimated by weight, 99% percent of nonsalmon fish were caught using rod and reel gear (1,474 lb; Table D2-6). The only exceptions were 3 burbot taken by fish wheel and 3 broad whitefish taken by gillnet. Figure 2-14 is a visual representation of the pounds of nonsalmon fish harvested by gear type.

Figure 2-15 depicts the nonsalmon fishing areas mapped by survey respondents. Some nonsalmon fishing took place locally in small lakes and Nenana River tributaries, but similarly to salmon, Denali Park residents traveled to other areas to harvest nonsalmon fish. Fishing spots in Interior Alaska were located along the Parks, Denali, and Richardson highways. Two areas in the Arctic National Wildlife Refuge in Arctic Alaska were also mapped as nonsalmon fishing locations. Several of the fishing areas for marine nonsalmon fish species overlapped with salmon harvest areas, and harvest of these 2 resources may have occurred concurrently in some places in Southcentral Alaska (Figures 2-12 and 2-14).

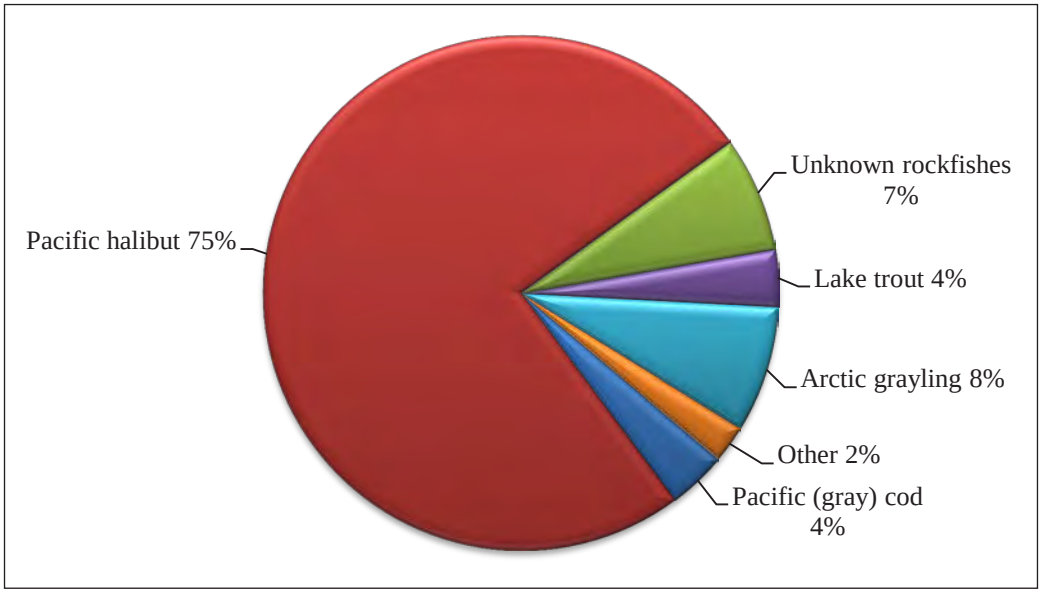


Figure 2-13.–Composition of nonsalmon fish harvest by edible weight, Denali Park, 2015.

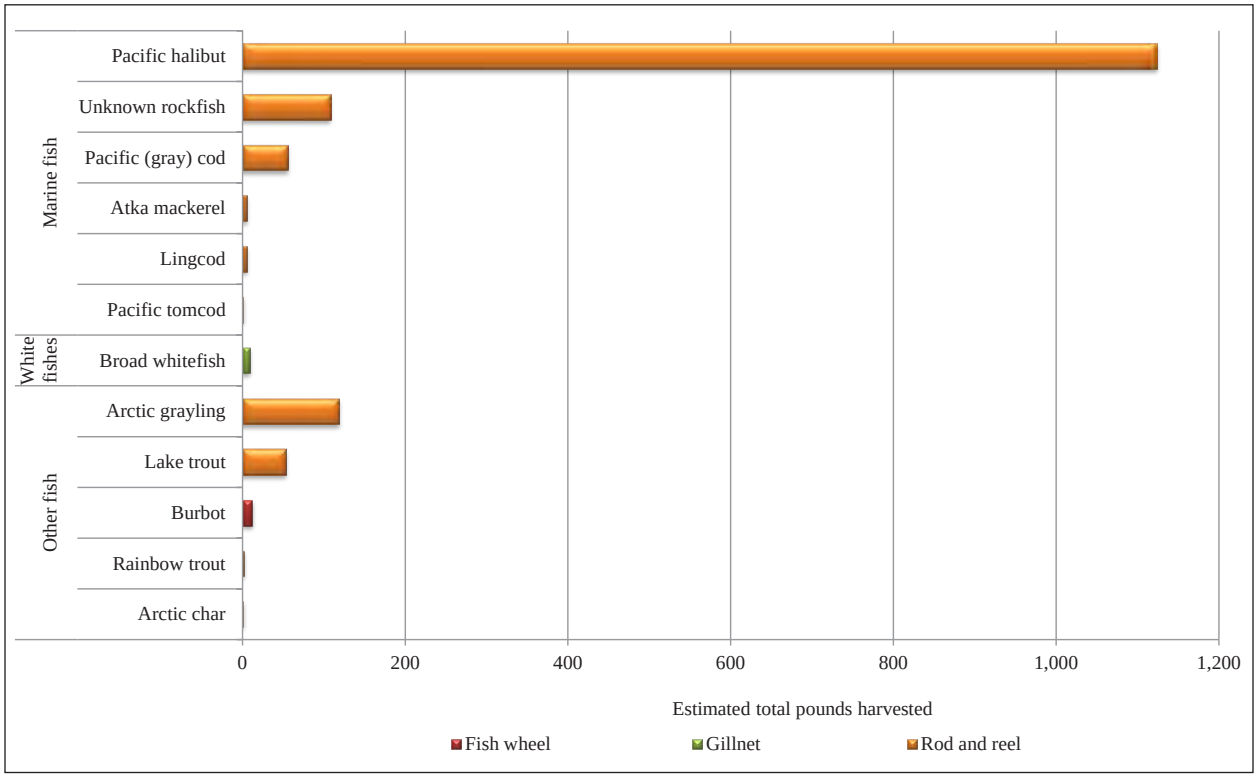


Figure 2-14.–Nonsalmon fish harvests by gear type, Denali Park, 2015.

Key respondents described how residents who want to fill up their freezers with fish will generally travel to take charters to catch halibut and other marine fish, but that local fishing more commonly takes place for recreational purposes rather than for subsistence. However, one key respondent recalled frequently fishing for dinner in the early years of living in Denali Park:

> There was a time in my life when I did spend like every evening after being a river guide and living in a wall tent and cooking on a little stove in there. It was like I knew exactly where to get burbot and grayling. One cast for the grayling and then chop it up and put it on a hook and throw it out there. I want to know how big those burbot are on the railroad line. You know there's a stretch of railroad between McKinley Village and the Park Station, all that's big 'ol kettle ponds that are full of grayling and burbot. For sure, there might be some Dolly-type in there as well. (020817DEN2)

No nonsalmon fish were harvested for dog food by Denali Park residents in 2015.

Large Land Mammals

In 2015, an estimated 73% of Denali Park households used large land mammals; however, only 16% attempted their harvest, and only 9% were successful in doing so (Table 2-4). The total large land mammal harvest was an estimated 1,645 edible pounds, which amounts to an average of 18 lb per household or 10 lb per capita. Residents successfully harvested 3 species of large land mammals in 2015. Figure 2-16 shows the composition of the large land mammal harvest by edible pounds. Caribou represented 55% of the large mammal harvest, followed by bison (37%) and Dall sheep (8%).

Hunters took approximately 7 caribou during 2015, amounting to 907 lb or 5 lb per capita. Six percent of households attempted to harvest caribou and all were successful; however, a greater number of households reported using it (29%; Table 2-4). Eighteen percent of households received caribou and 10% reported

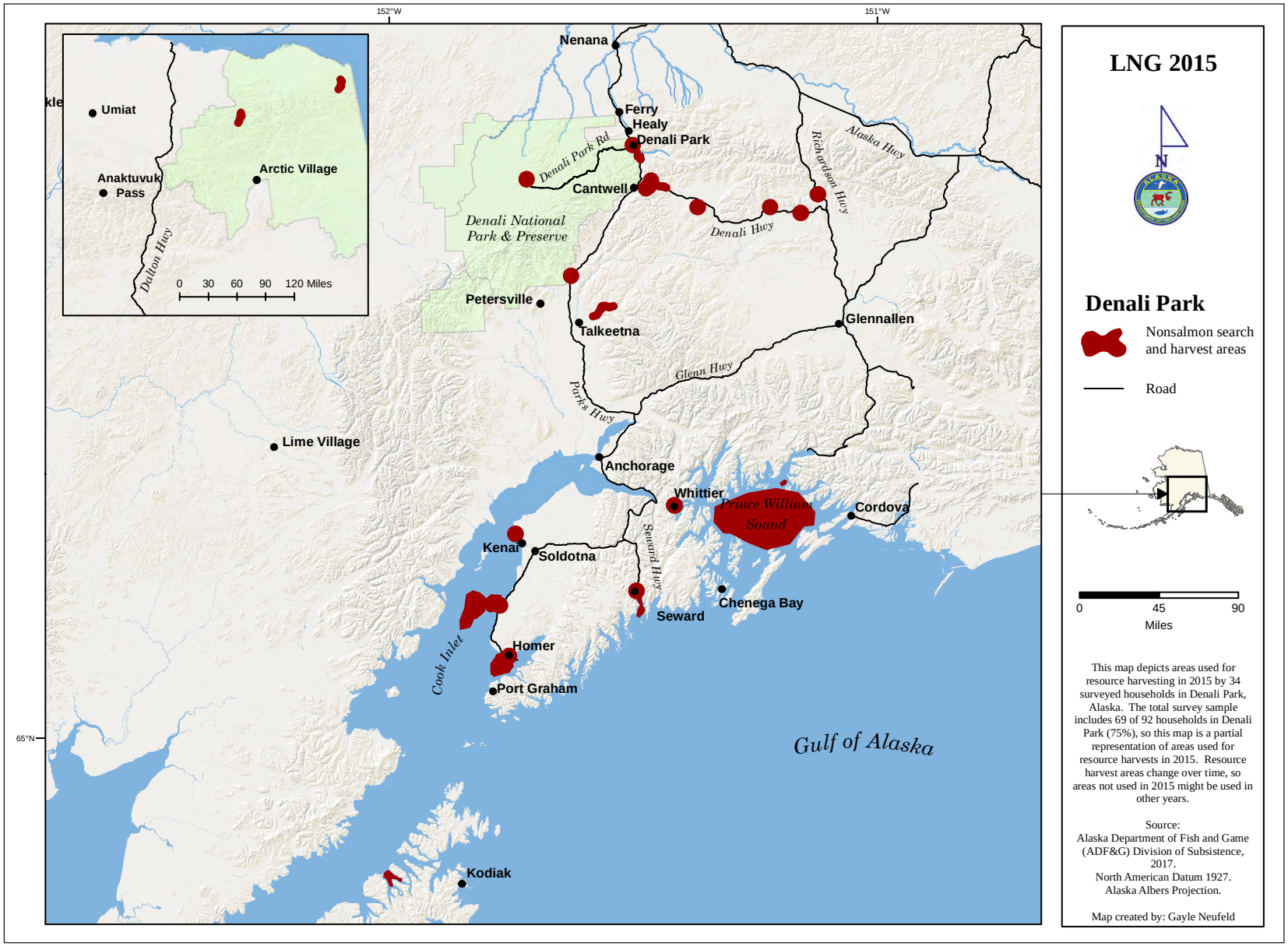


Figure 2-15.–Nonsalmon fishing areas, Denali Park, 2015.

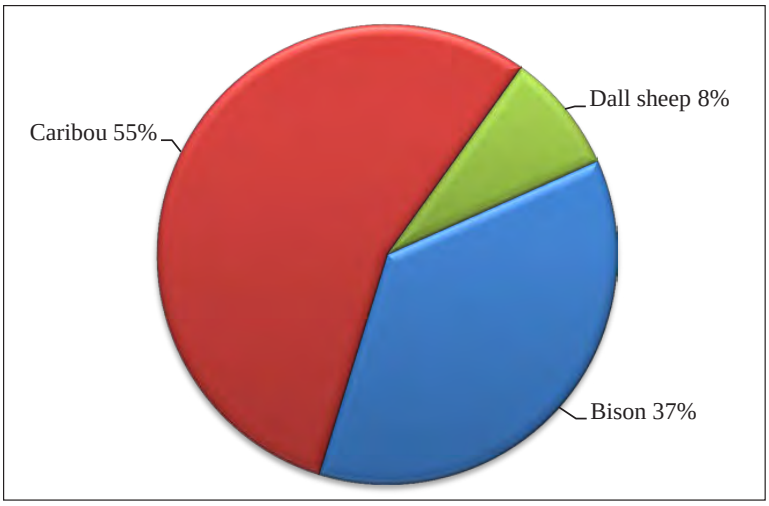


Figure 2-16.–Composition of large land mammal harvest by edible weight, Denali Park, 2015.

giving it away. Residents harvested caribou in September (1 bull and 1 cow), and November (3 bulls and 1 cow; Table D2-7).

Moose was the large land mammal used by the most households (61%) even though no actual harvests were reported by surveyed households (Table 2-4). Seven percent of households attempted to hunt for moose. Moose was the resource received most frequently in Denali Park: 49% of households obtained it from others and 15% gave it away.

Because Denali Park is located along the highway, residents have the opportunity to participate in the roadkill salvage program administered by the Alaska State Troopers. During the survey, 8 households indicated that they salvaged roadkill moose, and 4 salvaged roadkill caribou. Although roadkill is an important source of wild food for several households, the meat salvaged from roadkill is not included in the total edible pounds harvested by the community because it is not killed by hunters, and because the amount of salvageable meat is difficult to assess. However, assuming roadkill salvage yields the same number of edible pounds per animal as hunting, Denali Park residents could have recovered 4,304 lb of moose and an additional 544 lb of caribou in 2015.[12]

A key respondent described learning about the roadkill salvage program and why it is considered important.

> I thought the roadkill harvest program was the coolest thing, because I'm not necessarily a hunter and I don't buy meat so I thought that was a cool thing about Alaska…I'm just not going to buy feed lot beef and eat antibiotics and hormones and god knows what and not to mention the carbon footprint. But my idea of being a locavore[13] is eating roadkill moose or moose that's brought by the hunters and I think there's a lot of people who share that sentiment and it is a big part of their quality of life. (020817DEN1)

The respondent then described bartering meat with others: "I trade a lot of moose and caribou for salmon and a bit of halibut, so it's a pretty nice barter system. We've got salmon only because we trade moose meat for it and occasionally caribou, but that's an important part of how we get fish" (020817DEN1). Additionally, if this household already has enough meat, then roadkill salvage allows them to share with other community members or donate the meat to the Nenana Senior Center.

> We've also helped others that aren't as set up. I've cut up a lot of moose and caribou, it's pretty easy to do it here because we've got running water and a lot of people want to come over here to do their butchering, and you know with that we are usually given some meat. And one year we had enough meat but I took a whole lot of it to the senior citizen center in Nenana. (020817DEN1)

Bison harvest totaled 600 edible pounds (Table 2-4). A single bison was taken in March (Table D2-7). Only 1% of households hunted for or received bison, but 3% reported using and giving it away (Table 2-4). One

12. The conversion factors found in Appendix C were used to calculate this estimate. However, it is likely that fewer edible pounds are yielded from roadkill animals because of damage incurred during impact and their higher susceptibility to spoilage.

13. Someone who eats foods grown locally whenever possible.

Dall sheep was harvested in August, amounting to 139 lb (tables 2-4 and D2-7). Similar to bison, only 1% of households hunted for or received Dall sheep, but 3% reported using it or giving it away (Table 2-4). Mountain goat was the only other large land mammal for which Denali Park residents attempted to hunt in 2015, but no harvests were reported. Residents reported using 2 large land mammals without any attempted harvest: black bear and deer. Just 1% of households reported receiving black bear, but 7% of households received deer and 1% gave it to others.

Figure 2-17 highlights the areas where Denali Park residents reported searching for large land mammals. Caribou search and harvest areas were located to the south of the community along the Parks Highway, in the Alaska Range west of Petersville, along the Denali Highway, and on Adak Island in the Aleutians. The bison search and harvest area was located southeast of Delta Junction along the Alaska Highway. Dall sheep search and harvest areas were located in the Alaska Range on the east side of the Parks highway, including the Yanert Fork valley. Residents also searched for moose in the Yanert Fork drainage, as well as inside Denali National Park west of the Kantishna Hills. At least one resident reported searching for mountain goat on Kodiak Island.

Small Land Mammals/Furbearers

During the study year, an estimated 6% of households used, attempted to harvest, and harvested small land mammals (Table 2-4). Overall, small land mammals made up less than 1% of Denali Park's total wild food harvest (Figure 2-8). The total number of edible pounds of small land mammals amounted to approximately 6 lb (Table 2-4).

Figure 2-18 shows the composition of small land mammal harvest by edible pounds. Snowshoe hare composed two-thirds of the edible harvest and the remaining one-third consisted of red squirrel. Approximately 4% of households reported using and harvesting snowshoe hares (Table 2-4). Half of the snowshoe hares were used only for fur therefore their weight is not included as edible pounds (Table 2-4; Figure 2-19). In 2015, 1% of households used and harvested red squirrels (Table 2-4). Four squirrels were harvested for a total of 2 edible pounds. No squirrels were used for fur (Figure 2-19). One red fox was taken for fur only. No households reported receiving small land mammals, but 1% reported giving away red fox (Table 2-4).

Table D2-8 shows the estimated small land mammal harvest by month. Harvest was concentrated in the winter and early spring. Snowshoe hares were harvested in November, December, and February. Red squirrels were harvested in February and March, and red fox was harvested only in February.

Small land mammal search and harvest areas are depicted in Figure 2-20. Residents reported searching for small land mammals near Deneki Lakes south of Denali Park and in the Arctic National Wildlife Refuge in northeast Alaska.

Marine Mammals

No use or attempted harvest of marine mammals was reported by survey respondents in 2015.

Birds and Eggs

Denali Park residents harvested an estimated 102 lb of birds in 2015, resulting in less than 1 lb per household (Table 2-4). No households reported use or harvest of wild bird eggs. About 15% of households used wild birds, 16% attempted to harvest them, and 13% reported successful harvest. Four percent of households reported receiving birds from others and 3% reported giving them to others.

Figure 2-21 shows the composition of the bird harvest by pounds edible weight. Spruce grouse accounted for 57% of the bird harvest by weight (59 lb), and ptarmigans made up 39% (40 lb; Table 2-4; Figure 2-21). Ruffed grouse and unknown ducks were harvested in much smaller amounts and each accounted for 2% (2 lb) of the bird harvest by edible weight.

The majority of wilds birds were harvested during fall and winter. Thirty-five spruce grouse were harvested in the fall, along with 3 ptarmigans, 3 ruffed grouse, and 1 unknown duck. During the winter, another 23 spruce grouse and 39 ptarmigans were taken. During 2015, 8 ptarmigans were taken during spring, followed by 8 spruce grouse in the summer (Table D2-9).

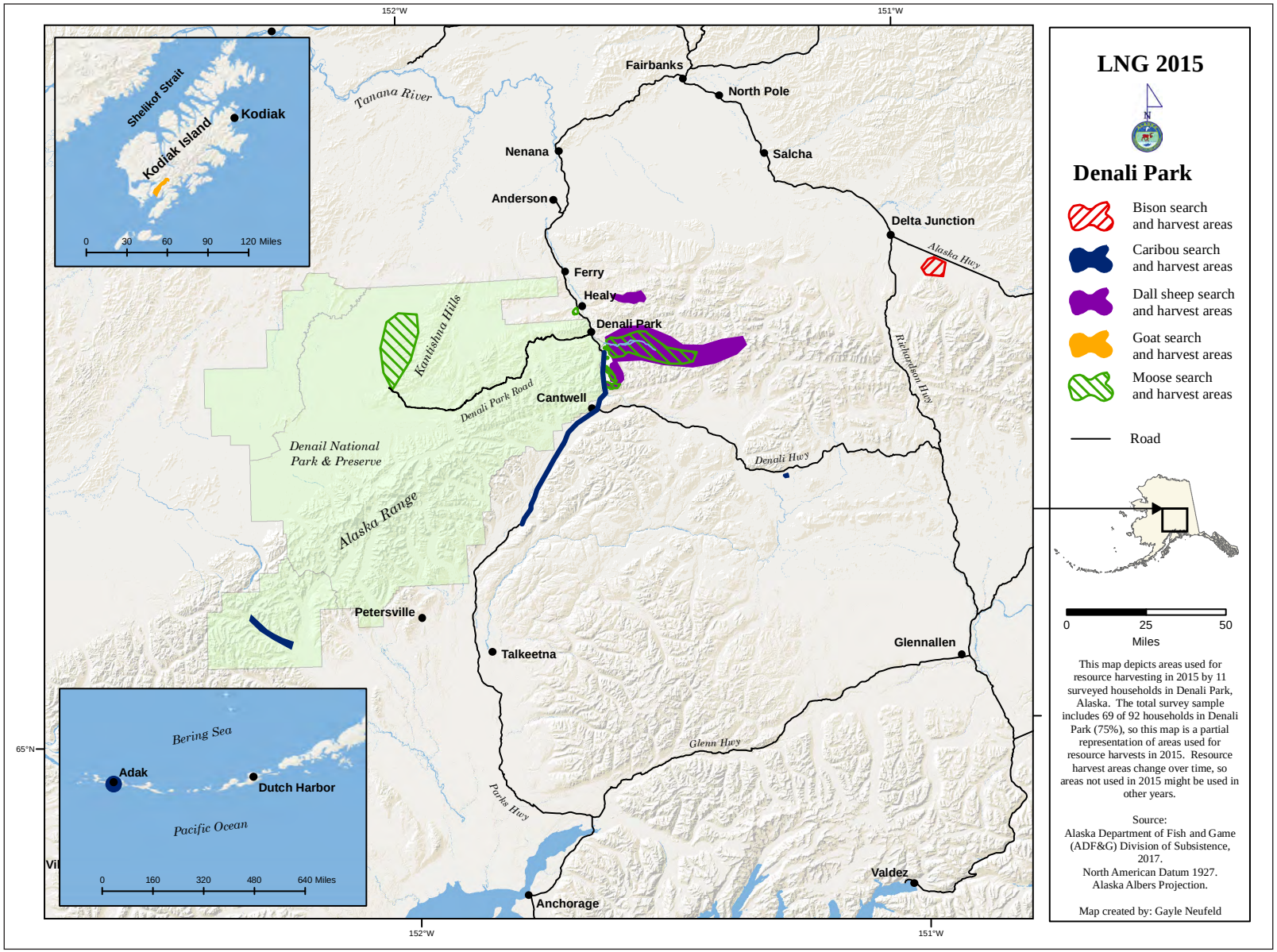


Figure 2-17.–Large land mammal hunting areas, Denali Park, 2015.

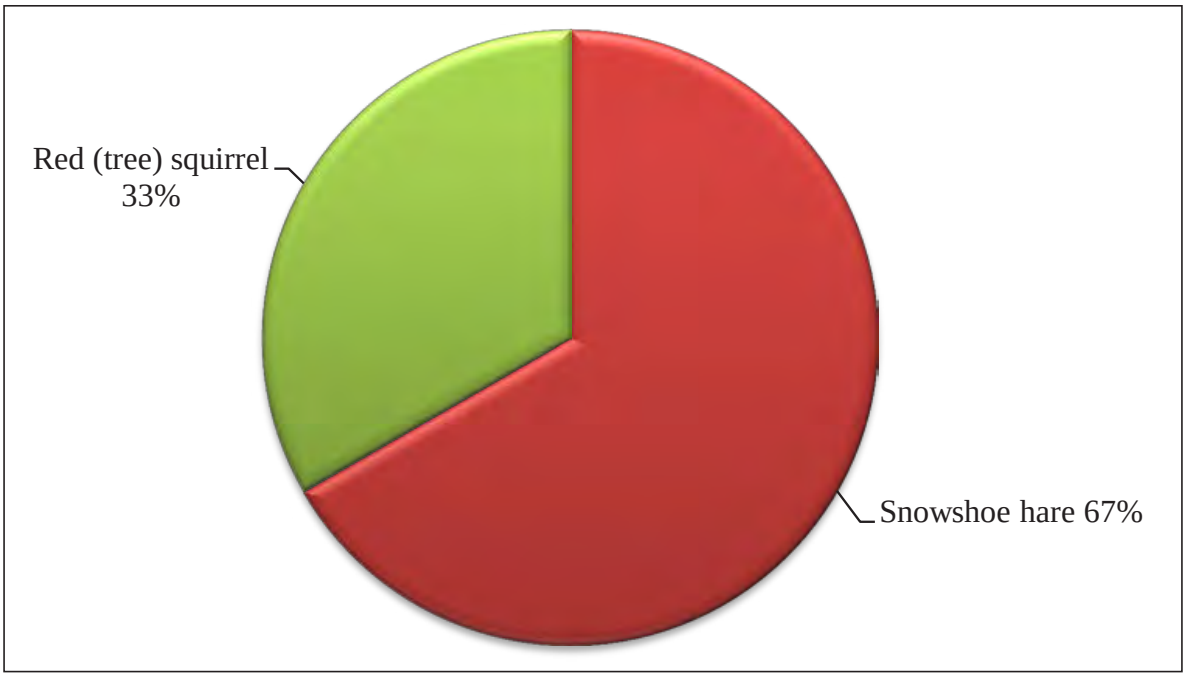


Figure 2-18.–Composition of small land mammal harvest by edible weight, Denali Park, 2015.

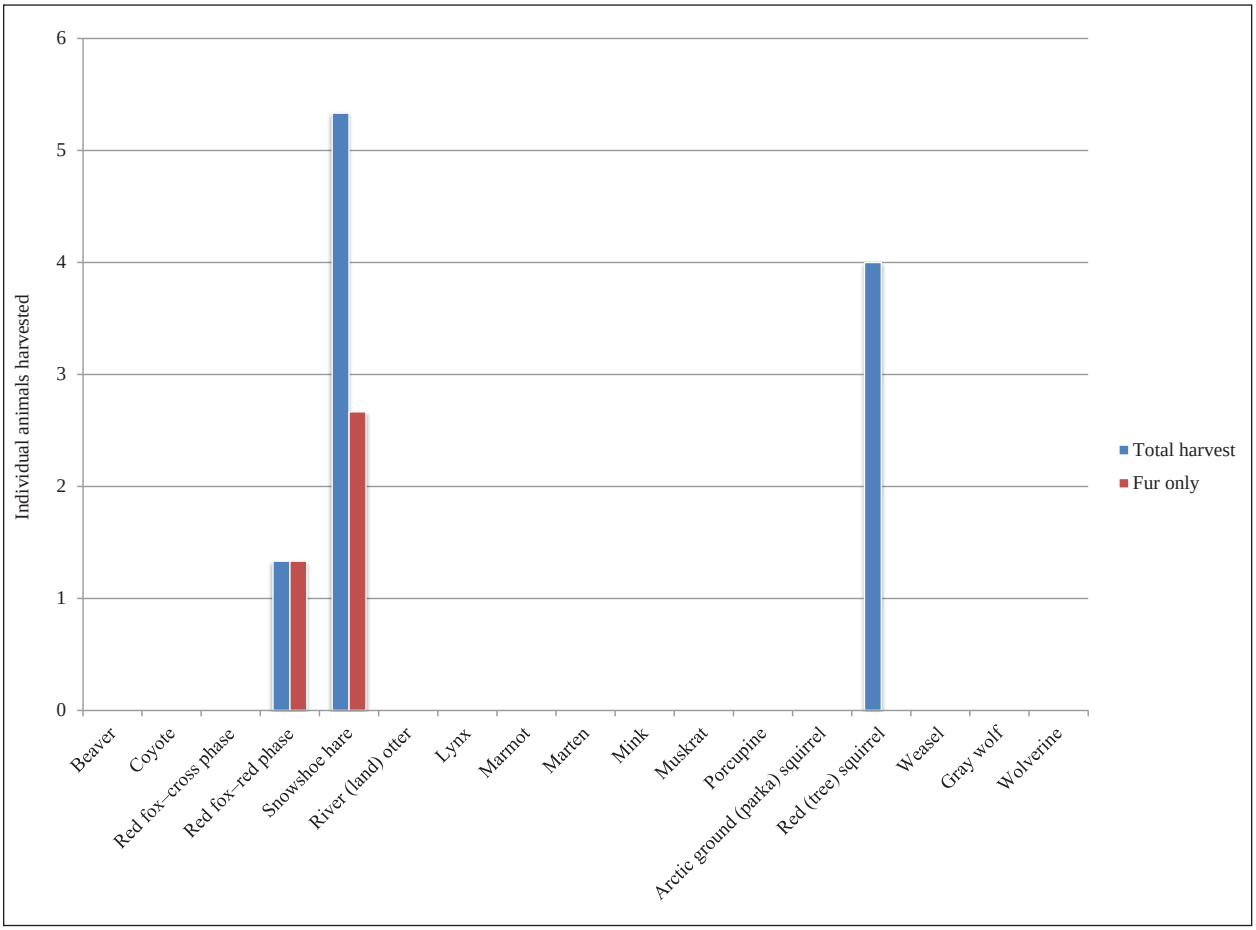


Figure 2-19.–Estimated small land mammal harvests for fur, Denali Park, 2015.

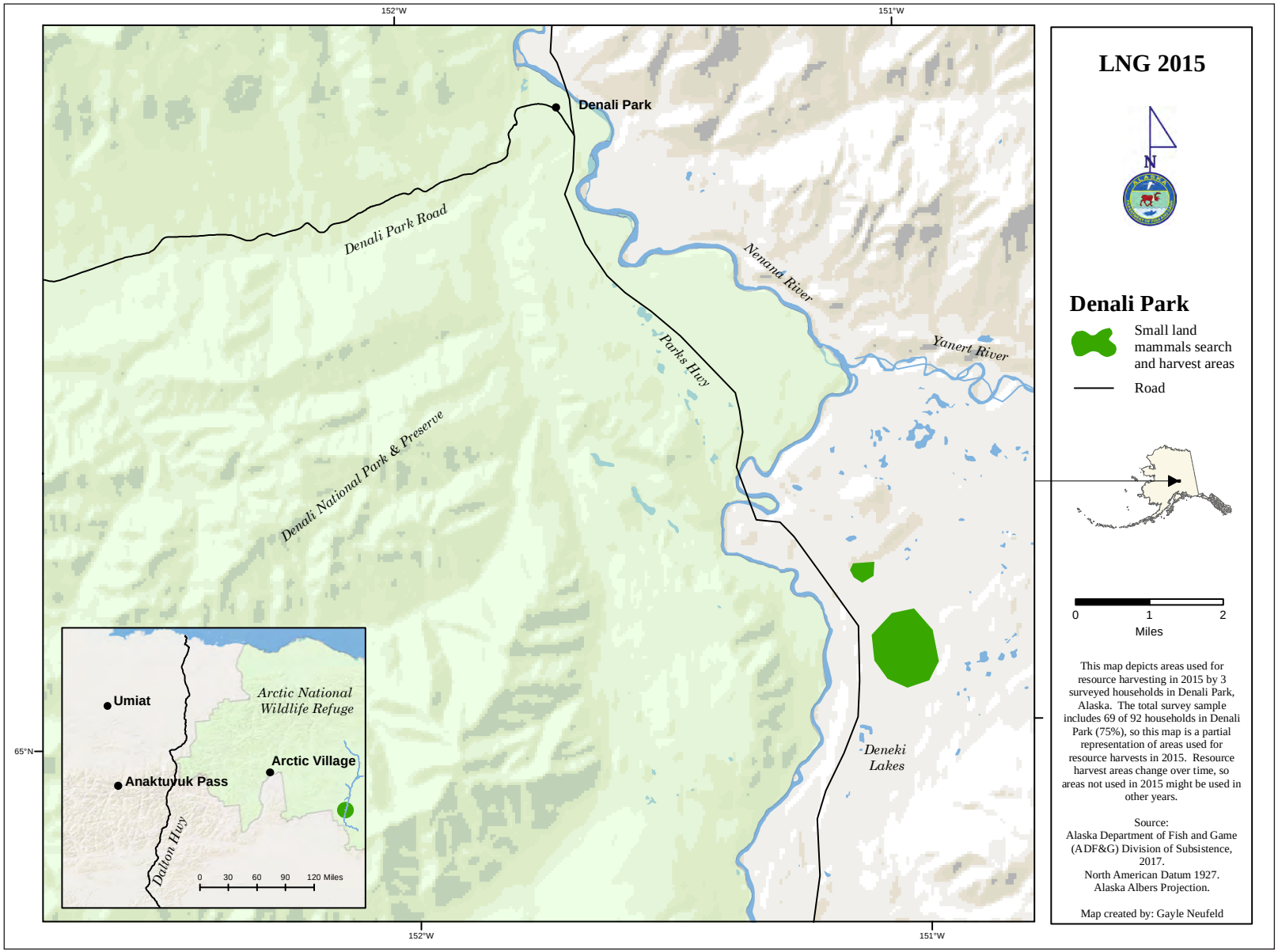


Figure 2-20.–Small land mammal hunting and trapping areas, Denali Park, 2015.

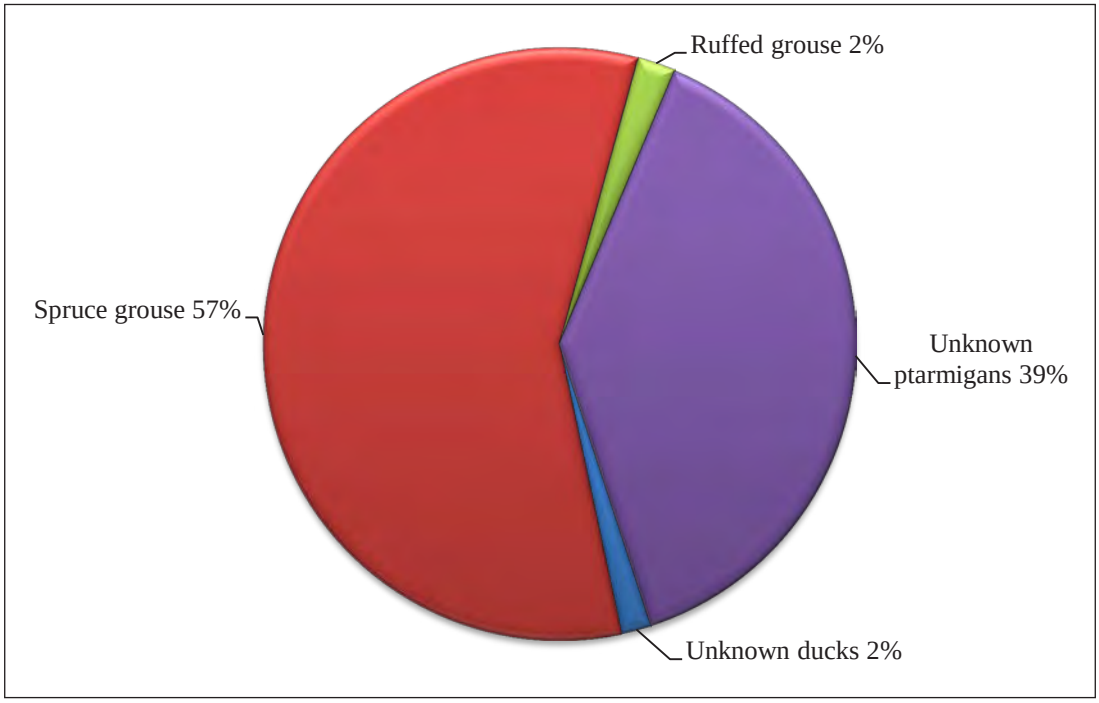


Figure 2-21.–Composition of bird harvest by edible weight, Denali Park, 2015.

Figure 2-22 shows the areas respondents reported searching for and harvesting birds in 2015. Locally, residents hunted ptarmigan and grouse throughout the Yanert Fork drainage as well as on the east side of the Parks Highway in locations between Ferry and Cantwell. Hunting for ptarmigan and grouse was also reported on Adak Island. Duck and goose hunting occurred in the Delta Junction area.

Marine Invertebrates

An estimated total of 136 lb of marine invertebrates were harvested by Denali Park households in 2015, resulting in 1.5 lb per household and less than 1 lb per capita (Table 2-4). Marine invertebrate use was reported by 13% of households, although harvest was reported by only 4%. There was some sharing of marine invertebrates; an estimated 9% of households received them and 3% gave them to others.

Shrimps represented 83% of the marine invertebrate harvest by weight, amounting to 113 lb total or about 1 lb per household (Table 2-4; Figure 2-23). The remaining harvest was composed of 4 other types of marine invertebrate and totaled 23 lb. In addition, residents received unknown species of tanner crab, other unknown crabs, and razor clams. Marine invertebrates were harvested primarily in Prince William Sound and off Kodiak Island (Figure 2-24).

Vegetation

Denali Park residents harvested an estimated total of 2,038 lb of edible vegetation in 2015 (Table 2-4). Berries composed 95% of the Denali Park vegetation harvest by weight (Figure 2-25). The remaining harvest was represented by various plants and greens (4% of the harvest by weight) and mushrooms (1%). Vegetation was used by 97% of households in Denali Park, a greater percentage than any other resource category (Table 2-4; Figure 2-7). Approximately 92% of households attempted to harvest vegetation and 90% did harvest it. Vegetation was one of the more commonly shared resources in Denali Park; 45% of households received vegetation and 36% gave it to others (Table 2-4).

Blueberries represented one-half of the total vegetation harvest by weight. The total blueberry harvest was 1,020 lb, amounting to 11 lb per household or 6 lb per capita. Lowbush cranberries were another popular berry: these were used by 74% of households, and 768 lb were harvested in total. Other types of edible

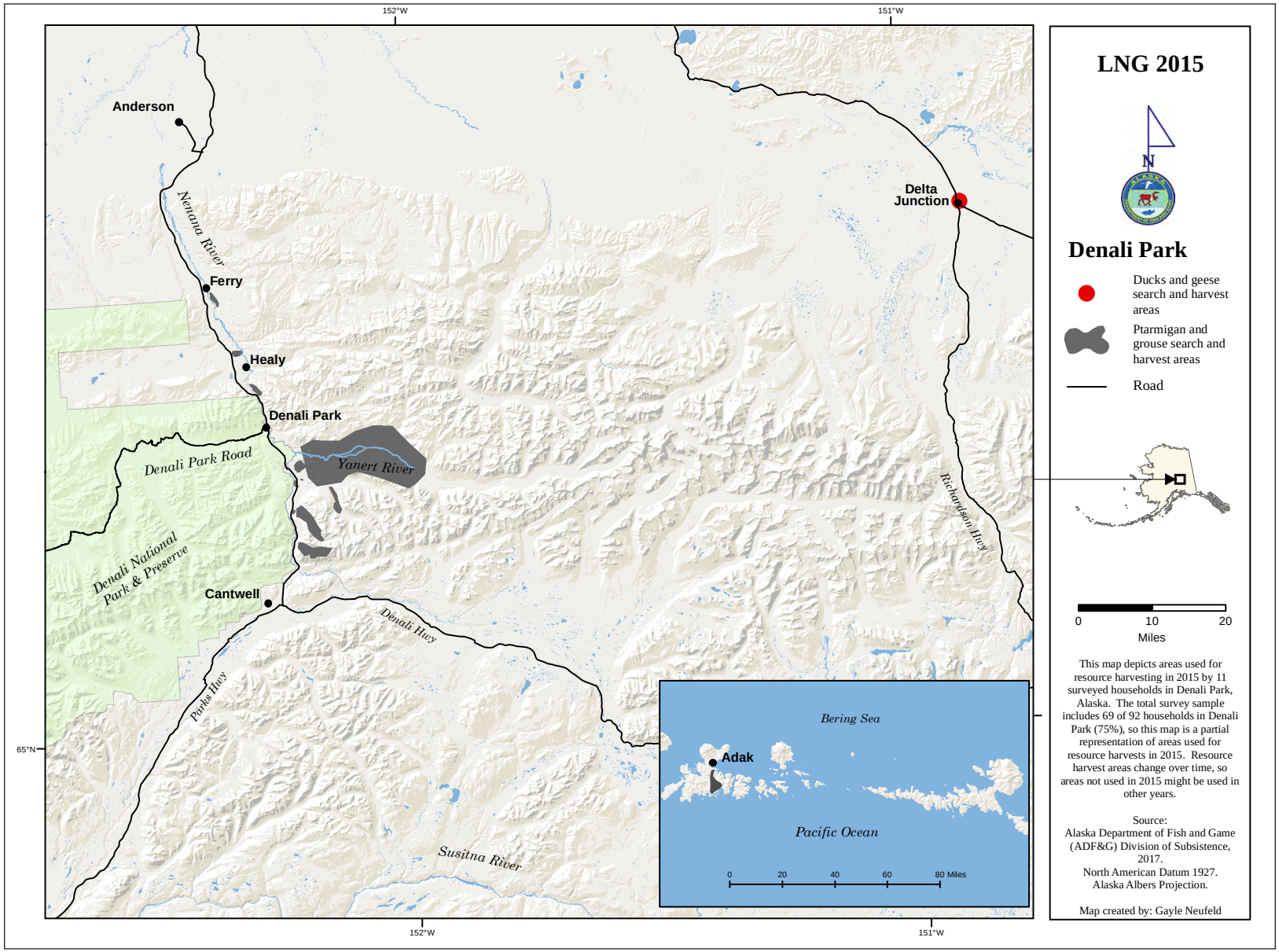


Figure 2-22.–Bird hunting areas, Denali Park, 2015.

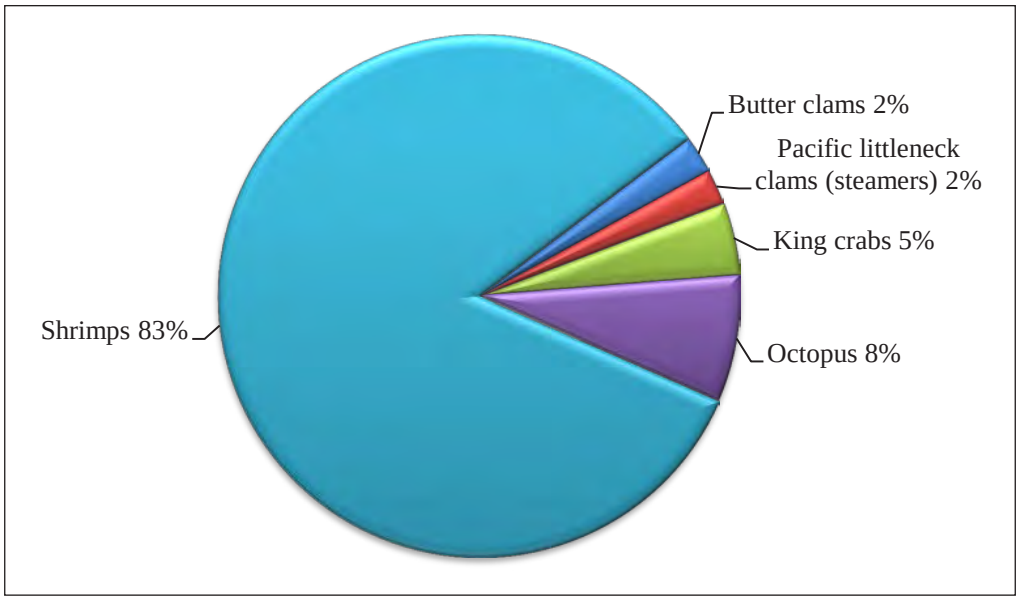


Figure 2-23.–Composition of marine invertebrate harvest by edible weight, Denali Park, 2015.

vegetation used by at least 10% of households included crowberries, spruce tips, wild rose hips, wild greens, mushrooms, and fireweed.

Survey respondents harvested or used a total of 34 different types of edible vegetation, all of which are listed in Table 2-4. Key respondents highlighted some of the particular varieties of vegetation they utilize:

> We both really cherish the opportunity to pick blueberries and cranberries and crowberries, and I make soap out of soapberries…We're getting pretty good at mushrooms too…I don't eat a lot of *Mertinsia* because I think it's so beautiful, but if there's a good patch of it I'll pick just enough of it to make a colorful salad. But we eat a lot of fireweed and lamb's quarters. I have a ton of lamb's quarters that grow out around the dog yard so we pick a lot of that…I made for the first time last summer, was picking *Artemisia tilesii*…it's a sage, and made a bunch of salve because it's supposed to be good for arthritis and it was lots of fun. But I think a lot of people will harvest balsam poplar buds and spruce tips and I think that goes along with people, they're not so much hunters as gatherers around here. (020817DEN1)

In addition to food and personal care items, Denali Park residents also make crafts out of the plant products they harvest. Some individuals sell these crafts for supplemental income.

> *Epilobium* shoots are going into all of my early season salads as well as lungwort. *Mertincia* is another delicious, it's a little bit fuzzy, but it's a delicious green that works well. Those two I hit pretty hard. Anytime I'm around the little sweet and sour plants like the sourdocks and the buckwheats, those leaves I'll harvest and bring home just for one meal if it winds up being that way. And then crafts, that's my other thing. I do spend a lot of time digging up spruce roots and digging up willow roots and peeling bark off of downed spruce trees. I don't tend to harvest off of any of the standing. You can do it in a way that doesn't kill the tree, but it does kind of disfigure it, and in the end it's half a girdle if not a full one. But leaning wind-blown trees, those are the ones that I tend to gravitate to for birch harvesting. I do that all in the spring and early summer, roots all through the summer, and then in the fall and winter I'll work on [baskets] and do some craft bazaars and I've got a couple of gals that like having them for sale and they're useful. (020817DEN2)

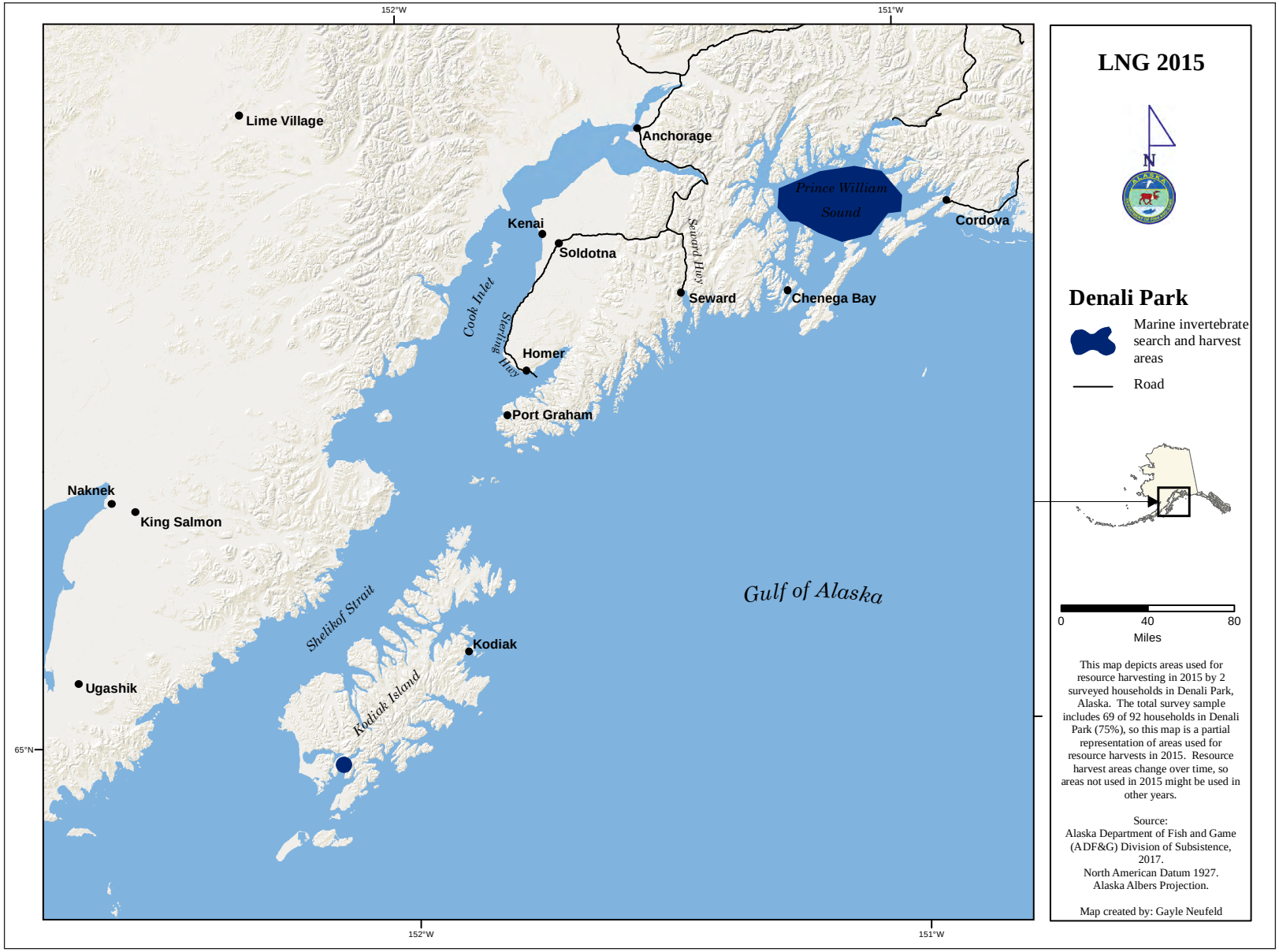


Figure 2-24.–Marine invertebrate search and harvest areas, Denali Park, 2015.

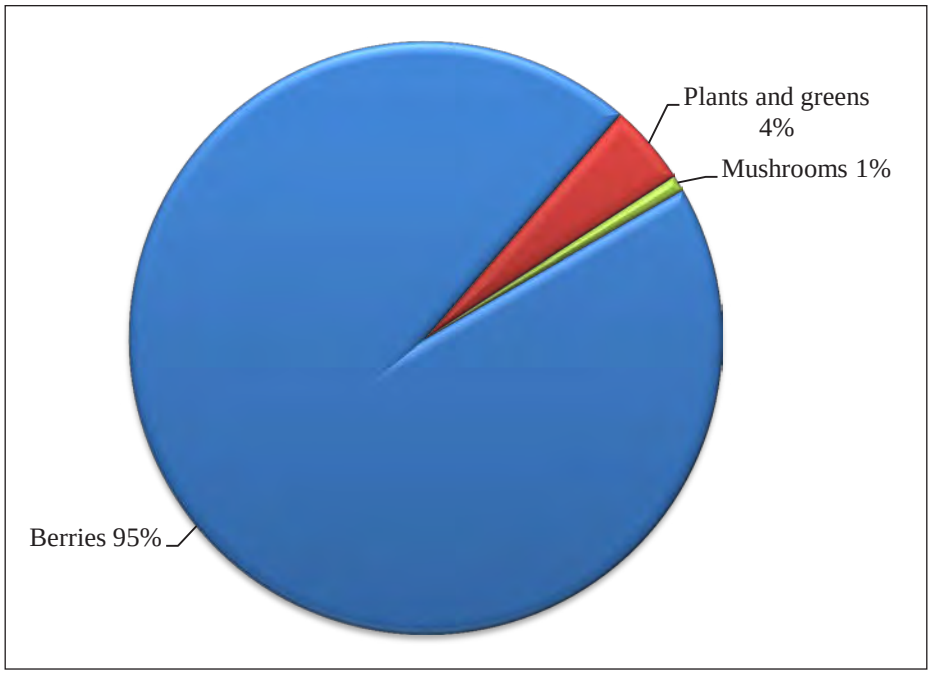


Figure 2-25.–Composition of vegetation harvest by edible weight, Denali Park, 2015.

Although it is not a wild food, firewood was used by 54% of Denali Park residents, harvested by 38%, and received by 25%. Table D2-10 shows the use of firewood for home heating during 2015. In Denali Park, approximately one-half of the homes use wood as source of heat. Only 3% of households rely on wood as their sole heating source. The remaining households use a mixture of wood and other heat sources.

Figure 2-26 shows the locations where respondents reported harvesting vegetation. Berries and greens were primarily gathered along the Parks and Denali highways. Residents also gathered vegetation inside Denali National Park off of the Denali Park Road as well as near Kantishna and Wonder Lake.

Production and Distribution of Wild Resources

Household Specialization in Resource Harvesting

Previous studies (Wolfe 1987; Wolfe et al. 2010) have shown that in most rural Alaska communities, a relatively small portion of households produces most of the community's fish and wildlife harvests, which they share with other households. A recent study of 3,265 households in 66 rural Alaska communities found that about 33% of the households accounted for 76% of subsistence harvests (Wolfe et al. 2010). Although overall the set of very productive households was diverse, factors that were associated with higher levels of subsistence harvests included larger households with a pool of adult male labor, higher wage income, involvement in commercial fishing, and community location.

In the 2015 study year in Denali Park, about 71% of the wild resources (as estimated in pounds usable weight) were harvested by 23% of the community's households (Figure 2-27). Additional findings indicate that the average harvest for the 50% of Denali Park households with the lowest harvests was 4 lb per person, and that these households used an average of 6 resources (Table 2-6). In comparison, the 25% of households with the highest harvests used an average of 11 resources. Further analysis of the study findings, beyond the scope of this report, might identify characteristics of the highly productive households in Denali Park and the other study communities.

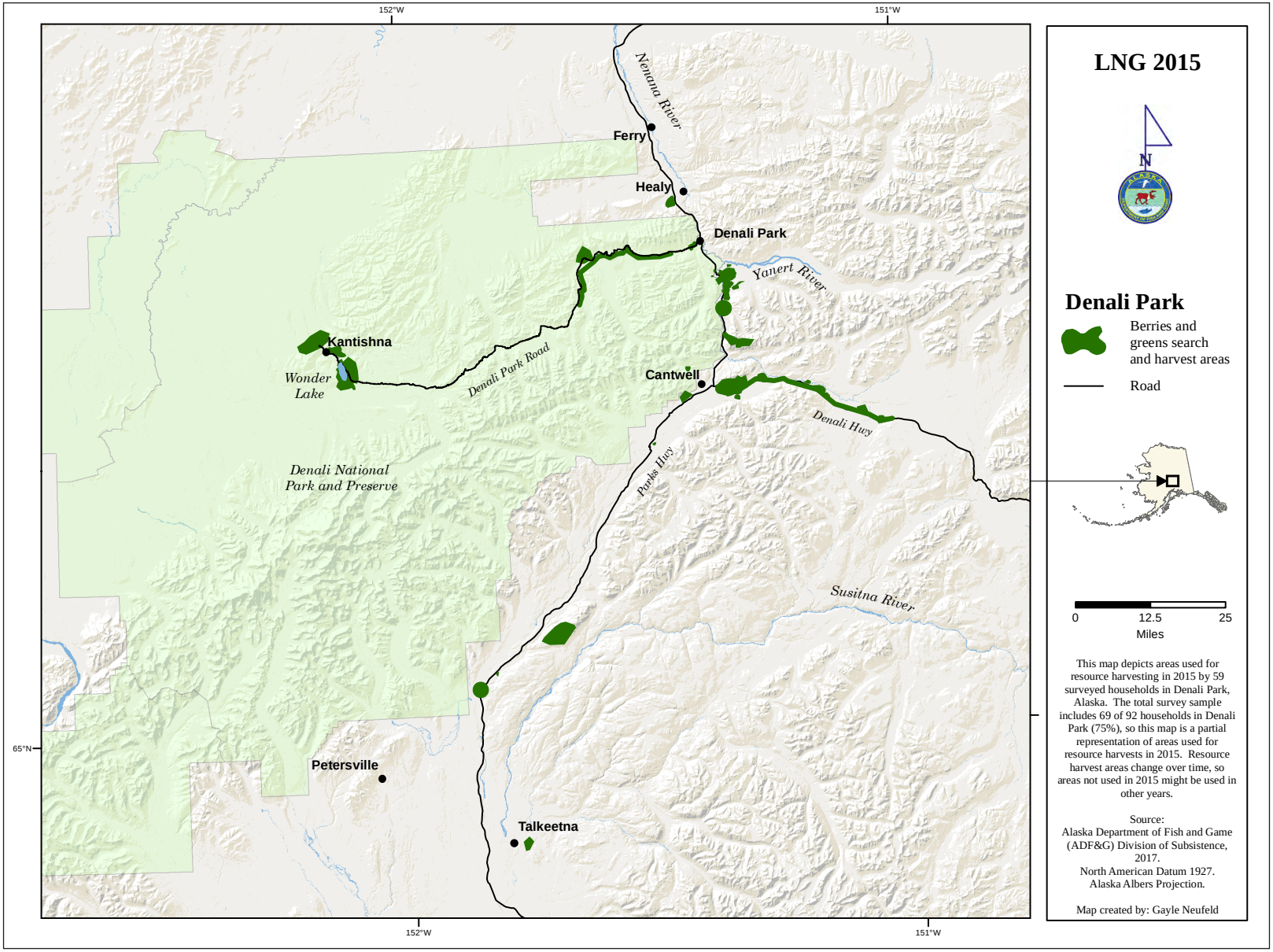


Figure 2-26.–Berries and greens gathering areas, Denali Park, 2015.

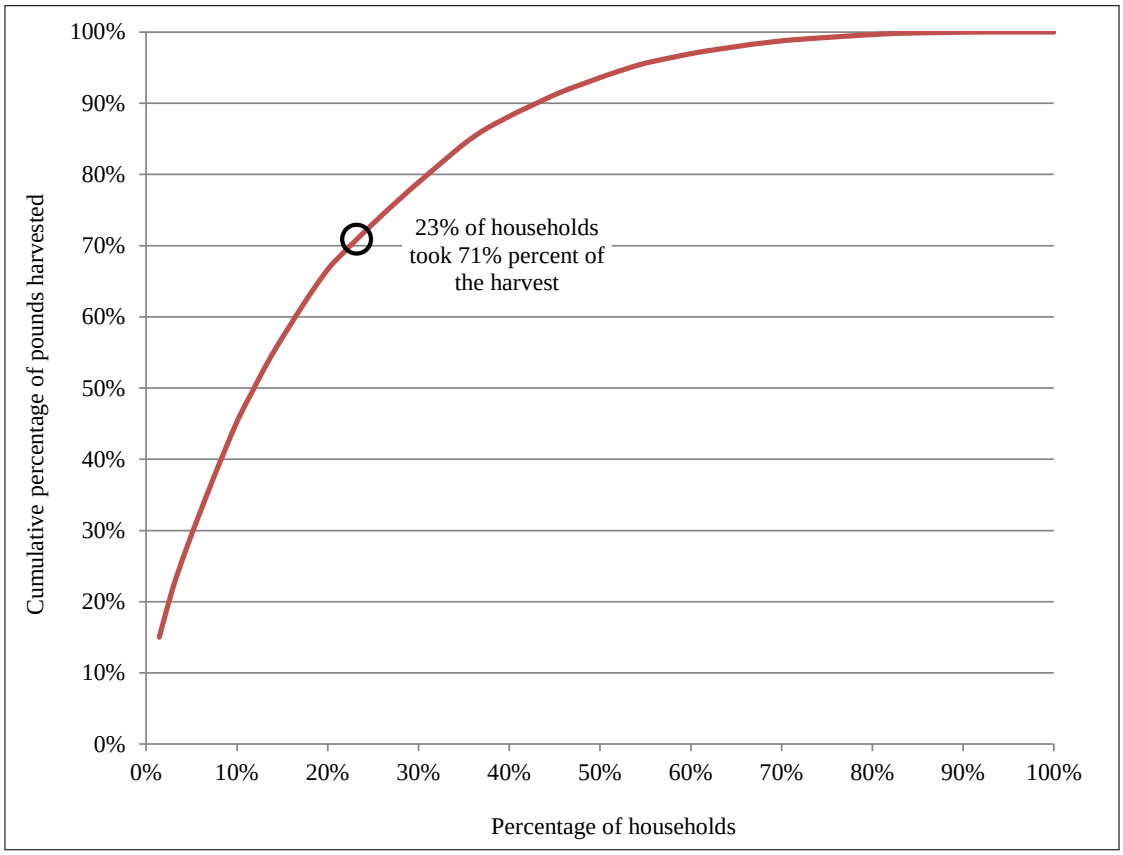


Figure 2-27.–Household specialization, Denali Park, 2015.

Income and Cash Employment

Survey respondents were asked about both earned income (jobs held and wages earned by all household members 16 years and older) and income from other sources. The survey also asked about months worked and work schedules for employed residents in each household. As shown in Figure 2-28, employment earnings from the federal government made the largest contribution, supplying 40% of the total community income. Earned income from service jobs contributed 28%. When combined, these 2 sources totaled just over two-thirds of all community income. Income from employment in the federal government accounted for $2.8 million of the community total, and service jobs brought in $1,934,328 (Table 2-7). Remaining income sources included job earnings from local government (6% of all income), retail (4%), and construction (3%), as well as other sources such as the Alaska Permanent Fund dividend (4%) and Social Security (2%; Figure 2-28). Other earned and unearned income accounted for the remaining 11%.

The total income for Denali Park households in 2015 was approximately $6,987,540. Table 2-7 shows all reported sources of income grouped by earned and other sources. Earned wages were $6,011,496, or 86% of the community total during 2015. Other income contributed the remaining 14%, or $976,044. The average income per household totaled $75,952 and included an estimated $65,342 from wages and $10,609 from other sources. The per capita income in Denali Park was $40,625 (Table 2-6).

The estimated median household income in Denali Park for 2015 was $126,766 with a 95% confidence interval of $65,389–$312,928 (Table D2-11; Figure 2-29). This estimate is substantially higher than the median of $78,750 calculated by the 2011–2015 American Community Survey (ACS). The difference between these estimates, similar to that found in the population data, could stem from differing sampling methods. For the entire State of Alaska, ACS estimated the median income during 2011–2015 to be $72,515. Both the ADF&G and ACS median income estimates for Denali Park are higher than that for the entire state.

Table 2-6.–Comparison of selected findings, Denali Park, 2015.

Category	Community Denali Park
Demography	
Population	172.0
Percentage of population that is Alaska Native	0.0%
Percentage of household heads born in Alaska	1.8%
Average length of residency of household heads (years)	13.4
Cash economy	
Average number of months employed	9.1
Percentage of employed adults working year-round	57.6%
Percentage of income from sources other than employment	14.0%
Average household income[a]	$75,952
Per capita income[a]	$40,625
Resource harvest and use	
Per capita harvest (lb)	57.2
Average household harvest (lb)	106.9
Number of resources used by 50% or more households	5.0
Average number of resources used per household	7.9
Average number of resources attempted to be harvested per household	5.7
Average number of resources harvested per household	5.4
Average number of resources received per household	2.9
Average number of resources given away per household	1.7
Percentage of total harvest taken by top 25% ranked households	72.7%
Percentage of households that harvested 70% of harvest	23.2%
Per capita harvest by lowest ranked 50% of households (lb)	3.9
Percentage of total harvest taken by lowest ranked 50% of harvesting households	6.7%
Average number of resources used by lowest ranked 50% of households	5.8
Average number of resources used by top 25% ranked households	10.1

Source ADF&G Division of Subsistence household surveys, 2016.

a. Includes income from sources other than employment.

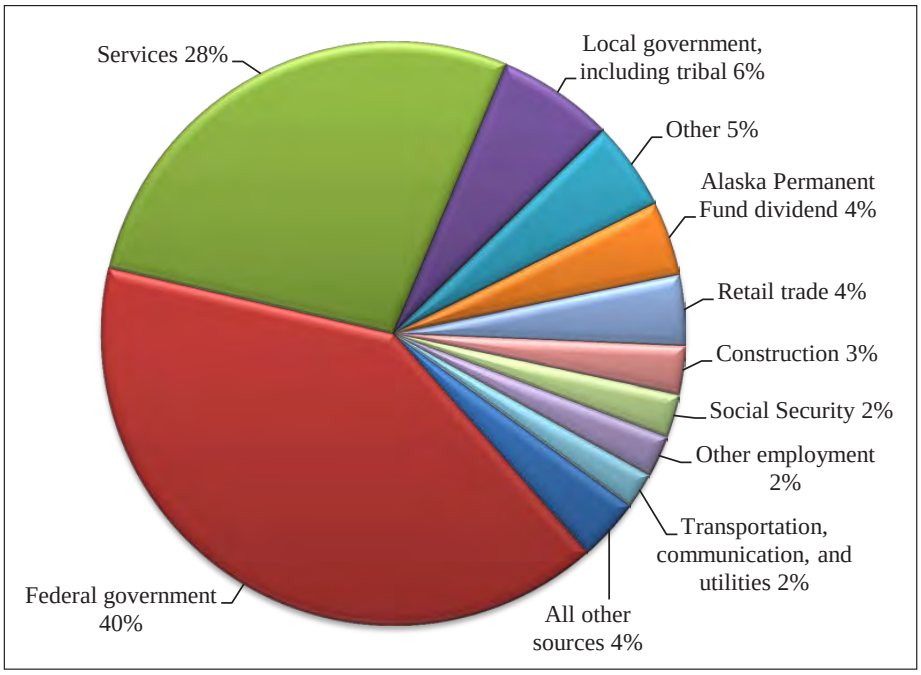


Figure 2-28.–Top income sources, Denali Park, 2015.

Table 2-7.–Estimated earned and other income, Denali Park, 2015.

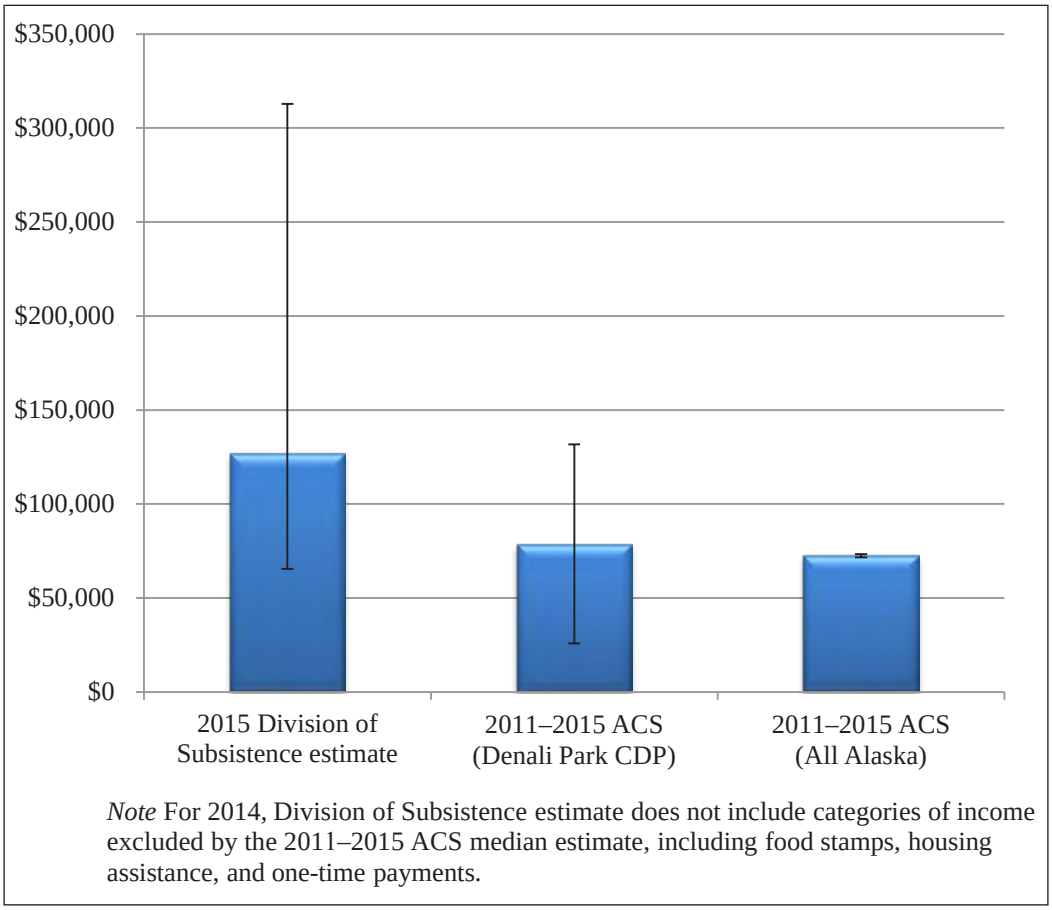
Income source	Number of employed adults	Number of households	Total for community	-/+ 95% CI	Mean per household	Percentage of total community income
Earned income						
Federal government	59	51	$2,806,404	$2,015,591 – $3,618,629	$30,504	40.2%
Services	55	46	$1,934,328	$1,168,311 – $3,506,528	$21,025	27.7%
Local government, including tribal	15	12	$447,567	$82,476 – $1,126,924	$4,865	6.4%
Retail trade	10	9	$274,487	$30,344 – $784,256	$2,984	3.9%
Construction	8	8	$187,061	$69,889 – $439,480	$2,033	2.7%
Other employment	4	4	$160,806	$0 – $631,422	$1,748	2.3%
Transportation, communication, and utilities	4	4	$137,834	$19,528 – $360,015	$1,498	2.0%
Manufacturing	1	1	$59,072	$40,622 – $121,408	$642	0.8%
Agriculture, forestry, and fishing	1	1	$3,938	$3,626 – $11,686	$43	0.1%
Earned income subtotal	**136**	**87**	**$6,011,496**	**$4,946,638 – $7,395,698**	**$65,342**	**86.0%**
Other income						
Other		5	$343,557	$0 $1,333,960	$3,734	4.9%
Alaska Permanent Fund dividend		73	$287,317	$232,064 $337,045	$3,123	4.1%
Social Security		11	$165,397	$57,637 $338,309	$1,798	2.4%
Pension / retirement		5	$127,797	$16,000 $291,952	$1,389	1.8%
Unemployment		11	$25,841	$7,140 $58,988	$281	0.4%
Disability		3	$20,800	$0 $52,800	$226	0.3%
Veterans assistance		1	$2,667	$0 $5,333	$29	0.0%
Meeting honoraria		1	$2,667	$0 $5,333	$29	0.0%
TANF (Temporary Assistance for Needy Families)		0	$0	$0 $0	$0	0.0%
Adult public assistance (OAA, APD)		0	$0	$0 $0	$0	0.0%
Longevity bonus		0	$0	$0 $0	$0	0.0%
Workers' compensation / insurance		0	$0	$0 $0	$0	0.0%
Heating assistance		0	$0	$0 $0	$0	0.0%
Supplemental Security Income		0	$0	$0 $0	$0	0.0%
Supplemental Nutrition Assistance Program (food stamps)		0	$0	$0 $0	$0	0.0%
Native corporation dividend		0	$0	$0 $0	$0	0.0%
Child support		0	$0	$0 $0	$0	0.0%
Rental income		0	$0	$0 $0	$0	0.0%
Foster care		0	$0	$0 $0	$0	0.0%
CITGO fuel voucher		0	$0	$0 $0	$0	0.0%
Other income subtotal		**5**	**$976,044**	**$460,056 – $1,933,549**	**$10,609**	**14.0%**
Community income total			**$6,987,540**	**$5,952,754 $8,541,075**	**$75,952**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2016.

Employment by industry and occupation for McKinley Park residents is shown in Table 2-8. Survey results indicated that in 2015, 177 jobs were held by 137 residents residing in 87 households. The service sector and federal government provided the most total jobs to Denali Park residents, supplying 37% and 36% of jobs, respectively. Fifty-three percent of employed households and 40% of employed individuals worked in the service sector, while 59% of employed households and 43% of employed individuals worked in the federal government. Additional jobs were provided by local government (10% of total); retail trade (6%); construction (5%); transportation, communication, and utilities (3%); and other industries (2%). The remaining job categories contributed less than 1% of the total jobs.

Job schedules reported by Denali Park residents during 2015 are shown in Table 2-9. Almost all employed households had at least one adult with full-time employment (97%) and overall, 89% of employed individuals held full-time positions. Very few jobs were on-call or occasional, and no shift work was reported.

Survey results indicated that 94% of households had at least one resident who was employed in 2015, amounting to 90% of all adult residents (Table 2-10). Fifty-eight percent of employed residents worked year round, however the average length of employment was 10 months. There was a mean of 2 jobs per employed household and 65 person-weeks of employment.



Note For 2014, Division of Subsistence estimate does not include categories of income excluded by the 2011–2015 ACS median estimate, including food stamps, housing assistance, and one-time payments.

Figure 2-29.–Comparison of median income estimates, Denali Park, 2015.

Table 2-8.–Employment by industry, Denali Park, 2015.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**176.5**	**86.7**	**136.5**	**100.0%**
Federal government	**35.9%**	**59.4%**	**43.4%**	**46.7%**
Executive, administrative, and managerial	7.0%	12.5%	9.1%	15.1%
Natural scientists and mathematicians	2.3%	4.7%	3.0%	2.7%
Social scientists, social workers, religious workers, and lawyers	2.3%	4.7%	3.0%	3.4%
Teachers, librarians, and counselors	0.8%	1.6%	1.0%	0.2%
Technologists and technicians, except health	6.3%	10.9%	8.1%	7.2%
Marketing and sales occupations	2.3%	4.7%	3.0%	1.6%
Administrative support occupations, including clerical	3.1%	6.3%	4.0%	2.0%
Service occupations	7.8%	14.1%	10.1%	9.0%
Mechanics and repairers	1.6%	3.1%	2.0%	2.8%
Transportation and material moving occupations	0.8%	1.6%	1.0%	1.3%
Handlers, equipment cleaners, helpers, and laborers	0.8%	1.6%	1.0%	0.5%
Occupation not indicated	0.8%	1.6%	1.0%	0.7%
Local government, including tribal	**10.2%**	**14.1%**	**11.1%**	**7.4%**
Executive, administrative, and managerial	3.9%	6.3%	4.0%	4.5%
Teachers, librarians, and counselors	3.9%	7.8%	5.1%	0.7%
Administrative support occupations, including clerical	0.8%	1.6%	1.0%	1.7%
Handlers, equipment cleaners, helpers, and laborers	1.6%	3.1%	2.0%	0.5%
Agriculture, forestry, and fishing	**0.8%**	**1.6%**	**1.0%**	**0.1%**
Executive, administrative, and managerial	0.8%	1.6%	1.0%	0.1%
Construction	**4.7%**	**9.4%**	**6.1%**	**3.1%**
Construction and extractive occupations	4.7%	9.4%	6.1%	3.1%
Manufacturing	**0.8%**	**1.6%**	**1.0%**	**1.0%**
Writers, artists, entertainers, and athletes	0.8%	1.6%	1.0%	1.0%
Transportation, communication, and utilities	**3.1%**	**4.7%**	**3.0%**	**2.3%**
Writers, artists, entertainers, and athletes	1.6%	1.6%	1.0%	1.1%
Transportation and material moving occupations	0.8%	1.6%	1.0%	0.3%
Handlers, equipment cleaners, helpers, and laborers	0.8%	1.6%	1.0%	0.9%
Retail trade	**5.5%**	**10.9%**	**7.1%**	**4.6%**
Executive, administrative, and managerial	0.8%	1.6%	1.0%	1.4%
Marketing and sales occupations	1.6%	3.1%	2.0%	2.3%
Service occupations	1.6%	3.1%	2.0%	0.1%
Transportation and material moving occupations	1.6%	3.1%	2.0%	0.8%
Services	**36.7%**	**53.1%**	**40.4%**	**32.2%**
Executive, administrative, and managerial	10.9%	17.2%	13.1%	19.5%
Teachers, librarians, and counselors	3.1%	6.3%	4.0%	1.6%
Registered nurses, pharmacists, dietitians, therapists, and physicians assistants	0.8%	1.6%	1.0%	0.9%
Writers, artists, entertainers, and athletes	1.6%	3.1%	2.0%	0.1%
Technologists and technicians, except health	0.8%	1.6%	1.0%	0.1%
Service occupations	13.3%	20.3%	15.2%	4.9%
Mechanics and repairers	0.8%	1.6%	1.0%	1.0%
Transportation and material moving occupations	4.7%	9.4%	6.1%	2.6%
Occupation not indicated	0.8%	1.6%	1.0%	1.5%
Industry not indicated	**2.3%**	**4.7%**	**3.0%**	**2.7%**
Executive, administrative, and managerial	0.8%	1.6%	1.0%	0.0%
Engineers, surveyors, and architects	0.8%	1.6%	1.0%	2.6%
Technologists and technicians, except health	0.8%	1.6%	1.0%	0.1%

Source ADF&G Division of Subsistence household surveys, 2016.

Table 2-9.–Reported job schedules, Denali Park, 2015.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	139.2	78.9%	121.3	88.9%	84.0	96.9%
Part-time	23.4	13.3%	23.4	17.2%	21.7	25.0%
On-call (occasional)	11.0	6.3%	9.6	7.1%	9.5	10.9%
Schedule not reported	2.8	1.6%	2.8	2.0%	2.7	3.1%

Source ADF&G Division of Subsistence household surveys, 2016.

Table 2-10.–Employment characteristics, Denali Park, 2015.

	Community
Characteristic	Denali Park
All adults	
Number	152.0
Mean weeks employed	39.5
Employed adults	
Number	136.5
Percentage	89.8%
Jobs	
Number	176.5
Mean	1.3
Minimum	1
Maximum	3
Months employed	
Mean	10.2
Minimum	2
Maximum	12
Percentage employed year-round	57.6%
Mean weeks employed	44.0
Households	
Number	92
Employed	
Number	86.7
Percentage	94.2%
Jobs per employed household	
Mean	2.0
Minimum	1
Maximum	5
Employed adults	
Mean	
Employed households	1.6
Total households	1.5
Minimum	1
Maximum	2
Mean person-weeks of employment	65.3

Source ADF&G Division of Subsistence household surveys, 2016.

Food Security

Survey respondents were asked a set of questions intended to assess their household's food security, defined as, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2012). The food security questions were modeled after those developed by the U.S. Department of Agriculture (USDA) but modified by ADF&G to account for differences in access to subsistence and store-bought foods. Based on their responses to these questions, households were broadly categorized as being food secure or food insecure following a USDA protocol (Bickel et al. 2000). Food secure households were broken down further into 2 subcategories—high or marginal food security. Food insecure households were divided into 2 subcategories: low food security or very low food security.

Households with high food security did not report any food access problems or limitations. Households with marginal food security reported 1 or 2 instances of food access problems or limitations—typically anxiety over food sufficiency or a shortage of particular foods in the house—but gave little or no indication of changes in diets or food intake. Households with low food security reported reduced quality, variety, or desirability of their diet, but they, too, gave little indication of reduced food intake. Households classified as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen et al. 2012).

Core questions and responses from Denali Park residents are summarized in Figure 2-30. Eight of the 10 statements in the figure are used to calculate a household's food security. In 2015, 14% of households reported that they lacked resources to get food, and 11% reported that at some point throughout the year their food did not last and they could not get more. When asked specifically about subsistence food, 43% reported that it did not last. When similarly asked about store-bought food, 11% responded that it did not last. No households reported worrying about having enough food, and likewise, no households said they had to cut the size of meals or skip meals because of a shortage of food.

Food security results for surveys for Denali Park, the state of Alaska, and the United States are summarized in Figure 2-31. Results from the Denali Park study indicate higher levels of food security when compared to state or national levels. An estimated 100% of households in Denali Park experienced high and marginal levels of food security in 2015. Although it may not apply to every household, a key respondent provided the following statement about subsistence and food security that is representative of the sentiments expressed by several survey respondents: "We would not perish without those resources, but it's a huge part of our diet and a huge part of our pleasure in living here" (020817DEN1).

Figure 2-32 depicts the average number of food insecure conditions reported by households throughout the year and shows that overall Denali Park is a very food secure community. Figure 2-33 shows which months and what percentage of households reported foods not lasting. During November, December, and January, 3% of households reported store-bought foods not lasting (shown in green). Throughout the year, the percentage of households reporting subsistence foods not lasting varied from 1% to 7% (shown in red). Spring, fall, and early winter were the most common months that households reported subsistence foods did not last.

Comparing Harvests and Uses in 2015 with Previous Years

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they used more, less, or about the same amount of 8 resource categories in 2015 as in the past 5 years, and whether they got "enough" of each of the 8 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. This section discusses responses to those questions.

Together, Figure 2-34 and Figure 2-35 provide a broad overview of households' assessments of their harvests in 2015. Because not everyone uses all resource categories, some households did not respond to

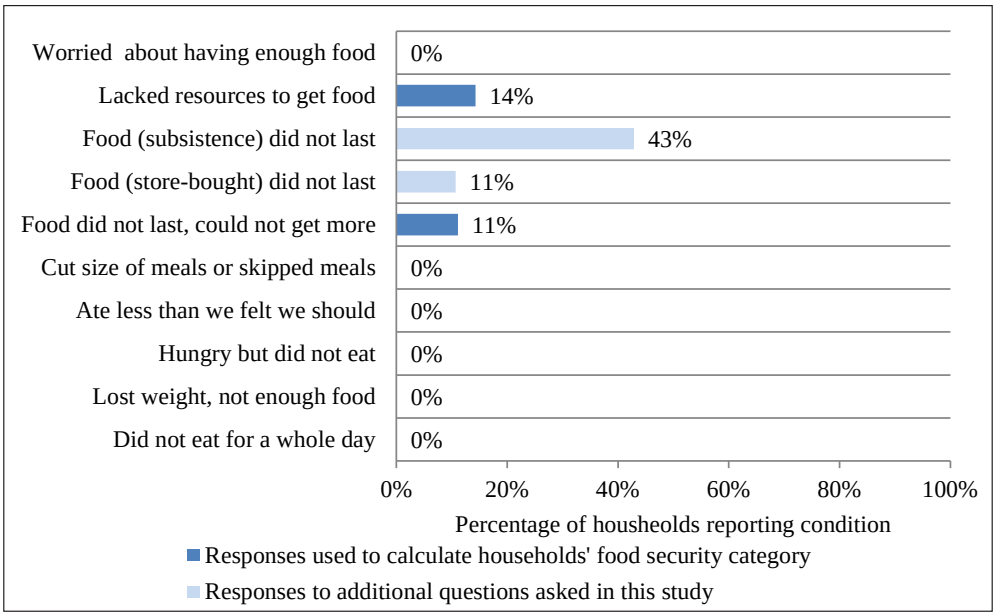


Figure 2-30.–Food insecure conditions, Denali Park, 2015.

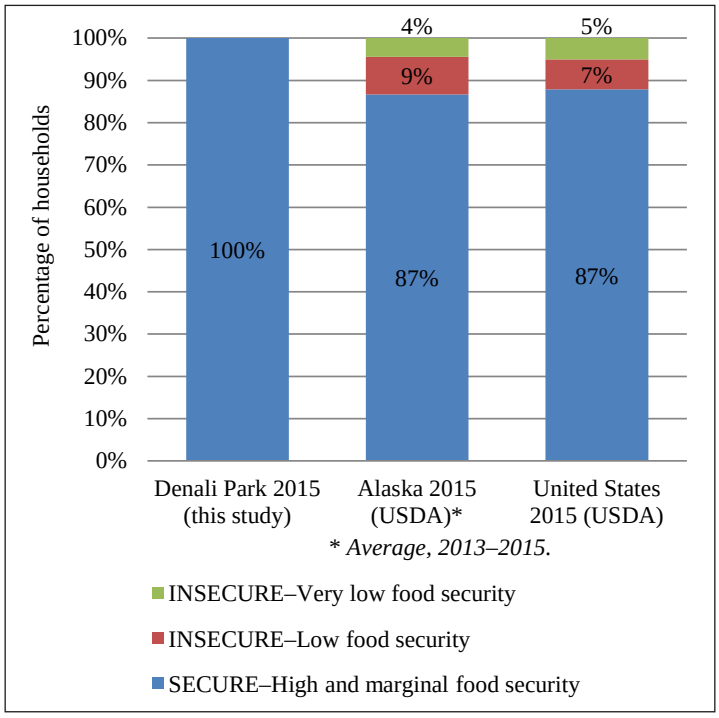


Figure 2-31.–Comparison of food security categories, Denali Park, 2015.

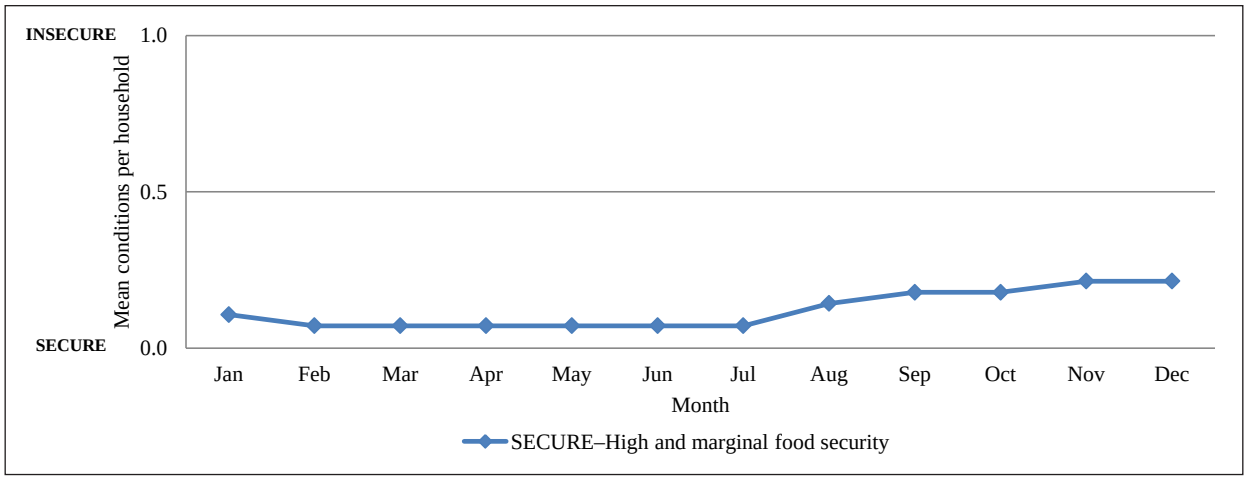


Figure 2-32.–Food insecure conditions by month, Denali Park, 2015.

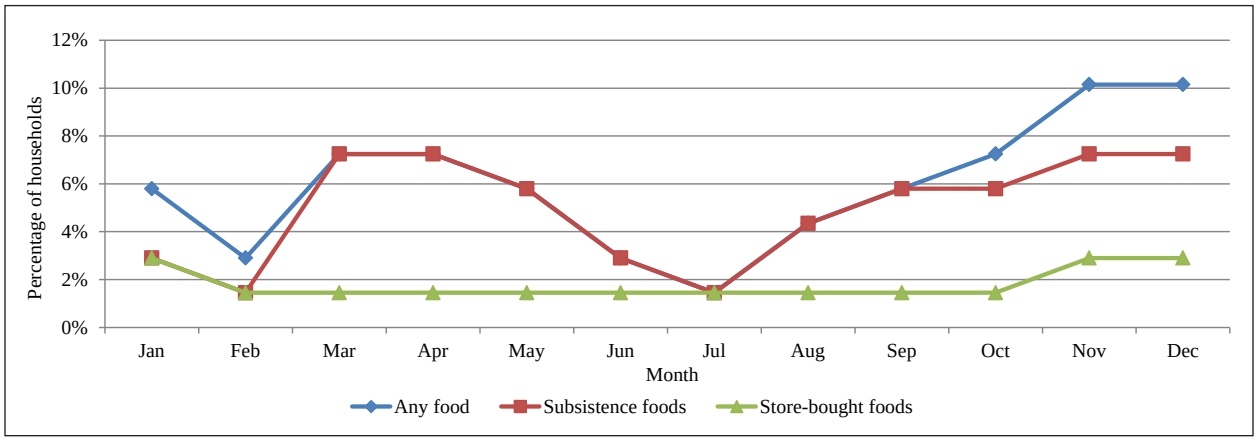


Figure 2-33.–Comparison of months when food did not last, Denali Park, 2015.

the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. Table D2-12 provides additional data to support Figure 2-35.

Slightly over one-half (54%) of households in Denali Park reported that they got enough wild foods in 2015, and 38% reported they did not (Figure 2-34). The 25 households that reported they did not get enough wild foods were further asked to rate the impact it had on their household. The majority of these households said the impact was minor (84%), but 8% reported it was major and 4% said it was not noticeable (Table D2-13). When asked to compare wild food use during 2015 to recent years, 49% of households reported using the same amount, 32% used less, and 17% used more (Figure 2-35). The reasons why households used less or used more of all resources in 2015 were highly varied and can be found in tables D2-14 and D2-15.

Salmon made up the largest portion of the community harvest by edible weight. Forty-one percent of responding households explained that they used the same amount of salmon in 2015 as they did in previous years, 26% reported that they used less, and 25% said they used more (Table D2-12; Figure 2-35). When asked why they used less, 28% of respondents reported that they did so because they were unsuccessful in their harvest attempts (Table D2-14). Other stated reasons for using less salmon included working/no time, less sharing, and lack of effort. For those households that used more salmon in the study year, 53% said it was because of increased harvest effort, 33% attributed it to receiving more, and 27% said it was because they needed more (Table D2-15). In Denali Park, 43% of respondents stated that they did not get enough salmon, more than any other resource (Figure 2-34). When asked to evaluate the impact of not getting enough salmon, 27% described it as not noticeable, and 70% described the impact as minor (Table D2-13).

Vegetation was used by more households than any other resource category, although it contributed fewer edible pounds than salmon to the total community harvest (Table 2-4). Fifty-four percent of surveyed households said they got enough vegetation and 38% said they did not (Figure 2-34). Of households that did not get enough in 2015, 58% said it had a minor impact, 19% said it had a major impact, and 12% said it was not noticeable (Table D2-13). About one-half (49%) of households used the same amount of vegetation in 2015 as recent years, 28% used less, and 16% used more (Figure 2-35). Less resource availability (32% of households) and working/no time (26%) were the 2 most commonly reported reasons for why respondents used less vegetation (Table D2-14).

Nonsalmon fish was another commonly utilized resource in Denali Park. Survey respondents indicated that 45% of their households got enough nonsalmon fish during the study year, and 35% did not (Figure 4-34). The impact of not getting enough nonsalmon was minor for 71% of households and not noticeable for 29% (Table D2-13). Thirty-eight percent of households used the same amount of nonsalmon fish as in recent years (Figure 4-35). Of the 26% of households who reported using less nonsalmon fish, 39% attributed it to less sharing. Other reasons noted for receiving less nonsalmon included working/no time and lack of effort (Table D2-14). One-half of the households reporting more use (50%) said that they used more nonsalmon fish because they needed more (Table D2-15).

Although large land mammals were not widely harvested by Denali Park residents, they were widely used. Just over one-half of resident households (55%) reported getting enough large land mammals, while about 30% of households said they did not (Figure 2-34). Of those who reported not getting enough, 57% described the impact as minor, 14% as major, and 24% as not noticeable (Table D2-13). In 2015, 45% of surveyed households reported using the same amount of large land mammals as in recent years, while 16% said they used more, and 22 % said they used less. The most common reasons households used less included less sharing, unsuccessful harvest, personal/family reasons, and lack of effort (Table D2-14).

If respondents indicated that they did not get enough resources in any given category, they were also asked to identify which resources they needed. A list of all resources households reported needing can be found in Table D2-16. Halibut was the resource needed by the most households (25%). Other commonly needed resources were fish (particularly sockeye salmon), berries, moose, and caribou. These also happen to be the resources that residents used and harvested most frequently (Figure 2-9; Table 2-5).

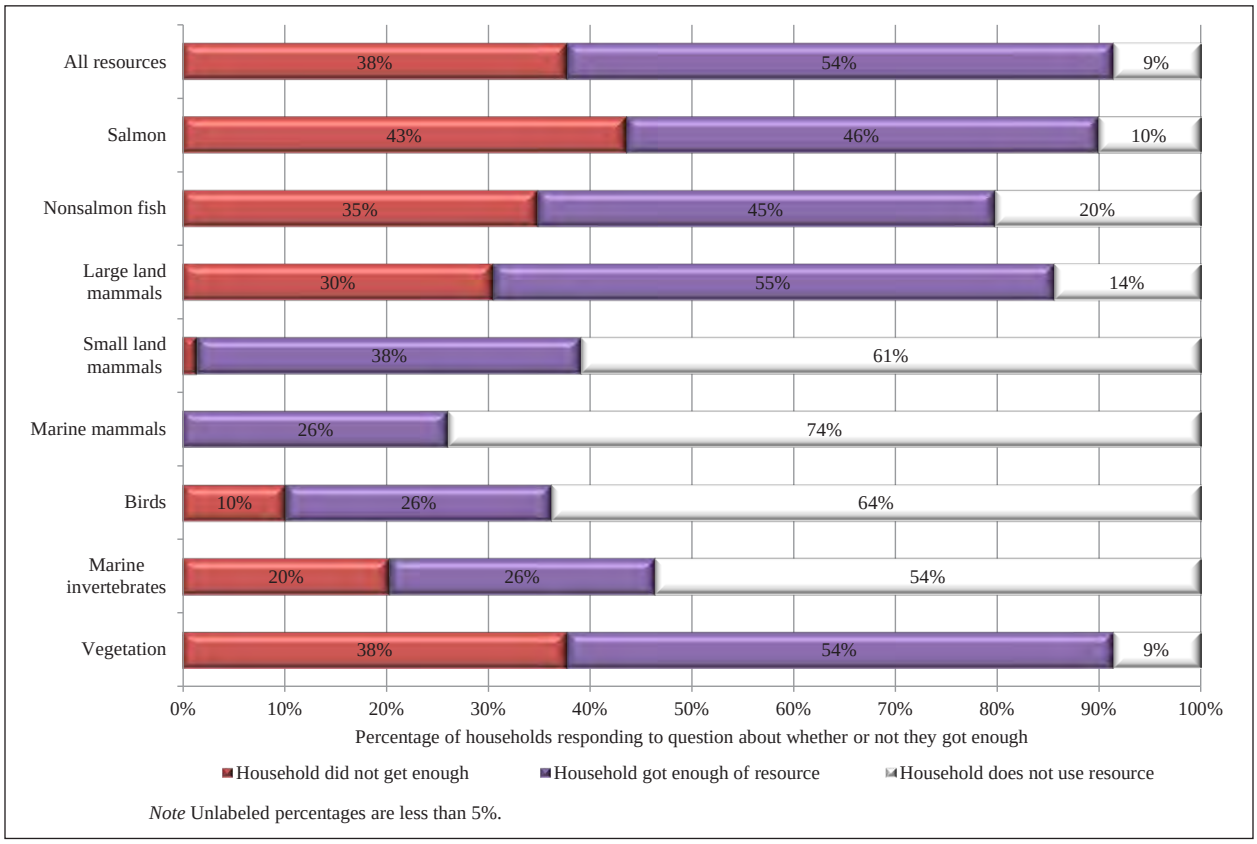


Figure 2-34.–Percentages of households reporting whether they got enough resources, Denali Park, 2015.

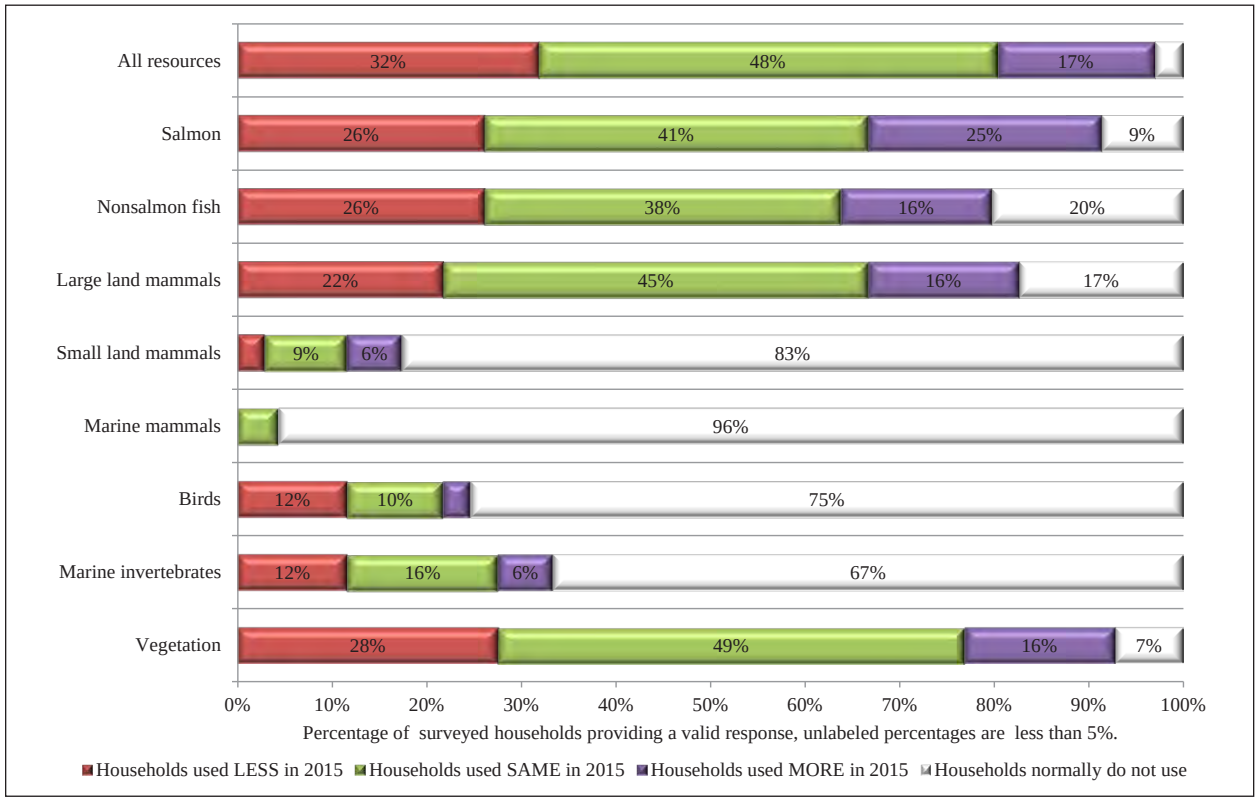


Figure 2-35.–Changes in household uses of resources compared to recent years, Denali Park, 2015.

Harvest Data

Changes in the harvest of resources by Denali Park residents can also be discerned through comparisons with findings from other study years. Denali Park was surveyed as part of the 1987 Nenana Valley Baseline Harvest Profile project. The data from the project is available on the Community Subsistence Information System (CSIS). Although the 2 studies both asked respondents to report their household's harvest and use of wild foods for the study year, the 1987 survey did not record the species of migratory birds, whitefish, or vegetation and instead grouped them into broader categories.

In 1987, the estimated population of Denali Park was 184 people residing in 88 households. Households were identified as high or low harvesters based on harvest ticket data from the year prior and a stratified random sample was drawn from these categories.[14] A total of 60 people and 25 households were surveyed resulting in a 28% sample. The estimated total harvest in 1987 was 44,485 lb of wild foods and 242 lb per capita. The 1987 per capita harvest is significantly higher than the estimate for the 2015 study year, which was 57 lb per capita. In both 1987 and 2015 approximately one-half of employment income was derived from federal government jobs. The most notable difference in employment income sources between the 2 years is from the service industry, which increased to 32% of employment income in 2015 from 9% in 1987.

The harvest composition in 1987 was less diverse than in 2015 (Figure 2-36). In 1987, salmon made up 69% of the harvest by weight in usable pounds, and large land mammals composed an additional 22%. The remaining 9% of the harvest was divided between other resource categories. In 2015, salmon still accounted for the largest portion of the overall harvest (45%), but not by as large of a margin as in the previous study. The large land mammal harvest had the least amount of change, but did decrease slightly between the 2 study years to 17% in 2015. Vegetation, which contributed an almost negligible weight to the harvest in 1987, increased to 21% of the harvest in 2015. Nonsalmon fish, which made up 5% of the harvest in 1987, increased to 15% in 2015.

Figure 2-37 compares the harvest composition for the 2 study years by resource category and pounds usable weight per capita. For all resource categories except vegetation, there was an overall decrease in the number of pounds harvested per capita in 2015. The 2015 survey recorded more detailed information about birds, whitefish, and vegetation than the 1987 study, therefore a comparison of the number of species harvested during each of the 2 study years is not possible. However, in 1987 there were at least 31 different resources harvested in addition to an unknown number of types of berries, ducks, geese, whitefish, and vegetation.[15] The most notable difference in the harvest composition between the 2 years was the species of salmon harvested. In the 1987 study, chum and coho salmon combined to account for 98% of the salmon by weight.[16] In the recent study, sockeye salmon represented 87% of the harvest by weight[17]. One key respondent noted that "some folks used to go up and fish for chum on the Tanana for their dog team" (020817DEN1), a practice that likely no longer occurs. During 1987, a wider variety and much greater number of small land mammals were harvested; suggesting that Denali Park residents were more active in trapping at that time. Moose was widely used in both 1987 and 2015; however, in the former study the moose were actually hunted and harvested by residents. It is unknown if residents also salvaged roadkill in 1987.

Current and Historical Harvest Areas

There are no previous map studies with which to compare the 2015 harvest and use maps.

14. ADF&G CSIS.
15. ADF&G CSIS.
16. ADF&G CSIS.
17. ADF&G CSIS.

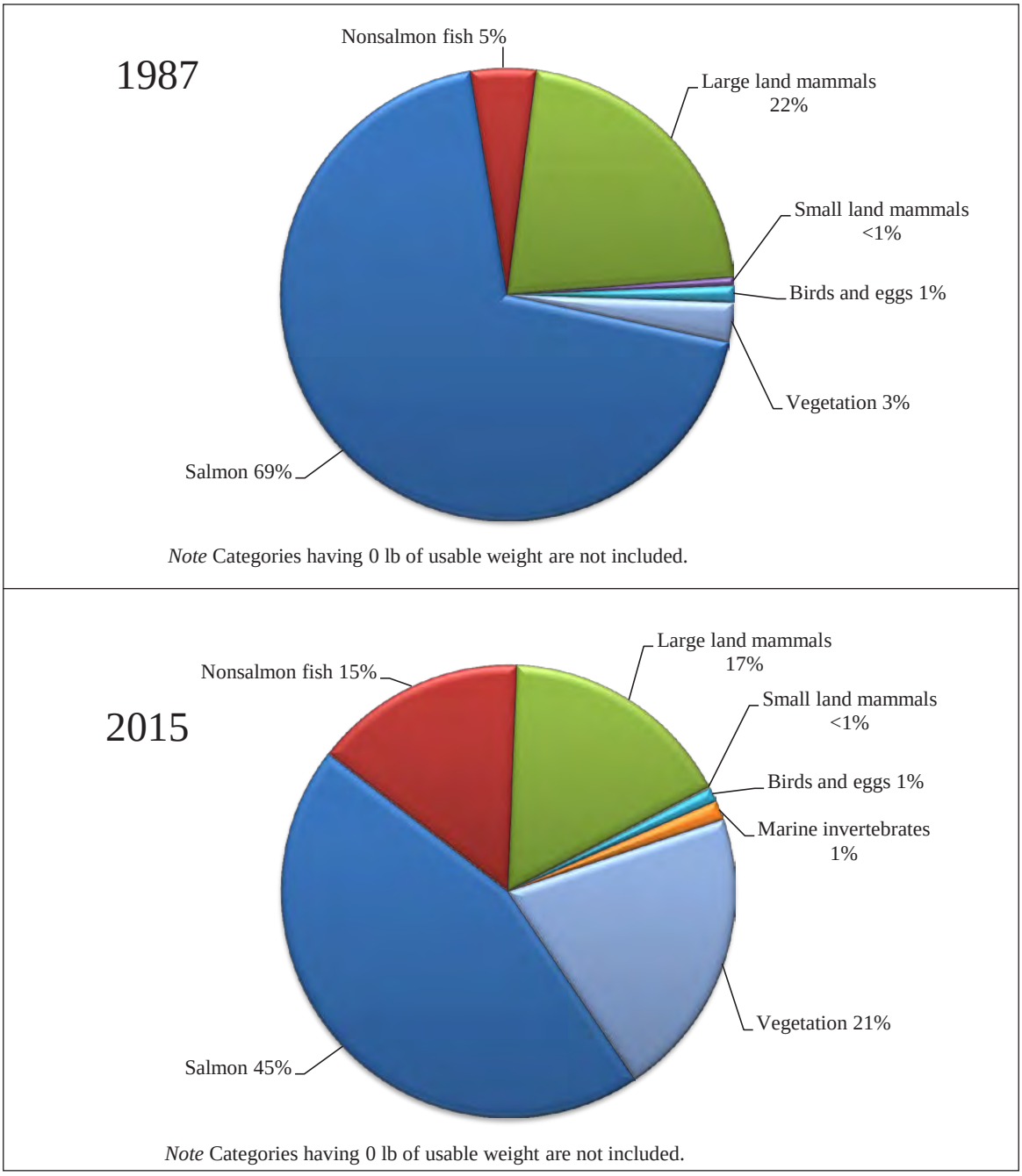


Figure 2-36.–Composition of harvests by edible weight, Denali Park, 1987 and 2015.

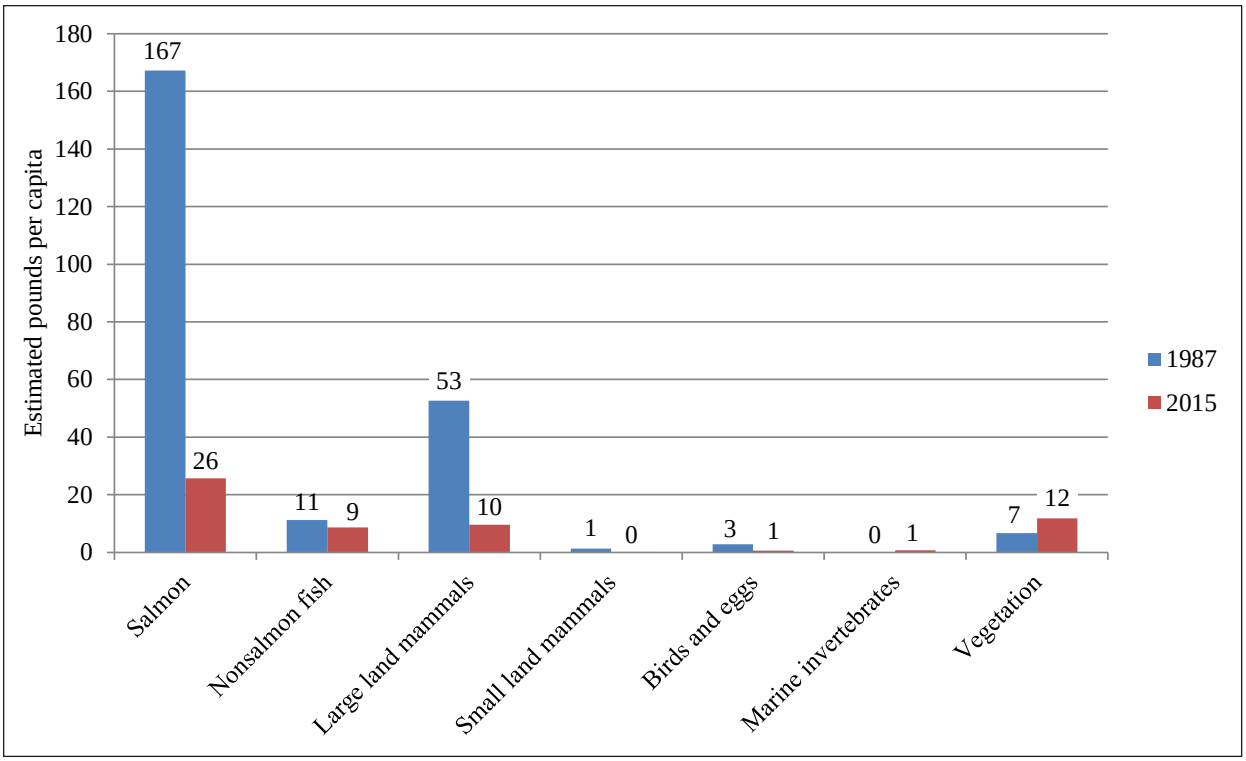


Figure 2-37.–Comparison of per capita harvests by category, Denali Park, 1987 and 2015.

Local Comments and Concerns

Following is a summary of local observations that were recorded during the surveys. Some households did not offer any additional information during the survey interviews, so not all households are represented in the summary. Thirty-two of 69 surveyed households provided comments during their surveys. In addition, respondents expressed their concerns about wild resources during the community review meeting of preliminary data. These concerns have been included in this summary.

Eighteen respondents expressed concerns about the proposed LNG pipeline development project. Concerns focused on a variety of issues related to potential negative impacts to wildlife and wilderness character, especially if the pipeline is routed through the Yanert Fork drainage. Specifically, residents noted that access roads and gravel pits will be detrimental to important wildlife habitat and migration corridors, as well as lead to an increase in hunting pressure on moose and Dall sheep by outsiders and construction workers. Respondents also expressed concerns regarding the safety of transporting liquid natural gas in a pipeline through the Alaska Range. One key respondent summarized a number of these concerns:

> I really think it's a bad idea to have it cross the biggest strike-slip fault in North America that's right down here. You know, we have earthquakes all the time. And some of them are big, 7.9. I just think that sounds frightening and it's not going to benefit any of these little communities. I mean supposedly the overall income to the state, but I don't know that I believe in that trickle down. I think the income is going to go to the producers and the Asian markets. And I think it's a compromise; this is a scenic corridor and it already had the railroad here. It has the busiest highway in Alaska, a transportation corridor that already has taken a hit. And I think that to have a pipeline here really compromises that aesthetic value and it's asking a lot of this community, who are here for aesthetic value, just to absorb a hit like that when it's not going to provide them anything except for a little bit of loss of sleep thinking about the next earthquake. I mean that's a serious consideration. And I think people feel like why not just take it down the TAPS corridor and not

> have it compromise this scenic byway that's hugely important for tourism and a transportation corridor. I think the roads and the gravel pits and the compressor stations and all of that would be just not even incremental but a big impact on not only the wilderness value but on the wildlife. Now the Yanert is just such an important wildlife corridor for a lot of animals from the Park. I think anything that promotes more development along the Yanert and the Nenana, all the gravel pads and construction and stuff, I think the construction will be a huge impact to wildlife. And noise pollution, I think it's a serious consideration. With the summer with flightseeing it's one thing, but when you have gravel trucks and compressor stations…So I'm not a real big fan of it. I mean I just really hope that if it happens that it does go down the TAPS corridor. (020817DEN1)

Currently, motorized access is not permitted in the Yanert Controlled Use Area (YCUA) which makes up a portion of Game Management Unit 20A. Thirteen respondents provided comments regarding their desires for the YCUA to remain nonmotorized; some residents were particularly strident on this point.[18] Many respondents felt that the nonmotorized rule helps protect the wilderness quality of the area, prevents motorized user conflicts with dog mushers and skiers who recreate there, and helps protect moose and other wildlife populations from overharvest. A few survey respondents noted issues with nonlocal hunters accessing the YCUA illegally by motorized vehicles. One key respondent described local support for keeping the area nonmotorized when proposals before the Board of Game have sought to change that:

> Two years in a row Fairbanks Advisory Committee put in a proposal to open up this area for motorized hunting…and I got wind of it and one year, the very first time they made the proposal was in a cycle where it wasn't addressing interior issues. So I think they thought they'd be able to slip it in under the rug. And when I saw it in the [proposal] book I'm like, "Whoa!" and it didn't take long for this community to stand up and say "No way!"…Then the following year the proposal came around again when it was in the Interior cycle and there was a huge turnout and support to keep it nonmotorized. (020817DEN1)

When further asked why it is important to keep the area nonmotorized, the same respondent described:

> I think a lot of people here really want to see the resource protected and it's not hard to see the damage that 4-wheelers and all that motorized stuff does. And the hunting season here in September, the ground's not frozen and often it's rainy, and boy, it doesn't take many of those things to just hammer the vegetation and the trails and stuff. So I think there's a real strong resistance because the habitat, to try and protect the habitat. And it's not necessarily because they're trying to protect their hunting grounds, it's just that they're trying to protect the habitat. They really appreciate that. I think this community has a pretty high regard for the ecosystem and stewardship and it's important. (020817DEN1)

Several respondents noted that the ability to harvest wild foods is something they highly value, but that it is more of a life choice than an inability to purchase store-bought food. Another commonly reoccurring theme in survey comments was a clear value for nonconsumptive uses of wild resources: many respondents gave equal importance to wildlife viewing and hunting. At least 4 respondents noted that they were against predator control and would like to see the wolf buffer in the Stampede Corridor reinstated. Others raised concerns for the Dall sheep population in the area and hoped for additional monitoring to understand the impacts of climate change and frequent air traffic on their numbers.

18. Survey comment

Conclusions

Through both household surveys and ethnographic interviews, this study recorded information about Denali Park residents' subsistence practices. Although the majority of residents have jobs or other sources of income that do not require them to be dependent on subsistence foods, the harvest of wild resources is still important to many households. This is evidenced by the variety of resources that residents used throughout 2015. Harvest of berries and other vegetation is a particularly popular local subsistence activity that residents easily pair with the other types of outdoor recreation that they enjoy. Residents commonly travel to Southcentral Alaska to fish for salmon or other marine species, and they occasionally sport fish locally. Some residents do hunt, but many are able to meet their needs through the salvage of roadkill moose and caribou, which is plentiful along the Parks Highway.

Acknowledgements

The Division of Subsistence would like to express its sincere gratitude to the residents of Denali Park who participated in this survey and helped us meet our research goals. In particular, we are extremely grateful for the help of our enthusiastic and hospitable local research assistants, Nan Eagleson and Erica Watson.

3. FERRY

Chris McDevitt

In March and April of 2015, 2 researchers and 1 local research assistant conducted subsistence harvest surveys with 14 of 18 eligible households in the community of Ferry, Alaska (78%; Table 1-4; Figure 3-1). Expanding for the 4 uncontacted households, the estimated total harvest for the community during the 2015 calendar year was 4,573 lb (Table 3-1). Per household and per capita harvests were estimated to be 254 lb and 111 lb, respectively (Table 3-2).

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

In addition to the comprehensive survey, researchers conducted ethnographic interviews with 3 Ferry residents. During the interviews, the respondents provided researchers with invaluable qualitative information including local history and changes over time as they pertain to the community's subsistence activities. This information helps to contextualize the quantitative harvest and use data collected in the surveys.

To respect and protect household anonymity and confidentiality, and due to the small size of the community, search and harvest maps for specific resources will not be provided for this community.

Community Background

From its origin at the Nenana Glacier in the eastern Alaska Range, the turbid water of the Nenana River flows northward 150 miles to its confluence with the Tanana River. Approximately 96 miles downstream from its source at the Nenana Glacier, the river dissects the community of Ferry (Plate 3-1).[2] Ferry sits at approximately 1,100 ft elevation, 20 miles south of the entrance to Denali National Park and Preserve. The community is located within the upper Nenana Basin and is flanked on either side by the north central foothills of the Alaska Range. Ferry sits within an area characterized as an ecotone, a region of transition from low-lying river valley taiga to an alpine ecosystem. The glaciated foothills to the east and west of Ferry form the northern fringes of the Alaska Range's "Outer Range" (Plate 3-2; Capps et al. 2016). Immediately north of Ferry, the landscape is typical of Interior Alaska and is largely dominated by boreal forests interspersed with wetlands, and hills of varying heights. South of Ferry, the landscape gains considerable elevation as the valley gives way to the high granite peaks of the Alaska Range.

The area in and around Ferry has experienced varying degrees of occupation for thousands of years (see Introduction chapter). The primary impetus for occupation has always been resource extraction in one form or another. During the early part of the 20th century, miners settled in the area to take advantage of recent discoveries, and market hunters followed to support the mining camps. During this time, Tom Strand and his family homesteaded in the Nenana River valley at Ferry, which was known at the time as "Nenana River" (Heiner 1977:235). Strand (also known as "Tom Savage") was part Snohomish Indian, and came to Alaska from Washington state after being lured north by news of gold found in the Klondike. He worked as a prospector, trapper, mail-carrier, and wood cutter, and he was well known for his hunting skills (Walker 2006:79). While Strand and others prospected in the Kantishna country, approximately 50 miles east of Ferry, Strand was often tasked with supplying meat for the mining camps. Eventually, he made the shift from part-time miner to full-time market hunter. Strand worked in the business for over 20 years, supplying

1. Alaska Department of Fish and Game (ADF&G) Division of Subsistence, Juneau. "Community Subsistence Information System: CSIS." https://www.adfg.alaska.gov/sb/CSIS. Hereafter *ADF&G CSIS*.
2. Google earth V 7.1.2.2041. "Ferry, Alaska." 64° 00 '22.53" N and 149° 05' 51.21" W. Landsat/Copernicus July 20, 2015. Google 2016, DigitalGlobe 2016. Accessed March 13, 2017.

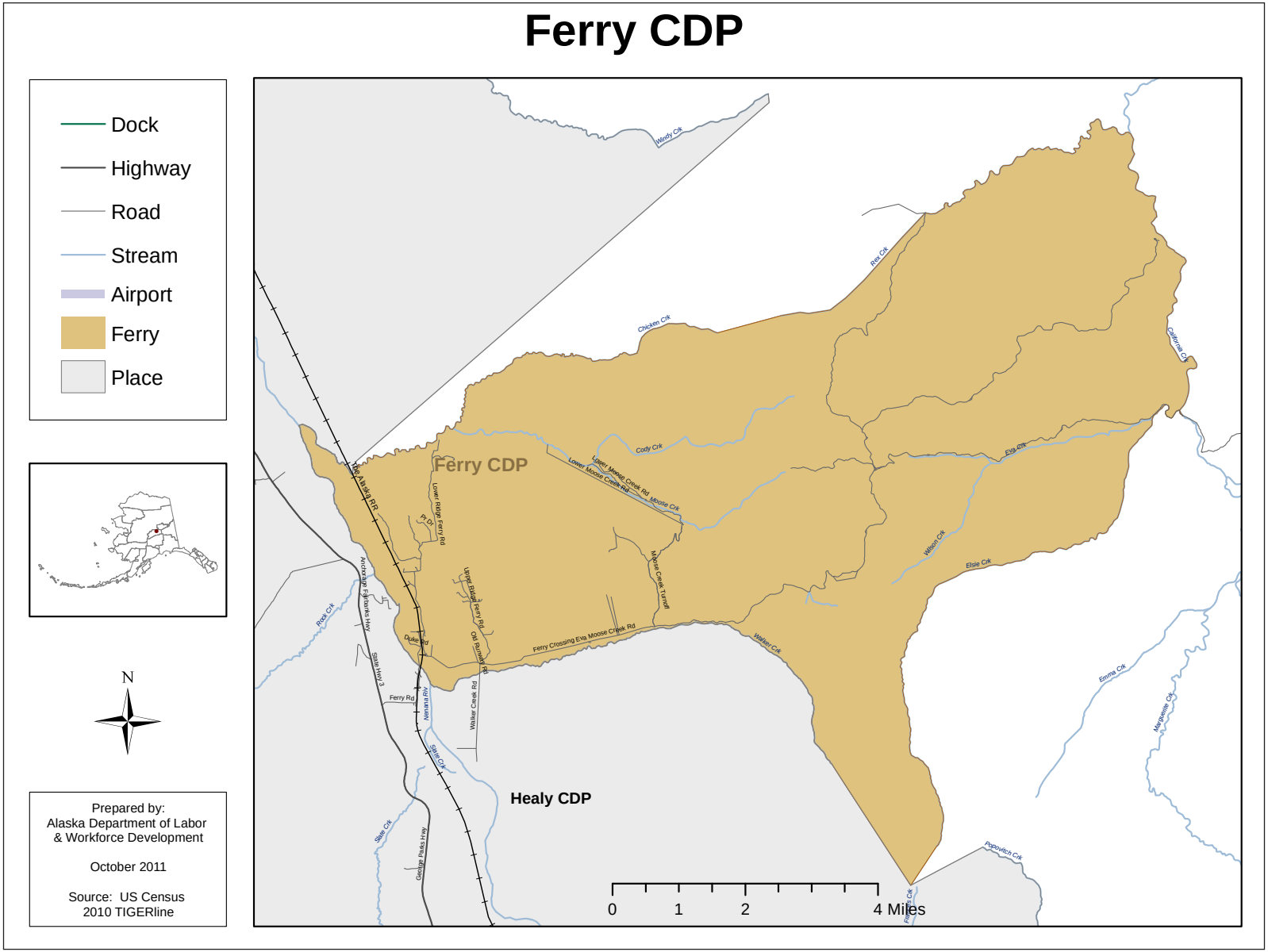


Figure 3-1.–Ferry Census Designated Place (ADLWD 2011).

Table 3-1.–Resource harvest and use characteristics, Ferry, 2015.

Characteristic	
Mean number of resources used per household	**10.7**
Minimum	3
Maximum	25
95% confidence limit (±)	18.5%
Median	9.5
Mean number of resources attempted to harvest per household	**10.1**
Minimum	1
Maximum	26
95% confidence limit (±)	20.4%
Median	8.5
Mean number of resources harvested per household	**9.0**
Minimum	1
Maximum	24
95% confidence limit (±)	21.3%
Median	7.0
Mean number of resources received per household	**1.8**
Minimum	0
Maximum	4
95% confidence limit (±)	20.0%
Median	1.5
Mean number of resources given away per household	**2.6**
Minimum	0
Maximum	11
95% confidence limit (±)	34.9%
Median	1.5
Household harvest (lb)	
Minimum	1
Maximum	745
Mean	254.0
Median	150.5
Total harvest weight (lb)	4,572.8
Community per capita harvest (lb)	111.1
Percentage using any resource	100%
Percentage attempting to harvest any resource	100%
Percentage harvesting any resource	100%
Percentage receiving any resource	86%
Percentage giving away any resource	71%
Number of households in sample	14
Number of resources asked about and identified voluntarily by respondents	120

Source ADF&G Division of Subsistence household surveys, 2016.

Table 3-2.–Comparison of selected findings, Ferry, 2015.

Category	Community Ferry
Demography	
Population	41.1
Percentage of population that is Alaska Native	0.0%
Percentage of household heads born in Alaska	8.7%
Average length of residency of household heads (years)	25.3
Cash economy	
Average number of months employed	5.4
Percentage of employed adults working year-round	46.2%
Percentage of income from sources other than employment	9.2%
Average household income[a]	$51,568
Per capita income[a]	$22,561
Resource harvest and use	
Per capita harvest (lb)	111.1
Average household harvest (lb)	254.0
Number of resources used by 50% or more households	6.0
Average number of resources used per household	10.7
Average number of resources attempted to be harvested per household	10.1
Average number of resources harvested per household	9.0
Average number of resources received per household	1.8
Average number of resources given away per household	2.6
Percentage of total harvest taken by top 25% ranked households	57.8%
Percentage of households that harvested 70% of harvest	28.6%
Per capita harvest by lowest ranked 50% of households (lb)	17.2
Percentage of total harvest taken by lowest ranked 50% of harvesting households	15.4%
Average number of resources used by lowest ranked 50% of households	7.8
Average number of resources used by top 25% ranked households	15.3

Source ADF&G Division of Subsistence household surveys, 2016.

a. Includes income from sources other than employment.

wild game meat to miners working in and around the many claims scattered throughout the Kantishna and Bonnifield districts west and east of Ferry, respectively. According to one source, Strand allegedly "killed 120 rams in one fall in cliffs along the Nenana River" (Walker 2006:79). Despite the ironic circumstances (see Introduction chapter), Strand's legacy continues today: the Savage River in Denali Park was named for him (Bryant 2011:51). Strand's grave marker can still be found in Ferry just west of the Nenana River railroad bridge. During the study, a longtime Ferry resident mentioned that the Strand family remained in the area until 1983 or 1984 (Ferry03301601).

Ferry was listed as a "railroad station" in a 1922 publication. At the completion of the Alaska Railroad in 1923, the railroad work camp at Ferry became a permanent settlement for miners, market hunters, and others. A post office was established in 1925 (Orth 1971rep.). Miner and roadhouse proprietor Valentine Dielbold acted as postmaster 1931–1942 (Tewkesbury and Tewkesbury 1947:18). Ferry's population during the years following establishment largely comprised "miners and prospectors" and "several employees of the Alaska Road Commission." The community also hosted a grocery store (Alaska Directory Co. 1935:108).

DeVere Pieschl traveled south to Ferry in the mid-1970s to look at a piece of property, which he subsequently purchased: "Bought the place with a couple other people back in 1976, but I did not move here to Ferry until '83. And when I first looked at the place in 1975, there wasn't a soul around here" (Ferry03301601).

Plate 3-1.–Former Diebold cabin, built ca. 1910 in Ferry.

Plate 3-2.–Ferry Hills, directly east of the community.

As Pieschl explained during an interview, aside from a few members of the Strand family who lived on the opposite side of the river from his cabin, there was "just nobody here, you know, to speak of" (Ferry03301601). According to Pieschl, the hand-hewn log cabin he had purchased was built in the early 1900s (Plate 3-1).

Plate 3-3.–The former Ferry post office was built around 1910 and is currently used as a bar and lounge.

Today, the cabin is straddled by 2 outbuildings. The original Ferry post office, built in 1910, is south of Pieschl's cabin (Plate 3-3). The building has since been transformed into a community pool hall, featuring a bar and lounge area. A train car used as a cabin sits on the north side of Pieshcl's cabin: just one of several pieces of equipment that had been shipped north to aid in building the Alaska railroad.[3] The car was previously used during the building of the Panama Canal (Plate 3-4).[4]

Pieschl explained that Ferry's close proximity to the Nenana River causes some misconceptions as to the origin of the community's name. He offered his own version of the story during an interview:

> There was a post office here and they actually accommodated quite a few miners. They would come in on the train and get off here and it got its name Ferry. People think there was a vessel across the river. Well that never happened, but Ferry was called that because there was a freight wagon and a team of horses. And the railroad would bring miners and supplies in, drop 'em off in Ferry and then these horses with a team would haul 'em in a wagon up into the various places in the hills and that is how it got its name. Everybody thinks there was a ferry or something across that river. But, naw, never. At one time there was some kind of a, I don't know what you call it, some kind of a cable line that went across the river but there was never a craft of any kind… (Ferry03301601)

Plate 3-4.–This train car, currently used as a cabin, was originally sent from the Panama Canal to aid in construction of the Alaska Railroad

3. Combs, John. "Alaska Engineering Commission (1914–1923)." Accessed March 13, 2017. http://www.alaskarails.org/historical/construction/menu.html
4. C. McDevitt field notes.

Plate 3-5.–A trestle bridge with a catwalk connects the two sides of Ferry.

The community of Ferry, itself a byproduct of infrastructure development, has witnessed several other major projects within the state. The Parks Highway, completed in 1971, was built to provide a more direct route between Fairbanks, the Matanuska-Susitna Valley, and Anchorage. In so doing, the highway connected several other Interior communities to the road system, including Ferry (Plate 3-5).[5]

The Eva Creek Wind Farm, situated in the Ferry Hills approximately 10 miles east of the community, is the largest of its kind in Alaska (Plate 3-6). The project was completed in 2012 and consists of 12 towers spread across 170 acres. Together, the turbines are capable of producing 26.4 megawatts of power.[6] Full commercial output began in January of 2013. According to Golden Valley Electric Association (GVEA), the owner and operator of the wind farm, "…the 93 million dollar project has already reduced its [GVEA's] dependence on oil by the equivalent of 1.3 million gallons of diesel fuel in its first quarter of operation."[7]

The wind farm project was met with concern by some local residents. This mainly had to do with the amount of congestion the project created. In what seemingly occurred "overnight," according to some residents, hundreds of workers, various pieces of construction equipment, and dozens of vehicles moved into town, working around the clock for months at a time.[8] According to one resident, the construction traffic sometimes created unsafe conditions for community members. Others noted, however, that the crews were very safety-oriented and respectful of the community.[9] Every piece of equipment that was not brought by rail came by road; each had to pass through the small community at one time or another, and often several times. In order to provide year-round access to the wind farm, the Ferry Trail, a foot trail once used by miners to access their diggings east of Ferry, has since become a 2-lane gravel road which extends 10 miles into the foothills. GVEA maintains the road throughout the winter to allow maintenance personnel access to the wind farm.

According to one Ferry resident "…the wind farm changed everything for the good and the bad" (Ferry03311602). The same respondent indicated that their household had to make sacrifices in regards to their subsistence activities (to be further discussed in the Local Comments and Concerns section). Another resident noted a positive outcome of the wind farm: "I received power in my homestead here two years ago [as a result of the wind farm]. And it did change a lot you know. You start out by buying a toaster" (Ferry03301601).

5. Alaska Department of Transportation and Public Facilities. "Alaska's Scenic Byways: Parks Highway." Accessed March 13, 2017. http://www.dot.state.ak.us/stwdplng/scenic
6. 26,400,000 watts
7. Arctic Council. 2015. "Eva Creek Wind Farm, Ferry, AK, USA." Accessed February 6, 2017. http://www.arctic-council.org
8. C. McDevitt field notes.
9. Capps, Kris. September 3, 2012. "Eva Creek Wind Farm project transforms small Interior Alaska Community." Fairbanks Daily Newsminer. Accessed February 6, 2017. http://www.newsminer.com/

Plate 3-6.–Eva Creek windfarm, southeast of Ferry.

Today, Ferry residents use the post office in Healy, 10 miles to the south. Gas and lodging options can also be found in Healy. Ferry is connected to the road system via the Ferry Road at mile 259 of the George Parks Highway, approximately 100 miles south of Fairbanks. Ferry is one of only a handful of Alaska communities that does not support a runway, but it can be reached via road, rail, or river. The community lies on either side of the Nenana River, and the 2 portions are connected by a railroad trestle bridge.[10]

Seasonal Round

In 2015, Ferry households conducted their subsistence activities during the appropriate seasons, in accordance with state and federal regulations. Households that fished did so throughout the summer, and those that picked berries did so during the late summer. Large game hunting and bird hunting occurred in the fall, and trapping occurred throughout the winter. Upland game birds were also harvested during the winter. With the exception of collecting birch sap and firewood, residents did not report participating in subsistence activities during the spring.

Ferry subsistence users focused their search and harvest efforts in the immediate vicinity of the community as well as areas east and west of the Parks Highway (Figure 3-2). The western extent of search and harvest areas included portions of the Teklanika River drainage north of Healy. The eastern extent included areas within the Ferry Hills, approximately 10–15 miles east of the community. Fewer residents focused their efforts northwest of the community of Nenana, along the Nenana River corridor. In addition, some residents travelled to the Kenai and Chitina rivers, Valdez, and Prince William Sound.

Population Estimates and Demographic Information

The study estimated Ferry's 2015 population to include a total of 41 residents (Figure 3-3; Table D3-1). The 2010 census listed Ferry's total population at 33 residents; the 2000 population was slightly lower at 29 residents (Figure 3-4). The highest recorded population was in 1990 with 56 residents. It is important to note that a large census boundary change occurred in the Denali Borough between the 1990 and 2000 censuses (ADLWD 2016:Chapter 4). This boundary change significantly decreased the original census designated place (CDP) within the borough thereby impacting the total population for Ferry. According to a Department of the Interior report from 1967, Ferry's total population comprised 31 residents (Orth

10. For more information concerning the railroad trestle, see Shattuck, H. 2007. "Is a full moon rising over Ferry, Alaska?" Houston Chronicle. Accessed February 6, 2017. http://www.chron.com/life/travel/

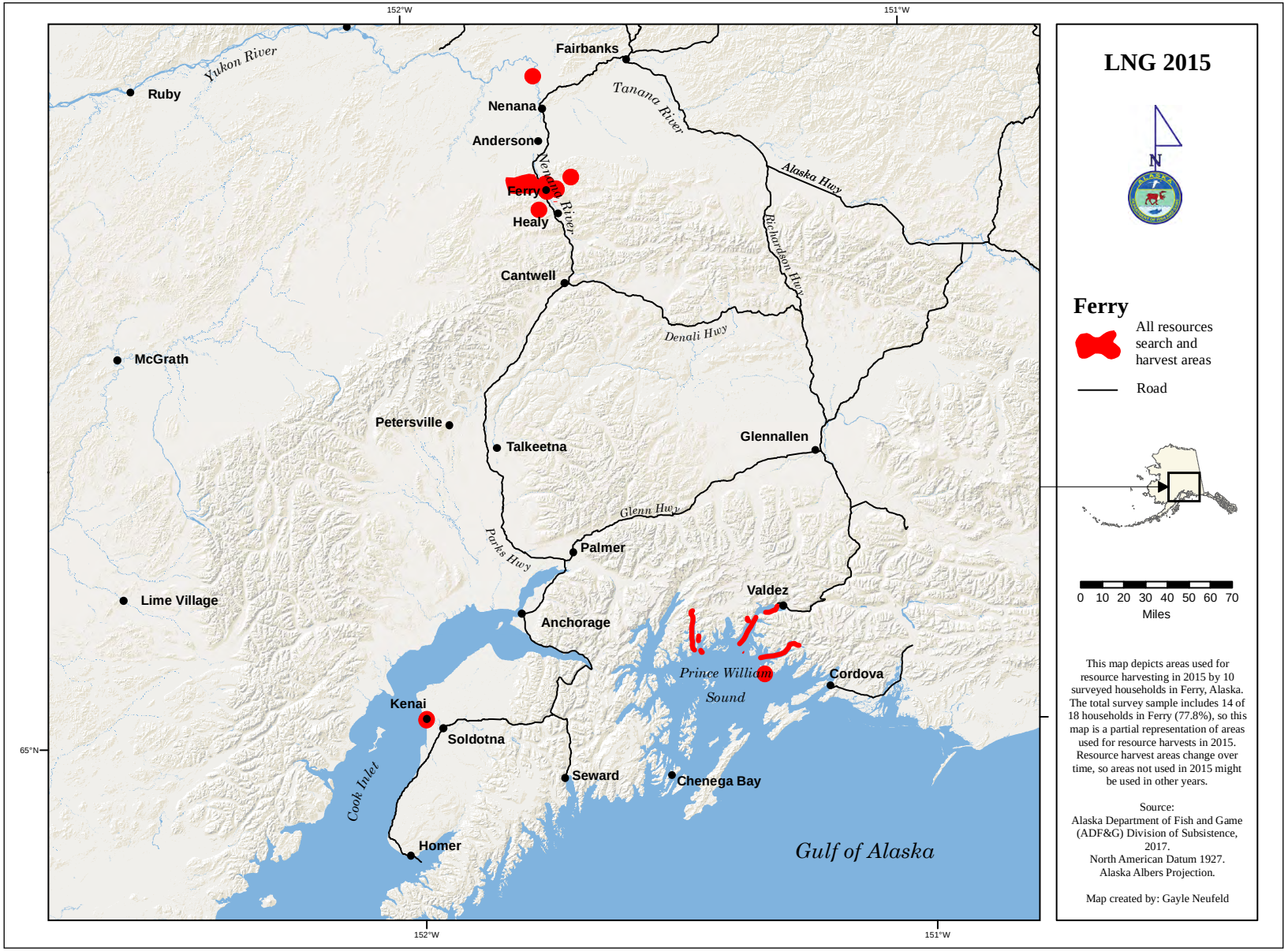


Figure 3-2.–All resources search and harvest areas, Ferry, 2015.

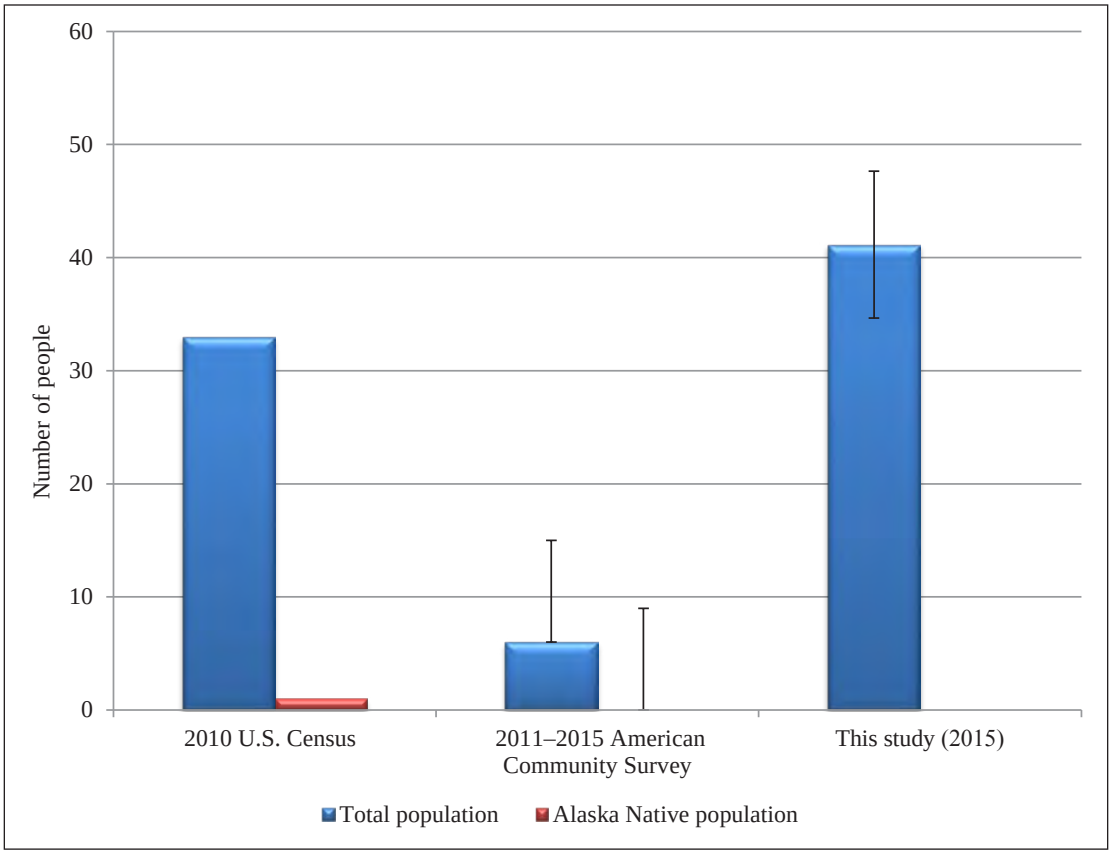


Figure 3-3.–Population estimates, Ferry, 2015.

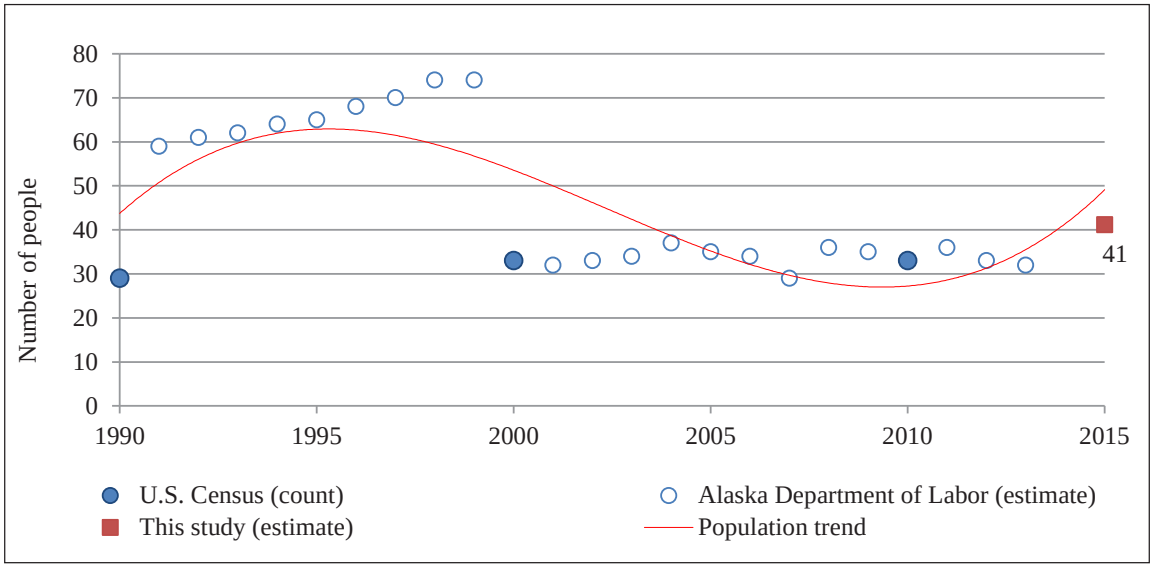


Figure 3-4.–Population estimates, Ferry, 1990–2015.

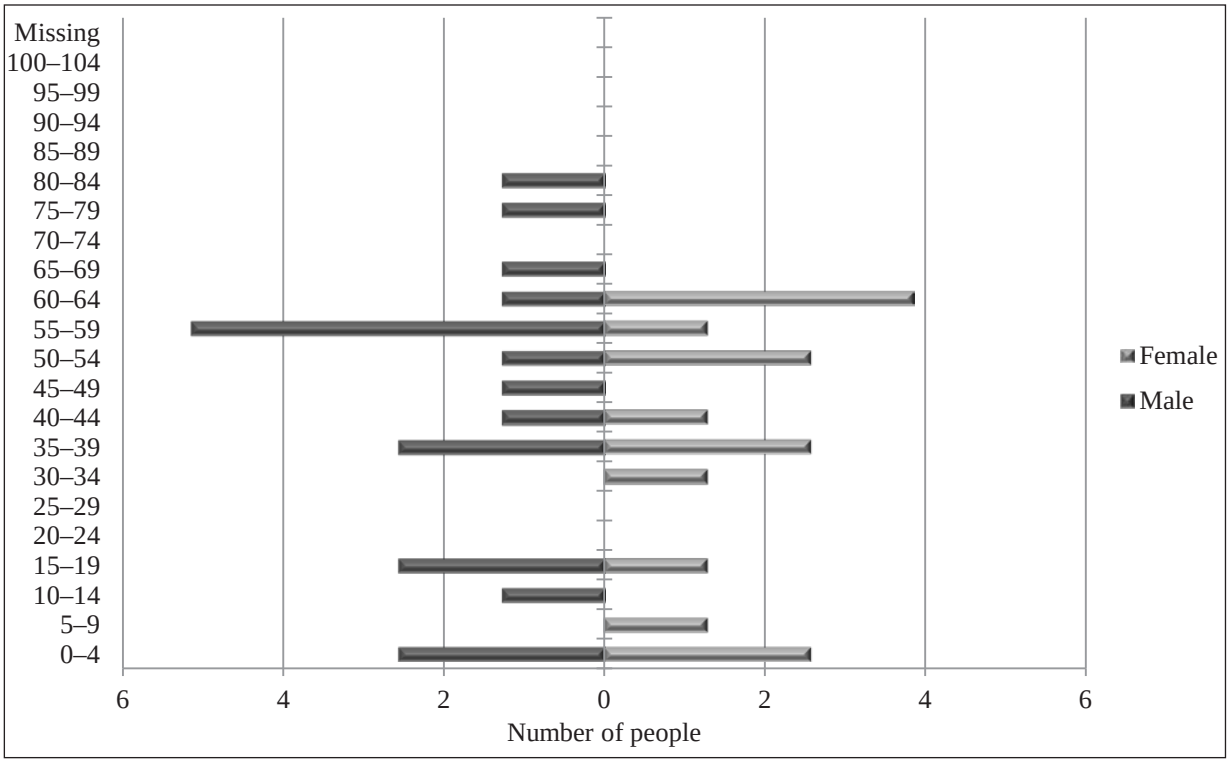


Figure 3-5.–Population profile, Ferry, 2015.

1971rep.). No population information exists between the 1950s and the 1980s.[11] The 1940 population included 31 residents, and a 1935 publication listed Ferry as having 26 residents during "1934–1935" (Alaska Directory Co. 1935). Comparing population size for all years, the community experienced growth since the first population records. These increases amounted to a 58% overall population growth between 1935 and 2015.

In 2015, male residents accounted for 56% of the total population, with 23 males to 18 females (Figure 3-5; Table D3-2). In the 55–59 age range, males accounted for 80% of the population. This age group contained the highest number of males, as well as people in general, for all age ranges. The 60–64 age group, however, was 80% female. The 0–4 and 35–39 age ranges each had the same number of females and males (3).

There were no Alaska Natives living in Ferry in 2015 (Table 3-3). The average household size was 2 people, and the average age among Ferry residents was 41years old. The average lengths of residency for both the population and household heads were 20 and 25 years, respectively (tables 3-3 and D3-2).

Most household heads were born elsewhere in the United States (87%; Table 3-4). Of the remaining household heads only 8% were born in Alaska; one-half of whom were born in Ferry. Of Ferry's entire population, 63% were born elsewhere in the United States, and 3% indicated that they were born outside of the U.S. (Table D3-3). The rest of the population was either born in Ferry (22%) or elsewhere in Alaska (13%).

Summary of Harvest and Use Patterns

Individual Participation in the Harvesting and Processing of Wild Resources

There is no individual participation information available for Ferry resident harvest and use in 2015.

11. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed February 7, 2017 http://commerce.alaska.gov/dcra/DCRAexternal

Table 3-3.–Sample and demographic characteristics, Ferry, 2015.

Characteristics	Community Ferry
Sampled households	14
Eligible households	18
Percentage sampled	77.8%
Sampled population	32
Estimated community population	41.1
Household size	
Mean	2.3
Minimum	1.0
Maximum	5.0
Age	
Mean	40.7
Minimum[a]	0
Maximum	82
Median	45.0
Length of residency	
Total population	
Mean	20.3
Minimum[a]	0
Maximum	41
Heads of household	
Mean	25.3
Minimum[a]	2
Maximum	41
Alaska Native	
Estimated households[b]	
Number	0.0
Percentage	0.0%
Estimated population	
Number	0.0
Percentage	0.0%

Source ADF&G Division of Subsistence household surveys, 2016.
a. A minimum age of 0 (zero) is used for infants who are less than 1 year of age.
b. The estimated number of households in which at least 1 head of household is Alaska Native.

Table 3-4.–Birthplaces of household heads, Ferry, 2015.

Birthplace	Percentage
Ferry	4.3%
Other Alaska	4.3%
Other U.S.	87.0%
Foreign	4.3%

Source ADF&G Division of Subsistence household surveys, 2016.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Harvest and Use of Wild Resources at the Household Level

Figure 3-6 shows by resource category the percentages of households that used wild resources, attempted to harvest, and harvested wild foods. In 2015, 100% of Ferry households used, attempted to harvest, or successfully harvested one or more resources. Vegetation was the most used wild food group among Ferry households (100%), and it was also the most actively pursued; 100% of households attempted to harvest vegetation, and 93% reported successful harvests. There was also wide use of large land mammals (93%) and salmon (79%) among households. Over one-half (57%) of Ferry households attempted to harvest large land mammals or salmon. Although that same percentage (57%) of households reported successful salmon harvests, only 7% reported successful large land mammal harvests. At least 50% of households used and attempted to harvest wild foods from 5 of 8 resource categories.

Ferry households harvested an average of 254 lb of wild foods in 2015 (Table 3-1). There was a maximum household harvest of 745 lb and a minimum harvest of 1 lb. In all, 120 different types of wild foods were discussed between researchers and household respondents. These included wild foods that were asked about by researchers directly as well as those that were voluntarily identified by respondents. On average, households used 11, attempted to harvest 10, and successfully harvested 9 specific resources. Households shared an average of 3 resources, and received an average of 2 resources. The maximum amount of resources used by households was 25, and the minimum was 3.

Harvest Quantities and Composition

Table 3-5 reports estimated wild resource harvests and uses by Ferry residents in 2015 and is organized first by general category and then by species. All edible resources are reported in pounds edible weight (see Appendix C for conversion factors). The harvest category includes resources harvested by any member of

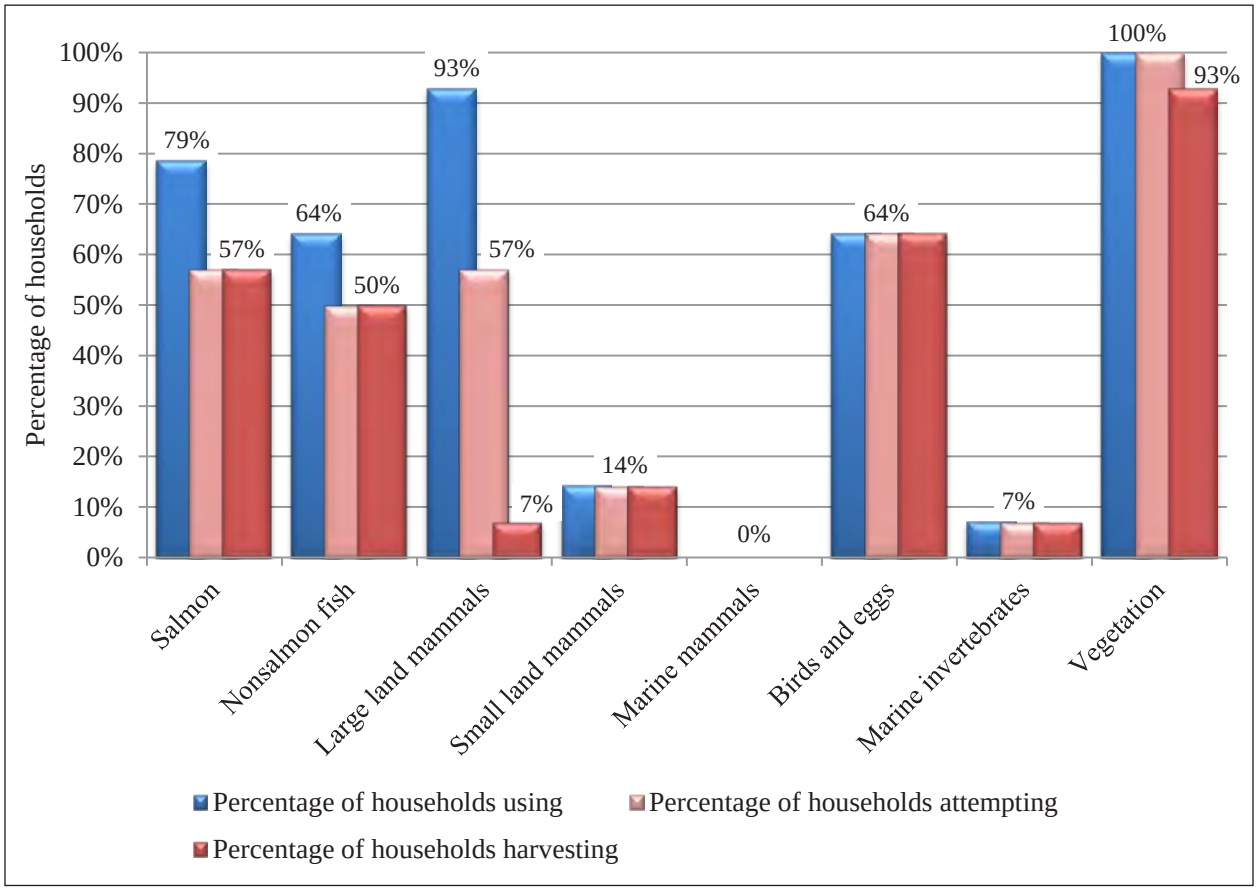


Figure 3-6.–Percentages of households attempting to harvest, harvesting, and using wild resources, Ferry, 2015.

Table 3-5.–Estimated harvests and uses of fish, wildlife, and vegetation resources, Ferry, 2015.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**100.0**	**100.0**	**100.0**	**85.7**	**71.4**	**4,572.8**	**254.0**	**111.1**				**28.7**
Salmon	**78.6**	**57.1**	**57.1**	**21.4**	**35.7**	**2,610.9**	**145.1**	**63.5**				**34.8**
Summer 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
Fall 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	28.6	21.4	21.4	7.1	21.4	484.7	26.9	11.8	90.0	ind	5.0	63.2
Chinook salmon	14.3	14.3	14.3	0.0	7.1	33.2	1.8	0.8	4.2	ind	0.2	71.2
Pink salmon	7.1	7.1	7.1	0.0	7.1	49.3	2.7	1.2	19.3	ind	1.1	101.8
Sockeye salmon	78.6	57.1	57.1	21.4	28.6	2,043.8	113.5	49.7	424.9	ind	23.6	37.6
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**64.3**	**50.0**	**50.0**	**28.6**	**21.4**	**434.7**	**24.2**	**10.6**				**44.3**
Pacific herring	7.1	7.1	7.1	0.0	0.0	6.4	0.4	0.2	1.1	gal	0.1	101.8
Pacific herring roe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Eulachon (hooligan, candlefish)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown smelts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific tomcod	14.3	14.3	14.3	0.0	0.0	29.0	1.6	0.7	137.9	ind	7.7	90.3
Starry flounder	14.3	14.3	14.3	0.0	0.0	15.7	0.9	0.4	14.3	ind	0.8	84.1
Lingcod	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pacific halibut	35.7	14.3	7.1	28.6	14.3	77.1	4.3	1.9	77.1	lb	4.3	101.8
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
Unknown rockfishes	7.1	7.1	7.1	0.0	0.0	25.7	1.4	0.6	17.1	ind	1.0	101.8
Burbot	14.3	14.3	14.3	0.0	0.0	64.8	3.6	1.6	15.4	ind	0.9	85.3
Dolly Varden	14.3	14.3	14.3	0.0	0.0	25.5	1.4	0.6	28.3	ind	1.6	92.3
Lake trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic grayling	42.9	42.9	42.9	0.0	7.1	111.1	6.2	2.7	123.4	ind	6.9	35.0
Northern pike	7.1	7.1	7.1	0.0	0.0	25.5	1.4	0.6	7.7	ind	0.4	101.8
Sheefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
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
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	7.1	7.1	7.1	0.0	7.1	10.8	0.6	0.3	7.7	ind	0.4	101.8
Unknown trouts	7.1	7.1	7.1	0.0	0.0	43.2	2.4	1.0	30.9	ind	1.7	101.8
Broad whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

-continued-

Table 3-5.–Page 2 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Nonsalmon fish, continued												
Bering cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Round whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whitefishes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Large land mammals	**92.9**	**57.1**	**7.1**	**78.6**	**21.4**	**691.7**	**38.4**	**16.8**				**101.8**
Bison	7.1	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black bear	7.1	28.6	0.0	7.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brown bear	0.0	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	7.1	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	85.7	57.1	7.1	71.4	21.4	691.7	38.4	16.8	1.3	ind	0.1	101.8
Dall sheep	7.1	7.1	0.0	7.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	**14.3**	**14.3**	**14.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Beaver	14.3	14.3	14.3	0.0	0.0	0.0	0.0	0.0	3.9	ind	0.2	73.5
Coyote	14.3	14.3	14.3	0.0	0.0	0.0	0.0	0.0	2.6	ind	0.1	69.2
Red fox–cross phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red fox–red phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lynx	14.3	14.3	14.3	0.0	0.0	0.0	0.0	0.0	2.6	ind	0.1	69.2
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Gray wolf	14.3	14.3	14.3	0.0	0.0	0.0	0.0	0.0	5.1	ind	0.3	69.2
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

-continued-

Table 3-5.–Page 3 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Marine mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sea otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**64.3**	**64.3**	**64.3**	**0.0**	**0.0**	**163.9**	**9.1**	**4.0**				**32.5**
Canvasback	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
Goldeneyes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pintail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
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
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada goose	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/cackling 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 goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
White-fronted goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown geese	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Tundra (whistling) swan	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
Spruce grouse	50.0	50.0	50.0	0.0	0.0	84.5	4.7	2.1	93.9	ind	5.2	40.7
Sharp-tailed grouse	7.1	7.1	7.1	0.0	0.0	6.4	0.4	0.2	6.4	ind	0.4	101.8
Ruffed grouse	35.7	35.7	35.7	0.0	0.0	49.4	2.7	1.2	61.7	ind	3.4	50.5
Unknown grouses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown ptarmigans	21.4	21.4	21.4	0.0	0.0	23.7	1.3	0.6	29.6	ind	1.6	59.4
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

-continued-

Table 3-5.–Page 4 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Birds and eggs, continued												
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine invertebrates	**7.1**	**7.1**	**7.1**	**0.0**	**7.1**	**64.3**	**3.6**	**1.6**				**101.8**
Butter clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Freshwater clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Razor clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
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 crabs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown tanner crabs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Shrimps	7.1	7.1	7.1	0.0	7.1	64.3	3.6	1.6	32.1	gal	1.8	101.8
Vegetation	**100.0**	**100.0**	**92.9**	**21.4**	**50.0**	**607.2**	**33.7**	**14.8**				**33.6**
Blueberry	71.4	78.6	71.4	7.1	14.3	104.8	5.8	2.5	26.2	gal	1.5	29.8
Lowbush cranberry	64.3	64.3	64.3	0.0	7.1	172.3	9.6	4.2	43.1	gal	2.4	47.3
Highbush cranberry	21.4	21.4	21.4	0.0	0.0	36.0	2.0	0.9	9.0	gal	0.5	73.2
Crowberry	7.1	7.1	7.1	0.0	0.0	5.1	0.3	0.1	1.3	gal	0.1	101.8
Currants	7.1	7.1	7.1	0.0	0.0	20.6	1.1	0.5	5.1	gal	0.3	101.8
Cloudberry	7.1	7.1	7.1	0.0	0.0	5.1	0.3	0.1	1.3	gal	0.1	101.8
Raspberry	57.1	64.3	57.1	0.0	21.4	99.7	5.5	2.4	24.9	gal	1.4	38.1
Other wild berry	7.1	7.1	7.1	0.0	0.0	5.1	0.3	0.1	1.3	gal	0.1	101.8
Devils club	7.1	7.1	7.1	0.0	7.1	2.6	0.1	0.1	2.6	gal	0.1	101.8
Fiddlehead ferns	14.3	14.3	14.3	0.0	7.1	7.7	0.4	0.2	7.7	gal	0.4	85.3
Hudson's Bay (Labrador) tea	7.1	7.1	7.1	0.0	7.1	3.9	0.2	0.1	3.9	gal	0.2	101.8
Lambs quarter	7.1	7.1	7.1	0.0	7.1	3.9	0.2	0.1	3.9	gal	0.2	101.8
Dandelion greens	7.1	7.1	7.1	0.0	7.1	1.3	0.1	0.0	1.3	gal	0.1	101.8
Sourdock	7.1	7.1	7.1	0.0	0.0	2.6	0.1	0.1	2.6	gal	0.1	101.8

-continued-

Table 3-5.–Page 5 of 5.

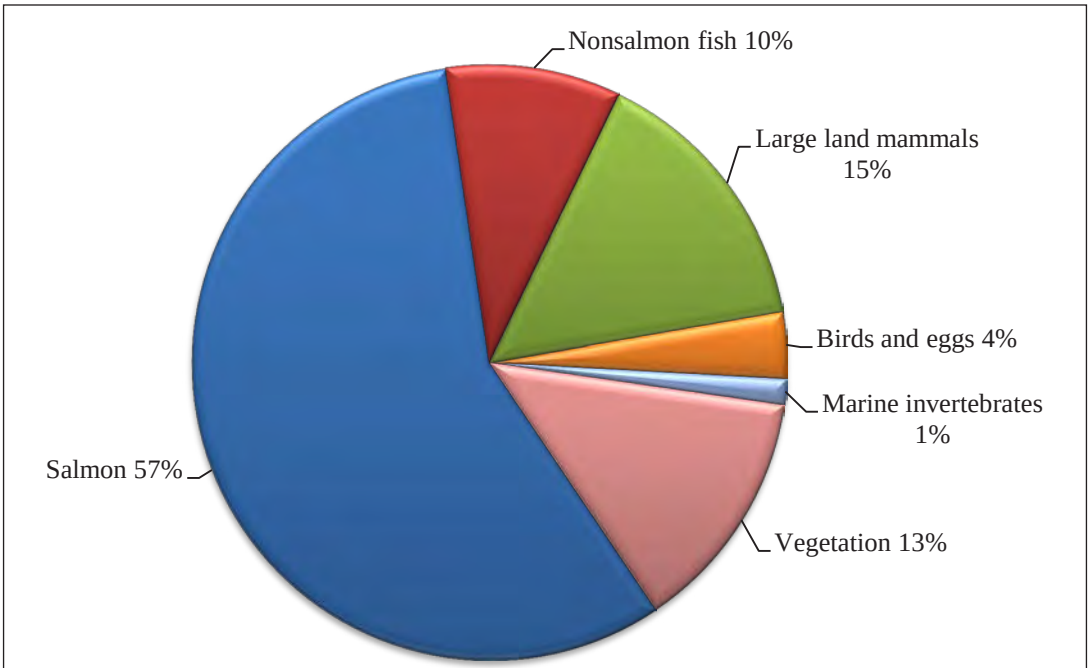
Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Wild rose hips	28.6	28.6	28.6	0.0	7.1	43.7	2.4	1.1	10.9	gal	0.6	52.9
Other wild greens	7.1	7.1	7.1	0.0	7.1	16.1	0.9	0.4	16.1	gal	0.9	101.8
Unknown mushrooms	35.7	35.7	35.7	7.1	0.0	23.8	1.3	0.6	23.8	gal	1.3	51.7
Fireweed	7.1	7.1	7.1	0.0	7.1	10.3	0.6	0.2	10.3	gal	0.6	101.8
Plantain	7.1	7.1	7.1	0.0	7.1	1.3	0.1	0.0	1.3	gal	0.1	101.8
Puffballs	7.1	7.1	7.1	0.0	0.0	1.6	0.1	0.0	1.6	gal	0.1	101.8
Chaga	14.3	14.3	14.3	0.0	7.1	9.0	0.5	0.2	9.0	gal	0.5	76.2
Birch sap	7.1	7.1	7.1	0.0	7.1	30.9	1.7	0.7	3.9	gal	0.2	101.8
Other wood	71.4	64.3	64.3	7.1	14.3							

Source ADF&G Division of Subsistence household surveys, 2016.

Note Resources where the percentage using is greater than the combined received and harvest indicate use from resources obtained during a previous year.

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

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



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

Figure 3-7.–Composition of harvest by resource category, Ferry, 2015.

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, or through hunting partnerships. Purchased foods are not included, but nonedible wild resources such as firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages often reflect sharing among households, which results in a wider distribution of wild foods.

Salmon accounted for 57% of the total subsistence harvest for Ferry in 2015 and provided substantially more edible pounds than any other wild food (Figure 3-7; Table 3-5). Three additional wild food categories—large land mammals, vegetation, and nonsalmon fish—accounted for the majority of the remaining harvest. Combined, these resources contributed 35% to the total harvest. Additional contributions included harvests of birds[12] (primarily upland game birds) as well as marine invertebrates (shrimps), which together contributed 4% to the total.

The remaining resource category, small land mammals, was not included in the total edible weight because these animals were used entirely for fur and not food. In addition, no marine mammal harvests were reported in 2015.

The 3 most commonly used wild foods among Ferry households were moose, sockeye salmon, and blueberries (Table 3-6). Other highly used resources included 3 other types of vegetation: raspberries, lowbush cranberries, and mushrooms.[13] Spruce and ruffed grouse, Arctic grayling, and halibut were also among the 10 most commonly used resources. Four of the 10 most used resources were vegetation.

Figure 3-8 shows the species with the highest per capita harvests during the 2015 study year. The average per capita harvest for Ferry residents was 111 lb (Table 3-5). The major contributors included 2 species of salmon, moose, 3 types of berries, 3 species of nonsalmon fish, and 1 species of bird. Sockeye and coho

12. No bird eggs were harvested by Ferry residents.

13. Mushrooms included morel, shaggy mane, orange delicious, coral, chantrelle, puffball, and hawkswing. Researcher field notes.

Table 3-6.–Resources most commonly used by households, Ferry, 2015.

Rank[a]	Resource	Percentage of households using
1.	Moose	85.7%
2.	Sockeye salmon	78.6%
3.	Blueberry	71.4%
4.	Lowbush cranberry	64.3%
5.	Raspberry	57.1%
6.	Spruce grouse	50.0%
7.	Arctic grayling	42.9%
8.	Pacific halibut	35.7%
8.	Ruffed grouse	35.7%
8.	Unknown mushrooms	35.7%

Source ADF&G Division of Subsistence household surveys, 2016.

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

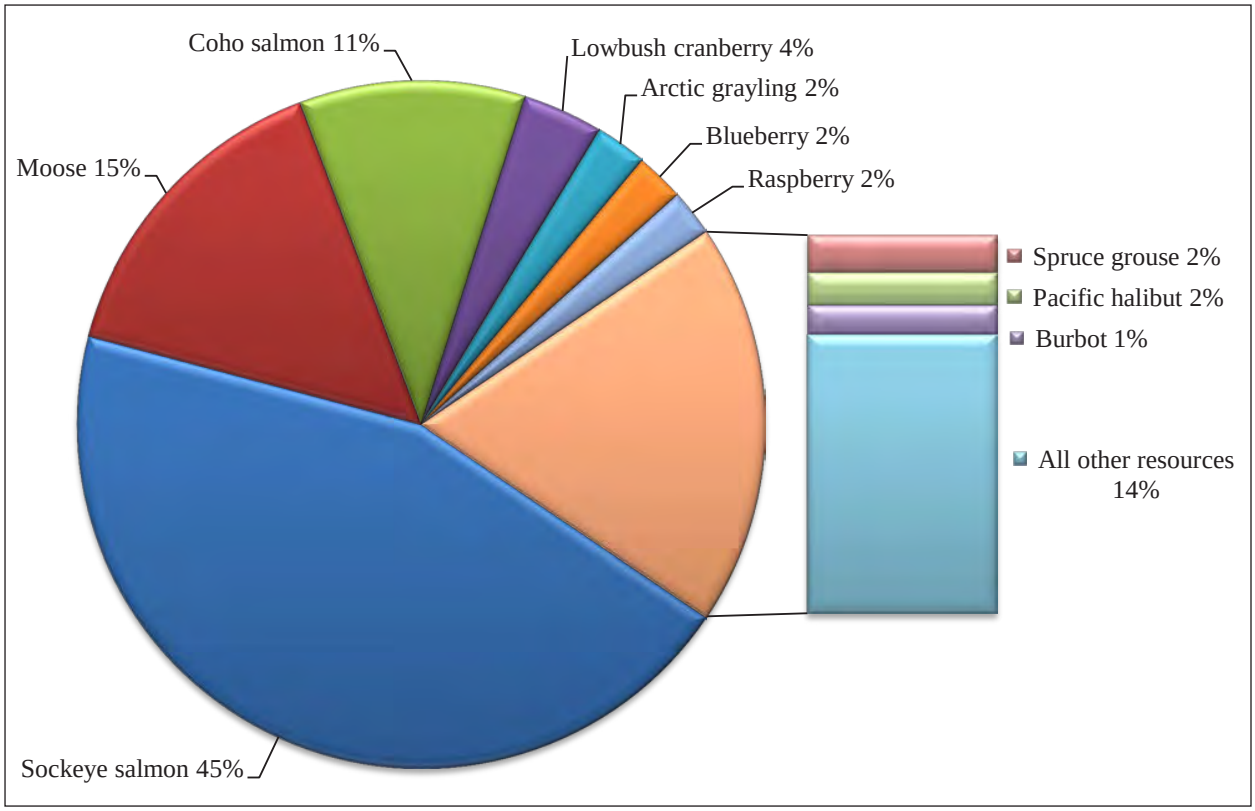


Figure 3-8.–Top resources harvested by edible weight, Ferry, 2015.

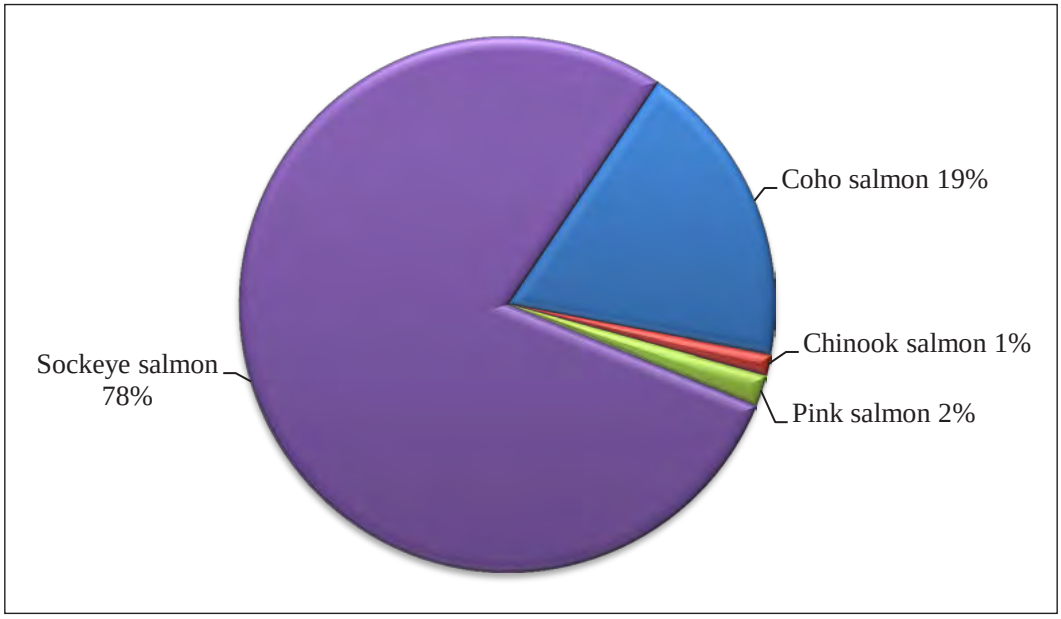


Figure 3-9.–Composition of salmon harvest by weight, Ferry, 2015.

were the 2 most harvested types of salmon, and provided the bulk of the total per capita edible weight. Combined, these 2 species accounted for 56% of the per capita harvest, or 71 lb per resident (Table 3-5; Figure 3-8). The remaining top contributing categories—large land mammals, nonsalmon fish, vegetation, and birds—provided 46 lb per resident, or 42% of the total per capita harvest (Table 3-5).

Salmon

According to survey results, 79% of Ferry households used salmon in 2015 (Table 3-5). In addition, 36% of households reported sharing salmon with others, and over 21% reported receiving salmon. Over one-half of Ferry households attempted to harvest and successfully harvested salmon in 2015. In terms of edible pounds, salmon's contribution to the total subsistence harvest far exceeded all other wild foods harvests (Figure 3-7). An estimated 2,611 lb of salmon (64 lb per capita) accounted for 57% of the entire wild foods harvest for the community (Figure 3-7; Table 3-5). Of this total, 2,044 lb or 78% was sockeye salmon (locally known as reds), which provided 50 lb per capita (Table 3-5; Figure 3-9). Coho salmon (locally known as silvers) harvests made up 19% of the salmon harvest, with 485 lb or 12 lb per capita. The remaining salmon harvest was composed of Chinook salmon (locally known as kings) and pink salmon (locally known as humpback salmon or humpies), which provided a combined total of 3%, or 83 lb to the salmon harvest. There were no reported chum salmon harvests in 2015.

Of the estimated 620 salmon caught by Ferry residents in 2015, 38% were harvested using dip nets (Figure 3-10; Table D3-4). Of the 234 salmon harvested by dip net, 99% were sockeye. Ferry residents also utilized other gear types for harvesting salmon, including set- and drift-gillnets, rod and reel, and fish wheels. Ferry fishers used gillnets while commercial fishing; the total gillnet catch combines those salmon removed from commercial catches (117) and those netted for subsistence use (103). All but 2 of these 220 gillnetted salmon were sockeye salmon. The rod and reel harvest included the entire coho salmon harvest of 90 fish as well as 19 pink salmon and 12 sockeye salmon. Lastly, the fish wheel harvest yielded 45 sockeye salmon.

No household respondents used salmon for dog food in 2015.

One respondent noted that salmon frequented local streams in the past, but that he no longer sees the same numbers of salmon in these same streams:

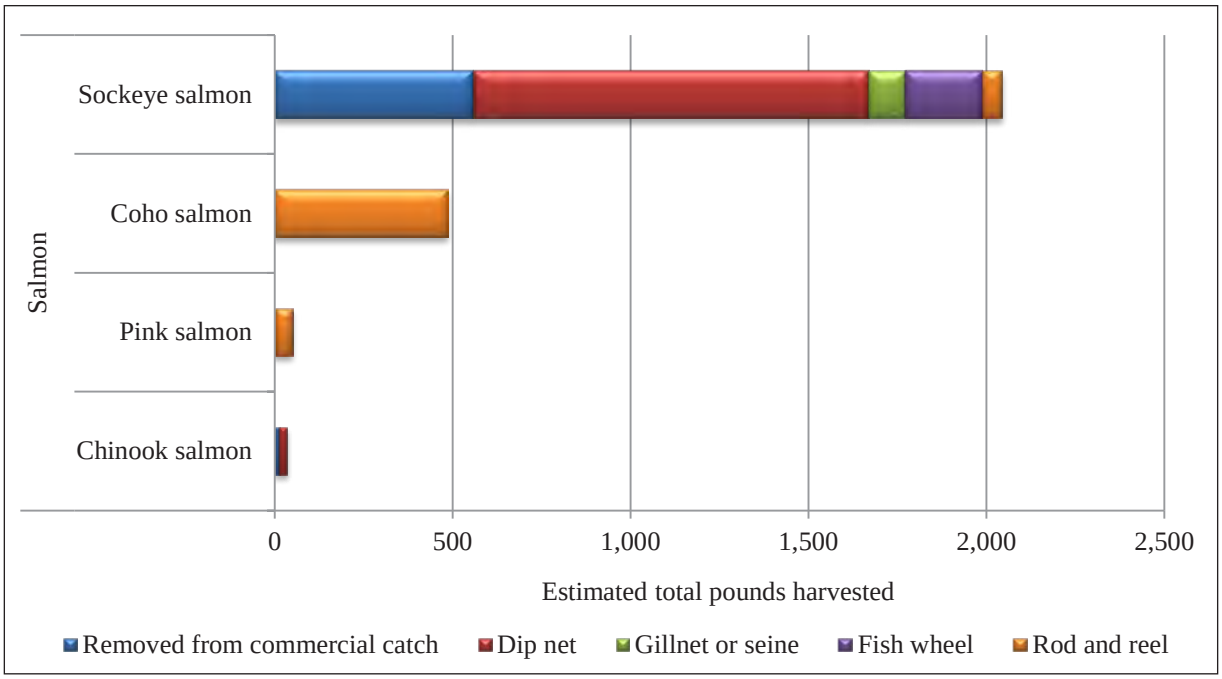


Figure 3-10.–Salmon harvests by gear type, Ferry, 2015.

> …there were fish [salmon], fish were in the Panguingue stream right up to the highway. There were silvers that would go up there, and chums. And today, 40 years later there is no fish in the Panguingue, any more than maybe a few grayling. I have not seen any salmon up to the highway bridge in many years. The next creek north that had fish [salmon] in [it] was Slate Creek. And there were some silvers at the mouth of Slate Creek, sometimes in September. On the other side of the Nenana, on the east side of the Nenana river…there was salmon that would, go way up the Cottonwood Creek, and now there's none. To Healy Creek after they, there was always a run of chums that would go up Healy Creek and I don't think there's any more. (Ferry03311603)

Nonsalmon Fish

In terms of usable weight, nonsalmon fish harvests made up 10% of the total subsistence harvest for Ferry in 2015 (Figure 3-7). One-half of the community attempted to catch nonsalmon fish, and the same amount reported harvesting nonsalmon fish (Table 3-5). Twenty-nine percent of households reported receiving nonsalmon fish from others, and 21% of households shared nonsalmon fish. In all, residents harvested an estimated 435 lb of nonsalmon fish, which translated to 11 lb per capita. Three species of nonsalmon fish—Arctic grayling, halibut, and burbot—provided over one-half of the total nonsalmon harvest (58%; Figure 3-11). Ferry residents harvested more Arctic grayling than any other nonsalmon fish (Table 3-5). Fishers caught an estimated 123 fish, which provided 3 lb per capita. Two other nonsalmon species, halibut and burbot, provided 4 lb per capita, or 33% of the nonsalmon fish harvest by weight. The remaining harvest included smaller amounts of several additional fishes, such as Pacific herring, Pacific tomcod, starry flounder, rockfishes, northern pike, and trouts.

Fishers used only 2 gear types to catch at least 11 different species of nonsalmon fish (Figure 3-12; Table D3-5). With the exception of 3 starry flounder that were caught incidentally while dip netting for sockeye salmon, all nonsalmon fish were caught using rod and reel.

No respondents reported using nonsalmon fish for dog food in 2015.

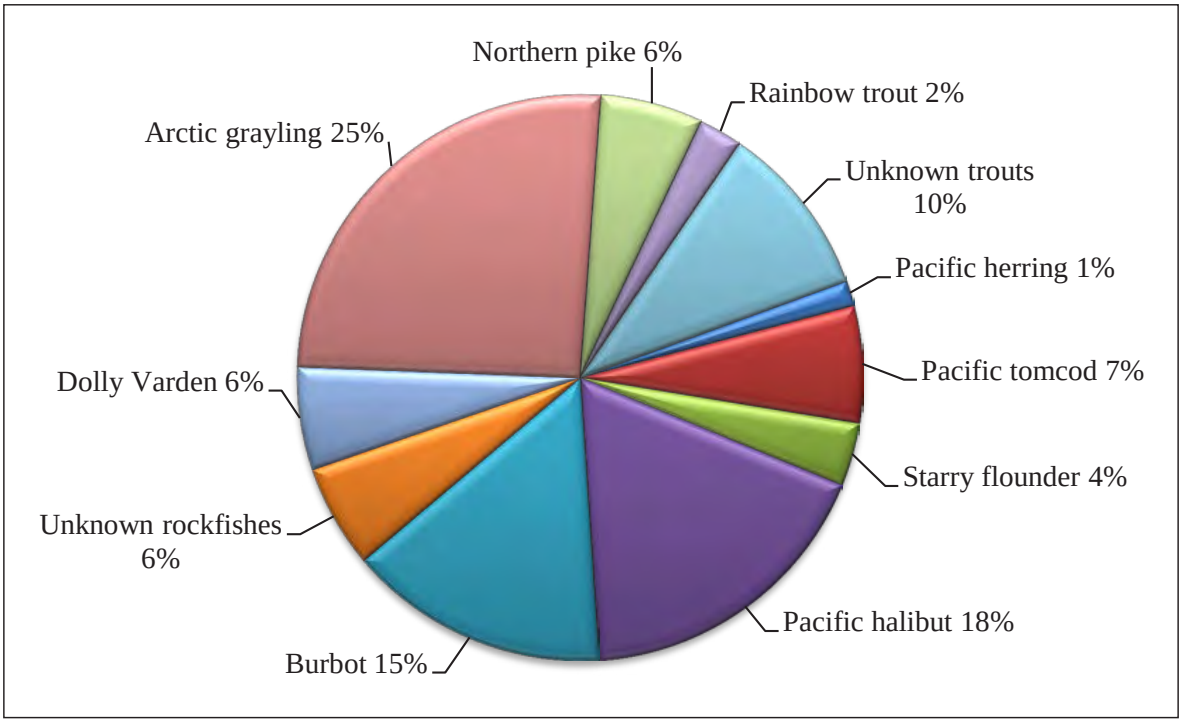


Figure 3-11.–Composition of nonsalmon fish harvest by edible weight, Ferry, 2015.

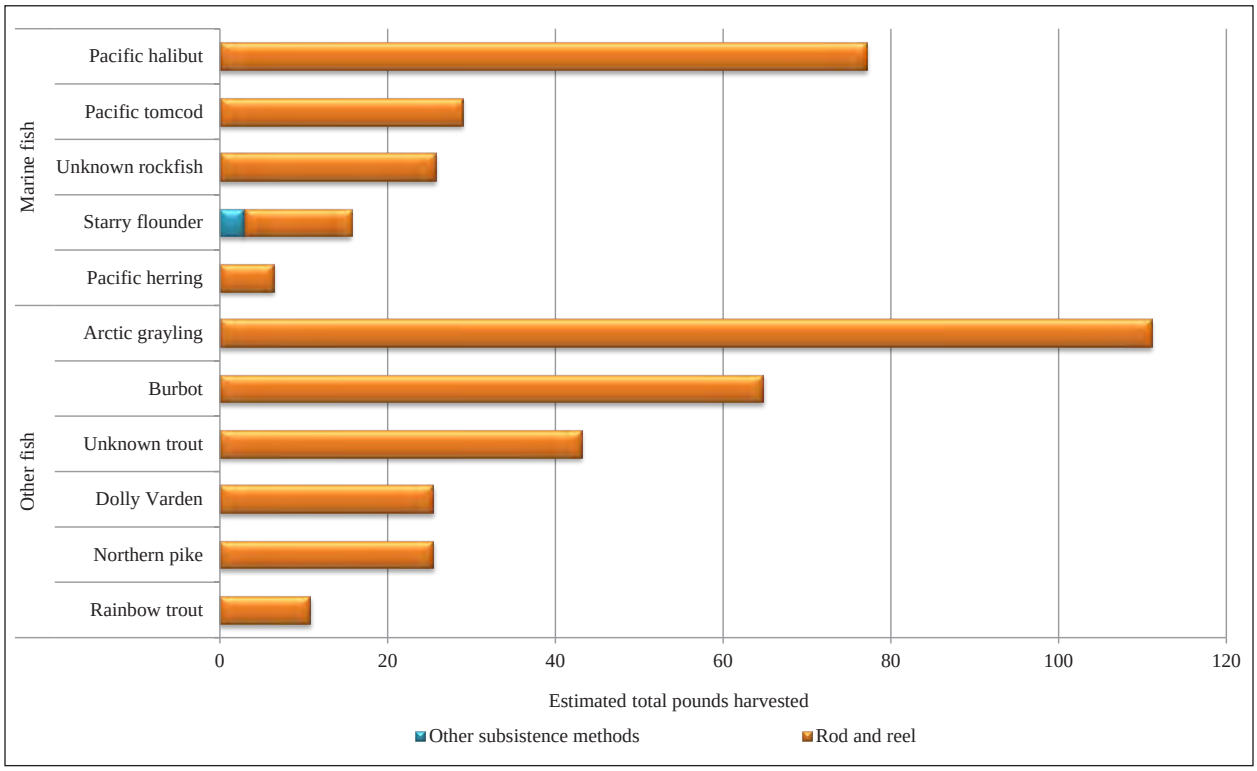


Figure 3-12.–Nonsalmon fish harvests by gear type, Ferry, 2015.

Large Land Mammals

Large land mammals accounted for 15% of the total wild foods harvest (Figure 3-7). Over one-half of the community attempted to harvest moose, but only 1 bull moose was harvested in September (Table 3-5; Table D3-6). This harvest was the sole contributor to the total large land mammal harvest, and provided approximately 692 lb, or 17 lb per capita (Table 3-5). Notwithstanding the low harvest, 93% of the community reportedly used large land mammals in 2015; 86% of whom used moose in particular. In addition, over two-thirds of households received moose, and slightly over 21% reported sharing it. Hunters also targeted other large land mammal species, including black bear, brown bear, and Dall sheep, although no harvests were documented. Black bear was the most heavily hunted of these: 29% of households searched for these animals. Lastly, small percentages of households reported receiving Dall sheep, black bear, caribou, and bison.

The low harvest numbers may be a reflection of what some respondents described as an overall decline among several different large land mammal species. Some respondents mentioned that wildlife was plentiful in and around the Ferry area when they first arrived:

> When we first came in here to Ferry, and all growing up, um there were a lot more moose, a lot more coyotes, a lot more wolves, a lot more of everything you know, game was a lot, it was just more abundant. (Ferry03311602)

One resident mentioned that

> I have pictures of our son he was probably 12 years old, back between Cripple Creek and Coal Creek, playing with rams…you would go up hike up the river, hop up the Healy, and a lot of places you would see 50–60 sheep in a band. And you'd go to the next draw, and you would see another 50–60 sheep. And all the time you'd see that the, at that time in September, or August and September the ewes and the rams are separated pretty much. But the rams are always probably within eyesight of the band of ewes and lambs. So…it was a point of picking the sheep you wanted to shoot, it wasn't picking the first one that you saw. (Ferry03311603)

Another respondent recalled that

> …it was pretty amazing to see anywhere from 300 to 3,000 caribou, just about every other day [in the area]. (Ferry03311603)

During an interview, a local hunter-trapper discussed how years ago he regularly traversed a large swath of territory via dog team while checking his trap line. He described the observations of large land mammals he typically made during those trips:

> Well…I used to trap with dogs out of Rochester's[14] and go all the way back to St. George Creek[15], that's out on the second river back. And then come back and come over to Grubstake[16], and then I come back up the river. Well, you know, there were always caribou and moose there, all the time. I mean I've had a couple of dogs get killed because the moose stomp 'em. (Ferry03301603)

The respondent added that his observations have changed during trips within the past 20 years: "… I never ever thought that we, we'd run out of game…" (Ferry03301603).

Small Land Mammals/Furbearers

Very few households used small land mammals in 2015. An estimated 15 small land mammals were harvested during the study year (Table 3-5). Harvested species included wolf, beaver, lynx, and coyote.

14. Decker's Denali Lodge in Anderson, AK, formerly known as Rochester's Lodge.
15. Approximately 30 miles east of Ferry. Google earth V 7.1.2.2041. "Ferry, Alaska." 64° 3′ 52″N and 148° 59′ 49″W. Landsat/Copernicus July 20, 2015. Google 2016, DigitalGlobe 2016. Accessed March 13, 2017.
16. Location unknown to author.

Plate 3-7.–Wolf pelt being prepared by a Ferry resident.

January and December were the most productive months, with a total of 11 animals harvested (Table D3-7). These included 5 wolves, 3 coyotes, and 3 lynx. In addition, 4 beaver were harvested in October and November.

All harvested species were used for fur only (Plate 3-7; Figure 3-13). None of the animals were used for human consumption, although some respondents indicated that portions of the meat were used for trap bait.[17]

Marine Mammals

There was no reported harvest or use of marine mammals among Ferry households in 2015.

Birds and Eggs

Over 64% of Ferry households took part in upland game bird hunting, and harvested an estimated 192 birds in 2015 (Table 3-5). All the households that attempted to harvest birds were successful, and there was no reported receiving or sharing of birds among households. The harvest was composed entirely of different species of upland gamebirds. Combined, these birds provided approximately 164 lb of edible weight, or 4 lb per capita. Spruce and ruffed grouse made up 82% of the total harvest (Figure 3-14). Sharp-tailed grouse provided 4% to the harvest, and unknown ptarmigans accounted for 14%. The ptarmigans were most likely either rock or willow ptarmigans.[18]

Nearly two-thirds (64%) of the total bird harvest occurred during the fall, and the remaining harvest happened throughout the winter months (Table D3-8). More than three-quarters (77%) of all spruce grouse were harvested in the fall, as were all sharp-tailed grouse. Ruffed grouse and ptarmigan harvests were split between fall and winter.

Marine Invertebrates

The marine invertebrate harvest contributed 1% to the total wild foods harvest, and consisted entirely of shrimp (Figure 3-7; Table 3-5). The harvest accounted for slightly over 64 lb, or 1.6 lb per capita (Table 3-5).

Vegetation

Vegetation accounted for 12% of the total wild food harvest, as households gathered over 20 different types of berries, mushrooms, and wild greens, during the study year (Figure 3-7; Table 3-5). The estimated total harvest for the community was 607 lb, or 15 lb per resident (Table 3-5). All households used and attempted to harvest 1 or more types of vegetation during the study year, and 93% of households were successful in doing so. Although an estimated 21% of households received vegetation, one-half of the community shared their vegetation harvest with others.

17. C. McDevitt field notes, March 2016.
18. ADF&G. 2017. "Willow ptarmigan (*Lagopus lagopus*) species profile" and "Rock ptarmigan (*Lagopus muta*) species profile." Accessed March 13, 2017. http://www.adfg.alaska.gov/index.cfm?adfg=animals.listbirds

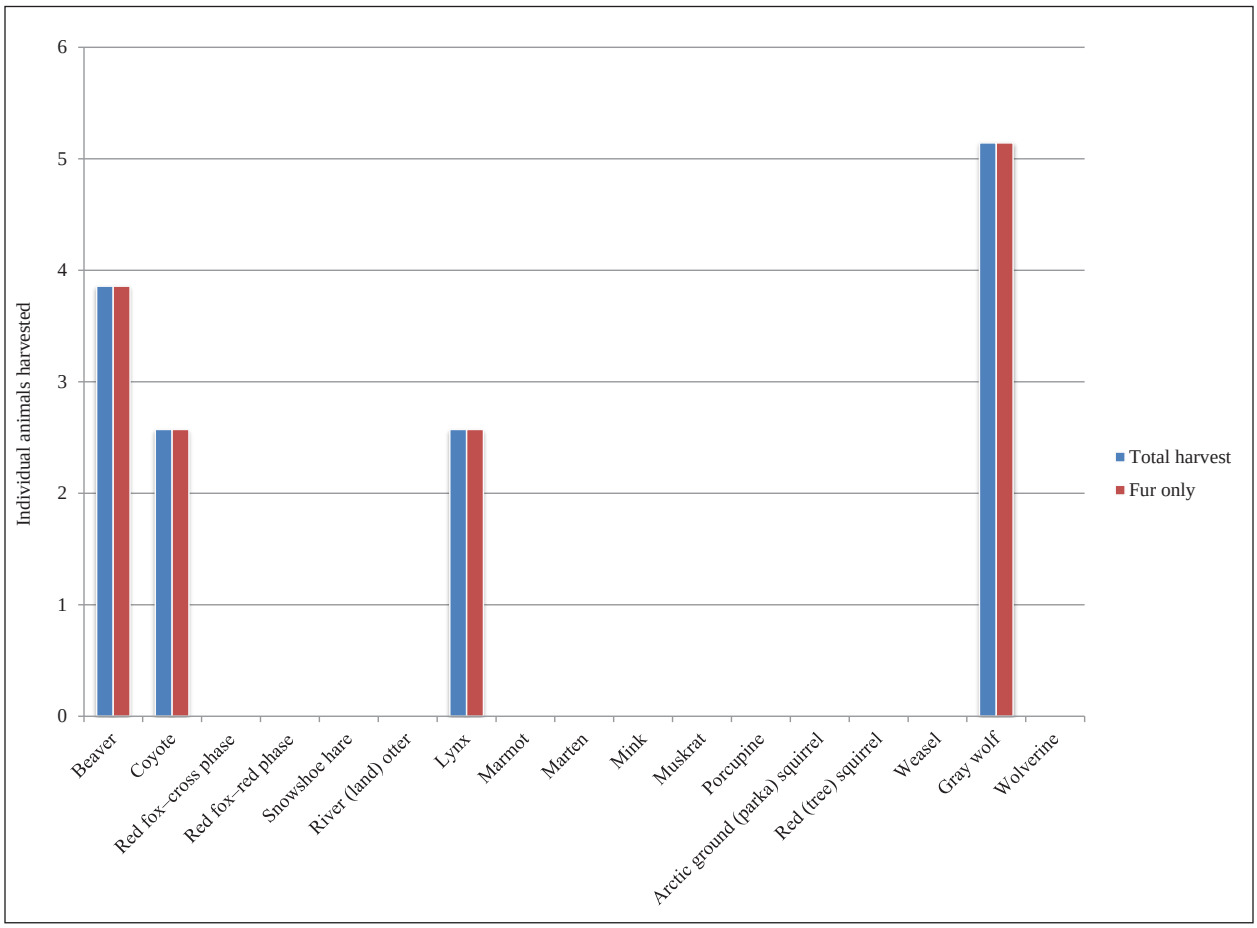


Figure 3-13.–Small land mammal harvests for fur, Ferry, 2015.

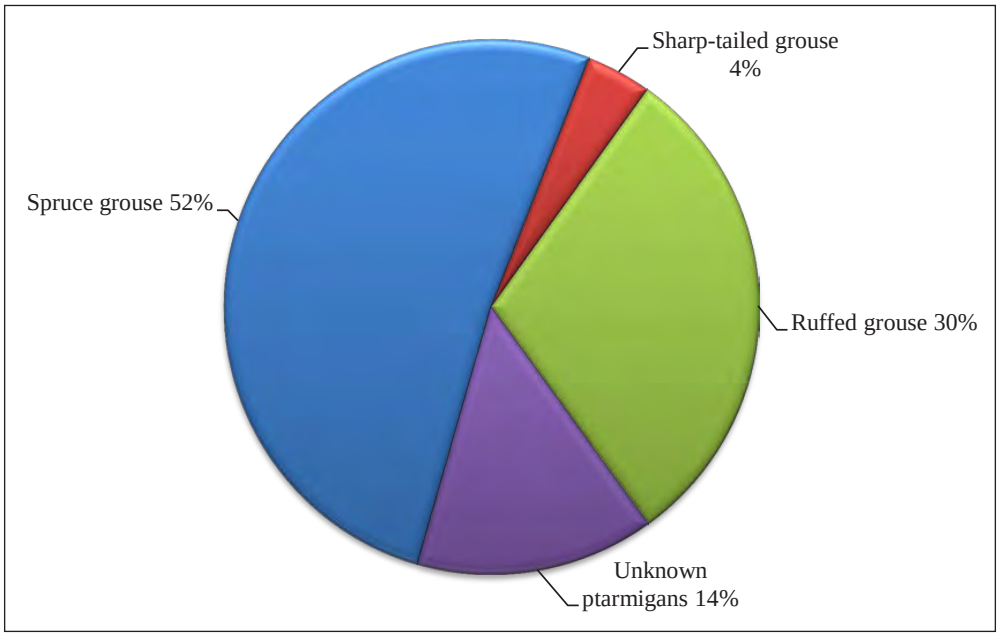


Figure 3-14.–Composition of bird harvest by edible weight, Ferry, 2015.

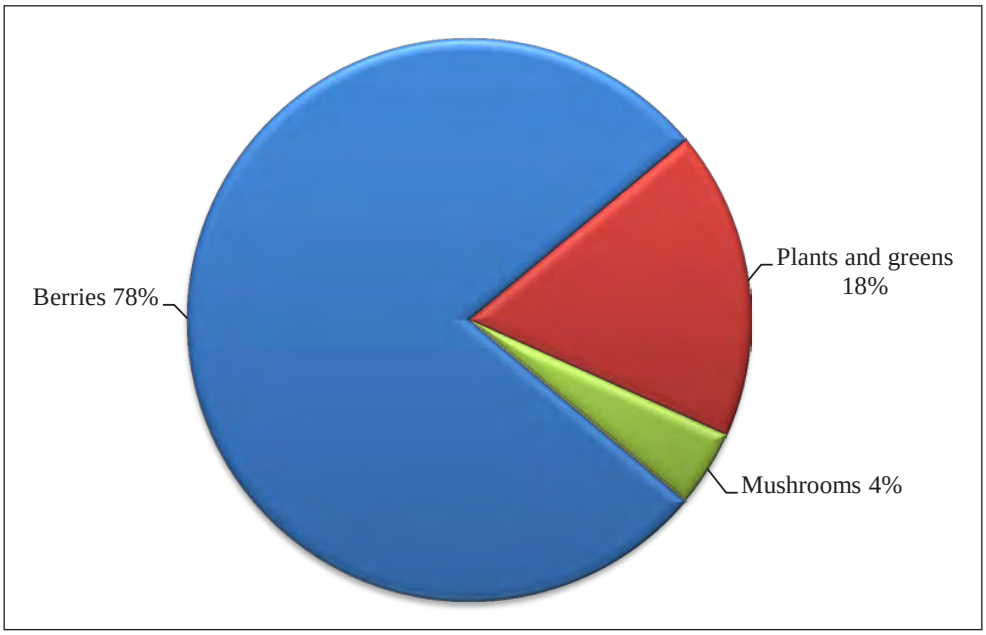


Figure 3-15.–Composition of vegetation harvest by edible weight, Ferry, 2015.

Some residents indicated that 2015 was a poor berry year.[19] Despite what some households considered to be low harvest levels in 2015, the amount of household usage indicates the importance of vegetation in the community of Ferry.

Berries were the most commonly used type of vegetation, and composed 78% of the total harvest for this particular resource category (Figure 3-15). Three different types of berries—lowbush cranberries, blueberries, and raspberries—made up the majority of the berry harvest (Table 3-5). Other significant contributions to the total included wild rose hips, birch sap, and mushroom harvests. One respondent explained the characteristics of a typical year for their household:

> We keep 5 gallons preserved of both the blueberries and the cranberry preserved in sugar. I probably put up, on a good berry year I'll put up 6 to 8 cases of blueberry jam and syrup. I'll put up 6 to 8 cases of cranberry jam. And then I, I make a lovely syrup with the highbush and lowbush and cinnamon sticks and stuff. And then highbush cranberries we do a lot of ketchups and relishes, things of that nature. Um, the blackberries [crowberries], we make, you know we put those up for everything essentially, I mix 'em, a lot of times you just use them as a filler. Salmonberries, I usually can get enough for maybe 8 to 10, 12 jars of jam. And we do birch syrup. Definitely do birch syrup every spring. (Ferry03311602)

Over two-thirds of Ferry households used firewood to heat their homes in 2015 (Table D3-9). Approximately 29% of households relied solely on wood heat, and the remaining households indicated that firewood was used in conjunction with other heat sources, namely stove oil or coal[20], or not used at all.

Production and Distribution of Wild Resources

Household Specialization in Resource Harvesting

Previous studies (Wolfe 1987; Wolfe et al. 2010) have shown that in most rural Alaska communities, a relatively small portion of households produces most of the community's fish and wildlife harvests, which they share with other households. A recent study of 3,265 households in 66 rural Alaska communities found

19. Survey comments, Ferry, March 2016.
20. C. McDevitt field notes, March 2016.

that about 33% of the households accounted for 76% of subsistence harvests (Wolfe et al. 2010). Although overall the set of very productive households was diverse, factors that were associated with higher levels of subsistence harvests included larger households with a pool of adult male labor, higher wage income, involvement in commercial fishing, and community location.

In the 2015 study year in Ferry, about 69% of the harvests of wild resources as estimated in pounds usable weight were harvested by 29% of the community's households (Figure 3-16). Further analysis of the study findings, beyond the scope of this report, might identify characteristics of the highly productive households in Ferry and the other study communities.

Income and Cash Employment

As is typical with many other road-connected communities, wage employment is the foundation of Ferry's economy.

The total income for the community was $928,219 (Table 3-7). Earned income accounted for 91% of the total income from all sources. The median income for Ferry households was $38,925, which was significantly lower than the estimate for all of Alaska (Figure 3-17; Table D3-10). Over one-half of the earned income was provided through employment in the transportation, communication, and utilities industries (Figure 3-18). The local power company (Golden Valley Electric Association) provided the bulk of employment among households. Employment earnings from federal and local government positions also made significant contributions, and accounted for 29% of the total income from all sources. These included jobs with the National Park Service and the Denali Borough. Other contributions included earnings from the services industry (4% of community income), as well as in agriculture, forestry, and fishing (2%).

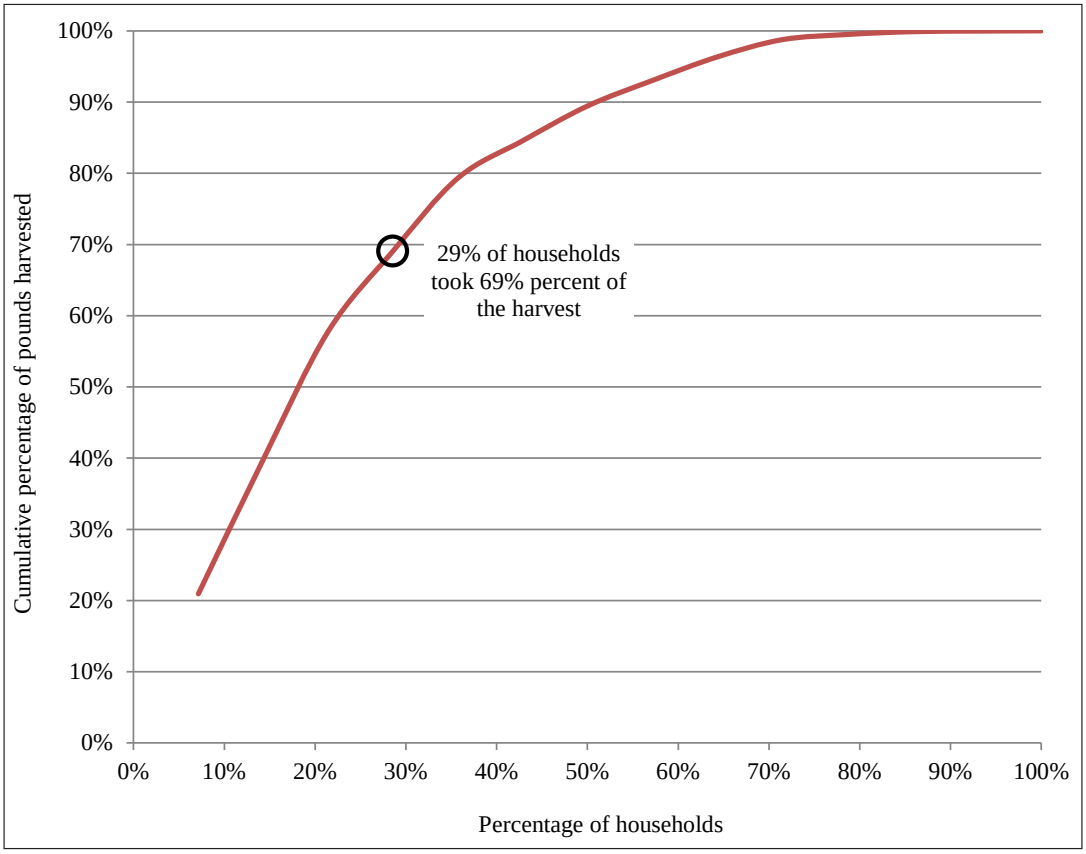


Figure 3-16.–Household specialization, Ferry, 2015.

Table 3-7.–Estimated earned and other income, Ferry, 2015.

Income source	Number of employed adults	Number of households	Total for community	-/+ 95% CI		Mean per household	Percentage of total community income
Earned income							
Transportation, communication, and utilities	6	6	$517,169	$128,232	– $1,172,877	$28,732	55.7%
Federal government	4	4	$184,412	$35,599	– $497,888	$10,245	19.9%
Local government, including tribal	3	3	$81,658	$23,002	– $198,437	$4,537	8.8%
Services	4	4	$39,317	$12,301	– $127,218	$2,184	4.2%
Agriculture, forestry, and fishing	3	1	$20,415	$16,894	– $39,199	$1,134	2.2%
Earned income subtotal	**19**	**14**	**$842,971**	**$368,416**	**– $1,469,211**	**$46,832**	**90.8%**
Other income							
Alaska Permanent Fund dividend		18	$85,248	$58,608	$109,224	$4,736	9.2%
TANF (Temporary Assistance for Needy Families)		0	$0	$0	$0	$0	0.0%
Adult public assistance (OAA, APD)		0	$0	$0	$0	$0	0.0%
Pension / retirement		0	$0	$0	$0	$0	0.0%
Longevity bonus		0	$0	$0	$0	$0	0.0%
Social Security		0	$0	$0	$0	$0	0.0%
Workers' compensation / insurance		0	$0	$0	$0	$0	0.0%
Heating assistance		0	$0	$0	$0	$0	0.0%
Supplemental Security Income		0	$0	$0	$0	$0	0.0%
Supplemental Nutrition Assistance Program (food stamps)		0	$0	$0	$0	$0	0.0%
Unemployment		0	$0	$0	$0	$0	0.0%
Native corporation dividend		0	$0	$0	$0	$0	0.0%
Child support		0	$0	$0	$0	$0	0.0%
Disability		0	$0	$0	$0	$0	0.0%
Other		0	$0	$0	$0	$0	0.0%
Veterans assistance		0	$0	$0	$0	$0	0.0%
Foster care		0	$0	$0	$0	$0	0.0%
CITGO fuel voucher		0	$0	$0	$0	$0	0.0%
Meeting honoraria		0	$0	$0	$0	$0	0.0%
Other income subtotal		**0**	**$85,248**	**$58,608**	**– $109,224**	**$4,736**	**9.2%**
Community income total			**$928,219**	**$445,672**	**$1,558,828**	**$51,568**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2016.

Other income for the community totaled $85,248, and was solely composed of monies received through the annual Alaska Permanent Fund dividend check (Table 3-7). These earnings accounted for over 9% of the total income from all sources (Table 3-7; Figure 3-18).

Approximately 63% of adults in Ferry were employed for an average of 38 weeks during 2015 (Table 3-8). There was an average of 2 jobs per household, and 77% of households had members who were employed. In addition, 77% of employed adults worked in full-time positions (Table 3-9). Positions in transportation, communication, and utilities made up 29% of all jobs in 2015 (Table 3-10). The services industry accounted for slightly over 21% of all jobs, while federal and local government agencies made up over one-third of all jobs. In addition, agriculture, forestry, and fishing provided 14% of the total jobs.

Food Security

Survey respondents were asked a set of questions intended to assess their household's food security, defined as, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2012). The food security questions were modeled after those developed by the U.S. Department of Agriculture (USDA) but modified by ADF&G to account for differences in access to subsistence and store-bought foods. Based on their responses to these questions, households were broadly categorized as being food secure or food insecure following a USDA protocol (Bickel et al. 2000). Food secure households were broken down further into 2 subcategories—high or marginal food security. Food insecure households were divided into 2 subcategories: low food security or very low food security.

Households with high food security did not report any food access problems or limitations. Households with marginal food security reported 1 or 2 instances of food access problems or limitations—typically anxiety over food sufficiency or a shortage of particular foods in the house—but gave little or no indication of changes in diets or food intake. Households with low food security reported reduced quality, variety, or

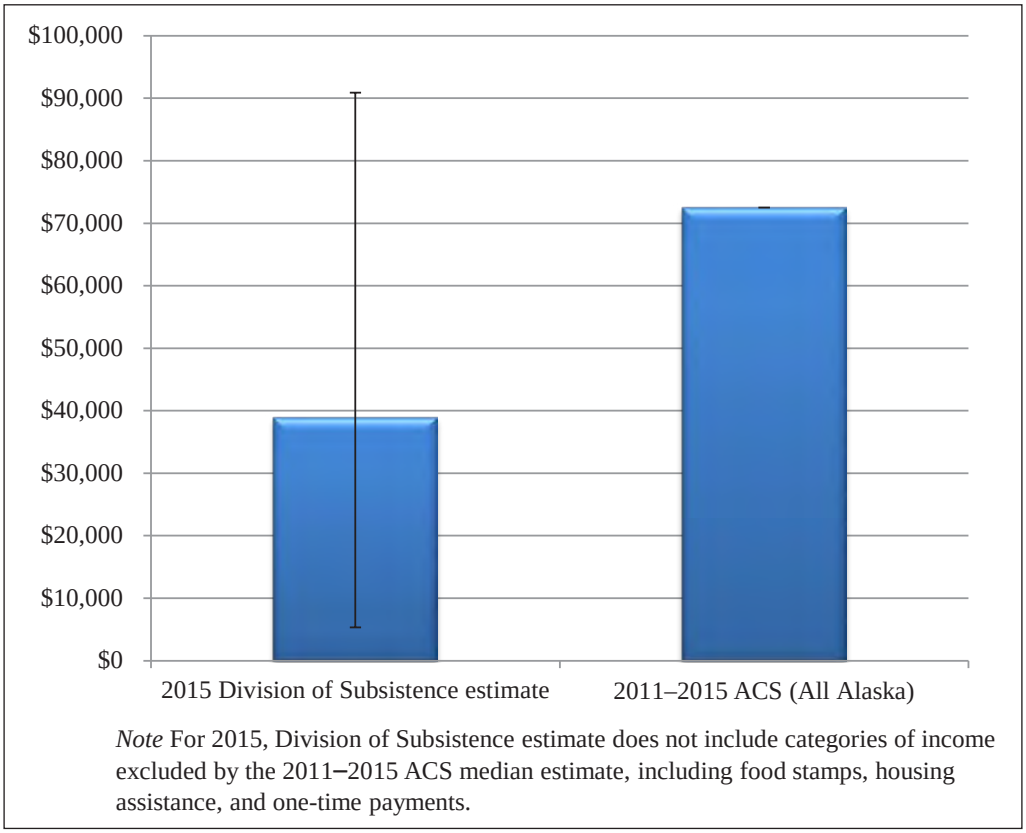


Figure 3-17.–Comparison of median income estimates, Ferry, 2015.

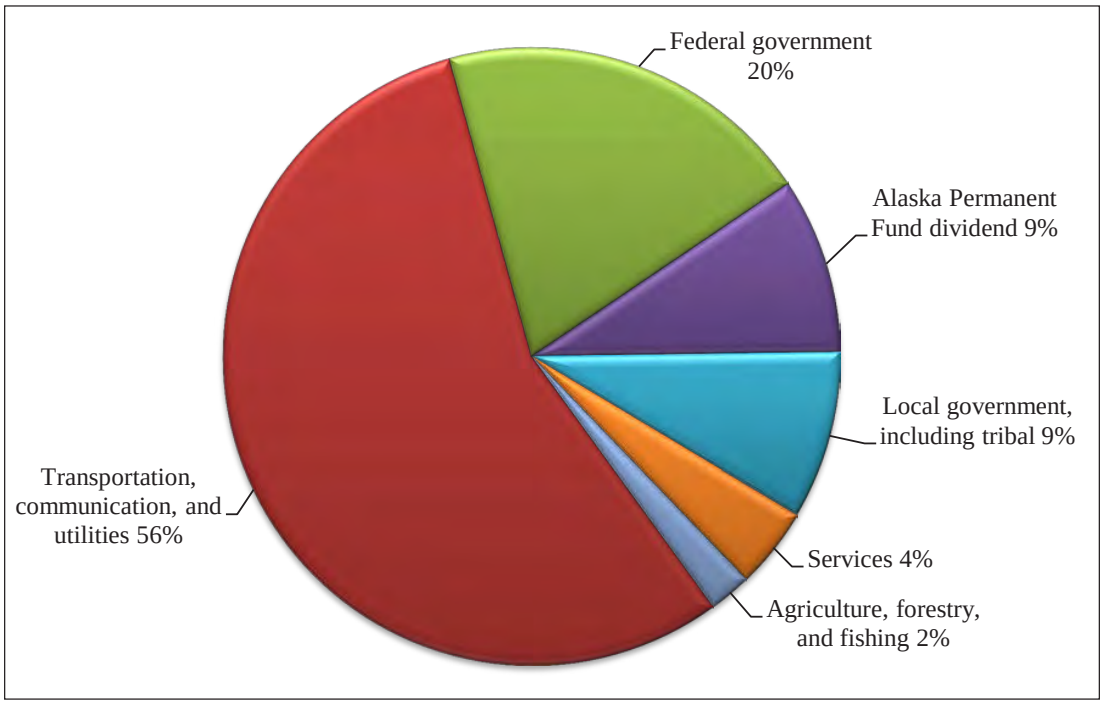


Figure 3-18.–Top income sources, Ferry, 2015.

Table 3-8.–Employment characteristics, Ferry, 2015.

Characteristic	Community Ferry
All adults	
Number	30.9
Mean weeks employed	23.6
Employed adults	
Number	19.3
Percentage	62.7%
Jobs	
Number	20.8
Mean	1.1
Minimum	1
Maximum	2
Months employed	
Mean	8.7
Minimum	2
Maximum	12
Percentage employed year-round	46.2%
Mean weeks employed	37.7
Households	
Number	18
Employed	
Number	13.8
Percentage	76.9%
Jobs per employed household	
Mean	1.5
Minimum	1
Maximum	3
Employed adults	
Mean	
Employed households	1.4
Total households	1.1
Minimum	1
Maximum	2
Mean person-weeks of employment	40.5

Source ADF&G Division of Subsistence household surveys, 2016.

Table 3-9.–Reported job schedules, Ferry, 2015.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	14.9	71.4%	14.9	76.9%	12.5	90.0%
Part-time	4.5	21.4%	4.5	23.1%	4.2	30.0%
Schedule not reported	1.5	7.1%	1.5	7.7%	1.4	10.0%

Source ADF&G Division of Subsistence household surveys, 2016.

Table 3-10.–Employment by industry, Ferry, 2015.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**20.8**	**13.8**	**19.3**	**100.0%**
Federal government	**21.4%**	**30.0%**	**23.1%**	**21.9%**
Service occupations	7.1%	10.0%	7.7%	5.7%
Transportation and material moving occupations	7.1%	10.0%	7.7%	11.3%
Handlers, equipment cleaners, helpers, and laborers	7.1%	10.0%	7.7%	4.8%
Local government, including tribal	**14.3%**	**20.0%**	**15.4%**	**9.7%**
Teachers, librarians, and counselors	7.1%	10.0%	7.7%	6.5%
Occupation not indicated	7.1%	10.0%	7.7%	3.2%
Agriculture, forestry, and fishing	**14.3%**	**10.0%**	**15.4%**	**2.4%**
Agricultural, forestry, and fishing occupations	14.3%	10.0%	15.4%	2.4%
Transportation, communication, and utilities	**28.6%**	**40.0%**	**30.8%**	**61.4%**
Executive, administrative, and managerial	7.1%	10.0%	7.7%	16.1%
Construction and extractive occupations	7.1%	10.0%	7.7%	16.1%
Precision production occupations	14.3%	20.0%	15.4%	29.1%
Services	**21.4%**	**30.0%**	**23.1%**	**4.7%**
Teachers, librarians, and counselors	7.1%	10.0%	7.7%	1.6%
Service occupations	14.3%	20.0%	15.4%	3.0%

Source ADF&G Division of Subsistence household surveys, 2016.

desirability of their diet, but they, too, gave little indication of reduced food intake. Households classified as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen et al. 2012).

According to this study's results, the community of Ferry is 100% food secure (Figure 3-19). There were no reported instances of food insecurity among any of the participating households during the study year.

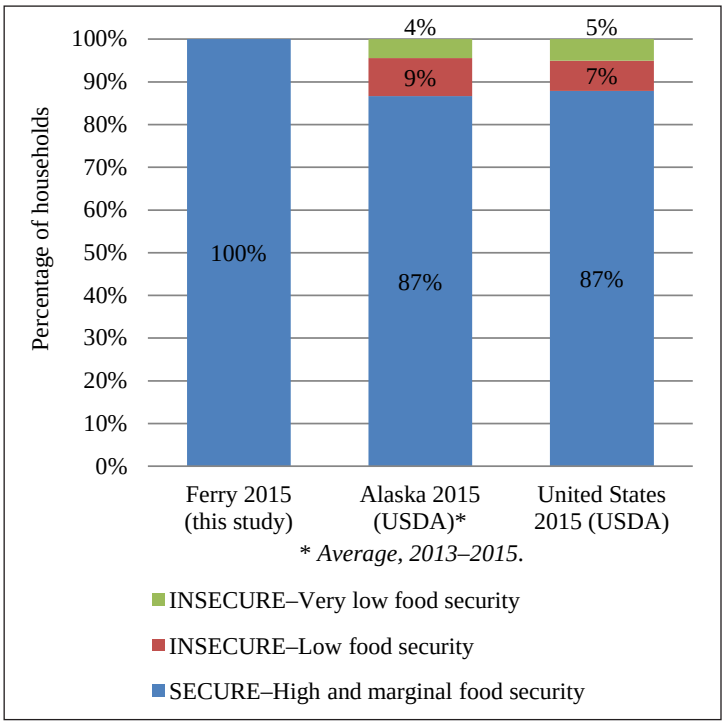


Figure 3-19.–Comparison of food security categories, Ferry, 2015.

Comparing Harvests and Uses in 2015 with Previous Years

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 8 resource categories in 2015 as in the past 5 years, and whether they got "enough" of each of the 8 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. They were further asked whether they did anything differently (such as supplement with store-bought food or switch to a different subsistence resource) because they did not get enough. This section discusses responses to those questions.

Together, Figure 3-20 and Figure 3-21 provide a broad overview of households' assessments of their harvests in 2015. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. Table D3-11 provides additional data to support Figure 3-20.

Approximately 64% of households indicated that they used less wild foods in 2015 as they had in recent years; the remaining 36% of households said that they used the same amount of resources during the study year as compared to previous years (Figure 3-20). No households reported using more of all resources during the study year as compared to previous years. Over one-half of respondents indicated that they used less wild foods in 2015 compared to previous years because resources were less available (Table D3-12). Additional reasons for less usage included weather or environmental factors and personal reasons such as too busy working.

Although all Ferry households reported using vegetation, making it the most highly used resource category in 2015, the majority (64%) of households reported using less vegetation in 2015 as compared to previous years. In addition, 29% of respondents indicated that their household used about the same amount, and 7% of households used more of the resource (Figure 3-20). The primary reason for less usage was resource availability (Table D3-12). As mentioned earlier, some households indicated that 2015 was a poor berry year.[21] The small number of households that used more vegetation attributed their increased usage to having received more as well as increased effort (Table D3-13).

21. C. McDevitt field notes, March 2016.

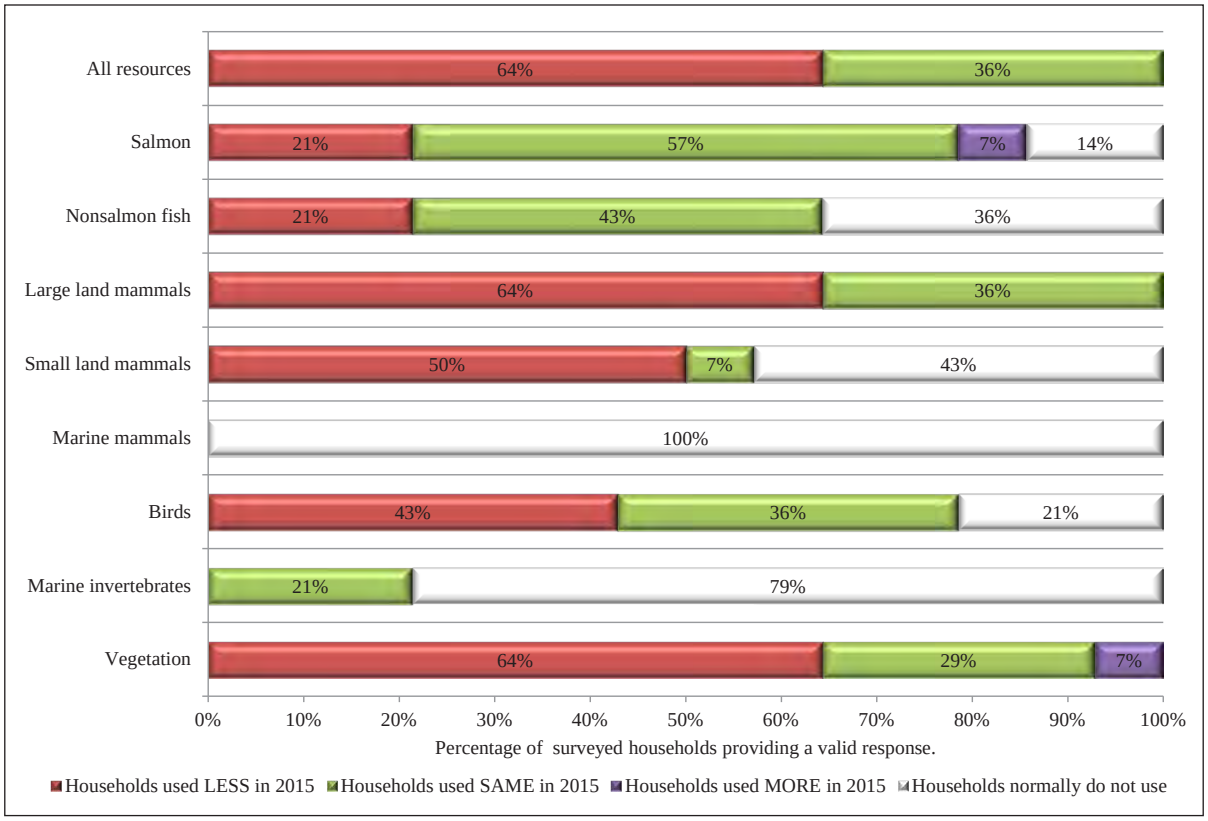


Figure 3-20.–Changes in household uses of resources compared to recent years, Ferry, 2015.

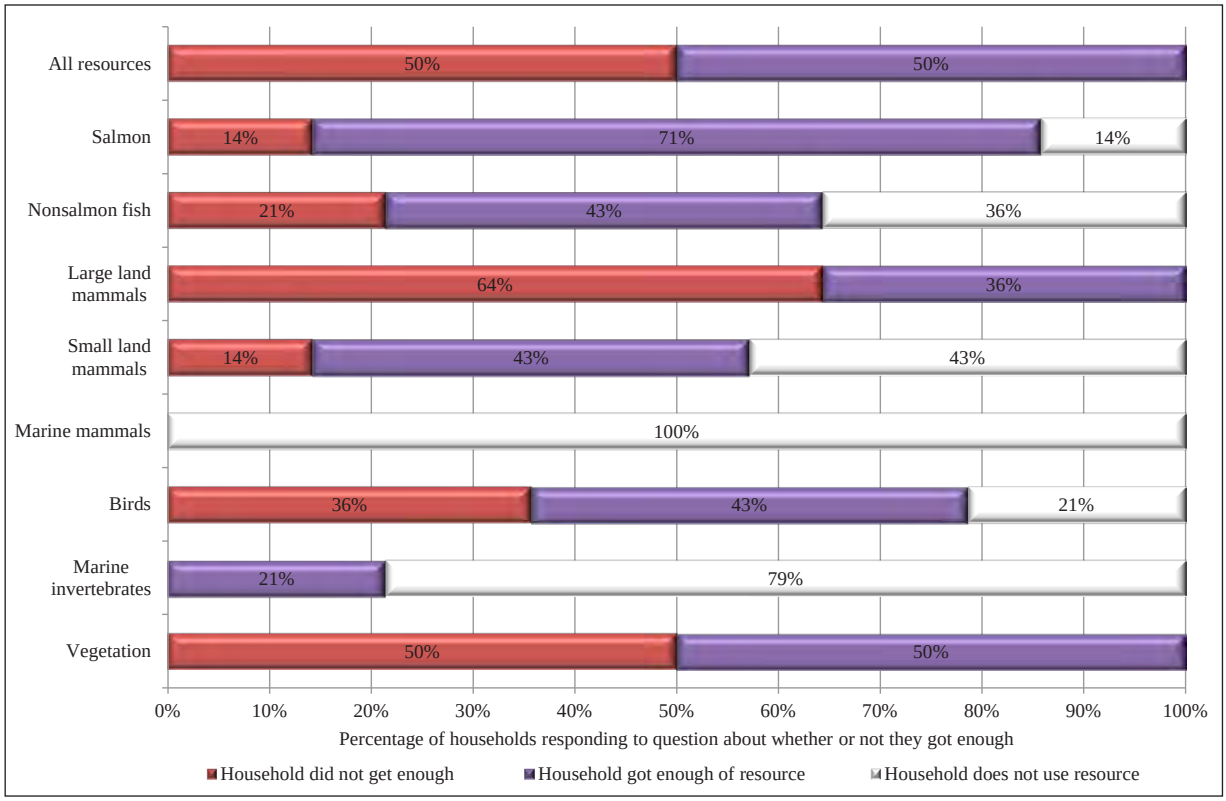


Figure 3-21.–Percentages of households reporting whether they got enough resources, Ferry, 2015.

When asked about large land mammals, the second most commonly used resource category, household usage reflected the same pattern as for all resources and vegetation: close to two-thirds of households used less, and the remaining households used the same amount (Figure 3-20). No households reported using more large land mammals. The primary reasons for less usage of large land mammals were regulations and resource availability (Table D3-12). As will be discussed later in the community concerns section, respondents indicated that these 2 reasons were related. One longtime resident noted that "the moose population in general isn't what it was twenty years ago or thirty years ago. And the caribou population is virtually extinct you know. You seldom see a caribou up on the Ferry Hills anymore" (Ferry03301601).

Over one-half of the community used the same amount of salmon in 2015 as they had in previous years, while 21% of households indicated that they used less salmon (Figure 3-20). Only 7% of households reported using more salmon (Table D3-11). The remaining 14% of households indicated that they did not normally use salmon. Reasons for less usage were evenly split between 3 different factors, including family or personal reasons, working or no time, and lack of effort (Table D3-12). Households that reported using more salmon indicated that they had increased their effort (Table D3-13).

Forty-three percent of households reported using the same amount of nonsalmon fish in 2015 as compared to previous years (Figure 3-20). The remaining 57% of households either used less (21%) or did not use (36%) nonsalmon fish. For the households that reported less usage, the primary reasons were being unsuccessful in their attempted harvest, family or personal reasons, and resource availability (Table D3-12).

Thirty-six percent of responding households indicated that they used the same amount of birds in 2015, and 43% used less (Figure 3-20). No households reported more bird usage, though 21% indicated they did not normally use birds. The primary reason for less bird usage was resource availability (Table D3-12). Other reasons included working or no time, and personal reasons.

Small land mammal usage for 50% of responding households had declined in 2015, compared to previous years (Figure 3-20). Only 7% of households indicated that they had used the same amount of small land mammals, and 43% expressed that they did not use the resource in 2015. Reasons for less usage included personal reasons, resource availability, and weather (Table D3-12).

Household respondents were also asked to assess the impact that their household may or may not have experienced as a result of not getting enough of a particular resource. Impacts could be characterized as "not noticeable, minor, major, or severe." Of those respondents who reported not getting enough of all resources, the majority indicated that the impact of not getting enough was major (Table D3-14). Over one-half of respondents indicated that not getting enough of either nonsalmon fish, large land mammals or small land mammals had a major impact on their household. For households that reported not getting enough vegetation and birds, 40% or more expressed that this had a major impact on the household. Households that reported severe impacts were far fewer: this degree of impact was only reported 3 times.

Two species of large land mammals were the most needed subsistence resources for the majority of households. Nearly two-thirds of households said that they needed moose, and close to 30% said that they needed caribou. This was a common theme throughout the study, and was discussed on several occasions with a number of different households.[22] Other sought-after resources included salmon, grouse, and several types of vegetation.

Harvest Data

No other subsistence harvest information exists for Ferry prior to this study.

Current and Historical Harvest Areas

No subsistence search and harvest information exists for Ferry prior to this study.

22. Survey comments and C. McDevitt field notes Ferry, AK 2016

Local Comments and Concerns

At the end of each survey, household respondents were given the opportunity to share their own comments, questions or concerns with research staff. In all, 79% of participating households offered comments or concerns to researchers, providing their own perspectives on various topics. These issues included subsistence-related matters such as animal populations, hunting and regulations, as well as concerns about development.

Regulations

Some respondents attributed the decline in moose populations to misdirected game management. Of the 11 households that shared comments and concerns with researchers, 8 of these households commented specifically on a series of antlerless moose hunts that had taken place in Game Management Unit 20A (GMU 20A) in years prior.

According to one resident, the decision to offer these types of hunts represented a gross mismanagement of GMU 20 and the Ferry Trail[23], the primary access into the Ferry hills. Another resident offered his own logic:

> Well I am not much of a game biologist but I got enough common sense to know that when the moose population gets low you just don't kill cows and for years that was the case here. But it just diminished the herds and I don't know if it is ever going to come back where it's a healthy, healthy number again. (Ferry03301601)

A longtime resident and active harvester pointed out that the antlerless hunts not only decimated the moose population, but also had far-reaching ecological implications:

> When you go into an area and you eliminate the cows and calves it takes a long time before we get the moose back and as I've learned from some of the elders, the older Native people, the moose is one of the most important parts that belong here in the Interior, because without moose we don't have anything. (Ferry03301603)

The respondent added that predators, healthy populations of which are oftentimes seen as sound indicators of a healthy ecosystem, have also suffered. One respondent joked that "…wolves travel through that country with a backpack on because there's nothing to eat" (Ferry03301603).

Another respondent added:

> I would be tickled if they never did another cow and calf hunt. It was, it was too intensive, as far as myself, all of the Ferry residents and pretty well anybody who live, any of the locals who live you know closer to Anderson, closer to the park, you know. It was pretty well a general consensus that, ok you said that you know, you guys [ADF&G biologists] claimed that the, you know the male to female and the browse, you know everything, it was out of whack. Well, um, it went too far, as far as I'm concerned. It…would just, it went too far, they took too many. You know, the wolves, the coyotes, everybody suffered when they're, you know, moose are prey. They're food for everybody, not just us, not just humans, they're food for everybody. (Ferry03311602)

In describing the biological basis for these hunts, the assistant Area Biologist for ADF&G noted that:

> In the early 2000s the moose population was growing to a very high level in 20A. It reached a point that the department didn't feel was sustainable. We were seeing high rates of browse removal, low calf weights, low twinning rates and cows that weren't having their first calves until 4 or 5 years old. These are all indicators of nutritionally stressed animals. The population reached a level of 18,000–20,000 moose. In an attempt to reduce the moose population we instituted very liberal

23. Survey comments.

> antlerless hunts and harvested many cows. The very liberal hunts started in 2004 and lasted until 2007. As the population level was reduced, the number of antlerless moose allowed to be harvested was reduced. Antlerless hunts continued through 2013 and then were stopped during 2014, 2015, and 2016 when we reached the low end of our population objective.[24]

When asked about the presence of caribou in the area today, one resident pointed to the results of a registration caribou hunt held in the late 1980s, and indicated that this particular hunt had a lasting impact on the Delta Caribou Herd (DCH); a herd that traditionally frequented the Ferry Hills:

> …our Fish and Game Department had a, a big hunt for a couple, 3 years in a row, and from that point on we haven't had any caribou. Whether, um, whether they just went someplace else…I have no idea if that's the truth or what but I know there's no caribou around here anymore. …When they had that registration hunt there was cars parked all the way from the Ferry Bridge all the way up that road up and down the highway. And they just blasted everything. (Ferry03311603)

A local Ferry hunter described this hunt, during which he had witnessed "five caribou floundering around out there [after having been wounded by hunters] and a bunch of them laying there dead" (Ferry03311603). Another resident concluded that it was "quite the slaughter" which left a lasting impression on residents, and added that "…the stories certainly live on, just about the wanton waste" (Ferry03311602).

User Conflict

One respondent acknowledged that being connected to the road system has significantly increased pressures on large game species: "This Unit 20A…we're on the highway system, we got a highway on the west and we got a highway on the east. You've got the Richardson, you got uh, the Glenn Highways, you got all them people in Anchorage…" coming up to hunt in the area (Ferry03311603).

Furthermore, road accessibility has enabled the creation of a series of extensive trail networks in the area. According to one resident, the trails have destroyed vegetation and permanently scarred the landscape:

> Man we can mess it up in a real quick hurry if we just go into it…look at what's the 4-wheelers have done to the country I mean there's trails everywhere. I mean you could fly with an airplane and you wonder how in the world did somebody get a 4-wheeler there…that vegetation and stuff, poof; you know it'll be there forever, them trails will be there forever. (Ferry03311603)

Some residents offered their own recommendations as to the direction that management should take in addressing local user concerns. One respondent suggested that a permitting system for local resident moose hunters be implemented in order to help minimize hunting pressure from nonlocal hunters. According to this resident, the antlerless hunt drew a lot of attention to the community of Ferry, as the area was inundated with nonlocal hunters during several of the antlerless hunts. Another respondent suggested that there should be more law enforcement presence and increased monitoring during moose hunting season. This particular resident also mentioned that there have been more instances of poaching and harvests of young bulls in recent years.[25]

Another resident echoed the claims of poaching, wanton waste, and lack of enforcement:

> You get a lot of guys who will shoot a 46,[26] you know, and instead of wanting to run the risk of getting caught, they just leave it. You know and it's tough…when there's not a lot of game enforcement you know. I think that the brown shirt that's stationed in Cantwell, the Fish and Game officer, he has to patrol from the Denali

24. T. Hollis, Assistant Area Biologist, ADF&G Division of Wildlife Conservation, email communication, January 5, 2017.

25. Survey comments.

26. 46" antler rack.

> Highway all the way up to the Rex Trail. So obviously Ferry kinda gets put on the backside 'cause the Denali Highway and the Rex Trail are so much more heavily trafficked. Yeah, we've seen some pretty, pretty bad things…when the cow and calf hunt started we saw a lot of missed shots. We saw a lot of moose with injuries, with crazy gangrene, I mean just driving home we'd see moose with arrows in their hind quarters…unfortunately not a single instance. Oh we saw a moose with a bullet in his butt, just oozy pustules… lotta single calves [harvested], lotta single calves the first few years that the cow and calf hunt went forward. Saw a lotta guys taking little teeny tiny baby calves. (Ferry03311602)

The same respondent told a story about an encounter she had with nonlocal hunters during one of the antlerless hunts:

> We were going home, we saw a cow with 2 arrows stuck in her hind quarter run across the trail…So, we go another, I don't know, 10–15 ft. down the road and there's…2 military guys with their girlfriends…they actually admitted to shooting this moose twice with bow and arrows and that they were bad shots… they proceeded to tell us they had gone through the flats and the tussocks and they had done everything in their power to kill this moose that we just saw run across the road… they didn't have a speck of water on 'em, they didn't have a speck of grass, dirt, moss. They were dry. The girls were very pretty, their makeup wasn't smudged, they hadn't worked up a sweat…that was discouraging, we were pretty furious. (Ferry03311602)

Development

Some residents also shared concerns about development in the area. One respondent mentioned that the wind farm had impacted large game behavior and "changed their [moose and caribou] browse and migration patterns." The same respondent added that "the wind farm changed everything for the good and the bad, period. I mean there's just no going back, we sacrificed a lot of our subsistence…" Notwithstanding these changes, the respondent added that "we gained some comfort out of it, you know" (Ferry03311602).

Residents also voiced concerns about the proposed natural gas pipeline. One respondent stated that the construction of the pipeline would have a dramatic impact on the wildlife in the area.[27] Another respondent expressed concerns about potential accidents that may occur during the construction phase.[28] These included possible disruptions that may cause irreparable damage to the environment and compromise the quality of life for all inhabitants, wildlife and humans alike. One resident however welcomed the project.[29]

Conclusions

Because it is on the road system, the community of Ferry experiences issues that may be common among similarly situated communities throughout the state. Historically, the area in and around Ferry has received a considerable amount of hunting pressure. Although market hunting has long since been outlawed, user conflict remains a contentious issue as nonlocal users travel to easily accessible semi-rural areas to hunt. Some residents, however, pointed out that they also often travel to different parts of the state on an annual basis to harvest other subsistence resources that cannot be sourced locally. For example, some respondents travel to the Kenai or Copper rivers to dipnet for sockeye salmon. In their opinion, competition within their own community is no different than what confronts Chitina and Kenai residents during dipnet season.[30]

27. Survey comment.
28. Survey comment.
29. C. McDevitt field notes, March 2016.
30. C. McDevitt field notes, March 2016.

Acknowledgements

ADF&G staff would like to thank the people of Ferry for their hospitality, and participation in the project. Additional thanks to "Mayor" DeVere Pieschl for providing transportation and a convenient location to "take a break." Lastly, special thanks to our very kind, knowledgeable, and hardworking local research assistant Erin Dynes.

4. ANDERSON

Alida Trainor

In March 2015, 6 researchers surveyed 50 of 79 eligible households in Anderson (63%; Table 1-4; Figure 4-1). Expanding for 29 unsurveyed households, Anderson's estimated total harvest of wild foods between January and December 2015 was 15,045 edible pounds (Table 4-1). The average harvest per household was 190 lb; the average harvest per capita was 81 lb. This study estimates that 186 people lived in Anderson for 6 months or more during the 2015 study year (Table 1-4).

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

In addition to the comprehensive survey, 2 men were interviewed individually. Both were longtime residents of Anderson. By providing a better understanding of the seasonal round, local history, and subsistence activities in the area, the ethnographic interviews contextualize the quantitative harvest and use data collected in the surveys.

Community Background

Tanana Athabascans have inhabited the Nenana Basin for time immemorial. However, the community of Anderson was settled by non-Natives who began residing there in the 1950s. During the late 1950s, Arthur Anderson and several other homesteaders moved to the area and began building homes near the Nenana River. In 1959, Mr. Anderson subdivided his homestead into quarter-acre lots and began selling them to civilian workers who were presently employed by Clear Air Force Station (Plate 4-1).[2]

In 1961, the Ballistic Missile Early Warning System station was built.[3] The development of Clear Air Force Base (CAFB) as a strategic defensive location brought more service personnel and civilian workers to the area. Some bought or built houses in Anderson while others lived in barrack housing on base. As the population grew, a school was built to accommodate the influx of residents. The city incorporated in 1962.

In the 1960s and 1970s, access to Anderson increased. In 1968, a bridge was built over the Tanana River which made travel to Fairbanks more convenient.[4] Prior to the bridge construction, a ferry operated during the summer months. The bridge allowed Anderson residents to easily travel north to Fairbanks for supplies. In 1971, access to communities such as Anchorage in Southcentral Alaska was facilitated by the completion of the George Parks Highway.[5]

The fluctuations in operations at CAFB have affected Anderson's population over time. As the Cold War came to a close in the 1990s, Anderson began losing longtime residents. In 2007, in an effort to encourage residency in Anderson, the City decided to give quarter-acre parcels to anyone who would build on them. This initiative failed to bolster the local population or economy.

Beginning in the early 2000s the city held a bluegrass music festival at the riverside park. This event grew in popularity and brought business to the city each July, but in 2012 the event was discontinued because of ongoing issues with drugs and alcohol abuse by attendees. Now, a smaller music festival is held at the Cantwell lodge. Residents expressed regret about this. "We don't even have that anymore. At least

1. Alaska Department of Fish and Game (ADF&G) Division of Subsistence, Juneau. "Community Subsistence Information System: CSIS." https://www.adfg.alaska.gov/sb/CSIS. Hereafter *ADF&G CSIS*.
2. City of Anderson. 2017. "Anderson." Accessed March 1, 2017. http://www.anderson.govoffice.com/
3. Airforce-technology.com. 2017. "Clear Air Force Station, Alaska, United States of America." Accessed March 1, 2017. http://www.airforce-technology.com/projects/clear-air-force-station-alaska/
4. City of Anderson. 2017. "Anderson." Accessed March 1, 2017. http://www.anderson.govoffice.com/
5. Hereafter, *Parks Highway.*

Table 4-1.–Resource harvest and use characteristics, Anderson, 2015.

Characteristic	
Mean number of resources used per household	**6.9**
Minimum	0
Maximum	21
95% confidence limit (±)	12.0%
Median	6.5
Mean number of resources attempted to harvest per household	**6.0**
Minimum	0
Maximum	23
95% confidence limit (±)	15.7%
Median	5.0
Mean number of resources harvested per household	**5.2**
Minimum	0
Maximum	20
95% confidence limit (±)	15.6%
Median	4.0
Mean number of resources received per household	**2.0**
Minimum	0
Maximum	7
95% confidence limit (±)	16.2%
Median	1.0
Mean number of resources given away per household	**1.3**
Minimum	0
Maximum	9
95% confidence limit (±)	26.5%
Median	0.0
Household harvest (lb)	
Minimum	0
Maximum	1,242
Mean	190.4
Median	29.3
Total harvest weight (lb)	15,045.3
Community per capita harvest (lb)	80.7
Percentage using any resource	94%
Percentage attempting to harvest any resource	84%
Percentage harvesting any resource	78%
Percentage receiving any resource	78%
Percentage giving away any resource	44%
Number of households in sample	50
Number of resources asked about and identified voluntarily by respondents	120

Source ADF&G Division of Subsistence household surveys, 2016.

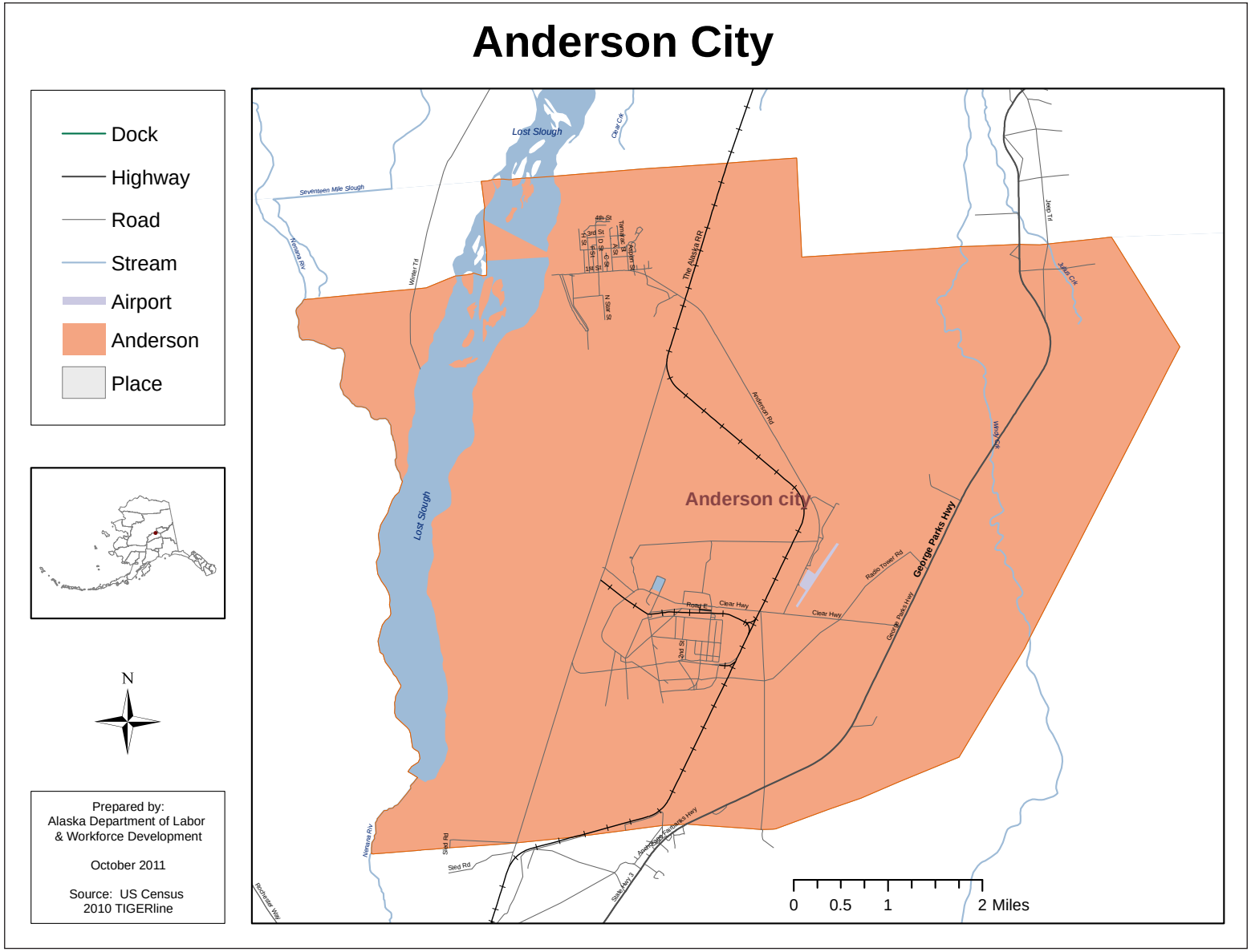


Figure 4-1.–Anderson City (ADLWD 2011).

Plate 4-1.–Anderson Road connects the community to the George Parks Highway. The community, located at the end of this road, is surrounded by spruce trees and has access to the Nenana River.

the music festival was something to look forward to, something to keep us on the map."[6]

Anderson has a post office, city council, a kindergarten through 12th grade school, a church, and a local landfill. Residents travel to Nenana, Fairbanks, or Anchorage for supplies and groceries (Plate 4-2).

Seasonal Round

Residents who participated in the survey described their hunting and gathering of wild foods as occasional events rather than a seasonal practice. Many Anderson residents work full- or part-time jobs for much of the year and are able to hunt or fish during their time off. In the summer months, many residents travel to the southern region of Alaska to fish for salmon and marine species such as halibut. Moose hunting in the fall is a yearly practice by many residents and also involves some travel. However, increased competition with other hunters has made moose hunting more difficult in recent years. Access to the Rex Trail and hunting pressure is discussed in a later section.

Ethnographic respondents described trapping furbearing animals throughout the year. Local trappers target lynx, wolverine, muskrat, marten, and river otter.

Greens and a variety of berries are locally available in and near town, and residents frequently pick and gather them throughout the summer and fall. The preparation of jams and jellies is a common use for the berries picked by Anderson residents.

Figure 4-2 shows the search and harvest areas Anderson residents used in 2015 to hunt, gather, or fish wild resources. Residents relied on the road system to access areas well beyond the community. The Dalton, Parks, Seward, and Denali highways allowed residents to harvest foods not locally available and diversified the harvest profile.

Plate 4-2.–Built in 1959, the local school continues to serve Anderson families.

6. A. Trainor field notes, March 4, 2016.

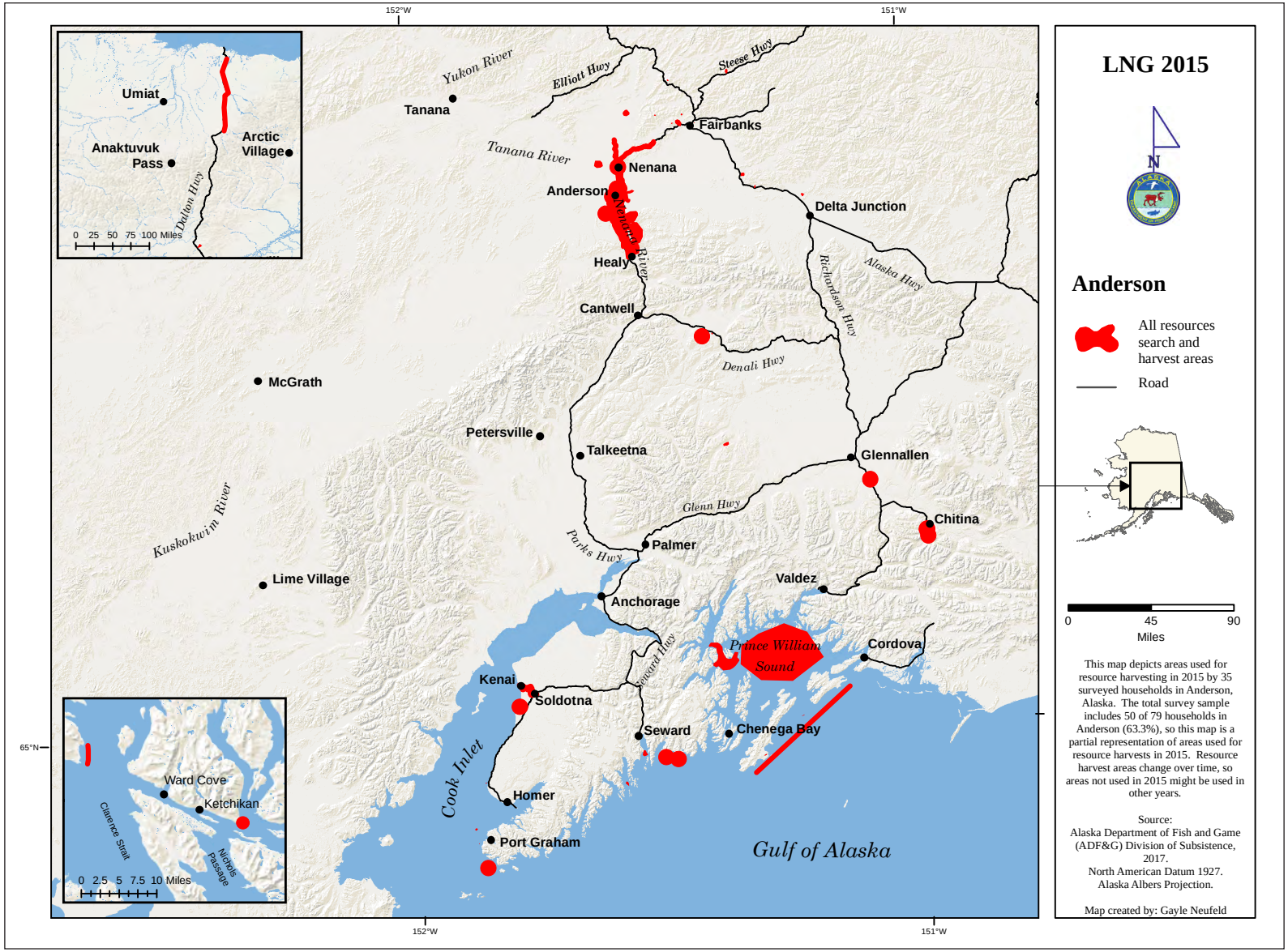


Figure 4-2.–All resources search and harvest areas, Anderson, 2015.

Table 4-2.–Sample and demographic characteristics, Anderson, 2015.

Characteristics	Community Anderson
Sampled households	50
Eligible households	79
Percentage sampled	63.3%
Sampled population	118
Estimated community population	186.4
Household size	
Mean	2.4
Minimum	1.0
Maximum	9.0
Age	
Mean	37.9
Minimum[a]	0
Maximum	83
Median	42.5
Length of residency	
Total population	
Mean	14.3
Minimum[a]	0
Maximum	55
Heads of household	
Mean	17.8
Minimum[a]	1
Maximum	55
Alaska Native	
Estimated households[b]	
Number	1.6
Percentage	2.0%
Estimated population	
Number	3.2
Percentage	1.7%

Source ADF&G Division of Subsistence household surveys, 2016.

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

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

Population Estimates and Demographic Information

One hundred and eighteen residents lived in 50 surveyed households in Anderson in 2015 (Table 4-2). Expanding for the unsurveyed households, the estimated population of 186 included 106 males (57%) and 81 females (43%); 3 residents identified themselves as Alaska Native (2%; figures 4-3 and 4-4; tables D4-1 and D4-2). Figure 4-4 is a population profile depicting the number of males and females in the age groups from 0 to 84. Of the 186 residents in Anderson, most were between the ages of 35 and 64 (53%), showing a large middle-aged population. A smaller proportion was under the age of 34 (34%).

Household sizes ranged from 1 to 9 occupants with an average of 2 residents per household (Table 4-2). During the survey period, the median age was 43, the oldest resident was 83, and the youngest was less than 1. The average length of residency was 14 years. The vast majority (87%) of household heads reported they were born outside of Alaska in another state (Table 4-3). One respondent explained that in the past, when CAFB employed a large portion of Anderson residents, "everybody was from someplace else here" (03062016AND1). He went on to say that, "when people would ask us where we were from, the first thing would come out of our mouths was where we came from in the lower 48 and then they would say, 'no we mean in Alaska.' 'Oh, Anderson, yeah, we're from Anderson.'" Today, the same is true. Most residents are originally from other U.S. states (tables 4-3 and D4-3). Only 2% of household heads reported Anderson as their birthplace, but 5% recorded Fairbanks as their birthplace (Table 4-3). Similar to household heads, most of the population was born in other states (71%). Ten percent of residents reported Anderson as their birthplace, and 10% listed Fairbanks (Table D4-3).

Figure 4-5 shows historical population estimates between 1970 and 2015 from the U.S. Census, the Alaska Department of Labor, and this study. With the exception of decennial U.S. census years, the Alaska Department of Labor estimates population annually. In 2010, the U.S. Census Bureau counted 246 residents in Anderson. In 2014, the Alaska Department of Labor estimated a population of 240. This study's estimate of 186 shows the continuation of a gradual decline in the local population since the late 1980s. The population peaked at 635 in 1988. In the 1980s and 1990s, as the scale of CAFB operations decreased, Anderson's population began to decline sharply. One respondent explained that during that time, positions were eliminated and the work week was reduced from 80 hours per week to a 4-day work week with 10-hour shifts. This "was a terrific shift, when that happened, because they have rooms at the base and they, you know, most of people have food [supplied to them]. You can live

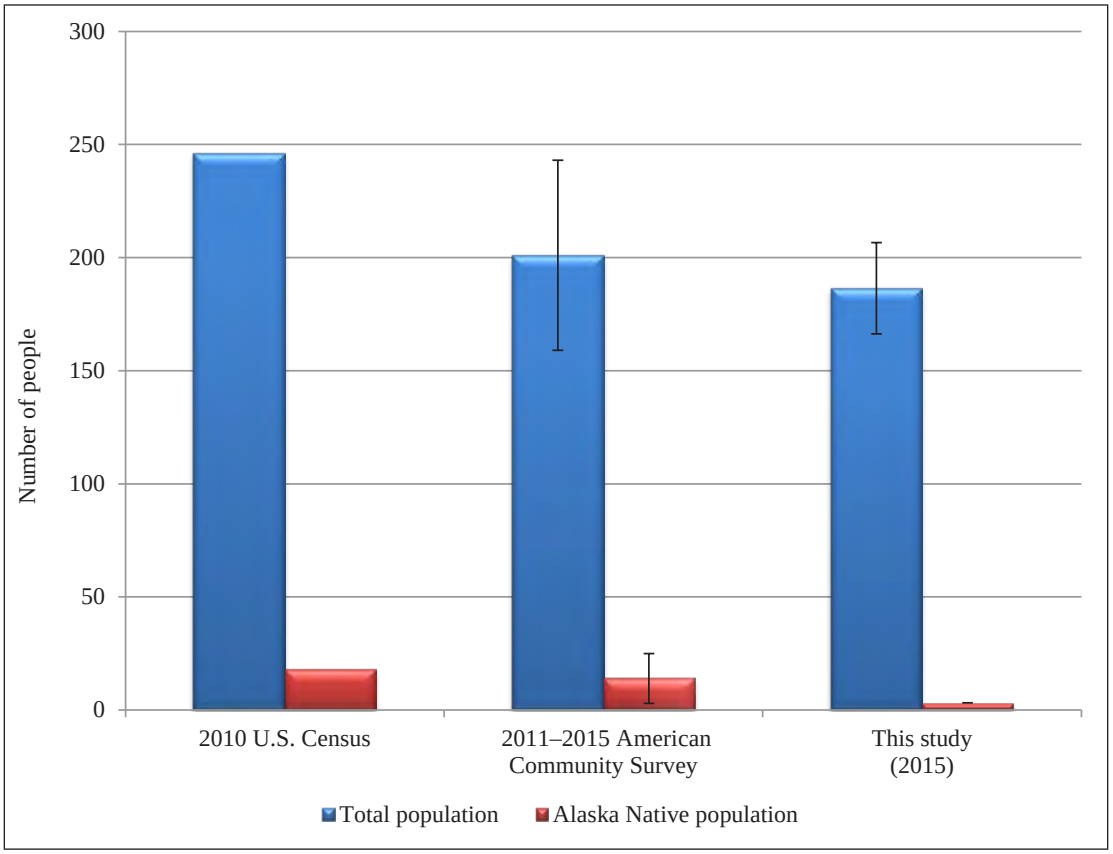


Figure 4-3.–Population estimates, Anderson, 2010 and 2015.

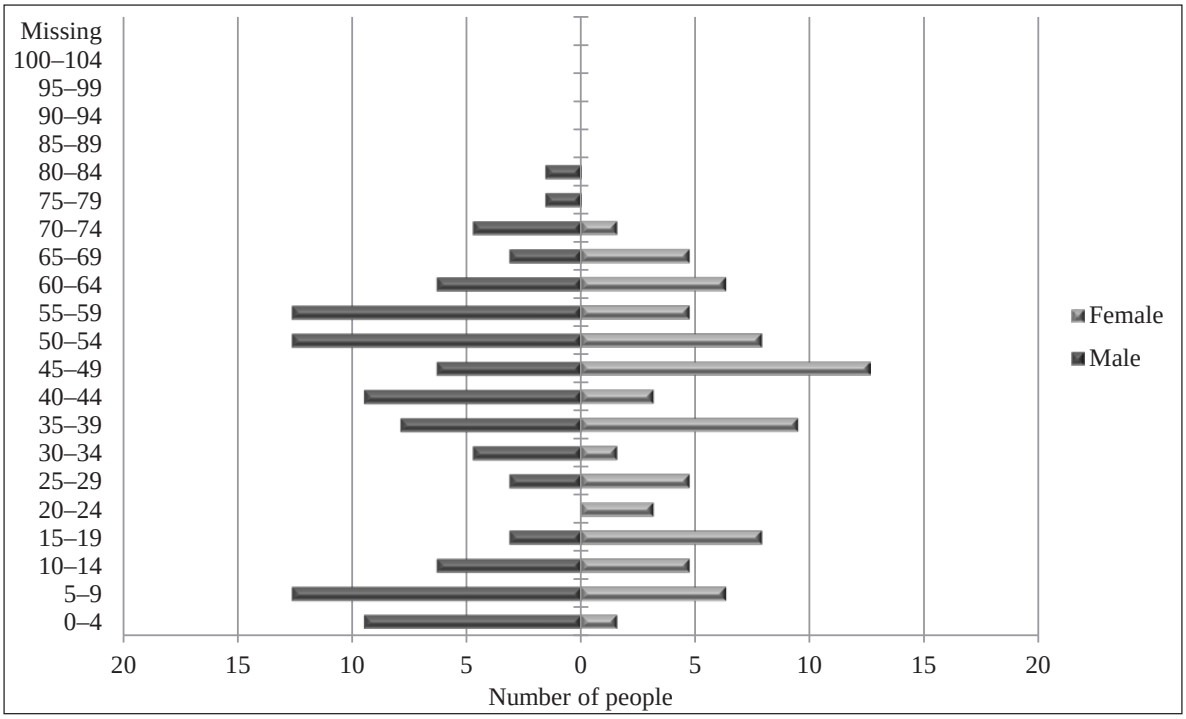


Figure 4-4.–Population profile, Anderson, 2015.

Table 4-3.–Birthplaces of household heads, Anderson, 2015.

Birthplace	Percentage
Anderson	2.4%
Fairbanks	4.8%
Ketchikan	1.2%
Nenana	1.2%
Other U.S.	86.9%
Foreign	3.6%

Source ADF&G Division of Subsistence household surveys, 2016.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

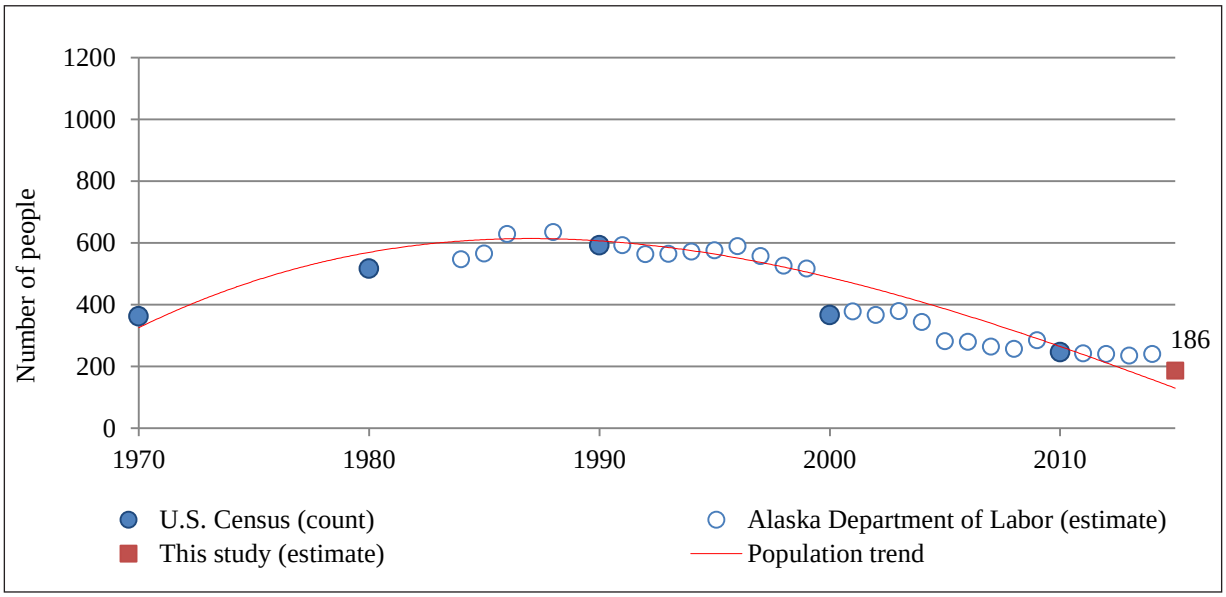


Figure 4-5.–Population estimates, Anderson, 1970–2015.

anywhere in this state and just spend a couple of nights at Clear [Air Force Base]…So unless they had a family" there was little reason to live in Anderson (03062016AND1). With the Parks Highway completed, employees were able to easily commute to Fairbanks, Wasilla, Anchorage, or elsewhere.

Summary of Harvest and Use Patterns

Individual Participation in the Harvesting and Processing of Wild Resources

Figure 4-6 and Table D4-4 report the expanded levels of individual participation in the harvest and processing of wild resources by all Anderson residents in 2015. Overall, the same percentage of people who harvested wild foods processed them (71%). In all resource categories, a similar proportion of people processed wild foods as those that harvested them. This could indicate that those who harvest wild foods are actively involved in the processing of the same food. As a category, fish had the largest reported difference between the percentage of individuals fishing and those that helped process (39% and 46% respectively). Processing fish can include cutting, cleaning, drying, smoking, vacuum packaging, or jarring. Other categories including large and small land mammals, birds and eggs, and vegetation show higher levels of harvest than of participation in processing activities. A discussion on the harvest and use characteristics of each resource category is described below and explores possible explanations for this pattern.

Harvest and Use of Wild Resources at the Household Level

Figure 4-7 shows by resource category the percentages of households that used wild resources, attempted to harvest, harvested, and shared wild foods. Anderson households reported the greatest use levels in the vegetation and salmon resource categories (78% and 74%, respectively; Figure 4-7). Sixty-two percent of households used large land mammals, the third most utilized category. Nonsalmon fish followed, used by

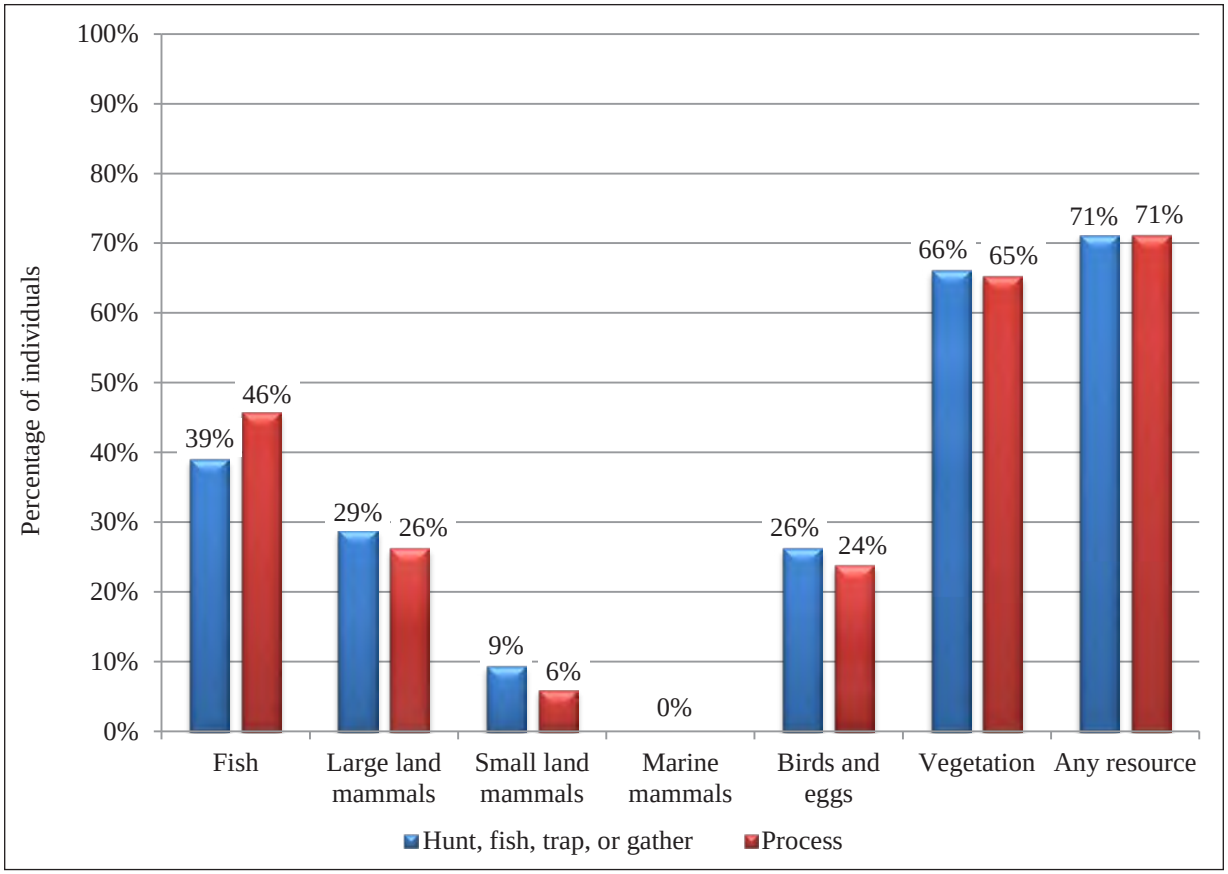


Figure 4-6.–Percentages of individuals participating in harvesting and processing wild resources, Anderson, 2015.

more than one-half of all households (60%). Although the use of these categories is high, the percentage of households that actually harvested them is slightly lower, or in some cases, significantly lower. Salmon, for example, was used by 74% of households but only harvested by 40%. The same percentage of households that reported attempting to harvest salmon successfully did so. This suggests that households with the means to fish for salmon were able to harvest salmon. Unlike the salmon category, residents reported a lower success rate in harvesting large land mammals. Although 42% attempted to harvest large land mammals, only 12% of households successfully harvested them. Hunting a moose or another large land mammal does not guarantee success, but those who were successful may distribute the moose to those who were not by sharing, bartering, and trading. A further discussion on the connection between sharing and high rates of use is discussed in the large land mammals section below.

Table 4-1 summarizes resource harvest and use characteristics for Anderson in 2015 at the household level. Most households (94%) used wild foods from a variety of resource categories. The average harvest was 190 lb edible weight per household. During the study year, community households harvested an average of 5 kinds of resources and used an average of 7 kinds of resources. The maximum number of resources used by any household was 21. In addition, households gave away an average of 1 resource. Overall, as many as 120 resources were available for households to harvest; this included resources that survey respondents identified but were not asked about in the survey instrument.

Harvest Quantities and Composition

Table 4-4 reports estimated wild resource harvests and uses by Anderson residents in 2015 and is organized first by general category and then by species. All edible resources are reported in pounds edible weight (see Appendix C for conversion factors). The harvest category includes resources harvested by any member of

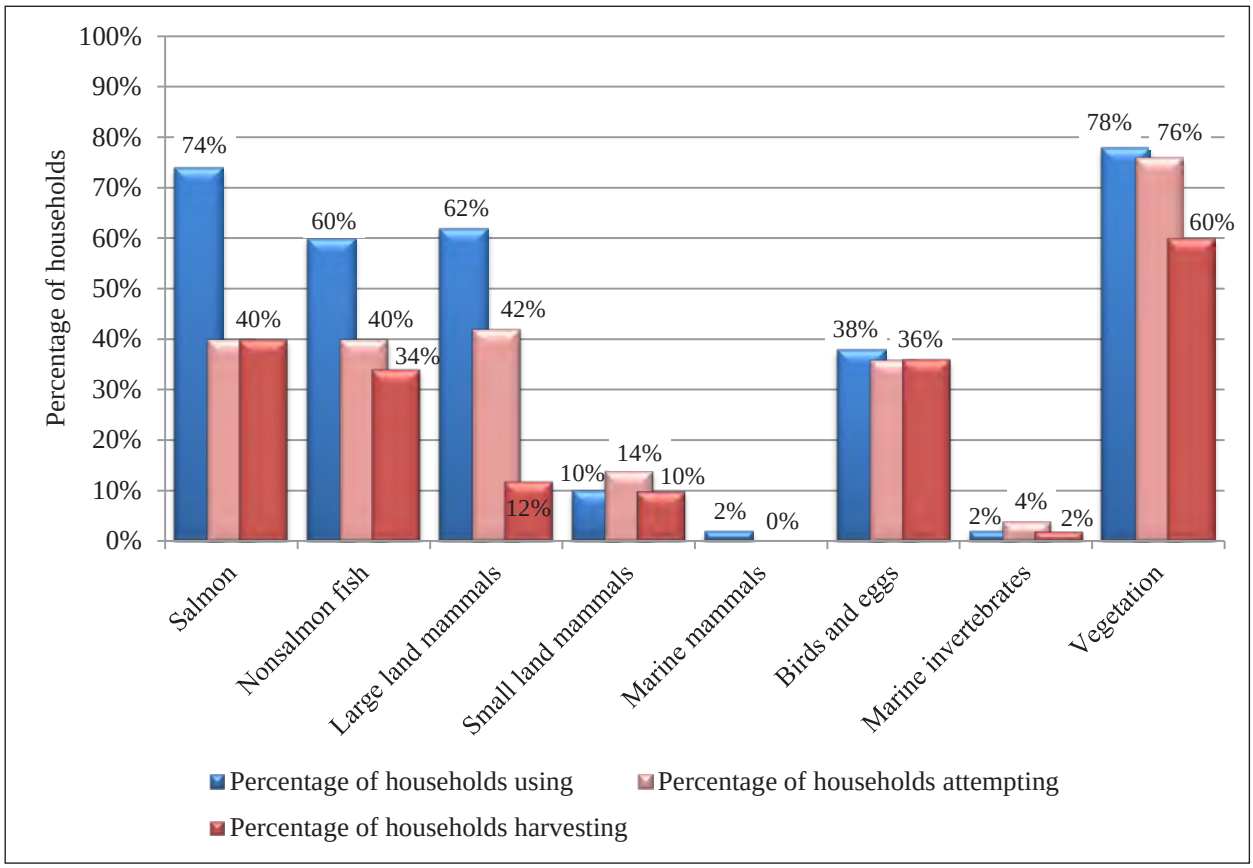


Figure 4-7.–Percentages of households attempting harvest, harvesting, and using wild resources, Anderson, 2015.

the surveyed household during the study year. The use category includes all resources taken, given away, or used by a household and resources acquired from other harvesters, either as gifts, by barter or trade, through hunting partnerships, or as meat given by hunting guides and nonlocal hunters. Purchased foods are not included, but resources such as firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

Anderson residents harvested 15,045 edible pounds of wild foods for an estimated harvest of 81 lb per capita (Table 4-4). Salmon accounted for 45% of the total harvest (Figure 4-8). Sockeye salmon, caught in the Copper and Kasilof rivers and near Kenai, made up 30% of the community's harvest (25 lb per capita or 4,561 lb total; Table 4-4; Figure 4-9), and lesser amounts of coho, pink, and Chinook salmon were also among the highest harvested resources (9%, 3%, and 3% of the community harvest respectively). Moose was the second highest harvested species in 2015, accounting for 28% of the per capita harvest. Overall, residents harvested 4,250 lb of moose or 23 lb per capita (Table 4-4). Pacific halibut,[7] the only marine species in Anderson's highest harvested resources, made up 10% of the community harvest with a per capita harvest of 8 lb (Table 4-4; Figure 4-9).

The top resources used by households were similar to the highest harvested resources. Sockeye salmon was used by 62% of households (Table 4-5). Moose and halibut followed with 54% and 48% of households using those species. Noted above, neither sockeye salmon nor halibut are locally available, highlighting Anderson residents' ability to travel great distances to harvest wild foods.

Figure 4-8 shows the composition of Anderson's harvest by resource category. Following salmon, large land mammals was the second highest harvested resource category, accounting for 32% of the total harvest. Nonsalmon fish made up 13% of the community harvest during the study year. Together, those 3 categories made up 90% of the harvest. Smaller amounts of vegetation (7%), birds and eggs (3%), marine invertebrates (less than 1%), and small land mammals (less than 1%) are also represented in this figure.

Salmon

Approximately 6,848 lb (37 lb per capita) of salmon was harvested in 2015, roughly 45% of all wild food harvested by Anderson residents (Table 4-4; Figure 4-8). Aside from vegetation, more households used salmon (74%) than any other resource category. Forty percent of households attempted to and successfully harvested salmon in 2015. Sharing salmon was common throughout the community; 24% of households reported that they gave some salmon away and 44% reported that they received some from others. Figure 4-10 shows the composition of salmon harvest by edible pounds. The Tanana River near Nenana is a major tributary for chum salmon and is accessible to Anderson residents. One respondent explained why many Anderson residents prefer traveling to catch sockeye salmon rather than fishing for chum salmon closer to home:

> Generally what [Nenana residents] are catching is dog salmon and those are fine to smoke or make dried fish with and it's oilier and mealier…and there are people here and that's the only exposure to salmon that they've ever had and you don't wanna tell them otherwise, they think it's absolutely fantastic and so it's good you know? It's not that it's bad, it's just that we've had the reds [sockeye salmon] you know? We've had the kings [Chinook salmon] or the silvers [coho salmon] and they're in better condition. (03042016AND2)

Sockeye salmon, a type of salmon not available in the nearby Tanana or Nenana rivers, composed the bulk of the harvest (66%; Figure 4-10). More residents reported use of sockeye salmon (62%) than any other type of salmon (Table 4-4). Per capita, residents harvested 25 lb of sockeye salmon in 2015.

Coho salmon accounted for 19% of the salmon harvest, resulting in a per capita harvest of 7 lb (Table 4-4; Figure 4-10). Chinook and pink salmon both contributed 3 lb per capita to the community harvest, and each represented 7% of the salmon harvest.

7. Hereafter, *halibut*.

Table 4-4.–Estimated harvests of fish, wildlife, and vegetation resources, Anderson, 2015.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**94.0**	**84.0**	**78.0**	**78.0**	**44.0**	**15,045.3**	**190.4**	**80.7**				**28.3**
Salmon	**74.0**	**40.0**	**40.0**	**44.0**	**24.0**	**6,847.7**	**86.7**	**36.7**				**39.6**
Summer chum salmon	2.0	2.0	2.0	0.0	0.0	22.4	0.3	0.1	4.7	ind	0.1	121.8
Fall chum salmon	2.0	2.0	2.0	0.0	2.0	37.3	0.5	0.2	7.9	ind	0.1	121.8
Coho salmon	24.0	18.0	16.0	8.0	6.0	1,275.3	16.1	6.8	236.8	ind	3.0	82.6
Chinook salmon	30.0	20.0	16.0	18.0	6.0	475.5	6.0	2.6	60.0	ind	0.8	57.1
Pink salmon	12.0	12.0	12.0	0.0	2.0	476.4	6.0	2.6	186.4	ind	2.4	103.2
Sockeye salmon	62.0	32.0	32.0	34.0	22.0	4,560.8	57.7	24.5	948.2	ind	12.0	45.7
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown salmon	4.0	0.0	0.0	4.0	2.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**60.0**	**40.0**	**34.0**	**34.0**	**10.0**	**1,901.8**	**24.1**	**10.2**				**45.1**
Pacific herring	2.0	2.0	2.0	0.0	0.0	9.5	0.1	0.1	1.6	gal	0.0	0.0
Pacific herring roe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Eulachon (hooligan, candlefish)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown smelts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific tomcod	8.0	6.0	6.0	2.0	0.0	11.3	0.1	0.1	53.7	ind	0.7	69.1
Starry flounder	4.0	6.0	4.0	2.0	0.0	31.3	0.4	0.2	28.4	ind	0.4	90.0
Lingcod	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pacific halibut	48.0	24.0	22.0	28.0	10.0	1,439.1	18.2	7.7	1,439.1	lb	18.2	51.3
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
Black rockfish	2.0	2.0	2.0	0.0	0.0	4.7	0.1	0.0	3.2	ind	0.0	121.8
Unknown rockfishes	12.0	10.0	10.0	2.0	2.0	75.8	1.0	0.4	50.6	ind	0.6	79.7
Unknown skates	2.0	2.0	2.0	0.0	0.0	47.4	0.6	0.3	9.5	ind	0.1	121.8
Burbot	2.0	2.0	2.0	0.0	0.0	19.9	0.3	0.1	4.7	ind	0.1	121.8
Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lake trout	4.0	4.0	4.0	0.0	0.0	25.3	0.3	0.1	6.3	ind	0.1	85.2
Arctic grayling	14.0	20.0	14.0	2.0	0.0	93.9	1.2	0.5	104.3	ind	1.3	54.6
Northern pike	2.0	2.0	2.0	0.0	0.0	57.4	0.7	0.3	17.4	ind	0.2	121.8

-continued-

Table 4-5.–Page 2 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Nonsalmon fish, continued												
Sheefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
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
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	10.0	10.0	8.0	4.0	0.0	86.3	1.1	0.5	61.6	ind	0.8	67.7
Unknown trouts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Bering cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Round whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whitefishes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Large land mammals	**62.0**	**42.0**	**12.0**	**46.0**	**16.0**	**4,745.7**	**60.1**	**25.5**				**50.1**
Black bear	6.0	4.0	2.0	4.0	0.0	158.0	2.0	0.8	1.6	ind	0.0	121.8
Brown bear	4.0	2.0	2.0	2.0	2.0	132.7	1.7	0.7	1.6	ind	0.0	121.8
Caribou	14.0	10.0	0.0	14.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mule deer	2.0	2.0	2.0	0.0	2.0	204.8	2.6	1.1	4.7	ind	0.1	121.8
Mountain 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	54.0	38.0	10.0	40.0	14.0	4,250.2	53.8	22.8	7.9	ind	0.1	52.2
Dall sheep	4.0	4.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	**10.0**	**14.0**	**10.0**	**2.0**	**4.0**	**7.1**	**0.1**	**0.0**				**121.8**
Beaver	2.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	12.6	ind	0.2	121.8
Coyote	4.0	6.0	4.0	0.0	0.0	0.0	0.0	0.0	4.7	ind	0.1	90.0
Red fox	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snowshoe hare	4.0	4.0	4.0	0.0	2.0	7.1	0.1	0.0	7.9	ind	0.1	121.8
River (land) otter	4.0	6.0	4.0	0.0	0.0	0.0	0.0	0.0	7.9	ind	0.1	99.9
Lynx	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	11.1	ind	0.1	70.3
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marten	4.0	6.0	4.0	0.0	0.0	0.0	0.0	0.0	34.8	ind	0.4	88.5
Mink	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	31.6	ind	0.4	121.8
Muskrat	2.0	2.0	2.0	0.0	2.0	0.0	0.0	0.0	41.1	ind	0.5	121.8

-continued-

Table 4-5.–Page 3 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Small land mammals, continued												
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red (tree) squirrel	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	9.5	ind	0.1	121.8
Weasel	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	9.5	ind	0.1	121.8
Gray wolf	2.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolverine	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine mammals	**2.0**	**0.0**	**0.0**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sea otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whales	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**38.0**	**36.0**	**36.0**	**2.0**	**2.0**	**425.3**	**5.4**	**2.3**				**39.0**
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
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
Goldeneyes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	2.0	2.0	2.0	0.0	0.0	12.6	0.2	0.1	7.9	ind	0.1	121.8
Northern pintail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
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
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada goose	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/cackling 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 goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
White-fronted goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown geese	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

-continued-

Table 4-5.–Page 4 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Birds and eggs, continued												
Tundra (whistling) swan	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
Spruce grouse	22.0	22.0	22.0	0.0	2.0	182.0	2.3	1.0	202.2	ind	2.6	41.6
Sharp-tailed grouse	8.0	8.0	8.0	0.0	0.0	79.0	1.0	0.4	79.0	ind	1.0	71.7
Ruffed grouse	24.0	22.0	22.0	2.0	0.0	123.9	1.6	0.7	154.8	ind	2.0	44.2
Unknown grouses	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown ptarmigans	8.0	6.0	6.0	2.0	2.0	27.8	0.4	0.1	34.8	ind	0.4	88.8
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine invertebrates	**2.0**	**4.0**	**2.0**	**0.0**	**0.0**	**15.8**	**0.2**	**0.1**				**121.8**
Butter clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Freshwater clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Razor clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
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 crabs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown tanner crabs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Octopus	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Shrimps	2.0	2.0	2.0	0.0	0.0	15.8	0.2	0.1	7.9	gal	0.1	121.8
Vegetation	**78.0**	**76.0**	**60.0**	**20.0**	**28.0**	**1,101.9**	**13.9**	**5.9**				**32.9**
Blueberry	42.0	42.0	42.0	2.0	4.0	351.6	4.5	1.9	87.9	gal	1.1	49.4
Lowbush cranberry	24.0	24.0	24.0	2.0	10.0	196.7	2.5	1.1	49.2	gal	0.6	45.2
Highbush cranberry	20.0	22.0	20.0	0.0	2.0	43.5	0.6	0.2	10.9	gal	0.1	48.5
Crowberry	4.0	4.0	4.0	0.0	0.0	6.7	0.1	0.0	1.7	gal	0.0	114.7
Currants	4.0	4.0	4.0	0.0	0.0	9.5	0.1	0.1	2.4	gal	0.0	90.0
Raspberry	30.0	30.0	30.0	0.0	4.0	50.4	0.6	0.3	12.6	gal	0.2	33.4
Strawberry	22.0	22.0	22.0	2.0	4.0	64.8	0.8	0.3	16.2	gal	0.2	43.1
Dogwood berry	2.0	2.0	2.0	0.0	0.0	0.4	0.0	0.0	0.1	gal	0.0	121.8

-continued-

Table 4-5.–Page 5 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Serviceberry	2.0	2.0	2.0	0.0	0.0	2.4	0.0	0.0	0.6	gal	0.0	121.8
Bearberry	4.0	4.0	4.0	0.0	2.0	3.2	0.0	0.0	0.8	gal	0.0	85.2
Other wild berry	2.0	2.0	2.0	0.0	0.0	0.4	0.0	0.0	0.1	gal	0.0	121.8
Hudson's Bay (Labrador) tea	2.0	2.0	2.0	0.0	0.0	0.1	0.0	0.0	0.1	gal	0.0	121.8
Lambs quarter	2.0	2.0	2.0	0.0	0.0	1.6	0.0	0.0	1.6	gal	0.0	0.0
Dandelion greens	2.0	2.0	2.0	0.0	0.0	94.8	1.2	0.5	94.8	gal	1.2	121.8
Wild rose hips	16.0	16.0	16.0	0.0	4.0	47.4	0.6	0.3	11.9	gal	0.2	57.9
Other wild greens	6.0	6.0	6.0	0.0	0.0	97.2	1.2	0.5	97.2	gal	1.2	118.7
Unknown mushrooms	14.0	14.0	14.0	0.0	2.0	60.2	0.8	0.3	60.2	gal	0.8	85.3
Chaga	4.0	4.0	4.0	2.0	2.0	71.1	0.9	0.4	71.1	gal	0.9	108.8
Wood	54.0	46.0	46.0	14.0	12.0							

Source ADF&G Division of Subsistence household surveys, 2016.

Note Resources where the percentage using is greater than the combined received and harvest indicate use from resources obtained during a previous year.

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

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

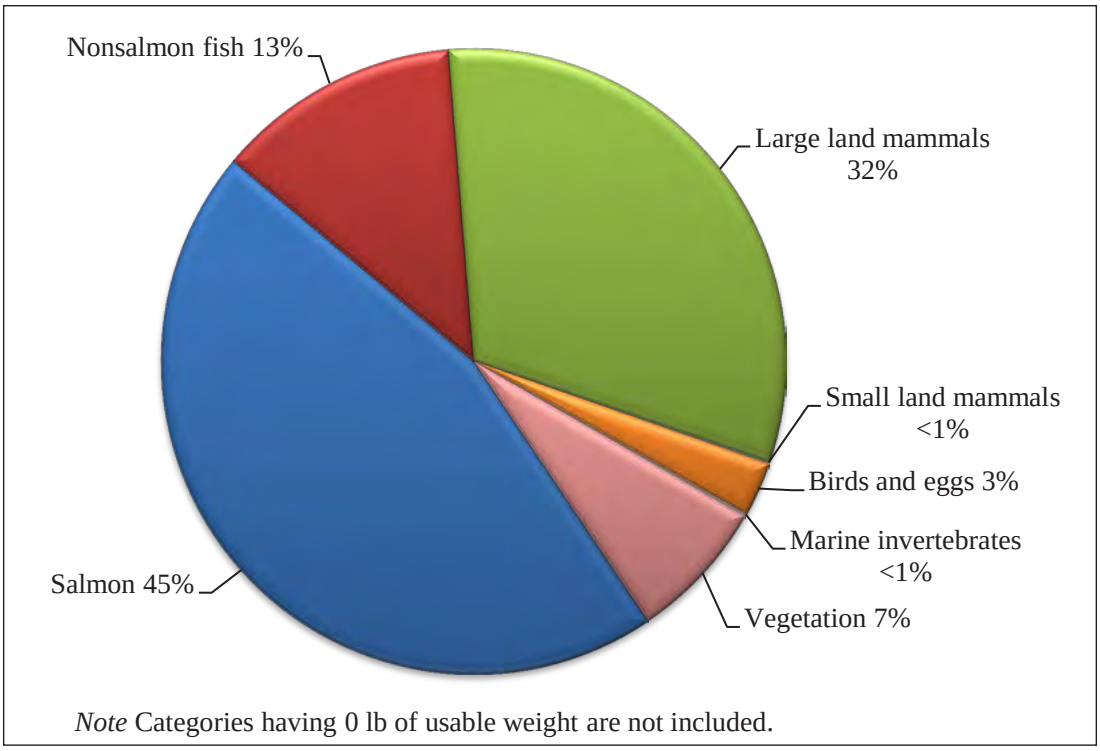


Figure 4-8.–Composition of harvest by resource category, Anderson, 2015.

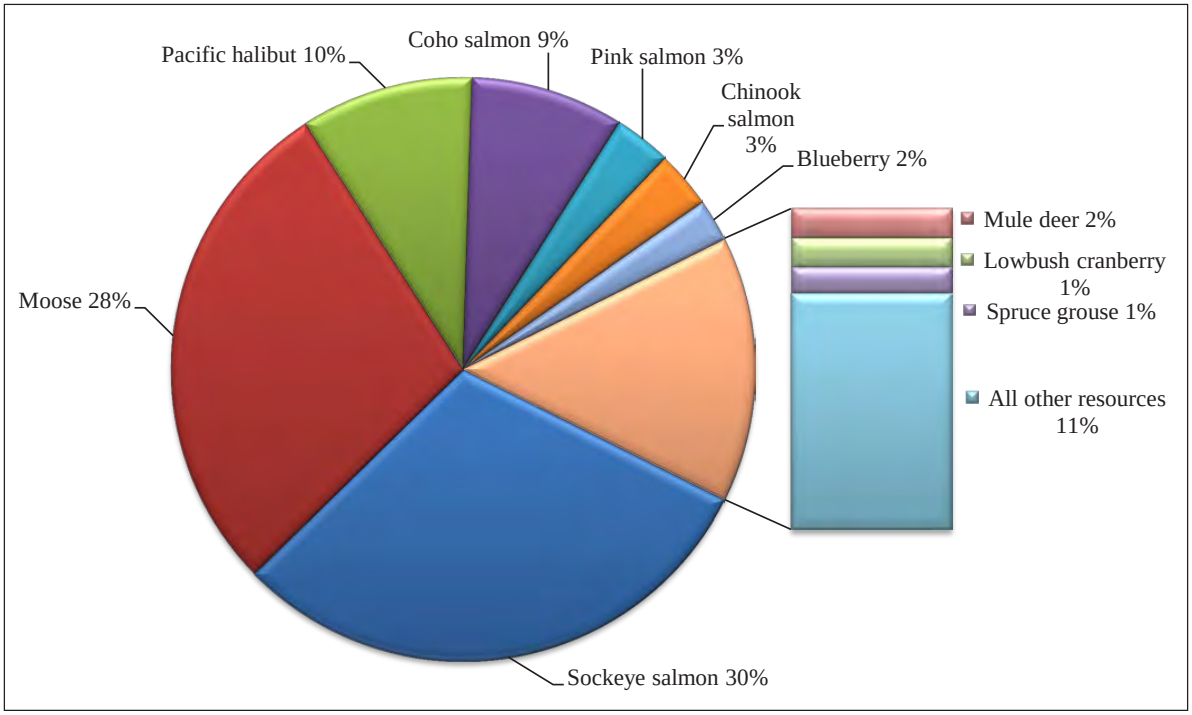


Figure 4-9.–Top resources harvested by weight, Anderson, 2015.

Table 4-5.–Resources most commonly used by households, Anderson, 2015.

Rank[a]	Resource	Percentage of households using
1.	Sockeye salmon	62.0%
2.	Moose	54.0%
3.	Pacific halibut	48.0%
4.	Blueberry	42.0%
5.	Chinook salmon	30.0%
5.	Raspberry	30.0%
7.	Coho salmon	24.0%
7.	Ruffed grouse	24.0%
7.	Lowbush cranberry	24.0%
10.	Spruce grouse	22.0%

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

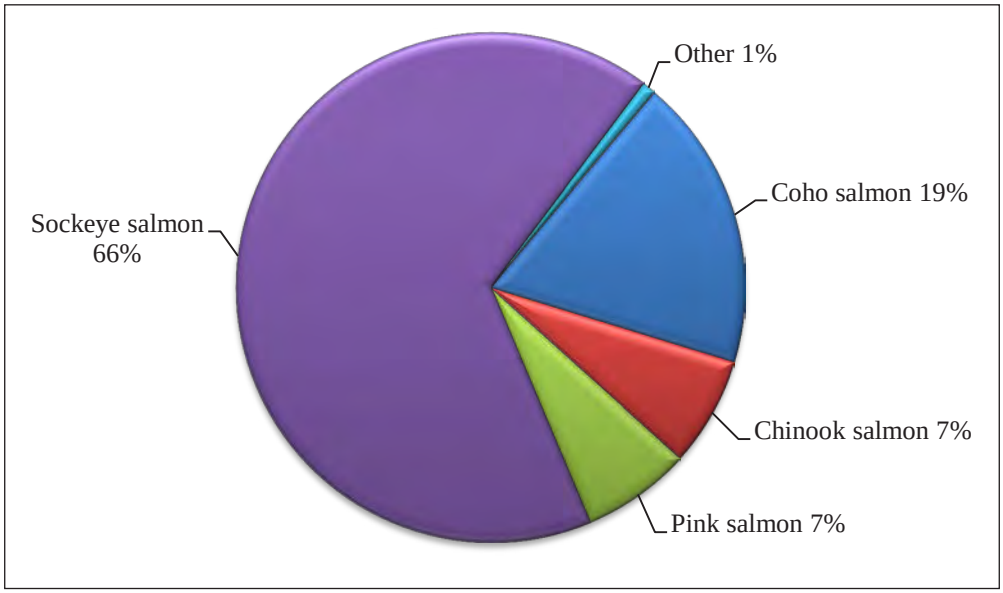


Figure 4-10.–Composition of salmon harvest by edible weight, Anderson, 2015.

Figure 4-11 shows the harvest of salmon by gear type. Anderson residents used a variety of methods to catch salmon. Rod and reel fishing was the most utilized method, catching 35% of the salmon harvest by weight in 2015 (Table D4-5). More than 90% of summer chum, fall chum, coho, pink, and Chinook salmon was caught with rod and reel. Sockeye salmon, the most commonly used type of salmon, was frequently caught in dip nets (45%) and fish wheels (38%).

Figure 4-12 shows the search and harvest areas used for salmon in 2015. A small dot surrounds Nenana, indicating that Anderson residents do fish for salmon from the Tanana River. Anderson residents traveled south to fish for salmon near Glennallen in the Copper River. Salmon fishing also occurred near Kenai and Soldotna. Residents mapped salmon fishing locations in Prince William Sound and in southeastern Alaska in Clarence Strait near Ketchikan.

Anderson residents did not feed any salmon to dogs.

Nonsalmon Fish

Nonsalmon fish contributed less than salmon in terms of edible weight (1,902 lb vs. 6,848 lb, respectively) accounting for 13% of the total wild food harvest in 2015 (Table 4-4; Figure 4-8). Per capita, Anderson residents harvested 10 lb of nonsalmon fish (Table 4-4). A majority of households (60%) used nonsalmon fish in 2015, and 34% reported harvest. Slightly more attempted to harvest (40%), but some were unsuccessful. Thirty-four percent of households received nonsalmon fish from others, and 10% reported giving some away. Figure 4-13 shows the composition of nonsalmon harvest by weight. Pacific halibut, a marine fish that is not locally available, made up 76% of the total nonsalmon harvest. Approximately 8 lb of Pacific

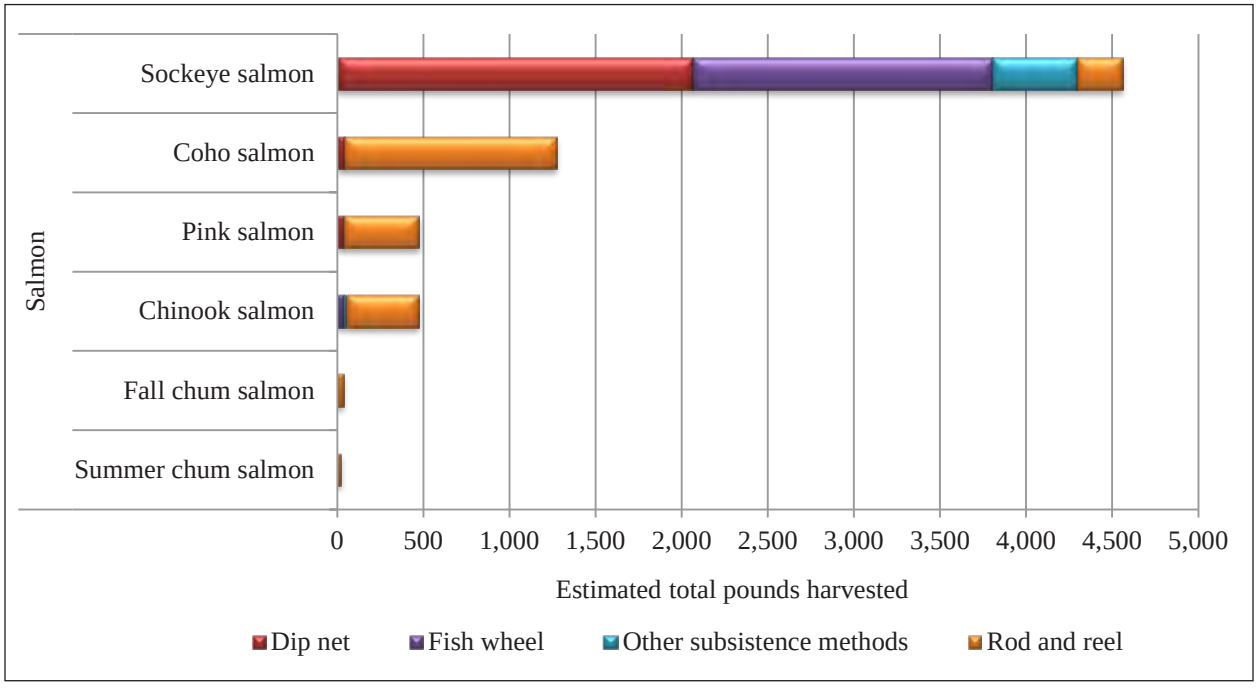


Figure 4-11.–Salmon harvests by gear type, Anderson, 2015.

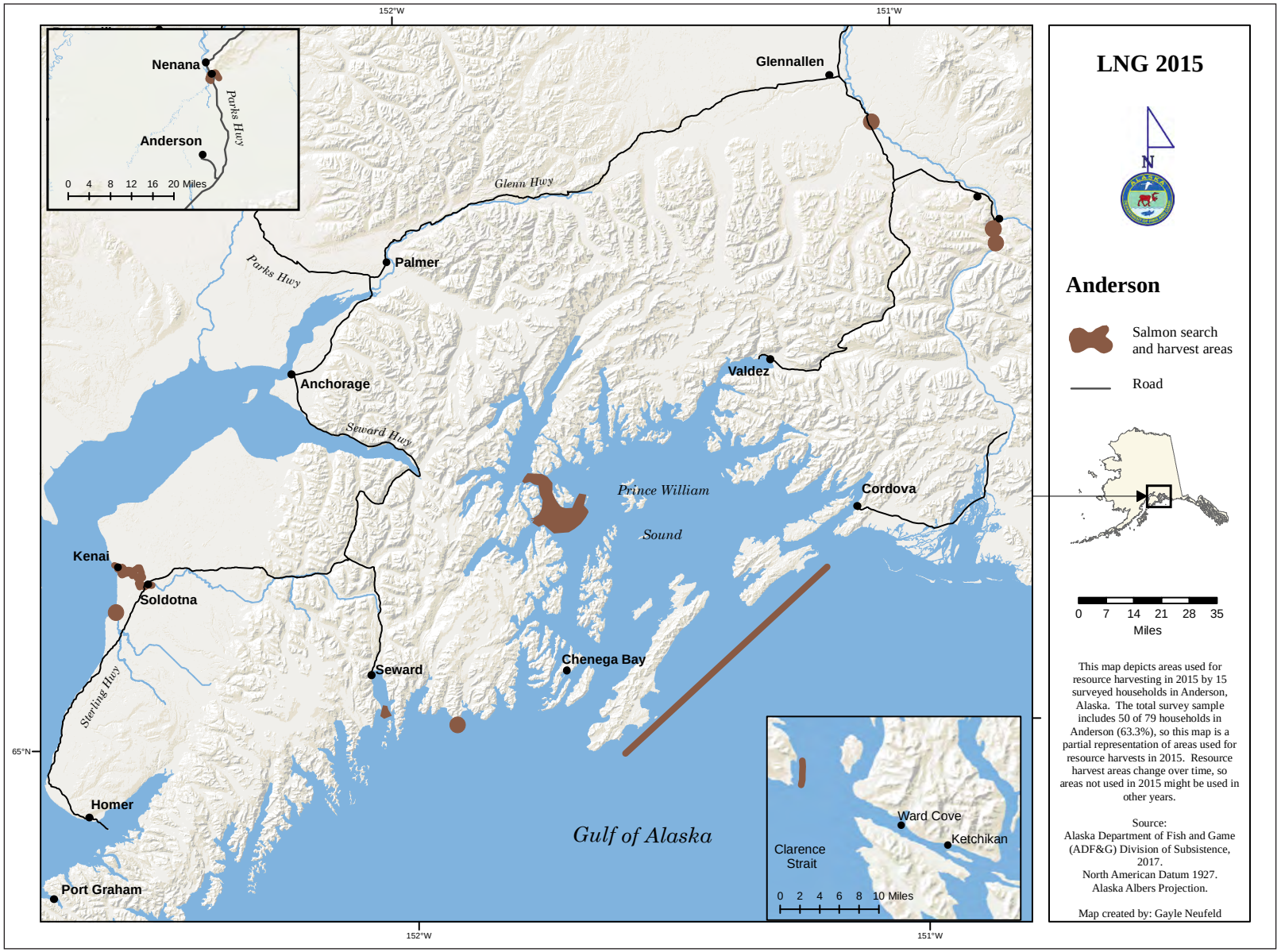


Figure 4-12.–Salmon fishing areas, Anderson, 2015.

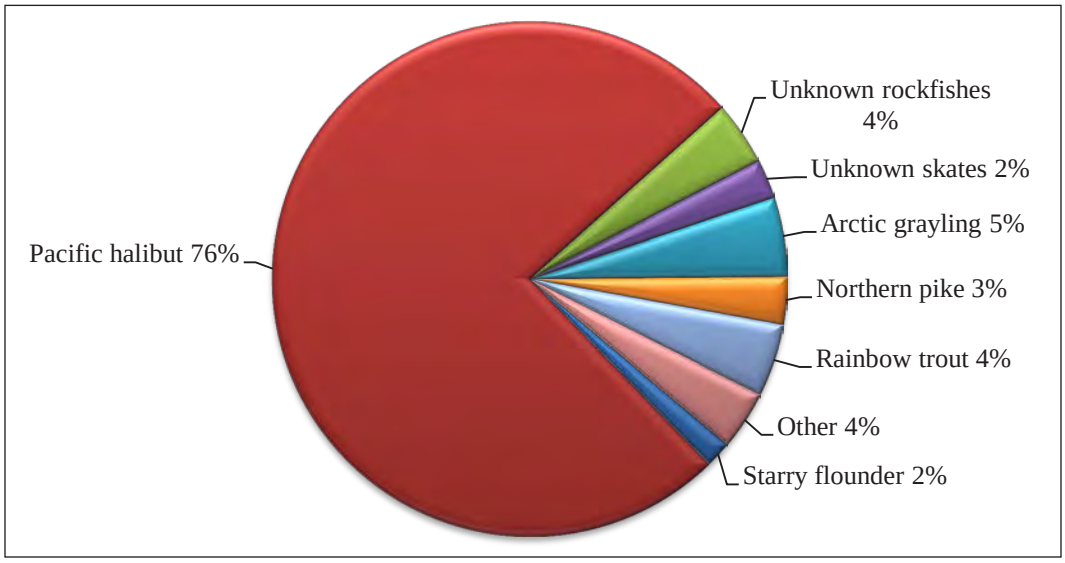


Figure 4-13.–Composition of nonsalmon fish harvest by edible weight, Anderson, 2015.

halibut[8] per capita was caught for a total harvest of 1,439 lb (Table 4-5). The remaining nonsalmon harvest comprised a mixture of other marine fish including starry flounder (2% of nonsalmon harvest, less than 1 lb per capita) and skates (2% of nonsalmon harvest, less than 1 lb per capita), and local, freshwater species including Arctic grayling[9] (4% of nonsalmon harvest, 1 lb per capita) and rainbow trout (4% of nonsalmon harvest, 1 lb per capita).

One respondent remembers fishing for grayling and northern pike with his brothers:

> Um, little bit of pike, you know, I used to enjoy when I was growing up we would go out and my brothers and I would camp out. We'd spend a couple of nights just out by the creek and eating the grayling that we caught and kind of living like Huck Finn. It was awesome… that was just kind of cool to be able to do that, so during that time in my life I ate a lot of grayling. (03062016AND1)

The respondent also recalled fishing for a variety of locally available nonsalmon species and explained that fishing for them was a fun activity that usually included friends or family members.

Figure 4-14 shows the gear types used by Anderson residents to catch nonsalmon fish. Nearly all (96%) of the nonsalmon fish harvest was caught by rod and reel (Table D4-6). One lifelong resident of Anderson remembers his family rod and reel fishing when he was a child. In the summer his "mom would take us fishing and she'd just put a willow and tie some fishing string on it you know? And put either a spinner or a fly on the end of it and we were fishing" (03062016AND1). Anderson residents caught all their halibut with rod and reel. Most rainbow trout were caught with rod and reel, but residents also went jigging for the nonsalmon species. Thirty-eight percent were caught ice fishing. All the burbot caught in 2015 were caught using an unspecified subsistence method. This could possibly indicate that the respondents used a fish trap or went jigging for burbot.

Figure 4-15 shows the 2015 search and harvest areas used by Anderson residents to fish for nonsalmon species. Residents fished for nonsalmon species near Nenana and Anderson, along the Parks Highway. They also fished in a small location off the Denali Highway. A few small fishing sites appear along the upper Tanana River. Residents also identified a variety of nonsalmon fishing locations in Prince William Sound near Valdez. Fishing also occurred near Seward, Port Graham, and Ketchikan. Halibut, a heavily harvested nonsalmon species, is available in these locations.

Anderson residents did not feed any nonsalmon fish to dogs.

8. Henceforth *halibut*.
9. Henceforth *grayling*.

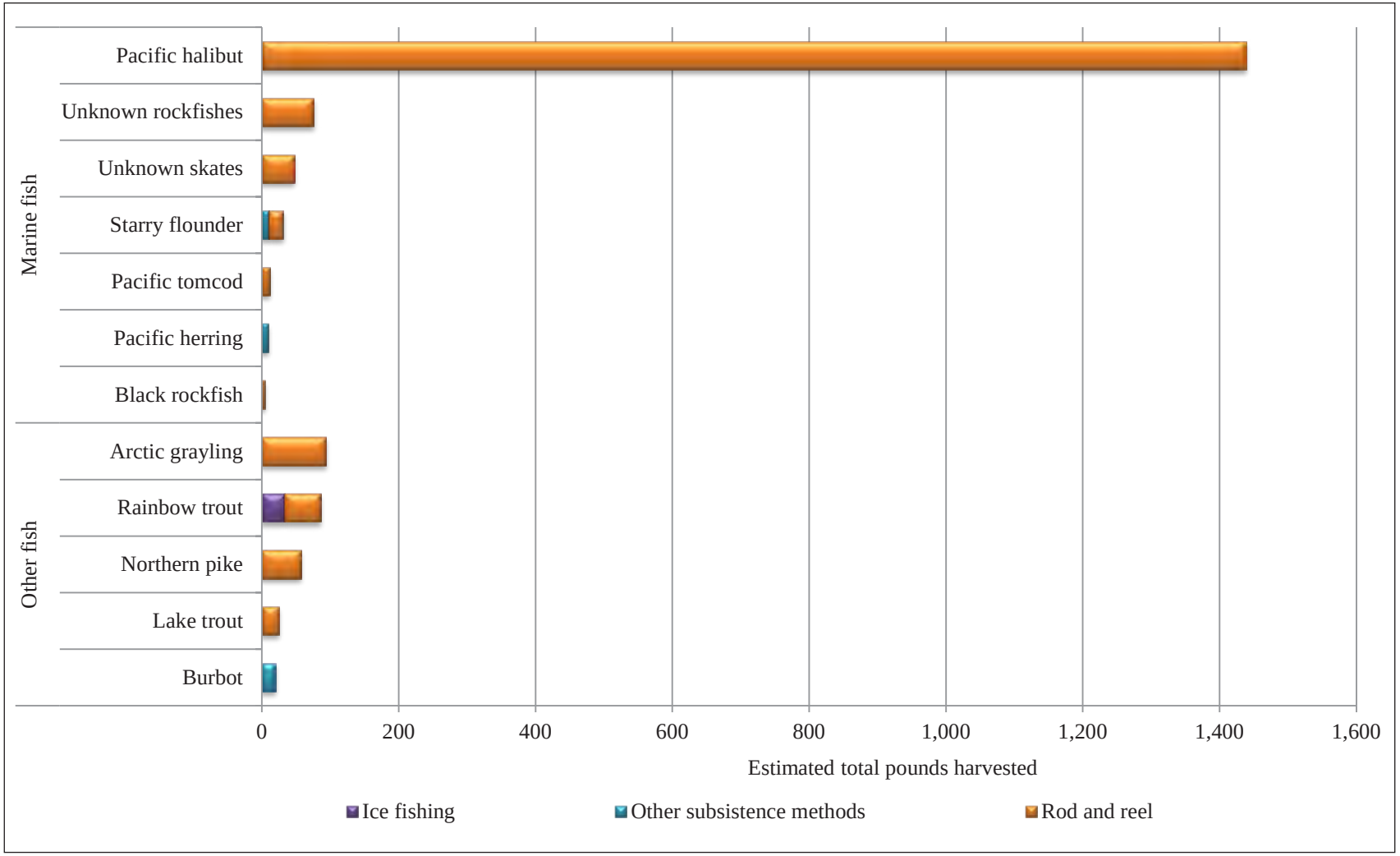


Figure 4-14.–Nonsalmon fish harvests by gear type, Anderson, 2015.

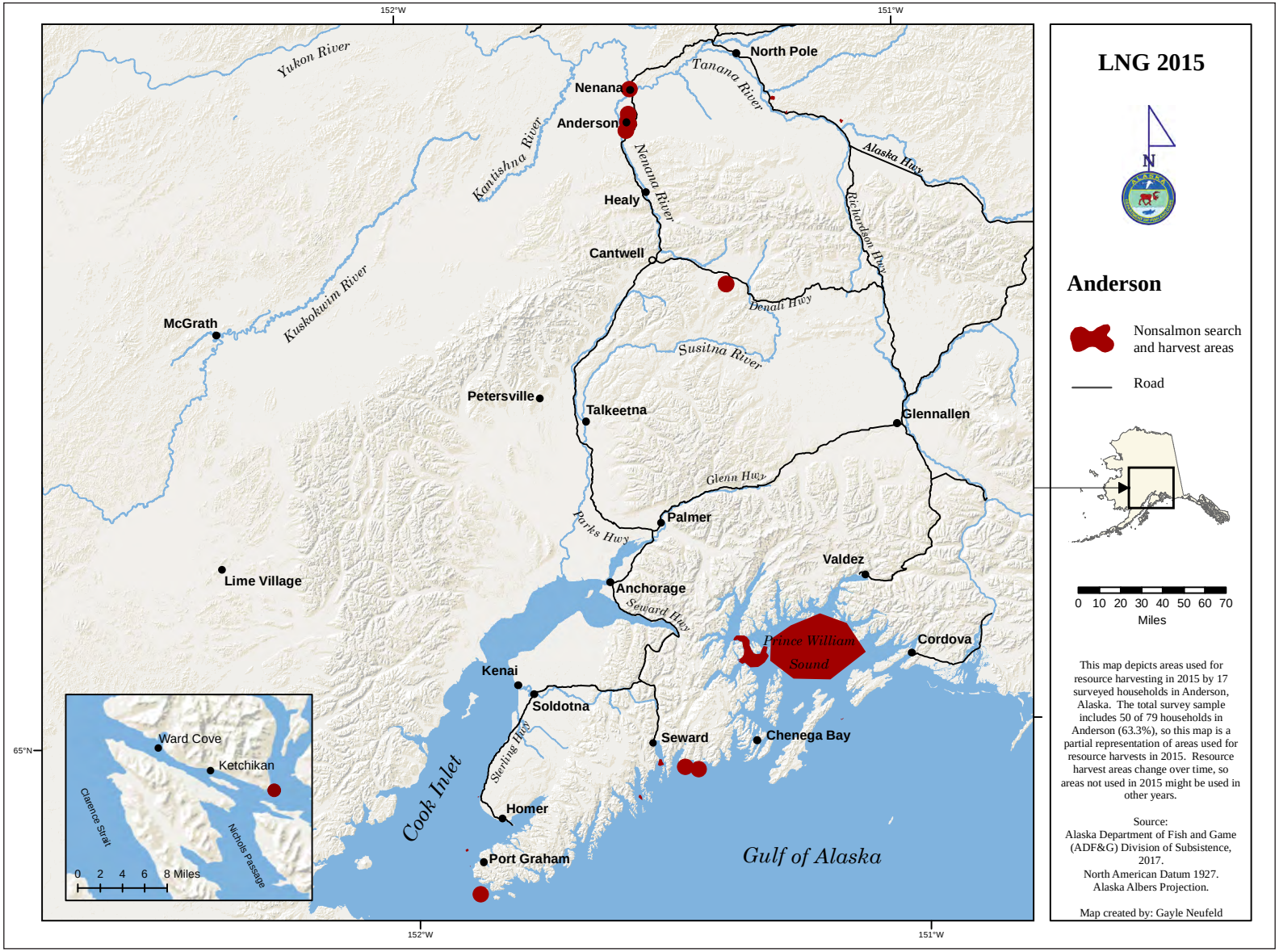


Figure 4-15.–Nonsalmon fishing areas, Anderson, 2015.

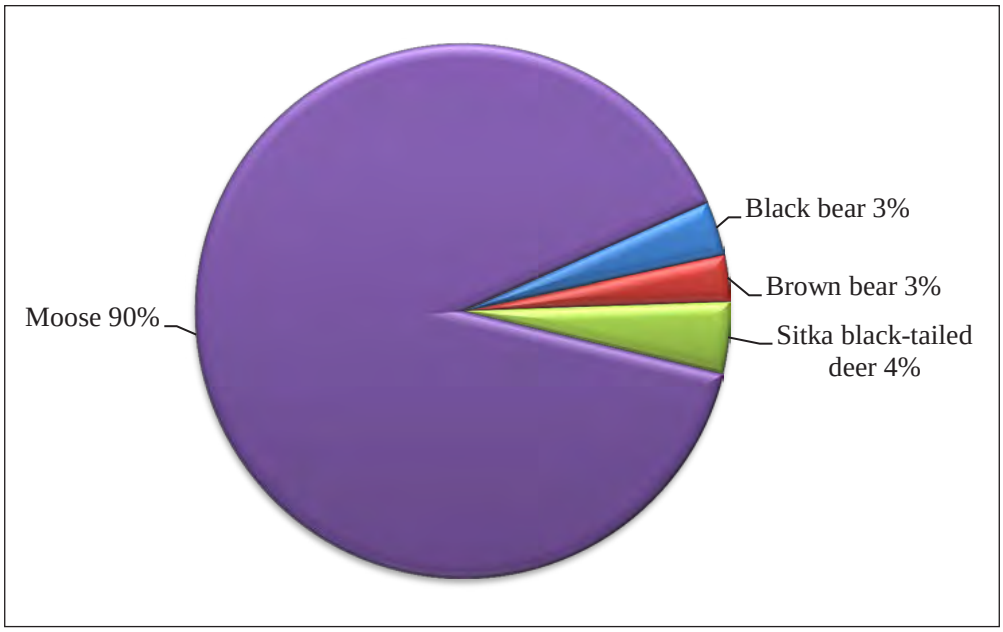


Figure 4-16.–Composition of large land mammal harvest by edible weight, 2015.

Large Land Mammals

Large land mammals contributed substantially to the total wild food harvested by Anderson residents in 2015. A total of 4,746 edible pounds were harvested (26 lb per capita), accounting for 32% of the total wild food harvest (Table 4-4; Figure 4-8). Moose, a large land mammal locally available to residents, made up 90% of the category harvest (Figure 4-16). Although 38% of households attempted to harvest moose, only 10% successfully did so (Table 4-4). Despite the low success rate, more than one-half of all households (54%) reported using moose in 2015. Moose was commonly shared between households: 14% of households reported that they gave some moose away, and 40% reported that they received some. Approximately 8 moose were harvested in 2015, resulting in an estimated 4,250 lb or 23 lb per capita. Six were bulls harvested in September (Table D4-7). Two cows were harvested in August.

In the 1960s and 1970s when the permanent population of Anderson was higher, one lifelong respondent recalled that residents were more involved in the hunting and gathering of wild foods, particularly moose. In the fall time, "the school year started and it was just generally understood that kids weren't gonna be in school during hunting season…we were not marked down [absent] for not being there. That was just understood" (03062016AND1). Today, that is no longer the case. Harvesting moose occurs during school breaks, and students are marked absent if they miss school to hunt.

According to a key respondent and other community members, the abundance of moose has decreased in the last decade because of a cow hunt authorized by ADF&G in mid 2000s (Young Jr. et al. 2014). The hunt allowed cow harvest and, in one respondent's opinion, led to a depletion of the moose population in the area. Prior to the cow hunt the availability of moose was "fantastic," but during the period of cow hunts, nonlocal hunters traveled to the Anderson area to participate in the cow hunt (03042016AND2). Hunting in this way killed "all the accessible moose" near the highway and trail systems. As a result the population "still hasn't recovered…and people are mad as hell" (03042016AND2).

The Rex Trail, a popular route that is roughly 60 miles long, stretches to a mining camp northeast of Anderson (Plate 4-3). Residents traveled on Rex Trail throughout the year, but it was especially utilized during moose hunting season. However, the increased hunting pressure that occurred in the 2000s brought a surge of motorized vehicles to the trail, resulting in deep ruts and muddy terrain. Today it has become a "boggy mud hole" and is difficult to travel during hunting season (03042016AND2).

Two percent of households reported harvesting 5 deer, accounting for 4% of the large land mammal harvest (205 lb; Table 4-4; Figure 4-8). Brown and black bears made up the remaining large land mammal harvest (both 3% of the total; Table 4-4). Four percent of households attempted to harvest black bear, but only 2% were successful. Some sharing occurred, resulting in 6% of households using black bear. Fewer households (2%) attempted to harvest brown bears and all were successful. In total, 4 bears were harvested in 2015.

Survey respondents did not report any caribou harvest, but 10% did hunt for them in 2015. Despite the lack of harvest, 14% of households reported receiving caribou from others either from unsurveyed households in the community or from households in communities outside Anderson.

Anderson residents traveled throughout the state to hunt caribou, moose, bears, and deer. In order to accurately document the extent of these areas, multiple maps are needed. Figures 4-17, 4-18, and 4-19 show the search and harvest areas for large land mammals. Moose hunting primarily occurred in areas near Anderson (Figure 4-17). Residents hunted along the Parks Highway in a range that extends roughly 40 miles north of Nenana to Healy. South of Anderson, a large polygon (identified by green hatch marks), extends off the road to the east and west of the Nenana River. This area is characterized by mixed boreal forest, lowlands near the river, and the foothills of the Alaska Range. Figure 4-18 shows an isolated polygon in the hills east of Talkeetna. No other large land mammal hunting occurred in this area. Figure 4-19 also identifies a deer hunting location on an island east of Chenega Bay. Both hunting locations on this map are remote. Without ethnographic explanations it is impossible to know more about the pattern of use in these areas and whether harvest in these areas occurs regularly or was a singular event in 2015.

Residents hunted caribou along the Dalton Highway (Figure 4-19). The northern stretch of highway near Deadhorse was identified as a search area. However, a smaller polygon appears at the bottom of the map and covers an area of land to the right of the highway. Survey respondents also traveled south along the Parks Highway in 2015 to access an area of land in the hills northeast of Healy (Figure 4-17). A large polygon, appearing in blue, follows the Nenana River and extends into the foothills of the Alaska Range. Some of the caribou hunting area on this map overlaps with moose hunting areas. Although seasons for these large land mammals are different, the overlap may indicate a particular preference for and reliance on this use area.

Some black and brown bear hunting occurred in 2015. Brown bear hunting occurred within the search and harvest areas for moose (Figure 4-17). Shown in brown, the location is well off the Parks highway, east of the Nenana River. A small, black, striped polygon south of Anderson shows an area used for black bear harvest.

Small Land Mammals/Furbearers

Ten percent of households in Anderson used small land mammals (Table 4-4). Slightly more, 14%, attempted to harvest them, but just 10% successfully did so. Two percent of households reported receiving some small land mammals from other households. Table 4-4 assigns a zero value to species that were harvested but are not typically eaten. Red fox, river otter, marten, mink, weasel, gray wolf, and wolverine are a few furbearers that are typically used only for their fur.

Unlike other subsistence activities, trapping has a cash-earning element that can affect the level of participation. The declining market and decreasing prices for fur no longer incentivize the activity as they did in the past. However, of all the small land mammals harvested in 2015, snowshoe hare was the only species reportedly used for food (Figure 4-20). Approximately 8 snowshoe hares were harvested in 2015, and some were used for human food. Of the snowshoe hares harvested, 40% were harvested for fur only (Figure 4-20). Four percent of households attempted to harvest snowshoe hare, and all were successful (Table 4-4). Two percent reported giving some away, and no households reported receiving any from others. The remaining small land mammals harvested were used solely for their fur.

More muskrats were harvested than any other furbearing animal. In 2015, 2% of households harvested 41 muskrats. All the muskrats were harvested in May (Table D4-8). The local muskrat population experienced decades of low abundance, but one respondent described a recent increase, "When I first moved here, I never even seen muskrats and now they are just thick. Every little pond if you notice around here has those

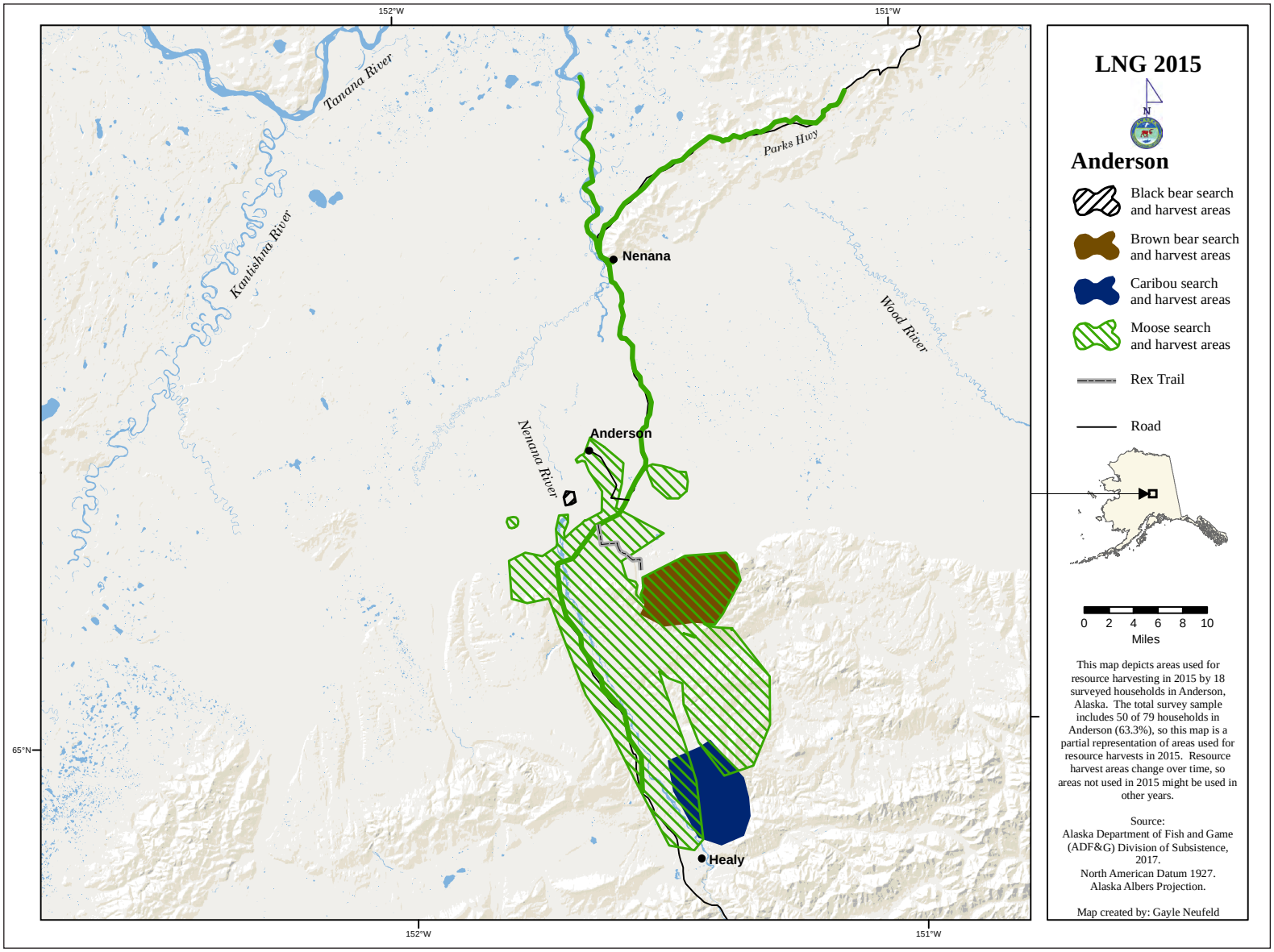


Figure 4-17.–Bears, caribou, and moose hunting areas, Anderson, 2015.

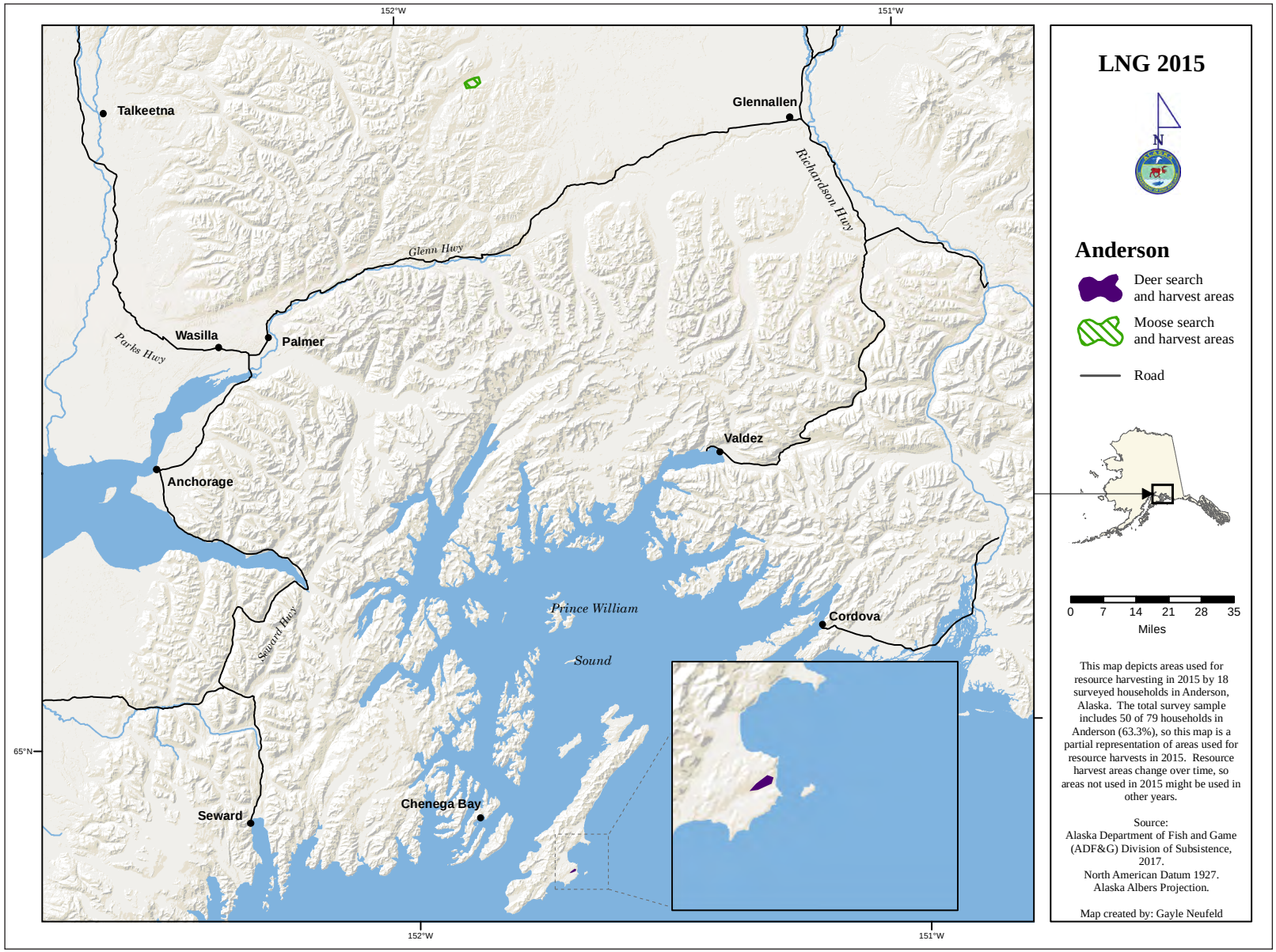


Figure 4-18.–Nonlocal deer and moose hunting areas, Anderson, 2015.

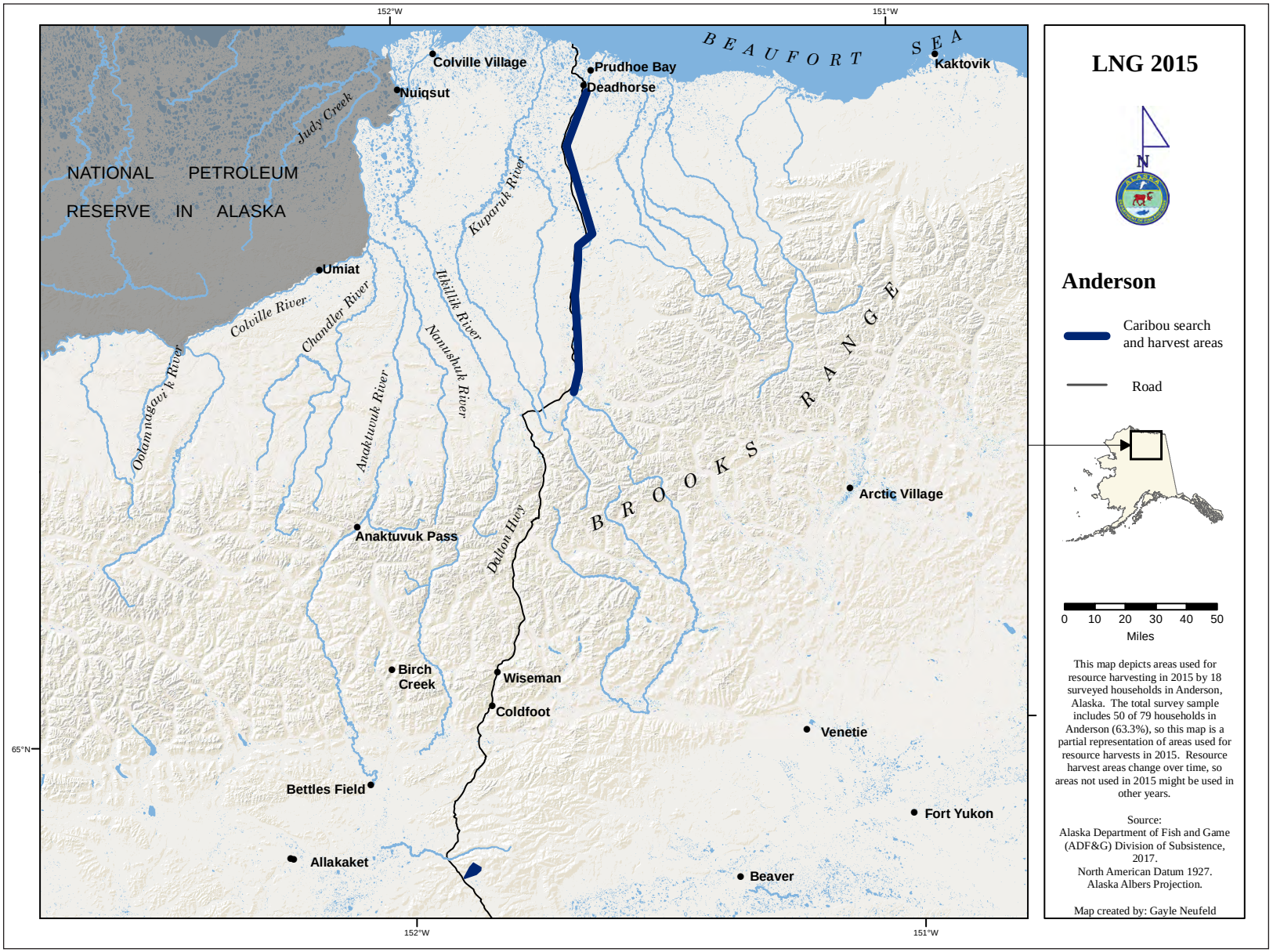


Figure 4-19.–Nonlocal caribou hunting areas, Anderson, 2015.

little push-ups now. Those little debris piles they push up through the ice. You never seen that until just a few years ago" (03042016AND1). To trap muskrat, the same respondent uses blind sets in early spring. At this time the ice around the edges of ponds begins to melt, opening a ring of water. Muskrats like to swim and feed in that open area, making it an effective place to set traps (03042016AND2).

Beaver, a furbearer that is commonly eaten in other areas of Alaska, was only harvested for its fur in Anderson (Figure 4-20). Two percent of households harvested 13 beavers (Table 4-4). More households (6%) attempted to and successfully trapped 11 lynx in the winter months of January, February, and December (Table 4-4; Table D4-8). One respondent believed that the lynx population has been low in recent years, but that the increased abundance of rabbits could indicate an upcoming rise in the availability of lynx (03042016AND2).

Marten and mink, 2 furbearer species commonly sold, were harvested primarily in November and December when their coats are in their prime (Table D4-8). A total of 32 mink and 35 marten were harvested in 2015. According to ethnographic respondents, fur sewing for clothing is not a common activity in Anderson. Instead, most of the fur sewing in the area occurs in Nenana. In the past some Anderson residents would buy or barter for wolf pelts, fur ruffs, and marten hats (03062016AND1).

Figure 4-21 shows the 2015 search and harvest areas for small land mammals used by residents. Unlike for other resources, Anderson residents did not travel far to harvest small land mammals. Instead, residents used the land in the immediate vicinity of the community. Some respondents did indicate that they trapped across the Nenana River, but the majority of the hunting and trapping activity in 2015 took place east of the Nenana River.

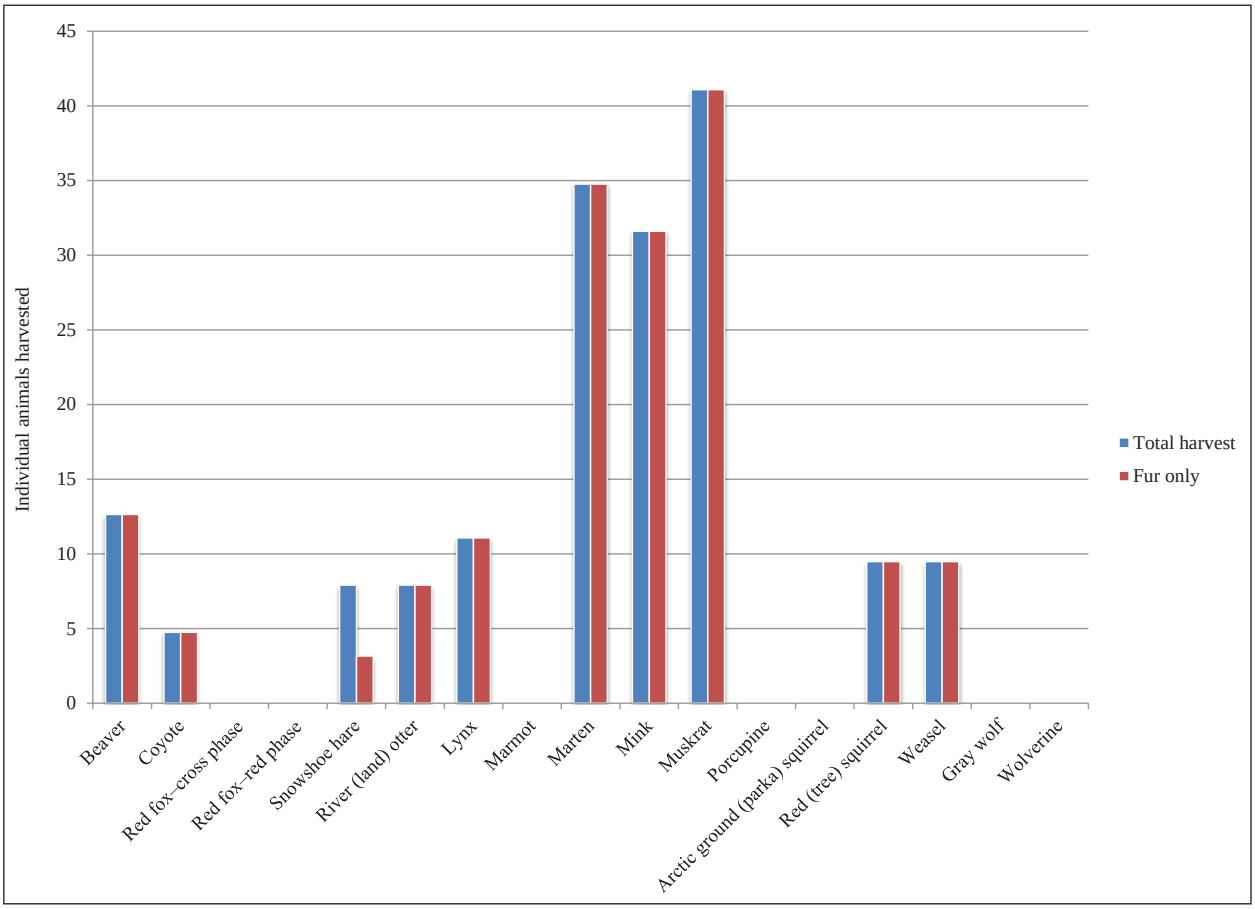


Figure 4-20.–Small land mammal harvests for fur, Anderson, 2015.

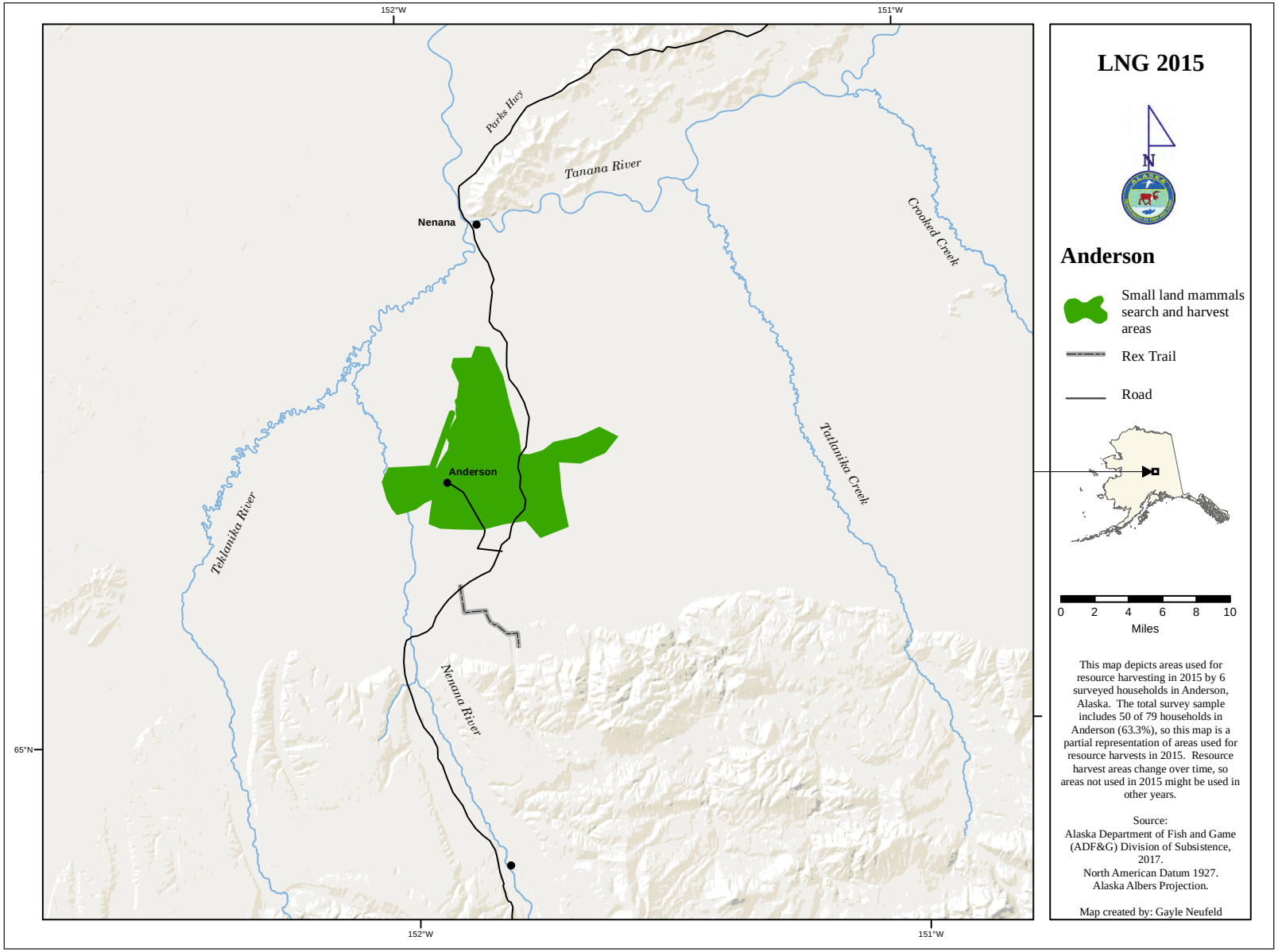


Figure 4-21.–Small land mammal hunting and trapping areas, Anderson, 2015.

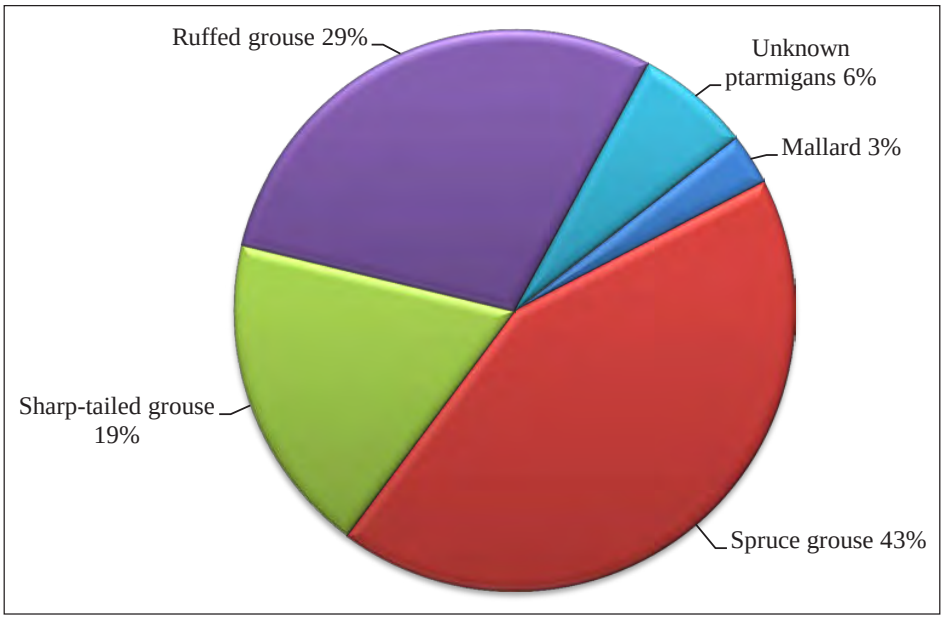


Figure 4-22.–Composition of bird harvest by edible weight, Anderson, 2015.

Marine Mammals

Residents did not report any harvest of marine mammals. The community is predominantly non-Native, and therefore residents are not legally allowed to hunt for marine mammals. However, 2% of households reported receiving unknown whale, likely in the form of muktuk (Table 4-4). It is unclear where the whale originated, but it possibly was received from friends or family in other parts of Alaska or received from neighboring residents in Nenana who may have stronger social ties to whale harvesting communities.

Birds and Eggs

In 2015, Anderson residents used 5 types of birds (Table 4-4). Two pounds of birds were harvested per capita (425 pounds). Thirty-six percent of households attempted to harvest birds, and the same amount successfully did so. Only 2% of households reported giving birds to or receiving birds from other households in Anderson or outside of the community. Figure 4-22 shows the composition of bird harvest. Residents focused their harvest effort on nonmigratory birds. Grouses composed the majority of bird harvest in 2015 (91% of bird harvest). In total, an estimated 436 grouses were harvested and contributed 385 lb of edible weight to the community total (Table 4-4). Spruce grouse was the favored species by Anderson residents, making up 43% of the bird harvest (Figure 4-22). Twenty-two percent of households harvested an estimated 202 spruce grouse (Table 4-4). Two percent of households reported giving some away to others. Ruffed grouse followed, with 155 birds harvested for an edible weight contribution of 124 lb. Twenty-four percent of households used ruffed grouse, more than any other bird species. An active bird hunter described his preference for ruffed grouse, "they are really good, it is like shooting chickens. Delicious, real white meat. Not dark meat like the other grouse" (03042016AND2). One respondent recalled that bird hunting is an activity in which young residents can easily take part. When his children were young, he taught his son how to hunt and prepare grouse:

> He took his [younger] brothers and sisters out and showed them how to do that. They really enjoy just cooking it up, putting it in, dip it in egg, put it in flour, do a little lemon pepper on it you know? And oh man, you can eat way too much! ...It always got ate and then there would be friends over and stuff too. (03062016AND1)

Residents harvested 76% of their grouses in fall and 24% in winter (Table D4-9). Mallard was the only migratory species used by Anderson households. An estimated 8 mallards were harvested in 2015 and

were used by 2% of households (Table 4-4). All of the mallards were harvested in the fall (Table D4-9). No survey respondents reported harvesting eggs in 2015 (Table 4-4).

Figure 4-23 shows the areas identified by respondents who hunted birds in 2015. Ducks and geese were targeted in the lake-dense area east of Minto, known as the Minto Flats. Respondents did not identify any other area used for migratory birds. The remaining search areas show the areas used for grouse and ptarmigan hunting. The long line, extending from Nenana to Healy, is likely a general reference to the Parks Highway rather than a literal hunting path. Residents also identified smaller areas closer to Anderson, south of the community.

Marine Invertebrates

Anderson residents who harvest marine invertebrates must travel to coastal regions of Alaska. In 2015, 4% of households attempted to harvest marine invertebrates, including octopus and shrimp (Table 4-4). No household was successful at harvesting octopus, but 2% were able to harvest some shrimp. A total of 16 lb or 8 gallons were reported. No household reported giving shrimp away or receiving shrimp from others.

An ethnographic respondent described his experience traveling to Kachemak Bay on the weekends to go clamming with his family in the 1980s:

> In Southeast we went after pinknecks, which were super slow and really big. And, and you had to be careful because they were slower, you know you just had to be careful you weren't breaking their shell. And they were, they were just big, they were massive big clams. The razors are super-fast, and so those were hard to kick, you know, you dug as fast as you could to, to catch a razor. And then also, you're reaching in, you're trying to get 'em and then you know you get your fingers cut. You know 'cause, um but, the cool thing about the butter clams, when we went across the bay at Kachemak Bay, um, I'd never seen it done this way before, but we got into a bay that had um kind of a stratus of gravel in it and they were sitting in that, and we'd dig a trench and then just kind of hydraulic, you know just use a scoop of water. And, and just blast the side of the trench and it would expose the butter clams and you just pick 'em out and put 'em in a 5-gallon bucket. So that was, that's pretty cool. And we did, and we would cook those up on the beach and the shrimp we had. And that was, that was, again that was in the 80's. (03062016AND1)

Figure 4-24 shows the areas Anderson residents traveled to in order to harvest shrimp and octopus in 2015. A single polygon, shown in blue, is located off the southern tip of the Kenai Peninsula. No other areas were identified.

Vegetation

Lastly, the survey asked about the vegetation harvested or used by respondents. The category of vegetation included berries, plants, mushrooms, and wood. Figure 4-25 shows the composition of the edible vegetation harvest in Anderson by edible weight. Berries made up 66% of the vegetation harvest. A total of 726 lb of berries were harvested (Table 4-4). For each type of berry, the same percentage of households who attempted to harvest them successfully did so. Residents primarily used blueberries (42%), raspberries (30%), and lowbush cranberries (24%). Many other berries were harvested by residents, including wild strawberries, currents, dogwood berries, and others.

Anderson residents also targeted wild greens. Plants and greens made up 28% of the vegetation harvested in 2015 by weight (Figure 4-25). This harvest largely consisted of dandelion greens (95 lb or 1 lb per capita; Table 4-4). However, only 2% of households reported harvesting or using dandelion greens. A smaller amount of wild rose hips was harvested (47 lb or less than 1 lb per capita), but these were harvested and used by 16% of households. Unspecified types of other wild greens were also used.

Mushrooms composed the remaining 6% of the vegetation harvested in 2015. Sixty pounds of unknown mushrooms were harvested by 14% of households. Four percent of households harvested 71 lb of chaga, and the same amount used it. Wood used for home heating purposes was gathered by 46% of households and used by 54%. Table D4-10 shows the percentages of home heating that residents obtained from wood.

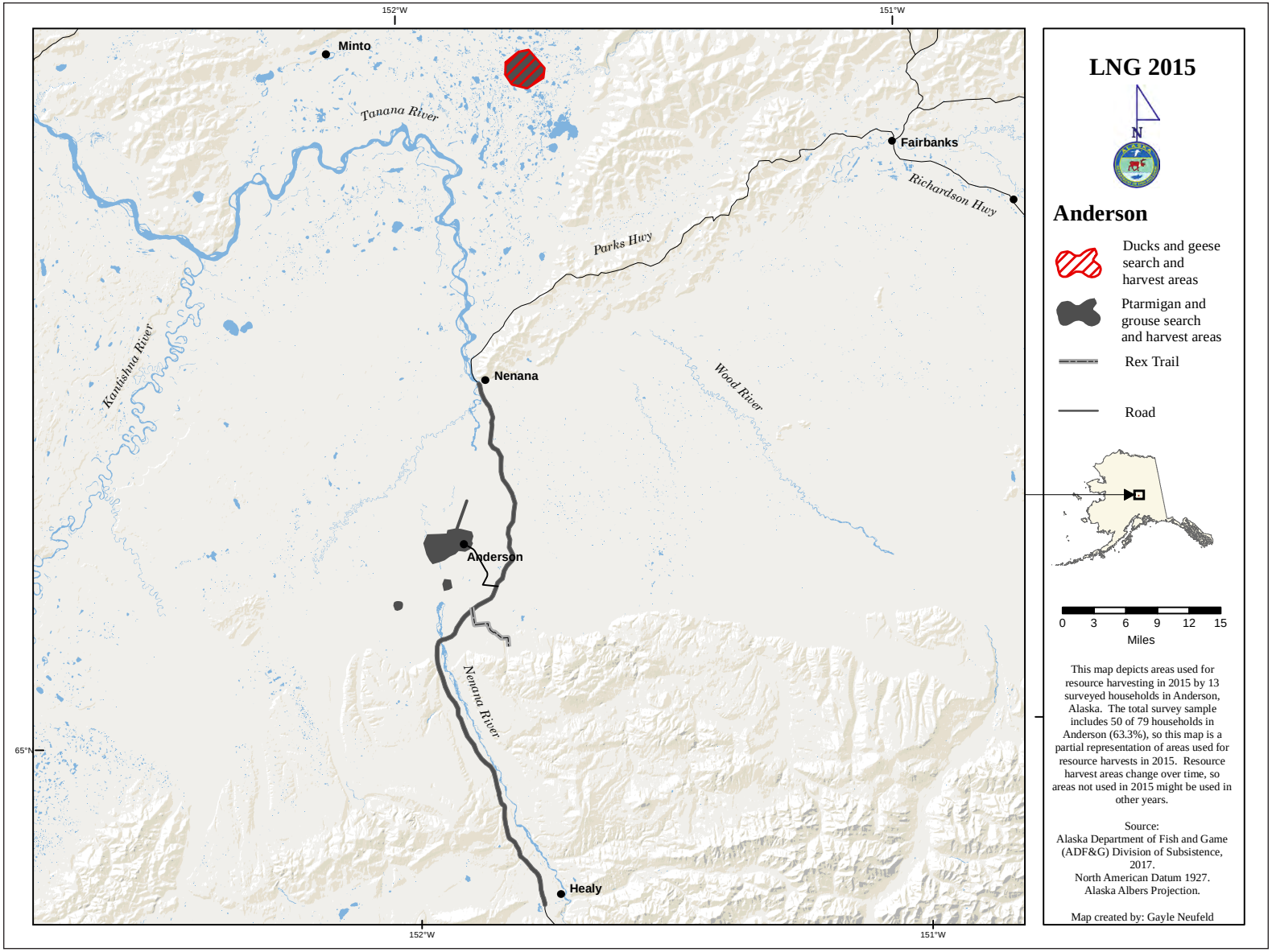


Figure 4-23.–Bird hunting areas, Anderson, 2015.

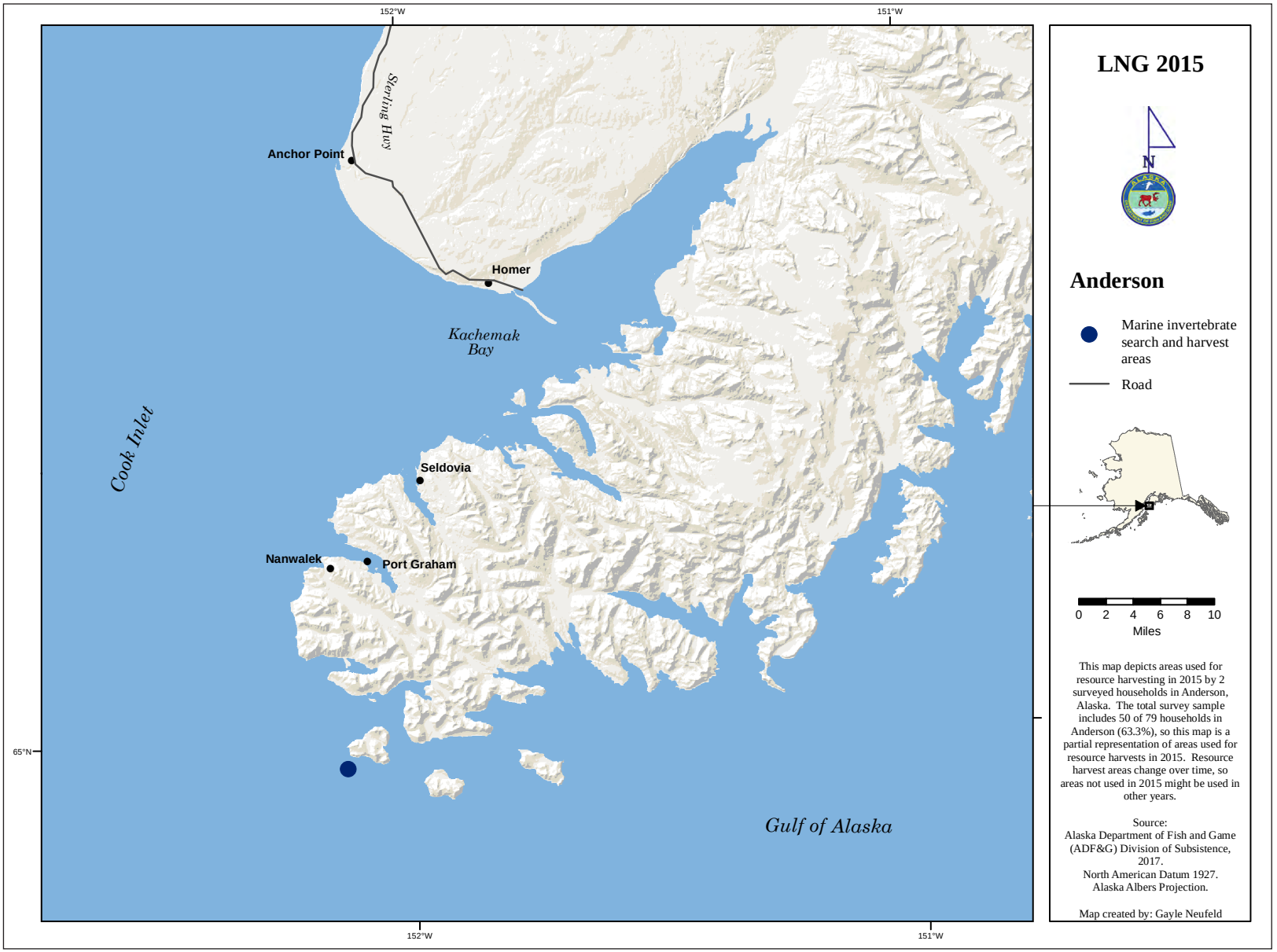


Figure 4-24.–Marine invertebrate search and harvest areas, Anderson, 2015.

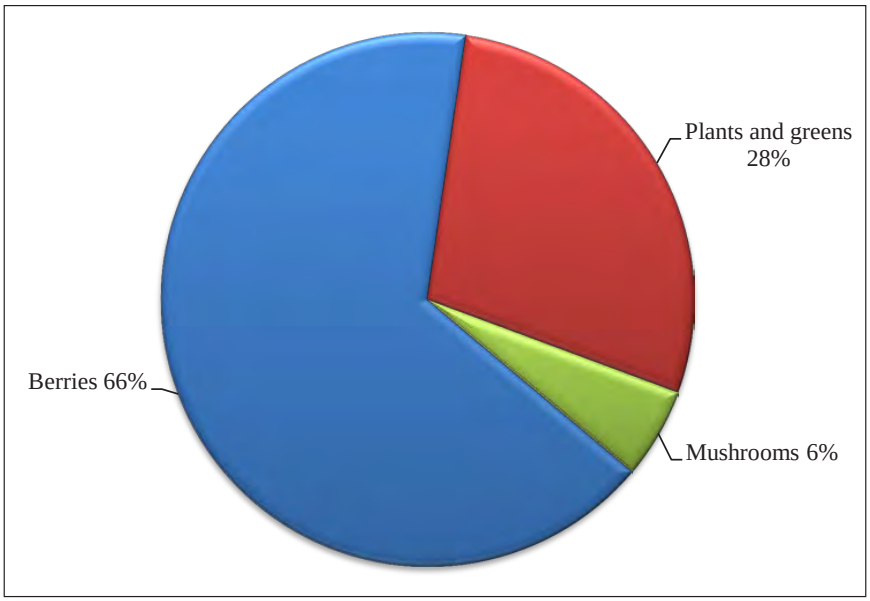


Figure 4-25.–Vegetation harvest by edible weight, Anderson, 2015.

Most households did not use firewood to heat their homes (42%). Eighteen percent of households reported that between 26% and 50% of their heating came from firewood while another 18% reported that between 76% and 99% of their heating needs were met with firewood.

Figure 4-26 shows the search and harvest area for vegetation in 2015. Residents harvested vegetation including plants and berries in numerous locations around Anderson. Residents traveled to the hills north of Healy to gather plants and along the Steese Highway north of Fairbanks.

Production and Distribution of Wild Resources

Household Specialization in Resource Harvesting

Previous studies (Wolfe 1987; Wolfe et al. 2010) have shown that in most rural Alaska communities, a relatively small portion of households produces most of the community's fish and wildlife harvests, which they share with other households. A recent study of 3,265 households in 66 rural Alaska communities found that about 33% of the households accounted for 76% of subsistence harvests (Magdanz et al. 2009; Wolfe et al. 2010). Although overall the set of very productive households was diverse, factors that were associated with higher levels of subsistence harvests included larger households with a pool of adult male labor, higher wage income, involvement in commercial fishing, and community location.

In the 2015 study year in Anderson, about 70% of the harvests of wild resources as estimated in pounds usable weight were harvested by 16% of the community's households (Figure 4-27). Further analysis of the study findings, beyond the scope of this report, might identify characteristics of the highly productive households in Anderson and the other study communities.

Income and Cash Employment

Survey respondents were asked about both earned income (jobs held and wages earned by all household members 16 and older) and other income (e.g., Alaska Permanent Fund dividend, Social Security, public assistance). In 2015, Anderson households earned or received an estimated $6,507,308 with an average household income of $82,371 (Table 4-6). Per capita, residents earned and received $34,903 (Table 4-7). Of the total community income, $5,473,007 was from wage employment (84%), and $1,034,301(16%) was from other sources. Figure 4-28 and Appendix Table D4-11 compare the estimated median income from this study with American Community Survey (ACS) estimates of median income in Anderson and in all of Alaska between 2011 and 2015. The Division's 2015 median income estimate is comparable to

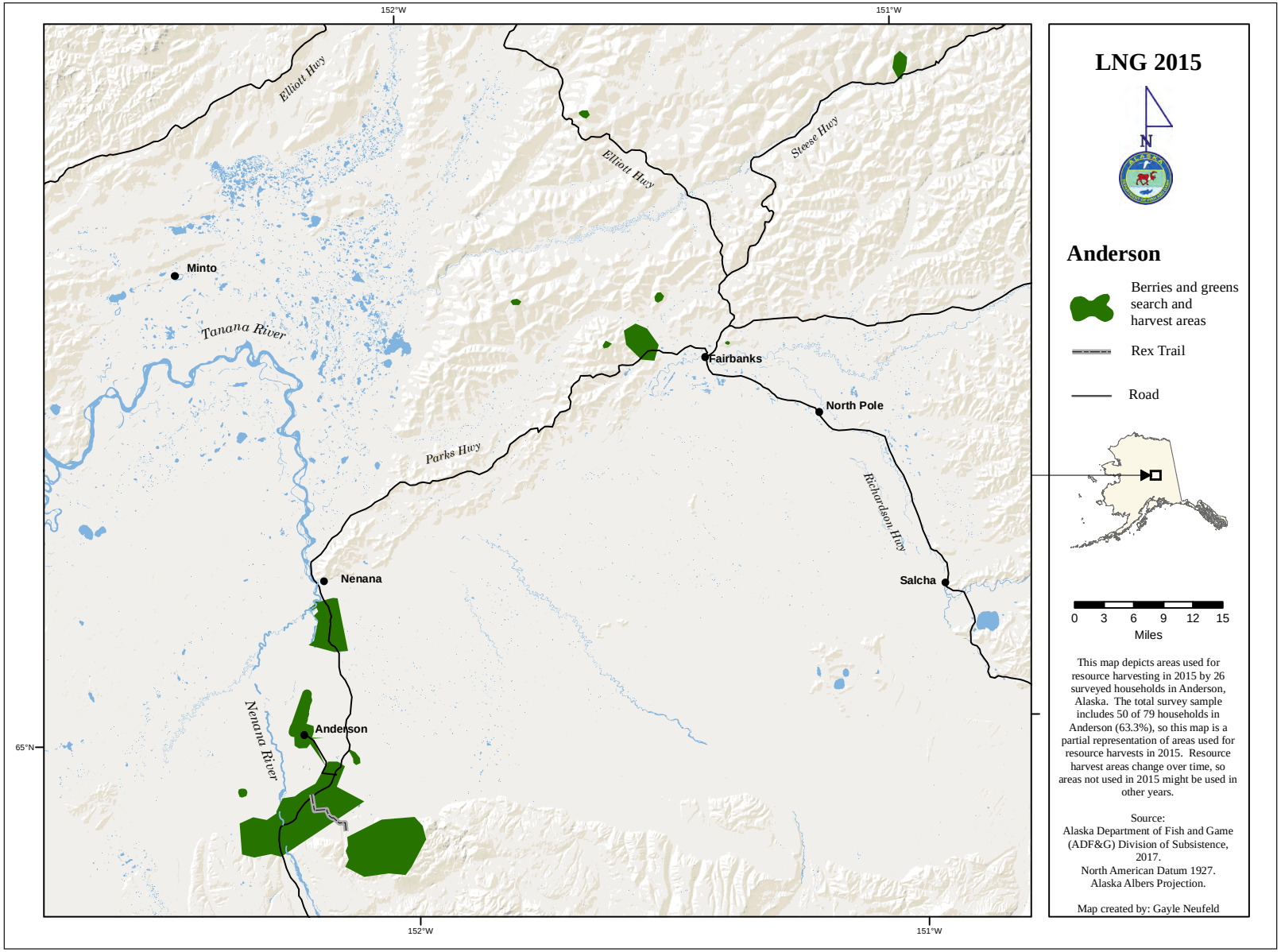


Figure 4-26.–Berries and greens gathering areas, Anderson, 2015.

the ACS calculation; both estimates for Anderson are higher than the median income for all of Alaska. Figure 4-29 shows the top income sources for residents in Anderson. The federal government sector, representing CAFB, provided $1,758,678 or 27% of the community total, more than any other source (Table 4-6; Figure 4-29). Twenty-two percent of the jobs held by Anderson residents were in the federal government sector, and 24% of employed adults worked for the federal government in 2015 (Table 4-8). Transportation, communication, and utilities positions followed; these provided 16% of the community income ($1,042,777; Table 4-6; Figure 4-29). Nine percent of wage-earning jobs were in this sector (Table 4-8). An estimated 94 adults (65%) held at least 1 job in 2015 (Table 4-9). Of the jobs reported by Anderson residents, 73% were full-time, 16% were part-time (fewer than 35 hours per week) and the rest were on-call or occasional occupations (Table 4-10). On average, employed adults worked 10 months out of the year and 72% of employed adults worked year round (Table 4-9). On average, employed adults held 1 job, but some reported holding 2, the maximum number reported in 2015.

The Alaska Permanent Fund, the largest contributor of money in the "other income" category, paid a dividend of $2,072 per person in 2015.[10] In Anderson, households received an average of $4,061 from the Permanent Fund (a total of $320,828; Table 4-6). This is roughly 5% of Anderson's total income and 31% of Anderson's other income sources. Disability benefits were the next highest contributor to other income, adding $253,432 to the community total and resulting in an average household income of $3,208. The remaining sources of other income included pension and retirement, Social Security, rental income, and a variety of other small contributors.

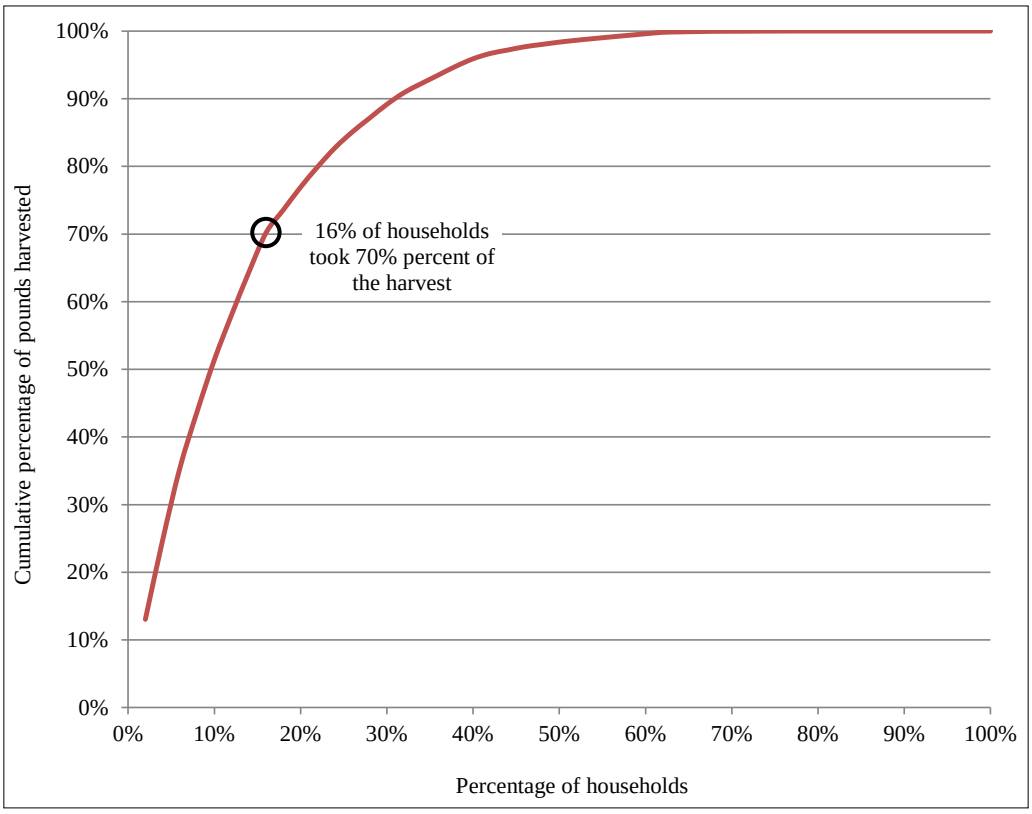


Figure 4-27.–Household specialization, Anderson, 2015.

10. Alaska Department of Revenue, Permanent Fund Dividend Division. 2017. "Summary of dividend applications & payments." Accessed April 12, 2017. https://pfd.alaska.gov/Division-Info/Summary-of-Applications-and-Payments

Table 4-6.–Estimated earned and other income, Anderson, 2015.

Income source	Number of employed adults	Number of households	Total for community	-/+ 95% CI	Mean per household	Percentage of total community income
Earned income						
Federal government	23	21	$1,758,678	$914,822 – $2,980,652	$22,262	27.0%
Transportation, communication, and utilities	10	10	$1,042,777	$375,470 – $2,029,357	$13,200	16.0%
Local government, including tribal	23	21	$908,709	$372,050 – $1,587,359	$11,503	14.0%
Services	23	21	$665,215	$205,793 – $1,395,761	$8,420	10.2%
Mining	6	7	$581,114	$144,065 – $1,245,009	$7,356	8.9%
Retail trade	5	5	$290,557	$79,361 – $837,823	$3,678	4.5%
Construction	6	7	$106,538	$24,660 – $339,721	$1,349	1.6%
Agriculture, forestry, and fishing	5	5	$86,683	$1,232 – $325,822	$1,097	1.3%
State government	5	5	$32,736	$10,026 – $185,363	$414	0.5%
Earned income subtotal	**94**	**68**	**$5,473,007**	**$3,884,100 – $7,303,432**	**$69,279**	**84.1%**
Other income						
Alaska Permanent Fund dividend		71	$320,828	$261,901 – $392,851	$4,061	4.9%
Disability		6	$253,432	$37,920 – $570,064	$3,208	3.9%
Pension / retirement		9	$216,686	$34,824 – $456,225	$2,743	3.3%
Social Security		6	$125,136	$24,648 – $263,544	$1,584	1.9%
Rental income		3	$85,320	$0 – $199,080	$1,080	1.3%
Veterans assistance		2	$18,960	$0 – $37,920	$240	0.3%
Supplemental Nutrition Assistance Program (food stamps)		2	$7,584	$0 – $15,168	$96	0.1%
Meeting honoraria		2	$3,792	$0 – $7,584	$48	0.1%
Child support		2	$948	$0 – $2,844	$12	0.0%
Native corporation dividend		2	$818	$0 – $1,637	$10	0.0%
CITGO fuel voucher		3	$796	$0 – $1,593	$10	0.0%
TANF (Temporary Assistance for Needy Families)		0	$0	$0 – $0	$0	0.0%
Adult public assistance (OAA, APD)		0	$0	$0 – $0	$0	0.0%
Longevity bonus		0	$0	$0 – $0	$0	0.0%
Workers' compensation / insurance		0	$0	$0 – $0	$0	0.0%
Heating assistance		0	$0	$0 – $0	$0	0.0%
Supplemental Security Income		0	$0	$0 – $0	$0	0.0%
Unemployment		0	$0	$0 – $0	$0	0.0%
Other		0	$0	$0 – $0	$0	0.0%
Foster care		0	$0	$0 – $0	$0	0.0%
Other income subtotal		**71**	**$1,034,301**	**$679,885 – $1,551,810**	**$13,092**	**15.9%**
Community income total			**$6,507,308**	**$5,120,034 – $8,305,187**	**$82,371**	**100.0%**

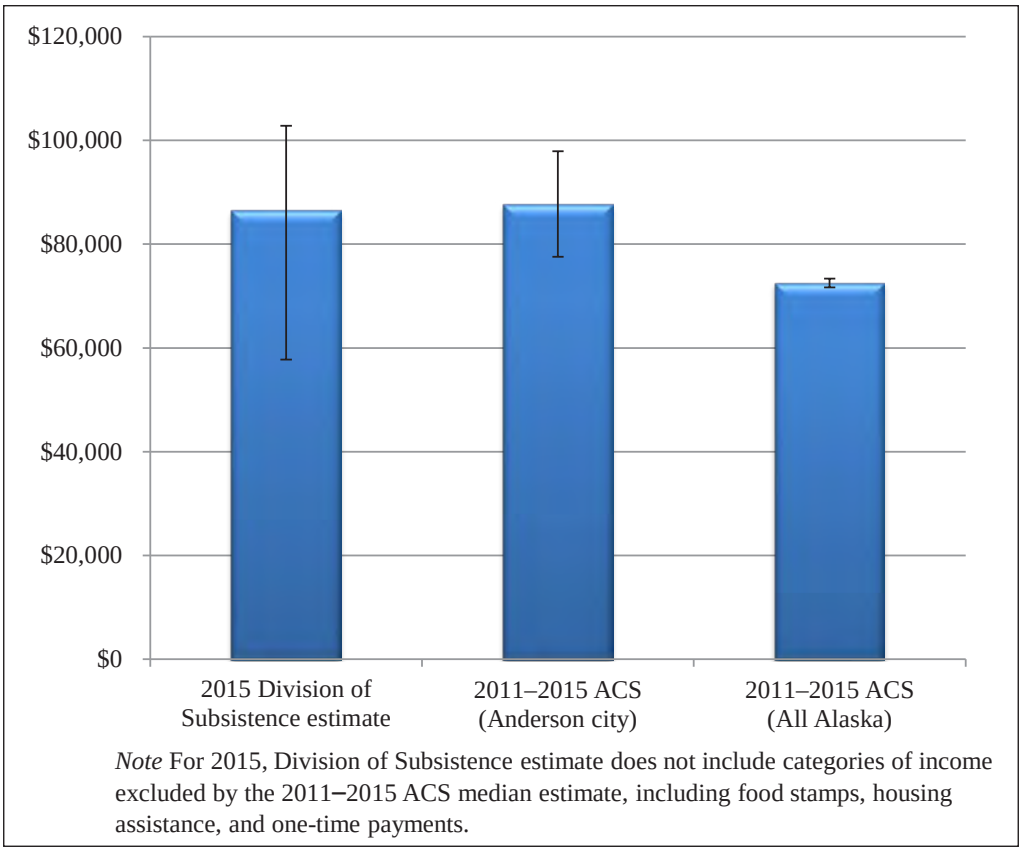
Source ADF&G Division of Subsistence household surveys, 2016.

Table 4-7.–Comparison of selected findings, Anderson, 2015.

Category	Community Anderson
Demography	
Population	186.4
Percentage of population that is Alaska Native	1.7%
Percentage of household heads born in Alaska	9.5%
Average length of residency of household heads (years)	17.8
Cash economy	
Average number of months employed	6.8
Percentage of employed adults working year-round	71.9%
Percentage of income from sources other than employment	15.9%
Average household income[a]	$82,371
Per capita income[a]	$34,903
Resource harvest and use	
Per capita harvest (lb)	80.7
Average household harvest (lb)	190.4
Number of resources used by 50% or more households	3.0
Average number of resources used per household	6.9
Average number of resources attempted to be harvested per household	6.0
Average number of resources harvested per household	5.2
Average number of resources received per household	2.0
Average number of resources given away per household	1.3
Percentage of total harvest taken by top 25% ranked households	82.8%
Percentage of households that harvested 70% of harvest	16.0%
Per capita harvest by lowest ranked 50% of households (lb)	1.6
Percentage of total harvest taken by lowest ranked 50% of harvesting households	2.0%
Average number of resources used by lowest ranked 50% of households	4.4
Average number of resources used by top 25% ranked households	12.2

Source ADF&G Division of Subsistence household surveys, 2016.

a. Includes income from sources other than employment.



Note For 2015, Division of Subsistence estimate does not include categories of income excluded by the 2011–2015 ACS median estimate, including food stamps, housing assistance, and one-time payments.

Figure 4-28.–Comparison of median income estimates, Anderson, 2015.

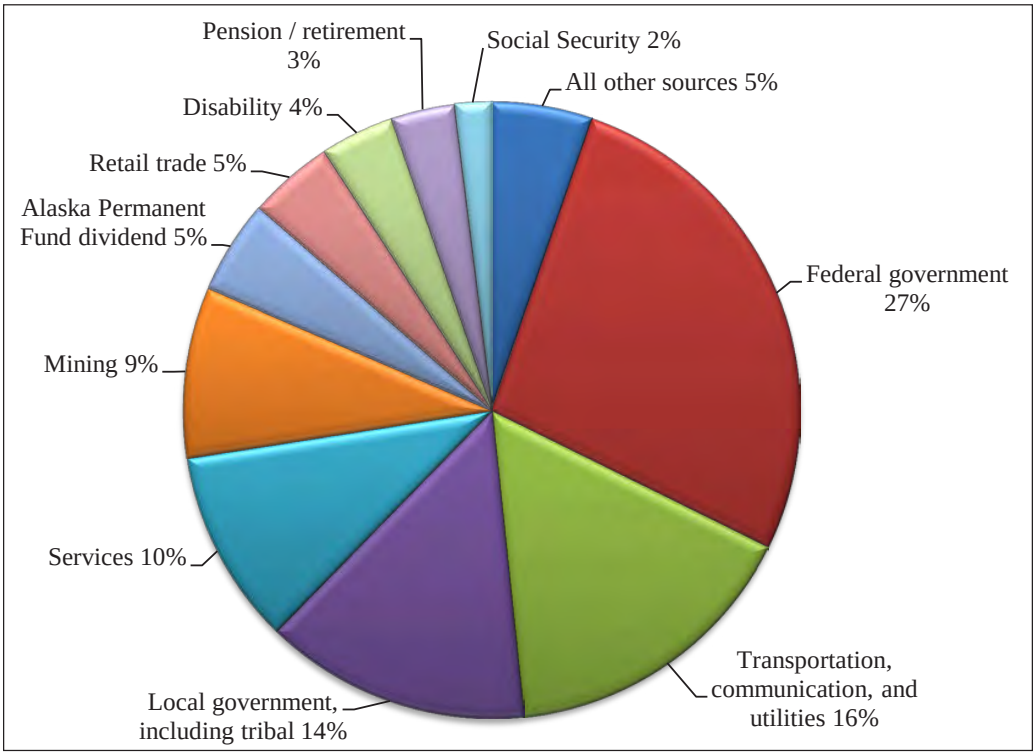


Figure 4-29.–Top income sources, Anderson, 2015.

Table 4-8.–Employment by industry, Anderson, 2015.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**108.6**	**67.7**	**94.1**	**100.0%**
Federal government	**22.4%**	**31.7%**	**24.1%**	**32.1%**
Executive, administrative, and managerial	10.4%	17.1%	12.1%	14.8%
Technologists and technicians, except health	1.5%	2.4%	1.7%	1.2%
Administrative support occupations, including clerical	4.5%	7.3%	5.2%	5.6%
Service occupations	3.0%	4.9%	3.4%	2.8%
Mechanics and repairers	1.5%	2.4%	1.7%	2.4%
Precision production occupations	1.5%	2.4%	1.7%	5.3%
State government	**4.5%**	**7.3%**	**5.2%**	**0.6%**
Executive, administrative, and managerial	1.5%	2.4%	1.7%	0.2%
Marketing and sales occupations	1.5%	2.4%	1.7%	0.2%
Administrative support occupations, including clerical	1.5%	2.4%	1.7%	0.2%
Local government, including tribal	**20.9%**	**31.7%**	**24.1%**	**16.6%**
Teachers, librarians, and counselors	10.4%	17.1%	12.1%	8.9%
Administrative support occupations, including clerical	3.0%	4.9%	3.4%	2.2%
Service occupations	1.5%	2.4%	1.7%	2.4%
Transportation and material moving occupations	1.5%	2.4%	1.7%	1.5%
Handlers, equipment cleaners, helpers, and laborers	4.5%	7.3%	5.2%	1.6%
Agriculture, forestry, and fishing	**4.5%**	**7.3%**	**5.2%**	**1.6%**
Agricultural, forestry, and fishing occupations	3.0%	4.9%	3.4%	0.1%
Mechanics and repairers	1.5%	2.4%	1.7%	1.5%
Mining	**6.0%**	**9.8%**	**6.9%**	**10.6%**
Executive, administrative, and managerial	3.0%	4.9%	3.4%	5.9%
Technologists and technicians, except health	1.5%	2.4%	1.7%	2.1%
Service occupations	1.5%	2.4%	1.7%	2.7%
Construction	**6.0%**	**9.8%**	**6.9%**	**1.9%**
Construction and extractive occupations	3.0%	4.9%	3.4%	1.0%
Production working occupations	1.5%	2.4%	1.7%	0.5%
Handlers, equipment cleaners, helpers, and laborers	1.5%	2.4%	1.7%	0.5%
Transportation, communication, and utilities	**9.0%**	**14.6%**	**10.3%**	**19.1%**
Executive, administrative, and managerial	1.5%	2.4%	1.7%	4.1%
Mechanics and repairers	1.5%	2.4%	1.7%	2.9%
Construction and extractive occupations	1.5%	2.4%	1.7%	3.2%
Precision production occupations	4.5%	7.3%	5.2%	8.8%
Retail trade	**4.5%**	**7.3%**	**5.2%**	**5.3%**
Service occupations	3.0%	4.9%	3.4%	3.5%
Occupation not indicated	1.5%	2.4%	1.7%	1.8%
Services	**22.4%**	**31.7%**	**24.1%**	**12.2%**
Executive, administrative, and managerial	3.0%	4.9%	3.4%	1.7%
Social scientists, social workers, religious workers, and lawyers	3.0%	4.9%	3.4%	1.3%
Health technologists and technicians	3.0%	4.9%	3.4%	0.4%
Technologists and technicians, except health	1.5%	2.4%	1.7%	3.5%
Marketing and sales occupations	1.5%	2.4%	1.7%	0.1%
Administrative support occupations, including clerical	1.5%	2.4%	1.7%	0.0%
Service occupations	3.0%	4.9%	3.4%	1.8%
Mechanics and repairers	3.0%	4.9%	3.4%	2.8%
Transportation and material moving occupations	1.5%	2.4%	1.7%	0.4%
Handlers, equipment cleaners, helpers, and laborers	1.5%	2.4%	1.7%	0.1%

Source ADF&G Division of Subsistence household surveys, 2016.

Table 4-9.–Employment characteristics, Anderson, 2015.

Characteristic	Community Anderson
All adults	
Number	143.8
Mean weeks employed	29.6
Employed adults	
Number	94.1
Percentage	65.4%
Jobs	
Number	108.6
Mean	1.2
Minimum	1
Maximum	2
Months employed	
Mean	10.4
Minimum	1
Maximum	12
Percentage employed year-round	71.9%
Mean weeks employed	45.2
Households	
Number	79
Employed	
Number	67.7
Percentage	85.7%
Jobs per employed household	
Mean	1.6
Minimum	1
Maximum	3
Employed adults	
Mean	
Employed households	1.4
Total households	1.2
Minimum	1
Maximum	3
Mean person-weeks of employment	53.9

Source ADF&G Division of Subsistence household surveys, 2016.

Table 4-10.–Reported job schedules, Anderson, 2015.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	79.5	73.1%	77.8	82.8%	59.5	87.8%
Part-time	16.2	14.9%	16.2	17.2%	13.2	19.5%
On-call (occasional)	13.0	11.9%	13.0	13.8%	13.2	19.5%

Source ADF&G Division of Subsistence household surveys, 2016.

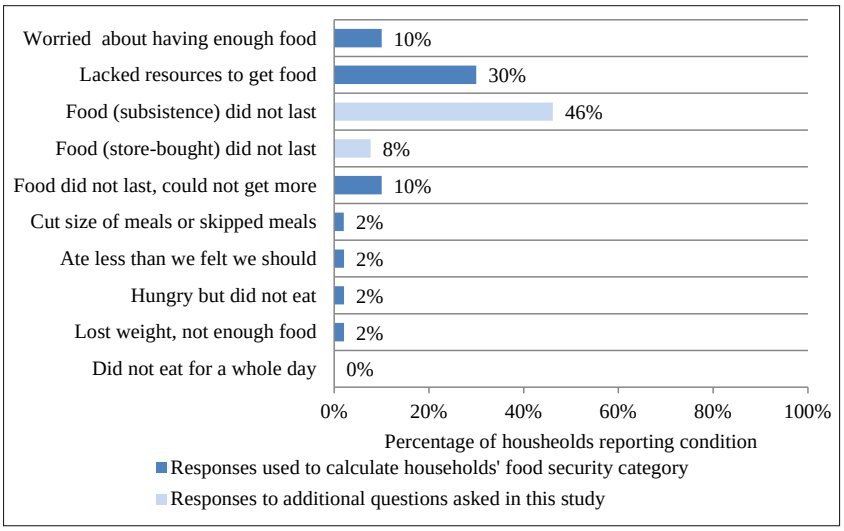


Figure 4-30.–Food insecure conditions, Anderson, 2015.

Food Security

Survey respondents were asked a set of questions intended to assess their household's food security, defined as, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2012). The food security questions were modeled after those developed by the U.S. Department of Agriculture (USDA) but modified by ADF&G to account for differences in access to subsistence and store-bought foods. Based on their responses to these questions, households were broadly categorized as being food secure or food insecure following a USDA protocol (Bickel et al. 2000). Food secure households were broken down further into 2 subcategories—high or marginal food security. Food insecure households were divided into 2 subcategories: low food security or very low food security.

Households with high food security did not report any food access problems or limitations. Households with marginal food security reported 1 or 2 instances of food access problems or limitations—typically anxiety over food sufficiency or a shortage of particular foods in the house—but gave little or no indication of changes in diets or food intake. Households with low food security reported reduced quality, variety, or desirability of their diet, but they, too, gave little indication of reduced food intake. Households classified as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen et al. 2012).

Core questions and responses from Anderson residents are summarized in Figure 4-30. Eight of the 10 statements listed in the figure are used to calculate a household's food security category. Ten percent of households worried that they would not have enough food. Similarly, 10% reported that their

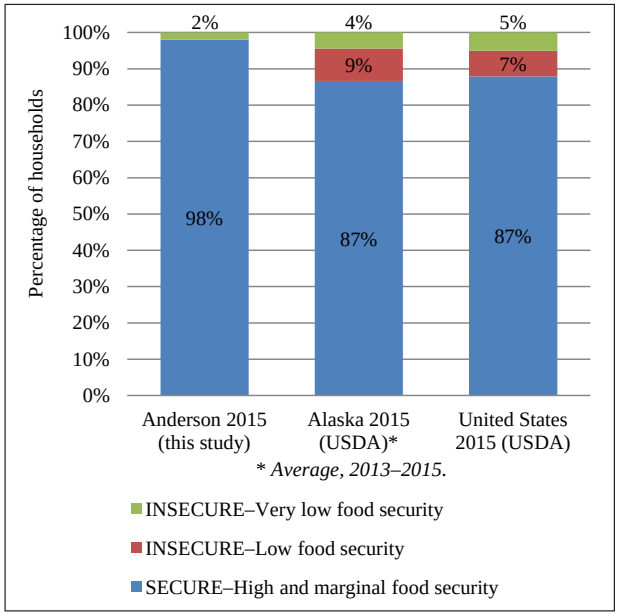


Figure 4-31.–Comparison of food security categories, Anderson, 2015.

food, either store-bought or subsistence, ran out and they were unable to get more. Forty-six percent of households specified that subsistence food did not last throughout the year. Two percent of households reported a series of conditions consistent with very low food security.

Food security results for surveys for Anderson, the state of Alaska, and the United States are summarized in Figure 4-31 and show that residents in Anderson experienced higher levels of food security compared to other Alaska households and those surveyed across the United States. Overall, 98% of households were food secure in 2015, compared to 87% across Alaska and 86% in the United States. No responding households fell in the low food security category. However, 2% of Anderson households were considered to have very low food security. Anderson's connection with the CAFB and the nature of residency in the community could explain the food security profile.

Figure 4-32 portrays the mean number of food insecure conditions per household by food security category by month. This figure shows a seasonal food security profile that has a steep increase between the months of May and November. The spikes in food insecure conditions represent the responses from the 2% of households that reported insecure conditions. Rather than a broad community pattern of food insecurity throughout the year, individual circumstances affecting those households are responsible for these increases.

Figure 4-33 shows in which months households reported foods not lasting. For the majority of the year, households did not run out of store-bought food. Only in November and December did 2% of households report shortages of store-bought food. Households reported more variability in their access to subsistence food. With the exception of summer months (June through August) households reported that their subsistence food ran out. The summer availability of salmon and halibut, key resources for Anderson residents, may explain why no household reported running out of wild food during those months. Eight percent of responding households reported their subsistence food ran out in November, the highest level in 2015. During the months of May, September, and October, 4% of responding households reported running out of subsistence food.

Comparing Harvests and Uses in 2015 with Previous Years

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 8 resource categories in 2015 as in the past 5 years, and whether they got "enough" of each of the 8 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. They were further asked whether they did anything differently (such as supplement with store-bought food or switch to a different subsistence resource) because they did not get enough. This section discusses responses to those questions.

Together, Figure 4-34 and Figure 4-35 provide a broad overview of households' assessments of their harvests in 2015. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. Table D4-12 provides additional data to support Figure 4-35.

More than one-half (58%) of households reported they got enough wild foods in 2015, while 18% did not (Figure 4-34). Forty-eight percent of households used less wild food in 2015 than they did in recent years (Figure 4-35). Only 12% used more and 36% reported using the same amount. For households that did not get enough wild foods in 2015, 14% stated they did not notice an impact, while 36% reported that not getting enough wild foods had a minor impact on their household (Table D4-13). Twenty-nine percent reported that their households experienced a major impact from not getting enough. No household reported severe impacts.

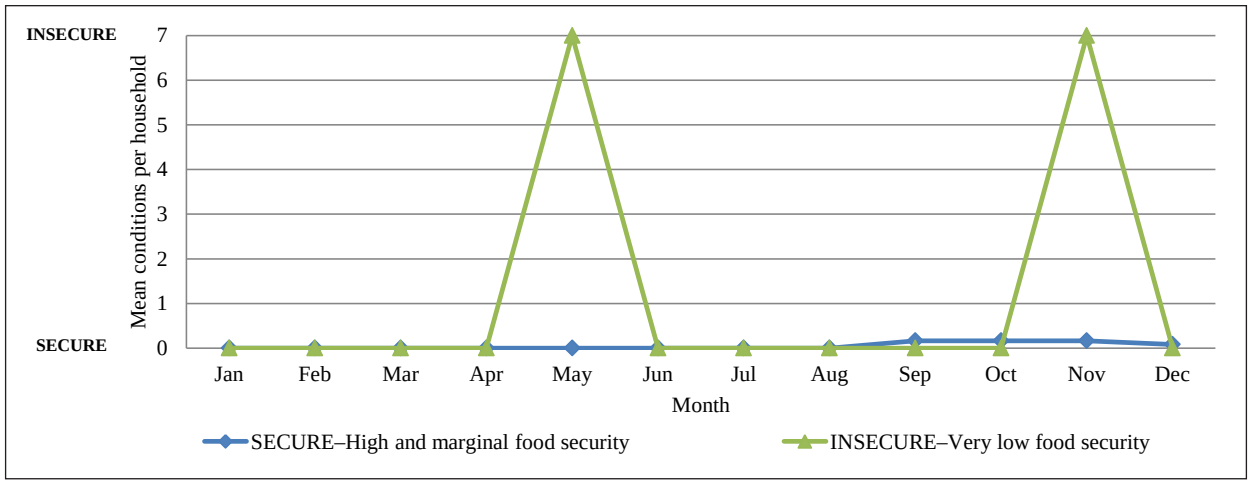


Figure 4-32.–Food insecure conditions by month, Anderson, 2015.

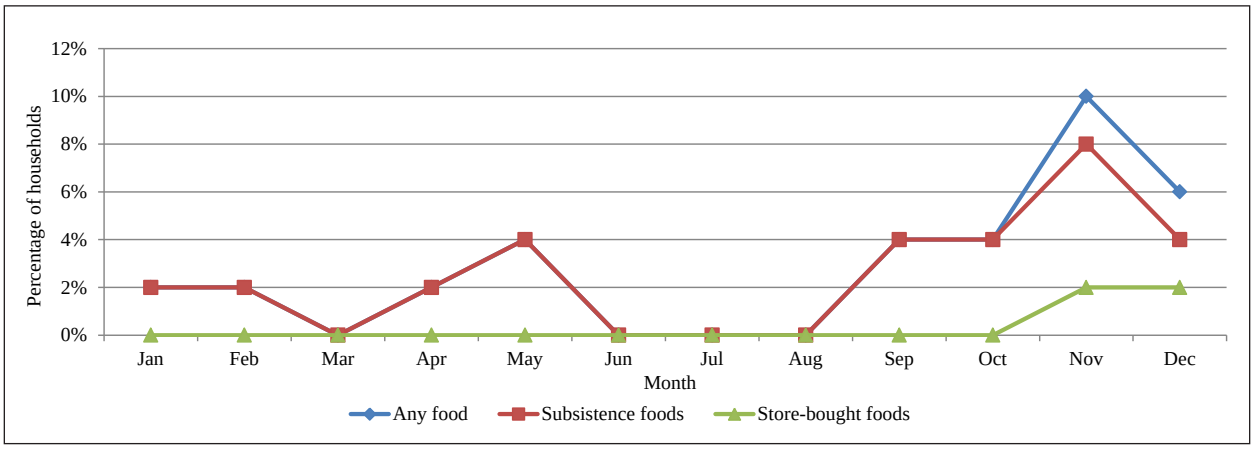


Figure 4-33.–Comparison of months when food did not last, Anderson, 2015.

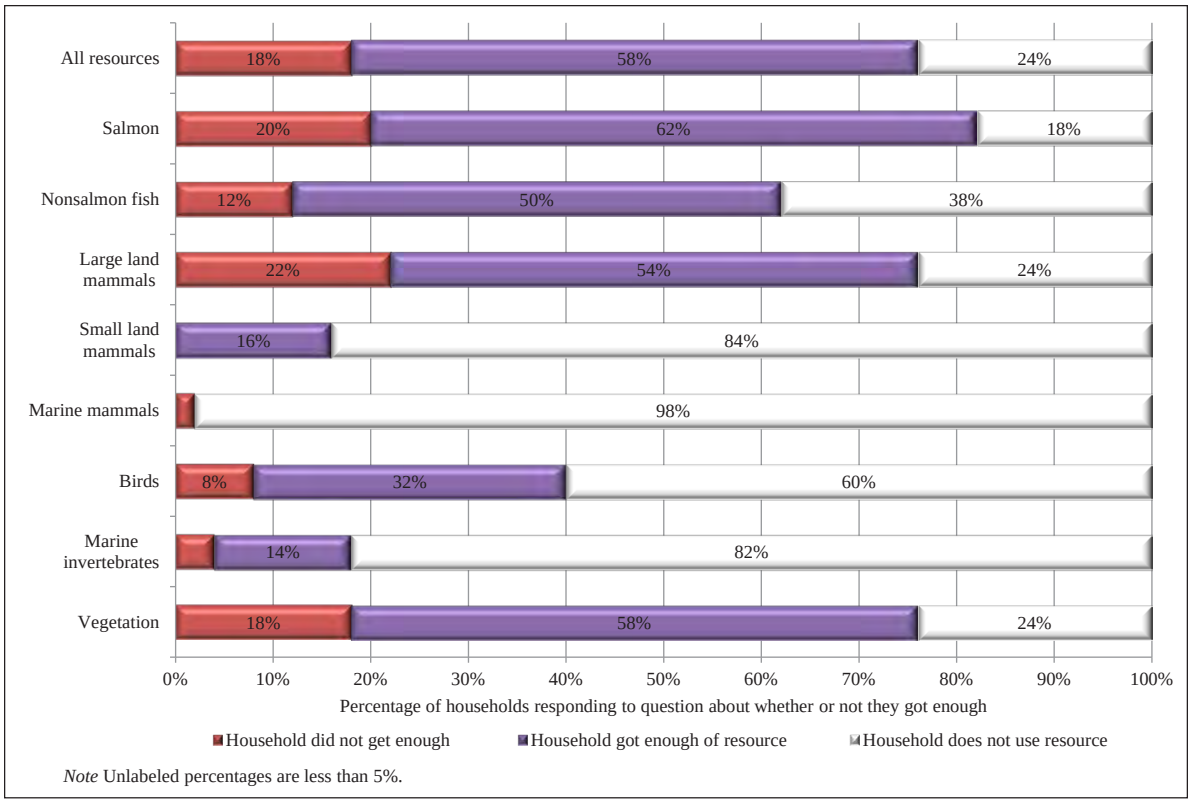


Figure 4-34.–Percentages of households reporting whether they got enough resources, Anderson, 2015.

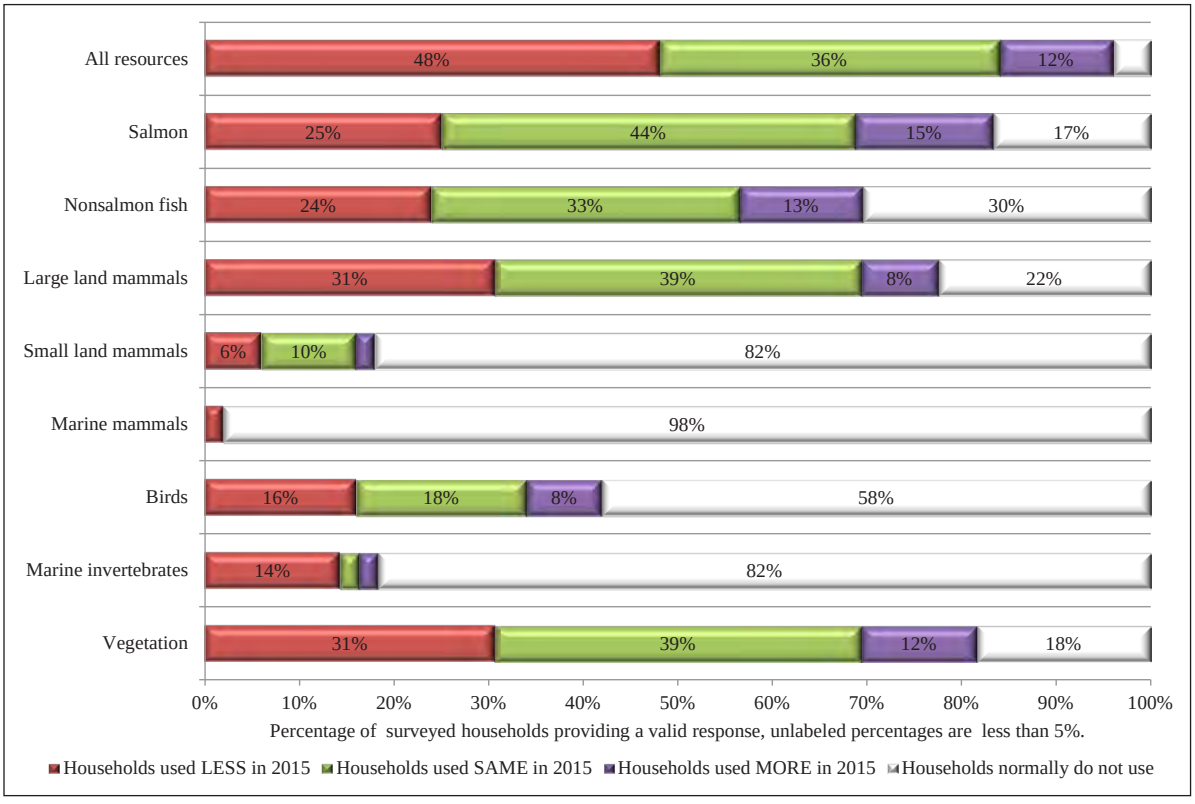


Figure 4-35.–Changes in household uses of resources compared to recent years, Anderson, 2015.

Twenty percent of households reported they did not get enough salmon, a primary resource category (Figure 4-34). When compared to recent years, one quarter of Anderson households used less salmon (Figure 4-35). When asked why they used less, 42% of households said they did not put in enough effort to harvest salmon (Table D4-14). Thirty-three percent reported they did not have enough time to fish, and 25% attributed their lowered use to personal reasons. Half of households that did not get enough salmon experienced a minor impact, and 40% reported major impacts to their households from not getting enough salmon (Table D4-13). Despite these factors, 62% of Anderson respondents felt they got enough salmon in 2015 (Figure 4-34). Table D4-15 shows the resources of which Anderson households reported needing more in 2015. Eight households (16% of those responding) reported needing more sockeye salmon, more than any other resource.

Large land mammals, used by 62% of households, had a higher percentage of households that reported they did not get enough (22%; Table 4-4; Figure 4-34). Thirty-one percent of households reported they used less large land mammals than in recent years (Figure 4-35). Most attributed their households' lowered use to unsuccessful harvest (33%), while others cited personal reasons for using less large land mammals (20%; Table D4-14). Thirteen households, or 26% of those that answered the assessment questions, specified that they needed more moose (Table D4-15). Forty-six percent of households that did not get enough large land mammals experienced minor impacts (Table D4-16). Thirty-six percent experienced major ones. Overall, 54% of responding households felt they got enough of large land mammals in 2015 (Figure 4-34).

Fifty percent of households reported that they got enough nonsalmon fish, which includes halibut (Figure 4-34). In 2015, 13% of households used more nonsalmon fish than in recent years (Figure 4-35). Needing more nonsalmon fish was the most commonly cited reason for getting more in 2015 (33%; Table D4-16).

More than one-half (58%) of households got enough vegetation, including berries and greens (Figure 4-34). Twelve percent of households used more vegetation, and 31% used less (Figure 4-35). Sixty percent of households reported that the limited availability of vegetation in the area resulted in reduced use (Table D4-14).

Harvest Data

Changes in the harvest of resources by Anderson residents can also be discerned through comparisons with findings from other study years. Historical quantitative information on the subsistence harvests in Anderson is limited. Only one prior comprehensive subsistence harvest survey has been conducted in Anderson: the Division of Subsistence collected comprehensive harvest data for a special report for the Alaska Board of Game in 1987. This data set is accessible on the Community Subsistence Information System (CSIS). Some methodological differences exist, but the 1987 data do provide a general point of reference.

In 1987, the population in Anderson and their participation in subsistence harvest and use were higher than the current study year. In 1987, the Division of Subsistence estimated that 655 residents harvested 91,122 lb of wild foods resulting in a per capita harvest of 139 lb (Figure 4-36).[11] By 2015, the population had declined to 186 residents, and per capita harvest had dropped to 81 lb (Table 4-2; Figure 4-36). Despite significant differences in population, the percentages of households that attempt to harvest, successfully harvest, and use wild foods are similar between the 2 years. In the earlier study, 83% of households attempted to harvest a wild food; in 2015, 84% did (Table 4-4).[12] Eighty-three percent of households were successful in 1987, while slightly less (78%) were successful in 2015. Overall the percentage of households using wild foods in 2015 was higher than in 1987 (94% verses 85%).

Figure 4-37 shows the estimated per capita harvest of each resource category. Per capita harvests in the top 3 categories (salmon, nonsalmon fish, and large land mammals) were lower in 2015 than in 1987. The per capita harvest of salmon showed the most substantial decrease, dropping from 87 lb per capita in 1987 to 37 lb per capita in 2015.

11. ADF&G CSIS.
12. ADF&G CSIS.

In both years, salmon accounted for the bulk of the edible pounds harvested by Anderson residents. In 1987, salmon made up 63% of the total community harvest, while in 2015, salmon made up 45% of the community harvest (Figure 4-38). However, the composition of the salmon harvest is different between the 2 years, suggesting changed salmon harvesting patterns. In 1987, chum salmon accounted for 91% of the salmon taken and a per capita harvest of 79 lb.[13] Chum salmon, readily available in the nearby Tanana and Nenana rivers, were rarely harvested in 2015, when an estimated 13 chum salmon accounted for less than 1 pound per capita (Table 4-4). Instead, sockeye salmon, a species typically harvested at Chitina as part of the Copper River personal use and subsistence fisheries, made up 66% of the salmon harvest and 30% of the overall community harvest. The Kenai and Kasilof personal use fisheries were also sources of sockeye salmon. Without ethnographic information to contextualize the 1987 data, it is unclear whether Anderson residents were spending more time targeting locally available types of salmon or if they were harvesting their chum salmon elsewhere.

The harvest of nonsalmon fish increased slightly from 9% of the total community harvest in 1987 to 13% in 2015. An estimated 8,566 lb of nonsalmon fish was harvested in 1987 (13 lb per capita).[14] Seventy-one percent of households used nonsalmon fish in 1987; slightly less (60%) used them in 2015 (Table 4-4).[15] Overall, the nonsalmon harvest in 2015 was much lower (1,902 lb), but the per capita harvest remained similar (10 lb). In both study years, grayling and halibut were popular species. In 1987, grayling accounted for 35% of the nonsalmon harvest (5 lb per capita) and halibut made up 18% of the nonsalmon harvest (2 lb per capita). In 2015, these were still the most popular nonsalmon species, but their portion of nonsalmon harvest had changed over time. Halibut made up 76% of the nonsalmon harvest (8 lb per capita), while Arctic grayling made up 5% of the nonsalmon harvest (1 lb per capita).

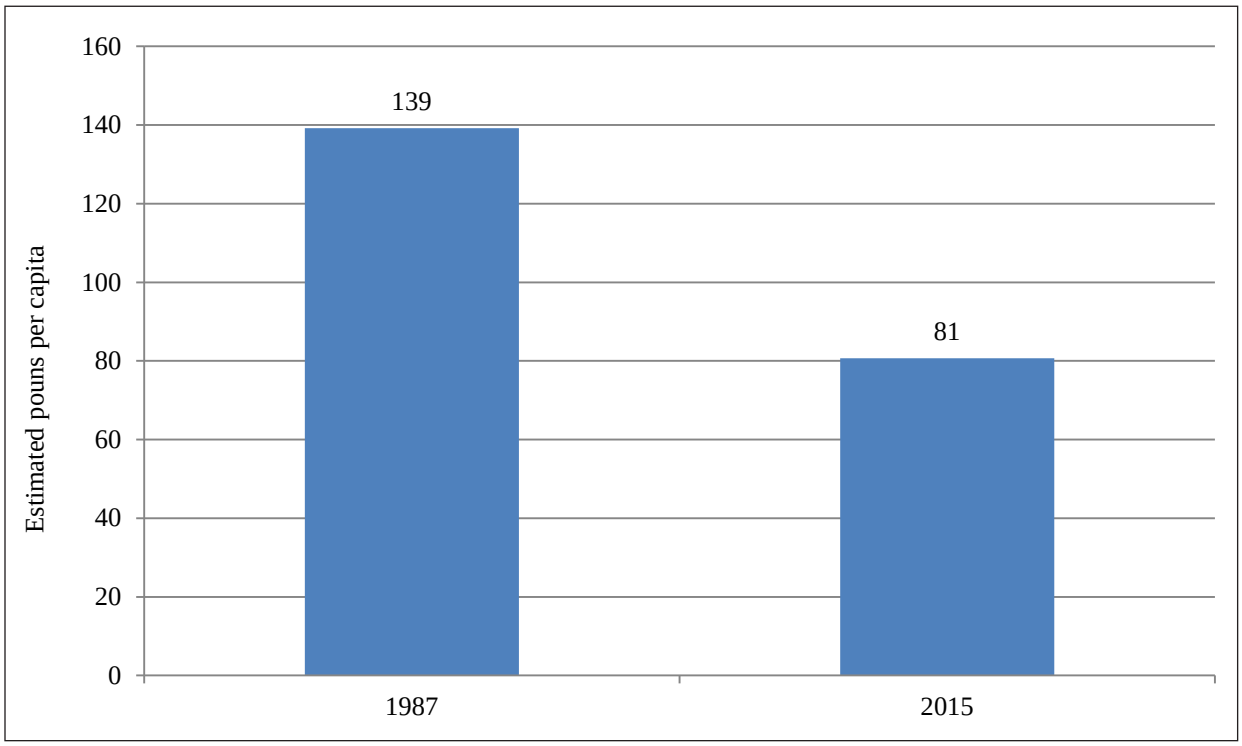


Figure 4-36.–Estimated per capita harvests, Anderson, 1987 and 2015.

13. ADF&G CSIS.
14. ADF&G CSIS.
15. ADF&G CSIS.

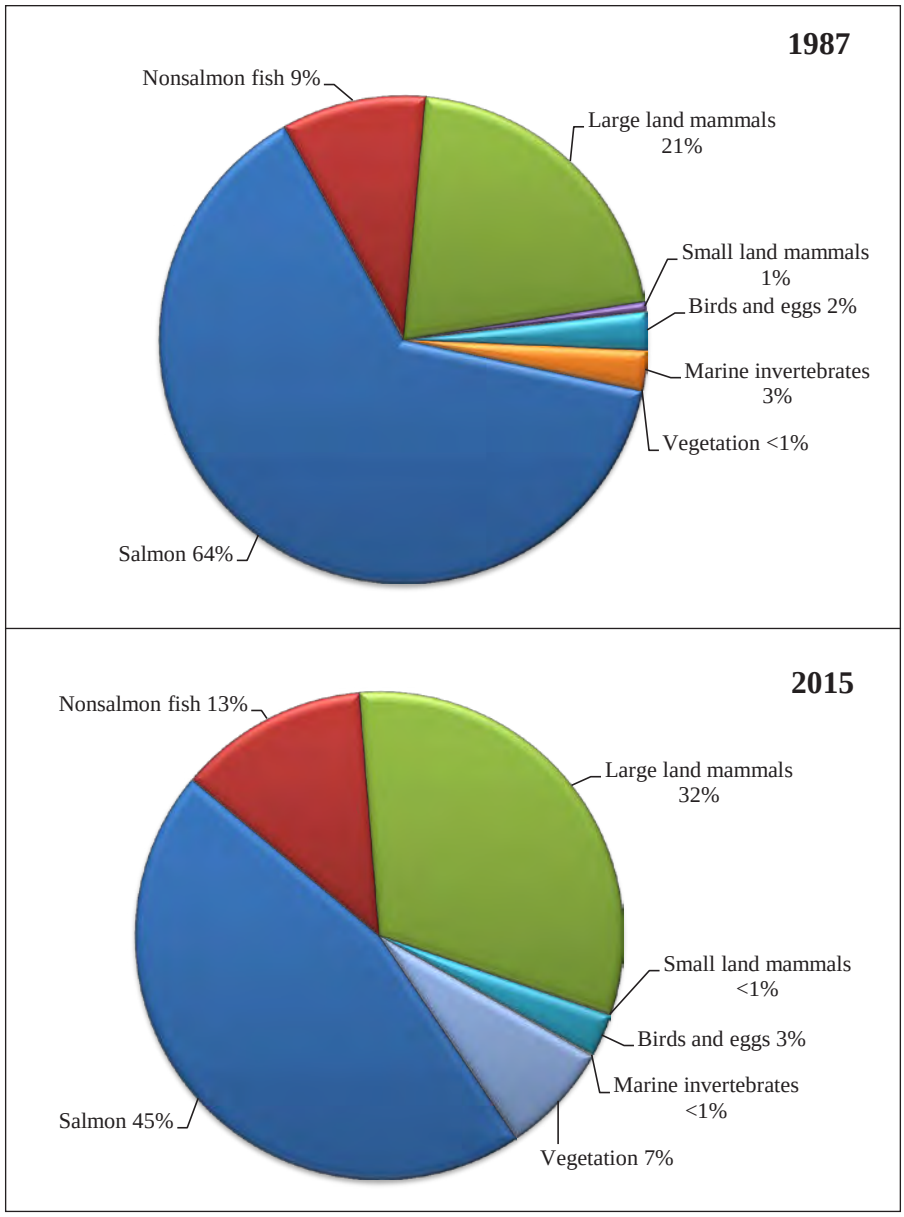


Figure 4-37.–Composition of harvests by edible weight, Anderson, 1987 and 2015.

Large land mammals accounted for a larger portion of the harvest in 2015, rising from 21% to 32% (Figure 4-38). Caribou was a dominant large land mammal harvested by Anderson residents in 1987, but no harvest was reported in 2015 (Table 4-4).[16] In the prior study, Anderson hunters harvested 6 lb of caribou per capita, accounting for 20% of the large land mammal harvest. Twenty-eight percent of households reported using caribou. In 2015, no harvest was reported, but 14% of households did report use. Moose was a primary resource in both years, but accounted for less of the large land mammal harvest in 2015 than in 1987. In 1987, moose made up 90% of the large land mammal harvest and 28% of the total community harvest. In 2015, moose made up 73% of the large land mammal harvest and 15% of the total harvest. Anderson residents harvested 21 lb of moose per capita in 1987, and 23 lb per capita during the 2015 study year. Roughly the same percentage of households reported using moose in the 2 years: 53% in 1987 and 54% in 2015.

16. ADF&G CSIS.

Trapping in Anderson was a less prominent activity in 2015 than it was in 1987. The percentage of households attempting to harvest small land mammals decreased from 21% to 14% (Table 4-4).[17] The success rate also dropped. In 1987, all the households that attempted to harvest small land mammals were able to do so. In the 2015 study year, only 10% were able to do so (4% lower than the percentage that attempted to harvest). In 1987, the primary species harvested were marten (247 individual animals), red fox (116), and hares (219). In 2015, muskrat, marten, and mink were the most heavily harvested species (41, 35, and 32 individual animals, respectively).

The 1987 study grouped birds into subcategories; ducks, geese, cranes, grouses, and ptarmigans. For the purposes of comparison, the species level harvest reported in this study will be grouped into the same categories. In both years, grouses comprised the majority of the bird harvest (Table 4-4).[18] In 1987, the bird harvest was more diverse than in 2015, but grouses still made up 45% of the harvest. In 2015, grouses made up 91% of the community bird harvest. Without ethnographic context, it is impossible to determine why harvest patterns have changed. In comparison with the prior study year, migratory bird harvests were nearly nonexistent in 2015. Mallards were the only migratory bird harvested in Anderson in 2015, making up 3% of the bird harvest and accounting for less than 1 lb per capita. In 1987, ducks, geese, and cranes were harvested by Anderson residents, resulting in a 1 lb per capita harvest and accounting for 32% of the bird harvest in that year.

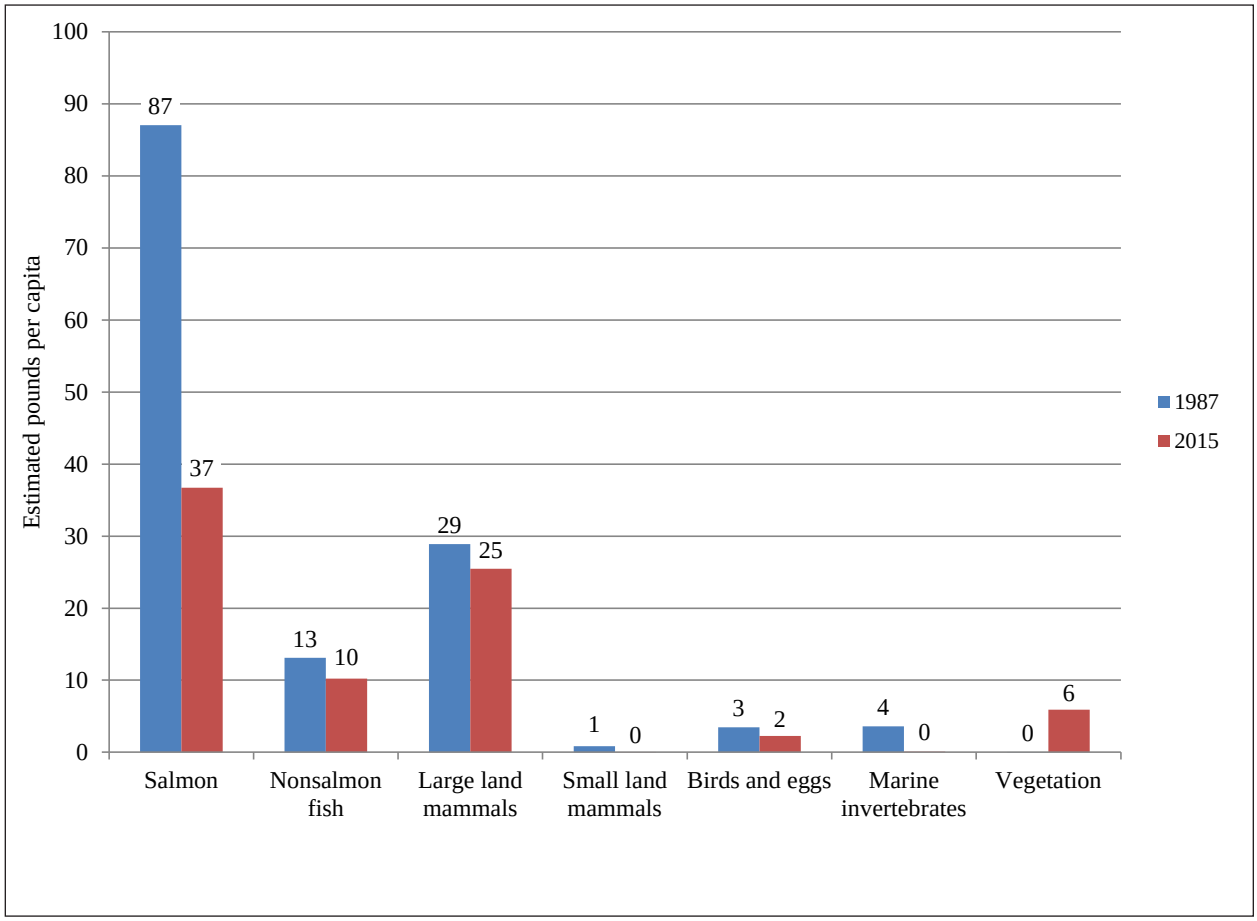


Figure 4-38.–Per capita harvests by category, Anderson, 1987 and 2015.

17. ADF&G CSIS.
18. ADF&G CSIS.

The harvest and use of marine invertebrates have dropped since the last study. Per capita harvest fell from 4 lb in 1987 to less than 1 lb in 2015 (Table 4-4).[19] In 1987, 6% of households harvested marine invertebrates including a variety of clams, crabs, and shrimp. Ten percent reported using them. In 2015, 2% of households reported harvest or use of shrimp, the only marine invertebrate harvested during this study year.

The harvest and use of vegetation was high in both years. Sixty-one percent of households used and harvested berries and greens in 1987.[20] Similarly, 60% of households harvested berries and greens in 2015, while 78% reported using them (Table 4-4). Per capita, 2 lb of berries and greens were harvested in 1987 and 6 lb in 2015 (Figure 4-37). Vegetation is the only resource category that shows an increase in per capita harvest since 1987.

Current and Historical Harvest Areas

Previously mapped data does not exist for Anderson.

Local Comments and Concerns

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

Ethnographic respondents have observed warming winters. For example, the Tanana River now freezes solid in midwinter rather than in early winter, as it had historically (O3062016AND2). Ice in creeks, lakes, and smaller tributaries is noticeably thinner in recent years. Temperatures have warmed in the winter. Extreme cold is rare, according to one respondent, with lows near negative -20° F instead of near -60° F.

Residents of Anderson are emphatically opposed to antlerless moose hunts in GMU 20A and believe that, in the last decade, antlerless hunts have depleted moose populations and have caused irreversible damage. Several survey respondents shared their thoughts about antlerless moose hunts. One said that the liberal hunting opportunity increased competition along Rex Trail with nonlocal hunters. Another respondent suggested that residents in Nenana and Anderson are not able to get the moose they need because of ADF&G management strategies. The same respondent believed that the reduction in the moose population in GMU 20A occurred too rapidly, making it difficult for the population to rebound.

Acknowledgements

The author would like to thank the Anderson City Council for the support and assistance provided to Division of Subsistence staff. Special thanks go to Dorothy Leake, the Anderson City Clerk, who was extremely generous with her time and made research staff feel welcome and comfortable in the community. This research would not have been possible without the assistance of local research assistants and the interest and cooperation from all the residents in Anderson.

19. ADF&G CSIS.
20. ADF&G CSIS.

5. NENANA

Alida Trainor, Caroline L. Brown, Brooke M. McDavid, and Jeff Park

In March and April 2015, 7 researchers surveyed 134 of 243 eligible households (55%; Table 1-4) in the Nenana area. Expanding for 109 unsurveyed households, Nenana's estimated total harvest of wild foods between January and December 2015 was 64,965 edible pounds (Table 5-1). The average harvest per household was 267 lb; the average harvest per capita was 111 lb. The area surveyed for Nenana exceeded the community itself (approximately miles 300–305 on the George Parks Highway[1]) to include an area that began near mile 299, south of Nenana, and continued to approximately mile 320, north of Nenana (Figure 5-1). This study area was selected in order to capture all of the households located along the highway but outside of the city limits, including the Four Mile Road Census Designated Place (CDP) just north of Nenana.

This chapter summarizes findings from household surveys, including demographic characteristics, responses to harvest assessment questions, harvest estimates, reported employment and income, a networking section, and responses to food security questions. Harvest numbers are expanded estimates. Results from this survey are available online in the ADFG Community Subsistence Information System (CSIS).[2]

In addition to the comprehensive survey, 8 interviews were conducted with 10 individuals. Respondents included elders who held a long lifetime of knowledge about living off the land as well as members of younger generations who were among the most currently active hunters, fishers, and gatherers in the community. These ethnographic interviews provided an opportunity to identify valuable information that may not be captured by the survey, including details about the seasonal round, recent changes in subsistence harvesting and processing practices, and insights on how the study year may have differed from a typical year.

Community Background

Nenana is the largest and northernmost of the 4 study communities. It is situated at the junction of the Nenana and Tanana rivers at mile 304 of the Parks Highway. The community is in the westernmost portion of Tanana Athabascan territory. The specific area, originally known as "Tortella" or "Toghotthele," which means "mountain that parallels the river," is an important place name of an associated hill located opposite the community on the north bank of the Tanana River (Shinkwin and Case 1984). The current name, Nenana, is derived from the Lower Tanana word meaning the "stopping-while-migrating-stream" (Bright 2004).

The Tanana Valley has a long history of human occupation and hosts one of the earliest archaeological sites in North America, dating from the late Pleistocene (Powers and Hoffecker 1989). According to Shinkwin and Case (1984), H.T. Allen, a United States Army officer who explored the Copper, Tanana, and Koyukuk rivers in the late 1800s, observed a small fish camp in 1885 at the contemporary location of Nenana. The area was described as a large seasonal settlement where Athabascan Indians from the surrounding area gathered for a midwinter potlatch and summer salmon fishing. In the late 1800s, Tanana Athabascan people traded with Europeans regularly at the village of Tanana on the Yukon River, bartering commerical goods for furs. One resident described trading relationships with other Alaska Native groups:

> There was a trade route from here to Copper Center, because they needed copper in the Interior. It made it a lot easier to work birch bark. See, if you pierce birch bark you leave a little split in it, even if you use an electric drill you leave those little splits. So the only way to make a hole in birch bark without that miniscule split, which when it's lashed to a rib with spruce root will split out and be a leak, only way to get around that is to burn that hole through. And you got to have metal for that. And so they traded for copper all the way down in there and they brought it back here. (032516ENN01)

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

Table 5-1.–Resource harvest and use characteristics, Nenana, 2015.

Characteristic	
Mean number of resources used per household	**8.6**
Minimum	0
Maximum	41
95% confidence limit (±)	10.5%
Median	6.0
Mean number of resources attempted to harvest per household	**5.4**
Minimum	0
Maximum	37
95% confidence limit (±)	13.4%
Median	4.0
Mean number of resources harvested per household	**4.9**
Minimum	0
Maximum	34
95% confidence limit (±)	14.3%
Median	3.0
Mean number of resources received per household	**4.3**
Minimum	0
Maximum	24
95% confidence limit (±)	12.2%
Median	3.0
Mean number of resources given away per household	**2.8**
Minimum	0
Maximum	33
95% confidence limit (±)	20.7%
Median	1.0
Household harvest (lb)	
Minimum	0
Maximum	7,050
Mean	267.3
Median	20.0
Total harvest weight (lb)	64,964.9
Community per capita harvest (lb)	111.3
Percentage using any resource	97%
Percentage attempting to harvest any resource	86%
Percentage harvesting any resource	84%
Percentage receiving any resource	87%
Percentage giving away any resource	54%
Number of households in sample	134
Number of resources asked about and identified voluntarily by respondents	141

Source ADF&G Division of Subsistence household surveys, 2016.

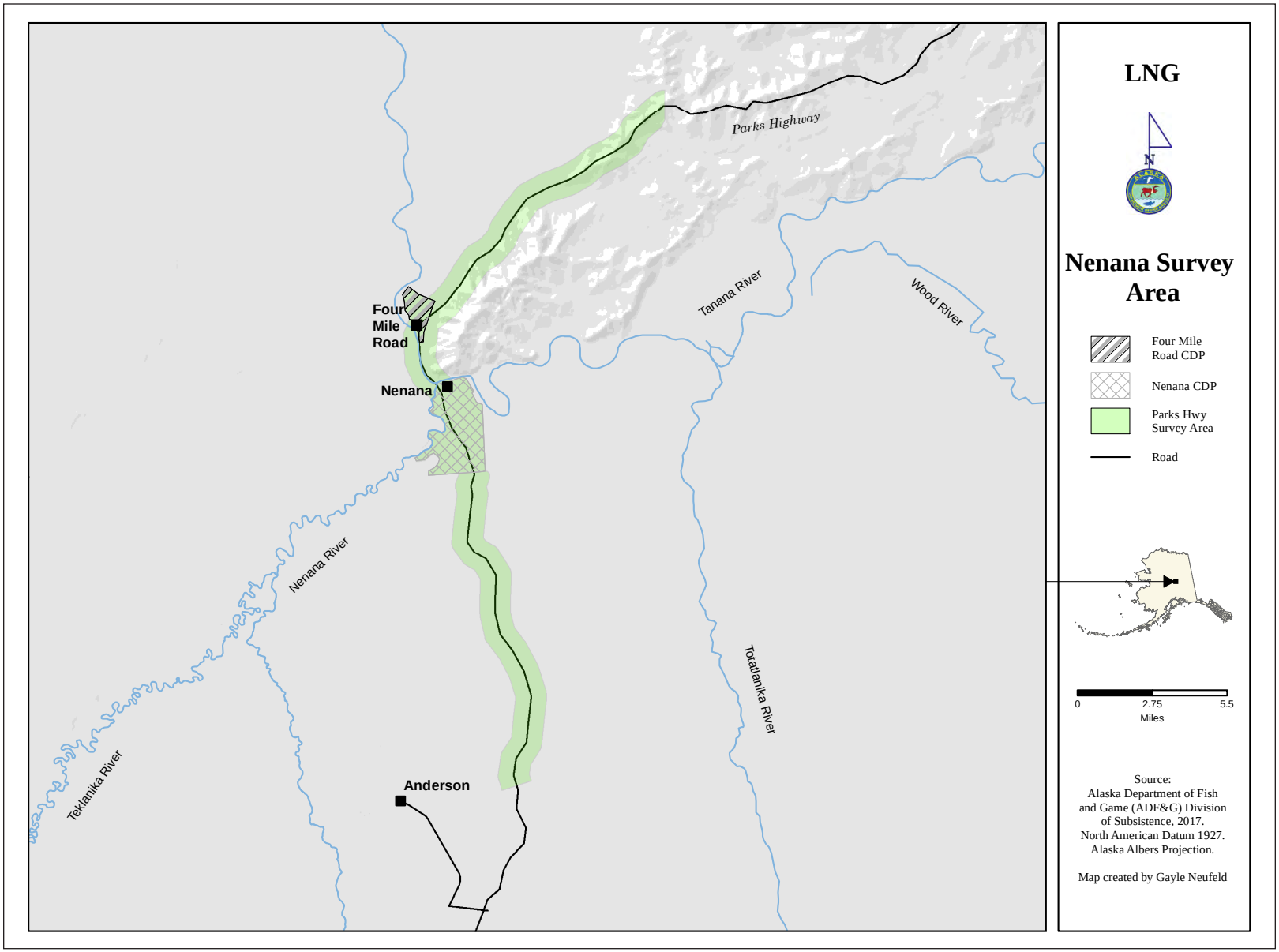


Figure 5-1.–Nenana survey area, 2015.

Multiple log cabin homes built at Nenana provided Native families with access to non-Native trade goods and employment in the growing steamboat traffic business.

The turn of the century brought significant development to the Interior region. The discovery of gold in the Pedro mining district in 1902 and the establishment of a telegraph line and mail route supported a growing population. Between 1903 and 1908, a trading post and roadhouse, an Episcopal mission and school, and a post office were added to the growing settlement (Olson 1968; Shinkwin and Case 1984). Census data listed the population of Nenana at 190 in 1910 (Rollins 1978). In 1915, workers came to Nenana to build the Alaska Railroad and dramatically changed the ethnic composition of the community. By the 1920s, the Native community established their first council; Nenana incorporated as a city in 1921 (Shinkwin and Case 1984). In 1923, workers completed a railroad depot, which linked Fairbanks to Seward in the south and established Nenana as a major transportation hub. According to census records, more than 800 residents lived in Nenana during this time; however, an influenza epidemic around 1920 and an exodus of non-Natives following the completion of the railroad dramatically decreased the local population (Rollins 1978; Shinkwin and Case 1984). In 1930, there were 291 people recorded in Nenana.

Until about 1950, the population of Nenana stayed relatively low; many families remained on the outskirts of the community following subsistence resources, but using the community as a seasonal base for supplies, employment, access to health care, and periodic schooling associated with the mission (Shinkwin and Case 1984). Nenana has long served as a transportation hub in Interior Alaska. Military activity in the area during World War II led to an increase in railroad and river freighting and ultimately established Nenana as a permanent, year-round community. In 1960, a road from Fairbanks reached as far as the north bank of the Tanana River opposite Nenana; and in 1967 the river was bridged, putting Nenana on the road system. When the Parks Highway was completed in 1970, Nenana was connected to Anchorage and other communities to the south (Shinkwin and Case 1984). However, the community remains a center of river freighting, with 2 barge companies that plie the Yukon River every summer. The community also has a health clinic, mental health clinic, public library, and fire department. The Alaska State Troopers, Alaska Court System, and Golden Valley Electric Association maintain facilities in Nenana. The Nenana Student Living Center, 1 of 3 statewide boarding facilities for high school students, attracts students from around the state.

Shinkwin and Case (1984) describe Nenana as a place where "the growing, but transient, presence of other non-Natives" has influenced the development and character of Nenana since the "contact-traditional" period of the 19th century (Helm et al. 1975). Because of its history as a transportation center, first by river and then by road, the population of Nenana has long been a diverse mixture of Athabascan and non-Native people. Today the community is approximately 35% Alaska Native (Table 5-2). The majority of residents continue to participate in subsistence activities: Nenana households used an average of 9 subsistence resources in 2015.

Seasonal Round

Despite vast changes in economy, political development, and ethnic composition in Nenana, most residents participate in a seasonal round of subsistence activities much like the Tanana Athabascan people who occupied the area from precontact times. This section relies on a description of the seasonal round summarized in Shinkwin and Case (1984) for the early 1900s through the 1980s along with ethnographic information documented during the 2015 study for more recent aspects of subsistence practices.

Considering data for the Nenana-Toklat band, Shinkwin and Case (1984) describe a seasonal round in terms of species, geography, and social organization. In the first half of the 20th century, members of the Nenana-Toklat band moved between seasonal camps centered around 2 significant sites—one on the Nenana River and one on the Toklat River—where large numbers of families gathered to harvest salmon. By 1910, salmon fishing primarily occurred on the Tanana River rather than clearwater tributaries, enabled by the introduction of the fish wheel. The use of dog teams for fur trading translated into a need for large quantities of fish, which could be efficiently caught in fish wheels. By 1930, residents added commercial fishing to their sources of income, selling 50 lb bales of Chinook and chum salmon. One elder remembered staying at fish camp all summer: from June to September.

Table 5-2.–Comparison of selected findings, Nenana, 2015.

Category	Community Nenana
Demography	
Population	583.9
Percentage of population that is Alaska Native	34.8%
Percentage of household heads born in Alaska	40.8%
Average length of residency of household heads (years)	29.2
Cash economy	
Average number of months employed	6.8
Percentage of employed adults working year-round	66.5%
Percentage of income from sources other than employment	16.1%
Average household income[a]	$55,197
Per capita income[a]	$22,970
Resource harvest and use	
Per capita harvest (lb)	111.3
Average household harvest (lb)	267.3
Number of resources used by 50% or more households	3.0
Average number of resources used per household	8.6
Average number of resources attempted to be harvested per household	5.4
Average number of resources harvested per household	4.9
Average number of resources received per household	4.3
Average number of resources given away per household	2.8
Percentage of total harvest taken by top 25% ranked households	93.4%
Percentage of households that harvested 70% of harvest	8.2%
Per capita harvest by lowest ranked 50% of households (lb)	1.0
Percentage of total harvest taken by lowest ranked 50% of harvesting households	0.9%
Average number of resources used by lowest ranked 50% of households	4.9
Average number of resources used by top 25% ranked households	15.7

Source ADF&G Division of Subsistence household surveys, 2016.

a. Includes income from sources other than employment.

> [The] smokehouse is still there and the little house we stayed in, shack, is still there. We used to stay in a tent and then my dad built the shack…just me and my mom and dad and relatives, aunties and uncles. And grandmas would come from Minto and put up camp too. (102016ENN02)

Women often ran the summer fish camps while the men participated in the commercial market, working for the railroad and cutting wood for the steamboats. According to one elder,

> I started work [cutting wood] when I was a teenager and that, between that time [March or April] until September, or stock up for my grandparents grocery, fuel and help them move up the Wood River or down river. Yeah most all of us teenagers back then back in the ‘40s there, we started work early. Soon as they would get old enough to get hired we’d take off. Be gone all summer. (102716ENN07)

Today, residents time their summer fishing with the river breakup:

> …about 3 weeks after that [breakup], the river be cleared up with ice, maybe even 10 days…And you got the whole month of May to get ready to get poles and stuff for fishing. And then June 14 is when you get, really get your wheel ready. (040716ENN06)

Historically, members of the Nenana-Toklat band camped on the Toklat River well into November to harvest fall chum salmon to freeze for human consumption and dog food. However, the fall and winter seasons were dominated by hunting and trapping. Families fanned out southward towards the Healy area to follow the resources into the flats between the Nenana and Toklat rivers and the foothills of the Alaska Range. There, hunters harvested ducks and small game as well as moose, which was dried and stored to provide the bulk of the meat for winter. Although most moose hunting was done by individual men or in pairs of related male kin, the remains of a moose fence near Healy suggest that snaring methods may have been used (Shinkwin and Case 1984).[3] During the fall months, they also gathered roots to eat and firewood for heating over a long winter. One contemporary resident describes gathering roots:

> In the fall, all those roots those voles collect to eat are good for us too. Even they collect those little horsetail root…rhizomes. You know the little black, look like a nut-thing? If you ever dig in a garden where you got horsetail, you'll see them long roots and every once in a while on them long roots there's a little bitty ball and the inside of that ball tastes just like a nut. And it's good. Well, the voles they collect all of them too. And there will be chamber maybe like that—so high, so broad—just full. (032516ENN01)

Fall time is also important for gathering berries. Residents often pick berries in conjunction with other fall activities, like moose hunting.

> I try to get our berries picked right away. Right when they ripen up, that's one of my priorities, um, blueberries, highbush berries, lowbush berries, raspberries…I think it was 3 years ago we were looking for a moose, and I tell them I know where this old dried up bed is 'cause I surveyed there back in the '80s and I always seen moose tracks back in there…oh, man! We hit the motherlode. We were gone for about 5 hours. Everyone thought we'd had a moose we were gone so long. We came home, bags of berries. We were so happy. (032416ENN05)

During the winter, a family might move between several seasonal camps while hunting and trapping. One elder resident recalled that his family maintained 3 cabins in the Wood River area:

> Yeah we didn't stay in one place long, maybe a few days, and we'd move on there. Like, when there were animals, say if you catch anything there you know, just limit it there. Just catch one or two and move on, so we don't mess up their population. (102716ENN07)

Trapping activities were focused on commercially useful animals, such as red fox, river otter, wolf, and wolverine, but other furbearers were also important sources of food, such as beaver, muskrat, and lynx.

In early spring, families snared Arctic ground squirrels and gathered wild rhubarb and wild potatoes before moving north, downriver to the Minto Flats. There, they hunted ducks during spring migration and set nets for whitefish in sloughs off the Tanana River. One resident described how local people decide when to start fishing in the springtime:

> As soon as the ice goes out we try to put our net in. We try to find a good spot where ice chunks won't go by and grab your net…About a week after [breakup], because when it breaks up you know then you got to give it a chance for the bottom ice to come up and give a chance for the big flows to go by, and we usually go down, down geese hunting about a week after the ice goes out. (032416ENN05)

3. See also McKennan (1959) and Andrews (1977).

Spring fishing and hunting migratory waterfowl are often linked. Another recalled, "You actually got to go follow the ice down…go down Sand Slough and wait for the ice to break up and then follow the ice back down and then jam up again" (040716ENN06). He went on to describe hunting areas:

> For geese hunting, I go down to the Minto Flats and I try to hunt geese. Maybe about 4, maybe 4 boats that will try to get down there to get geese. Cause you don't get 'em around here you know. You might get out at Fish Creek. Some people hunt at the end of the airport, on the sand bar. But you would be lucky to get 3, 4 geese over there. (040716ENN06)

Prior to the 1980s, Nenana people hunted muskrats in the spring as well.

> Birds and muskrat season is opening right here, seasons you know…when I was younger there's a place called Fish Creek we used to go up there all the time in the spring time. We'd get 5 or 6 a day...it's a canoe ride, it takes about an hour. It takes about a half hour drive with a truck and then an hour to get back. (032416ENN05)

Figure 5-2 shows the areas where respondents reported hunting, fishing, gathering, and trapping all resources in 2015. Nenana residents utilized the vicinity around their community for subsistence activities as well as the areas surrounding important drainages, including the Nenana, Tanana, Kantishna, Tolovana, and Chatanika rivers. Today, as it has been historically, Minto Flats to the north is heavily used by Nenana hunters and fishers. Nenana residents also identified a few areas farther to the north (the Yukon River and a few spots in the White Mountains) and to the south (the Denali Highway and Kenai) as subsistence use areas.

Population Estimates and Demographic Information

During this study, 55% of Nenana households were surveyed (Table 1-4). Three hundred twenty-two people lived in the 134 surveyed Nenana households during the study year (Table 5-3). Expanding for the 109 unsurveyed households results in a total estimated population in 2015 of 584, with 203 (35%) Alaska Natives (Table 5-3; Figure 5-3; Table D5-1). Figure 5-3 compares this study's population estimate with the most recent U.S. Census and the ACS 5-year average. This study's higher population estimate likely results from the area surveyed as described earlier. Surveyed households had an average of 2.4 members (Table 5-3). The largest household surveyed had 9 occupants. The average age of Nenana residents was 42, and the eldest resident of surveyed households was 88. The average length of residency was 24 years.

Figure 5-4 shows historical population estimates between 1939 and 2015. The community's U.S. Census Bureau count slowly increased from the first count of 231 in 1939 to 470 in the 1980 census, and then decreased to around 400 in 1990 and 2000.

Figure 5-5 shows the number of males and females in age groups from 0 to 88. There were approximately 272 females and 312 males in Nenana in 2015 (Table D5-2), and the 2 largest age cohorts were in the 5–19 and the 50–64 age groups. Table 2-4 shows the birthplaces reported by Nenana household heads. Eighteen percent reported Nenana as the place their parents were living when they were born, and 56% reported birthplaces outside of Alaska. Six percent of household heads were originally from Fairbanks, and just over 2% were from Tanana. A few were from the other communities in Alaska, including Anchorage, Nulato, and Palmer, and some were born outside of the United States. Similar to the household heads, a significant portion of other residents reported that Nenana was their birthplace (30%; Table D5-3), and a larger percentage of the population listed states outside of Alaska as their birthplace (41%). A small portion of the population identified a variety of rural communities, many of which are located in Interior Alaska, as birthplaces.

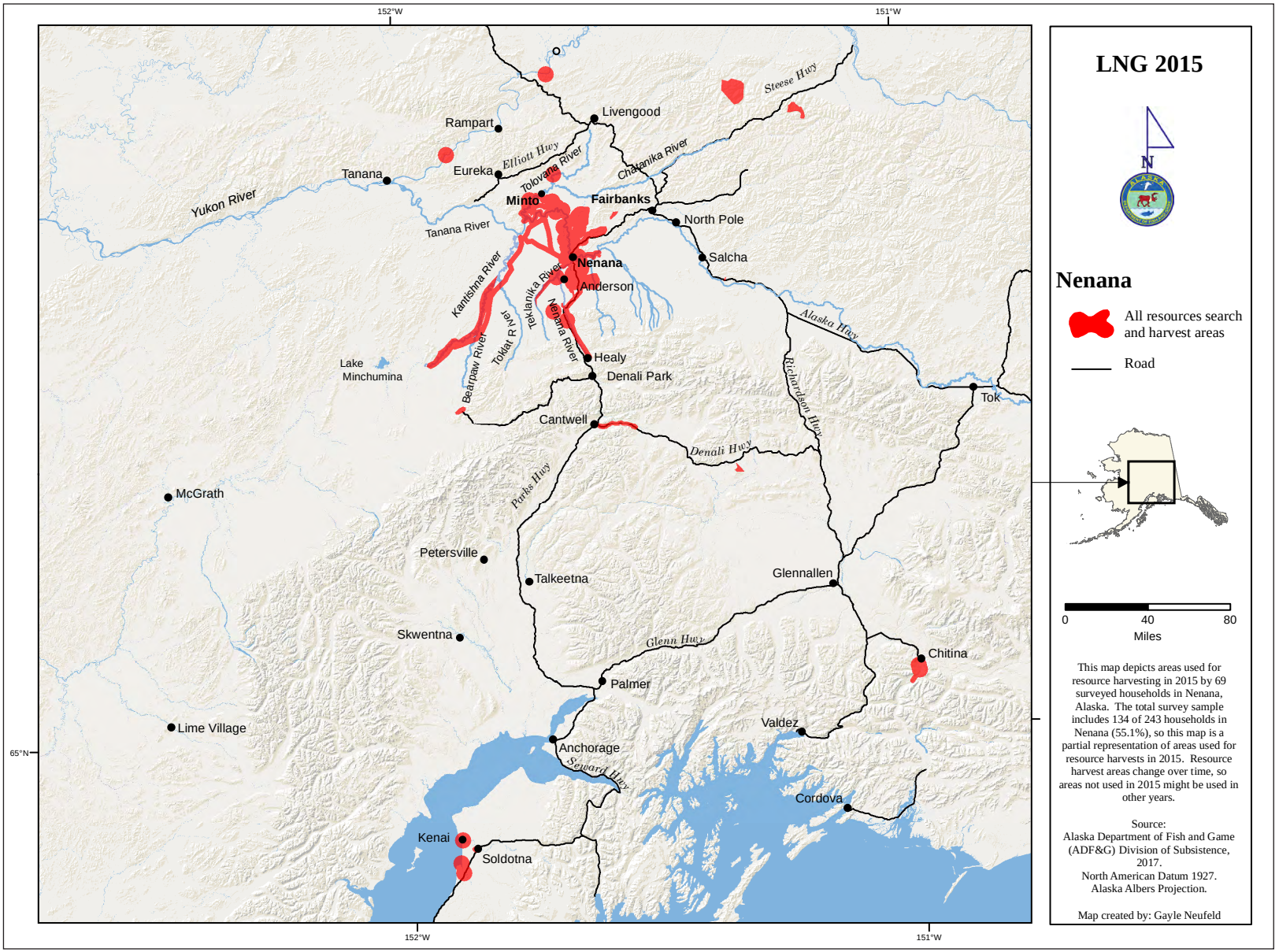


Figure 5-2.–All resources search and harvest areas, Nenana, 2015.

Table 5-3.–Sample and demographic characteristics, Nenana, 2015.

Characteristics	Community[c] Nenana
Sampled households	134
Eligible households	243
Percentage sampled	55.1%
Sampled population	322
Estimated community population	583.9
Household size	
Mean	2.4
Minimum	1.0
Maximum	9.0
Age	
Mean	41.8
Minimum[a]	0
Maximum	88
Median	49.0
Length of residency	
Total population	
Mean	23.7
Minimum[a]	0
Maximum	88
Heads of household	
Mean	29.2
Minimum[a]	1
Maximum	88
Alaska Native	
Estimated households[b]	
Number	101.6
Percentage	41.8%
Estimated population	
Number	203.1
Percentage	34.8%

Source ADF&G Division of Subsistence household surveys, 2016.

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

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

c. The Nenana sample includes Nenana City CDP, Four-Mile Road CDP, and portions of the Tanana Flats tract of the Yukon-Koyukuk Census area.

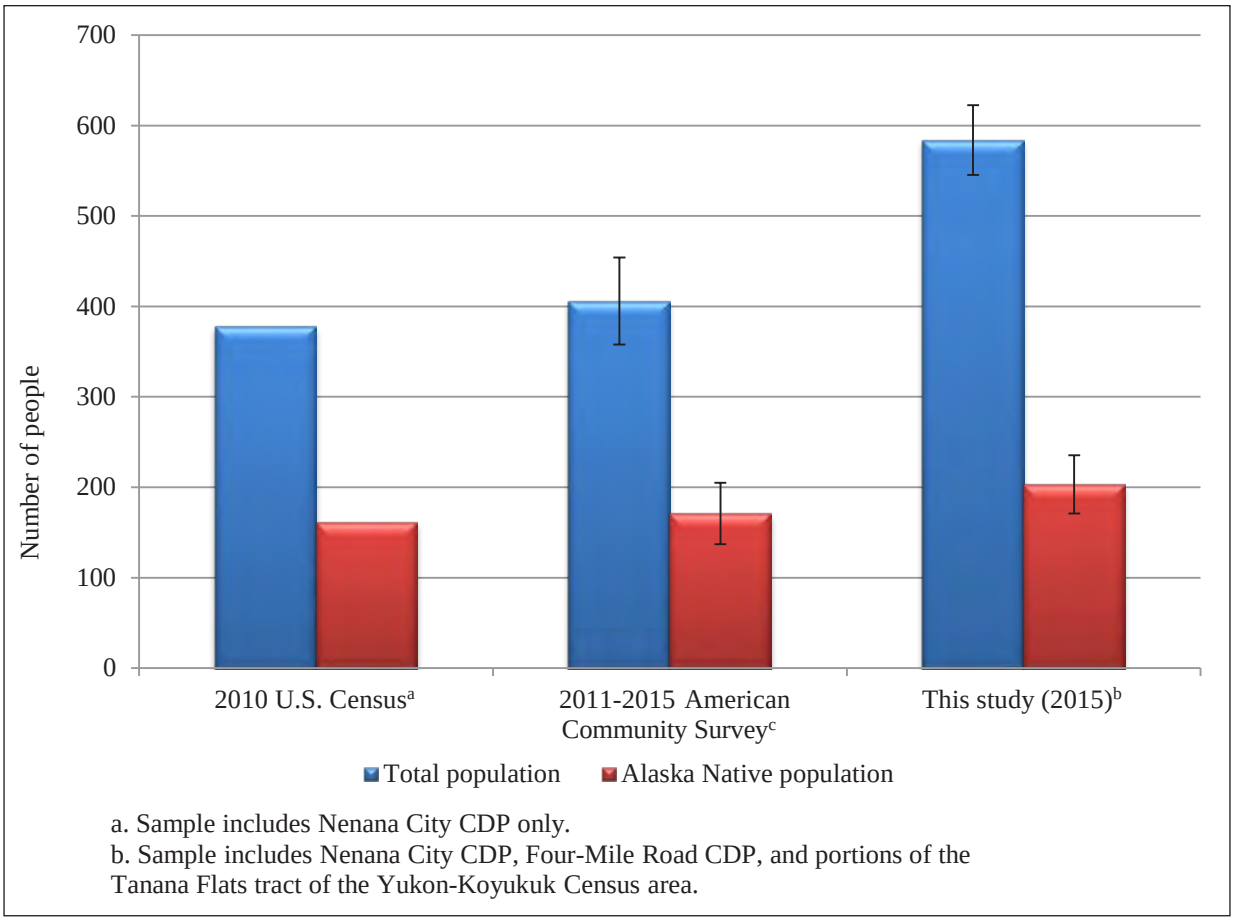


Figure 5-3.–Population estimates, Nenana, 2010 and 2015.

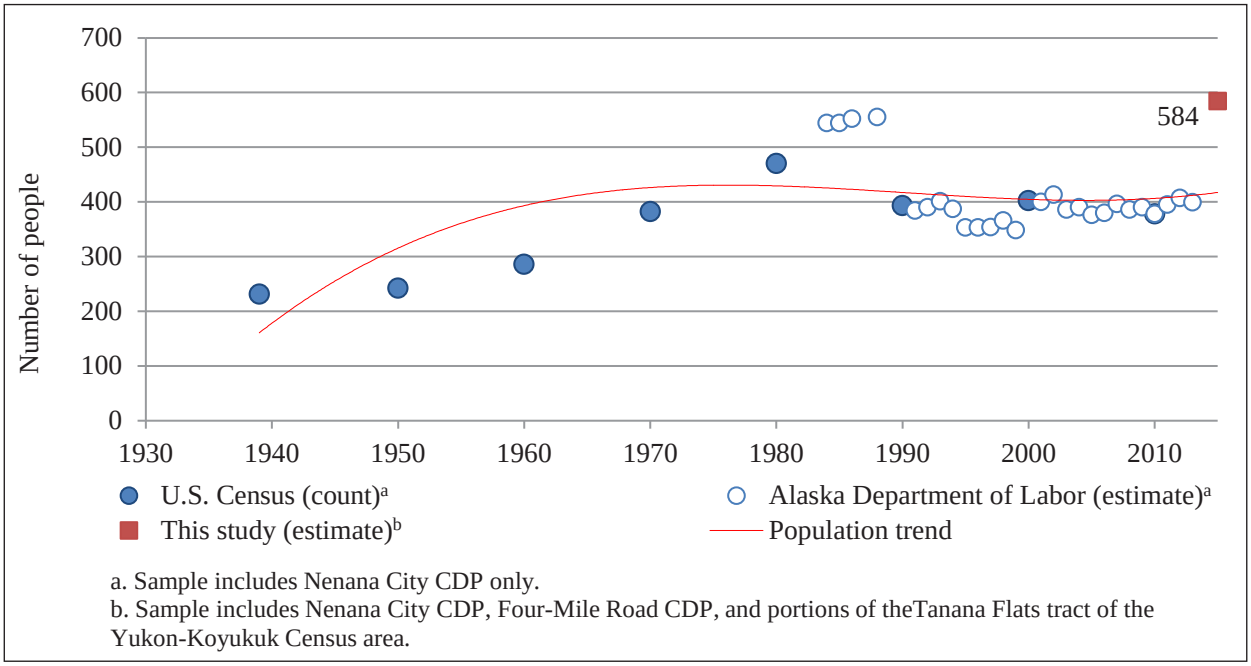


Figure 5-4.–Population estimates, Nenana, 1939–2015.

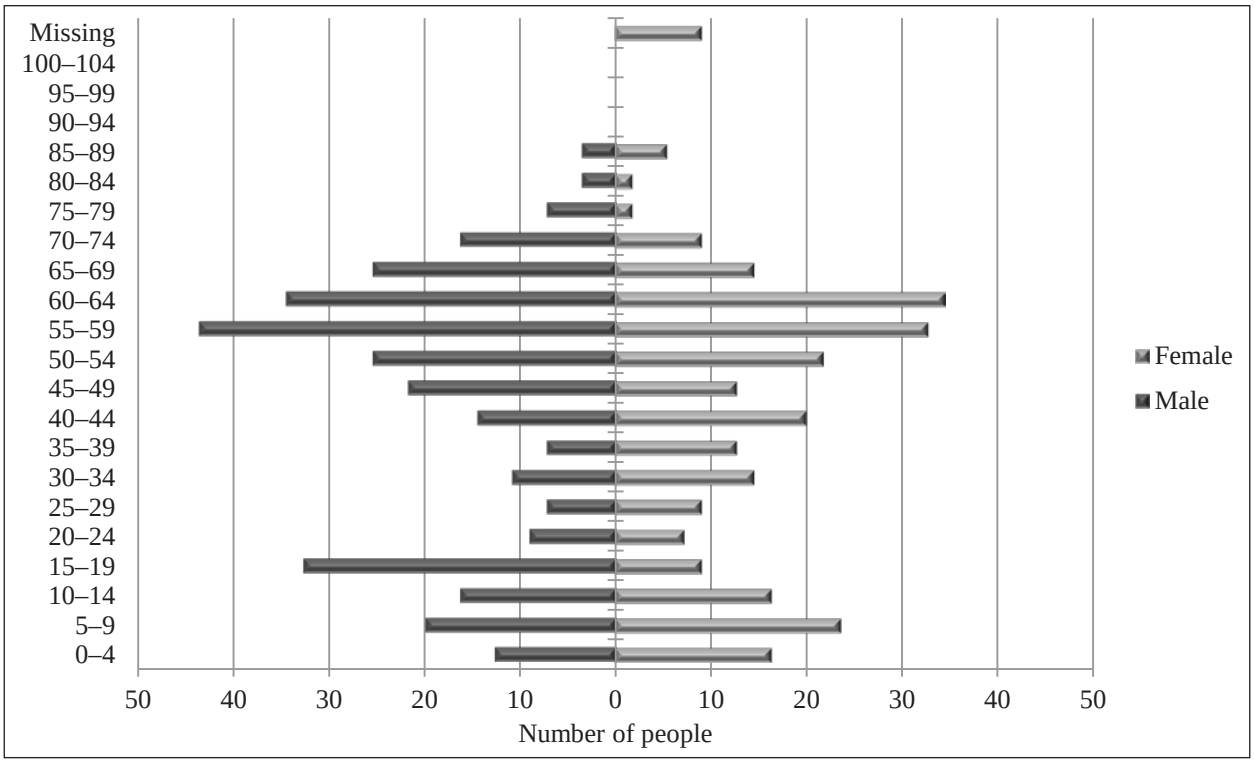


Figure 5-5.–Population profile, Nenana, 2015.

Table 5-4.–Birthplaces of household heads, Nenana, 2015.

Birthplace	Percentage
Anchorage	1.9%
Anderson	0.5%
Bettles/Evansville	0.5%
Circle	0.5%
Fairbanks	6.0%
Holy Cross	0.5%
Huslia	0.5%
Kodiak City	0.5%
Koyukuk	0.5%
Manley Hot Springs	0.9%
Nenana	18.1%
Nulato	0.9%
Palmer	0.9%
Ruby	0.5%
Seward	0.5%
Stevens Village	0.5%
Tanana	2.3%
Tatalina Station Census Designated Place	0.5%
Wasilla	0.5%
Ferry	0.5%
Old Minto	0.5%
District 6 Tanana River	0.5%
Other Alaska	2.8%
Other U.S.	55.6%
Foreign	2.3%
Missing	1.4%

Source ADF&G Division of Subsistence household surveys, 2016.

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

Note The Nenana sample includes Nenana City CDP, Four-Mile Road CDP, and portions of the Tanana Flats tract of the Yukon-Koyukuk Census area.

Summary of Harvest and Use Patterns

Individual Participation in the Harvesting and Processing of Wild Resources

Figure 5-6 and Appendix Table D5-4 report the expanded levels of individual participation in the harvest and processing of wild resources by all Nenana residents in 2015. Sixty-six percent of Nenana residents attempted to harvest some subsistence resource, and 67% participated in processing a resource. The percentage of people attempting to harvest a resources and was similar to the percentage processing within most resource categories. For example, 29% of respondents went fishing in the study year, and 33% of individuals played a role in processing fish. Processing fish can include cutting, cleaning, drying, smoking, vacuum packaging, or jarring. All other categories, including large and small land mammals, birds and eggs, and vegetation, showed even smaller percentage spreads. A discussion on the harvest and use characteristics of each resource category is described below and explores possible explanations for this pattern.

Harvest and Use of Wild Resources at the Household Level

Figure 5-7 shows by resource category the percentages of households that used, attempted to harvest, harvested, and shared wild foods. Almost all households (97%) used wild foods from a variety of resource categories (Table 5-1). Nenana households reported the greatest use levels in the vegetation and large land mammals and salmon resource categories (87% and 78%, respectively; Figure 5-7). Sixty-five percent of households used nonsalmon fish, the third most utilized category of resources. Birds and eggs followed, used by nearly one-half of all households (43%). Although the use of the resources in these categories is high, the percentage of households that actually harvested them is lower, and in some cases, significantly lower. Salmon, for example, were used by 76% of households but only harvested by 26%. The percentage of households that reported attempting to harvest salmon was only slightly higher than those who were successful. This suggests that households with the means to fish were able to successfully harvest salmon.

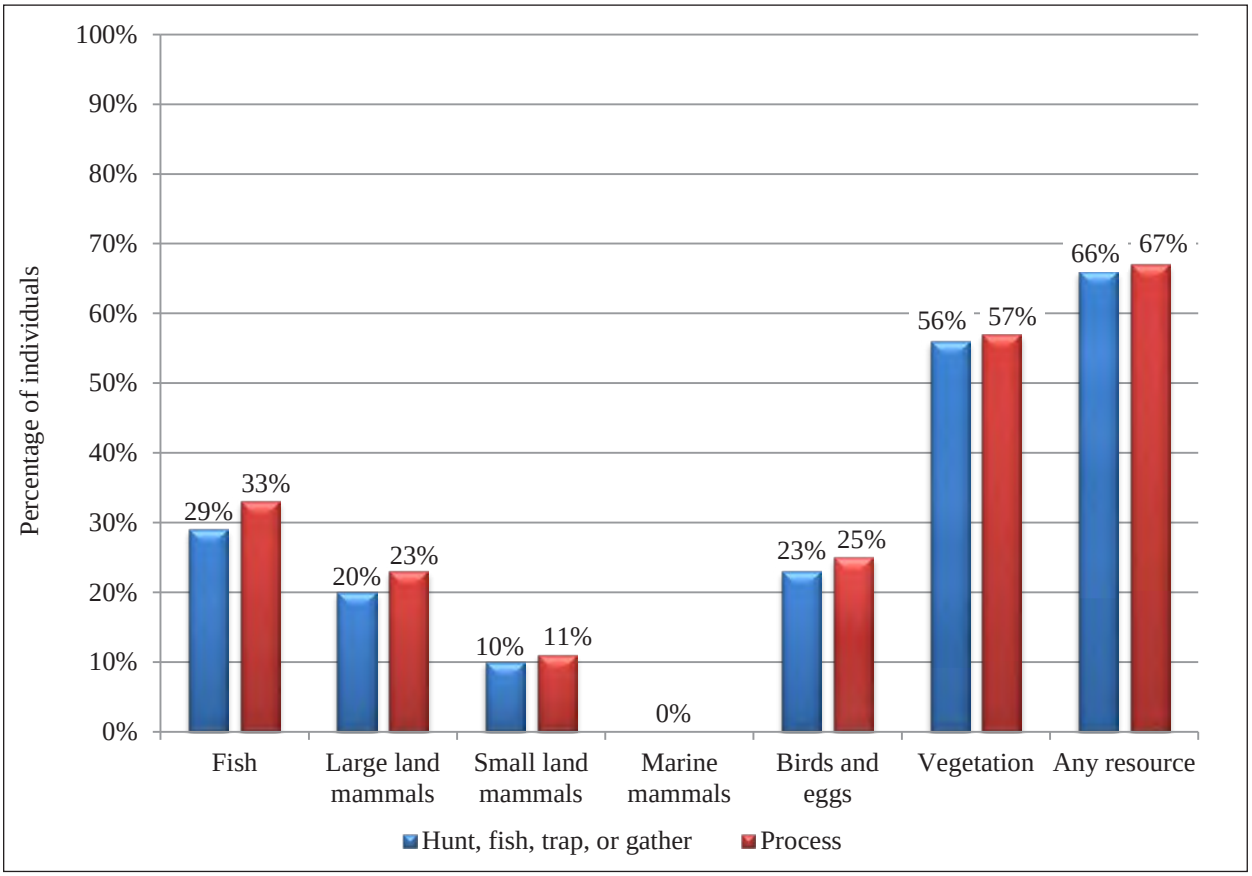


Figure 5-6.–Percentages of households participating in harvesting and processing wild resources, Nenana, 2015.

The largest discrepancy between households that reported attempting to harvest and those that successfully harvested was in the large land mammal resource category, likely because of low success rates for moose hunting. Thirty-eight percent of households attempted to harvest, but only 13% of households actually harvested. Hunting a moose or another large land mammal does not guarantee success, but those who are successful may distribute the moose through sharing, bartering, or trading to those who did not harvest one.

Table 5-1 summarizes resource harvest and use characteristics for Nenana in 2015 at the household level. The average harvest was 267 lb edible weight per household. During the study year, community households harvested an average of 5 kinds of resources and used an average of 9 kinds of resources. The maximum number of resources used by any household was 41. In addition, households gave away an average of 3 kinds of resources. Overall, as many as 141 resources were available for households to harvest in the study area; this included resources that survey respondents identified but were not asked about in the survey instrument.

Harvest Quantities and Composition

Table 5-5 reports estimated wild resource harvests and uses by Nenana residents in 2015 and is organized first by general category and then by species. All edible resources are reported in pounds edible weight (see Appendix C for conversion factors). The harvest category includes resources harvested by any member of the surveyed household during the study year. The use category includes all resources taken, given away, or used by a household, and resources acquired from other harvesters, either as gifts, by barter or trade, through hunting partnerships, or as meat given by hunting guides and nonlocal hunters. Purchased foods are not included, but resources such as firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

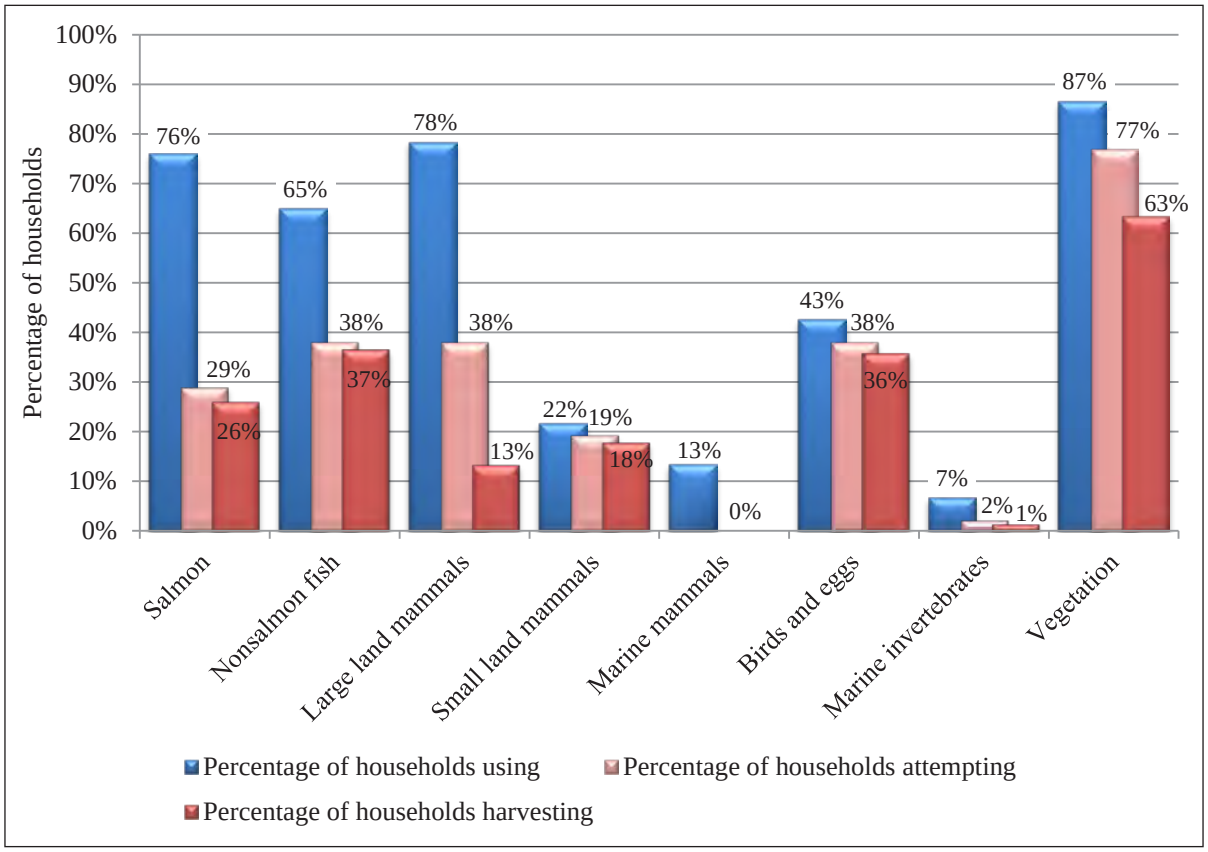


Figure 5-7.–Percentage of households using, attempting to harvest, and harvesting wild resources, Nenana, 2015.

Table 5-5.–Estimated harvests and uses of fish, wildlife, and vegetation resources, Nenana, 2015.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**97.0**	**85.8**	**78.4**	**86.6**	**53.7**	**64,964.9**	**267.3**	**111.3**				**33.4**
Salmon	**76.1**	**29.1**	**26.1**	**67.9**	**27.6**	**26,722.2**	**110.0**	**45.8**				**53.0**
Summer chum salmon	12.7	3.7	3.7	9.0	3.7	1,909.2	7.9	3.3	404.4	ind	1.7	71.3
Fall chum salmon	24.6	8.2	6.0	22.4	10.4	6,130.1	25.2	10.5	1,298.4	ind	5.3	64.8
Coho salmon	27.6	11.9	10.4	20.1	9.0	9,628.6	39.6	16.5	1,788.0	ind	7.4	82.9
Chinook salmon	31.3	10.4	9.7	26.9	14.2	4,466.1	18.4	7.6	563.9	ind	2.3	55.4
Pink salmon	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sockeye salmon	29.9	10.4	10.4	24.6	10.4	4,588.1	18.9	7.9	953.9	ind	3.9	46.7
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown salmon	9.7	0.0	0.0	9.7	0.7	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**64.9**	**38.1**	**36.6**	**47.0**	**23.9**	**7,796.1**	**32.1**	**13.4**				**32.5**
Pacific herring	1.5	0.0	0.0	1.5	1.5	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring roe	3.7	0.0	0.0	3.7	1.5	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring roe/unspecified	3.0	0.0	0.0	3.0	1.5	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring roe on hemlock branches	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Eulachon (hooligan, candlefish)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown smelts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Saffron cod	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
Lingcod	2.2	0.0	0.0	2.2	0.7	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pacific halibut	36.6	3.7	2.2	33.6	10.4	453.4	1.9	0.8	453.4	lb	1.9	80.4
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
Unknown rockfishes	3.7	0.0	0.0	3.7	0.7	0.0	0.0	0.0	0.0	ind	0.0	0.0
Burbot	11.9	7.5	7.5	5.2	3.0	784.5	3.2	1.3	186.8	ind	0.8	58.2
Arctic char	0.7	0.7	0.7	0.0	0.0	16.3	0.1	0.0	18.1	ind	0.1	132.5
Dolly Varden	2.2	1.5	1.5	0.7	0.7	70.2	0.3	0.1	78.0	ind	0.3	93.6
Lake trout	2.2	2.2	2.2	0.7	1.5	689.1	2.8	1.2	172.3	ind	0.7	83.5
Arctic grayling	26.9	24.6	23.9	6.0	8.2	1,251.8	5.2	2.1	1,390.9	ind	5.7	33.2

-continued-

Table 5-5.–Page 2 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Nonsalmon fish, continued												
Northern pike	11.2	8.2	8.2	3.7	4.5	807.9	3.3	1.4	244.8	ind	1.0	57.9
Sheefish	10.4	6.0	6.0	6.0	6.7	538.6	2.2	0.9	97.9	ind	0.4	57.9
Longnose sucker	1.5	1.5	1.5	0.0	0.7	30.5	0.1	0.1	21.8	ind	0.1	112.4
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	6.7	6.0	6.0	0.7	1.5	350.4	1.4	0.6	250.3	ind	1.0	60.7
Unknown trouts	2.2	1.5	1.5	0.7	0.0	55.9	0.2	0.1	39.9	ind	0.2	120.9
Broad whitefish	10.4	5.2	5.2	6.0	7.5	841.4	3.5	1.4	262.9	ind	1.1	78.2
Bering cisco	1.5	0.7	0.7	0.7	0.7	152.3	0.6	0.3	108.8	ind	0.4	132.5
Least cisco	4.5	2.2	2.2	2.2	3.0	266.6	1.1	0.5	380.8	ind	1.6	96.0
Humpback whitefish	13.4	7.5	7.5	7.5	8.2	1,390.0	5.7	2.4	661.9	ind	2.7	56.5
Round whitefish	3.7	2.2	2.2	1.5	2.2	54.6	0.2	0.1	78.0	ind	0.3	96.6
Unknown whitefishes	8.2	2.2	2.2	6.7	0.7	42.7	0.2	0.1	23.6	ind	0.1	77.7
Large land mammals	**78.4**	**38.1**	**13.4**	**61.9**	**29.9**	**21,656.0**	**89.1**	**37.1**				**37.0**
Bison	1.5	0.7	0.0	1.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black bear	6.0	3.7	0.7	4.5	0.0	181.3	0.7	0.3	1.8	ind	0.0	132.5
Brown bear	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	14.2	4.5	3.0	12.7	4.5	986.5	4.1	1.7	7.3	ind	0.0	65.5
Deer	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mountain goat	1.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	79.9	37.3	10.4	58.2	26.9	20,488.2	84.3	35.1	38.1	ind	0.2	38.9
Dall sheep	3.0	0.0	0.0	3.0	0.7	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	**21.6**	**19.4**	**17.9**	**8.2**	**6.7**	**1,326.5**	**5.5**	**2.3**				**47.8**
Beaver	14.2	9.7	9.0	8.2	5.2	1,233.1	5.1	2.1	114.2	ind	0.5	50.9
Coyote	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	3.6	ind	0.0	132.5
Red fox–cross phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red fox–red phase	2.2	2.2	1.5	0.0	0.0	0.0	0.0	0.0	9.1	ind	0.0	109.0
Snowshoe hare	5.2	5.2	5.2	0.7	0.7	32.6	0.1	0.1	152.3	ind	0.6	70.9
River (land) otter	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	3.6	ind	0.0	132.5
Lynx	2.2	2.2	2.2	0.0	0.0	14.5	0.1	0.0	21.8	ind	0.1	132.5
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

-continued-

Table 5-5.–Page 3 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Small land mammals, continued												
Marten	4.5	4.5	4.5	0.0	0.0	0.0	0.0	0.0	50.8	ind	0.2	59.3
Mink	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	10.9	ind	0.0	132.5
Muskrat	3.0	2.2	2.2	0.7	0.7	2.7	0.0	0.0	45.3	ind	0.2	132.5
Porcupine	3.7	3.7	3.7	0.0	0.7	43.5	0.2	0.1	10.9	ind	0.0	75.9
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Weasel	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	1.8	ind	0.0	132.5
Gray wolf	3.0	3.7	3.0	0.0	0.0	0.0	0.0	0.0	14.5	ind	0.1	69.6
Wolverine	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine mammals	**13.4**	**0.0**	**0.0**	**13.4**	**4.5**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seals	4.5	0.0	0.0	4.5	0.7	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sea otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Beluga whale	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Bowhead whale	3.7	0.0	0.0	3.7	0.7	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whales	7.5	0.0	0.0	7.5	3.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**42.5**	**38.1**	**35.8**	**14.9**	**14.2**	**3,950.8**	**16.3**	**6.8**				**42.9**
Bufflehead	1.5	1.5	1.5	0.0	0.0	5.4	0.0	0.0	9.1	ind	0.0	109.0
Canvasback	0.7	0.7	0.7	0.0	0.7	77.1	0.3	0.1	45.3	ind	0.2	132.5
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
Goldeneyes	3.0	3.0	3.0	0.0	0.7	42.4	0.2	0.1	32.6	ind	0.1	83.4
Mallard	14.2	11.9	11.2	4.5	6.0	649.9	2.7	1.1	406.2	ind	1.7	63.2
Long-tailed duck	0.7	0.7	0.7	0.0	0.7	21.8	0.1	0.0	18.1	ind	0.1	132.5
Northern pintail	5.2	4.5	4.5	0.7	2.2	315.5	1.3	0.5	262.9	ind	1.1	93.7
Unknown scaups	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black scoter	2.2	2.2	2.2	0.7	1.5	114.2	0.5	0.2	76.2	ind	0.3	89.0
Surf scoter	0.7	0.7	0.7	0.0	0.7	54.4	0.2	0.1	36.3	ind	0.1	132.5
Northern shoveler	3.0	3.0	3.0	0.0	1.5	26.1	0.1	0.0	29.0	ind	0.1	73.4
Green-winged teal	3.0	3.0	3.0	0.0	1.5	30.8	0.1	0.1	61.7	ind	0.3	84.5

-continued-

Table 5-5.–Page 4 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Birds and eggs, continued												
American wigeon	3.0	3.0	3.0	0.0	1.5	99.7	0.4	0.2	90.7	ind	0.4	71.5
Unknown wigeon	0.7	0.7	0.7	0.0	0.0	19.9	0.1	0.0	18.1	ind	0.1	132.5
Unknown ducks	5.2	3.0	2.2	2.2	0.7	41.4	0.2	0.1	30.8	ind	0.1	76.2
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	4.5	3.7	3.7	1.5	3.0	282.9	1.2	0.5	141.4	ind	0.6	79.7
Canada goose	6.0	5.2	5.2	2.2	3.0	319.2	1.3	0.5	72.5	ind	0.3	65.1
Unknown Canada/cackling geese	3.0	1.5	1.5	1.5	0.7	40.6	0.2	0.1	14.5	ind	0.1	96.2
Snow goose	1.5	1.5	1.5	0.7	1.5	20.3	0.1	0.0	7.3	ind	0.0	104.5
White-fronted goose	7.5	6.0	6.0	3.0	4.5	607.1	2.5	1.0	195.9	ind	0.8	54.2
Unknown geese	3.7	0.7	0.7	3.0	0.7	16.0	0.1	0.0	5.4	ind	0.0	132.5
Tundra (whistling) swan	0.7	0.7	0.7	0.0	0.7	18.3	0.1	0.0	1.8	ind	0.0	132.5
Sandhill crane	3.7	3.7	3.0	0.7	0.0	255.3	1.1	0.4	39.9	ind	0.2	94.1
Spruce grouse	17.2	15.7	14.9	2.2	3.0	308.5	1.3	0.5	342.7	ind	1.4	41.9
Sharp-tailed grouse	4.5	3.7	3.7	1.5	0.7	19.9	0.1	0.0	19.9	ind	0.1	64.1
Ruffed grouse	15.7	15.7	15.7	2.2	4.5	272.7	1.1	0.5	340.9	ind	1.4	39.6
Unknown grouses	6.7	6.0	6.0	0.7	2.2	203.0	0.8	0.3	250.3	ind	1.0	55.5
Unknown ptarmigans	8.2	7.5	6.7	1.5	0.7	76.9	0.3	0.1	96.1	ind	0.4	69.2
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mew gull eggs	0.7	0.7	0.7	0.0	0.0	4.8	0.0	0.0	43.5	ind	0.2	132.5
Unknown gull eggs	0.7	0.7	0.7	0.0	0.0	6.4	0.0	0.0	58.0	ind	0.2	132.5
Unknown eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine invertebrates	**6.7**	**2.2**	**1.5**	**6.0**	**1.5**	**36.3**	**0.1**	**0.1**				**99.4**
Butter clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Freshwater clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Razor clams	2.2	0.7	0.7	1.5	1.5	27.2	0.1	0.0	9.1	gal	0.0	132.5
Unknown clams	0.7	0.7	0.7	0.7	0.0	5.4	0.0	0.0	1.8	gal	0.0	0.0
Dungeness crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
King crabs	1.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown tanner crabs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Scallops	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Shrimps	3.0	1.5	0.7	3.0	0.0	3.6	0.0	0.0	1.8	gal	0.0	0.0

-continued-

Table 5-5.–Page 5 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Vegetation	**86.6**	**76.9**	**63.4**	**42.5**	**32.1**	**3,477.0**	**14.3**	**6.0**				**17.3**
Blueberry	62.7	52.2	50.0	23.1	23.1	1,664.3	6.8	2.9	416.1	gal	1.7	19.9
Lowbush cranberry	23.1	22.4	22.4	3.7	10.4	472.9	1.9	0.8	118.2	gal	0.5	33.6
Highbush cranberry	20.9	18.7	18.7	6.0	11.2	453.1	1.9	0.8	113.3	gal	0.5	32.7
Crowberry	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Currants	0.7	0.7	0.7	0.0	0.0	29.0	0.1	0.0	7.3	gal	0.0	132.5
Cloudberry	2.2	1.5	1.5	0.7	0.7	18.1	0.1	0.0	4.5	gal	0.0	109.0
Nagoonberry	0.7	0.7	0.7	0.0	0.7	7.3	0.0	0.0	1.8	gal	0.0	132.5
Raspberry	30.6	28.4	28.4	6.0	11.9	446.1	1.8	0.8	111.5	gal	0.5	25.1
Salmonberry	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Strawberry	5.2	5.2	5.2	0.0	0.0	32.6	0.1	0.1	8.2	gal	0.0	53.1
Other wild berry	1.5	1.5	1.5	0.0	0.0	50.8	0.2	0.1	12.7	gal	0.1	101.6
Beach asparagus	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Wild rhubarb	0.7	0.7	0.7	0.0	0.7	3.6	0.0	0.0	3.6	gal	0.0	132.5
Wild potato	0.7	0.7	0.7	0.0	0.0	1.8	0.0	0.0	0.5	gal	0.0	132.5
Fiddlehead ferns	0.7	0.7	0.7	0.0	0.0	0.5	0.0	0.0	0.5	gal	0.0	132.5
Hudson's Bay (Labrador) tea	2.2	2.2	2.2	0.0	0.0	3.9	0.0	0.0	3.9	gal	0.0	88.1
Lambs quarter	0.7	0.7	0.7	0.0	0.0	9.1	0.0	0.0	9.1	gal	0.0	132.5
Spruce tips	1.5	1.5	0.7	0.0	0.0	1.8	0.0	0.0	1.8	gal	0.0	0.0
Wild rose hips	6.7	6.0	6.0	0.7	2.2	71.2	0.3	0.1	17.8	gal	0.1	66.5
Other wild greens	3.0	3.0	3.0	0.0	0.0	14.6	0.1	0.0	14.6	gal	0.1	101.1
Unknown mushrooms	10.4	8.2	8.2	2.2	0.7	96.3	0.4	0.2	96.3	gal	0.4	54.7
Fireweed	2.2	2.2	2.2	0.0	0.7	13.6	0.1	0.0	13.6	gal	0.1	95.2
Punk	0.7	0.7	0.7	0.0	0.7	3.6	0.0	0.0	3.6	gal	0.0	132.5
Chaga	5.2	3.7	3.7	2.2	2.2	53.0	0.2	0.1	53.0	gal	0.2	94.0
Sea chickweed	0.7	0.7	0.7	0.0	0.0	0.9	0.0	0.0	0.9	gal	0.0	132.5
Birch sap	0.7	0.7	0.7	0.0	0.0	29.0	0.1	0.0	3.6	gal	0.0	132.5
Wood	64.9	51.5	50.7	21.6	11.9							

Source ADF&G Division of Subsistence household surveys, 2016.

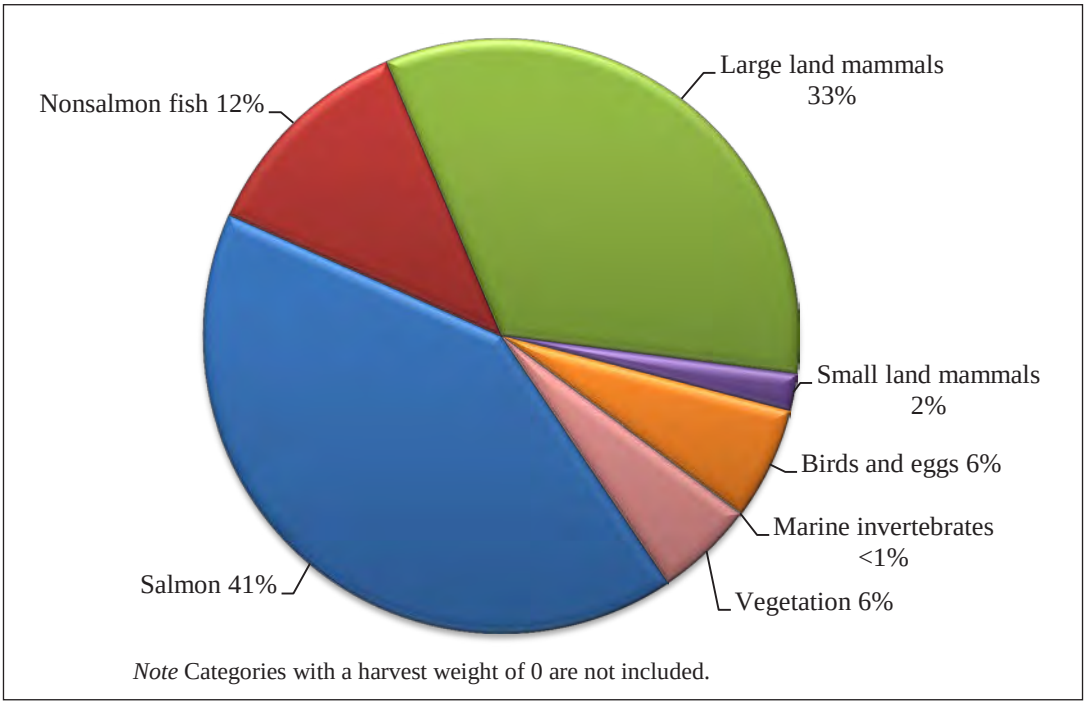
Note Resources where the percentage using is greater than the combined received and harvest indicate use from resources obtained during a previous year.

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

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

Nenana residents harvested 64,965 lb of wild foods for an estimated harvest of 111 lb per capita (Table 5-5). Figure 5-8 shows the composition of Nenana's harvest by resource category. Salmon made up 41% of the total harvest, large land mammals and nonsalmon fish followed with 33% and 12% respectively. Salmon contributed 26,722 lb to the community harvest (46 lb per capita), significantly more than any other resource category (Table 5-5). Residents harvested a total of 21,656 lb of large land mammals (37 lb per capita) and 7,796 lb of nonsalmon fish (13 lb per capita). Together, fish species made up 53% of the subsistence harvest (34,518 lb). The other resource categories made less significant contributions to the community's harvest in terms of edible weight. The bird and vegetation harvests, both 6% of the total (3,951 lb and 3,477 lb respectively) followed nonsalmon fish as the 4th and 5th most harvested resource categories. Small land mammals and marine invertebrates each accounted for 2% or less of the community's harvest total.

Heavily harvested resources are not always the most widely used, however. Table 5-6 lists the top ranked resources used by households and Figure 5-9 shows the species with the highest per capita harvests during the 2015 study year. Although fish species made up the bulk of the harvest, they were not used by the largest percentage of households. Moose, a large land mammal, was used by 80% of households, more than any other resource (Table 5-6). Blueberries, which only made up 3% of the community harvest, were used by 63% of households. Pacific halibut[4], a species that is not locally available, was used by 37% of households. Although not every household is able to travel to harvest halibut, the data suggest that many of those households that did shared with other households. A variety of fish and berries made up the remaining top resources used by Nenana residents. Four types of salmon—Chinook salmon (used by 31% of households), sockeye salmon (30%), coho salmon (28%), and fall chum salmon (25%)—were among the 10 most popular resources. Arctic grayling, used by 27% of households, was the only nonsalmon fish species in the top 10 used resources.



Note Categories with a harvest weight of 0 are not included.

Figure 5-8.–Composition of harvest by resource category, Nenana, 2015.

4. Henceforth, *halibut*.

Table 5-6.–Top resources used by households, Nenana, 2015.

Rank[a]	Resource	Percentage of households using
1.	Moose	79.9%
2.	Blueberry	62.7%
3.	Pacific halibut	36.6%
4.	Chinook salmon	31.3%
5.	Raspberry	30.6%
6.	Sockeye salmon	29.9%
7.	Coho salmon	27.6%
8.	Arctic grayling	26.9%
9.	Fall chum salmon	24.6%
10.	Lowbush cranberry	23.1%

Source ADF&G Division of Subsistence household surveys, 2016.

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

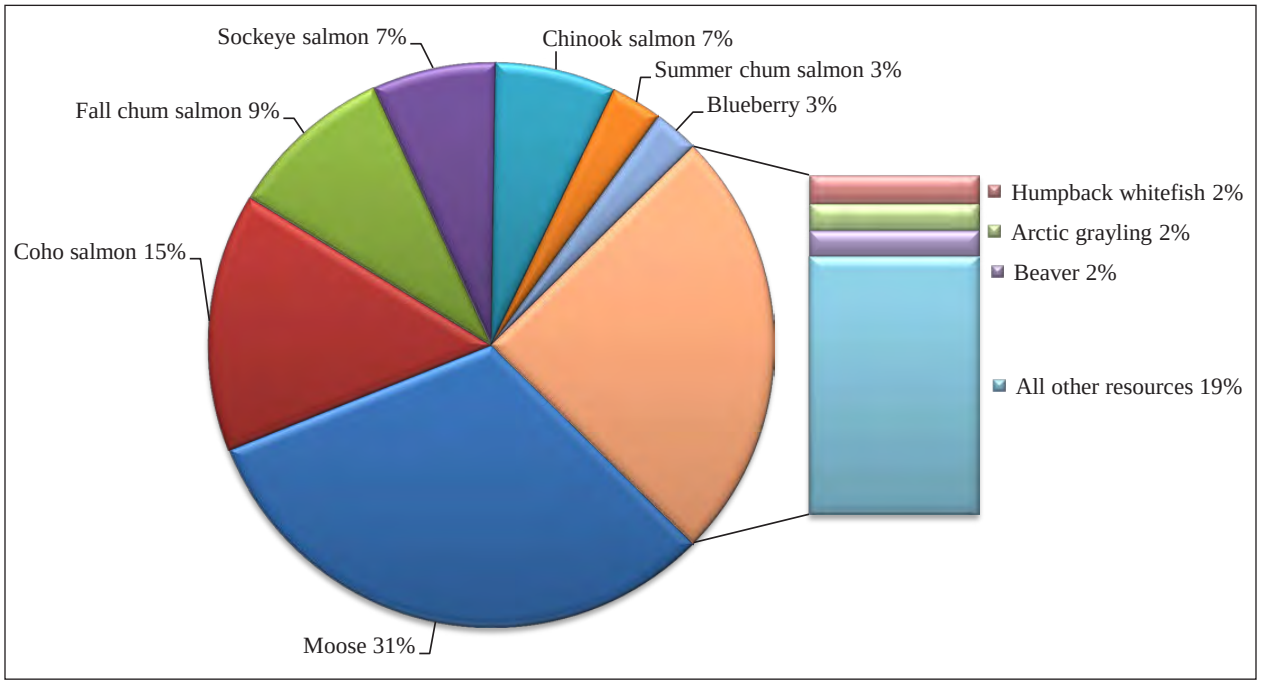


Figure 5-9.–Top harvested resources by edible weight, Nenana, 2015.

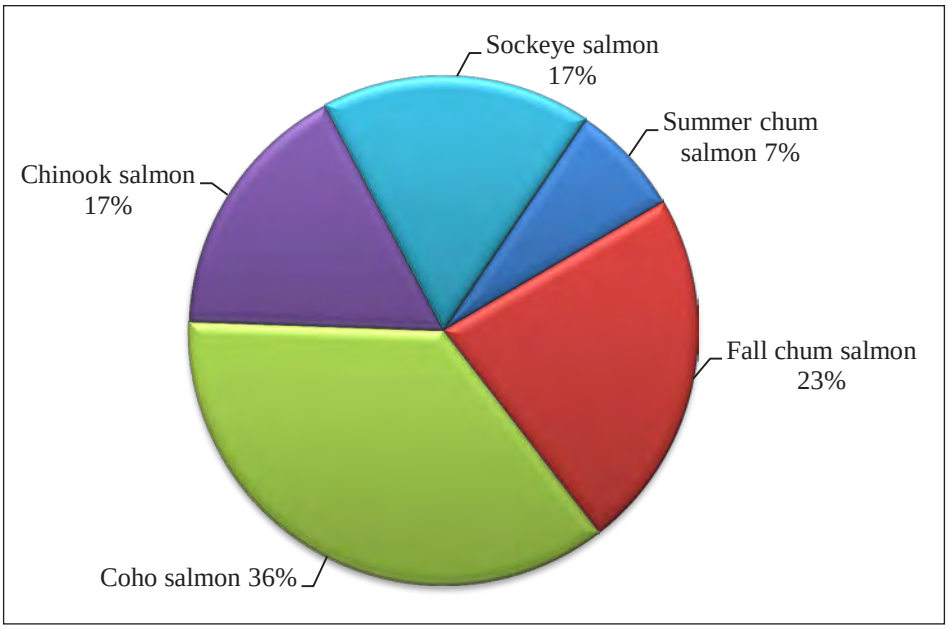


Figure 5-10.–Composition of salmon harvest by edible weight, Nenana, 2015.

Salmon

Nenana residents harvested a variety of resources in 2015, but the harvest of salmon surpassed that of any other resource category. Forty-one percent of the total community harvest came from salmon (26,722 lb) (Table 5-5; Figure 5-8). Two-thirds of households used salmon (76%; Figure 5-7). Twenty-nine percent of households attempted to harvest salmon, and a slightly smaller percentage reported successful harvests (26%). Sharing salmon in Nenana is a common practice. Twenty-eight percent of households gave some of their salmon away, and more than two-thirds (68%) received some from others (Table 5-5). Figure 5-10 shows the composition of salmon harvest. Coho salmon made up the largest portion of the salmon harvested in 2015 (36%). A total of 9,629 lb or 17 lb per capita were harvested by 10% of Nenana households (Table 5-5). Nenana residents also harvested a large amount of fall chum salmon (23% of the total salmon harvest; Figure 5-10). Coho and fall chum salmon are available in the Tanana River at Nenana in the late summer and fall. Six percent of households harvested an estimated 6,130 lb of fall chum salmon (11 lb per capita; Table 5-5). The use of fall chum salmon (25%) was similar to that of coho salmon (28%). Nenena residents also used and harvested Chinook salmon, the second most commonly used type of salmon. Thirty-one percent of households used Chinook salmon and 10% caught them. A total of 4,466 lb were caught for subsistence in 2015 (8 lb per capita; Table 5-5). Chinook salmon made up 17% of the overall salmon harvest (Figure 5-10).

Figure 5-11 and Table D5-5 show the gear types that Nenana residents used to catch salmon. Nenana fishers used gillnets to harvest nearly two-thirds (65%) of all salmon caught in 2016. The second most popular gear type, dip net, was only used to harvest 16% of the salmon. Eight-four percent of the coho salmon caught in 2015 came from gillnets, a larger portion than any other type of salmon. In addition to gillnets, fall chum salmon were caught in a fish wheel (25%) or were removed from commercial catch (14%).

Nenana residents discussed multiple processing methods including freezing, smoking and drying strips, and canning or jarring, and described the care needed to learn these methods correctly.

> I like to dry fish in salmon strips and I like sharing with people…if you get one little piece dry fish and hung up and it, if it's sour it'll spread to the next one. I don't know how it does that. But that's what my parents always said and it seems what happens you know. They'd go through the whole smoke house every piece of fish. There'd be hundreds of them and they would smell every one of them…Everyday

> they'd do that. That's my mom out there. Never said what you doing, you know? It was always I had eyes and ears open, mouth shut. Watch what they're doing, figure it out. So, I think that's a better way to learn 'cause then you don't forget it. (102016ENN02)

> Yeah, I kinda make salmon strips and dry fish; those are the ones that are smoked all the time. And on the strips, you smoke them for two, two days or three days, and you could take them down and you could put them in jars. My family really loves that jarred fish. (032416ENN05)

Table 5-7 shows the estimated salmon harvest for feeding dogs. Nenana residents only fed fall chum and coho salmon to their dogs in 2015. A total of 1,112 lb of salmon was fed to dogs during the study year. Coho salmon accounted for 61% of the harvest for dogs (684 lb or 7% of the total coho salmon harvest), and fall chum salmon made up 38% (428 lb or 7% of the total fall chum salmon harvest). Overall, salmon made up 94% of the fish fed to dogs.

Figure 5-12 shows the search and harvest areas Nenana residents used for salmon fishing in 2015. Nenana residents identified multiple salmon fishing locations along the Tanana River near Nenana, both downriver and upriver to the east. Salmon were also harvested on the Yukon River upriver from the Dalton Highway bridge and at Rapids, an historical spot for fish wheels near Rampart that has long been used by residents of Tanana and Manley Hot Springs. Finally, some residents identified fishing areas near Kenai, far to the south and in the Copper River near Chitina.

Nonsalmon Fish

Historically, Nenana fishers harvested and used a wide variety of nonsalmon fish, much like today. Residents recalled some methods of processing certain nonsalmon fish species that are no longer practiced: "That [whitefish] we used to dry it out too, dried fish. And the eggs we used to store that one too. Like I said we used to put it in that, like a basket like, and put in the ground" (102716ENN07). Also,

> It's always good fish [whitefish], my mother and me, we used to never pass them up…they used to cut them. They were such good fish cutters they'd smoke them, or make half dry out of them…We used to always have it in our backpack when we were hunting in the fall time, and wintertime. Set, checking rabbit snares and checking out traps, I always had whitefish in our backpacks. (102716ENN03)

Nenana residents caught a total of 7,796 lb of nonsalmon species in 2015 (13 lb per capita), making up 12% of the total community harvest (Table 5-5; Figure 5-8). Fewer households used nonsalmon fish than salmon (65% compared to 76%) but more households reported harvesting them than those that harvested salmon (37% compared to 26%; Figure 5-7). About one-quarter of households (24%) gave away some nonsalmon fish, and 47% reported receiving some from others.

Figure 5-13 shows the composition of the nonsalmon species harvested in 2015. Residents used a variety of species, none of which made up more that 20% of the total nonsalmon harvest. Humpback whitefish and Arctic grayling contributed the most in terms of edible weight (1,390 lb and 1,252 lb respectively; Table 5-5). Thirteen percent of households reporting using humpback whitefish, and 27% used Arctic grayling. Broad whitefish was the third highest nonsalmon harvest (11%); residents harvested 841 lb in 2015 (Table 5-5; Figure 5-13). Burbot was used by 12% of households and made up 10% of the nonsalmon harvest (785 lb). Although other species including lingcod and rockfish were used by Nenana residents, Pacific halibut was the only marine fish that they reported harvesting. Roughly 453 lb of halibut were caught in 2015 (1 lb per capita) accounting for 6% of the nonsalmon harvest.

Nenana residents harvested an array of nonsalmon species and used a variety of gear to catch them Figure 5-14 and Table D5-6 show the gear types that residents used to catch nonsalmon fish species. Gillnets and fish wheels were the most common gear to catch nonsalmon fish. Twenty-four percent of the fish caught in 2015 were caught in a gillnet and 22% came from a fish wheel (Table D5-6). This suggests that the majority of nonsalmon fishing occurs in summer months when the rivers near Nenana are ice free.

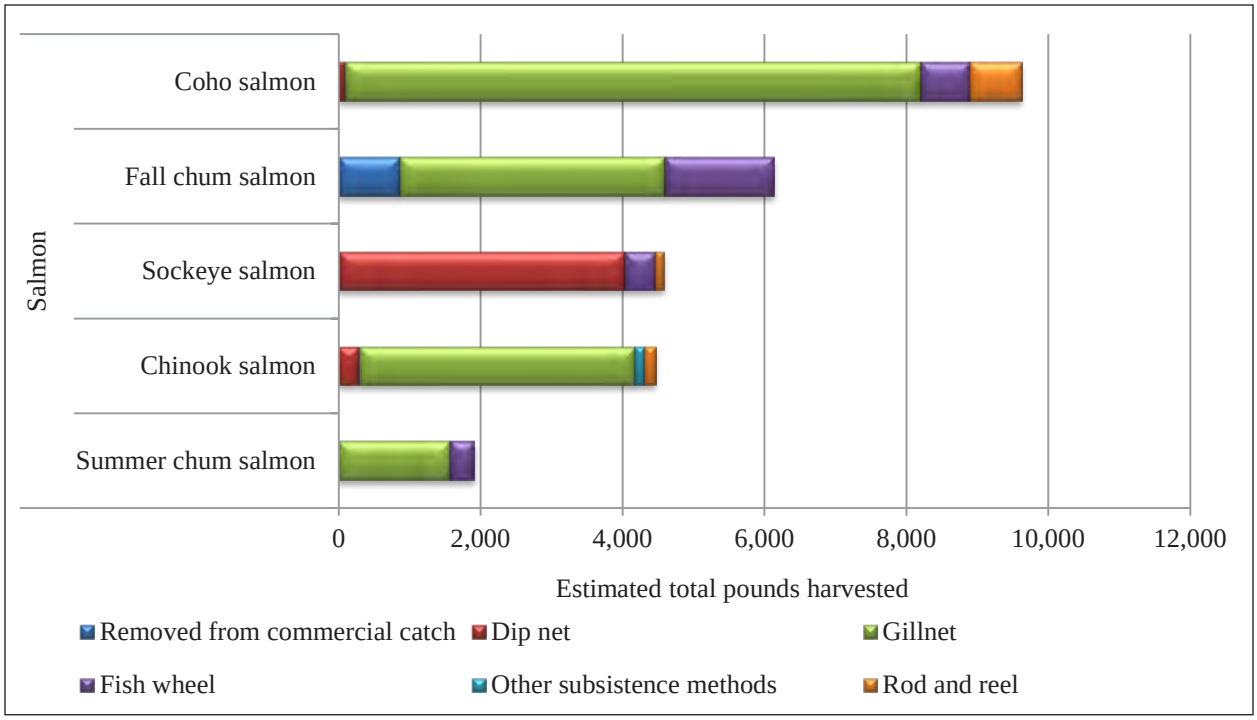


Figure 5-11.–Salmon harvests by gear type, Nenana, 2015.

Table 5-7.–Estimated harvests of fish for consumption by dogs, Nenana, 2015.

Resource	Amount	Pounds
Salmon		
Fall chum salmon	90.7 ind	428.1 lb
Coho salmon	126.9 ind	683.6 lb
Nonsalmon fish		
Broad whitefish	9.1 ind	29.0 lb
Humpback whitefish	18.1 ind	38.1 lb
Total	**244.8 ind**	**1,178.7 lb**

Source ADF&G Division of Subsistence household surveys, 2016.

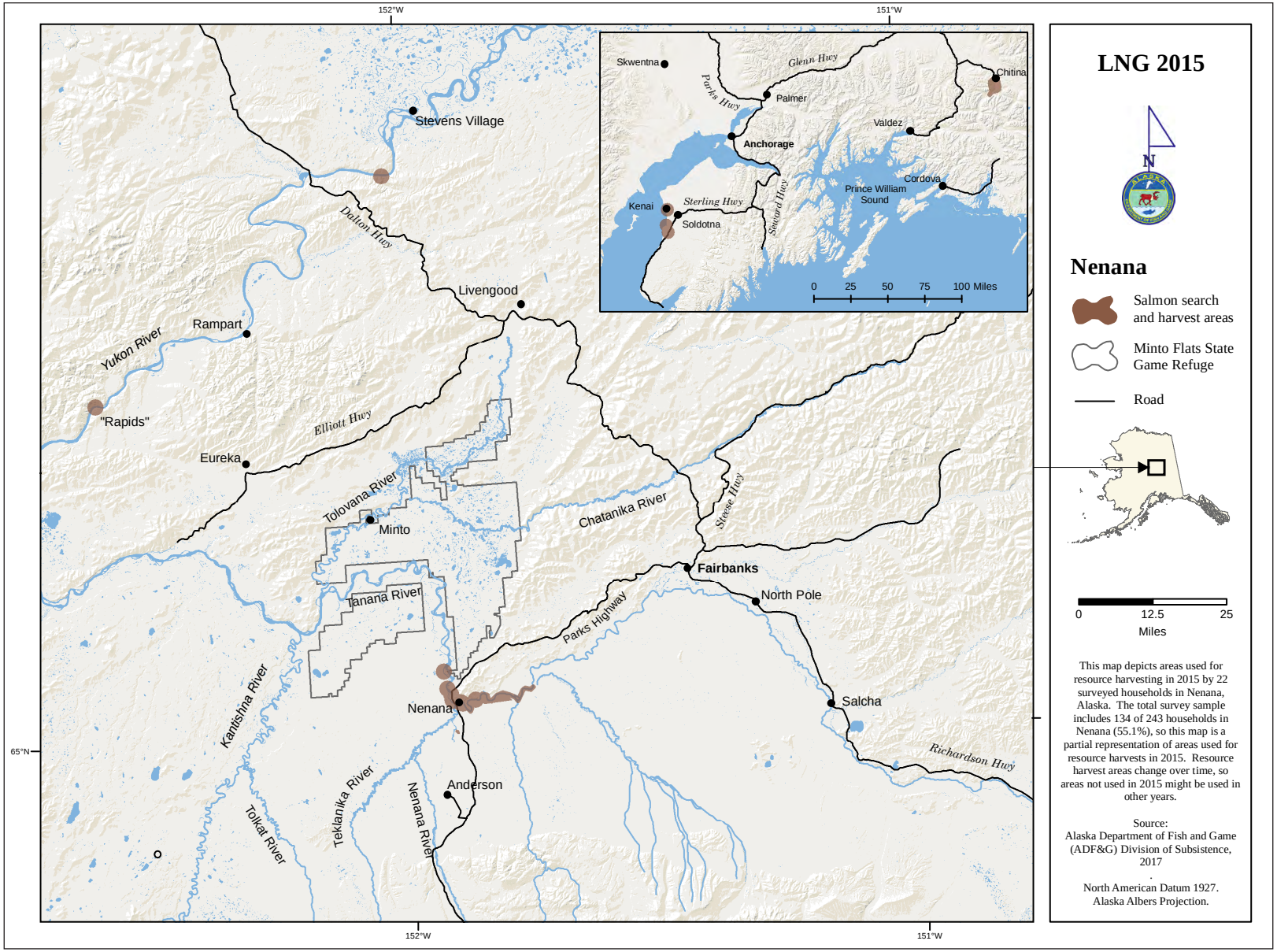


Figure 5-12.–Salmon fishing areas, Nenana, 2015.

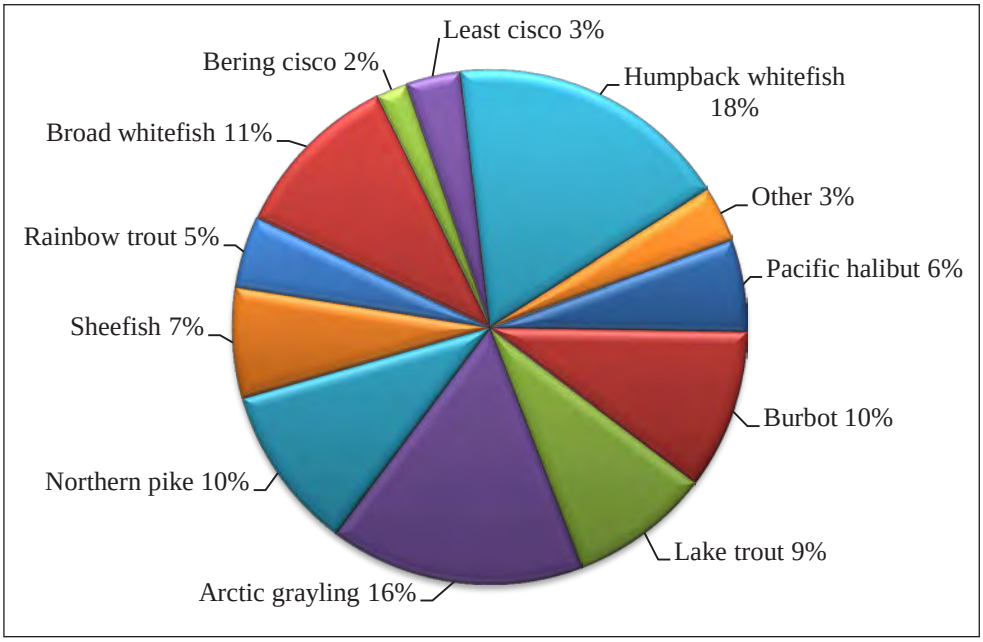


Figure 5-13.–Composition of nonsalmon fish harvest by edible weight, Nenana, 2015.

Humpback whitefish, the most heavily harvested nonsalmon species, was caught with fish wheels (38%), gillnet (53%), while ice fishing with a hook and line (3%), and with other subsistence methods (6%). Arctic grayling were caught with rod and reel (70%), in gillnets (26%) and while ice fishing (4%). One Nenana fisher described his burbot sets:

> I do a pole set [for burbot]. You get a big long spruce pole that's dried. Drill your hole through. You put your hook about 6 inches above the bottom of the pole on a foot long with your bait on it, usually whitefish or grayling. And then you just put your pole all the way down and sink it into this mud and kind of, you know, I use usually a rock tied up on there so it don't pop up. Because that pole is light and it's going to want to pop up, you know wood floats and so you've got to kind of put it down in there. Shove it in the mud as best you can, and weight it down, and, and when you check it the next day…one hook on each pole but you got eight, I got eight poles. And I stagger them from one here, one over here, one there like that. So, and, that one year I caught 36 fish in eight days. So I was catching them every, every pole was coming up with fish. (032416ENN05)

Table 5-7 shows the estimated nonsalmon fish harvest for feeding dogs. Broad whitefish (29 lb) and humpback whitefish (38 lb) were the only nonsalmon species fed to dogs in 2015. Nonsalmon fish accounted for 6% of the total weight of fish fed to dogs. "You know if, you're not working or nothing, you gotta, you gotta, if you got dogs you gotta catch fish for suckers and little whitefish and whatnot for your dogs, and all the good ones goes in your pot or your smokehouse" (102716ENN03).

Figure 5-15 shows the search and harvest areas Nenana residents used for nonsalmon fishing in 2015. Residents harvested nonsalmon fish species on the Tanana River in the vicinity of their community, south in spots along the Nenana River, westward near the Teklanika River, and northward into the Minto Flats. Although respondents did harvest Pacific halibut, it is not locally available, and residents did not identify locations on the map.

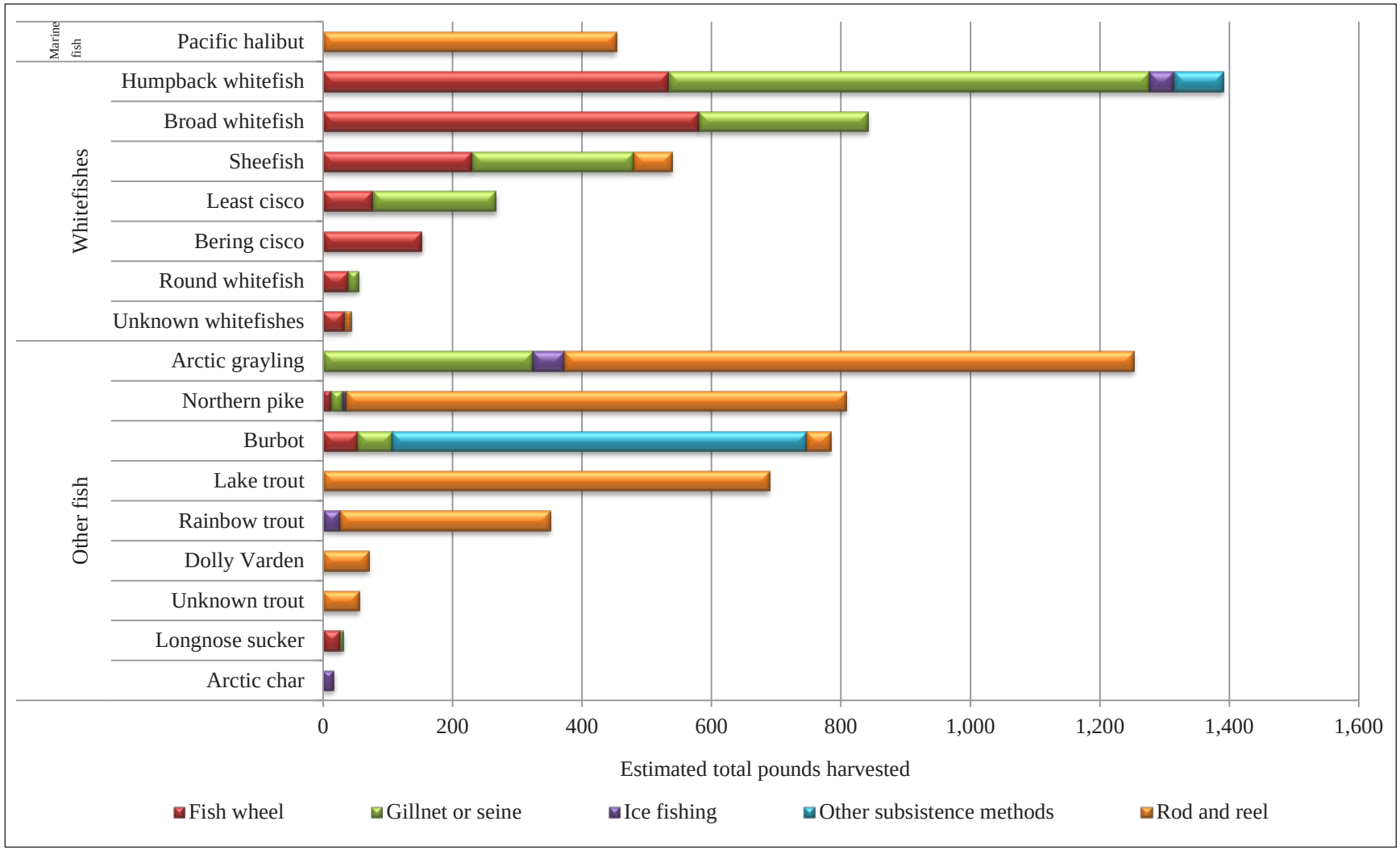


Figure 5-14.–Nonsalmon fish harvests by gear type, Nenana, 2015.

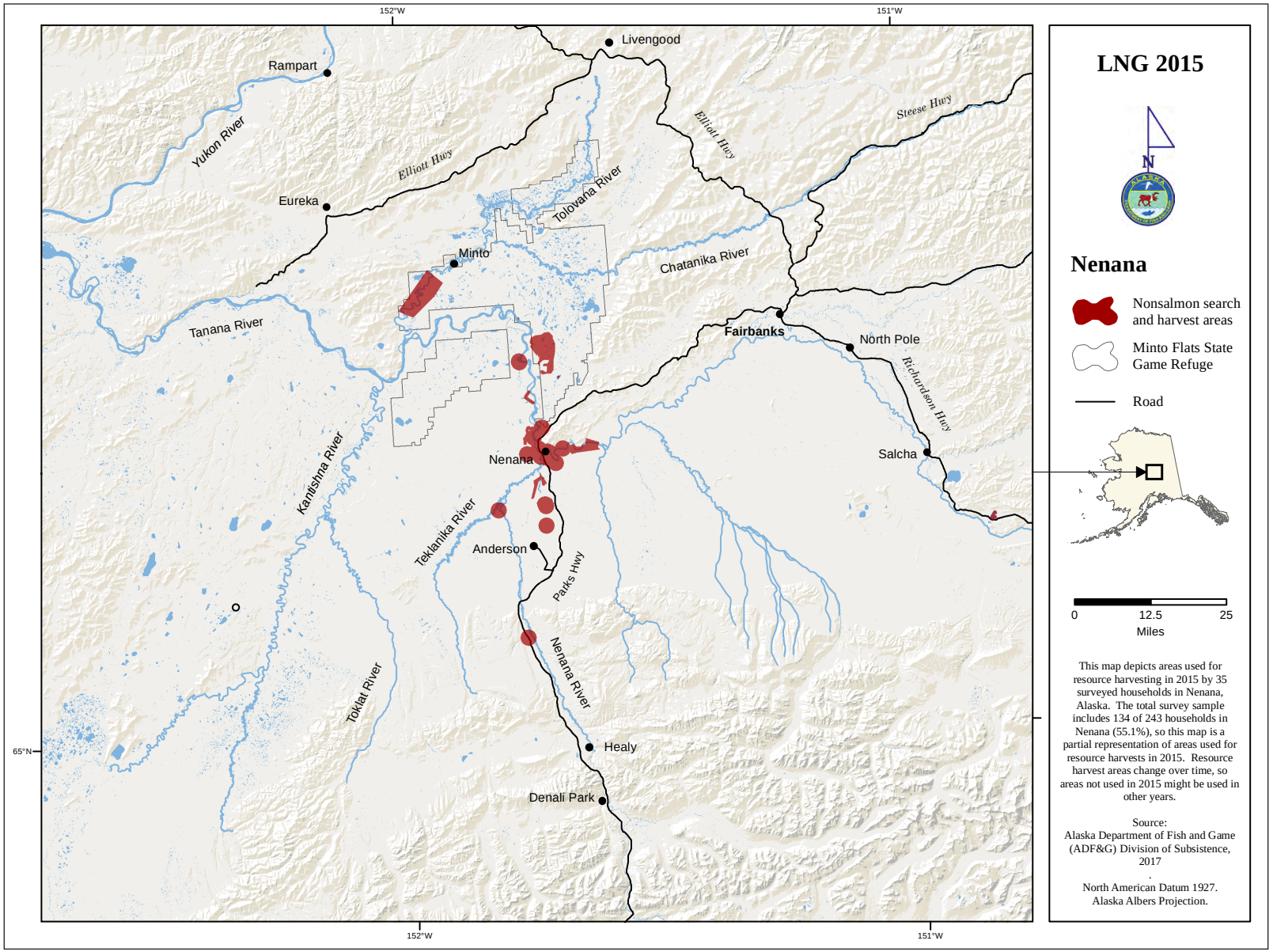


Figure 5-15.–Nonsalmon fishing areas, Nenana, 2015.

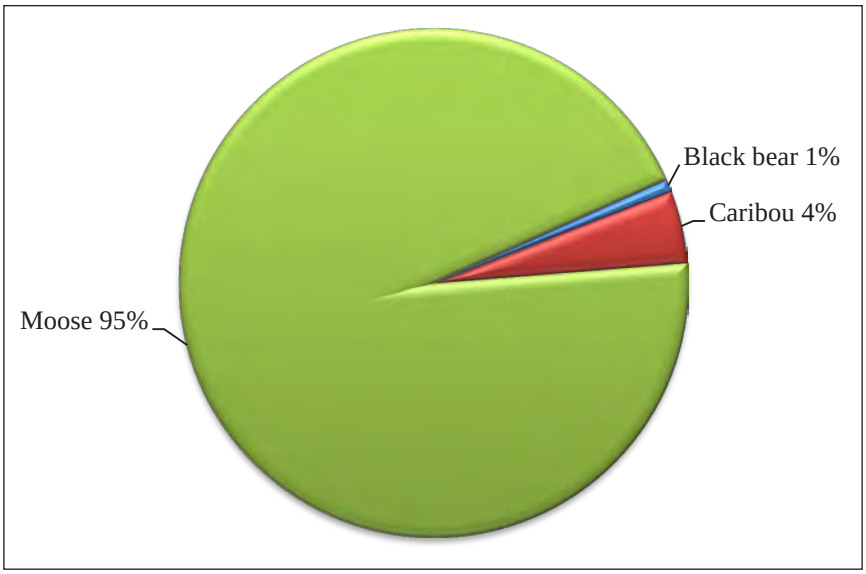


Figure 5-16.–Composition of large land mammal harvest by edible weight, Nenana, 2015.

Large Land Mammals

Large land mammals contributed substantially to the diets of Nenana residents. Nenana hunters harvested 38 moose in 2015 for a total harvest of 20,488 lb (35 lb per capita; Table 5-5). Overall, 78% of Nenana households reported using large land mammals, and 38% reported attempting to harvest them (Figure 5-7).

Moose, the only large land mammal included in the top 10 resources harvested by per capita weight, constituted 95% of the total large land mammal harvest (figures 5-8 and 5-16). Nenana residents maintain a rich body of traditional ecological knowledge about moose and moose hunting. For example, one hunter described how to identify a barren cow while tracking:

> When you need fat, you go out where the moose are yardin' up kinda together, you know how they do, and you go out to their beds. And in the snow you poke your finger and if your finger just don't go through it you don't track that moose, you don't follow it. If your finger goes through it you track that moose, it's their fat. Moose that's bearing, she's got a baby in there, she's makin' baby, she ain't got much fat. She doesn't have the insulation; she's bleedin' off heat and melting the snow enough to where it becomes hard. Now barren cow, she's got that fat insulation, she ain't turnin' loose of her heat. (032516ENN01)

Nenana is located in Game Management Unit (GMU) 20 at the nexus of GMUs 20A, 20B, and 20C. Nenana hunters have historically hunted moose around their community and up into the Minto Flats (Shinkwin and Case 1984). There are multiple hunts available to Nenana residents, including antler-restricted bulls in parts of GMU 20A, fall and winter opportunities for bulls or any moose in GMU 20B in the Minto Flats Management Area, and a fall hunt for bulls in GMU 20C (ADF&G n.d.). Sixty-seven percent of the moose were taken in August or September (Table D5-7). The remaining harvest occurred in November. Eleven moose were harvested in months unknown to respondents. Twenty-seven of the 38 moose harvested were bulls (71%). Although 38% of Nenana households reported trying to harvest moose, only 10% successfully harvested moose, However, broad sharing accounted for high use levels (80%): 27% of households reported giving moose to other households, and 58% reported receiving moose.

Moose meat is processed in a variety of ways. Some hunters hang their meat to age slightly before cutting into smaller pieces. Smaller pieces can be frozen in roasts or steaks, or made into other products such as ground meat. One resident described making dry meat:

> Well, it's a lot of work. Uh, of course anything that is about 1,500 pounds is going to take some effort...I cut it in slabs like that; as thin as I can. I put it in one of those tins…layer salt and pepper in 'em, layer of dry meat, and another salt and pepper, double because it's gonna be two layers. You are gonna be salting two different pieces of meat so you double up on salt and pepper. You know, you keep going and going and going and let that sit overnight…let it just kind of dissolves the pepper and kind of dissolves the salt, soaks into the meat. And I hang it. Hang it up. I use little pieces of wire like that you know. Make hooks out of them. (102016ENN02)

In addition to moose, survey respondents reported harvesting and using caribou. In 2015, 14% of households used caribou and 3% harvested them (Table 5-5). In total 7 caribou were taken, accounting for 987 lb (2 lb per capita). Respondents harvested caribou in August and December (Table D5-7). Nenana residents recalled that caribou used to be much more present in the area than they are now. One elder remembered hunting a herd that migrated through the Healy area in the 1960s, and another hunter talked about hunting this herd:

> We used to go up to summit, Eagle Summit. It used to come out there at above Wood River too there, used to have crossing there. And another one down at the Rex, used to have a crossing there. Only once, I think in 1950, somewhere in there, '59, somewhere in there, they came through here. (102716ENN07)

Finally, residents described another small, rarely hunted, resident caribou herd up in the foothills of the Alaska Range near Milepost 26 of the Parks Highway that currently ranges from Wood River over to the Kantishna (032516ENN01).

Black bear is less significant than moose or caribou in terms of the percentage of households harvesting or using it: this resource was used by 6% of households and harvested by only 1% of households (Table 5-5). Two male black bears were taken in October (Table D5-7)

Respondents reported receiving minimal amounts of deer, mountain goat, brown bear, and bison. Because respondents did not harvest these animals themselves, they do not contribute to the community harvest total or appear on Figure 5-16.

Figure 5-17 shows the search and harvest areas Nenana residents used for large land mammal hunting in 2015. Residents reported hunting moose along the Tanana and Tolovana rivers into the area around Minto, referred to as the Minto Flats. This area was also an area of focus for hunting brown bears. Residents also moved south along the Nenana, Teklanika, and Kantishna rivers as well as along the Parks Highway searching for moose. According to one respondent,

> Well, we try to get down that way, you know [Old Minto area]…You could see cow moose and calves, you could see moose tracks all along the bank, you know. It's a lot of fun down that way. The kids are really getting to know that, that land pretty good too, now…then around here [near Nenana] after that fire we're starting to see more moose but we're not seeing that many bulls anymore. I don't know what's going on with our bull population. (032416ENN05)

Residents identified small black bear search areas north of Nenana and south of the community between the Nenana and the Totatlanika rivers (Figure 5-17). Finally, Nenana hunters searched for caribou along the west side of the Denali Highway and in areas to the north and south of the Steese Highway northeast of Fairbanks.

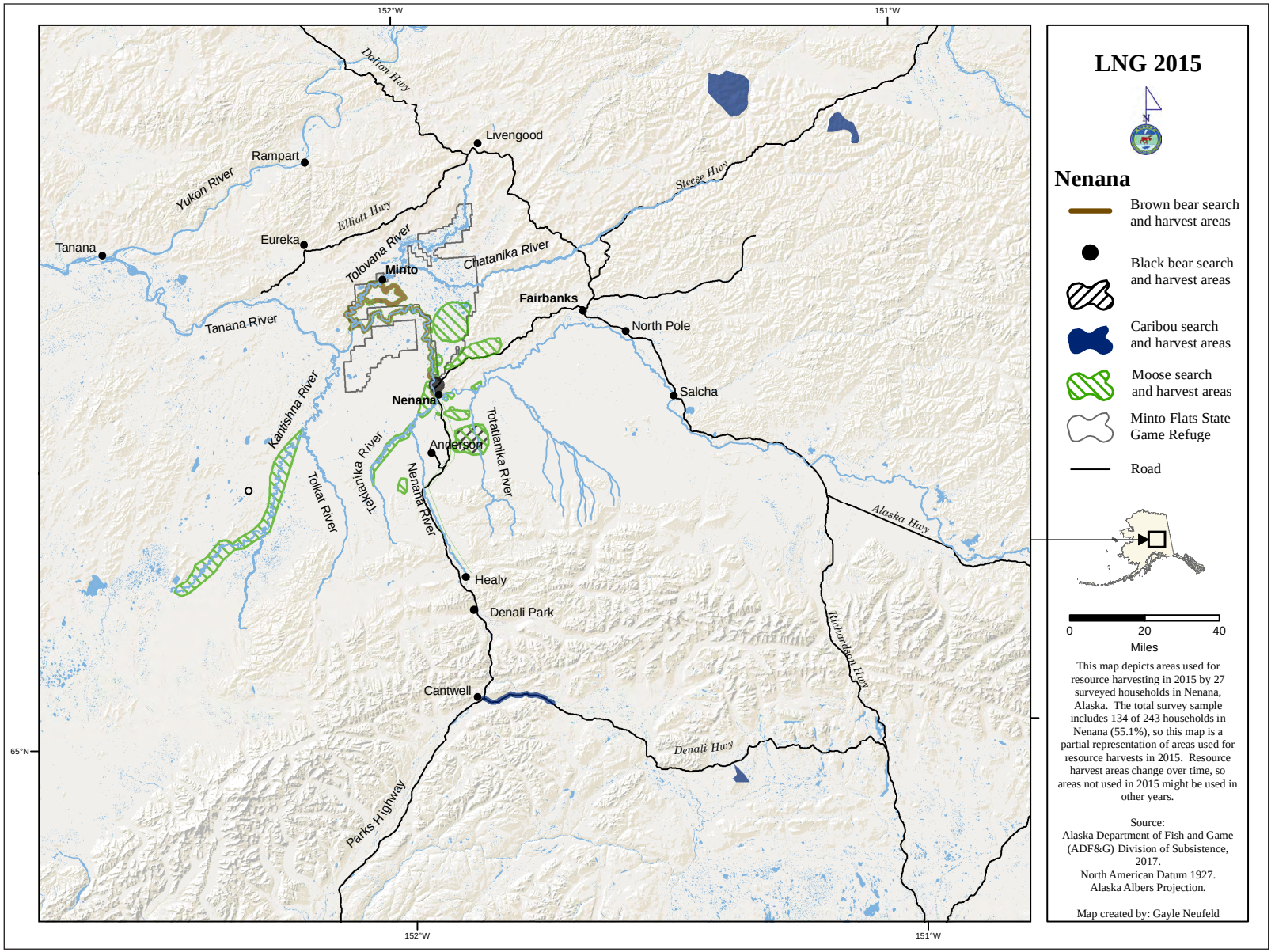


Figure 5-17.–Large land mammal hunting areas, Nenana, 2015.

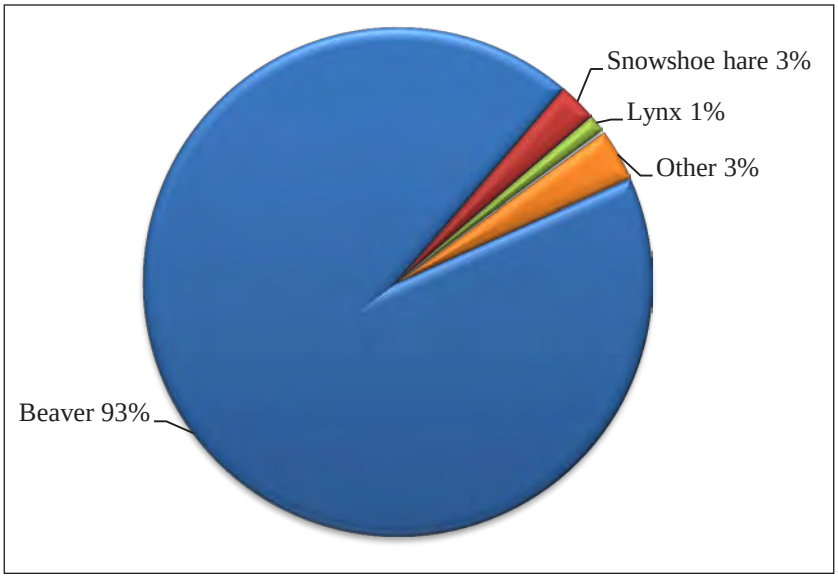


Figure 5-18.–Composition of small land mammal harvest by edible weight, Nenana. 2015.

Small Land Mammals/Furbearers

Twenty-two percent of households in Nenana attempted to hunt or trap small land mammals (Figure 5-7). Of the 439 small land mammals taken in 2015, the majority (343 or 78%) were used for fur only (Figure 5-19). For example, gray wolf, red fox, marten, mink, weasel, coyote, and river otter did not contribute any edible pounds to the total community harvest in 2015. Figure 5-19 shows the contrast between the numbers of small land mammals that provided food versus those that were only used for their fur.

Figure 5-18 shows the composition of only the small land mammal harvest in 2015 that residents reported using for food. Beaver, an animal commonly harvested by Nenana residents, contributed 1,233 edible pounds to the community harvest (2 lb per capita; 93% of the small land mammal harvest by edible weight; Table 5-4; Figure 5-18). Residents harvested approximately 114 beavers in 2015 (Table 5-5). Although beaver accounted for the bulk of the small land mammal harvest by edible weight, residents used only about one-half of that harvest for food. Fourteen percent of households reported using beaver in 2015; 9% harvested them. Residents also harvested 152 snowshoe hares during the study year. These animals made up 3% of the edible small land mammal harvest (Figure 5-18). Five percent of households harvested and used snowshoe hare (Table 5-5). Less than 1% of households reported either giving or receiving them. Other small land mammals are also harvested for food and fur or other products and make their way into the community's distribution networks.

> My kid was graduating…and this lady does really good bead work. So I asked her to make me a beaded picture frame…So I went to her to pay her and I said, "Well, I got some porcupine quills here." So I pulled out a good-sized jar, she looked at them. "Good trade" she told me. (032416ENN05)

Table D5-8 shows the months of harvest for small land mammals. Muskrat was the only species harvested during summer months. Fifteen muskrats were taken in June and July. Harvest of the remaining small land mammals occurred throughout the year in accordance with hunting and trapping regulations.

Figure 5-20 shows the search and harvest areas Nenana residents used for small land mammal hunting in 2015. Primary areas included a space immediately around the community and to the southeast. Several traplines extend north of Nenana on both sides of the Tanana River and south along the Kantishna River to the west of Nenana.

As with most subsistence animals, residents maintain a body of knowledge about trapping and furbearers that dictates, in addition to the regulations, their trapping practices. One elder recalled learning local rules about trapping ethics from older, more experienced trappers:

> I learned to run a trapline and fish for my dogs in the summer. And my teachers had rules. But then again, those were the days of the hundred-mile lines. And a man would have a river valley that was his trapline and there was nobody messed with it or there was big trouble. You didn't go set your traps on another man's line, you might not come back, you know, it's just the way it was. (032516ENN01)

The same elder recalled traditional management beliefs regarding marten.

> If you're trappin' marten, lay your line out you'll take big males first. You may have some sets in fairly new ground or if you've left it alone for a while…you take two, three big male marten. Soon as you catch females in those sets or outstretched sets, you pull your line 'cause the males come through first with marten, then come the females and the younger ones. Big males they come through right ahead of them. When you start catching females you're starting to deplete your breed stock, you pull your sets. (032516ENN01)

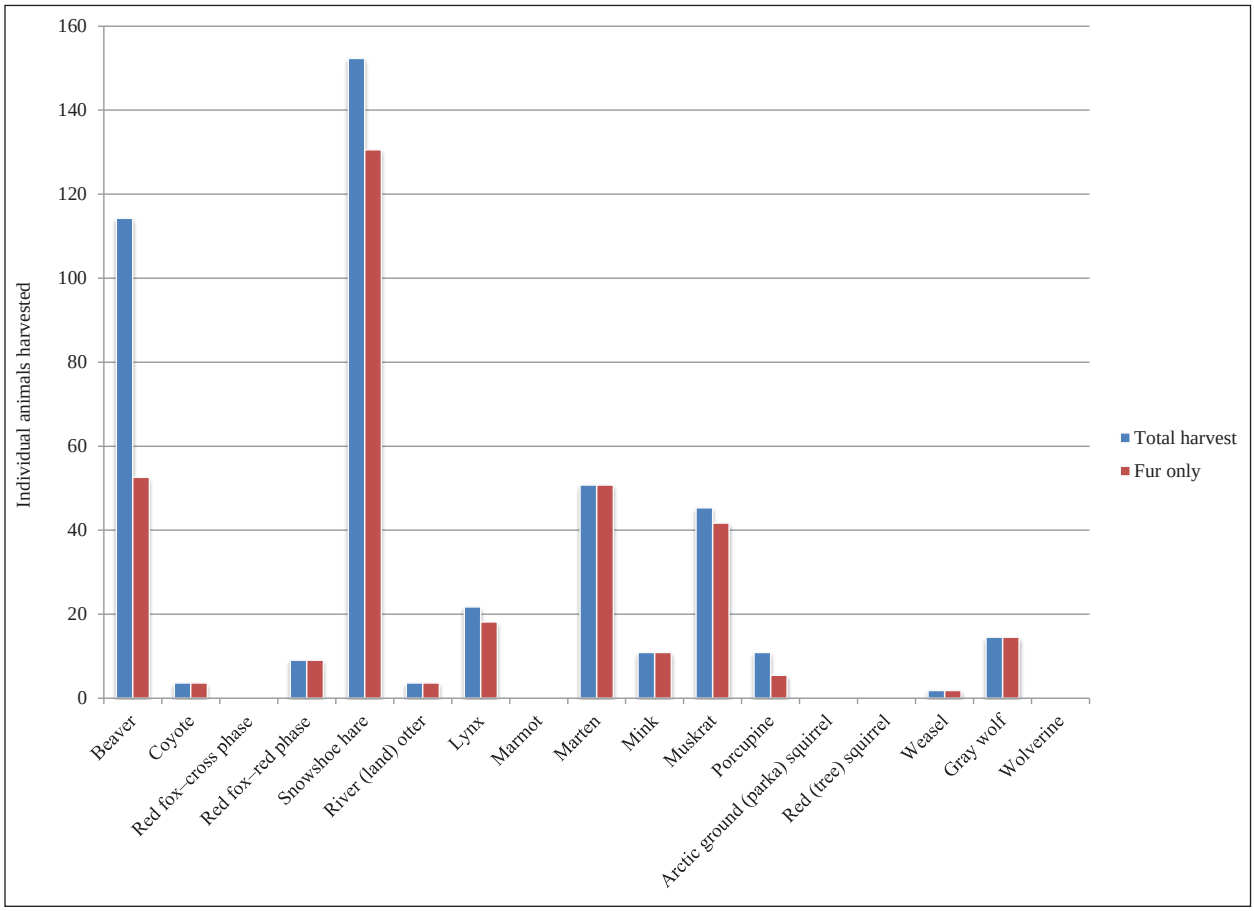


Figure 5-19.–Small land mammal harvests for fur, Nenana, 2015.

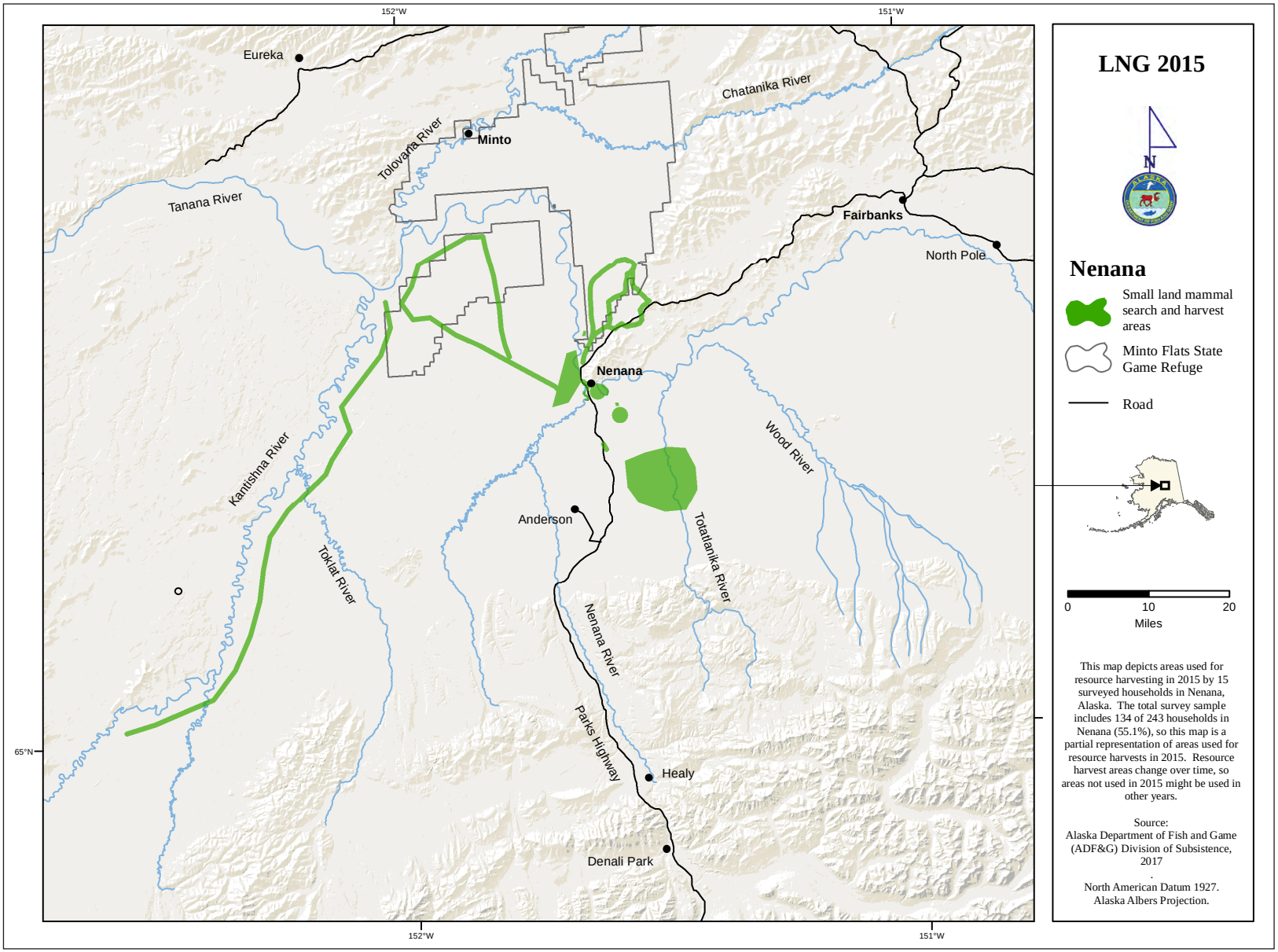


Figure 5-20.–Small land mammal hunting and trapping areas, Nenana, 2015.

Marine Mammals

Nenana residents did not harvest any marine mammals in 2015. However, some survey respondents did report receiving seal oil (5%) and whale meat or blubber (Table 5-5). Four percent of households received and used bowhead whale, 1% received and used beluga whale, and 8% of households received and used unknown whale.

Birds and Eggs

In 2015, Nenana residents used 27 different types of birds and 2 kinds of bird eggs (Table 5-5). A total of 3,951 lb of birds and eggs were harvested (7 lb per capita). Forty-three percent of households used birds, eggs or both. Sharing birds and eggs occurred with roughly 15% of households. Most of the birds harvested were migratory. Figure 5-21 shows the composition of bird harvest. In terms of edible weight, residents harvested more mallards than any other type of bird: 16% of the bird harvest came from mallards (650 lb or 1 lb per capita; Table 5-5; Figure 5-21). White-fronted geese accounted for 15% of the bird harvest (607 lb or 1 lb per capita). Table D5-9 reports the harvest of birds and eggs by season.

When asked about using decoys during spring bird hunting, one hunter responded, "No we just used a shotgun shell, and you burn a hole in it with a lighter, and used it as a whistle" (102016ENN02). According to some respondents, migratory bird hunting is best in the spring. "If you miss that opportunity, they're not here in the fall time. They just fly right over this area. They might go to Fairbanks Creamers Field, they might go to Delta, but for the most part, they just fly right over here" (040716ENN06). Despite this, Nenana hunters reported harvesting more than half of their harvest (55%) in the fall (Table D5-9); it is possible that some component of the fall harvest was not immediately around Nenana. Another respondent observed a change in migratory patterns after the Northern Intertie was built by Golden Valley Electric Association in 2003.[5]

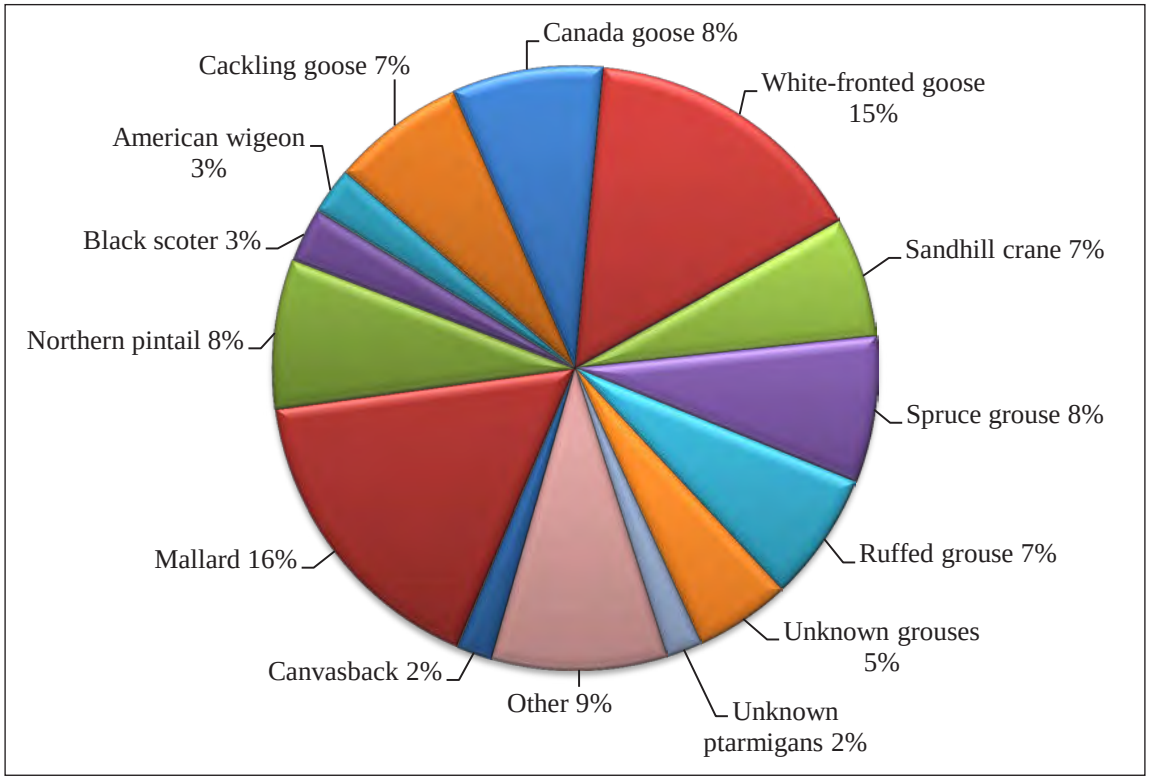


Figure 5-21.–Composition of bird and bird egg harvest by edible weight, Nenana, 2015.

5. Alaska Journal of Commerce, June 6, 2004. "Alaska Intertie system faces challenges." Accessed April 5, 2017. http://www.alaskajournal.com

> The powerline, that intertie that goes from Fairbanks, Golden Valley or whatever, to Healy, the year they put that in was the year that, about four of us noticed, the birds around here were migrating different…we all had spots up this way. But they put that in, they changed their flight that way. I don't know if they just follow that powerline or what but they weren't coming to where we were at anymore… Can't do nothing about it. The powerline's there and no birds. It might have been too, because when they did that powerline they just cleared such a big swath in it, you know, it might have been a fuel for them geese or something, I'm not sure. (032416ENN05)

Several species of grouse and ptarmigan are available year round to Nenana residents. These are the only nonmigratory birds that residents used or harvested (Table 5-5). Respondents reported harvesting sharp-tailed grouse, ruffed grouse, and spruce grouse in 2015. Combined, residents harvested an estimated 954 grouses (804 lb or 1 lb per capita), which accounted for 20% of the bird and egg harvest (Table 5-5; Figure 5-21). Spruce grouse, the type of grouse most commonly used in Nenana, was harvested by 15% of households and used by 17%. Very few households gave any spruce grouse away (3%). Similarly, ruffed grouse were harvested by 16% and used by 16% of households. Five percent of households gave ruffed grouse away, and 2% received them. Ptarmigans were used by 8% of households and harvested by 7%. Roughly 96 ptarmigans were harvested in 2015, providing 77 lb and making up 2% of the bird harvest.

Figure 5-22 shows the search and harvest areas Nenana residents used for bird hunting in 2015. Residents hunted for ducks and geese along the Tanana River into the Minto Flats. Ptarmigans and grouses were harvested immediately around the community, along the Parks Highway towards Fairbanks and in the hills north of Fairbanks. According to one resident,

> You want ptarmigan? You go where one of the islands is like down Yukon, down below Tanana. Those big islands on the river, willow islands, willow bars, ptarmigan come down in the winter when the snow gets deep and they're all along that river just flocks of hundreds of 'em. (032516ENN01)

Marine Invertebrates

The use of marine invertebrates by Nenana residents is uncommon. Seven percent of households used marine invertebrates in 2015. Only 2% actually harvested any. Razor clams made up the majority of the harvest (Figure 5-23). Table 5-5 shows that 27 lb of razor clams, 5 lb of unknown clams, and 4 lb of shrimps were harvested by Nenana residents. These resources are not available locally, indicating that Nenana residents traveled distantly to harvest them. Six percent of households received king crabs, scallops, and shrimps from other households, likely elsewhere in Alaska.

Vegetation

Lastly, the survey asked about vegetation harvested and or used by respondents. The category of vegetation included berries, plants, mushrooms, and wood. Figure 5-24 shows the composition of vegetation harvest in Nenana by edible weight. Berries made up 92% of the vegetation harvest by weight. Households primarily used blueberries: 63% of households used blueberries, more than any other type of berry (Table 5-5). Half of all households gathered roughly 1,664 lb of blueberries, which made up 48% of the total vegetation harvest. Lowbush cranberry, highbush cranberry, and raspberry were also widely used (23%, 21%, and 31% respectively). Each contributed 1 lb per capita to the community harvest total. One resident remarked on the possible effect of fires on new berry patches:

> [I] try to get our berries picked right away. Right when they ripen up, that's one of my priorities, blueberries, highbush berries, lowbush berries, raspberries…after that fire, I think it was seven years ago maybe, there's a place upriver that just blew up into a blueberry patch. It wasn't there before, 'cause I never seen blueberries. There's a climbing tree that we go in, and I've never seen blueberries around that climbing tree. After that fire there were blueberries everywhere. That fire was kinda good for us. (032416ENN05)

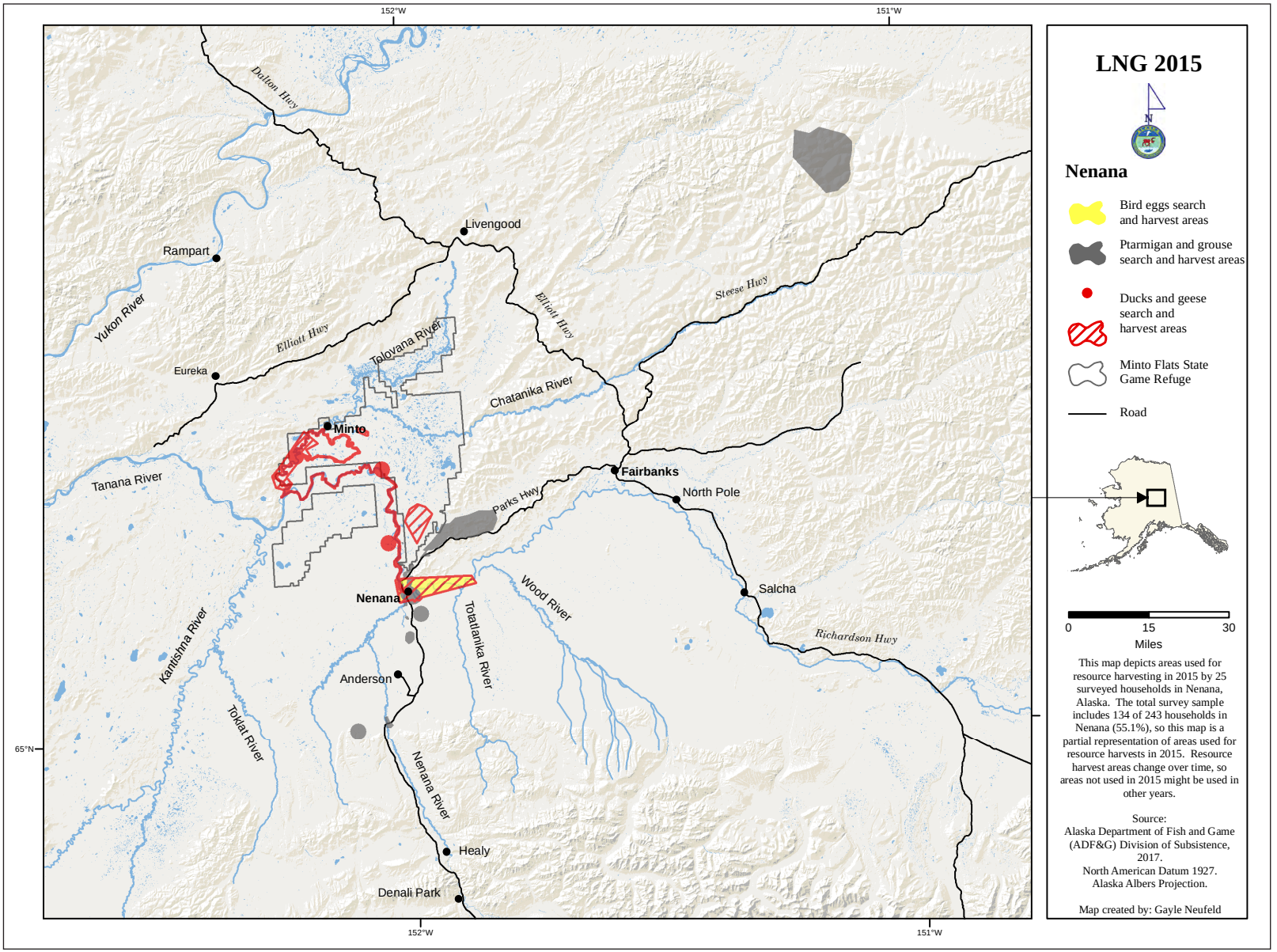


Figure 5-22.–Bird hunting and bird egg gathering areas, Nenana, 2015.

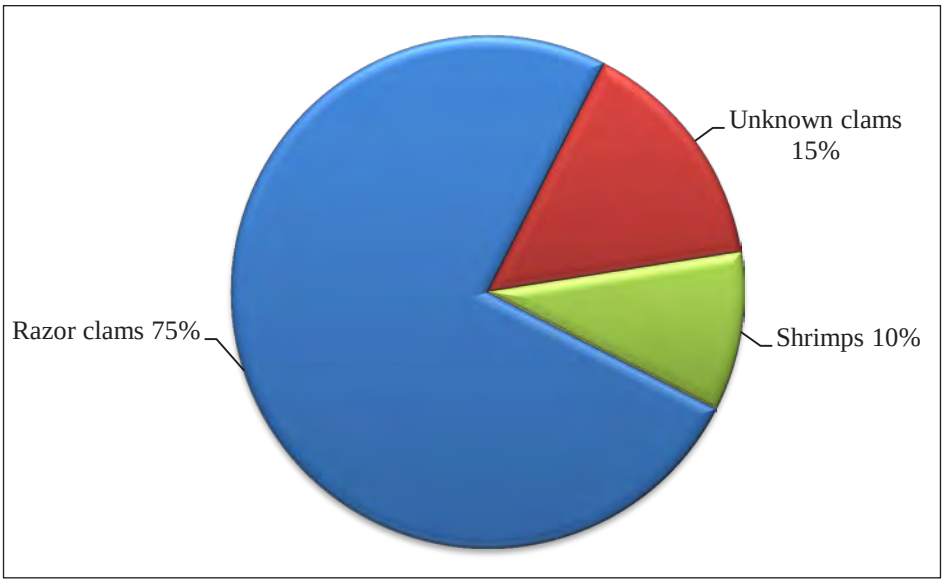


Figure 5-23.–Composition of marine invertebrate harvest by edible weight, Nenana, 2015.

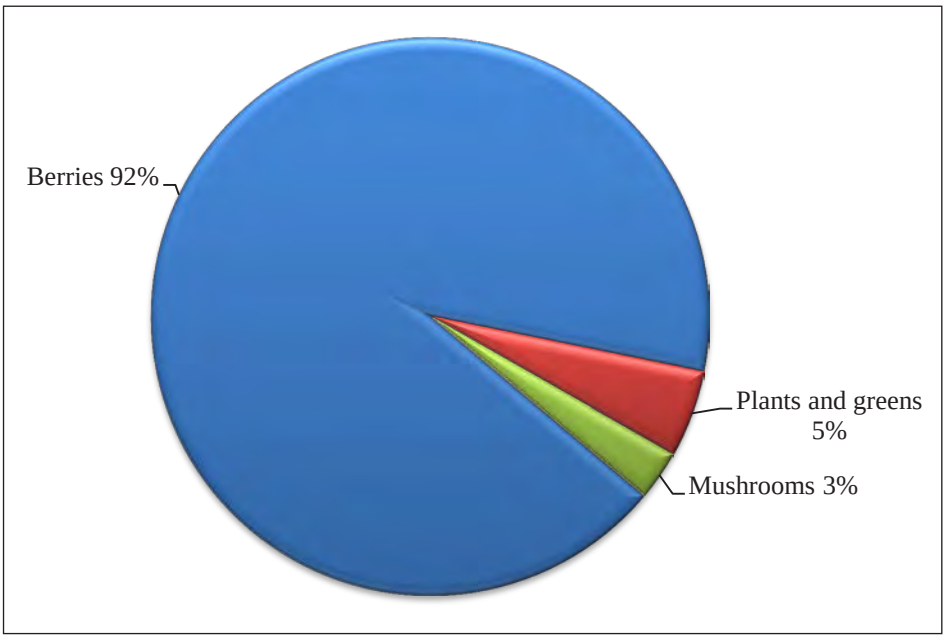


Figure 5-24.–Compostition of vegetation harvest by edible weight, Nenana, 2015.

Plant material could also be used for purposes other than food. Another respondent recalled the use of birch bark and spruce boughs for food storage in the old days.

> Another thing they used tell us to do is pick a lot of berries in fall and take it up in a tree and tie it up, up there [in birch bark]. Couldn't figure out how come crow don't get it…they never bother with it, not even squirrels. (102716ENN07)

Plants and greens contributed 5% to the vegetation harvest total (Figure 5-24). Residents gathered a variety of plants including 71 lb of rose hips, 4 gallons (equivalent to 29 lb) of birch sap, and 14 lb of fireweed (Table 5-4). The plants and greens category does not include firewood. However 7% of households did report using some firewood to heat their homes (Table D5-10).

Wild mushrooms were combined into a single category (96 lb total). Eight percent of households harvested mushrooms and 10% used them. Some sharing did occur: 2% of households reported that they received mushrooms from others.

Figure 5-25 shows the search and harvest areas that Nenana residents used to gather vegetation in 2015. Search areas were broadly spread across the landscape in spots along the Parks Highway both north and south of Nenana, upstream along the Nenana River, and in the Minto Flats.

Production and Distribution of Wild Resources

Household Specialization in Resource Harvesting

Previous studies by the Division of Subsistence (Wolfe 1987; Wolfe et al. 2010) have shown that in most rural Alaska communities, a relatively small portion of households produces most of the community's fish and wildlife harvests, which they share with other households. A recent study of 3,265 households in 66 rural Alaska communities found that about 33% of the households accounted for 76% of subsistence harvests (Wolfe et al. 2010). Although overall the set of very productive households was diverse, factors that were associated with higher levels of subsistence harvests included larger households with a pool of adult male labor, higher wage income, involvement in commercial fishing, and community location.

In the 2015 study year in Nenana, about 8% of the harvests of wild resources as estimated in pounds usable weight were harvested by 69% of the community's households (Figure 5-26). Further analysis of the study findings, beyond the scope of this report, might identify characteristics of the highly productive households in Nenana and the other study communities.

Income and Cash Employment

Survey respondents were asked about both earned income (jobs held and wages earned by all household members 16 and older) and other income (e.g., Alaska Permanent Fund dividend, Social Security, or public assistance). In 2015, Nenana households earned or received an estimated $13,412,858, with an average household income of $55,197 (Table 5-8). Of the total community income, $11,251,598 (84%) was from wage employment, and $2,161,261 (16%) was from other sources. Figure 5-27 and Appendix Table D5-11 compare the estimated median income from this study with American Community Survey (ACS) estimates of median income in Nenana and in all of Alaska between 2011 and 2015. The 2015 median income estimate for the Nenana study area is similar to the ACS calculation for Nenana City CDP, but substantially lower than the median income of all of Alaska.

Figure 5-28 shows the top income sources for residents of Nenana. Service jobs, including those in health care, social services, and education, provided more earned income than any other source ($3,912,431; 29% of the total; Table 5-8; Figure 5-28). Forty-six percent of employed adults had a job in this sector (Table 5-9). Local government accounted for $1,834,939, 14% of all earned income in 2015 (Table 5-8; Figure 5-28). Twenty-four percent of employed adults worked in local government (Table 5-9). An estimated 325 of 472 adults (69%) held at least 1 job in 2015 (Table 5-10). Of the jobs reported by Nenana residents, 65% were full time, 18% were part-time (fewer than 35 hours per week), and 9% were on-call positions, in which individuals worked when needed (Table 5-11). On average, employed adults worked 42 weeks out of the year, and 66% worked year round (Table 5-10). At least 1 employed adult lived in 84% of households. Employed adults often reported having more than 1 job; the number of jobs ranged from 1 to 5.

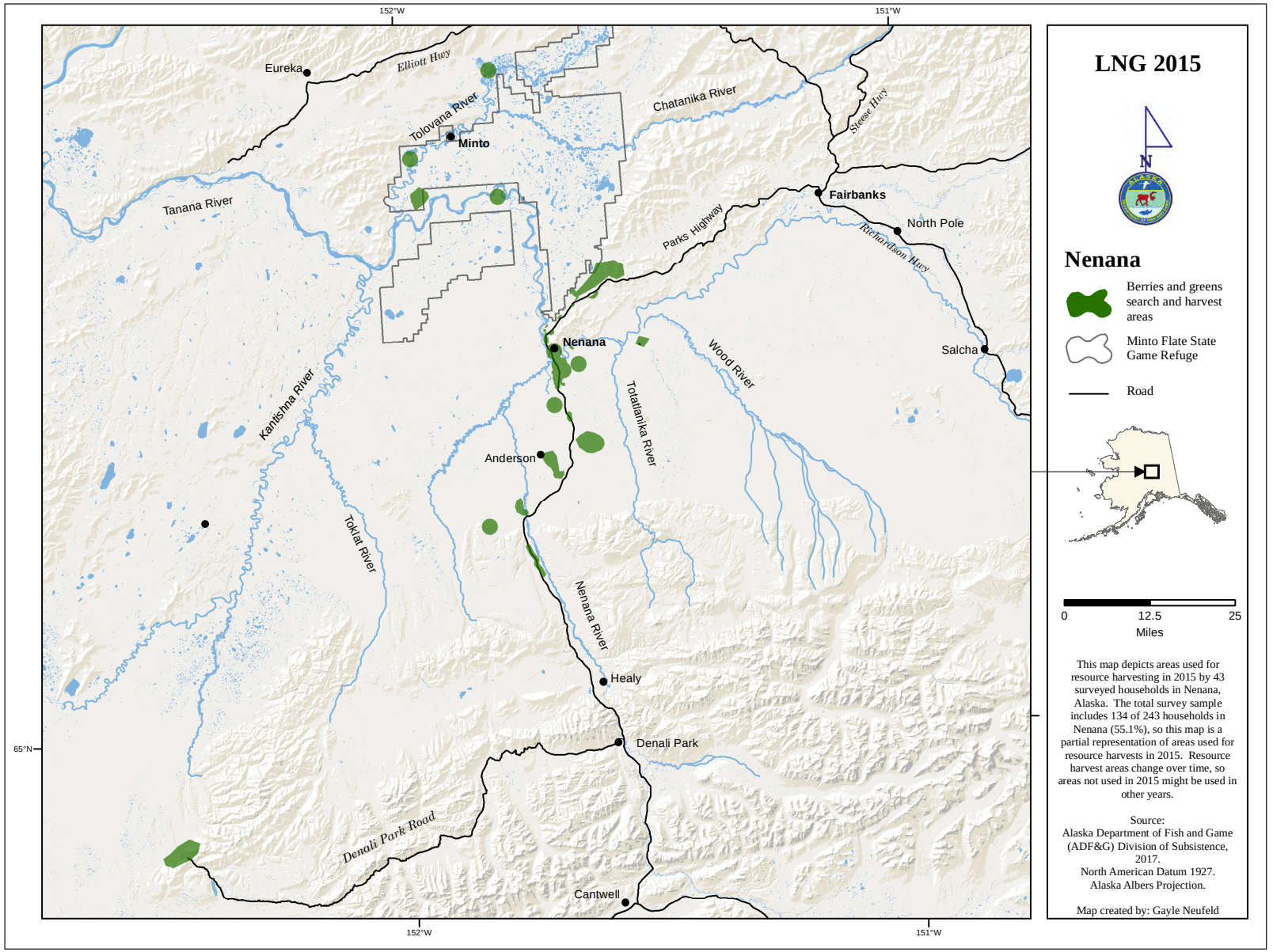


Figure 5-25.–Berries and greens gathering areas, Nenana, 2015.

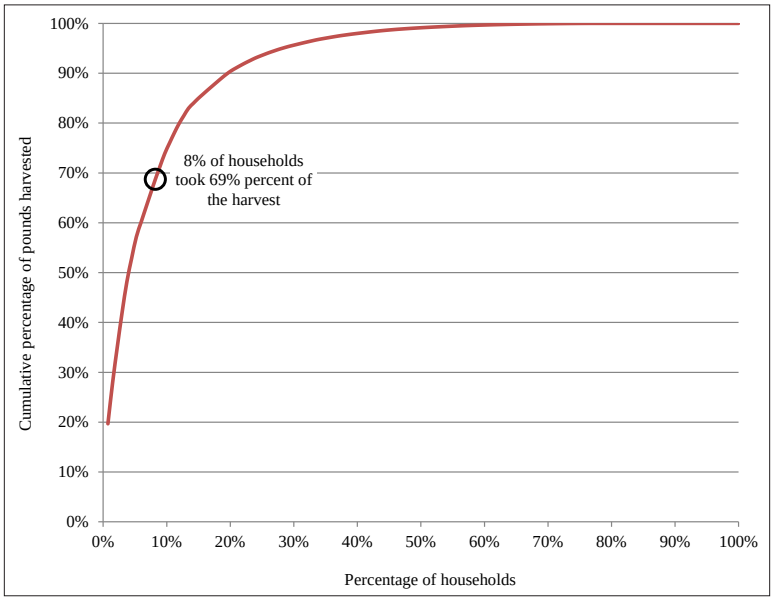


Figure 5-26.–Household specialization, Nenana, 2015.

Table 5-8.–Estimated earned and other income, Nenana, 2015.

Income source	Number of employed adults	Number of households	Total for community	-/+ 95% CI	Mean per household	Percentage of total community income
Earned income						
Services	148	102	$3,912,431	$2,569,168 – $5,707,456	$16,101	29.2%
Local government, including tribal	79	67	$1,834,939	$1,158,759 – $2,793,460	$7,551	13.7%
Transportation, communication, and utilities	18	17	$1,390,710	$567,567 – $2,621,413	$5,723	10.4%
Federal government	24	23	$1,112,399	$472,059 – $2,009,686	$4,578	8.3%
State government	18	15	$1,043,067	$334,763 – $2,439,965	$4,292	7.8%
Retail trade	20	17	$782,939	$233,739 – $2,222,079	$3,222	5.8%
Mining	10	10	$547,331	$87,994 – $1,385,597	$2,252	4.1%
Construction	16	12	$324,344	$33,633 – $893,505	$1,335	2.4%
Other employment	8	8	$230,870	$52,544 – $525,602	$950	1.7%
Finance, insurance, and real estate	2	2	$47,300	$40,853 – $100,166	$195	0.4%
Agriculture, forestry, and fishing	10	8	$22,735	$861 – $81,674	$94	0.2%
Manufacturing	6	6	$2,534	$736 – $63,394	$10	0.0%
Earned income subtotal	**325**	**204**	**$11,251,598**	**$9,310,364 – $14,464,825**	**$46,303**	**83.9%**
Other income						
Alaska Permanent Fund dividend		214	$998,792	$882,997 – $1,133,377	$4,110	7.4%
Social Security		27	$404,272	$221,471 – $658,392	$1,664	3.0%
Pension / retirement		22	$330,767	$127,189 – $673,166	$1,361	2.5%
Disability		11	$135,826	$24,481 – $322,610	$559	1.0%
Native corporation dividend		65	$108,992	$70,098 – $170,925	$449	0.8%
Unemployment		15	$54,503	$17,409 – $116,522	$224	0.4%
Supplemental Nutrition Assistance Program (food stamps)		16	$46,966	$16,457 – $94,101	$193	0.4%
Heating assistance		27	$20,874	$10,597 – $32,430	$86	0.2%
Rental income		2	$18,134	$0 – $54,403	$75	0.1%
Longevity bonus		7	$15,826	$1,899 – $33,295	$65	0.1%
Child support		4	$9,140	$0 – $24,808	$38	0.1%
Meeting honoraria		2	$5,440	$0 – $10,881	$22	0.0%
Adult public assistance (OAA, APD)		2	$5,331	$0 – $10,663	$22	0.0%
Investments / stocks / bonds		2	$4,287	$0 – $8,574	$18	0.0%
CITGO fuel voucher		9	$1,657	$457 – $3,868	$7	0.0%
Other		2	$453	$0 – $907	$2	0.0%
TANF (Temporary Assistance for Needy Families)		0	$0	$0 – $0	$0	0.0%
Workers' compensation / insurance		0	$0	$0 – $0	$0	0.0%
Supplemental Security Income		0	$0	$0 – $0	$0	0.0%
Veterans assistance		0	$0	$0 – $0	$0	0.0%
Foster care		0	$0	$0 – $0	$0	0.0%
Other income subtotal		**8**	**$2,161,261**	**$1,793,059 – $2,599,568**	**$8,894**	**16.1%**
Community income total			**$13,412,858**	**$11,476,563 – $16,540,879**	**$55,197**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2016.

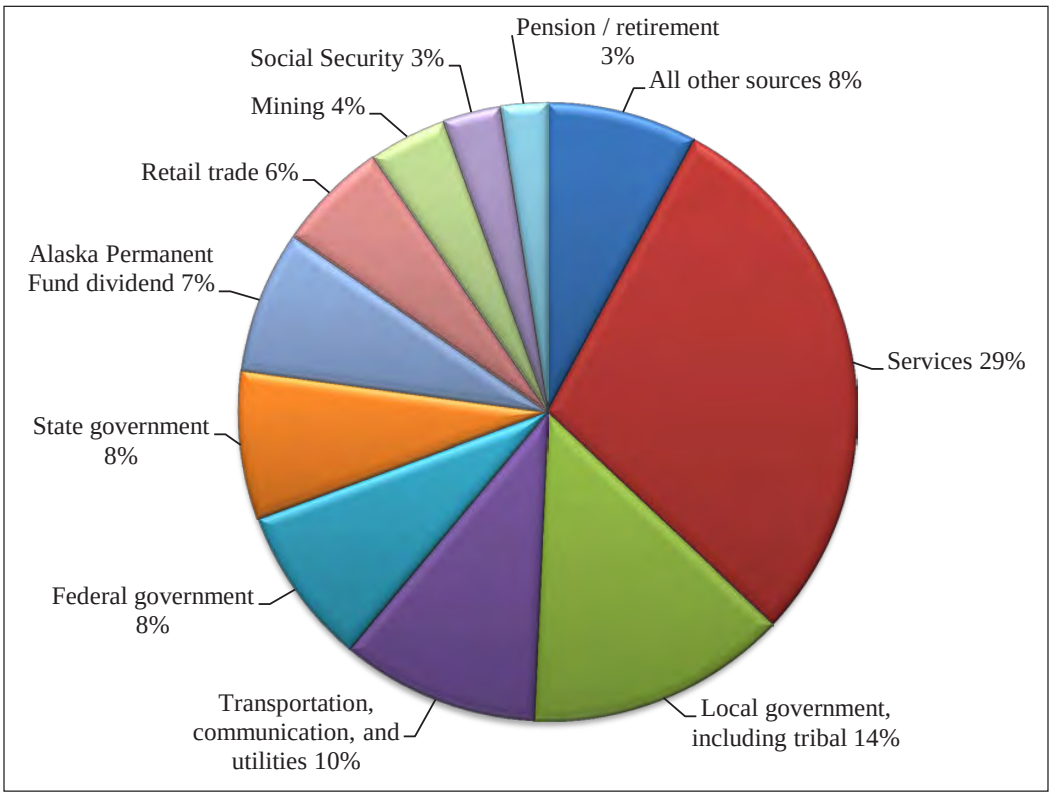
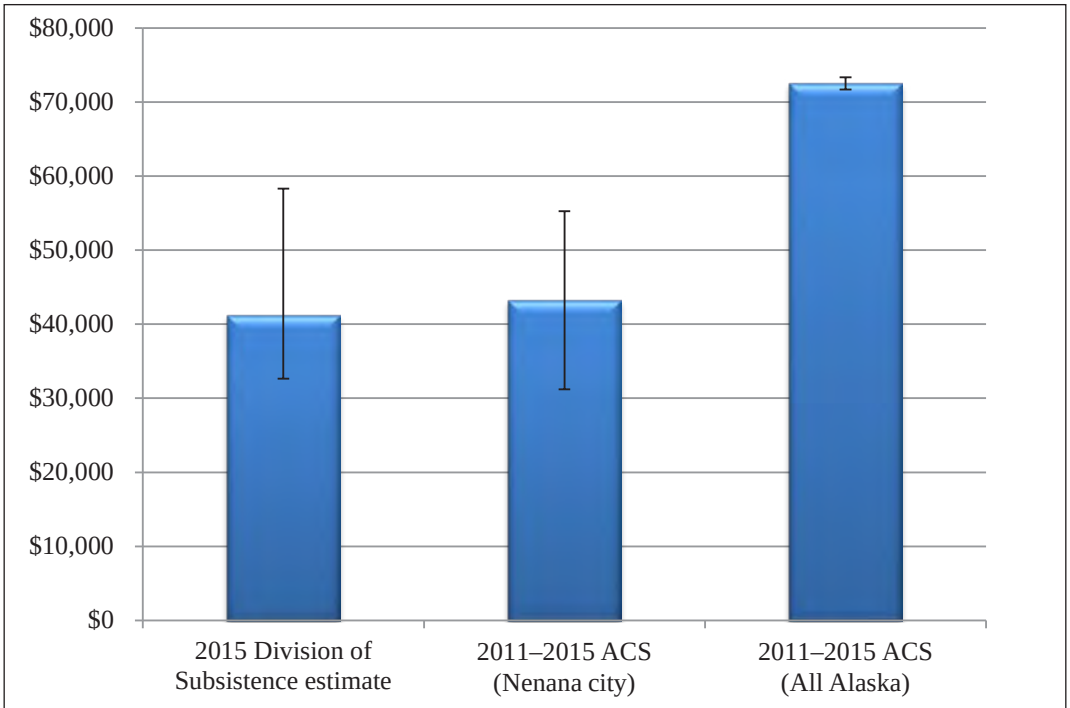


Figure 5-27.–Top income sources, Nenana, 2015.



Note For 2014, Division of Subsistence estimate does not include categories of income excluded by the 2011–2015 ACS median estimate, including food stamps, housing assistance, and one-time payments.

Note Division of Subsistence sample includes Nenana City CDP, Four-Mile Road CDP, and portions of the Tanana Flats tract of the Yukon-Koyukuk Census area.

Figure 5-28.–Comparison of median income estimates, Nenana, 2015.

Table 5-9.–Employment by industry, Nenana, 2015.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**388.3**	**203.7**	**325.2**	**100.0%**
Federal government	**6.1%**	**11.3%**	**7.3%**	**9.9%**
Technologists and technicians, except health	0.5%	0.9%	0.6%	0.8%
Administrative support occupations, including clerical	1.0%	1.9%	1.2%	0.5%
Service occupations	1.0%	1.9%	1.2%	1.4%
Mechanics and repairers	1.0%	1.9%	1.2%	2.0%
Precision production occupations	0.5%	0.9%	0.6%	0.8%
Transportation and material moving occupations	1.0%	1.9%	1.2%	3.4%
Occupation not indicated	1.0%	1.9%	1.2%	0.9%
State government	**4.6%**	**7.5%**	**5.5%**	**9.3%**
Executive, administrative, and managerial	0.5%	0.9%	0.6%	1.6%
Technologists and technicians, except health	0.5%	0.9%	0.6%	0.1%
Administrative support occupations, including clerical	0.5%	0.9%	0.6%	1.6%
Construction and extractive occupations	0.5%	0.9%	0.6%	0.4%
Transportation and material moving occupations	1.0%	1.9%	1.2%	3.1%
Handlers, equipment cleaners, helpers, and laborers	1.0%	1.9%	1.2%	1.0%
Occupation not indicated	0.5%	0.9%	0.6%	1.5%
Local government, including tribal	**21.3%**	**33.0%**	**24.2%**	**16.3%**
Executive, administrative, and managerial	1.5%	2.8%	1.8%	2.5%
Teachers, librarians, and counselors	5.6%	10.4%	6.7%	6.2%
Writers, artists, entertainers, and athletes	0.5%	0.9%	0.6%	0.0%
Administrative support occupations, including clerical	5.1%	9.4%	6.1%	4.5%
Service occupations	3.0%	5.7%	3.6%	1.1%
Transportation and material moving occupations	1.0%	1.9%	1.2%	0.6%
Handlers, equipment cleaners, helpers, and laborers	1.5%	2.8%	1.8%	0.1%
Occupation not indicated	3.0%	5.7%	3.6%	1.3%
Agriculture, forestry, and fishing	**2.5%**	**3.8%**	**3.0%**	**0.2%**
Agricultural, forestry, and fishing occupations	2.5%	3.8%	3.0%	0.2%
Mining	**2.5%**	**4.7%**	**3.0%**	**4.9%**
Mechanics and repairers	0.5%	0.9%	0.6%	1.7%
Transportation and material moving occupations	0.5%	0.9%	0.6%	2.3%
Handlers, equipment cleaners, helpers, and laborers	1.0%	1.9%	1.2%	0.5%
Occupation not indicated	0.5%	0.9%	0.6%	0.5%
Construction	**4.1%**	**5.7%**	**4.8%**	**2.9%**
Construction and extractive occupations	1.5%	2.8%	1.8%	0.3%
Transportation and material moving occupations	1.0%	0.9%	1.2%	1.8%
Occupation not indicated	1.5%	1.9%	1.8%	0.8%
Manufacturing	**1.5%**	**2.8%**	**1.8%**	**0.0%**
Writers, artists, entertainers, and athletes	1.5%	2.8%	1.8%	0.0%
Transportation, communication, and utilities	**5.6%**	**8.5%**	**5.5%**	**12.4%**
Executive, administrative, and managerial	1.0%	0.9%	0.6%	2.3%
Administrative support occupations, including clerical	0.5%	0.9%	0.6%	1.6%
Transportation and material moving occupations	3.6%	5.7%	3.6%	7.0%
Occupation not indicated	0.5%	0.9%	0.6%	1.6%
Retail trade	**5.1%**	**8.5%**	**6.1%**	**7.0%**
Executive, administrative, and managerial	2.5%	3.8%	3.0%	5.9%
Marketing and sales occupations	0.5%	0.9%	0.6%	0.4%
Service occupations	2.0%	3.8%	2.4%	0.7%

-continued-

Table 5-9.–Page 2 of 2.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Finance, insurance and real estate	**0.5%**	**0.9%**	**0.6%**	**0.4%**
Marketing and sales occupations	0.5%	0.9%	0.6%	0.4%
Services	**44.2%**	**50.0%**	**45.5%**	**34.8%**
Executive, administrative, and managerial	7.1%	11.3%	8.5%	11.1%
Social scientists, social workers, religious workers, and lawyers	2.5%	4.7%	3.0%	2.3%
Writers, artists, entertainers, and athletes	1.0%	0.9%	0.6%	0.0%
Health technologists and technicians	0.5%	0.9%	0.6%	0.2%
Technologists and technicians, except health	1.0%	1.9%	1.2%	3.0%
Marketing and sales occupations	2.0%	3.8%	2.4%	1.0%
Administrative support occupations, including clerical	7.1%	12.3%	8.5%	2.3%
Service occupations	5.6%	8.5%	6.7%	4.5%
Mechanics and repairers	1.0%	1.9%	1.2%	1.4%
Construction and extractive occupations	0.5%	0.9%	0.6%	0.4%
Production working occupations	0.5%	0.9%	0.6%	0.0%
Transportation and material moving occupations	3.6%	6.6%	4.2%	5.8%
Handlers, equipment cleaners, helpers, and laborers	4.6%	6.6%	4.8%	0.2%
Occupation not indicated	7.1%	7.5%	6.7%	2.4%
Industry not indicated	**2.0%**	**3.8%**	**2.4%**	**2.1%**
Executive, administrative, and managerial	1.0%	1.9%	1.2%	0.9%
Mechanics and repairers	0.5%	0.9%	0.6%	0.6%
Construction and extractive occupations	0.5%	0.9%	0.6%	0.6%

Source ADF&G Division of Subsistence household surveys, 2016.

Table 5-10.–Employment characteristics, Nenana, 2015.

Characteristic	Community Nenana
All adults	
Number	471.6
Mean weeks employed	29.5
Employed adults	
Number	325.2
Percentage	69.0%
Jobs	
Number	388.3
Mean	1.2
Minimum	1
Maximum	5
Months employed	
Mean	9.9
Minimum	1
Maximum	12
Percentage employed year-round	66.5%
Mean weeks employed	42.8
Households	
Number	243
Employed	
Number	203.7
Percentage	83.8%
Jobs per employed household	
Mean	1.9
Minimum	1
Maximum	8
Employed adults	
Mean	
Employed households	1.6
Total households	1.3
Minimum	1
Maximum	5
Mean person-weeks of employment	57.3

Source ADF&G Division of Subsistence household surveys, 2016.

Table 5-11.–Reported job schedules, Nenana, 2015.

Schedule	Jobs		Employed persons		Employed households	
	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	252.3	65.0%	234.6	72.1%	165.3	81.1%
Part-time	71.0	18.3%	67.0	20.6%	57.7	28.3%
Shift	15.8	4.1%	15.8	4.8%	11.5	5.7%
On-call (occasional)	33.5	8.6%	31.5	9.7%	28.8	14.2%
Part-time shift	2.0	0.5%	2.0	0.6%	1.9	0.9%
Schedule not reported	11.8	3.0%	9.9	3.0%	7.7	3.8%

Source ADF&G Division of Subsistence household surveys, 2016.

Food Security

Survey respondents were asked a set of questions intended to assess their household's food security, defined as, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2012). The food security questions were modeled after those developed by the U.S. Department of Agriculture (USDA) but modified by ADF&G to account for differences in access to subsistence and store-bought foods. Based on their responses to these questions, households were broadly categorized as being food secure or food insecure following a USDA protocol (Bickel et al. 2000). Food secure households were broken down further into 2 subcategories—high or marginal food security. Food insecure households were divided into 2 subcategories: low food security or very low food security.

Households with high food security did not report any food access problems or limitations. Households with marginal food security reported 1 or 2 instances of food access problems or limitations—typically anxiety over food sufficiency or a shortage of particular foods in the house—but gave little or no indication of changes in diets or food intake. Households with low food security reported reduced quality, variety, or desirability of their diet, but they, too, gave little indication of reduced food intake. Households classified as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen et al. 2012).

Core questions and responses from Nenana residents are summarized in Figure 5-29. Eight of the 10 statements listed in the figure are used to calculate a household's food security category. Sixteen percent of households worried they would not have enough food. Twenty-nine percent of households reported that once their wild or store-bought food ran out, they were unable to get more. Forty-one percent of households lacked the resources they needed to get food. Seven percent of households reported having at least 1 adult eat less than they felt they should because they did not have enough food. Other responses associated with low food security included households members who were hungry but did not eat (4%), household members

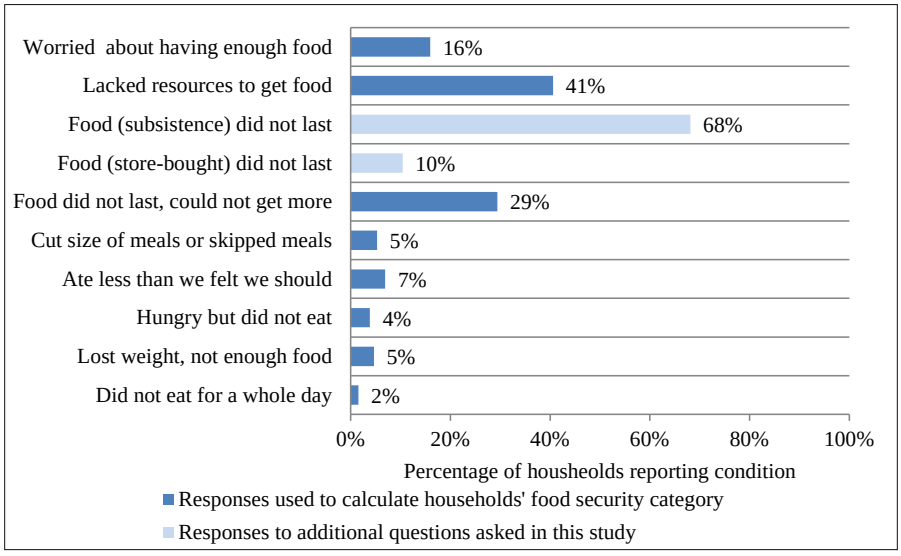


Figure 5-29.–Food insecure conditions, Nenana, 2015.

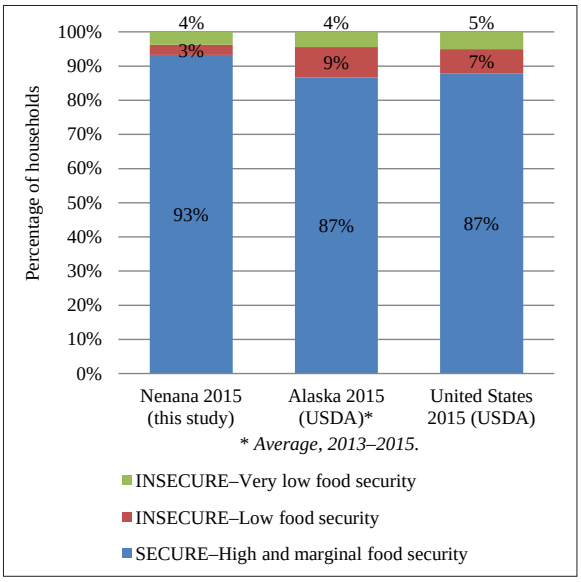


Figure 5-30.–Comparison of food security categories, Nenana, 2015.

who lost weight because they did not have enough food (5%), and those that did not eat for a whole day (2%). At least one Nenana resident expressed concern about the community's food security because of its relatively remote location and relative susceptibility to natural disaster,

> Our very existence might depend on at least partial subsistence if not total…For the first time I've been to Fred Meyers [in Fairbanks] and the shelves were empty. I've never seen that before. That happened this winter…They said, well, 3 barges couldn't make it…to me this hints of what is potentially possible in the future. (032416ENN04)

Food security results for surveys for Nenana, the state of Alaska, and the United States are summarized in Figure 5-30. Ninety-three percent of households were included in the high and marginal food security categories during the study year, a higher percentage than all Alaska or the United States (both 87%). Three percent of households were considered to have low food security in 2015, and the remaining 4% were in the very low food security category. The percentage of households in the very low food security category is similar to Alaska (4%) and the rest of the United States (5%).

Figure 5-31 portrays the mean number of food insecure conditions per household by food security category by month. As discussed previously, subsistence harvests occur year round based on the seasonal availability of wild resources. The availability of wild resources fluctuates throughout the year and may affect the month to month food security of households participating in subsistence activities.

Households with high and marginal food security (shown in blue) reported, on average, less than 1 food insecure condition throughout the entire year. For households with very low food security, the summer months provided a reduction in food insecure conditions, down from an average of 5 in March through May to 3 for June, July, and August. However, in winter months, household responses from the very low food security group fluctuated from month to month, ranging from more than 6 insecure conditions in January to 3 in December. The increase in subsistence activities in warmer months, including spring bird hunting, summer salmon fishing, and fall moose hunting may explain why households with very low food security experienced a reduction in the number of food insecure conditions during these months. Low food secure households (shown in red) experienced much less variability throughout the year. These households experienced an average of 2 insecure conditions throughout the entire year, except in March, April, and May when they experienced an average of 3.

Figure 5-32 shows the months in which households reported their food did not last. More households reported running out of subsistence foods (shown in red) in each month of the year than store-bought foods. The highest percentage of households ran out of subsistence foods in January, February, March and December (all 19%). Households ran out of store-bought foods most often in January, September, and November, when 3% of households reported this condition.

Harvesting and Processing Networks

Although subsistence harvest surveys collect information from individual households, in reality, most households produce (harvest and process) subsistence foods in cooperation with other households. This cooperation often resembles traditional Alaska Native kinship systems. The organization of the contemporary mixed market–subsistence economies predominant in rural Alaska has been documented ethnographically

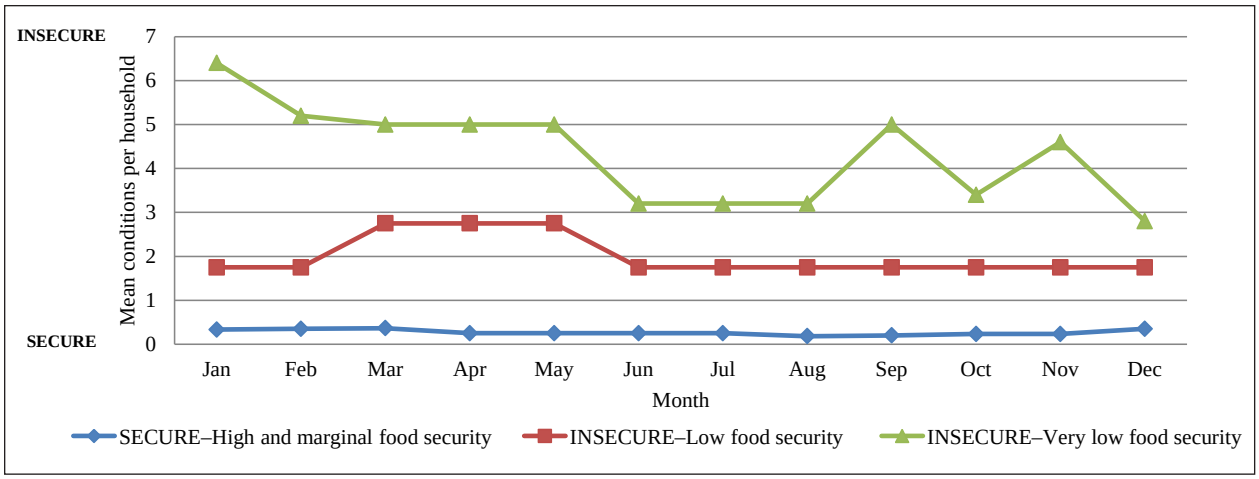


Figure 5-31.–Food insecure conditions by month and by household security category, Nenana, 2015.

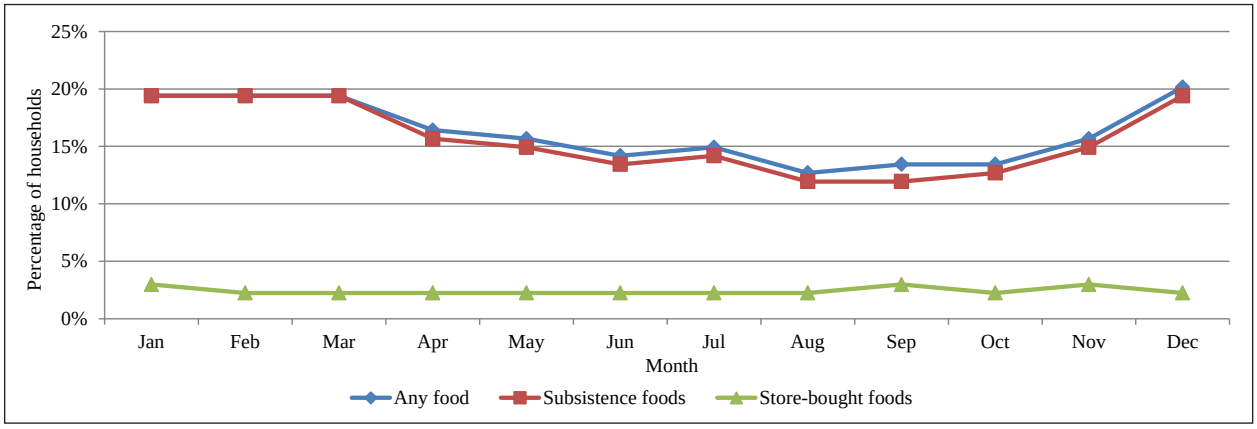


Figure 5-32.–Comparison of months when foods did not last, Nenana, 2015.

by numerous researchers. Of particular interest for Interior Alaska are reports from Shinkwin and Case (1984), Nelson (1983), McKennan (1959), Andrews (1977), Brown et al. (2015), Wolfe and Walker (1987), Wolfe and Ellanna (1983), and Fall (1990).

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

In Nenana, 132 households provided network information on the survey. Households were characterized by their ethnicity[6], maturity[7], total income[8], and total harvest[9] in order to explore the potential influence of these factors on patterns in the network. Of the surveyed households, 58% had non-Native heads of household, and 41% had at least 1 head of household who identified as Native. There were equal numbers of "mature" and "elder" households (each accounted for 44% of respondents), but only 11% were classified as "developing" households. Thirty-six percent of surveyed households reported their total income as less than $50,000, 41% had reported total income between $50,000 and $100,000, and 23% reported income greater than $100,000. Surveyed households that provided network data were divided into 4 categories based on their total harvest in pounds: 23% reported no harvest, 57% harvested less than 274 lb (the average harvest for Nenana households that provided network information), 14% harvested the average harvest or within 1 standard deviation above the average (274–1065 lb), and 5% of households reported a harvest greater than 1 standard deviation above the average (>1065 lb).

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

Inflow

In network terms, the resources and services[10] entering a household can be referred to collectively as "inflow." In Nenana, respondents were asked about 2 general types of inflow: self-provisioning and social provisioning. Self-provisioning refers to production by the members of a respondent household for their own household, and social provisioning refers to production by and distribution from members of other households for the respondent household. For 13 different subsistence resources and 4 types of market resources, respondents were asked about the types of support their household received.[11] A total of 2,440

6. A household was considered "Native" if at least 1 head of household self-identified as Native.
7. Following Wolfe et al. (2009), "developing" households were those with heads 39 years old or younger, "mature" households had heads 40 to 59 years of age, and "elder" households had heads 60 years old or older.
8. Total income was divided into 3 categories: less than $50,000; $50,000 to $100,000; and greater than $100,000.
9. Four harvest categories were calculated using standard deviations (SD) from the mean household harvest (274 lb) for households in the Nenana network: 1) No harvest; 2) Less than 274 lb; 3) 274 to 1,065 lb (mean to within 1 SD), and 4) > 1065 lb (harvest greater than 1 SD from the mean).
10. These exchanges may be subsistence resources (e.g., salmon or moose), market resources (e.g., expenses or equipment) , or services (labor, i.e., harvesting or processing of subsistence foods).
11. Subsistence resources included salmon, whitefishes, other nonsalmon fish, moose, caribou, small land mammals, whales, seals, birds, eggs, marine invertebrates, edible plants, and firewood. Market resources included equipment, subsistence expenses, household expenses, and groceries.

inflow ties[12] were reported; of which 67% were self-provisioning ties and 33% were social provisioning ties. A tie indicates that support was provided, but it does not specify how much support was given.

Self Provisioning

Individual participation in harvesting and processing in Nenana was previously described in Figure 5-5 and Appendix Table D5-4, but network questions asked about additional roles that individuals may have fulfilled. For each of the 13 resource categories, respondents were asked to indicate who within their household harvested or processed resources, or received shares of resources for helping others. They also were asked who paid for groceries, household expenses, and subsistence expenses, and who owned equipment within their household (collectively, "market resources"). Thus an individual could provide support to their household in 43 different ways[13]. Respondents reported 1,639 self-provisioning ties[14] from 257 individuals, an average of 2 individuals per household (range 0–9).

More individuals were harvesters and processors than providers of financial support or equipment. For all subsistence categories except one, more individuals processed resources than harvested them. The exception was berries, where individuals of all ages can and usually do participate in picking berries. Respondents reported 41 individuals who received shares for helping others harvest or process; this type of support accounted for only 3% of self-provisioning ties overall. Of these limited "receiving for helping" ties, moose was the resource most frequently received for helping others. Almost equal numbers of individuals bought groceries and paid for household expenses such as utilities. Similarly, nearly the same number of individuals owned subsistence equipment and paid for subsistence expenses such as fuel or ammunition. However, more individuals bought groceries or paid for household expenses than owned equipment or paid for subsistence expenses.

The average number of individuals providing support within households did not vary by ethnicity, maturity, or income, but support from individuals did vary by harvest amount. The higher a household's harvest, the more individuals provided support within the household. Households with no reported harvest had an average of 1 individual providing support within their households. This number increased to 2 individuals for households with total harvests of less than 274 lb and to an average of 3 individuals in households who harvested more than the community average.

The number of self-provisioning ties a household reported varied widely based on household characteristics. On average, Native households reported 17 self-provisioning ties per household and non-Native households reported 10. Mature households had the greatest number of self-provisioning ties (15), elder households had slightly fewer (12), and developing households had the fewest (7). The average number of self-provisioning ties in households that reported less than $100,000 in total income ranged from 11 to 12, but the number of self-provisioning ties increased to 17 in households with income greater than $100,000. The biggest differences in numbers of total self-provisioning ties were between households with varying harvest levels. Households that harvested the most had significantly greater numbers of self-support ties (23–30) than those with smaller harvests (5–12), clearly highlighting the increase in participation and effort needed to achieve high harvest levels.

Social Provisioning

Respondents were asked whether people residing in other Nenana households or other communities harvested, processed, and gave them resources, as well as who bartered or traded resources with them They were also asked whether other people provided 4 types of financial support or equipment. Thus, 5 potential relations that could exist between a provider (or "source") and a receiver (or "sink") for each of the 13 resource categories plus an additional 4 market resources (a total of 69 potential ties between each source

12. A tie is an instance of support. There can be multiple ties between each household in the network because the survey queried multiple types of support (or relations) between households for multiple resource categories.
13. No households reported self-provisioning (i.e., harvesting or processing) of seals or whales.
14. Self-provisioning ties are not visible on network diagrams because they are essentially a household's ties to itself.

and sink). In Nenana, 104 households reported receiving support from 138 providers, including 83 Nenana households[15] and households in 55 other communities.

Surveyed households identified a total of 801 social-provisioning ties, or instances that they received support through a particular relation for a particular resource . They most commonly reported that others had given them a resource (429 times), however, they also reported that other households had harvested (130) or processed (164) a resource for them. Higher instances of giving may have been reported because respondents were more likely to know from which household or community they received a resource than who harvested or processed it, especially if they received it through a potlatch or other event. As in other rural Alaska communities where network questions have been asked, few barter and trade relations were reported (43 and 21 times respectively). The social provisioning of market resources, such as cash for household expenses or equipement, were extremely limited: only 14 ties were reported.

Figure 5-33 depicts the inflow of wild foods and commodities to households in Nenana[16]. The figure is a partial representation of sharing, trade, and barter in the study year because it only documents the food flows into the households who reported support from others. Colors show the ethnicity of heads of household and symbol size is scaled to indicate the amount of a household's subsistence harvest in 2015 by usable weight. Lines connect cooperative households; an arrow shows the direction of flow from the provider to the recipient, and the line width represents total number of ties between each source and sink household. Households or communities near the center of the figure were the most active in the network—either by receiving resources or services from others, or being identified as a provider by other surveyed households. The households aligned vertically in the upper left are not connected to any other households; they reported only self provisioning, and no inflow from other households or communities. There are a total of 7 components[17] in the inflow network, including the large unit in the center and the 6 smaller components arranged around the periphery.

Ties between Nenana households accounted for 55% of the social provisioning ties, and households in other communities provided the remaining 45%. Fifty-two percent of surveyed households received support from other communities. Of the social-provisioning ties to other communities, 58% were to communities in the Interior region, 20% were to communities in Southcentral Alaska, 19% were divided throughout other regions of Alaska, and 3% were to places outside of Alaska. Fairbanks was the only other community situated in the center of the network diagram, indicating strong ties between Nenana and Fairbanks households. Twenty percent of ties to other communities were to Fairbanks; Anchorage was the next most frequently named community, accounting for 7% of ties to other communities. Nenana residents most often received salmon, other nonsalmon fish, and moose from other communities. Nenana's location along the road system and the community's history as a crossroad for various populations may have contributed to the large number of connections households have to other communities in comparison with previously studied communities off the road system.

Surveyed households averaged 8 social-provisioning ties; Native households had an average of 10 ties and non-Native households had an average of 6. There were more than 5 times as many social-provisioning ties between households that each had Native heads of households than between households that each had non-Native heads of household. There was also a higher number of ties between Native and non-Native households than between households that were both non-Native. Native households were more likely to receive support from other communities.

The resource categories for which both Native and non-Native Nenana households reported the most social-provisioning ties were salmon, moose, and other fish. The largest differences in the amount of support

15. If a source household could not be identified from the community maps or if respondents reported receiving a resource from a potlatch or other event, then the source was coded as "unknown Nenana." Unknown Nenana was reported as a source of social provisioning 40 times for 9 different resource categories.
16. It is possible to include data from grey nodes in the network analysis because survey respondents described their connections to these unsurveyed households.
17. Groups of households with connections to one another, but not with other households in the population.

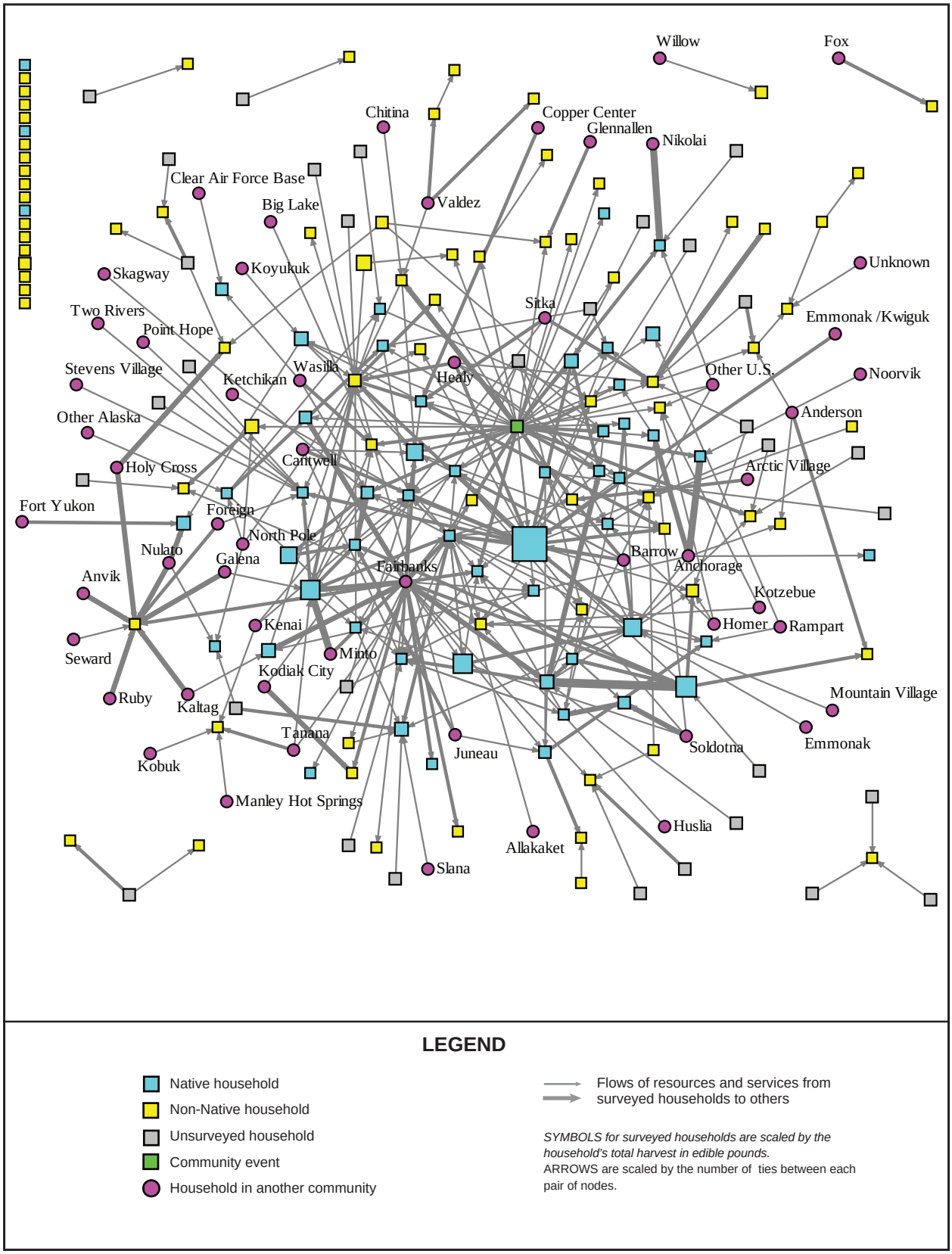


Figure 5-33.–Inflow of resources and services to surveyed households, Nenana, 2015.

received between Native and non-Native households were for birds, salmon, small land mammals, edible plants, and whales; Native households reported more ties for each of these resources. Few non-Native households received birds, small land mammals, whales, or seals; and none received eggs. Overall, few households received support for expenses or equipment. Non-Native households received slightly more support for equipment and subsistence expenses than Native households, but they received similar amounts of support for household expenses and groceries.

Households that did not harvest any resources had the lowest average number of ties per household (5), and the highest harvesting households averaged the most incoming ties (15). High harvesting households reported that 65% of their social provisioning ties were from other communities, but for all other households the percent of ties to other communities was 42–43%. Some households that did not harvest were still sources of support for others; they may have shared resources from a previous year's harvest or resources that they received from others.

Among surveyed households, mature households reported receiving the most social provisioning and were also named by others as the most common provider of social provisioning. Elder households both received and provided more social provisioning than developing households, and they were more likely to support mature households than other elder households or developing households. No developing households received support from each other.

On average, households with higher incomes (more than $100,000) tended to receive more support than those with middle ($50,000–$100,000) or lower (less than $50,000) incomes. Among surveyed households, middle income households were named the most often as providers of support. Higher income households received more support from outside Nenana and less support from within the community than middle or lower income households.

Figure 5-34 compares the support that surveyed households received for moose, salmon, other nonsalmon fish, and market resources. In these diagrams, symbol size for the subsistence resource networks are scaled to indicate the amount of the resource that a household harvested in 2015. Lines are weighted to show the total number of ties between households only for the resource of interest, and arrows show the direction of flow from the provider to the recipient. The number of ties in the subsistence resource networks is substantially greater than that in the market resource networks. Only 9% of households that reported support from others did so for market resource relations, and most of this support came from other communities. In each of the 3 subsistence networks there is a large central component where many households are connected to each other, as well as several dyads[18] and small groups that are not connected to the larger component. The majority of social-provisioning ties for moose and salmon were from within the community, but for other fish (nonsalmon fish except whitefishes) and for market resources, most support came from other communities. Native households had more support for moose from other communities than non-Native households did. For other fish, both Native and non-Native households received most of their support from other communities, although non-Native households received a greater percentage from other communities than Native households did. Both Native and non-Native households received most of their salmon support from within Nenana.

Outflow

In network terms, the resources and services leaving a household can be referred to collectively as "outflow." In Nenana, respondents were asked to indicate to which households they provided fish, game, berries or greens, and equipment. They were also asked if they provided these resources to potlatches, holiday feasts, or other events. All outflows are considered "sharing" because the survey did not ask about other relations such as harvesting or processing. Figure 5-35 depicts all outgoing ties reported by Nenana households. Overall, 77 surveyed households reported 316 ties to others in the outflow network. Respondents primarily provided support to other Nenana households (38% of outflow ties) and to events (38%), but about one-

18. Two households connected only to each other.

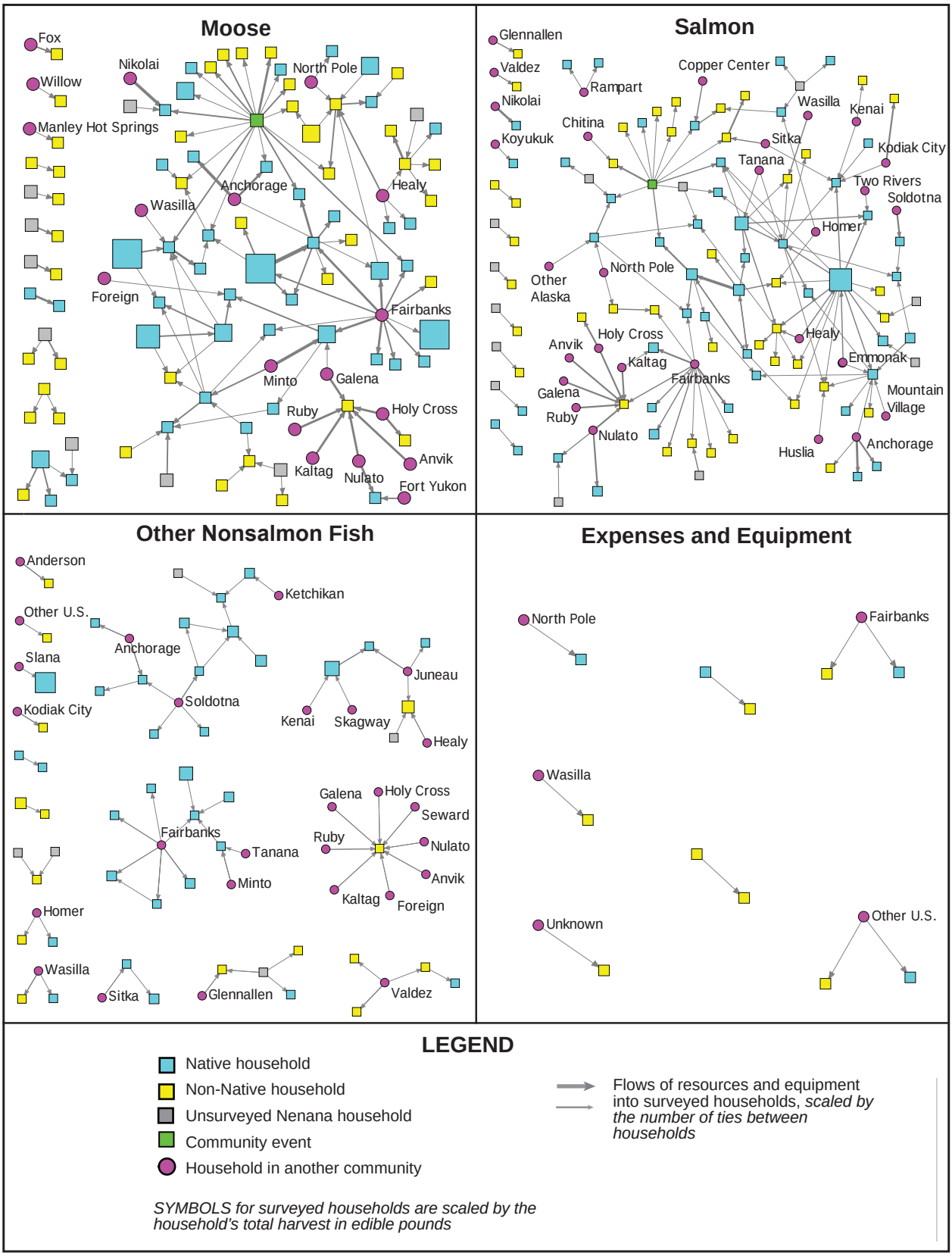


Figure 5-34.–Comparison of inflow patterns for moose, salmon, other nonsalmon fish, and expenses and equipment, Nenana, 2015.

quarter of outflow ties were to other communities (24%). Nenana households provided more instances of support to Fairbanks households than to any other community (65% of other community ties).

On average, mature households had 5 outflow ties and elder households had 4, but developing households only averaged 1 tie per household. Overall, mature households provided the most support to other households in Nenana as well as to other communities, but elder households provided the most support to community events, especially potlatches.

Among the surveyed households, the number of outflow ties was correlated with income. Households whose total income was over $100,000 averaged 5 ties, those whose income was between $50,000 and $100,000 averaged 4, and those whose income was below $50,000 averaged 3.

The number of outflow ties was also correlated with total household harvest. High harvesting households reported an average of 11 ties, which was over twice as many ties as mid-level harvesters and almost 4 times as many as low harvesters. Households with no harvest reported very little outflow.

Native households had an average of 6 outflow ties per household: 3 times as many outflow ties as non-Native households, which had an average of 2. Overall, Native households reported 81% of all outflow ties in Nenana. Figure 5-36 depicts outflows in Nenana with nodes grouped by ethnicity and unsurveyed households removed. This diagram shows that Native households had more ties to potlatches, holiday feasts, other events, and other communities than non-Native households. Forty-one percent of Native households' outflow ties were to community events, and 25% were to other communities. Non-Native households had comparatively few ties to community events. Similar to the patterns seen in the inflow network, there was a greater concentration of ties between Native households and between Native and non-Native households than between non-Native households alone. Fish was the most commonly given resource overall, followed by game and edible plants. Households shared equipment with others much less frequently than they shared resources. Both Native and non-Native households most often provided fish to others, but the second most commonly provided resource varied by household ethnicity. Native households shared game, and non-Native households shared edible plants.

Comparing Harvests and Uses in 2015 with Previous Years

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they used more, less, or about the same amount of 8 resource categories in 2015 as in the past 5 years, and whether they got "enough" of each of the 8 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. They were further asked whether they did anything differently (such as supplement with store-bought food or switch to a different subsistence resource) because they did not get enough. This section discusses responses to those questions.

Together, Figure 5-37 and Figure 5-38 provide a broad overview of households' assessments of their harvests in 2015. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer the questions. Appendix Table D5-12 provides additional data to support Figure 5-38.

Figure 5-37 shows the percentages of households that reported whether they got enough of each resource category. More than half of all responding households reported they got enough wild foods (56%). Thirty-one percent said they did not. Forty-eight percent of households reported that they used less wild resources in 2015 than they did in recent years (Figure 5-38). Only 6% of households said that they used more wild resources than in recent years.

Forty-three percent of responding households reported using less salmon, a primary resource (Figure 5-38). Thirty-seven percent indicated that they did not get enough salmon (Figure 5-37). When asked why they used less salmon, 14% of households cited family and personal reasons that conflicted with salmon fishing,

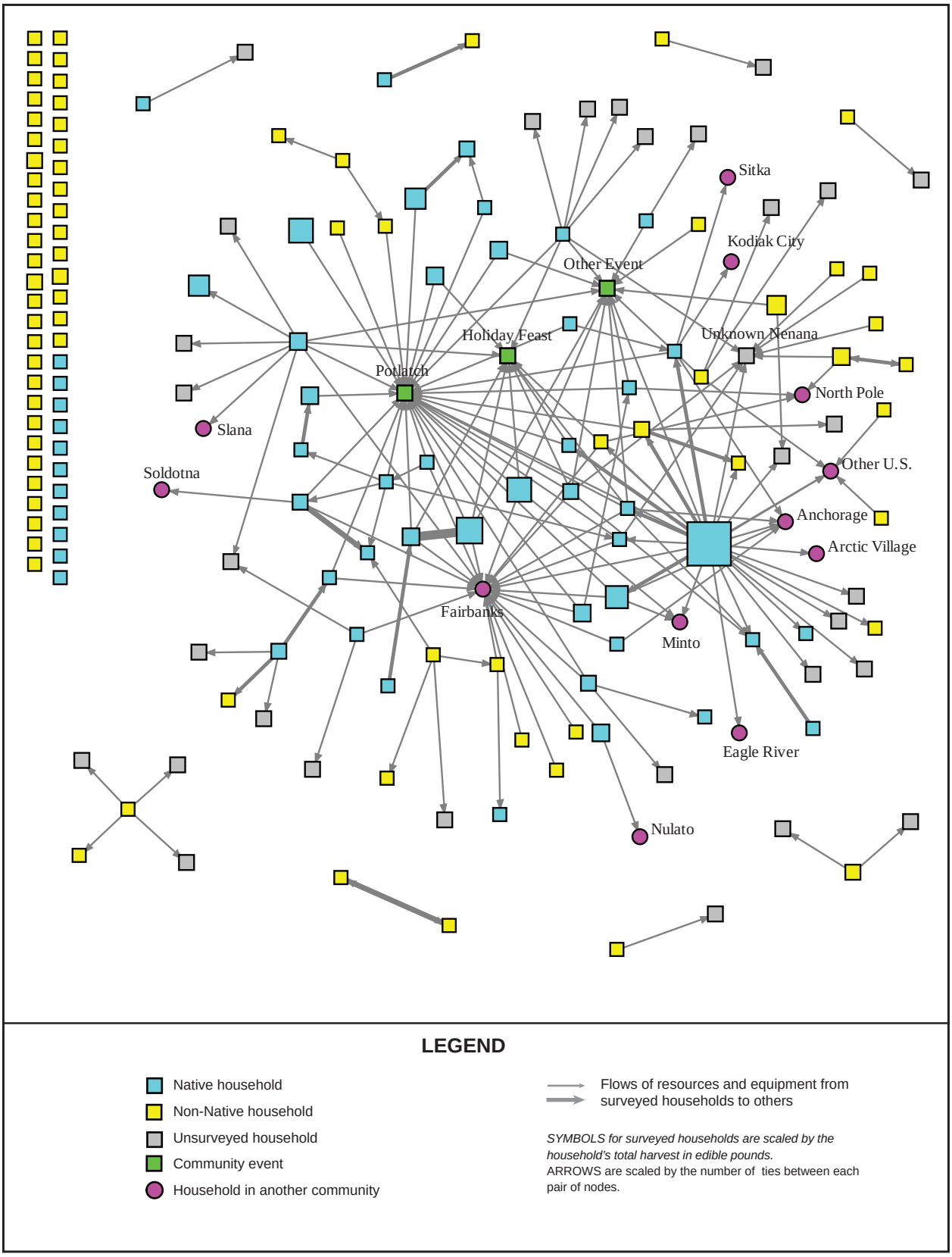


Figure 5-35.–Outflow of resources and equipment from surveyed households, Nenana, 2015.

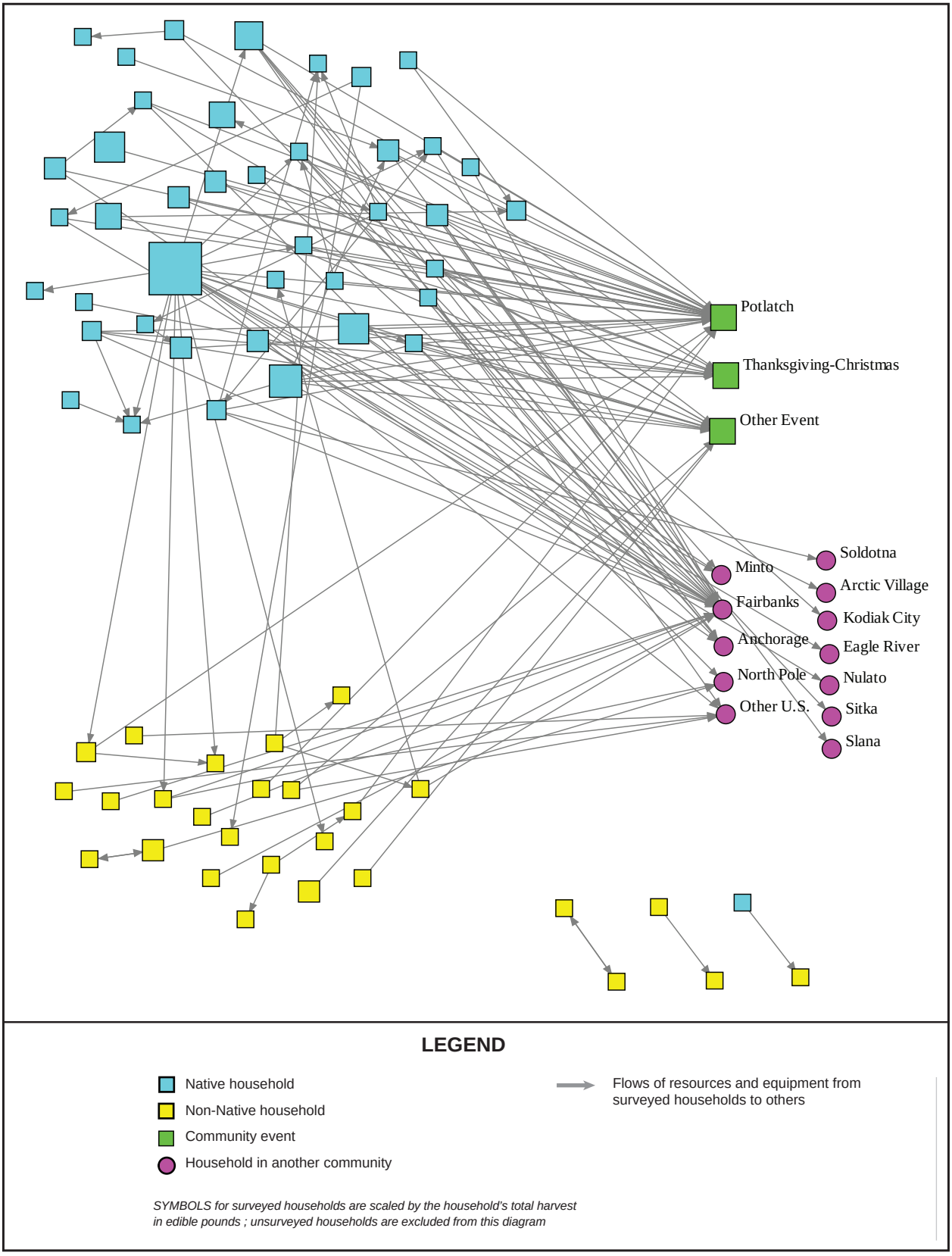


Figure 5-36.–Outflow of resources and equipment from surveyed Native and non-Native households to community events and to households in other communities, Nenana, 2015.

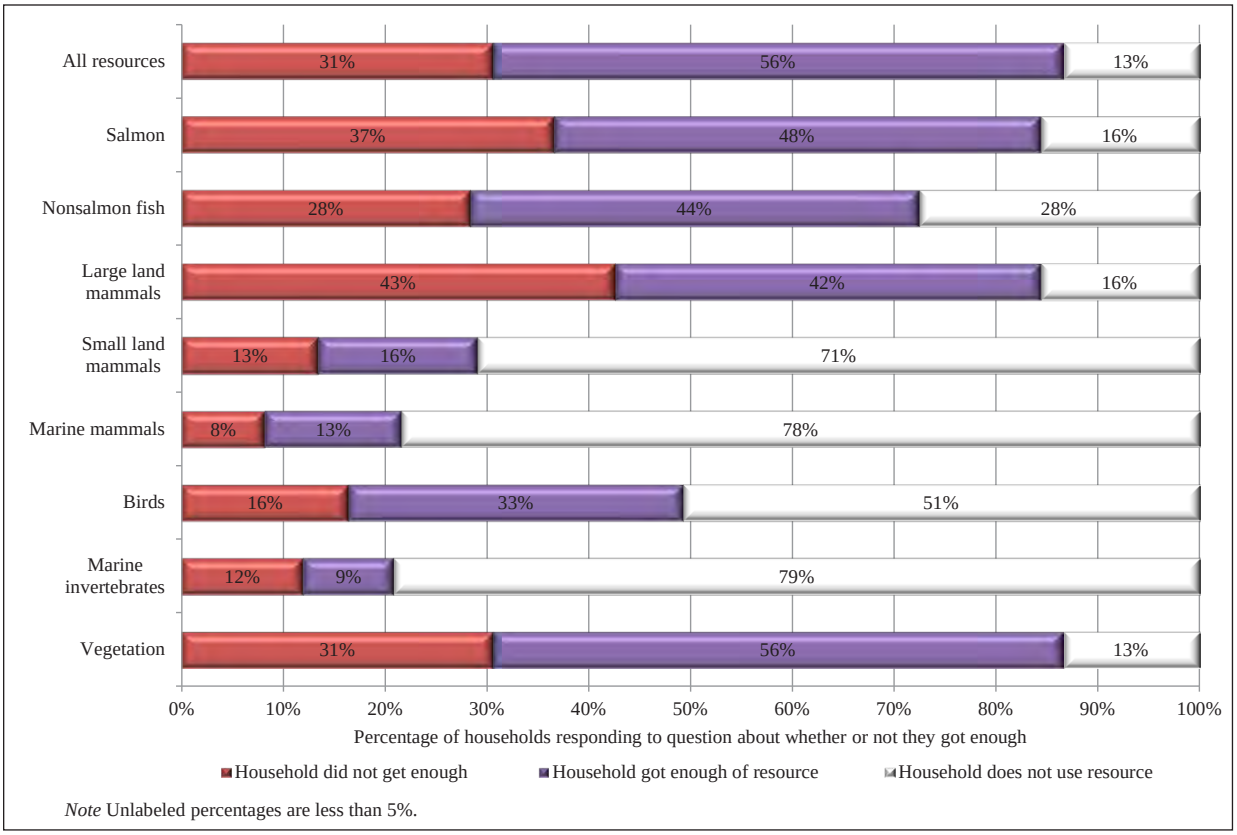


Figure 5-37.–Percentages of households reporting whether they got enough resources, Nenana, 2015.

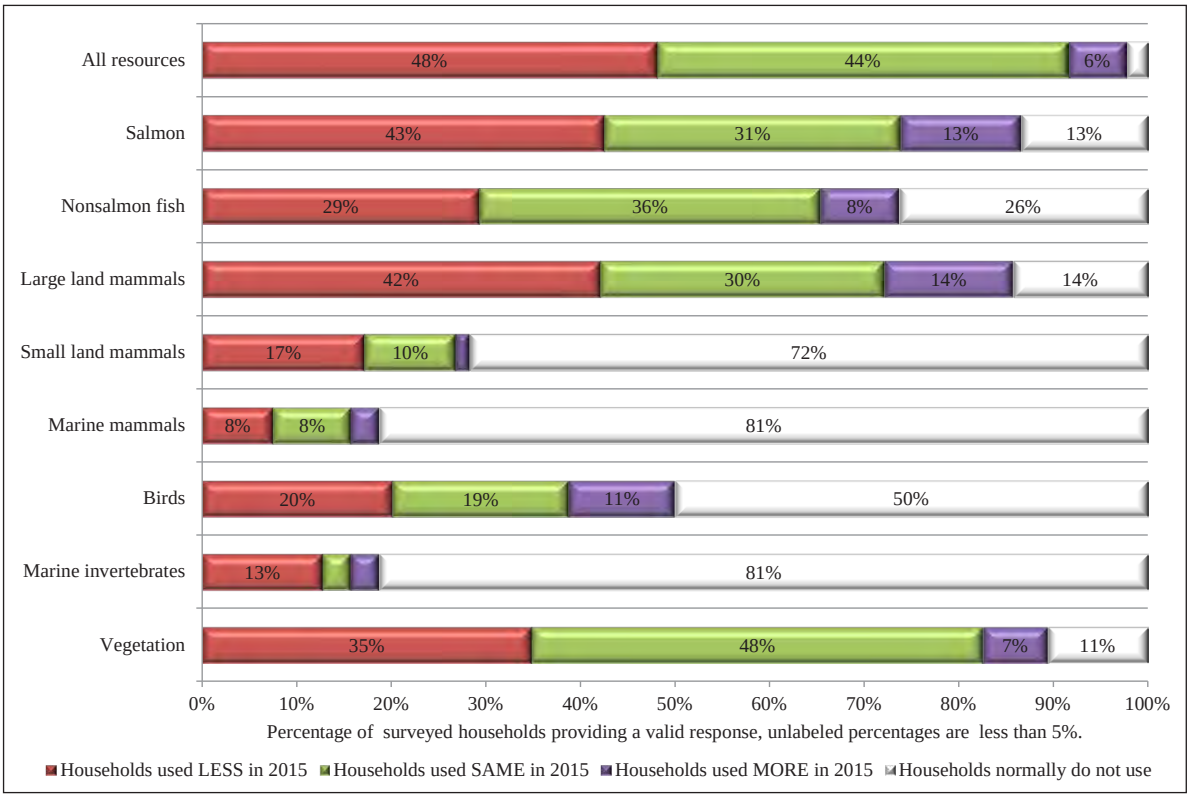


Figure 5-38.–Changes in household uses of resources compared to recent years, Nenana, 2015.

and 28% of households specified that they did not put in enough effort to catch salmon (Table D5-13). Other reasons including working or having limited time to fish (25%) and regulations (19%) were also cited. Twelve percent of respondents specified they needed more Chinook salmon (Table D5-14). When asked to evaluate the impact of not getting enough salmon, 39% described a minor impact, 41% described a major one, and 6% reported that members of the household felt a severe impact.

Large land mammals, used by 78% of households, also had a high percentage of households indicating they did not get enough (figures 5-8 and 5-37). Forty-three percent of responding households did not get enough large land mammals in 2015, more than any other resource category. Additionally, 42% of households reported that they used less large land mammals in 2015 than in recent years (Figure 5-38). Almost half (46%) of households specified that they needed more moose. Nine percent indicated that they needed more caribou (Table D5-14). Unsuccessful hunting (28%), less sharing (22%), and limited time to hunt because of employment (20%) were the most common reasons that Nenana residents used fewer large land mammals than in recent years (Table D5-13).

With the exception of large land mammals and marine invertebrates, the percentage of respondents getting enough of each resource category was higher than those that did not (Figure 5-37). For example, more people reported using less salmon in recent years than using the same or more, but 48% of respondents still felt they got enough salmon in 2015 (figures 5-37 and 5-38). Of the households that used more salmon, 44% credited receiving more from others as the reason for their increased use (Table D5-16). Overall, the same is true for all resources (67% used more because they received more from others). Sharing, or the lack thereof, can have a significant impact on whether households use more or less of a resource and whether they get enough of that resource.

Harvest Data

Changes in the harvest of resources by Nenana residents can also be discerned through comparisons with findings from other study years. ADF&G staff conducted a comprehensive subsistence harvest survey in 1982 (Shinkwin and Case 1984) and a partial subsistence survey in 2004[19]. Although Shinkwin and Case (1984) did conclude that residents continued to use multiple wild resources for subsistence and that this use remained extremely important in the "maintenance of household economies," the quantitative results of the 1982 study in terms of harvest quantities are largely not comparable to this study for methodological reasons (Shinkwin and Case 1984:5). Shinkwin and Case relied on systematic interviews and household surveys for data collection, however they only collected data from households in Nenana with Alaska Native residents to represent "Nenana Village" rather than the community at large (Shinkwin and Case 1984:9–10). For the 1982 study, researchers documented the population of Nenana Village to be 234 individuals in 76 households. As noted earlier, this study estimated the 2015 Alaska Native population of Nenana to be 203 individuals in 102 households, about 35% of the entire population (Table 5-2). Because of the difference in sampling households between the 2 studies, it is impossible to make useful comparsions between the datasets.

The 2004 study does provide a few comparable data points. This survey effort included questions about the nonsalmon, large land mammals, and small land mammals resource categories. In 2004, Nenana residents harvested almost 10 lb per capita of nonsalmon fish species (4,738 lb), 85 lb per capita of large land mammal species (41,134 lb), and nealy 4 lb per capita of small land mammal species (1,818 lb) (Figure 5-39). In comparison, they harvested 13 lb per capita of nonsalmon fish (7,796 lb total), 37 lb per capita of large land mammals (21,656 lb total), and 2 lb per capita of small land mammals (1,327 lb total) in 2015. The most notable decline between the 2 study years is in the large land mammal harvest, largely resulting from a decrease in the moose harvest from 40,213 lb in 2002 to 20,488 lb in 2015. Although moose accounts for roughly the same percentage of the large land mammal harvest between 2004 and 2015 (98% and 95%, respectively), the harvest in 2015 represents a 58% decline from 2004 per capita harvests (83 lb to 35 lb). Comparisons between 2 points in time should be made with caution, because the difference between 2 points does not always represent a trend; however, it is notable that this time period coincides

19. ADF&G CSIS.

with that of the management actions aimed to reduce the moose harvest in the area. Also, between the 2004 and 2015 data points, the nonsalmon fish harvests increased, largely as a result of a doubled Arctic grayling harvest and more modest increases in burbot and humpback whitefish. The harvest of small land mammals remained approximately the same (4 lb per capita or 1,818 total in 2004 and 2 lb per capita or 1,327 total in 2015), and beaver harvests were the largest contributor in both years to the overall small land mammal harvests by weight.

Other datasets also provide useful comparisons to the 2015 data. Since 1988, ADF&G Division of Commercial Fisheries has documented the harvest of subsistence salmon by communities in the Yukon River drainage, including Nenana. These data are largely collected through permits. Copper River harvest data are collected by ADF&G through permits. Figures 5-40 and 5-41 show Nenana fishers' total salmon harvests by species through time, including this study. In 2015, Nenana fishers reported large harvests of fall chum and coho salmon, which migrate together in the Yukon and Tanana rivers (Figure 5-40). However, these harvests represent an overall decline over the last 10 years in harvests of these 2 salmon species. According to one respondent,

> My, there used to be, every bend used to be fish wheel, from here all the way up to Wood River. And from here all the way down to Manley. And we went down there about a year ago, we didn't see nothing. Not one fish wheel except for down here at Two-Mile Camp. (102716ENN07)

Nenana fishers also reported slightly lower harvests of Chinook salmon, likely from the Yukon River, and sockeye salmon, likely from the Copper River and Upper Cook Inlet personal use fisheries (Figure 5-41). Harvests of Chinook salmon also represent an overall decline consistent with the decline of Chinook salmon runs and conservative management in the Yukon Area. However, harvests of sockeye salmon appear to be increasing; this may represent a shift in salmon fishing patterns by Nenana residents resulting from a variety of factors including fewer dog teams being kept by Nenana residents (and thus less need for fall salmon fishing), targeting more available species over Chinook salmon despite the distance traveled, or a shift in taste for sockeye salmon over chum salmon.

Current and Historical Harvest Areas

The documentation of use areas by Nenana residents over time also provides some useful comparsions. Maps of use areas by species or resource category were produced for the 1982 and 2015 harvest data.

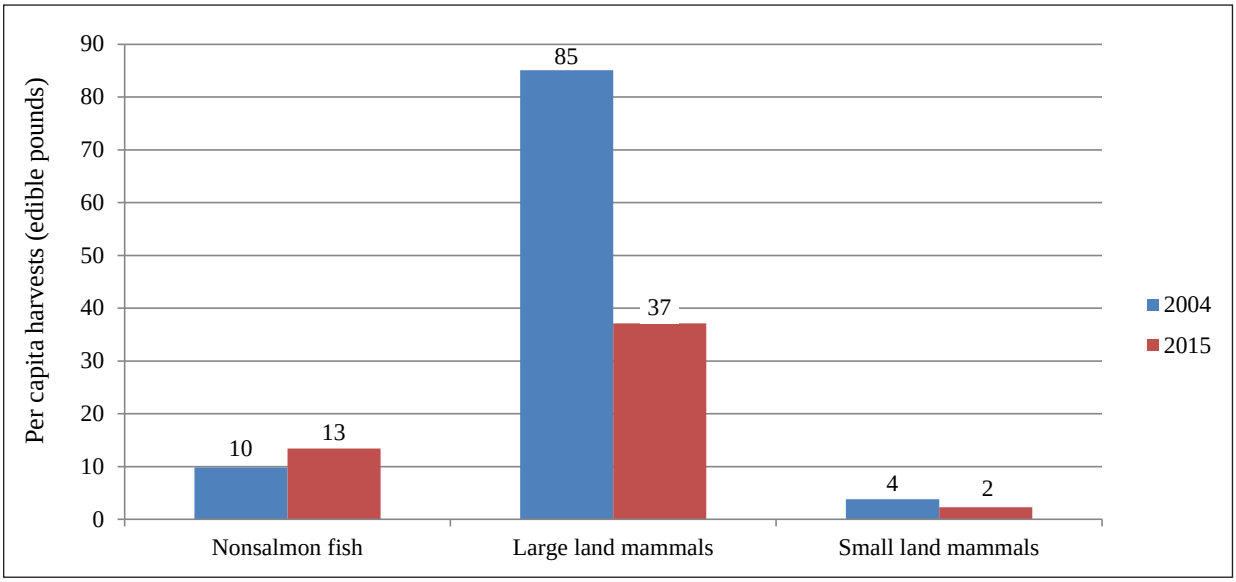


Figure 5-39.–Per capita harvests of nonsalmon fish, large land mammals, and small land mammals, Nenana, 2004 and 2015.

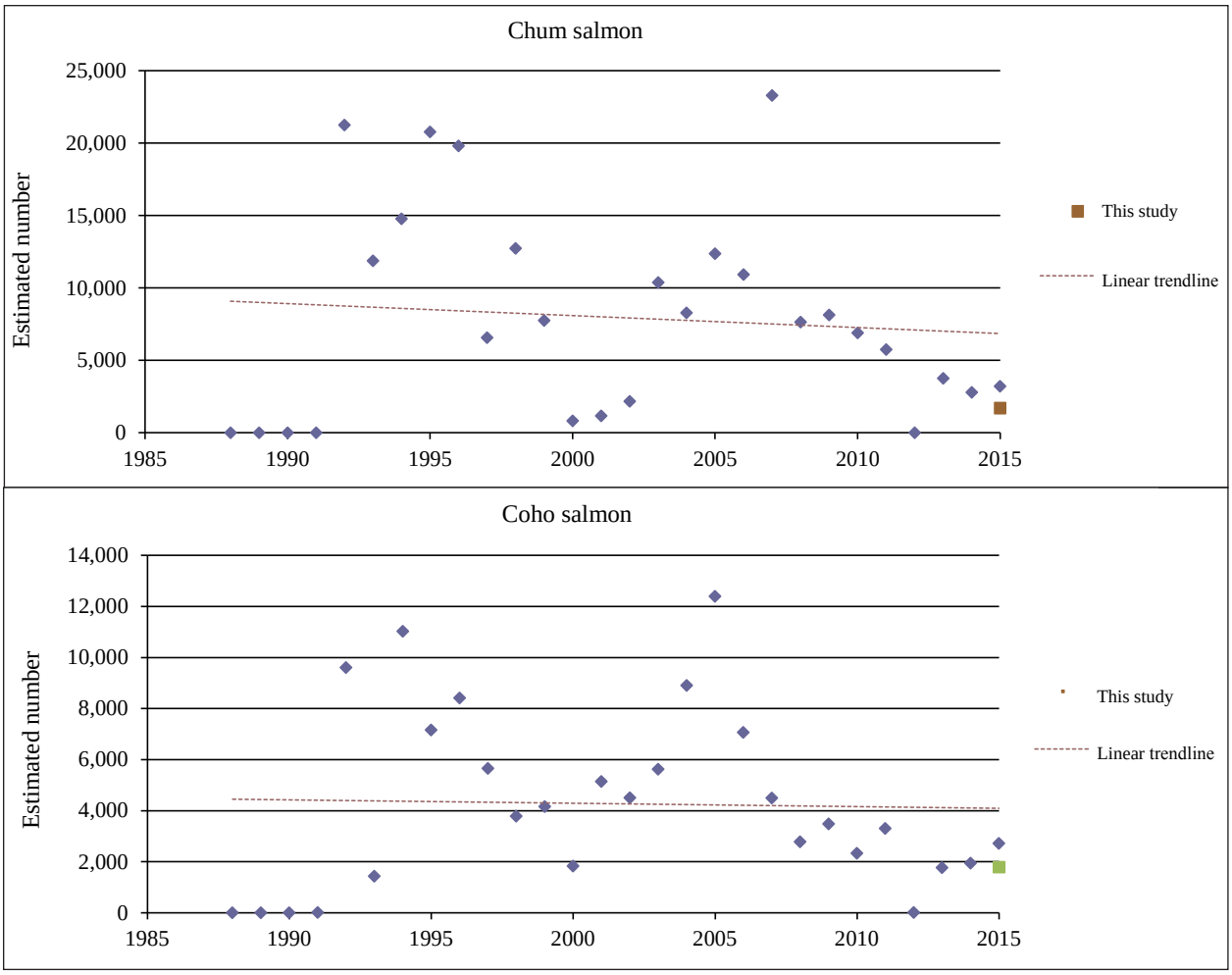


Figure 5-40.–Estimated harvests of chum and coho salmon, Nenana 1988–2015.

However, none of these sets of maps provide comprehensive depictions of the use areas for Nenana in their respective study years, because they are all aggregations of use areas by surveyed households only, and none of these studies surveyed all households. The total use areas documented in 1982 (for study year 1981–1982) and 2015 are similar with 2 important differences. First, the 1982 use area extends up the Kantishna, Nenana, Tolovana, Chatanika, and Wood rivers, but the 2015 maps do not show uses in these areas. Second, the 2015 maps document use areas in places much farther away from Nenana than the 1982 maps, including the Kenai Peninsula, Chitina, and areas north of Minto on the Yukon River and north of the Steese Highway. Looking at specific resources, the first difference appears to be explained by changes to moose hunting areas, which do not extend nearly as far up the Kantishna, Nenana, Tolovana, Chatanika, and Wood rivers in 2015 as they did in 1982. Waterfowl hunting areas are also more constrained in 2015 and do not extend in to the Kantishna area as they did in 1982.

Local Comments and Concerns

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

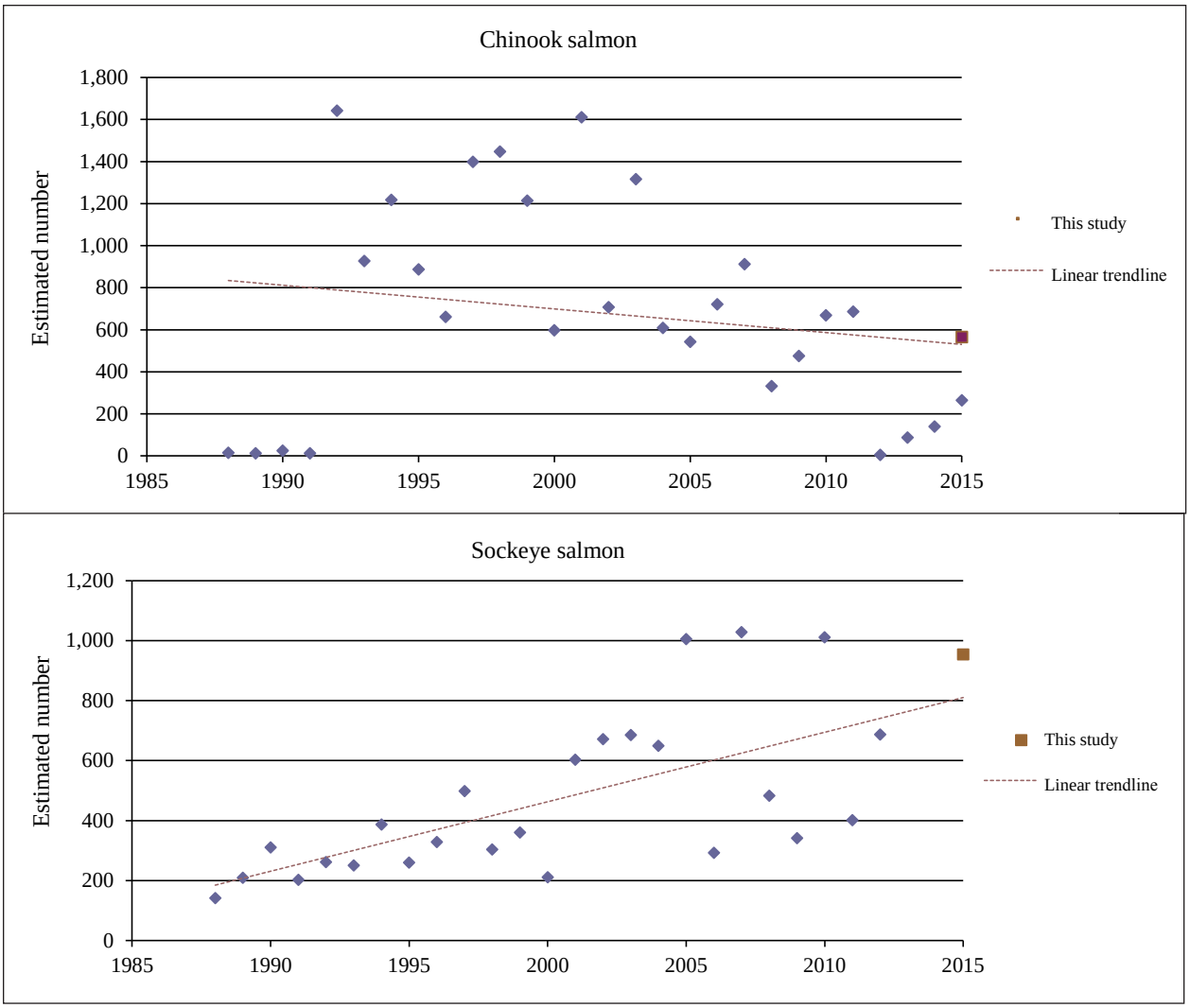


Figure 5-41.–Estimated harvests of Chinook and sockeye salmon, Nenana, 1988–2015.

Regulations

One Nenana resident provided a particularly eloquent statement about how subsistence is locally understood and legally defined, and how those definitions affect the practice of subsistence on the community level. He describes a situation where the regulatory structure is not always well understood locally, making community residents unsure of the legality of their sincere efforts to support their families and communities off the land.

> Well, what I think is important is that…it goes beyond, numbers. You ask people who is currently living subsistence and it's going to be a number, but there's a lot of people who believe in subsistence, who'd like to live subsistence who are, um, not encouraged, or [are] nervous about it. They're worried that the laws are unclear, they're not sure quite what their rights are, and they're backed away. But their heart is in it and if they knew they had a go-ahead, they'd love to go out and harvest wild things and live more of a subsistence lifestyle, but they're, but a lot of it is the legal issues. You study the big thick book on moose hunting for example and, you know, are you on this side of the river or that side of the river and what if you shoot one and the moose swims across to the other side. And have you heard

> the story of so and so and how he lost his boat and everything because, and these stories go around and around and it becomes a concern. (032416ENN04)

From this local perspective, specific subsistence regulations can be an obstacle to subsistence practices. This respondent uses the example of moose hunting seasons to illustrate how current regulations do not always coincide with the seasonality of subsisting on multiple resources and assume a technological infrastructure not economically available to all families.

> We're supposed to be of the people, you know, the government is supposed to be us. It isn't supposed to be some other entity that's your enemy. I don't want civilization to be my enemy. I'm out there in the woods trying to live subsistence, trying to be a good person, trying to pay my bills, and don't be a burden on society… And some of the laws are, um, difficult to live by and still live that lifestyle. One of the critical ones, in my view, are moose harvesting laws where to get a legal moose you have to own a freezer and have electricity. You're, by law you have to get a moose in September, and I've done that and it won't keep 'til winter. It's green and it has flies in it, without a freezer. A lot of subsistence people don't have freezers, and so we try and get a moose the last day of the season, at the end of September, but sometimes it's into October before we can realistically, we're done fishing, because that's important in our lifestyle. You can't stop fishing to go look for a moose, so you wait 'til October when you, that's just a good time. You can put it up, you know, it freezes eventually, and then that meat will last all the way 'til next May. And, in my view, waste, wanton waste should be a bigger crime than when you got it because if I need one moose a year, it's hard to understand why it makes a huge, huge difference when I get that one moose a year, it's the same moose. Biologically, I took that moose whether it's May, August, November, it's one moose. And I, I mean I could see you during the breeding season you don't want to interfere with that, you don't want to take a cow, you don't want to take a cow when it's got calves. I mean, I understand all those things. (032416ENN04)

Other regulations can also be considered controversial. Customary trade, or the exchange of subsistence resources for limited amounts of cash, is considered a customary and traditional practice under the state subsistence statute, but is only legally allowed in state regulations in a few places statewide.[20] Nonetheless, customary trade is a long-documented practice throughout Interior Alaska, including Nenana, and continues today. Some Nenana residents express concern that the regulatory structure makes them criminals when practicing traditional subsistence activities. Local people often traded harvested resources for cash to pay for food and fuel. "It wasn't no, nobody ever got rich, or made a living, but you had to have gas and you had to have rice and you had to have butter…it was just the way it was" (102716ENN03). This respondent also noted that trading subsistence resources for cash had its origins when non-Natives came into the country, but since then, a largely non-Native legal structure has made the historical practice illegal. "And that's been like that since, since uh, non-Natives and Natives got together. They was start trading right off the bat, helping each other out. And that's what they forgot when they came down to laws and rules, yeah" (102716ENN03). The criminalization of customary trade has widespread effects for the sharing that is characteristic of subsistence economies.

> We're all affected. One way or the other. Because we all trade back and forth, a dozen people are affected; all 300 are affected because now your trading ability is gone. And a Native put it to me very well. He told me that back in the 70s, 80s,

20. Customary trade is recognized as a legitimate subsistence use in federal law, through Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA). Since 2003, federal regulations allow for the customary trade of subsistence caught fish in the Yukon Area harvested from waters adjacent to federal public lands. Because these fish are still subject to Alaska food safety and health laws, only the sale of fresh, uncut, unprocessed fish is allowed unless processed according to state health laws.

> 90s, we went out to fish camp and it was a way of life and we looked forward to it and we took the kids and we took the family and it, it, it was a time of celebration and we shared and when people came by we waved them over and we fed them. He said, now everybody does it in secret. Nobody wants another boat to come by. (102716ENN03)

In addition to concerns about regulations that define subsistence, some Nenana residents also expressed disagreement with how moose were managed in their area. Nenana residents hunt mostly in GMU 20 under various hunt structures depending on location. As will be discussed in more detail in the Discussion chapter, the management of moose in GMUs 20A and 20B, specifically the allowance of antlerless moose hunts, has been a source of controversy since the early 2000s. Concerned that the GMU 20 moose population was too large for the available habitat to support, ADF&G reduced herd size by allowing the harvest of antlerless moose or cows, and for a short while, calves.[21]

Some local residents expressed concern with this management strategy and worried that it has artificially lowered the area's moose population and made hunting more difficult.

> …They were all healthy. I never shot a skinny moose…The [Area Biologist] determined that their moose population was unhealthy because they were only calving 1 calf at a time instead of 2…If he spent any time in the woods he'd see that coyotes always 98% of the time will kill the other calf because they're like jackals. So that's what's going on for the past 15 years, 20 years coyote population came up…They [hunters in the area] killed thousands, I mean thousands of 'em. There were just and they killed off all our potlatch moose you know. Our herd. That's what I call it. Our herd. Because from here to 10 miles out that's, that's where we go when its 50, 60 below in the winter you don't want to go much farther than that. (102016ENN02)

Environmental Changes

Nenana respondents commented on a variety of environmental changes they have observed over time. One resident talked about the lakes in Minto Flats, a traditional harvest area for Nenana people and an area important for harvesting a variety of resources including moose, northern pike, and migratory birds.

> That way we get down at the Minto Flats, from Dunbar we make that circle around what they call Seven-Mile Lake down here, the one big lake. In fact, that's the only big lake left I think…We used to be able to paddle in there with canoe, but like I said I never been around there for so long I don't know. Friend of mine said it's pretty well dried up in that area. (102716ENN07)

Other respondents noted changes in the waterways as well. According to one hunter, the area rivers do not "cycle" the way they used to, making access difficult:

> Used to be you could depend spring was pretty dry. Should be dry up into August, middle August then start raining. Your water'd go down at a certain time…it would go up at a certain time. And now you can't tell what's where. (032516ENN01)

In 2015, water levels were much higher, according to another hunter.

> Don't know why, but some of the lakes back there we usually walk to we had to bring canoes with us. So many meadows that we normally walk around, 'cause it can be wet out there, but we would have a trail that goes through to another portage, and that we had to bring canoes with us everywhere. (032416ENN05)

Changes in waterways are also locally linked to the timing of particular migrations. One respondent recalled using local knowledge of natural indicators to time his migratory bird hunt, planning his hunt for about 7 to 10 days after ice-out. However, the last 5 years have challenged this regular cycle: "Oh, it seems like

21. T. Hollis, ADF&G Fairbanks Area biologist, personal communication, April 4, 2017.

the geese were getting here before the ice went out, oh, about five years ago, cause the ice went out and the geese mostly had migrated by already" (032416ENN05).

Residents commented on irregular weather cycles affecting other resources as well.

> And we are having a lot of years that of either we got hellacious berries or almost no berries. We've got years that this freaky cycles has been lightening the berries out. And that's not good for much of the critters or me either. But yeah, just cycles of things and things not cycling right like I say about the rabbits and stuff. The birds are on funny cycle now. (032516ENN01)

In conclusion, one respondent summed up the long-time practices of living off the land and shaping it for successful subsistence: "And there was thousands of years of knowledge about this country. Like I say, this whole country. And you look at it as vast as it is and how small the bands were but they pretty well managed this country for meat. It was just their practices of trappin', the practices of huntin'" (032516ENN01).

Acknowledgements

Division of Subsistence staff would like to acknowledge those who helped make this research possible in Nenana. We would like to extend a special thanks to the Nenana Native Council and the City of Nenana for approving the project. The Native Council was especially generous in allowing us to use their facilities during fieldwork. Survey efforts certainly would not have been possible without the help of our seven local research assistants. We also greatly appreciate all the time community members took to answer the lengthy survey and interview questions, as well as the information and knowledge they shared therein.

6. DISCUSSION AND CONCLUSIONS

Caroline L. Brown

Introduction

This report describes the contemporary subsistence uses of fish, wildlife, and plant resources by 4 Interior Alaska communities. Research in Denali Park, Ferry, Anderson, and Nenana described subsistence harvest and use patterns for the Nenana River valley area along the George Parks Highway[1] between the Alaska Range and Fairbanks. Although there are extensive similarities in the subsistence patterns of residents of the 4 communities, there are also some relevant differences, especially by Nenana residents in comparison to the other 3 communities. This chapter contextualizes the harvest patterns of the 4 study communities within the larger regional dataset of subsistence harvest patterns in Interior Alaska communities and compares the harvest patterns of the study communities by specific resource, geography, and when available, through time.

Regional Comparison

As discussed in the Introduction, the subsistence base and seasonal round of Interior Alaska communities has not changed much through time. As small seasonal settlements gave way to more sedentary communities in the mid-1900s in Interior Alaska, residents continued to trap small land mammals and hunt birds in the spring, set up fish camps along the mainstem Yukon River for salmon and other nonsalmon fish species in the summer, and pursue large ungulates like moose in the fall before fishing under the ice for resident nonsalmon fish species. With few exceptions, the riverine, boreal communities of Interior Alaska have continued to rely heavily on moose and salmon as the base of their subsistence economies, augmented by trapping small land mammals for food and fur and smaller harvests of birds, vegetation, and nonsalmon fish. In many communities, including the study communities, salmon have accounted for 30%–60% of the total subsistence harvest in any given year (figures 2-8, 3-7, 4-8, 5-8; Fall 2016a). With generally stable populations across much of the Interior and supplying approximately 500 lb of meat per animal, moose have also provided a significant component of total community harvests.

According to a recent update on subsistence hunting and fishing across Alaska (Fall 2016), rural Interior communities harvested an average of 317 lb of wild foods per person. High percentages of households in each community reported harvesting and using wild resources: 75% of Interior Alaska households reported harvesting fish resources, and 92% reported using them. Similar percentages of households reported harvesting and using wild game (69% and 88%, respectively). However, the 4 study communities reported lower per capita harvest levels, ranging from 59 lb to 121 lb (tables 2-1, 3-1, 4-1, 5-1), in comparison to the Interior average of 317 lb (Fall 2016). In all 4 communities, salmon species accounted for the largest component of the total subsistence harvest (41%–61%; figures 2-8, 3-7, 4-8, 5-8). Similarly, harvest and use levels were lower than Interior averages: between 26% and 57% of community households harvested salmon resources, and 74%–79% used them (figures 2-7, 3-5, 4-7, 5-7). Between 7% and 13% of community households reported harvesting large land mammals, namely moose, and 62%–93% used them.

Multiple studies have looked at correlations between demography, economics, and subsistence productivity. In their work addressing the differences between urban and rural communities, Wolfe and Walker (1987) found that communities with high percentages of Alaska Natives, farther away from urban centers and not connected to the statewide road system tend to have higher per person subsistence harvests.[2] Indeed, communities along the road system harvested approximately 69% less than communities off the road system (Wolfe and Walker 1987). These earlier works posited that roads connecting to urban centers promote settlement entry (immigration by non-Natives), in turn promoting changes associated with lower subsistence

1. Henceforth, *Parks Highway.*
2. See also Magdanz et al. (2016).

harvests such as increased competition and changes in community economic orientation away from mixed subsistence-wage adaptations. Magdanz et al.'s (2016) reevaluation of subsistence productivity found that economic region,[3] road access to urban centers, and population size all influence community economies. Studies of the factors affecting community subsistence harvests also found an inverse relationship between mean community incomes and subsistence productivity (Wolfe et al. 2010; Wolfe and Walker 1987). Magdanz et al. (2016:34) confirmed this:

> For 269 projects with valid observations, community mean harvests per household decrease by 2.5% for each 10% increase in community mean income per household. Controlling for household size, the influence of income on harvest is almost twice as strong. Community mean harvests per person decrease by 4.3% for each 10% increase in community mean income per person.

Results from the 2015 surveys are consistent with these analyses to a limited degree, but also point to some inconsistencies in the interplay of all factors described. All communities surveyed in this research were on the road system. Three of 4 had relatively small populations (<190 individuals) with low percentages of resident Alaska Native families (0–2%; Table 1-1). The exception to this pattern was Nenana, the largest community surveyed (584 residents) and the community with the highest percentage of resident Native families (42%).

Mean household incomes in the 4 study communities ranged from a low of $51,197 in Nenana to $82,371 in Anderson (tables 2-6, 3-2, 4-7, 5-2), all much higher than average Interior community household incomes.[4] The highest per capita subsistence harvests documented in this study came from Ferry (121 lb) and Nenana (111 lb)—2 communities that occupy the extremes of the dataset with regard to both community population and the percentage of Native households in the community, but have the lowest mean household incomes of the 4 communities. In general, however, several factors likely contribute to relatively low subsistence harvests by 2015 study communities, including the historical origins of the communities, the ethnic make-up of the populations, the location of the study communities on the road system, their relatively high income levels, and the relatively long distance to subsistence salmon fisheries for all of the communities except Nenana.

Relationships between subsistence patterns and household income may also be reflected in levels of food security. Food security scores among the study communities were higher than those of both Alaska overall (87% food secure) and the United States (86% food secure; Figure 6-2). All communities showed higher food security than the state or the nation, and in 2 of the study communities—Ferry and Denali Park—100% of residents were categorized as food secure. Sources of food insecurity varied as well. With the exception of Ferry, where residents did not report any instances of food insecurity, all of the study communities reported higher levels of subsistence food not lasting than of store-bought food not lasting (figures 2-29, 4-30, 5-29). The relationship (if any) between food security scores and per capita harvests is not yet well understood. Food security scores and per capita harvests do not always correlate in a consistent fashion across rural Alaska (see Brown et al. 2012, 2013); however, all of the study communities had relatively high household incomes, low per capita harvests, and high food security scores. In this case, relatively high incomes and road access may help insulate communites from food insecurity, especially when the harvest of wild foods is low.

---

3. The 2016 reevaluation followed the approach in Goldsmith (2007): dividing the state into economic regions by aggregating census areas based on accessibility and economic characteristics; these regions happen to mirror the distribution of Alaska's indigenous population. "The urban region includes the Anchorage, Matanuska-Susitna, Kenai Peninsula, Fairbanks, and Juneau boroughs. The 'other rural' region includes boroughs and census areas outside urban areas but along the road system, served by a marine ferry system in southeast Alaska, or dominated by commercial fishing or military activities" (Magdanz et al. 2016).

4. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed April 14, 2017. http://commerce.alaska.gov/dcra/DCRAexternal

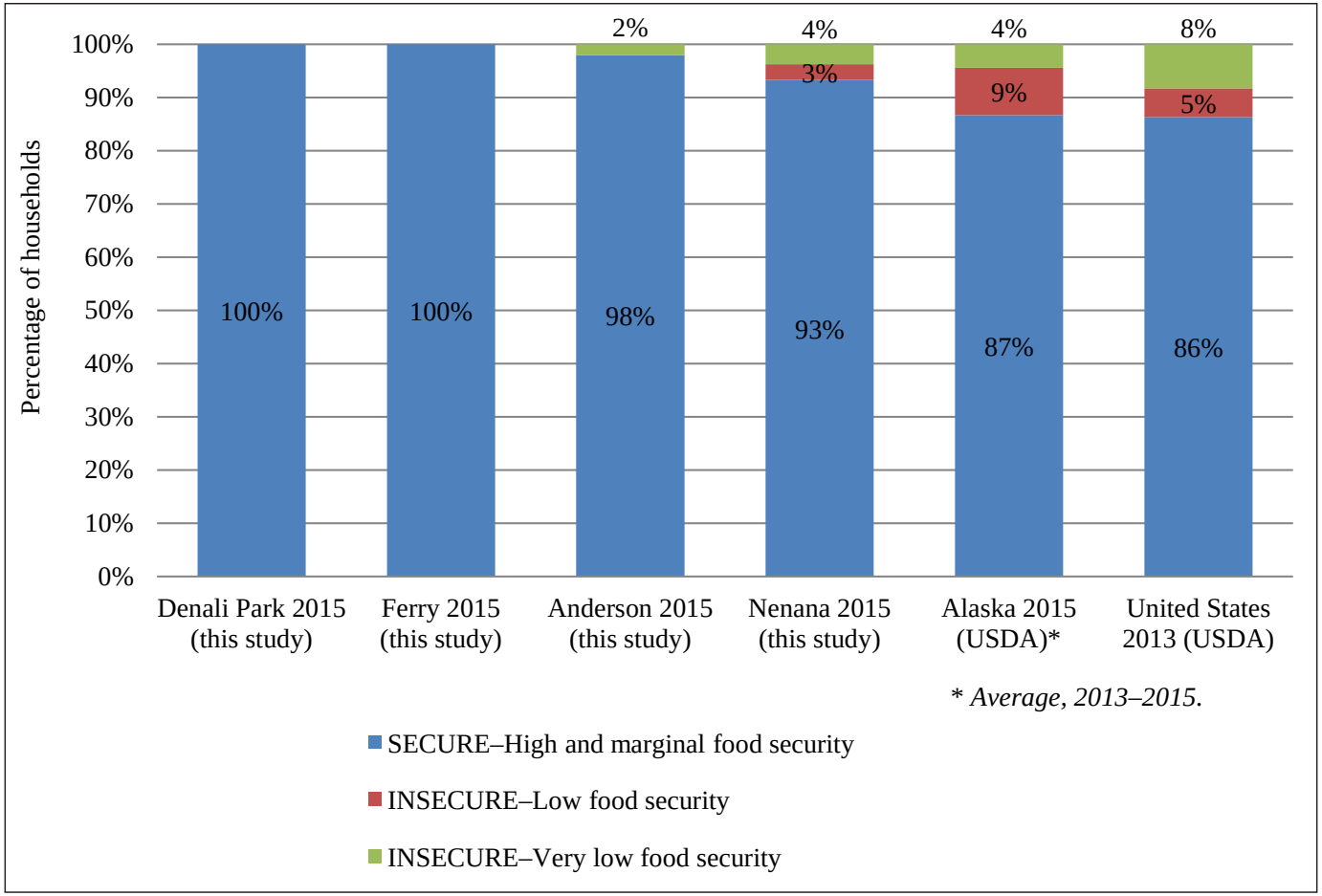


Figure 6-1.–Comparison of food security categories, study communities, Alaska, and United States, 2015.

Table 6-1.–Comprehensive subsistence harvest data, Interior Alaska communities in proposed LNG pipeline corridor, 2011–2015.

Community	Study year	Publication
Allakaket/Alatna	2011	Holen et al. 2012
Bettles	2011	Holen et al. 2012
Coldfoot	2011	Holen et al. 2012
Dot Lake	2011	Holen et al. 2012
Dry Creek	2011	Holen et al. 2012
Evansville	2011	Holen et al. 2012
Healy Lake	2011	Holen et al. 2012
Tok	2011	Holen et al. 2012
Wiseman	2011	Holen et al. 2012
Minto	2012	Brown et al. 2014
Manley	2012	Brown et al. 2014
Healy	2014	Brown et al. 2016
Rampart	2014	Brown et al. 2016
Stevens Village	2014	Brown et al. 2016
Tanana	2014	Brown et al. 2016
Nenana	2015	Brown et al. *in prep*
Anderson	2015	Brown et al. *in prep*
Ferry	2015	Brown et al. *in prep*
Denali Park	2015	Brown et al. *in prep*

Source ADF&G Division of Subsistence, 2016.

Historical Harvest Comparisons

Prior to 2010, comprehensive subsistence data from middle Yukon Area communities were relatively old (>20 years old), especially in the general area of the proposed pipeline. Table 6-1 lists more recent available data on harvest by community and year for the area of the proposed Alaska LNG project. Two important resource categories—salmon and large land mammals, primarily moose—are well documented for most Interior communities. However, the harvest practices of the 2015 Nenana River basin study communities do not mirror those of Interior Yukon River communities to the north or those of the upper Tanana River, a tributary of the Yukon River, to the southeast. This section includes a discussion of general harvest patterns for the study area over time, where possible, and their similarities and differences to other Interior Alaska communities.

Although earlier, comprehensive subsistence harvest data does not exist for all study communities, total subsistence harvests appear to have declined for the study communities in the Nenana River basin. In the 2 communities for which earlier comprehensive data exist, 2015 total harvest levels decreased by 83% in Anderson and 78% in Denali Park as compared to late-1980s harvests (Figure 6-2). Comparing per capita harvest estimates can control for the potential effect of changes in human population on harvests over time. This comparison shows a 76% decline in harvests from 1987 to 2015 in Denali Park and a 42% decline in harvests for the same years in Anderson (Figure 6-3).

Salmon

Salmon is the largest contributing resource category to all 4 study communities' harvest of wild foods in 2015. This is also true for most Yukon River communities (Brown et al. 2014, 2015; Ikuta et al. 2014, 2016; Wilson and Kostick 2016). However, 3 of the 2015 study communities exhibit different patterns of harvest

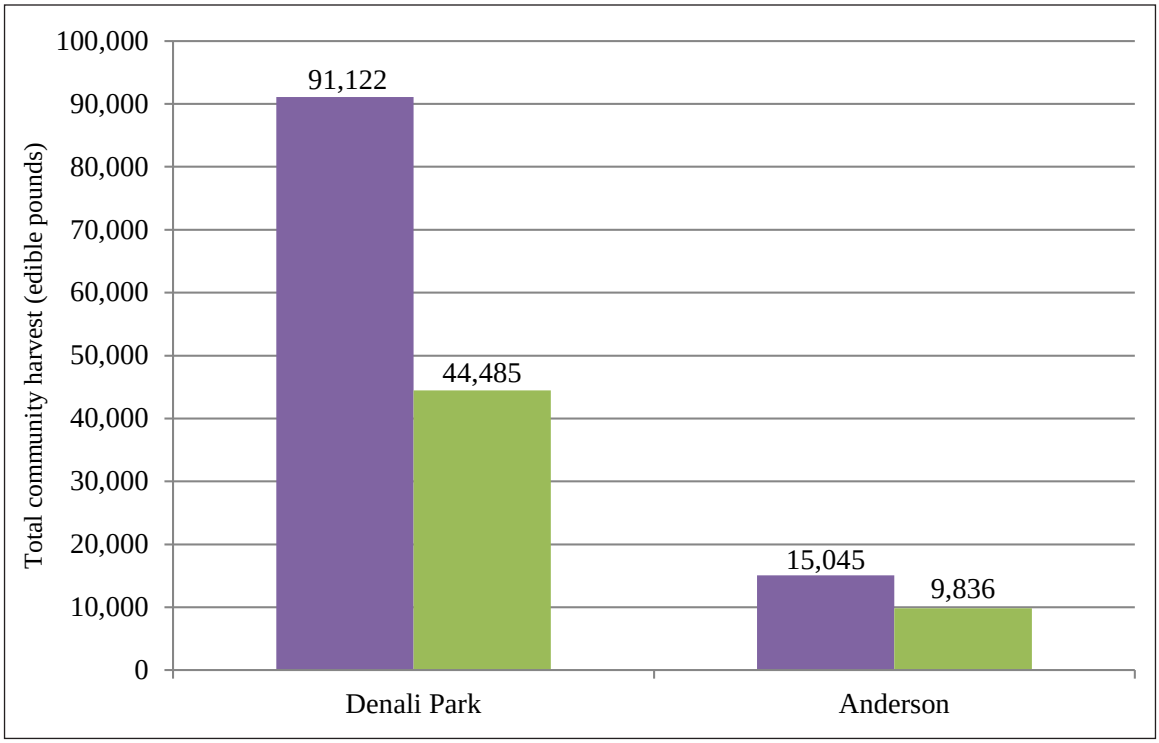


Figure 6-2.–Estimated total community harvests, Denali Park and Anderson, 1987 and 2015.

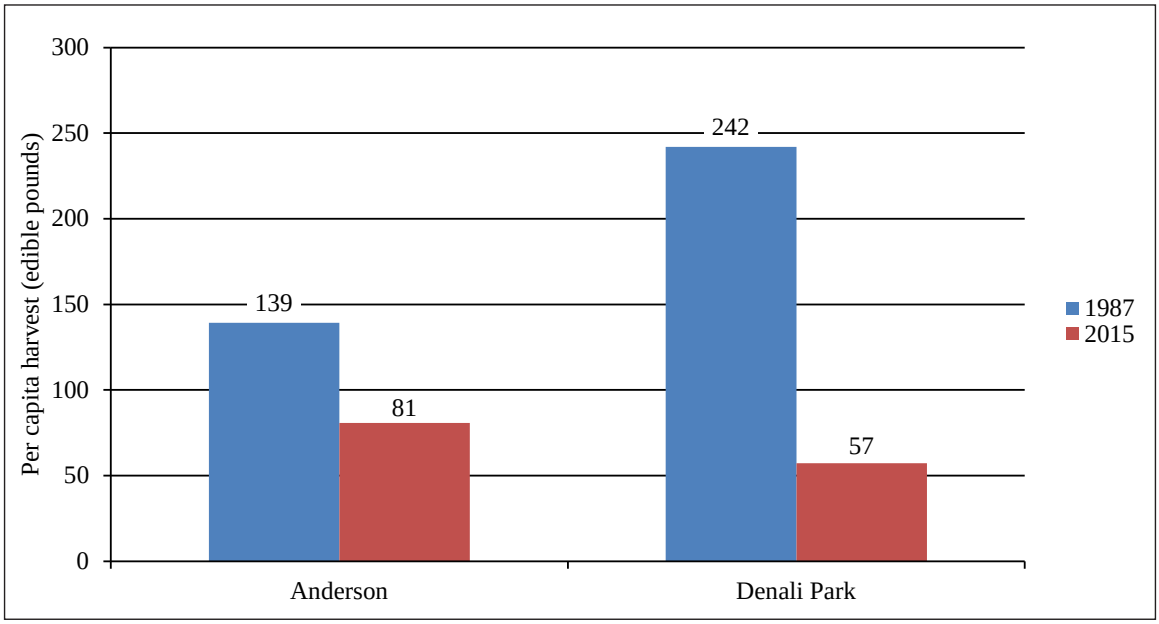


Figure 6-3.–Estimated per capita harvests, Denali Park and Anderson, 1987 and 2015.

in terms of species, gear type, and harvest location from Interior Yukon River communities.[5] Chinook, summer chum, and fall chum salmon are the most heavily harvested types of salmon on the Yukon River, but Ferry, Anderson, and Denali Park harvests were dominated by sockeye and coho salmon. Sockeye salmon is present in the Yukon River in only small numbers and is not actively managed, and coho salmon is an important but minimally harvested species on the Yukon River because of its late run timing. Based on key respondent interviews and mapping, it is likely the majority of salmon harvested by the 2015 study communities came from the Copper River and the Kenai. This is also supported by the primary gear types used for harvest. In the Yukon River, subsistence fishers primarily use gillnets and fish wheels. The 2015 sockeye salmon harvest was caught predominately by dip nets or fish wheels, the 2 gear types used in the Copper River personal use and subsistence fisheries, respectively.

Salmon fishing patterns in the Nenana Basin communities are also different from those of the upper Tanana River communities to the southeast. Primarly Chinook and fall chum salmon distribute into the Tanana River, a tributary of the Yukon River; however, they generally do not travel far into the upper Tanana River area in appreciable numbers. As a result, upper Tanana River communities have traditionally harvested most of their salmon from the Copper River. However, in upper Tanana River communities, salmon do not dominate the total subsistence harvests as they do for Nenana Basin communities; instead, these communities harvest their locally available resource, humpback whitefish, in larger numbers (Godduhn and Kostick 2016).[6]

The 2 communities for which earlier comparable comprehensive survey data are available—Anderson and Denali Park—show a pattern of decreasing salmon harvests over time, even when those harvests are adjusted for decreasing human populations. In 1987, residents of Anderson harvested an estimated 56,979 lb of salmon, which was the largest contributor to the community harvest.[7] In 1987, salmon accounted for 63% of the community harvest (87 lb per capita), and in 2015, salmon made up 45% of the community harvest (37 lb per capita; figures 4-37 and 4-38). As noted earlier, however, the composition of the salmon harvest appears to have changed since 1987. In 1987, chum salmon, likely from the Yukon or Tanana rivers, accounted for 91% of the salmon taken (79 lb per person).[8] By 2015, the salmon harvest was dominated by sockeye salmon from the Copper River (Figure 4-10).

A similar pattern is evident for residents of Denali Park. In both 1987 and 2015, salmon made up the largest component of the harvest by useable weight (69% and 47%, respectively; Figure 2-36), and there was an overall decline in the per capita harvest of salmon in Denali Park (Figure 2-37). Like Anderson, though, the most notable difference is the composition of the salmon harvest; in 1987, chum and coho salmon combined to account for 98% of the salmon harvest by weight.[9] In 2015, sockeye salmon represented 87% of the salmon harvest by weight (Figure 2-10). One key respondent explained that residents no longer traveled to the Tanana River to fish for their dog teams (020817DEN1); instead they often travel to the Copper, Kenai, and Kasilof rivers for sockeye salmon.

Moose

Traditionally, moose harvests by local residents have been an essential part of subsistence hunting activities in Interior Alaska (Andersen et al. 1998, 2000, 2001, 2004; Brown et al. 2004). According to local knowledge, the number of moose in the middle Yukon River area dramatically increased around the 1940s (Huntington 1993). Historical reliance on moose as a primary subsistence resource has been supported by variable densities of moose populations throughout Game Management Unit (GMU) 20, where all of the 2015 study communities are located.

5. The exception is Nenana, whose salmon fishing patterns largely reflect those of the Yukon River because of the community's proximity to the Yukon River and the historical ties its Native residents maintain to fishing in the lower Tanana River and at the "Rapids" on the Yukon River. See the Nenana chapter for more detail.
6. ADF&G CSIS.
7. ADF&G CSIS.
8. ADF&G CSIS.
9. ADF&G CSIS.

Residents of the study communities hunt mostly in GMU 20 under various hunt structures depending on specific location. In GMUs 20A and 20B, antlerless moose hunts have been implemented by ADF&G to regulate herd growth and improve or maintain the ability of available moose habitat to support the current population. The number of moose in GMU 20A was estimated at 17,768 in 2003.[10] Research indicated that this high-density moose population was experiencing density-dependent effects, including low productivity, relatively light calf weights, and high removal rates of winter forage. Beginning in regulatory year 2004–2005 (RY04), the management objective was to reduce moose numbers to the population objective of 10,000–12,000 unless indicators of moose condition showed signs of improvement at higher densities. By 2015, the Unit 20A population was estimated at 10,622–14,009 moose, bringing the population within population objectives. In the Minto Flats Management Area (MFMA) of GMU 20B, the 2010 moose density was high (4.1 moose/mi^2). In order to reduce the moose population, harvest of antlerless moose during RY12 and RY13 was about 2.5% of the population. The fall 2013 estimate showed a more appropriate density of 2.6 moose/mi^2. Since then, ADF&G has recommended reducing antlerless harvests to approximately 1% of the total population in both subunits to maintain the current moose populations.

In 2015, moose harvests for the Nenana Basin communities were relatively low compared to other Interior Alaska communities. In Denali Park, no moose were harvested though the majority of households (61%) reported using it; in Ferry, only 1 moose was harvested, accounting for 17 lb per capita with 86% of households using the resource; Anderson hunters took 8 moose (23 lb per capita, 54% of households using); and Nenana hunters harvested a total of 38 moose (35 lb per capita, 80% of households using; tables 2-4, 3-5, 4-4, 5-4). In contrast, in 2014, Tanana hunters harvested 33 moose or 88 lb of moose per person (Brown et al. 2016). Northway hunters in the upper Tanana region harvested 23 moose, or 77 lb per capita (Godduhn and Kostick 2016). Although harvests were lower in the Nenana Basin communities than in other Interior communities, sharing levels likely remained high as evidenced by the high rates of use by households, a pattern similar to other Interior communities.

It is difficult to determine if these low harvest levels are consistent through time in the Nenana Basin. Comparing 2015 and 1987 data for Denali Park and Anderson suggests different conclusions. Moose was widely used in both 1987 and 2015 by Denali Park residents; however, in the former study, moose were actually hunted and harvested by residents. In 1987, Denali Park residents harvested 16 moose (42 lb per capita)[11]; no moose harvests were reported in 2015. With only 2 data points separated by 28 years, comparisons should be made with caution. It is impossible to determine if the apparent decline in moose harvests in Denali Park in 2015 is a downward trend or if 1987, 2015, or both years were anomalies in Denali Park residents' harvest history. Although moose was a primary subsistence resource for residents of Anderson in both 1987 and 2015, it accounted for less of the total subsistence harvest in 2015. Nonetheless, controlling for population size over time, per capita harvests and use levels were virtually identical between the 2 data points. In 1987, Anderson hunters harvested 21 lb per capita and 53% of households reported using moose[12]; in 2015, residents reported 23 lb per capita and 54% of households used moose (Table 4-4).

Conclusions

The results of this 2015 research further contribute to a diachronic understanding of subsistence patterns in Interior Alaska. Analyses of harvest levels for specific species, demographics, harvest areas, and local economies help to characterize contemporary subsistence patterns and also contribute to knowledge of subsistence patterns statewide, especially by rural communities on the road system. This research also collected harvest assessment data for multiple subsistence resources and information on food security levels for all of the study communities; in all cases, this is the first time that harvest assessment and food security data were collected for Nenana Basin communities.

Communities in Interior Alaska have experienced a great deal of change in their subsistence patterns, especially over the last 30 years, despite continuing their historical and traditional hunting, fishing, trapping,

10. T. Hollis, ADF&G Fairbanks Area Biologist, personal communication, April 4, 2017.
11. ADF&G CSIS.
12. ADF&G CSIS.

and gathering practices. The Nenana Basin study communities have also been subject to significant changes in population due to their origins as transportation hubs or as work camps for highly transient human populations. These communities have also been exposed to the boom and bust cycles of development through mineral strikes, the building of Alaska's railroad, and the industrial military complex. The exception to this transience is the Tanana Athabascan component of Nenana's residents, who have been present in the area since prior to contact. Because of the unevenness of data availability across all of the study communities, in some cases it is difficult to track changes in harvest levels over time for all resources. However, the historical harvest data available for several resources or resource categories are instructive for trends in the region. Like much of Interior Alaska, total subsistence harvests appear to have declined across resource categories in the Nenana Basin. For example, harvesting large ungulates and trapping furbearers occurs on much smaller scales than in prior decades, and salmon harvesting patterns have shifted dramatically in both species harvested and location of harvest.

These issues underscore the vulnerability of subsistence economies, but also the resilience of communities in the face of change. Respondents in all of the study communities discussed changes in their harvesting practices, including decreases in resource availability such as caribou, regulatory restrictions, employment conflicts, increases in costs of fuel, development effects, and reported changes in weather patterns and landscape characteristics. Respondents, especially those in Nenana, emphasized the importance of subsistence hunting, fishing, and gathering, as well as cultural practices of sharing that linked many households in each community. Such cultural patterns provide a clear measure against the insecurity of fluctuating harvests and external pressures. Even at low levels, fishing, hunting, and gathering in these Nenana Basin communities remain a vital part of cultural, economic, and social aspects of community life. However, these communities also regularly experience a great deal of pressure that can affect their subsistence practices, highlighting the need for sound management of resources and the continuing regulatory protection of subsistence uses of Alaska's fish and wildlife resources.

REFERENCES CITED

Alaska Department of Fish and Game Division of Wildlife Conservation
n.d. *2015–2016 Alaska hunting regulations: governing general, subsistence, and commercial uses of Alaska's wildlife, effective July 1, 2015–June 30, 2016.* Alaska Department of Fish and Game: n.p.

Alaska Department of Labor and Workforce Development (ADLWD)
2016. *Alaska population overview*. Alaska Department of Labor and Workforce Development, Research and Analysis Section: Juneau.

2010. Denali Park CDP [cartographic material]. http://live.laborstats.alaska.gov/cen/maps/place/current/18805.pdf

2011. *Anderson City [cartographic material]*. http://live.laborstats.alaska.gov/cen/maps/place/current/03220.pdf

2011. *Ferry CDP [cartographic material]*. http://live.laborstats.alaska.gov/cen/maps/place/current/25220.pdf

n.d. *Population of Alaska by economic region, borough and census area, 2010–2013*. State of Alaska Department of Labor and Workforce Development, Research and Analysis Homepage: Population: Juneau. http://laborstats.alaska.gov/pop/popest.htm

Alaska Directory Co.
1935. *Alaska directory and gazetteer 1934–1935*. Alaska Directory Co.: Seattle

Andersen, D.B., C. Brown, R. Walker, and G. Jennings
2004. *The 2001–2002 harvest of moose, caribou, and bear in middle Yukon and Koyukuk river communities.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 278

Andersen, D.B., C.J. Utermohle, and L. Brown
1998. *The 1997– 1998 harvest of moose, caribou, and bear in middle Yukon and Koyukuk river communities, Alaska.* Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 245

2000. The 1998–1999 harvest of moose, caribou, and bear in ten middle Yukon and Koyukuk river communities. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 251

Andersen, D.B., C.J. Utermohle, and G. Jennings
2001. *The 1999–2000 harvest of moose, caribou, and bear in ten middle Yukon and Koyukuk river communities.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 262: Juneau.

Andrews, E.
1975. *Salcha: an Athapaskan band of the Tanana and its culture*. University of Alaska Fairbanks, M.A. Thesis: Fairbanks

Andrews, E.F.
1977. *Report on the cultural resources of the Doyon region, Central Alaska.* Cooperative Park Studies Unit, University of Alaska: Fairbanks

Association of Canadian Universities for Northern Studies
2003. *Ethical principles for the conduct of research in the North*. The Association = L'Association: Ottawa. ISBN 0-921421-10-9

Bickel, G., M. Nord, C. Price, W. Hamilton, and J. Cook
2000. *Guide to Measuring Household Food Security, Revised 2000*. U.S. Department of Agriculture, Food and Nutrition Service: Alexandria, VA.

Bowers, P.M.
1980. *Carlo Creek Site: geology and archaeology of an Early Holocene site in the Central Alaska Range*. University of Alaska, Cooperative Park Studies Unit, Occasional Paper, Anthropology and Historic Preservation, 1: Fairbanks.

Bright, W.
2004. *Native American placenames of the United States.* University of Oklahoma Press: Norman, OK

Brown, C.L., N.M. Braem, A. Trainor, L.J. Slayton, D.M. Runfola, C. McDevitt, J.J. Simon, and M.L. Kostick
2016. *Harvests and Uses of Wild Resources in 4 Interior Alaska Communities and 3 Arctic Alaska Communities, 2014*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 426: Fairbanks

Brown, C.L., A.R. Brenner, H. Ikuta, E. Mikow, B. Retherford, L.J. Slayton, A. Trainor, J. Park, D. Koster, and M.L. Kostick
2015. *The harvest and uses of wild resources in Mountain Village, Marshall, Nulato, Galena, and Ruby, Alaska, 2010.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 410: Fairbanks

Brown, C.L., A. Godduhn, H. Ikuta, B. Retherford, A. Trainor, and S.J. Wilson
2015. *Socioeconomic effects of declining salmon runs on the Yukon River*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 398: Fairbanks

Brown, C.L., J.S. Magdanz, D.S. Koster, and N.S. Braem
2012. *Subsistence harvests in 8 communities in the central Kuskokwim River drainage, 2009*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 365: Fairbanks.

2013. *Subsistence harvests in 6 communities in the Kuskokwim River drainage, 2010*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 379: Fairbanks.

Brown, C.L., L.J. Slayton, A. Trainor, D.S. Koster, and M. Kostick
2014
Wild resource harvests and uses, land use patterns, and subsistence economies in Manley Hot Springs and Minto, Alaska, 2012. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 400: Fairbanks

Brown, C.L., R.J. Walker, and S.B. Vanek
2004. *The 2002–2003 harvest of moose, caribou, and bear in middle Yukon and Koyukuk river communities*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 280

Bryant, J.
2011. *Snapshots from the past: a roadside history of Denali National Park and Preserve*. National Park Service, Denali National Park and Preserve: Denali Park, AK

Capps, D.M., S. McLane, L. Chang, E. Grover, and S. Strand
2016. *Denali National Park and Preserve geology road guide*. National Park Service, Denali National Park and Preserve: Denali Park, AK

Charnley, S.
1984. *Human ecology of two central Kuskokwim communities: Chuathbaluk and Sleetmute*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 81: Juneau.

Coates, J.
2004. *Experience and expression of food security across cultures: practical implications for valid measurement*. Food and Nutrition Technical Assistance Project, FHI 360: Washington, D.C.

Coates, J., E.A. Frongillo, B.L. Rogers, P. Webb, P.E. Wilde, and R. Houser
2006. *Commonalities in the experience of household food insecurity across cultures: what are measures missing?* Journal of Nutrition 136(5), page 1438S–1448S

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

Coleman-Jensen, A., M. Nord, M. Andrews, and S. Carlson
2012. *Household food security in the United States, 2011*. U.S. Department of Agriculture, Economic Research Service, Economic Research Report No. 141: Washington, DC.

Denali Borough Planning Commission
2009. *Denali Borough comprehensive plan*. Denali Borough Planning Commission: Healy, AK.

Fall, J.A.
2016. *Subsistence in Alaska: a year 2014 update*. Alaska Department of Fish and Game Division of Subsistence: Anchorage.

Fall, J.A.
1990. *The Division of Subsistence of the Alaska Department of Fish and Game: an overview of its research program and findings: 1980–1990.* Arctic Anthropology 27(2), pages 68–92

Fall, J.A., A.R. Brenner, S.S. Evans, L. Hutchinson-Scarbrough, B. Jones, R. La Vine, T. Lemons, M.A. Marchioni, E. Mikow, J.T. Ream, L.A. Sill, and A. Trainor
2013. *Alaska subsistence and personal use salmon fisheries 2011 annual report*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 387: Anchorage.

Frongillo, E.A. and S. Nanama
2006. *Development and validation of an experience-based measure of household food insecurity within and across seasons in northern Burkina Faso*. Journal of Nutrition 136(5), page 1409s–1419s

Godduhn, A.R. and M.L. Kostick
2016. *Harvest and use of wild resources in Northway, Alasksa, 2014, with special attention to nonsalmon fish*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 421: Fairbanks

Goldsmith, S.
2007. *The remote rural economy of Alaska*. University of Alaska Anchorage Institute of Social and Economic Research: Anchorage

Helm, J., T. Alliband, T. Birk, V. Lawsone, S. Reisner, C. Sturtevant, and Witokowski
1975. "The contact history of the subarctic Athapaskans: an overview" [in] A. McFayden Clark, editor *Proceedings of the Northern Athapaskan Conference, Volume I.* National Museums of Canada, Publications in Ethnology No. 27: Ottowa

Heiner, V.D.
1977. *Alaska mining history: a source document.* Alaska Division of Parks, Office of History and Archaeology, History and Archaeology Series No. 17

Hoffecker, J.F., W.R. Powers, and T. Goebel
1993. *The colonization of Beringia and the peopling of the New World*. Science 259(5091), pages 46–53

Holen, D., S.M. Hazell, J.M. Van Lanen, J.T. Ream, S.P.A. Desjardins, B. Jones, and G. Zimpelman
2014. *The harvest and use of wild resources in Cantwell, Chase, Talkeetna, Trapper Creek, Alexander/Susitna, and Skwentna, Alaska, 2012*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 385: Anchorage.

Huntington, S.
1993. *Shadows on the Koyukuk: an Alaska Native's life along the river*. Alaska Northwest Books: Anchorage

Ikuta, H., C.L. Brown, and D.S. Koster
2014. *Subsistence harvests in 8 communities in the Kuskokwim River drainage and lower Yukon River, 2011*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 396: Fairbanks.

Ikuta, H., D.M. Runfola, J.J. Simon, and M.L. Kostick
2016. *Subsistence harvests in 6 communities on the Bering Sea, in the Kuskokwim River drainage, and on the Yukon River, 2013*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 417: Fairbanks.

Kari, P.R.
1983. *Land use and economy of Lime Village.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 80: n.p.

Krauss, M.E. 1982. *Native people and languages of Alaska [cartographic material]*. Alaska Native Language Center, University of Alaska Fairbanks: Fairbanks.

Lonner, T.D.
1980. *Subsistence as an economic system in Alaska: theoretical and policy implications.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 67: Anchorage.

Magdanz, J.S.
1988. *Harvest and exchange of eulachon from the Chilkat and Chilkoot rivers, Alaska.* Alaska Department of Fish and Game Division of Subsistence, Special Publication No. SP1988-03: Juneau.

Magdanz, J.S., J. Greenberg, J.M. Little, and D.S. Koster
2016. *The persistence of subsistence: wild food harvests in rural Alaska, 1983–2013*. Social Science Research Network.

Magdanz, J.S., D.S. Koster, L. Naves, and P. Fox
2011. *Subsistence harvests in Northwest Alaska, Buckland and Kiana, 2003 and 2006*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 363: Anchorage.

Magdanz, J.S., S. Tahbone, A. Ahmasuk, D.S. Koster, and B.L. Davis
2007. *Customary trade and barter in fish in the Seward Peninsula Area, Alaska.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 328: Juneau.

Magdanz, J.S., E. Trigg, A. Ahmasuk, P. Nanouk, D.S. Koster, and K. Kamletz
2009. *Patterns and trends in subsistence salmon harvests, Norton Sound-Port Clarence Area, Alaska, 1994–2003*. American Fisheries Society Symposium 70, pages 395–431

Magdanz, J.S., C.J. Utermohle, and R.J. Wolfe
2002. *The production and distribution of wild food in Wales and Deering, Alaska.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 259: Kotzebue.

Magdanz, J.S. and R.J. Wolfe
1988. *The production and exchange of seal oil in Alaska.* Alaska Department of Fish and Game Division of Subsistence, Special Publication No. SP1988-001: Juneau.

McKennan, R.A.
1959. *The Upper Tanana Indians.* Yale University Publications in Anthropology 55. Yale University Press: New Haven

Melgar-Quinonez, H.R., A.C. Zubieta, B. MkNelly, A. Nteziyaremye, M.F.D. Gerardo, and C. Dunford
2006. *Household Food Insecurity and Food Expenditure in Bolivia, Burkina Faso, and the Philippines*. Journal of Nutrition 136(5), page 1431S–1437S

Moncrieff, C.F.
2007. *Traditional ecological knowledge of customary trade of subsistence harvested salmon on the Yukon River.* Final report to the Office of Subsistence Management, Fisheries Information Services, study 04-265. Yukon River Drainage Fisheries Association: Anchorage

Nelson, R.K.
1983. *Make Prayers to the Raven: A Koyukon View of the Northern Forest.* University of Chicago Press: Chicago.

Newland, E.
2014. *2014 preliminary Yukon River summer season summary [press release].*Alaska Department of Fish and Game Division of Commercial Fisheries

Nord, M., M. Andrews, and S. Carlson
2008. *Household food security in the United States, 2007*. Department of Agriculture, Economic Research Service, ERR-66: Washington, D.C.

Norris, F.
2006. *Crown jewel of the north: an administrative history of Denali National Park.* National Park Service, Alaska Regional Office: Anchorage.

Olson, W.M.
1968. *Minto Alaska: cultural and historical influences on group identity.* University of Alaska Fairbanks, M.A. Thesis: Fairbanks

Orth, D.J.
1971rep. *[1967] Dictionary of Alaska Place Names.* United States Government Printing Office

Pearson, G.A.
1999. *Early occupations and cultural sequence at Moose Creek: a late Pleistocene cite in central Alaska*. ARCTIC 52(4), pages 332–345

Pérez-Escamilla, R., A.M. Segall-Corrêa, L.K. Maranha, M. de F.A. Sampaio, L. Marín-León, and G. Panigassi
2004. *An adapted version of the U.S. Department of Agriculture food insecurity module is a valid tool for assessing household food insecurity in Campinas, Brazil*. Journal of Nutrition 134(8), pages 1923–1928

Pete, M.C.
1991. *Contemporary patterns of wild resource use by residents of Russian Mission, Alaska.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 127: Juneau

Powers, W.R. and J.F. Hoffecker
1989. *Late Pleistocene settlement in the Nenana valley, central Alaska.* American Antiquity 54(2), pages 263–287

Rollins, A.M.
1978. *Census Alaska: numbers of inhabitants, 1792–1970.* University of Alaska Library, University of Alaska: Anchorage

Schroeder, R.F., D.B. Andersen, R. Bosworth, J.M. Morris, and J.M. Wright
1987. *Subsistence in Alaska: Arctic, Interior, Southcentral, Southwest, and Western regional summaries.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 150: Juneau

Shinkwin, A. and M. Case
1984. *Modern foragers: Wild resource use in Nenana Village, Alaska.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 91

Stickney, A.
1984. *Coastal ecology and wild resource use in the central Bering Sea area: Hooper Bay and Kwigillingok.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 85: n.p.

Swindale, A. and P. Bilinsky
2006. *Development of a universally applicable household food insecurity measurement tool: process, current status, and outstanding issues*. Journal of Nutrition 136(5), page 1449S–1452S

Tewkesbury, D. and W. Tewkesbury
1947. *Tewkesbury's who's who in Alaska and Alaska business index, Volume 1*. Tewkesbury Publishers: Juneau

U.S. Census Bureau
n.d. *2010 Decennial Census and American Community Survey data*. U.S. Census Bureau American FactFinder Homepage: Washington, D.C. https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

2011. *2010 census*. U.S. Census Bureau: Washington, D.C.

Walker, T.
2009. *McKinley Station: the people of the pioneer park that became Denali*. Pictorial Histories Publishing Company, Inc.: Missoula, MT.

Walker, T.
2006. *Kantishna: mushers, miners, mountaineers. The pioneer story behind Mount McKinley National Park*. Pictorial Histories Publishing Company, Inc.: Missoula, MT

Webb, P., J. Coates, E.A. Frongillo, B.L. Rogers, A. Swindale, and P. Bilinsky
2006. *Measuring household food insecurity: why it's so important and yet so difficult to do*. Journal of Nutrition 136(5), page 1404s–1408s

Wilson, S.J. and M.L. Kostick
2016. *Harvest and use of wild resources in Hughes, Alaska, 2014*. Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 424: Fairbanks

Wolfe, R.J.
1987. *The super-household: specialization in subsistence economies*. Paper presented at the 14th annual meeting of the Alaska Anthropological Association, March 1987, Anchorage, Alaska. Alaska Department of Fish and Game Division of Subsistence: Juneau.

Wolfe, R.J. and L.J. Ellanna
1983. *Resource use and socioeconomic systems: case studies of fishing and hunting in Alaskan communities.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 61: Juneau.

Wolfe, R.J., C.L. Scott, W.E. Simeone, C.J. Utermohle, and M.C. Pete
2009. *The "super-household" in Alaska Native subsistence economies.* National Science Foundation ARC 0352611. Alaska Department of Fish and Game: Anchorage

2010. *The "super-household" in Alaska Native subsistence economies*. Final Report to the National Science Foundation, Project ARC 0352611

Wolfe, R.J., W.E. Simeone, C.J. Utermohle, M.C. Pete, and National Science Foundation
1993. *The sharing, distribution, and exchange of wild resources in Alaska: a compendium of materials presented to the Alaska Board of Fisheries.* Alaska Department of Fish and Game Division of Subsistence: Juneau

Wolfe, R.J. and R.J. Walker
1986. *Impacts of roads and settlement entry on subsistence in Alaska*. Proceedings of the Annual Meeting of Alaska Anthropological Association: Fairbanks

1987. Subsistence economies in Alaska: productivity, geography, and development impacts. Arctic Anthropology 24(2), pages 56–81

Wunderlich, G.S. and J.L. Norwood
2006. *Food insecurity and hunger in the United States: an assessment of the measure. Panel to review the U.S. Department of Agriculture's measurement of food insecurity and hunger*. Committee on National Statistics, Division of Behavioral and Social Sciences and Education, the National Academies Press: Washington, D.C.

Young Jr., D.D.
2014. "Unit 20A moose" [in] P. Harper and L.A. McCarthy, editors. *Moose management report of survey and inventory activities 1 July 2011–30 June 2013*. Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR-2014-6: Juneau

APPENDIX A.–SURVEY INSTRUMENT

COMPREHENSIVE WILD FOOD HARVEST SURVEY

ALASKA LNG - NENANA

NENANA, ALASKA

From January 1, 2015 to December 31, 2015

printed: 2016-03-15

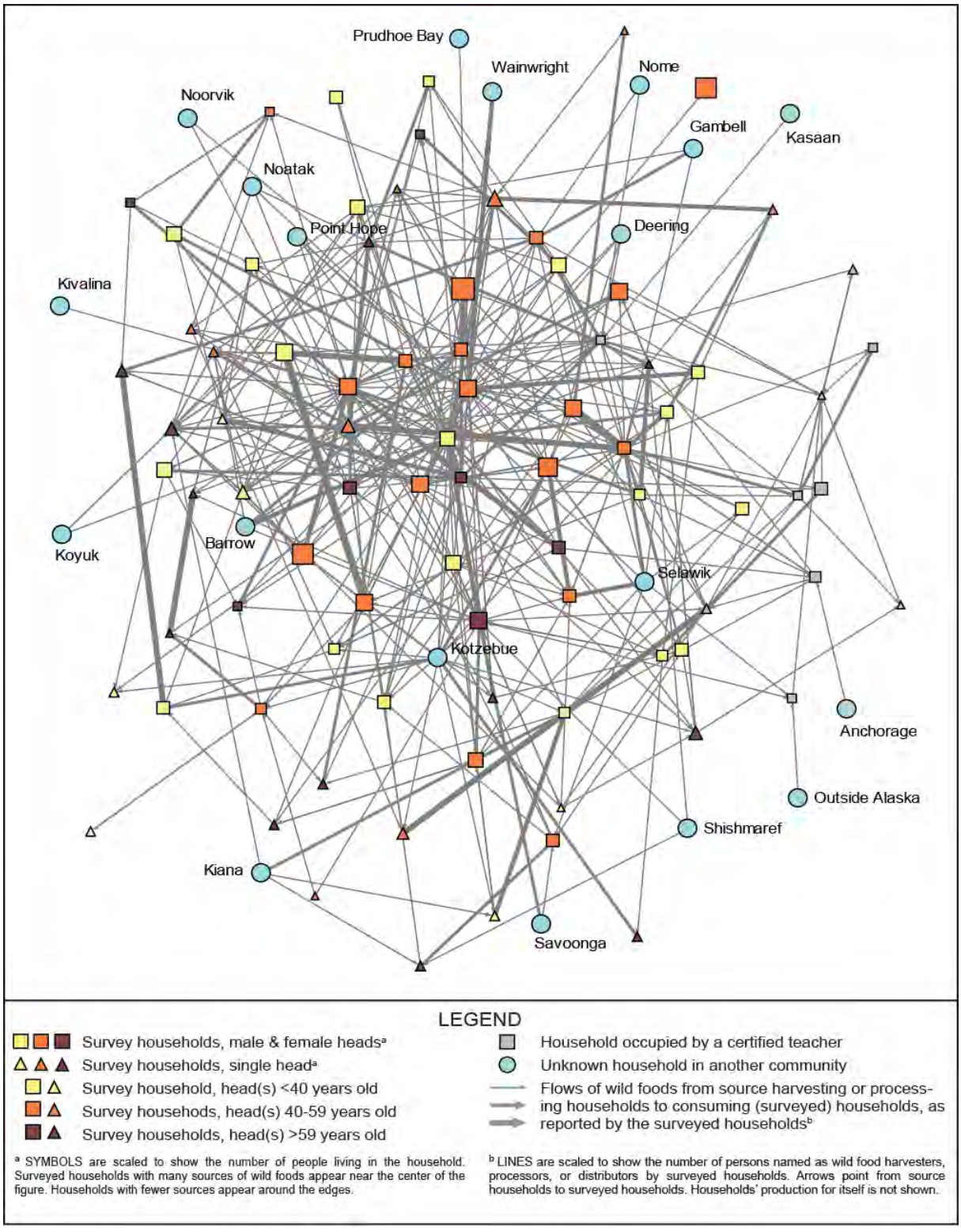
This survey is used to estimate wild food harvests and to describe rural community economies. We will publish a summary report, and send it to all households in your community. We share this information with the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Park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

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:	
INTERVIEWER 1:	
INTERVIEWER 2:	
INTERVIEW DATE:	
START TIME:	
STOP TIME:	
DATA CODED BY:	
DATA ENTERED BY:	
SUPERVISOR:	

ALASKA DEPARTMENT OF FISH AND GAME
1300 COLLEGE RD.
FAIRBANKS, AK 99701
907-459-7321

NETWORK EXAMPLE



HOUSEHOLD MEMBERS

HOUSEHOLD ID

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

Last year, that is, between January 1, 2015 and December 31, 2015 WHO were the head or heads of your household?

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

PERMANENT HH MEMBERS: 01 **NENANA: 241**

NOTES HOUSEHOLD ID

RETAINED COMMERCIAL HARVESTS

HOUSEHOLD ID

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

2. During the last year (between January 1, 2015 and December 31, 2015),
did you, or members of your household PARTICIPATE in any commercial fishery?..... Y N

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

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

During the last year,[1]

did you or members of your household...

A ... FISH commercially for _____?

B ... KEEP any ____ from your commercial catch or as an incidental catch in another commercial fishery for your own use[2] or to share?

if keep is "yes"

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

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

Read names below in blanks above	A COMM FISH?	B KEEP?	How many were removed for your OWN USE?[5]	How many were removed to give to OTHERS, NOT including CREW ?	Units[3]	
			number	*number*	*specify*	*comments*
CHINOOK (KING) SALMON	Y N	Y N			IND	
113000001						
SOCKEYE (RED) SALMON	Y N	Y N			IND	
115000001						
COHO (SILVER) SALMON	Y N	Y N			IND	
112000001						
SUMMER CHUM SALMON	Y N	Y N			IND	
111010001						
FALL CHUM SALMON	Y N	Y N			IND	
111020001						
PINK (HUMPIES) SALMON	Y N	Y N			IND	
114000001						
UNKNOWN SALMON	Y N	Y N			IND	
119000001						
HALIBUT	Y N	Y N			IND	
121800001						
HERRING	Y N	Y N			IND	
120200001						
HERRING ROE	Y N	Y N			IND	
120300001						
KING CRAB	Y N	Y N			IND	
501008001						

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

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

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

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

COMMERCIAL FISHING: 03 **NENANA: 241**

HARVESTS: SALMON

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for salmon for subsistence, personal use, or sport?..... Y N

2. During the last year (between January 1, 2015 and December 31, 2015), did you, or members of your household USE or TRY TO HARVEST salmon?..... Y N

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

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

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

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

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	DIP NET	GILL NET	FISH WHEEL	ROD & REEL[3]	OTHER GEAR (specify type)	Units[4]	# of those used just for dog food?
						(number harvested by each gear type)				*amount / type*	*specify*	*amt.*
CHINOOK (KING) SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
113000000												
SOCKEYE (RED) SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
115000000												
COHO (SILVER) SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
112000000												
SUMMER CHUM SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
111010000												
FALL CHUM SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
111020000												
PINK (HUMPIES) SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
114000000												
LANDLOCKED SALMON *KOKANEE*	Y N	Y N	Y N	Y N	Y N					/	IND.	
116000000												

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "ice fishing."*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

SALMON: 04 **NENANA: 241**

NETWORKS: SALMON

HOUSEHOLD ID

If this household did NOT USE or HARVEST salmon last year, go to the NEXT PAGE.

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

MAPPING: SALMON *Refer to data collection maps and mapping instructions to map salmon...*

NETWORKS: SALMON 110000000

Members of your household

role	*enter person code from page 2*

During the last year...[1]

…which members of your household CAUGHT salmon that your household used? (Enter most important sources first.)

CAUGHT SALMON															

…which members of your household PROCESSED salmon that your household used? (Enter most important sources first.)

PROCESSED SALMON															

…which members of your household RECEIVED A SHARE FOR HELPING someone else FISH FOR or CUT salmon?

SHARE FOR HELPING															

People in other households or other communities

role	*enter local HH code (000) or airport code (XXX) for other community*

During the last year...[1]

…Did anyone living in another household or community FISH FOR salmon for your household?.....Y N

IF YES, who CAUGHT the salmon your household used? (Enter most important sources first.)

CAUGHT SALMON															
1															

…Did anyone living in another household or community CUT salmon for your household?.....Y N

IF YES, who CUT the SALMON your household used? (Enter most important sources first.)

PROCESSED SALMON															
2															

…Did anyone living in another household or community SHARE salmon with your household?.....Y N

IF YES, who GAVE salmon to your household? (Enter most important sources first.)

SHARED SALMON															
3															

…Did anyone living in another household or community BARTER OR TRADE salmon with your household?.....Y N

IF YES, who BARTERED OR TRADED salmon with your household? (Enter most important sources first.)

BARTERED SALMON															
5															

…Did anyone living in another household or community SELL subsistence-caught salmon to your household?.....Y N

IF YES, who sold salmon to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD SALMON TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF SALMON: 67 **NENANA: 241**

ASSESSMENTS: SALMON

HOUSEHOLD ID

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

During the last year,[1]

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

IF LESS or MORE …

X = do not use

WHY was your use different? _____

_____

During the last year,[1]

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

If NO…

What KIND of did you need? _____

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

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

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

ASSESSMENTS OF SALMON: 66 **NENANA: 241**

HARVESTS: FRESH WATER FISH

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for fresh water fish for subsistence, personal use, or sport?..... Y N

2. During the last year (between January 1, 2015 and December 31, 2015),
   did you, or members of your household USE or TRY TO HARVEST fresh water fish?..... Y N

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

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

During the last year,[1]

did you or members of your household…

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

if harvest is "yes"

Please estimate how many fresh water fish ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested with ….

INCLUDE fresh water fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest. DO NOT INCLUDE catch and release fish or retained commercial harvests.

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	FISH WHEEL	GILL NET OR SEINE	ICE FISHING[3]	ROD & REEL[4]	OTHER GEAR (specify type)	Units[5]	# of those used just for dog food?
						(number harvested by each gear type)				*amount / type*	*specify*	*amt.*
RAINBOW TROUT	Y N	Y N	Y N	Y N	Y N					/	IND.	
126204000												
LAKE TROUT	Y N	Y N	Y N	Y N	Y N					/	IND.	
125010000												
CUTTHROAT TROUT	Y N	Y N	Y N	Y N	Y N					/	IND.	
126202000												
TROUT	Y N	Y N	Y N	Y N	Y N					/	IND.	
126299000												
DOLLY VARDEN	Y N	Y N	Y N	Y N	Y N					/	IND.	
125006000												
GRAYLING	Y N	Y N	Y N	Y N	Y N					/	IND.	
125200000												
PIKE	Y N	Y N	Y N	Y N	Y N					/	IND.	
125500000												
BURBOT (LOCHE)	Y N	Y N	Y N	Y N	Y N					/	IND.	
124800000												
LAMPREYS	Y N	Y N	Y N	Y N	Y N					/	IND.	
122000000												
SUCKER	Y N	Y N	Y N	Y N	Y N					/	IND.	
126000000												

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ICE FISHING" includes fish caught ithrough the ice with a hook and and a line attached to a rod or a pole."*
4 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is " ice fishing."*
5 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

FRESH WATER FISH: 06 **NENANA: 241**

HARVESTS: WHITEFISH

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for whitefish for subsistence, personal use, or sport?..... Y N

2. During the last year (between January 1, 2015 and December 31, 2015),
   did you, or members of your household USE or TRY TO HARVEST whitefish?..... Y N

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

IF the answer is YES, continue on this page …

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

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

if harvest is "yes"

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

INCLUDE fresh water fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.DO NOT INCLUDE catch and release fish or retained commercial harvests.

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	FISH WHEEL	GILL NET OR SEINE	ICE FISHING[3]	ROD & REEL[4]	OTHER GEAR (specify type)	Units[5]	# of those used just for dog food?
						(number harvested by each gear type)				*amount / type*	*specify*	*amt.*
ROUND WHITEFISH	Y N	Y N	Y N	Y N	Y N					/	IND.	
126412000												
HUMPBACK WHITEFISH	Y N	Y N	Y N	Y N	Y N					/	IND.	
126408000												
BROAD WHITEFISH	Y N	Y N	Y N	Y N	Y N					/	IND.	
126404000												
LEAST CISCO	Y N	Y N	Y N	Y N	Y N					/	IND.	
126406060												
BERING CISCO	Y N	Y N	Y N	Y N	Y N					/	IND.	
126406040												
SHEEFISH	Y N	Y N	Y N	Y N	Y N					/	IND.	
125600000												
UNKNOWN WHITEFISH	Y N	Y N	Y N	Y N	Y N					/	IND	
126499000												
	Y N	Y N	Y N	Y N	Y N					/		
	Y N	Y N	Y N	Y N	Y N					/		
	Y N	Y N	Y N	Y N	Y N					/		

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ICE FISHING" includes fish caught ithrough the ice with a hook and and a line attached to a rod or a pole."*
4 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is " ice fishing."*
5 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

WHITEFISH: 06 **NENANA: 241**

HARVESTS: MARINE FISH

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for marine fish for subsistence, personal use, or sport?..... Y N

2. During the last year (between January 1, 2015 and December 31, 2015),
   did you, or members of your household USE or TRY TO HARVEST marine fish?..... Y N

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

IF the answer is YES, continue on this page …

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

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

if harvest is "yes"

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

INCLUDE fresh water fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest. DO NOT INCLUDE catch and release fish or retained commercial harvests.

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	FISH WHEEL	GILL NET OR SEINE	ICE FISHING[3]	ROD & REEL[4]	OTHER GEAR (specify type)	Units[5]	# of those used just for dog food?
						(number harvested by each gear type)				*amount / type*	*specify*	*amt.*
HALIBUT	Y N	Y N	Y N	Y N	Y N					/	LBS.	
121800000												
HERRING	Y N	Y N	Y N	Y N	Y N					/	GAL.	
120200000												
SAFFRON COD	Y N	Y N	Y N	Y N	Y N					/	IND.	
121010000												
STARRY FLOUNDER	Y N	Y N	Y N	Y N	Y N					/	IND.	
121406000												
SMELT	Y N	Y N	Y N	Y N	Y N					/	GAL.	
120400000												
ROCKFISH	Y N	Y N	Y N	Y N	Y N					/	IND.	
122600000												
EULACHON *(HOOLIGAN, CANDLEFISH)*	Y N	Y N	Y N	Y N	Y N					/	IND.	
120404000												
LINGCOD	Y N	Y N	Y N	Y N	Y N					/	IND.	
121606000												
	Y N	Y N	Y N	Y N	Y N					/		
	Y N	Y N	Y N	Y N	Y N					/		

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ICE FISHING" includes fish caught ithrough the ice with a hook and and a line attached to a rod or a pole."*
4 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is " ice fishing."*
5 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

MARINE FISH: 06 **NENANA: 241**

NETWORKS: WHITEFISH

HOUSEHOLD ID

If this household did NOT USE or HARVEST whitefish last year, go to the NEXT PAGE.

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

MAPPING: WHITEFISH *Refer to data collection maps and mapping instructions to map whitefish...*

NETWORKS: WHITEFISH 126400000

Members of your household	
role	***enter person code from page 2***

During the last year...[1]

…which members of your household CAUGHT whitefish that your household used? (Enter most important sources first.)

CAUGHT WHITEFISH															

…which members of your household PROCESSED whitefish that your household used? (Enter most important sources first.)

PROCESSED WHITEFISH															

…which members of your household RECEIVED A SHARE FOR HELPING someone else FISH FOR or CUT whitefish?

SHARE FOR HELPING															

People in other households or other communities	
role	***enter local HH code (000) or airport code (XXX) for other community***

During the last year...[1]

…Did anyone living in another household or community FISH FOR whitefish for your household?.....Y N

IF YES, who CAUGHT the whitefish your household used? (Enter most important sources first.)

CAUGHT WHITEFISH															
1															

…Did anyone living in another household or community CUT whitefish for your household?.....Y N

IF YES, who CUT the WHITEFISH your household used? (Enter most important sources first.)

PROCESSED WHITEFISH															
2															

…Did anyone ELSE living in another household or community SHARE whitefish with your household?.....Y N

IF YES, who GAVE whitefish to your household? (Enter most important sources first.)

SHARED WHITEFISH															
3															

…Did anyone living in another household or community BARTER OR TRADE whitefish with your household?.....Y N

IF YES, who BARTERED OR TRADED whitefish with your household? (Enter most important sources first.)

BARTERED WHITEFISH															
5															

…Did anyone living in another household or community SELL subsistence-caught whitefish to your household?.....Y N

IF YES, who sold whitefish to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD WHITEFISH TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF WHITEFISH: 67 **NENANA: 241**

NETWORKS: OTHER FISH

HOUSEHOLD ID

If this household did NOT USE or HARVEST other fish last year, go to the NEXT PAGE.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING: OTHER FISH *Refer to data collection maps and mapping instructions to map other fish...*

NETWORKS: OTHER FISH 120000000

Members of your household

role	*enter person code from page 2*

During the last year...[1]

…which members of your household CAUGHT other fish that your household used? (Enter most important sources first.)

CAUGHT OTHER FISH															

…which members of your household PROCESSED other fish that your household used? (Enter most important sources first.)

PROCESSED OTHER FISH															

…which members of your household RECEIVED A SHARE FOR HELPING someone else FISH FOR or CUT other fish?

SHARE FOR HELPING															

People in other households or other communities

role	*enter local HH code (000) or airport code (XXX) for other community*

During the last year...[1]

…Did anyone living in another household or community FISH FOR other fish for your household?.....Y N

IF YES, who CAUGHT the other fish your household used? (Enter most important sources first.)

CAUGHT OTHER FISH															
1															

…Did anyone living in another household or community CUT other fish for your household?.....Y N

IF YES, who CUT the OTHER FISH your household used? (Enter most important sources first.)

PROCESSED OTHER FISH															
2															

…Did anyone living in another household or community SHARE other fish with your household?.....Y N

IF YES, who GAVE other fish to your household? (Enter most important sources first.)

SHARED OTHER FISH															
3															

…Did anyone ELSE living in another household or community BARTER OR TRADE other fish with your household?.....Y N

IF YES, who BARTERED OR TRADED other fish with your household? (Enter most important sources first.)

BARTERED OTHER FISH															
5															

…Did anyone living in another household or community SELL subsistence-caught other fish to your household?.....Y N

IF YES, who sold other fish to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD OTHER FISH TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF OTHER FISH: 67 **NENANA: 241**

ASSESSMENTS: OTHER FISH

HOUSEHOLD ID

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

During the last year,[1]

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

IF LESS or MORE …

X = do not use

WHY was your use different? _____

_____

During the last year,[1]

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

If NO…

What KIND of did you need? _____

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

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

ASSESSMENTS OF OTHER FISH: 66 **NENANA: 241**

NOTES HOUSEHOLD ID

NOTES **NENANA: 241**

HARVESTS: MARINE INVERTEBRATES

HOUSEHOLD ID

1. Do you or members of your household USUALLY harvest marine invertebrates for subsistence, personal use, or sport? Y N

2. During the last year (between January 1, 2015 and December 31, 2015),
   did you, or members of your household USE or TRY TO HARVEST marine invertebrates?..... Y N

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

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

During the last year,[1]

did you or members of your household…

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

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	AMOUNT *(amt)*	Units[4] *specify*	COMMENTS *(text)*
DUNGENESS CRAB	Y N	Y N	Y N	Y N	Y N		IND.	
501004000								
KING CRAB	Y N	Y N	Y N	Y N	Y N		IND.	
501008000								
TANNER CRAB	Y N	Y N	Y N	Y N	Y N		IND.	
501012000								
RAZOR CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500612000								
FRESHWATER CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500604000								
BUTTER CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500602000								
OTHER/UNKNOWN CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500699000								
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

MARINE INVERTEBRATES: 08 **NENANA: 241**

NETWORKS: INVERTEBRATES

HOUSEHOLD ID

If this household did NOT USE or HARVEST invertebrates last year, go to the NEXT PAGE.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING: INVERTEBRATES *Refer to data collection maps and mapping instructions to map invertebrates...*

NETWORKS: INVERTEBRATES 500000000

Members of your household

role	*enter person code from page 2*

During the last year...[1]

…which members of your household HARVESTED (GOT) invertebrates that your household used? (Enter most important sources first.)

HARVESTED (GOT) INVERTEBRATES														
1														

…which members of your household PROCESSED invertebrates that your household used? (Enter most important sources first.)

PROCESSED INVERTEBRATES														
2														

…which members of your household RECEIVED A SHARE FOR HELPING someone else GET or PUT AWAY invertebrates?

SHARE FOR HELPING														
4														

People in other households or other communities

role	*enter local HH code (000) or airport code (XXX) for other community*

During the last year...[1]

…Did anyone living in another household or community GET invertebrates for your household?.....Y N

IF YES, who HARVESTED (GOT) the invertebrates your household used? (Enter most important sources first.)

HARVESTED (GOT) INVERTEBRATES														
1														

…Did anyone living in another household or community PUT AWAY invertebrates for your household?.....Y N

IF YES, who PUT AWAY the INVERTEBRATES your household used? (Enter most important sources first.)

PROCESSED INVERTEBRATES														
2														

…Did anyone living in another household or community SHARE invertebrates with your household?.....Y N

IF YES, who GAVE invertebrates to your household? (Enter most important sources first.)

SHARED INVERTEBRATES														
3														

…Did anyone ELSE living in another household or community BARTER OR TRADE invertebrates with your household?.....Y N

IF YES, who BARTERED OR TRADED invertebrates with your household? (Enter most important sources first.)

BARTERED INVERTEBRATES														
5														

…Did anyone living in another household or community SELL subsistence-caught invertebrates to your household?.....Y N

IF YES, who sold invertebrates to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD INVERTEBRATES TO US														
6														

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF INVERTEBRATES: 67 **NENANA: 241**

ASSESSMENTS: INVERTEBRATES

HOUSEHOLD ID

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

During the last year,[1]

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

IF LESS or MORE …

X = do not use

WHY was your use different? _____

_____

During the last year,[1]

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

If NO…

What KIND of did you need? _____

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

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

ASSESSMENTS OF INVERTEBRATES: 66 **NENANA: 241**

HARVESTS: LARGE LAND MAMMALS

HOUSEHOLD ID

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

2. During the last year (between January 1, 2015 and December 31, 2015), did you, or members of your household USE or TRY TO HARVEST large land mammals?..... Y N

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

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

During the last year,[1]

did you or members of your household...

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

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	SEX	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS[3]
						M/F	*(specify amount harvested per month)*													*(specify)*
MOOSE	Y N	Y N	Y N	Y N	Y N	M														IND
						F														IND
211800000						UNK														IND
211800001						1														
211800002						2														
211800009						-9														
CARIBOU	Y N	Y N	Y N	Y N	Y N	M														IND
						F														IND
211000000						UNK														IND
211000001						1														
211000002						2														
211000009						-9														
BLACK BEAR	Y N	Y N	Y N	Y N	Y N	M														IND
						F														IND
210600000						UNK														IND
210600001						1														
210600002						2														
210600009						-9														
BROWN BEAR	Y N	Y N	Y N	Y N	Y N															IND.
210800000																				
DALL SHEEP	Y N	Y N	Y N	Y N	Y N															IND.
212200000																				
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

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

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

LARGE LAND MAMMALS: 10 **NENANA: 241**

NETWORKS: MOOSE

HOUSEHOLD ID

If this household did NOT USE or HARVEST moose last year, go to the NEXT PAGE.

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

MAPPING: MOOSE *Refer to data collection maps and mapping instructions to map moose...*

NETWORKS: MOOSE 211800000

Members of your household

role	*enter person code from page 2*

During the last year...[1]

…which members of your household HARVESTED (GOT) moose that your household used? (Enter most important sources first.)

HARVESTED (GOT) MOOSE															

…which members of your household PROCESSED moose that your household used? (Enter most important sources first.)

PROCESSED MOOSE															

…which members of your household RECEIVED A SHARE FOR HELPING someone else HUNT or CUT moose?

SHARE FOR HELPING															

People in other households or other communities

role	*enter local HH code (000) or airport code (XXX) for other community*

During the last year...[1]

…Did anyone living in another household or community HUNT moose for your household?..... Y N

IF YES, who HARVESTED (GOT) the moose your household used? (Enter most important sources first.)

HARVESTED (GOT) MOOSE															
1															

…Did anyone living in another household or community CUT moose for your household?..... Y N

IF YES, who CUT the MOOSE your household used? (Enter most important sources first.)

PROCESSED MOOSE															
2															

…Did anyone ELSE living in another household or community SHARE moose with your household?..... Y N

IF YES, who GAVE moose to your household? (Enter most important sources first.)

SHARED MOOSE															
3															

…Did anyone living in another household or community BARTER OR TRADE moose with your household?..... Y N

IF YES, who BARTERED OR TRADED moose with your household? (Enter most important sources first.)

BARTERED MOOSE															
5															

…Did anyone living in another household or community SELL subsistence-caught moose to your household?..... Y N

IF YES, who sold moose to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD MOOSE TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

NETWORKS: CARIBOU

HOUSEHOLD ID

If this household did NOT USE or HARVEST caribou last year, go to the NEXT PAGE.

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

MAPPING: CARIBOU *Refer to data collection maps and mapping instructions to map caribou...*

NETWORKS: CARIBOU 211000000

Members of your household	
role	***enter person code from page 2***

During the last year...[1]

…which members of your household HARVESTED (GOT) caribou that your household used? (Enter most important sources first.)

HARVESTED (GOT) CARIBOU															

…which members of your household PROCESSED caribou that your household used? (Enter most important sources first.)

PROCESSED CARIBOU															

…which members of your household RECEIVED A SHARE FOR HELPING someone else HUNT or CUT caribou?

SHARE FOR HELPING															

People in other households or other communities	
role	***enter local HH code (000) or airport code (XXX) for other community***

During the last year...[1]

…Did anyone living in another household or community HUNT caribou for your household?.....Y N

IF YES, who HARVESTED (GOT) the caribou your household used? (Enter most important sources first.)

HARVESTED (GOT) CARIBOU															
1															

…Did anyone living in another household or community CUT caribou for your household?.....Y N

IF YES, who CUT the CARIBOU your household used? (Enter most important sources first.)

PROCESSED CARIBOU															
2															

…Did anyone ELSE living in another household or community SHARE caribou with your household?.....Y N

IF YES, who GAVE caribou to your household? (Enter most important sources first.)

SHARED CARIBOU															
3															

…Did anyone living in another household or community BARTER OR TRADE caribou with your household?.....Y N

IF YES, who BARTERED OR TRADED caribou with your household? (Enter most important sources first.)

BARTERED CARIBOU															
5															

…Did anyone living in another household or community SELL subsistence-caught caribou to your household?.....Y N

IF YES, who sold caribou to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD CARIBOU TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF CARIBOU: 67 **NENANA: 241**

HARVEST SUMMARY: LARGE LAND MAMMALS

HOUSEHOLD ID

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

During the last year,[1]

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

IF LESS or MORE …

X = do not use

WHY was your use different? 1 _____

2 _____

During the last year,[1]

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

If NO…

What KIND of large land mammals did you need? _____

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

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

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

ASSESSMENTS OF LARGE LAND MAMMALS: 66 **NENANA: 241**

HARVESTS: SMALL LAND MAMMALS OR FURBEARERS

HOUSEHOLD ID

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

2. During the last year (between January 1, 2015 and December 31, 2015),
   did you, or members of your household USE or TRY TO HARVEST small land mammals or furbearers?..... Y N

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

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

During the last year,[1]

did you or members of your household…

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

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	USED FOR FOOD OR FOR FOOD & FUR	UNITS[3]
						(specify amount harvested per month)													(amount)	specify
BEAVER	Y N	Y N	Y N	Y N	Y N															IND.
220200000																				
PORCUPINE	Y N	Y N	Y N	Y N	Y N															IND.
222600000																				
SNOWSHOE HARE	Y N	Y N	Y N	Y N	Y N															IND.
221004000																				
RED FOX	Y N	Y N	Y N	Y N	Y N															IND.
220804000																				
CROSS FOX	Y N	Y N	Y N	Y N	Y N															IND.
220804020																				
WOLF	Y N	Y N	Y N	Y N	Y N															IND.
223200000																				
WOLVERINE	Y N	Y N	Y N	Y N	Y N															IND.
223400000																				
LAND OTTER	Y N	Y N	Y N	Y N	Y N															IND.
221200000																				
MUSKRAT	Y N	Y N	Y N	Y N	Y N															IND.
222400000																				
WEASEL	Y N	Y N	Y N	Y N	Y N															IND.
223000000																				

…Continue on next page

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

SMALL LAND MAMMALS OR FURBEARERS: 14 **NENANA: 241**

HARVESTS: SMALL LAND MAMMALS OR FURBEARERS

HOUSEHOLD ID

…continued from previous page

During the last year,[1]

did you or members of your household…

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

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	USED FOR FOOD OR FOR FOOD & FUR (amount)	UNITS[3] (specify)
						(specify amount harvested per month)														
LYNX	Y N	Y N	Y N	Y N	Y N															IND.
221600000																				
MARTEN	Y N	Y N	Y N	Y N	Y N															IND.
222000000																				
COYOTE	Y N	Y N	Y N	Y N	Y N															IND.
220400000																				
MINK	Y N	Y N	Y N	Y N	Y N															IND.
222200000																				
MARMOT	Y N	Y N	Y N	Y N	Y N															IND.
221800000																				
GROUND SQUIRREL	Y N	Y N	Y N	Y N	Y N															IND.
222802000																				
TREE SQUIRREL	Y N	Y N	Y N	Y N	Y N															IND.
222804000																				
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

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

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

SMALL LAND MAMMALS OR FURBEARERS: 14 **NENANA: 241**

NETWORKS: SMALL LAND ANIMALS

HOUSEHOLD ID

If this household did NOT USE or HARVEST small land animals last year, go to the NEXT PAGE.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING: SMALL LAND ANIMALS *Refer to data collection maps and mapping instructions to map small land animals...*

NETWORKS: SMALL LAND ANIMALS 220000000

Members of your household	
role	***enter person code from page 2***

During the last year...[1]

…which members of your household HARVESTED (GOT) small land animals that your household used? (Enter most important sources first.)

HARVESTED (GOT) SMALL LAND ANIMALS														
1														

…which members of your household PROCESSED small land animals that your household used? (Enter most important sources first.)

PROCESSED SMALL LAND ANIMALS														
2														

…which members of your household RECEIVED A SHARE FOR HELPING someone else HUNT or CUT small land animals?

SHARE FOR HELPING														
4														

People in other households or other communities	
role	***enter local HH code (000) or airport code (XXX) for other community***

During the last year...[1]

…Did anyone living in another household or community HUNT small land animals for your household?.....Y N

IF YES, who HARVESTED (GOT) the small land animals your household used? (Enter most important sources first.)

HARVESTED (GOT) SMALL LAND ANIMALS														
1														

…Did anyone living in another household or community CUT small land animals for your household?.....Y N

IF YES, who CUT the SMALL LAND ANIMALS your household used? (Enter most important sources first.)

PROCESSED SMALL LAND ANIMALS														
2														

…Did anyone living in another household or community SHARE small land animals with your household?.....Y N

IF YES, who GAVE small land animals to your household? (Enter most important sources first.)

SHARED SMALL LAND ANIMALS														
3														

…Did anyone ELSE living in another household or community BARTER OR TRADE small land animals with your household?.....Y N

IF YES, who BARTERED OR TRADED small land animals with your household? (Enter most important sources first.)

BARTERED SMALL LAND ANIMALS														
5														

…Did anyone living in another household or community SELL subsistence-caught small land animals to your household?.....Y N

IF YES, who sold small land animals to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD SMALL LAND ANIMALS TO US														
6														

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF SMALL LAND ANIMALS: 67 **NENANA: 241**

HARVEST SUMMARY: SMALL LAND ANIMALS

HOUSEHOLD ID

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

During the last year,[1]

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

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

During the last year,[1]

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

If NO…

What KIND of small land animals did you need? _____

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

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

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

ASSESSMENTS OF SMALL LAND ANIMALS: 66 **NENANA: 241**

HARVESTS: MARINE MAMMALS

HOUSEHOLD ID

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

2. During the last year (between January 1, 2015 and December 31, 2015), did you, or members of your household USE or TRY TO HARVEST marine mammals?..... Y N

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

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

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

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

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	SEX	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS[3]
						M/F	*(specify amount harvested per month)*													*(specify)*
HARBOR SEAL	Y N	Y N	Y N	Y N	Y N															IND.
300806000																				
STELLER SEA LION	Y N	Y N	Y N	Y N	Y N															IND.
301200000																				
SEA OTTER	Y N	Y N	Y N	Y N	Y N															IND.
301000000																				
FUR SEAL	Y N	Y N	Y N	Y N	Y N															IND.
300804000																				
WHALE *(specify)*	Y N	Y N	Y N	Y N	Y N															IND.
301600000																				
UNKNOWN SEAL *(or seal oil)*	Y N	Y N	Y N	Y N	Y N															IND.
300899000																				
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

MARINE MAMMALS: 12 **NENANA: 241**

NETWORKS: WHALES

HOUSEHOLD ID

If this household did NOT USE or HARVEST whales last year, go to the NEXT PAGE.

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

MAPPING: WHALES *Refer to data collection maps and mapping instructions to map whales...*

NETWORKS: WHALES 301600000

Members of your household	
role	***enter person code from page 2***

During the last year...[1]

…which members of your household HARVESTED (GOT) whales that your household used? (Enter most important sources first.)

HARVESTED (GOT) WHALES															

…which members of your household PROCESSED whales that your household used? (Enter most important sources first.)

PROCESSED WHALES															

…which members of your household RECEIVED A SHARE FOR HELPING someone else HUNT or CUT whales?

SHARE FOR HELPING															

People in other households or other communities	
role	***enter local HH code (000) or airport code (XXX) for other community***

During the last year...[1]

…Did anyone living in another household or community HUNT whales for your household?..... Y N

IF YES, who HARVESTED (GOT) the whales your household used? (Enter most important sources first.)

HARVESTED (GOT) WHALES															
1															

…Did anyone living in another household or community CUT whales for your household?..... Y N

IF YES, who CUT the WHALES your household used? (Enter most important sources first.)

PROCESSED WHALES															
2															

…Did anyone ELSE living in another household or community SHARE whales with your household?..... Y N

IF YES, who GAVE whales to your household? (Enter most important sources first.)

SHARED WHALES															
3															

…Did anyone living in another household or community BARTER OR TRADE whales with your household?..... Y N

IF YES, who BARTERED OR TRADED whales with your household? (Enter most important sources first.)

BARTERED WHALES															
5															

…Did anyone living in another household or community SELL subsistence-caught whales to your household?..... Y N

IF YES, who sold whales to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD WHALES TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF WHALES: 67 **NENANA: 241**

NETWORKS: SEALS

HOUSEHOLD ID

If this household did NOT USE or HARVEST seals last year, go to the NEXT PAGE.

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

MAPPING: SEALS *Refer to data collection maps and mapping instructions to map seals...*

NETWORKS: SEALS 300800000

Members of your household

role	*enter person code from page 2*

During the last year...[1]

…which members of your household HARVESTED (GOT) seals that your household used? (Enter most important sources first.)

HARVESTED (GOT) SEALS															

…which members of your household PROCESSED seals that your household used? (Enter most important sources first.)

PROCESSED SEALS															

…which members of your household RECEIVED A SHARE FOR HELPING someone else HUNT or CUT seals?

SHARE FOR HELPING															

People in other households or other communities

role	*enter local HH code (000) or airport code (XXX) for other community*

During the last year...[1]

…Did anyone living in another household or community HUNT seals for your household?.....Y N

IF YES, who HARVESTED (GOT) the seals your household used? (Enter most important sources first.)

HARVESTED (GOT) SEALS															
1															

…Did anyone living in another household or community CUT seals for your household?.....Y N

IF YES, who CUT the SEALS your household used? (Enter most important sources first.)

PROCESSED SEALS															
2															

…Did anyone ELSE living in another household or community SHARE seals with your household?.....Y N

IF YES, who GAVE seals to your household? (Enter most important sources first.)

SHARED SEALS															
3															

…Did anyone living in another household or community BARTER OR TRADE seals with your household?.....Y N

IF YES, who BARTERED OR TRADED seals with your household? (Enter most important sources first.)

BARTERED SEALS															
5															

…Did anyone living in another household or community SELL subsistence-caught seals to your household?.....Y N

IF YES, who sold seals to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD SEALS TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF SEALS: 67 **NENANA: 241**

HARVEST SUMMARY: MARINE MAMMALS

HOUSEHOLD ID

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

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

ASSESSMENTS: MARINE MAMMALS 300000000

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

During the last year,[1]
… did your household use LESS, SAME, or MORE marine mammals than in recent years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? 1

2

During the last year,[1]
…did your household GET ENOUGH marine mammals?..... Y N

If NO…

What KIND of marine mammals did you need?

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

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

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

ASSESSMENTS OF MARINE MAMMALS: 66 **NENANA: 241**

NOTES HOUSEHOLD ID

HARVESTS: MIGRATORY WATERFOWL

HOUSEHOLD ID

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

2. During the last year (between January 1, 2015 and December 31, 2015),
   did you, or members of your household USE or TRY TO HARVEST migratory waterfowl?..... Y N

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

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

During the last year,[1]

did you or members of your household…

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

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	January February March November December WINTER	April May June SPRING	July August SUMMER	September October FALL	Season of harvest unknown *(number)*	UNITS[3] *(specify)*
						(number killed in each season)					
CANADA GEESE (CACKLERS)	Y N	Y N	Y N	Y N	Y N						IND.
410404040											
CANADA GEESE (BIG LESSER)	Y N	Y N	Y N	Y N	Y N						IND.
410404080											
CANADA GEESE (UNKNOWN)	Y N	Y N	Y N	Y N	Y N						IND.
410404990											
WHITE-FRONTED GEESE *Specklebelly*	Y N	Y N	Y N	Y N	Y N						IND.
410410000											
SPECTACLED EIDER	Y N	Y N	Y N	Y N	Y N						IND.
410206060											
BRANT (SEA GEESE)	Y N	Y N	Y N	Y N	Y N						IND.
410402000											
SNOW GEESE	Y N	Y N	Y N	Y N	Y N						IND.
410408000											
GEESE (UNKNOWN)	Y N	Y N	Y N	Y N	Y N						IND.
410499000											
TUNDRA SWAN (WHISTLING)	Y N	Y N	Y N	Y N	Y N						IND.
410604000											
SANDHILL CRANE	Y N	Y N	Y N	Y N	Y N						IND.
410802000											

…Continue on the next page

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

MIGRATORY WATERFOWL: 15 **NENANA: 241**

HARVESTS: MIGRATORY WATERFOWL

HOUSEHOLD ID

…continued from previous page

During the last year,[1]

did you or members of your household…

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

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	January February March November December WINTER	April May June SPRING	July August SUMMER	September October FALL	Season of harvest unknown (number)	UNITS[3] (specify)
						(number killed in each season)					
MALLARD	Y N	Y N	Y N	Y N	Y N						IND.
410214000											
NORTHERN PINTAIL	Y N	Y N	Y N	Y N	Y N						IND.
410220000											
GOLDENEYE	Y N	Y N	Y N	Y N	Y N						IND.
410210000											
GREEN WINGED TEAL	Y N	Y N	Y N	Y N	Y N						IND.
410232060											
CANVASBACK	Y N	Y N	Y N	Y N	Y N						IND.
410204000											
BLACK SCOTER	Y N	Y N	Y N	Y N	Y N						IND.
410228020											
UNKNOWN DUCKS	Y N	Y N	Y N	Y N	Y N						IND.
410299000											
	Y N	Y N	Y N	Y N	Y N						IND.
	Y N	Y N	Y N	Y N	Y N						IND.
	Y N	Y N	Y N	Y N	Y N						IND.
	Y N	Y N	Y N	Y N	Y N						IND.
	Y N	Y N	Y N	Y N	Y N						IND.

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

MIGRATORY WATERFOWL: 15 **NENANA: 241**

HARVESTS: OTHER BIRDS

HOUSEHOLD ID

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

2. During the last year (between January 1, 2015 and December 31, 2015), did you, or members of your household USE or TRY TO HARVEST other birds?..... Y N

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

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

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

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

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	January February March November December WINTER	April May June SPRING	July August SUMMER	September October FALL	Season of harvest unknown *(number)*	UNITS[3] *(specify)*
PTARMIGAN	Y N	Y N	Y N	Y N	Y N						IND.
421804990											
SPRUCE GROUSE	Y N	Y N	Y N	Y N	Y N						IND.
421802020											
RUFFED GROUSE	Y N	Y N	Y N	Y N	Y N						IND.
421802060											
SHARP-TAILED GROUSE	Y N	Y N	Y N	Y N	Y N						IND.
421802040											
GROUSE (UNKNOWN)	Y N	Y N	Y N	Y N	Y N						IND.
421802990											
	Y N	Y N	Y N	Y N	Y N						IND.
	Y N	Y N	Y N	Y N	Y N						IND.
	Y N	Y N	Y N	Y N	Y N						IND.
	Y N	Y N	Y N	Y N	Y N						IND.

(number killed in each season)

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

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

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

OTHER BIRDS: 15 **NENANA: 241**

HARVESTS: BIRD EGGS

HOUSEHOLD ID

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

2. During the last year (between January 1, 2015 and December 31, 2015), did you, or members of your household USE or TRY TO HARVEST bird eggs?..... Y N

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

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

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

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

if harvest is "yes"

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

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

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

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

BIRD EGGS: 15 **NENANA: 241**

NETWORKS: BIRDS

HOUSEHOLD ID

If this household did NOT USE or HARVEST birds last year, go to the NEXT PAGE.

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

MAPPING: BIRDS *Refer to data collection maps and mapping instructions to map birds...*

NETWORKS: BIRDS 410000000

Members of your household

role	*enter person code from page 2*

During the last year...[1]

…which members of your household HARVESTED (GOT) birds that your household used? (Enter most important sources first.)

HARVESTED (GOT) BIRDS															

…which members of your household PROCESSED birds that your household used? (Enter most important sources first.)

PROCESSED BIRDS															

…which members of your household RECEIVED A SHARE FOR HELPING someone else HUNT or CLEANED birds?

SHARE FOR HELPING															

People in other households or other communities

role	*enter local HH code (000) or airport code (XXX) for other community*

During the last year...[1]

…Did anyone living in another household or community HUNT birds for your household?.....Y N

IF YES, who HARVESTED (GOT) the birds your household used? (Enter most important sources first.)

HARVESTED (GOT) BIRDS															
1															

…Did anyone living in another household or community CLEANED birds for your household?.....Y N

IF YES, who CLEANED the BIRDS your household used? (Enter most important sources first.)

PROCESSED BIRDS															
2															

…Did anyone ELSE living in another household or community SHARE birds with your household?.....Y N

IF YES, who GAVE birds to your household? (Enter most important sources first.)

SHARED BIRDS															
3															

…Did anyone living in another household or community BARTER OR TRADE birds with your household?.....Y N

IF YES, who BARTERED OR TRADED birds with your household? (Enter most important sources first.)

BARTERED BIRDS															
5															

…Did anyone living in another household or community SELL subsistence-caught birds to your household?.....Y N

IF YES, who sold birds to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD BIRDS TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF BIRDS: 67 **NENANA: 241**

NETWORKS: EGGS

HOUSEHOLD ID

If this household did NOT USE or HARVEST eggs last year, go to the NEXT PAGE.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING: EGGS *Refer to data collection maps and mapping instructions to map eggs...*

NETWORKS: EGGS 430000000

Members of your household

role	*enter person code from page 2*

During the last year...[1]

…which members of your household GATHERED eggs that your household used? (Enter most important sources first.)

GATHERED EGGS															

…which members of your household PROCESSED eggs that your household used? (Enter most important sources first.)

PROCESSED EGGS															

…which members of your household RECEIVED A SHARE FOR HELPING someone else GATHER or PUT AWAY eggs?

SHARE FOR HELPING															

People in other households or other communities

role	*enter local HH code (000) or airport code (XXX) for other community*

During the last year...[1]

…Did anyone living in another household or community GATHER eggs for your household?.....Y N

IF YES, who GATHERED the eggs your household used? (Enter most important sources first.)

GATHERED EGGS															
1															

…Did anyone living in another household or community PUT AWAY eggs for your household?.....Y N

IF YES, who PUT AWAY the EGGS your household used? (Enter most important sources first.)

PROCESSED EGGS															
2															

…Did anyone ELSE living in another household or community SHARE eggs with your household?.....Y N

IF YES, who GAVE eggs to your household? (Enter most important sources first.)

SHARED EGGS															
3															

…Did anyone living in another household or community BARTER OR TRADE eggs with your household?.....Y N

IF YES, who BARTERED OR TRADED eggs with your household? (Enter most important sources first.)

BARTERED EGGS															
5															

…Did anyone living in another household or community SELL subsistence-caught eggs to your household?.....Y N

IF YES, who sold eggs to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD EGGS TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF EGGS: 67 **NENANA: 241**

HARVEST SUMMARY: BIRDS AND EGGS

HOUSEHOLD ID

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

During the last year,[1]

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

IF LESS or MORE …

X = do not use

WHY was your use different? _____ 1

_____ 2

During the last year,[1]

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

If NO…

What KIND of birds and eggs did you need? _____

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

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

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

ASSESSMENTS OF BIRDS AND EGGS: 66 **NENANA: 241**

HARVESTS: BERRIES

HOUSEHOLD ID

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

2. During the last year (between January 1, 2015 and December 31, 2015), did you, or members of your household USE or TRY TO HARVEST berries?..... Y N

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

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

During the last year,[1]

did you or members of your household…

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

if harvest is "yes"

Please estimate how many berries ALL MEMBERS OF YOUR HOUSEHOLD got during the last year.

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	AMOUNT *(amt)*	Units[4] *specify*	COMMENTS *(text)*
BLUEBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601002000								
LOW BUSH CRANBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601004000								
HIGH BUSH CRANBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601006000								
RASPBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601020000								
STRAWBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601026000								
OTHER BERRIES	Y N	Y N	Y N	Y N	Y N		GAL.	
601099000								
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	

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

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

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

BERRIES: 17 **NENANA: 241**

HARVESTS: PLANTS, GREENS, OR FIREWOOD

HOUSEHOLD ID

1. Do you or members of your household USUALLY harvest plants, greens, or firewood?..... Y N

2. During the last year (between January 1, 2015 and December 31, 2015),
did you, or members of your household USE or TRY TO HARVEST plants, greens, or firewood?..... Y N

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

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

During the last year,[1]

did you or members of your household…

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

if harvest is "yes"

Please estimate how many plants, greens, or firewood ALL MEMBERS OF YOUR HOUSEHOLD got during the last year.

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	AMOUNT *(amt)*	Units[4] *specify*	COMMENTS *(text)*
HUDSON BAY TEA *Labrador Tea*	Y N	Y N	Y N	Y N	Y N		GAL.	
602018000								
WILD ROSE HIPS	Y N	Y N	Y N	Y N	Y N		GAL.	
602036000								
MUSHROOMS	Y N	Y N	Y N	Y N	Y N		LBS	
602040000								
CHAGA	Y N	Y N	Y N	Y N	Y N		LBS	
602046040								
PUNK	Y N	Y N	Y N	Y N	Y N		GAL.	
602046010								
OTHER PLANTS	Y N	Y N	Y N	Y N	Y N		GAL.	
602038000								
	Y N	Y N	Y N	Y N	Y N		GAL.	

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

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

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

Please estimate the percentage of your household's heating needs in 2015 that came from firewood.

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

(circle one)

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

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

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

PLANTS, GREENS, OR FIREWOOD: 17 **NENANA: 241**

NETWORKS: PLANTS

HOUSEHOLD ID

If this household did NOT USE or HARVEST plants last year, go to the NEXT PAGE.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING: PLANTS *Refer to data collection maps and mapping instructions to map plants...*

NETWORKS: PLANTS 600000000

Members of your household

role	*enter person code from page 2*

During the last year...[1]

…which members of your household PICKED plants that your household used? (Enter most important sources first.)

PICKED PLANTS															

…which members of your household PROCESSED plants that your household used? (Enter most important sources first.)

PROCESSED PLANTS															

…which members of your household RECEIVED A SHARE FOR HELPING someone else PICK or PUT AWAY plants?

SHARE FOR HELPING															

People in other households or other communities

role	*enter local HH code (000) or airport code (XXX) for other community*

During the last year...[1]

…Did anyone living in another household or community PICK plants for your household?..... Y N

IF YES, who PICKED the plants your household used? (Enter most important sources first.)

PICKED PLANTS															
1															

…Did anyone living in another household or community PUT AWAY plants for your household?..... Y N

IF YES, who PUT AWAY the PLANTS your household used? (Enter most important sources first.)

PROCESSED PLANTS															
2															

…Did anyone ELSE living in another household or community SHARE plants with your household?..... Y N

IF YES, who GAVE plants to your household? (Enter most important sources first.)

SHARED PLANTS															
3															

…Did anyone living in another household or community BARTER OR TRADE plants with your household?..... Y N

IF YES, who BARTERED OR TRADED plants with your household? (Enter most important sources first.)

BARTERED PLANTS															
5															

…Did anyone living in another household or community SELL subsistence-caught plants to your household?..... Y N

IF YES, who sold plants to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD PLANTS TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF PLANTS: 67 **NENANA: 241**

NETWORKS: FIREWOOD

HOUSEHOLD ID

If this household did NOT USE or HARVEST firewood last year, go to the NEXT PAGE.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING: FIREWOOD *Refer to data collection maps and mapping instructions to map firewood...*

NETWORKS: FIREWOOD 604000000

Members of your household

role	*enter person code from page 2*

During the last year...[1]

…which members of your household CUT firewood that your household used? (Enter most important sources first.)

CUT FIREWOOD															

…which members of your household PROCESSED firewood that your household used? (Enter most important sources first.)

PROCESSED FIREWOOD															

…which members of your household RECEIVED A SHARE FOR HELPING someone else CUT or BUCKED AND STACKED firewood?

SHARE FOR HELPING															

People in other households or other communities

role	*enter local HH code (000) or airport code (XXX) for other community*

During the last year...[1]

…Did anyone living in another household or community CUT firewood for your household?..... Y N

IF YES, who CUT the firewood your household used? (Enter most important sources first.)

CUT FIREWOOD															
1															

…Did anyone living in another household or community BUCKED AND STACKED firewood for your household?..... Y N

IF YES, who BUCKED AND STACKED the FIREWOOD your household used? (Enter most important sources first.)

PROCESSED FIREWOOD															
2															

…Did anyone ELSE living in another household or community SHARE firewood with your household?..... Y N

IF YES, who GAVE firewood to your household? (Enter most important sources first.)

SHARED FIREWOOD															
3															

…Did anyone living in another household or community BARTER OR TRADE firewood with your household?..... Y N

IF YES, who BARTERED OR TRADED firewood with your household? (Enter most important sources first.)

BARTERED FIREWOOD															
5															

…Did anyone living in another household or community SELL subsistence-caught firewood to your household?..... Y N

IF YES, who sold firewood to your household ("CUSTOMARY TRADE")? (Enter most important sources first.)

SOLD FIREWOOD TO US															
6															

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

MAPS & NETWORKS OF FIREWOOD: 67 **NENANA: 241**

HARVEST SUMMARY: PLANTS AND BERRIES

HOUSEHOLD ID

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

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

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

ASSESSMENTS: PLANTS AND BERRIES 600000000

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

During the last year,[1]

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

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

During the last year,[1]

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

If NO…

What KIND of plants and berries did you need? _____

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

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

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

ASSESSMENTS OF PLANTS AND BERRIES: 66 **NENANA: 241**

HARVEST SUMMARY: ALL RESOURCES

HOUSEHOLD ID

ASSESSMENTS: ALL RESOURCES 0

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

During the last year,[1]

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

IF LESS or MORE … X = do not use

WHY was your use different? 1 _____

2 _____

During the last year,[1]

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

If NO…

What KIND of wild resources did you need? _____

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

HEALTH IMPACT ASSESSMENTS

(circle ONE response)

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

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

Otherwise, continue below…

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

(Not necessary to fill out every line)

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

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

(Not necessary to fill out every line)

	Other Food	Other Food	Other Food	Other Food	Other Food
OTHER FOODS[2] (1 TO 5)					
OTHER FOODS[2] (6 TO 10)					

1 "LAST YEAR" means between January 1, 2015 and December 31, 2015.

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

ASSESSMENTS OF ALL RESOURCES: 66 **NENANA: 241**

FOOD AND EQUIPMENT SHARING

HH ID

In most of this survey, we have asked how your HH got your wild foods. On this page, we ask the opposite question, with much less detail. During the last 12 months, did anyone in your HH GIVE wild foods or provide equipment or other help to someone in Nenana or ANOTHER community, including potlaches & feasts?..... Y N

IF NO, go to the next page.

IF YES, continue on this page...

Please list the most important HHs that members of your HH provided with fish, game, berries, greens, or equipment.

1 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

2 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

3 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

4 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

5 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

6 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

7 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

8 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

9 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

10 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

11 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

12 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

13 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

14 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

15 HH ID_____
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

Did anyone in your HH harvest fish, game, or Berries or Greens, or give wild foods to FEASTS, such as potlatches Thanksgiving or Christmas holidays, or other community get togethers? Y N

POTLATCH
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

THANKSGIVING / CHRISTMAS
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

3 OTHER _____?
- Provided Fish?
- Provided Game?
- Provided Berries or Greens?
- Provided Equipment?

NETWORK: 67 **NENANA: 241**

FOOD SECURITY

HOUSEHOLD ID

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

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

(Circle one)

HH1

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

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

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

1 2 3

If 2 or 3

continue to Statement 4 …

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

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

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

If YES…

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

…did this happen because your household couldn't get WILD FOOD,
your HH couldn't get STORE-BOUGHT food, or your HH couldn't get BOTH KINDS of food?..... WILD STOR BOTH

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

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

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

If YES…

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

…did this happen because your household couldn't get WILD FOOD,
your HH couldn't get STORE-BOUGHT food, or your HH couldn't get BOTH KINDS of food?..... WILD STOR BOTH

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

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

If YES…

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

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

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

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

If YES…

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

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

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

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

If YES…

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

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

FOOD SECURITY

HOUSEHOLD ID

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

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

If YES…

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

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

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

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

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

If YES…

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

FOOD SECURITY: 201 **NENANA: 241**

EMPLOYMENT

HOUSEHOLD ID

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

Between January 1, 2015 and December 31, 2015 ...

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

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

For each member of this household born before 2000, list EACH JOB held last year. For household members who did not have a job, write: RETIRED, UNEMPLOYED, STUDENT, HOMEMAKER, DISABLED, etc..

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

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

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

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

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

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

EMPLOYMENT: 23 **NENANA: 241**

OTHER INCOME

HOUSEHOLD ID

Between January 1, 2015 and December 31, 2015 ...

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

IF NO, go to the next section on this page

IF YES, continue below…

		Did anyone in your household receive income from _____ in 2015 (circle one)		TOTAL amount all members of your household received from _____ in 2015 (dollars)	
DIVIDENDS	ALASKA PERMANENT FUND DIVIDEND	Y	N	$	/ YR
	32				
	NATIVE CORPORATION DIVIDENDS	Y	N	$	/ YR
	13				

Alaska PFD IN 2015
1 PFD = $2,072
2 PFDs = $4,144
3 PFDs = $6,216
4 PFDs = $8,288
5 PFDs = $10,360
6 PFDs = $12,432
7 PFDs = $14,504
8 PFDs = $16,576
9 PFDs = $18,648
10 PFDs = $20,720
11 PFDs = $22,792

Regional corporations	***Dividend***
Village Corporation(s)	***Dividend***

Between January 1, 2015 and December 31, 2015 ...

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

IF NO, go to the next section on this page

IF YES, continue below…

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

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

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

Scratch paper for calculations

for _____ weeks =
for _____ weeks =

for _____ weeks =
for _____ weeks =

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

OTHER INCOME: 24 **NENANA: 241**

NETWORKS: EXPENSES

HOUSEHOLD ID

Members of your household	
role	*enter person code from page 2*

During the last year...[1]

…which members of your household PAID FOR HUNTING & FISHING SUPPLIES, such as gasoline, fishing gear, or ammunition?

PAID FOR H&F SUPPLIES																
4																

…which members of your household OWNED THE HUNTING &FISHING EQUIPMENT your household used, such as boats, snowmachine, etc.?

OWNED H&F EQUIPMENT																
4																

…which members of your household PAID YOUR HOUSEHOLD'S EXPENSES, such as stove oil, electricity, telephone, or rent? [2]

PAID HOUSEHOLD EXPENSES																
1																

...which members of your household PAID FOR FOODS for your household, either from local stores, mail order, or from other people?

PAID FOR FOODS																
2																

lds or other communities		
ole	*enter local HH code (000) or airport code (XXX) forother community*	

During the last year...[1]

…Did anyone living in another household or community PAY FOR HUNTING & FISHING SUPPLIES for your household?..... Y N

IF YES, who else PAID FOR H&F SUPPLIES for your household? (Enter most important sources first.)

PAID FOR H&F SUPPLIES																
3																

…Did anyone living in another household or community OWN HUNTING & FISHING EQUIPMENT your household used?..... Y N

IF YES, who else OWNED H&F EQUIPMENT your household used? (Enter most important sources first.)

OWNED H&F EQUIPMENT																
5																

…Did anyone living in another household or community PAY EXPENSES for your household?..... Y N

IF YES, who else PAID EXPENSES for your household? (Enter most important sources first.)

PAID HOUSEHOLD EXPENSES																
1																

…Did anyone living in another household or community PAY FOR FOODS for your household?..... Y N

IF YES, who else PAID FOR FOODS for your household? (Enter most important sources first.)

PAID FOR FOODS																
2																

NOTES

1 *"LAST YEAR" means between January 1, 2015 and December 31, 2015.*

2 *If money came from unemployment, TANF, or similar institution, list PERSON or HOUSEHOLD who received the income.*

MAPS & NETWORKS OF EXPENSES: 66, 67 **NENANA: 241**

COMMENTS

HOUSEHOLD ID

DO YOU HAVE ANY QUESTIONS, COMMENTS OR CONCERNS?

INTERVIEW SUMMARY: **DON'T FORGET TO FILL IN THE STOP TIME** _____

COMMENTS: 300 **NENANA: 241**

HOUSEHOLD PARTICIPATION

HOUSEHOLD ID

Fill out this page from the network responses during coding.

Between January 1, 2015 and December 31, 2015

Did this person ….

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

PERMANENT HH MEMBERS: 01 **NENANA: 241**

APPENDIX B.–ETHNOGRAPHIC INTERVIEW PROTOCOL

Alaska LNG Project

Part 1. Demographic Information
In the beginning of each interview, I recommend asking some basic demographic questions:

1. name
2. year/location born
3. parents names and where from?
4. how long has respondent been hunting/fishing?

Then, it is often useful to take the seasonal round approach when doing interviews and let people answer the questions below through the structure of a description of the parts of the seasonal round that they participate in. That way, you can also document seasonal camps used in the past or currently used by respondent. **[Keep in mind that you do not have to do it this way, but the species sections below are ordered by a seasonal round. Skip around if that works better for you and your respondent.]**

Beginning in the spring with bird hunting…

Part 2. Migratory Bird hunting

1. Please describe your current migratory bird hunting practices:

a. what are the primary species you try to get every year? Do you collect eggs (which kinds?)

b. who do you hunt with year to year? How is this determined?

c. if you are successful, what do you do with the birds – how do you distribute/share it?

d. How do you preserve/process your harvest?

e. how do you feel the different bird populations are doing right now? Why do you think the population is declining/increasing? Are the different bird species healthy?

f. Are there environmental factors that contribute to changes in bird migrations and hunting? (changing weather patterns, changing habitat, etc)

g. are younger people learning to hunt birds? If so, how do they do that? How did you learn?

h. can you show us where you hunt now (or in the last 5 years?) what about the last 10 or 20 years? Have those areas changed at all?

i. are there any rules about hunting or the treatment of birds during hunting/harvest?

j. native names for birds or other aspects of bird hunting? Do you remember any traditional stories about birds or bird hunting in your village?

k. are there any natural seasonal indicators that you use to know when the birds will come?

Part 3. Non-salmon fishing – ask questions for each species (households are likely to harvest multiple species. While we want to document all species they harvest, the most important species to cover will be: whitefish [differentiate species if possible], sheefish, and pike. If a household heavily harvests another species, document that as much as possible.**)**

1. Please describe your current non-salmon fishing practices:

a. which species do you harvest? Timing of that harvest (for each species)?

b. do you fish with other people? How is this determined?

c. what are the primary means you use to harvest different species of non-salmon? (gear type by species?)

d. what do you do with the non-salmon you harvest – how do you distribute/share it?

e. are younger people learning to fish? If so, how do they do that? How did you learn?

f. how do you feel the non-salmon population is doing right now? Why do you think the population is declining/increasing? Are the non- salmon healthy?

g. Have your fishing areas changed at all? (map changes in area – currently and 10-20 years ago)

h. if there are changes to your fishing areas, what explains those changes? (environmental conditions, personal circumstances, traditional areas, changes in the fish population, regulations, etc)

i. Are there environmental factors that contribute to changes in non-salmon fishing? (weather, river conditions, etc)

g. which parts of the fish do you use? How do you preserve/process these parts?

h. are there any rules about fishing or the treatment of fish/nets during fishing?

i. native names for non- salmon species or other aspects of fishing? Do you remember any traditional stories about non-salmon species or fishing in your village?

Part 4. Salmon fishing

1. Please describe your current salmon fishing practices:

a. do you fish with other people? How is this determined?

b. which species do you harvest? Timing of that harvest?

c. what are the primary means you use to harvest salmon? (gear type by species?)

d. what do you do with the salmon you harvest – how do you distribute/share it?

e. which parts of the salmon do you use? How do you preserve/process these parts?

f. how do you feel the salmon population is doing right now? Why do you think the population is declining/increasing? Are the salmon healthy?

g. Have your fishing areas changed at all? (map changes in area – currently and 10-20 years ago)

h. if there are changes to your fishing areas, what explains those changes? (environmental conditions, personal circumstances, traditional areas, changes in the fish population, regulations, etc)

i. Are there environmental factors that contribute to changes in salmon fishing? (weather, river conditions, etc)

j. many people say that the elders used observations of the environment (changes in the land or water, weather, other animals' behavior) to know when salmon were coming and how many might come. Do you remember any of these 'natural indicators'?

k. are younger people learning to fish? If so, how do they do that? How did you learn?

l. are there any rules about fishing or the treatment of fish/nets during fishing?

m. native names for salmon species or other aspects of fishing? Do you remember any traditional stories about salmon or fishing in your village?

Part 5. Moose hunting

1. Please describe your current moose hunting practices

a. who do you hunt with year to year? How is this determined?

b. if you are successful, what do you do with the moose – how do you distribute/share it?

c. which parts of the moose do you use? How do you preserve/process these parts?

d. how do you feel the moose population is doing right now? Why do you think the population is declining/increasing (e.g. predation concerns, hard winters, good habitat, etc?)? Are the moose healthy?

e. Are there environmental factors that contribute to changes in moose hunting? (weather, river conditions, etc)

f. are younger people learning to hunt? If so, how do they do that? How did you learn?

g. can you show us where you hunt now (or in the last 5 years?) what about the last 10 or 20 years? Have those areas changed at all?

h. are there any rules about hunting or the treatment of moose or other animals during moose hunting/harvest?

i. native names for moose or other aspects of moose hunting? Do you remember any traditional stories about moose or moose hunting in your village?

Part 6. Other large game hunting (brown bear, black bear, caribou)

1. Please describe your current big game hunting practices (for each…)

a. who do you hunt with year to year? How is this determined?

b. if you are successful, what do you do with the bear/caribou – how do you distribute/share it?

c. which parts of the bear/caribou do you use? How do you preserve/process these parts?

d. how do you feel the bear/caribou population is doing right now? Why do you think the population is declining/increasing? Are they healthy?

e. can you show us where you hunt now (or in the last 5 years?) what about the last 10 or 20 years? Have those areas changed at all?

f. Are there environmental factors that contribute to changes in bear/caribou hunting? (weather, river conditions, winter conditions, migratory routes (caribou), etc)

g. are younger people learning to hunt? If so, how do they do that? How did you learn?

h. are there any rules about hunting or the treatment of bear/caribou or other animals during moose hunting/harvest?

i. native names for bear/caribou or other aspects of bear/caribou hunting? Do you remember any traditional stories about bear/caribou or bear/caribou hunting in your village?

Part 7. Trapping

1. Please describe your current trapping practices:

a. do you trap with anyone else? How is this determined?

b. how do you 'hold' your trapline? From whom (if anyone) did you get it/take it over?

c. are younger people learning to trap? If so, how do they do that? How did you learn?

d. what species do you trap? Why?

e. how do you feel the population of the animals you trap is doing right now? Why do you think the population is declining/increasing? Are the species you trap healthy?

f. can you show us where you trap now (or in the last 5 years?) what about the last 10 or 20 years? Have those areas changed at all?

g. Are there environmental factors that contribute to changes in trapping? (changing weather, snow pack, river conditions, etc)

APPENDIX C.–CONVERSION FACTORS

The following table presents the conversion factors used in determining how many pounds were harvested of each resource surveyed. For instance, if respondents reported harvesting 3 qt of smelt, the quantity would be multiplied by the appropriate conversion factor (in this case 1.5) to show a harvest of 4.5 lb of smelt.

Resource name	Reported units	Conversion factor
Chum salmon	individual	4.7212
Chum salmon [CF retention]	individual	4.7212
Summer chum salmon	individual	4.7212
Summer chum salmon [CF retention]	individual	4.7212
Fall chum salmon	individual	4.7212
Fall chum salmon [CF retention]	individual	4.7212
Coho salmon	individual	5.3850
Coho salmon	pounds	1.0000
Coho salmon [CF retention]	individual	5.3850
Chinook salmon	individual	7.9200
Chinook salmon	pounds	1.0000
Chinook salmon [CF retention]	individual	7.9200
Chinook salmon [CF retention]	pounds	1.0000
Pink salmon	individual	2.5550
Pink salmon [CF retention]	individual	2.5550
Sockeye salmon	individual	4.8100
Sockeye salmon	pounds	1.0000
Sockeye salmon [CF retention]	individual	4.8100
Sockeye salmon [CF retention]	pounds	1.0000
Landlocked salmon	individual	1.0000
Pacific herring	gallons	6.0000
Pacific herring	pounds	1.0000
Pacific herring [CF retention]	gallons	6.0000
Pacific herring roe [CF retention]	gallons	6.0000
Pacific herring roe/unspecified	individual	0.1800
Pacific herring roe/unspecified	gallons	6.0000
Pacific herring roe on hemlock branches	gallons	6.0000
Eulachon (hooligan, candlefish)	individual	0.1800
Eulachon (hooligan, candlefish)	gallons	6.0000
Unknown smelts	gallons	6.0000
Pacific (gray) cod	individual	3.2000
Pacific tomcod	individual	0.2100
Pacific tomcod	pounds	1.0000
Saffron cod	individual	0.2100
Walleye pollock (whiting)	individual	1.4000
Starry flounder	individual	1.1000
Starry flounder	pounds	1.0000
Atka mackerel	individual	1.0000
Lingcod	individual	4.0000
Pacific halibut	individual	21.1000
Pacific halibut	pounds	1.0000
Pacific halibut [CF retention]	pounds	1.0000

-continued-

Resource name	Reported units	Conversion factor
Arctic lamprey	individual	0.6000
Black rockfish	individual	1.5000
Unknown rockfishes	individual	1.5000
Unknown rockfishes	pounds	1.0000
Sablefish (black cod)	individual	3.1000
Unknown skates	individual	5.0000
Burbot	individual	4.2000
Arctic char	individual	0.9000
Dolly Varden–unknown	individual	0.9000
Lake trout	individual	4.0000
Arctic grayling	individual	0.9000
Northern pike	individual	3.3000
Sheefish	individual	5.5000
Longnose sucker	individual	1.4000
Cutthroat trout	individual	1.4000
Rainbow trout	individual	1.4000
Steelhead	individual	0.7000
Unknown trouts	individual	1.4000
Broad whitefish	individual	3.2000
Bering cisco	individual	1.4000
Least cisco	individual	0.7000
Humpback whitefish	individual	2.1000
Round whitefish	individual	0.7000
Unknown whitefishes	individual	1.8124
Bison	individual	450.0000
Black bear	individual	100.0000
Brown bear	individual	84.0000
Caribou	individual	136.0000
Mule deer	individual	43.2000
Mountain goat	individual	72.5000
Moose	individual	538.0000
Dall sheep	individual	104.0000
Beaver	individual	20.0000
Coyote	individual	15.0000
Red fox–cross phase	individual	1.0000
Red fox–red phase	individual	1.0000
Snowshoe hare	individual	1.5000
River (land) otter	individual	3.0000
Lynx	individual	4.0000
Marmot	individual	5.0000
Marten	individual	0.0000
Mink	individual	2.5000
Muskrat	individual	0.7500
Porcupine	individual	8.0000
Arctic ground (parka) squirrel	individual	0.5000
Red (tree) squirrel	individual	0.5000
Weasel	individual	0.5000
Gray wolf	individual	0.0000

-continued-

Resource name	Reported units	Conversion factor
Wolverine	individual	0.0000
Fur seal	individual	19.7000
Harbor seal	individual	56.0000
Sea otter	individual	19.5000
Steller sea lion	individual	200.0000
Beluga whale	individual	995.0000
Bufflehead	individual	0.6000
Canvasback	individual	1.7000
Spectacled eider	individual	2.1000
Goldeneyes	individual	1.3000
Mallard	individual	1.6000
Long-tailed duck	individual	1.2000
Northern pintail	individual	1.2000
Unknown scaups	individual	1.4000
Black scoter	individual	1.5000
Surf scoter	individual	1.5000
Northern shoveler	individual	0.9000
Green-winged teal	individual	0.5000
American wigeon	individual	1.1000
Unknown wigeons	individual	1.1000
Unknown ducks	individual	1.2643
Unknown ducks	individual	1.3417
Brant	individual	1.6000
Cackling goose	individual	2.0000
Canada goose	individual	4.4000
Unknown Canada/cackling geese	individual	2.8000
Snow goose	individual	2.8000
White-fronted goose	individual	3.1000
Unknown geese	individual	2.9429
Tundra (whistling) swan	individual	10.1000
Sandhill crane	individual	6.4000
Spruce grouse	individual	0.9000
Sharp-tailed grouse	individual	1.0000
Ruffed grouse	individual	0.8000
Unknown grouses	individual	0.8111
Unknown ptarmigans	individual	0.8000
Unknown duck eggs	individual	0.1800
Unknown goose eggs	individual	0.2700
Mew gull eggs	individual	0.1100
Unknown gull eggs	individual	0.1100
Butter clams	individual	0.1200
Butter clams	gallons	3.0000
Freshwater clams	gallons	3.0000
Pacific littleneck clams (steamers)	individual	0.3700
Razor clams	gallons	3.0000
Unknown clams	gallons	3.0000
Dungeness crab	individual	0.7000
King crabs	individual	2.3000

-continued-

Resource name	Reported units	Conversion factor
King crabs[CF retention]	individual	2.3000
Unknown tanner crabs	individual	0.4000
Unknown crabs	gallons	0.0000
Octopus	individual	4.0000
Scallops	gallons	1.6400
Shrimps	pounds	1.0000
Shrimps	gallons	2.0000
Shrimps	quarts	0.5000
Blueberry	individual	0.1000
Blueberry	pounds	1.0000
Blueberry	gallons	4.0000
Blueberry	quarts	1.0000
Blueberry	pints	0.5000
Blueberry	cups	0.2500
Lowbush cranberry	pounds	1.0000
Lowbush cranberry	gallons	4.0000
Lowbush cranberry	quarts	1.0000
Lowbush cranberry	pints	0.5000
Lowbush cranberry	cups	0.2500
Highbush cranberry	gallons	4.0000
Highbush cranberry	quarts	1.0000
Highbush cranberry	pints	0.5000
Highbush cranberry	cups	0.2500
Crowberry	gallons	4.0000
Crowberry	quarts	1.0000
Crowberry	cups	0.2500
Currants	gallons	4.0000
Currants	quarts	1.0000
Currants	pints	0.5000
Currants	cups	0.2500
Cloudberry	gallons	4.0000
Cloudberry	quarts	1.0000
Cloudberry	pints	0.5000
Nagoonberry	gallons	4.0000
Raspberry	pounds	1.0000
Raspberry	gallons	4.0000
Raspberry	quarts	1.0000
Raspberry	pints	0.5000
Raspberry	cups	0.2500
Salmonberry	gallons	4.0000
Strawberry	gallons	4.0000
Strawberry	quarts	1.0000
Strawberry	pints	0.5000
Dogwood berry	quarts	1.0000
Dogwood berry	cups	0.2500
Serviceberry	pints	0.5000
Bearberry	gallons	4.0000
Bearberry	quarts	1.0000

-continued-

Resource name	Reported units	Conversion factor
Other wild berry	pounds	1.0000
Other wild berry	gallons	4.0000
Other wild berry	cups	0.2500
Beach asparagus	gallons	1.0000
Goose tongue	gallons	1.0000
Wild rhubarb	pounds	1.0000
Wild potato	quarts	1.0000
Devils club	gallons	1.0000
Fiddlehead ferns	gallons	1.0000
Fiddlehead ferns	quarts	0.2500
Nettle	quarts	0.2500
Hudson's Bay (Labrador) tea	pounds	1.0000
Hudson's Bay (Labrador) tea	gallons	1.0000
Hudson's Bay (Labrador) tea	quarts	0.2500
Hudson's Bay (Labrador) tea	pints	0.1250
Hudson's Bay (Labrador) tea	cups	0.0625
Lambs quarter	gallons	1.0000
Dandelion greens	gallons	1.0000
Sourdock	gallons	1.0000
Sourdock	pints	0.1250
Spruce tips	gallons	1.0000
Spruce tips	quarts	0.2500
Spruce tips	pints	0.1250
Spruce tips	cups	0.0625
Wild celery	gallons	1.0000
Wild rose hips	pounds	1.0000
Wild rose hips	gallons	4.0000
Wild rose hips	quarts	1.0000
Wild rose hips	pints	0.5000
Wild rose hips	cups	0.2500
Yarrow	pounds	1.0000
Yarrow	quarts	0.2500
Yarrow	pints	0.1250
Other wild greens	individual	0.0250
Other wild greens	pounds	1.0000
Other wild greens	gallons	1.0000
Other wild greens	quarts	0.2500
Other wild greens	pints	0.1250
Other wild greens	cups	0.0625
Unknown mushrooms	individual	0.0250
Unknown mushrooms	pounds	1.0000
Unknown mushrooms	gallons	1.0000
Unknown mushrooms	quarts	0.2500
Unknown mushrooms	pints	0.1250
Unknown mushrooms	cups	0.0625
Fireweed	gallons	1.0000
Fireweed	quarts	0.2500
Fireweed	pints	0.1250
Fireweed	cups	0.0625

-continued-

Resource name	Reported units	Conversion factor
Plantain	gallons	1.0000
Plantain	pints	0.1250
Stinkweed	quarts	0.2500
Punk	gallons	1.0000
Puffballs	individual	0.0250
Puffballs	quarts	0.2500
Orange Boletes	gallons	1.0000
Chaga	pounds	1.0000
Chaga	gallons	1.0000
Sea lovage	quarts	0.2500
Wild chives	gallons	1.0000
Sea chickweed	quarts	0.2500
Wood	0	0.0000
Bark	gallons	0.0000
Balsam poplar	pounds	0.0000
Balsam poplar	gallons	0.0000
Birch sap	gallons	8.0000

Source ADF&G Division of Subsistence household surveys, 2016.

APPENDIX D.–ADDITIONAL TABLES

Table D1-1.–Resources used by study communities, 2015.

Common name	Scientific name
Chum salmon	*Oncorhynchus keta*
Summer chum salmon	*Oncorhynchus keta*
Fall chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Chinook salmon	*Oncorhynchus tshawytscha*
Pink salmon	*Oncorhynchus gorbuscha*
Sockeye salmon	*Oncorhynchus nerka*
Unknown salmon	*Oncorhynchus spp.*
Pacific herring	*Clupea pallasi*
Pacific herring roe	*Clupea pallasi*
Pacific herring roe/unspecified	*Clupea pallasi*
Pacific herring roe on hemlock branches	*Clupea pallasi*
Pacific (gray) cod	*Gadus macrocephalus*
Pacific tomcod	*Microgadus proximus*
Walleye pollock (whiting)	*Theragra chalcogramma*
Starry flounder	*Platichthys stellatus*
Atka mackerel	*Pleurogrammus monopterygius*
Lingcod	*Ophiodon elongatus*
Pacific halibut	*Hippoglossus stenolepis*
Black rockfish	*Sebastes melanops*
Unknown rockfishes	
Sablefish (black cod)	*Anoplopoma fimbria*
Burbot	*Lota lota*
Arctic char	*Salvelinus alpinus*
Dolly Varden	*Salvelinus malma*
Lake trout	*Salvelinus namaycush*
Arctic grayling	*Thymallus arcticus*
Northern pike	*Esox lucius*
Sheefish	*Stenodus leucichthys*
Longnose sucker	*Catostomus catostomus*
Rainbow trout	*Oncorhynchus mykiss*
Steelhead	
Unknown trouts	
Broad whitefish	*Coregonus nasus*
Bering cisco	*Coregonus laurettae*
Least cisco	*Coregonus sardinella*
Humpback whitefish	*Coregonus pidschian*
Round whitefish	*Prosopium cylindraceum*
Unknown whitefishes	
Bison	*Bison bison*
Black bear	*Ursus americanus*
Brown bear	*Ursus arctos*
Caribou	*Rangifer tarandus*
Deer	*Odocoileus hemionus*
Mountain goat	*Oreamnos americanus*
Moose	*Alces alces*
Dall sheep	*Ovis dalli*
Beaver	*Castor canadensis*
Coyote	*Canis latrans*
Red fox	*Vulpes vulpes*

-continued-

Table D1-1.–Page 2 of 3.

Common name	Scientific name
Snowshoe hare	*Lepus americanus*
River (land) otter	*Lontra canadensis*
Lynx	*Lynx canadensis*
Marmot	*Marmota spp.*
Marten	*Martes spp.*
Mink	*Neovison vison*
Muskrat	*Ondatra zibethicus*
Porcupine	*Erethizon dorsatum*
Arctic ground (parka) squirrel	*Spermophilus parryii*
Red (tree) squirrel	*Tamiasciurus hudsonicus*
Weasel	*Mustela*
Gray wolf	*Canis lupus*
Unknown seals	
Beluga whale	*Delphinapterus leucas*
Bowhead whale	*Balaena mysticetus*
Unknown whale	
Bufflehead	*Bucephala albeola*
Canvasback	*Aythya valisineria*
Goldeneyes	*Bucephala spp.*
Mallard	*Anas platyrhynchos*
Long-tailed duck	*Clangula hyemalis*
Northern pintail	*Anas acuta*
Unknown scaups	*Aythya spp.*
Black scoter	*Melanitta nigra*
Surf scoter	*Melanitta perspicillata*
Northern shoveler	*Anas clypeata*
Green-winged teal	*Anas crecca*
American wigeon	*Anas americana*
Unknown wigeons	*Anas spp.*
Unknown ducks	
Cackling goose	*Branta hutchinsii minima*
Canada goose	*Branta canadensis parvipes*
Unknown Canada/cackling geese	*Branta spp.*
Snow goose	*Chen caerulescens*
White-fronted goose	*Anser albifrons*
Unknown geese	
Tundra (whistling) swan	*Cygnus columbianus*
Sandhill crane	*Grus canadensis*
Spruce grouse	*Falcipennis canadensis*
Sharp-tailed grouse	*Tympanuchus phasianellus*
Ruffed grouse	*Bonasa umbellus*
Unknown grouses	
Unknown ptarmigans	*Lagopus spp.*
Mew gull eggs	*Larus canus*
Unknown gull eggs	
Butter clams	*Saxidomus gigantea*
Pacific littleneck clams (steamers)	*Protothaca staminea*

-continued-

Table D1-1.–Page 3 of 3.

Common name	Scientific name
Razor clams	*Siliqua spp.*
Unknown clams	
King crabs	
Unknown tanner crabs	*Chionoecetes spp.*
Unknown crabs	
Octopus	*Octopus vulgaris*
Scallops	
Shrimps	
Blueberry	*Vaccinium uliginosum alpinum*
Lowbush cranberry	*Vaccinum vitis-idaea minus*
Highbush cranberry	*Viburnum edule*
Crowberry	*Empetrum nigrum*
Currants	*Ribes spp.*
Cloudberry	*Rubus chamaemorus*
Nagoonberry	*Rubus arcticus spp.*
Raspberry	*Rubus idaeus*
Salmonberry	*Rubus spectabilis*
Strawberry	*Fragaria virginiana*
Dogwood berry	*Cornus canadensis*
Serviceberry	
Bearberry	*Uva ursi*
Other wild berry	
Beach asparagus	*Salicornia virginica*
Goose tongue	*Plantago maritima*
Wild rhubarb	*Polygonum alaskanum*
Wild potato	*Hedysarum alpinum*
Fiddlehead ferns	
Nettles	*Urtica spp.*
Hudson's Bay (Labrador) tea	*Ledum palustre*
Lambs quarter	*chenopodium album*
Dandelion greens	*Taraxacum L.*
Sourdock	*Rumex fenestratus*
Spruce tips	*Picea spp.*
Wild celery	*Angelica lucida*
Wild rose hips	*Rosa acicularis*
Yarrow	*Achillea spp.*
Other wild greens	
Unknown mushrooms	
Fireweed	*Epilobium angustifolium*
Plantain	*Plantago major*
Stinkweed	*Artemisia tilesii*
Punk	
Puffballs	
Orange Boletes	
Chaga	*Inonotus I. obliquus*
Sea lovage	*sigusticum scoticum*
Wild chives	*Allium schoenoprasum*
Sea chickweed	*Stellaria spp.*
Wood	
Bark	
Balsam poplar	*Populus balsamifera balsamifera*
Birch sap	*Betula spp.*

Source ADF&G Division of Subsistence household surveys, 2016.

Table D2-1.–Population estimates, Denali Park, 2010 and 2015.

	Census (2010)	5-year American Community Survey (2011–2015)		This study (2015)	
		Estimate	Range[a]	Estimate	Range[b]
Total population					
Households	109	296.0	263–329	92.0	
Population	185	514.0	320–708	172.0	162–182
Alaska Native					
Population	3	25.0	0–70	0.0	–
Percentage	1.6%	4.9%	0.0%–13.6%	0.0%	0.0%–0.0%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2015 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2016, for 2015 estimate.

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

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

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

Table D2-2.–Birthplaces of population, Denali Park, 2015.

Birthplace	Percentage
Healy	0.8%
Denali Park	10.9%
Other U.S.	82.2%
Foreign	6.2%

Source ADF&G Division of Subsistence household surveys, 2016.

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

Table D2-3.–Population profile, Denali Park, 2015.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	2.7	3.3%	3.3%	2.7	2.9%	2.9%	5.3	3.1%	3.1%
5–9	4.0	5.0%	8.3%	4.0	4.3%	7.2%	8.0	4.7%	7.8%
10–14	1.3	1.7%	10.0%	4.0	4.3%	11.6%	5.3	3.1%	10.9%
15–19	0.0	0.0%	10.0%	1.3	1.4%	13.0%	1.3	0.8%	11.6%
20–24	1.3	1.7%	11.7%	2.7	2.9%	15.9%	4.0	2.3%	14.0%
25–29	8.0	10.0%	21.7%	4.0	4.3%	20.3%	12.0	7.0%	20.9%
30–34	6.7	8.3%	30.0%	13.3	14.5%	34.8%	20.0	11.6%	32.6%
35–39	8.0	10.0%	40.0%	6.7	7.2%	42.0%	14.7	8.5%	41.1%
40–44	10.7	13.3%	53.3%	14.7	15.9%	58.0%	25.3	14.7%	55.8%
45–49	9.3	11.7%	65.0%	9.3	10.1%	68.1%	18.7	10.9%	66.7%
50–54	2.7	3.3%	68.3%	5.3	5.8%	73.9%	8.0	4.7%	71.3%
55–59	4.0	5.0%	73.3%	8.0	8.7%	82.6%	12.0	7.0%	78.3%
60–64	14.7	18.3%	91.7%	8.0	8.7%	91.3%	22.7	13.2%	91.5%
65–69	1.3	1.7%	93.3%	2.7	2.9%	94.2%	4.0	2.3%	93.8%
70–74	2.7	3.3%	96.7%	4.0	4.3%	98.6%	6.7	3.9%	97.7%
75–79	1.3	1.7%	98.3%	1.3	1.4%	100.0%	2.7	1.6%	99.2%
80–84	1.3	1.7%	100.0%	0.0	0.0%	100.0%	1.3	0.8%	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	**80.0**	**100.0%**	**100.0%**	**92.0**	**100.0%**	**100.0%**	**172.0**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D2-4.–Individual participation in subsistence harvesting and processing activities, Denali Park, 2015.

Total number of people	**172.0**
Fish	
Fish	
Number	86.8
Percentage	50.0%
Process	
Number	86.8
Percentage	50.0%
Large land mammals	
Hunt	
Number	12.4
Percentage	7.0%
Process	
Number	12.7
Percentage	7.0%
Small land mammals	
Hunt or trap	
Number	4.7
Percentage	3.0%
Process	
Number	6.3
Percentage	4.0%
Marine mammals	
Hunt	
Number	0.0
Percentage	0.0%
Process	
Number	0.0
Percentage	0.0%
Birds and eggs	
Hunt/gather	
Number	17.4
Percentage	10.0%
Process	
Number	17.4
Percentage	10.0%
Vegetation	
Gather	
Number	138.9
Percentage	81.0%
Process	
Number	138.9
Percentage	81.0%
Any resource	
Attempt harvest	
Number	150.3
Percentage	87.0%
Process	
Number	150.3
Percentage	87.0%

Source ADF&G Division of Subsistence household surveys, 2016.

Table D2-5.–Estimated salmon harvests by gear type, Denali Park, 2015.

	Removed from commercial catch		Subsistence methods													
			Dip net		Gillnet		Fish wheel		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**0.0**	**0.0**	**777.7**	**3,741.5**	**1.3**	**6.4**	**0.0**	**0.0**	**0.0**	**0.0**	**779.0**	**3,747.9**	**140.0**	**665.9**	**919.0**	**4,413.9**
Chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	31.5	6.7	31.5
Coho salmon	0.0	0.0	17.0	91.8	0.0	0.0	0.0	0.0	0.0	0.0	17.0	91.8	56.0	301.6	73.0	393.4
Chinook salmon	0.0	0.0	10.7	84.5	0.0	0.0	0.0	0.0	0.0	0.0	10.7	84.5	0.0	0.0	10.7	84.5
Pink salmon	0.0	0.0	18.7	47.7	0.0	0.0	0.0	0.0	0.0	0.0	18.7	47.7	17.3	44.3	36.0	92.0
Sockeye salmon	0.0	0.0	731.3	3,517.5	1.3	6.4	0.0	0.0	0.0	0.0	732.6	3,524.0	60.0	288.6	792.6	3,812.6
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2016.

Table D2-6.–Estimated nonsalmon fish harvests by gear type, Denali Park, 2015.

		Removed from commercial catch		Subsistence methods													
				Fish wheel		Gillnet		Ice fishing		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Unit[a]	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**11.2**		8.5		**0.0**		**0.0**		**19.7**		**1,474.3**		**1,494.1**
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring roe	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eulachon (hooligan, candlefish)	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown smelts	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific (gray) cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.3	55.5	17.3	55.5
Pacific tomcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	1.1	5.3	1.1
Walleye pollock (whiting)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Starry flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Atka mackerel	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	5.3	5.3	5.3
Lingcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	5.3	1.3	5.3
Pacific halibut	lb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,123.9	1,123.9	1,123.9	1,123.9
Unknown rockfishs	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	72.0	108.0	72.0	108.0
Sablefish (black cod)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burbot	ind	0.0	0.0	2.7	11.2	0.0	0.0	0.0	0.0	0.0	0.0	2.7	11.2	0.0	0.0	2.7	11.2
Arctic char	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.2	1.3	1.2
Dolly Varden	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	53.3	13.3	53.3
Arctic grayling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	132.0	118.8	132.0	118.8
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sheefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Longnose sucker	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cutthroat trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rainbow trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.9	1.4	1.9
Steelhead	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown trouts	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broad whitefish	ind	0.0	0.0	0.0	0.0	2.7	8.5	0.0	0.0	0.0	0.0	2.7	8.5	0.0	0.0	2.7	8.5
Least cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Humpback whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Round whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2016.

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

a. The harvested number of each resource is measured by the unit in which the resource harvest information was collected; the unit of measurement is provided for each resource.

Table D2-7.–Estimated harvests of large land mammals by month and sex, Denali Park, 2015.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**1.3**	**2.7**	**0.0**	**4.0**	**0.0**	**0.0**	**9.3**
Bison	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.3**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	4.0	0.0	0.0	**6.7**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	2.7	0.0	0.0	**4.0**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1.3	0.0	0.0	**2.7**
Caribou, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mule deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mountain goat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	**1.3**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D2-8.–Estimated harvests of small land mammals by month, Denali Park, 2015.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All small land mammals	**0.0**	**4.0**	**2.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.7**	**1.3**	**0.0**	**10.7**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Coyote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red fox–cross phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red fox–red phase	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.3**
Snowshoe hare	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	1.3	0.0	**5.3**
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Marten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red (tree) squirrel	0.0	1.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**4.0**
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D2-9.–Estimated bird harvests by season, Denali Park, 2015.

Resource	Estimated harvest by season					
	Spring	Summer	Fall	Winter	Season unknown	**Total**
All birds	**8.0**	**8.0**	**41.3**	**61.3**	**0.0**	**118.7**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneyes	0.0	0.0	0.0	0.0	0.0	**0.0**
Mallard	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern pintail	0.0	0.0	0.0	0.0	0.0	**0.0**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Green-winged teal	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ducks	0.0	0.0	1.3	0.0	0.0	**1.3**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown Canada/cackling geese	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	0.0	0.0	0.0	0.0	0.0	**0.0**
White-fronted goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown geese	0.0	0.0	0.0	0.0	0.0	**0.0**
Tundra (whistling) swan	0.0	0.0	0.0	0.0	0.0	**0.0**
Sandhill crane	0.0	0.0	0.0	0.0	0.0	**0.0**
Spruce grouse	0.0	8.0	34.7	22.7	0.0	**65.3**
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0	**0.0**
Ruffed grouse	0.0	0.0	2.7	0.0	0.0	**2.7**
Unknown grouses	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ptarmigans	8.0	0.0	2.7	38.7	0.0	**49.3**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D2-10.–Use of firewood for home heating, Denali Park, 2015.

Percentage of home heating from wood	Households using wood for home heating	
	Denali Park	
	Number	Percentage
0%	33	49.3
1–25%	6	9.0
26–50%	11	16.4
51–75%	6	9.0
76–99%	9	13.4
100%	2	3.0

Source ADF&G Division of Subsistence household surveys, 2016.

Table D2-11.–Comparison of median income estimates, Denali Park, 2015.

Data source	Median[a]	Range[b,c]
2015 Division of Subsistence estimate	$126,766	$65,389 – $312,928
2011-2015 ACS (Denali Park CDP)	$78,750	$25,778 – $131,722
2011-2015 ACS (All Alaska)	$72,515	$71,677 – $73,353

Sources ADF&G Division of Subsistence household surveys, 2016, for 2015 estimate; U.S. Census Bureau for American Community Survey (ACS) 5-year survey estimate.

a. Division of Subsistence 2015 estimate does not include categories of income excluded by the 2011-2015 ACS median estimate, including food stamps, housing assistance, and one-time payments.

b. Range is a 95% confidence interval of the estimated median.

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

Table D2-12.–Changes in household uses of resources compared to recent years, Denali Park, 2015.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
All resources	69	66	64	97.0%	21	31.8%	32	48.5%	11	16.7%	2	3.0%
Salmon	69	69	63	91.3%	18	26.1%	28	40.6%	17	24.6%	6	8.7%
Nonsalmon fish	69	69	55	79.7%	18	26.1%	26	37.7%	11	15.9%	14	20.3%
Large land mammals	69	69	57	82.6%	15	21.7%	31	44.9%	11	15.9%	12	17.4%
Small land mammals	69	69	12	17.4%	2	2.9%	6	8.7%	4	5.8%	57	82.6%
Marine mammals	69	69	3	4.3%	0	0.0%	3	4.3%	0	0.0%	66	95.7%
Birds	69	69	17	24.6%	8	11.6%	7	10.1%	2	2.9%	52	75.4%
Marine invertebrates	69	69	23	33.3%	8	11.6%	11	15.9%	4	5.8%	46	66.7%
Vegetation	69	69	64	92.8%	19	27.5%	34	49.3%	11	15.9%	5	7.2%

Source ADF&G Division of Subsistence household surveys, 2016.

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

Table D2-13.–Reported impact to households that did not get enough of a resource, Denali Park, 2015.

Resource category	Sample households	Households not getting enough _____ . Valid responses[a] Number	Valid responses[a] Percentage	Did not get enough Number	Did not get enough Percentage	Impact to those not getting enough _____ . No response Number	No response Percentage	Not noticeable Number	Not noticeable Percentage	Minor Number	Minor Percentage	Major Number	Major Percentage	Severe Number	Severe Percentage
All resources	69	64	92.8%	25	39.1%	1	4.0%	1	4.0%	21	84.0%	2	8.0%	0	0.0%
Salmon	69	62	89.9%	30	48.4%	1	3.3%	8	26.7%	21	70.0%	0	0.0%	0	0.0%
Nonsalmon fish	69	55	79.7%	24	43.6%	0	0.0%	7	29.2%	17	70.8%	0	0.0%	0	0.0%
Large land mammals	69	59	85.5%	21	35.6%	1	4.8%	5	23.8%	12	57.1%	3	14.3%	0	0.0%
Small land mammals	69	27	39.1%	1	3.7%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Marine mammals	69	18	26.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	69	25	36.2%	7	28.0%	0	0.0%	1	14.3%	6	85.7%	0	0.0%	0	0.0%
Marine invertebrates	69	32	46.4%	14	43.8%	0	0.0%	6	42.9%	8	57.1%	0	0.0%	0	0.0%
Vegetation	69	63	91.3%	26	41.3%	3	11.5%	3	11.5%	15	57.7%	5	19.2%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2016.

a. Includes households failing to respond to the question and those households that never used the resource.

Table D2-14.–Reasons for less household use of resources compared to recent years, Denali Park, 2015.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/ environment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	66	20	3	15.0%	5	25%	0	0.0%	0	0%	4	20%	3	15%	2	10.0%	3	15.0%
Salmon	69	18	1	5.6%	0	0%	0	0.0%	0	0%	2	11%	2	11%	5	27.8%	0	0.0%
Nonsalmon fish	69	18	1	5.6%	0	0%	0	0.0%	0	0%	7	39%	4	22%	0	0.0%	0	0.0%
Large land mammals	69	15	3	20.0%	0	0%	0	0.0%	0	0%	5	33%	2	13%	4	26.7%	0	0.0%
Small land mammals	69	2	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	0	0.0%
Marine mammals	69	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	0	0.0%
Birds	69	8	1	12.5%	0	0%	0	0.0%	0	0%	0	0%	2	25%	1	12.5%	0	0.0%
Marine invertebrates	69	8	0	0.0%	0	0%	0	0.0%	0	0%	2	25%	0	0%	1	12.5%	0	0.0%
Vegetation	69	19	2	10.5%	6	32%	0	0.0%	0	0%	0	0%	2	11%	1	5.3%	4	21.1%

-continued-

Table D2-14.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for less use	Other reasons		Working/ no time		Regulations		Small/ diseased animals		Did not get enough		Did not need		Equipment/ fuel expense		Used other resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	66	20	3	15%	7	35.0%	1	5.0%	0	0.0%	0	0.0%	1	5.0%	0	0.0%	0	0.0%
Salmon	69	18	4	22%	3	16.7%	0	0.0%	0	0.0%	0	0.0%	1	5.6%	0	0.0%	0	0.0%
Nonsalmon fish	69	18	4	22%	4	22.2%	0	0.0%	0	0.0%	0	0.0%	1	5.6%	0	0.0%	0	0.0%
Large land mammals	69	15	1	7%	1	6.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	69	2	1	50%	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	69	0	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	69	8	0	0%	4	50.0%	0	0.0%	0	0.0%	0	0.0%	1	12.5%	0	0.0%	0	0.0%
Marine invertebrates	69	8	3	38%	2	25.0%	2	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	69	19	2	11%	5	26.3%	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, 2016.

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

Table D2-15.–Reasons for more household uses of resources compared to recent years, Denali Park, 2015.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	66	11	1	9.1%	0	0.0%	0	0.0%	3	27.3%	4	36.4%	5	45.5%	0	0.0%
Salmon	69	15	0	0.0%	0	0.0%	0	0.0%	5	33.3%	4	26.7%	8	53.3%	0	0.0%
Nonsalmon fish	69	10	0	0.0%	0	0.0%	1	10.0%	3	30.0%	5	50.0%	1	10.0%	0	0.0%
Large land mammals	69	11	0	0.0%	1	9.1%	2	18.2%	3	27.3%	0	0.0%	2	18.2%	1	9.1%
Small land mammals	69	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	25.0%	2	50.0%	0	0.0%
Marine mammals	69	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	69	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%	2	100.0%	0	0.0%
Marine invertebrates	69	4	0	0.0%	0	0.0%	0	0.0%	2	50.0%	1	25.0%	0	0.0%	0	0.0%
Vegetation	69	10	2	20.0%	0	0.0%	3	30.0%	0	0.0%	0	0.0%	4	40.0%	0	0.0%

-continued-

Table D2-15.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	66	11	1	9.1%	0	0.0%	0	0.0%	1	9.1%	0	0.0%	0	0.0%	0	0.0%
Salmon	69	15	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	69	10	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	69	11	3	27.3%	0	0.0%	0	0.0%	1	9.1%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	69	4	1	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	25.0%
Marine mammals	69	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	69	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	69	4	1	25.0%	1	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	69	10	2	20.0%	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, 2016.

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

Table D2-16.–Resources of which households reported needing more, Denali Park, 2015.

Resource	Households needing	Percentage of households
All resources	1	1.4%
Fish	11	15.9%
Salmon	12	17.4%
Coho salmon	3	4.3%
Chinook salmon	5	7.2%
Sockeye salmon	16	23.2%
Pacific halibut	17	24.6%
Rockfish	4	5.8%
Sablefish (black cod)	1	1.4%
Lake trout	1	1.4%
Arctic grayling	1	1.4%
Northern pike	2	2.9%
Land mammals	3	4.3%
Large land mammals	1	1.4%
Caribou	11	15.9%
Moose	16	23.2%
Dall sheep	5	7.2%
Small land mammals	1	1.4%
Snowshoe hare	1	1.4%
Birds and eggs	1	1.4%
Ducks	2	2.9%
Grouse	3	4.3%
Spruce grouse	1	1.4%
Ptarmigan	3	4.3%
Clams	1	1.4%
Pacific littleneck clams	1	1.4%
Razor clams	3	4.3%
Crabs	6	8.7%
Tanner crab	1	1.4%
Shrimp	5	7.2%
Berries	15	21.7%
Blueberry	13	18.8%
Lowbush cranberry	3	4.3%
Crowberry	1	1.4%
Currants	1	1.4%
Spruce tips	1	1.4%
Unknown mushrooms	6	8.7%
Wood	4	5.8%
Unknown	5	7.2%

Source ADF&G Division of Subsistence household surveys, 2016.

Table D3-1.–Population estimates, Ferry, 2010 and 2015.

	Census (2010)	5-year American Community Survey (2011–2015)		This study (2015)	
		Estimate	Range[a]	Estimate	Range[b]
Total population					
Households	17	54.0	43–65	18.0	
Population	33	6.0	0–15	41.1	35–48
Alaska Native					
Population	1	0.0	0–9	0.0	–
Percentage	3.0%	0.0%	0.0%–128.6%	0.0%	0.0%–0.0%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2015 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2016, for 2015 estimate.

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

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

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

Table D3-2.–Population profile, Ferry, 2015.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	2.6	11.1%	11.1%	2.6	14.3%	14.3%	5.1	12.5%	12.5%
5–9	0.0	0.0%	11.1%	1.3	7.1%	21.4%	1.3	3.1%	15.6%
10–14	1.3	5.6%	16.7%	0.0	0.0%	21.4%	1.3	3.1%	18.8%
15–19	2.6	11.1%	27.8%	1.3	7.1%	28.6%	3.9	9.4%	28.1%
20–24	0.0	0.0%	27.8%	0.0	0.0%	28.6%	0.0	0.0%	28.1%
25–29	0.0	0.0%	27.8%	0.0	0.0%	28.6%	0.0	0.0%	28.1%
30–34	0.0	0.0%	27.8%	1.3	7.1%	35.7%	1.3	3.1%	31.3%
35–39	2.6	11.1%	38.9%	2.6	14.3%	50.0%	5.1	12.5%	43.8%
40–44	1.3	5.6%	44.4%	1.3	7.1%	57.1%	2.6	6.3%	50.0%
45–49	1.3	5.6%	50.0%	0.0	0.0%	57.1%	1.3	3.1%	53.1%
50–54	1.3	5.6%	55.6%	2.6	14.3%	71.4%	3.9	9.4%	62.5%
55–59	5.1	22.2%	77.8%	1.3	7.1%	78.6%	6.4	15.6%	78.1%
60–64	1.3	5.6%	83.3%	3.9	21.4%	100.0%	5.1	12.5%	90.6%
65–69	1.3	5.6%	88.9%	0.0	0.0%	100.0%	1.3	3.1%	93.8%
70–74	0.0	0.0%	88.9%	0.0	0.0%	100.0%	0.0	0.0%	93.8%
75–79	1.3	5.6%	94.4%	0.0	0.0%	100.0%	1.3	3.1%	96.9%
80–84	1.3	5.6%	100.0%	0.0	0.0%	100.0%	1.3	3.1%	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%
100–10	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	**23.1**	**100.0%**	**100.0%**	**18.0**	**100.0%**	**100.0%**	**41.1**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D3-3.–Birthplaces of population, Ferry, 2015.

Birthplace	Percentage
Ferry	21.9%
Other Alaska	12.5%
Other U.S.	62.5%
Foreign	3.1%

Source ADF&G Division of Subsistence household surveys, 2016.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table D3-4.–Estimated harvests of salmon by gear type, Ferry, 2015.

			Subsistence methods													
	Removed from commercial catch		Dip net		Gillnet or Seine		Fish wheel		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**117.3**	**569.4**	**233.8**	**1,132.6**	**21.4**	**102.9**	**45.0**	**216.5**	**0.0**	**0.0**	**300.2**	**1,451.9**	**120.9**	**589.6**	**538.4**	**2,610.9**
Summer chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fall chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coho salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	90.0	484.7	90.0	484.7
Chinook salmon	1.6	12.9	2.6	20.4	0.0	0.0	0.0	0.0	0.0	0.0	2.6	20.4	0.0	0.0	4.2	33.2
Pink salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.3	49.3	19.3	49.3
Sockeye salmon	115.7	556.6	231.2	1,112.2	21.4	102.9	45.0	216.5	0.0	0.0	297.6	1,431.5	11.6	55.7	424.9	2,043.8
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2016.

Table D3-5.–Estimated harvests of nonsalmon fish by gear type, Ferry, 2015.

				Subsistence methods											
		Removed from commercial catch		Fish wheel		Gillnet or seine		Ice fishing		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Unit[a]	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**0.0**		**0.0**		**0.0**		**2.8**		**2.8**		**431.9**		**434.7**
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	6.4	1.1	6.4
Pacific herring roe	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eulachon (hooligan, candlefish)	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown smelts	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific tomcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	137.9	29.0	137.9	29.0
Starry flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.8	2.6	2.8	11.7	12.9	14.3	15.7
Lingcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific halibut	lb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.1	77.1	77.1	77.1
Arctic lamprey	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown rockfishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1	25.7	17.1	25.7
Burbot	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	64.8	15.4	64.8
Dolly Varden	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.3	25.5	28.3	25.5
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic grayling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	123.4	111.1	123.4	111.1
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	25.5	7.7	25.5
Sheefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Longnose sucker	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cutthroat trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rainbow trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	10.8	7.7	10.8
Unknown trouts	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.9	43.2	30.9	43.2
Broad whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bering cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Least cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Humpback whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Round whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2016.

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

a. The harvested number of each resource is measured by the unit in which the resource harvest information was collected; the unit of measurement is provided for each resource.

Table D3-6.–Estimated large land mammal harvests by month and sex, Ferry, 2015.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**1.3**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	**1.3**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	**1.3**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Dall sheep	0.0	0.0	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, 2016.

Table D3-7.–Estimated small land mammal harvests by month, Ferry, 2015.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All small land mammals	**3.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.3**	**2.6**	**6.4**	**0.0**	**14.1**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.6	0.0	0.0	**3.9**
Coyote	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	**2.6**
Red fox–cross phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red fox–red phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	**2.6**
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Marten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Gray wolf	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	**5.1**
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D3-8.–Estimated bird harvests by season, Ferry, 2015.

Resource	Estimated harvest by season					
	Spring	Summer	Fall	Winter	Season unknown	**Total**
All birds	**0.0**	**0.0**	**122.1**	**69.4**	**0.0**	**191.6**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneyes	0.0	0.0	0.0	0.0	0.0	**0.0**
Mallard	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern pintail	0.0	0.0	0.0	0.0	0.0	**0.0**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Green-winged teal	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ducks	0.0	0.0	0.0	0.0	0.0	**0.0**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown Canada/cackling geese	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	0.0	0.0	0.0	0.0	0.0	**0.0**
White-fronted goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown geese	0.0	0.0	0.0	0.0	0.0	**0.0**
Tundra (whistling) swan	0.0	0.0	0.0	0.0	0.0	**0.0**
Sandhill crane	0.0	0.0	0.0	0.0	0.0	**0.0**
Spruce grouse	0.0	0.0	72.0	21.9	0.0	**93.9**
Sharp-tailed grouse	0.0	0.0	6.4	0.0	0.0	**6.4**
Ruffed grouse	0.0	0.0	28.3	33.4	0.0	**61.7**
Unknown grouses	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ptarmigans	0.0	0.0	15.4	14.1	0.0	**29.6**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D3-9.–Use of firewood for home heating, Ferry, 2015.

Percentage of home heating from wood	Households using wood for home heating	
	Ferry	
	Number	Percentage
0%	4	28.6
1–25%	4.0	28.6
26–50%	1.0	7.1
51–75%	0.0	0.0
76–99%	1.0	7.1
100%	4.0	28.6

Source ADF&G Division of Subsistence household surveys, 2016.

Table D3-10.–Comparison of median income estimates, Ferry, 2015.

Data source	Median[a]	Range[b,c]
2015 Division of Subsistence estimate	$38,925	$5,328 – $90,878
2011–2015 ACS (Ferry CDP)	-	-
2011–2015 ACS (All Alaska)	$72,515	$71,677 – $73,353

Sources ADF&G Division of Subsistence household surveys, 2016, for 2015 estimate; U.S. Census Bureau for American Community Survey (ACS) 5-year survey estimate.

a. Division of Subsistence 2015 estimate does not include categories of income excluded by the 2011–2015 ACS median estimate, including food stamps, housing assistance, and one-time payments.

b. Range is a 95% confidence interval of the estimated median.

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

Table D3-11.–Changes in household uses of resources compared to recent years, Ferry, 2015.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
All resources	14	14	14	100.0%	9	64.3%	5	35.7%	0	0.0%	0	0.0%
Salmon	14	14	12	85.7%	3	21.4%	8	57.1%	1	7.1%	2	14.3%
Nonsalmon fish	14	14	9	64.3%	3	21.4%	6	42.9%	0	0.0%	5	35.7%
Large land mammals	14	14	14	100.0%	9	64.3%	5	35.7%	0	0.0%	0	0.0%
Small land mammals	14	14	8	57.1%	7	50.0%	1	7.1%	0	0.0%	6	42.9%
Marine mammals	14	14	0	0.0%	0	0.0%	0	0.0%	0	0.0%	14	100.0%
Birds	14	14	11	78.6%	6	42.9%	5	35.7%	0	0.0%	3	21.4%
Marine invertebrates	14	14	3	21.4%	0	0.0%	3	21.4%	0	0.0%	11	78.6%
Vegetation	14	14	14	100.0%	9	64.3%	4	28.6%	1	7.1%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2016.

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

Table D3-12.–Reasons for less household uses of resources compared to recent years, Ferry, 2015.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/ environment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	14	9	3	33.3%	5	56%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	3	33.3%
Salmon	14	3	1	33.3%	0	0%	0	0.0%	0	0%	0	0%	1	33%	0	0.0%	0	0.0%
Nonsalmon fish	14	3	1	33.3%	1	33%	0	0.0%	0	0%	0	0%	0	0%	1	33.3%	0	0.0%
Large land mammals	14	9	2	22.2%	3	33%	0	0.0%	0	0%	1	11%	0	0%	2	22.2%	0	0.0%
Small land mammals	14	7	3	42.9%	1	14%	0	0.0%	0	0%	0	0%	1	14%	0	0.0%	1	14.3%
Marine mammals	14	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	0	0.0%
Birds	14	5	1	20.0%	3	60%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	0	0.0%
Marine invertebrates	14	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	0	0.0%
Vegetation	14	9	2	22.2%	4	44%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	3	33.3%

-continued-

Table D3-12.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for less use	Other reasons		Working/ no time		Regulations		Small/ diseased animals		Did not get enough		Did not need		Equipment/ fuel expense		Used other resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	14	9	0	0%	2	22.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salmon	14	3	0	0%	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	14	3	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	14	9	0	0%	1	11.1%	3	33.3%	1	11.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	14	7	0	0%	2	28.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	14	0	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	14	5	0	0%	2	40.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	14	0	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	14	9	0	0%	1	11.1%	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, 2016.

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

Table D3-13.–Reasons for more household uses of resources compared to recent years, Ferry, 2015.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salmon	14	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Nonsalmon fish	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	14	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%

-continued-

Table D3-13.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salmon	14	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	14	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	14	1	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, 2016.

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

Table D3-14.–Reported impact to households that did not get enough of a resource, Ferry, 2015.

		Households not getting enough _____ .				Impact to those not getting enough _____ .									
	Sample	Valid responses[a]		Did not get enough		No response		Not noticeable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	14	14	100.0%	5	35.7%	1	20.0%	0	0.0%	0	0.0%	3	60.0%	1	20.0%
Salmon	14	12	85.7%	2	16.7%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Nonsalmon fish	14	9	64.3%	3	33.3%	0	0.0%	0	0.0%	1	33.3%	2	66.7%	0	0.0%
Large land mammals	14	14	100.0%	9	64.3%	0	0.0%	0	0.0%	3	33.3%	5	55.6%	1	11.1%
Small land mammals	14	8	57.1%	2	25.0%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	0	0.0%
Marine mammals	14	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	14	11	78.6%	5	45.5%	0	0.0%	0	0.0%	3	60.0%	2	40.0%	0	0.0%
Marine invertebrates	14	3	21.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	14	14	100.0%	7	50.0%	0	0.0%	1	14.3%	2	28.6%	3	42.9%	1	14.3%

Source ADF&G Division of Subsistence household surveys, 2016.

a. Includes households failing to respond to the question and those households that never used the resource.

Table D3-15.–Resources of which households reported needing more, Ferry, 2015.

Resource	Households needing	Percentage of households
Salmon	3	21.4%
Nonsalmon fish	1	7.1%
Pacific halibut	1	7.1%
Burbot	1	7.1%
Black bear	1	7.1%
Caribou	4	28.6%
Moose	9	64.3%
Small land mammals	1	7.1%
Lynx	1	7.1%
Migratory birds	1	7.1%
Grouse	3	21.4%
Spruce grouse	1	7.1%
Ruffed grouse	1	7.1%
Ptarmigan	2	14.3%
Berries	2	14.3%
Blueberry	4	28.6%
Raspberry	2	14.3%
Unknown mushrooms	2	14.3%
Wood	1	7.1%
Unknown	1	7.1%

Source ADF&G Division of Subsistence household surveys, 2016.

Table D4-1.–Population estimates, Anderson, 2010 and 2015.

	Census (2010)	5-year American Community Survey (2011–2015)		This study (2015)	
		Estimate	Range[a]	Estimate	Range[b]
Total population					
Households	90	153.0	134–172	79.0	
Population	246	201.0	159–243	186.4	166–207
Alaska Native					
Population	18	14.0	3–25	3.2	3–3
Percentage	7.3%	7.0%	1.5%–12.4%	1.7%	1.7%–1.7%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2015 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2016, for 2015 estimate.

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

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

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

Table D4-2.–Population profile, Anderson, 2015.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	9.5	9.0%	9.0%	1.6	2.0%	2.0%	11.1	5.9%	5.9%
5–9	12.6	11.9%	20.9%	6.3	7.8%	9.8%	19.0	10.2%	16.1%
10–14	6.3	6.0%	26.9%	4.7	5.9%	15.7%	11.1	5.9%	22.0%
15–19	3.2	3.0%	29.9%	7.9	9.8%	25.5%	11.1	5.9%	28.0%
20–24	0.0	0.0%	29.9%	3.2	3.9%	29.4%	3.2	1.7%	29.7%
25–29	3.2	3.0%	32.8%	4.7	5.9%	35.3%	7.9	4.2%	33.9%
30–34	4.7	4.5%	37.3%	1.6	2.0%	37.3%	6.3	3.4%	37.3%
35–39	7.9	7.5%	44.8%	9.5	11.8%	49.0%	17.4	9.3%	46.6%
40–44	9.5	9.0%	53.7%	3.2	3.9%	52.9%	12.6	6.8%	53.4%
45–49	6.3	6.0%	59.7%	12.6	15.7%	68.6%	19.0	10.2%	63.6%
50–54	12.6	11.9%	71.6%	7.9	9.8%	78.4%	20.5	11.0%	74.6%
55–59	12.6	11.9%	83.6%	4.7	5.9%	84.3%	17.4	9.3%	83.9%
60–64	6.3	6.0%	89.6%	6.3	7.8%	92.2%	12.6	6.8%	90.7%
65–69	3.2	3.0%	92.5%	4.7	5.9%	98.0%	7.9	4.2%	94.9%
70–74	4.7	4.5%	97.0%	1.6	2.0%	100.0%	6.3	3.4%	98.3%
75–79	1.6	1.5%	98.5%	0.0	0.0%	100.0%	1.6	0.8%	99.2%
80–84	1.6	1.5%	100.0%	0.0	0.0%	100.0%	1.6	0.8%	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	**105.9**	**100.0%**	**100.0%**	**80.6**	**100.0%**	**100.0%**	**186.4**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D4-3.–Birthplaces of population, Anderson, 2015.

Birthplace	Percentage
Anderson	10.2%
Fairbanks	10.2%
Ketchikan	0.8%
Nenana	0.8%
Savoonga	0.8%
Soldotna	0.8%
Other Alaska	1.7%
Other U.S.	71.2%
Foreign	3.4%

Source ADF&G Division of Subsistence household surveys, 2016.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table D4-4.–Individual participation in subsistence harvesting and processing activities, Anderson, 2015.

Total number of people	**186.4**
Fish	
Fish	
Number	72.7
Percentage	39.0%
Process	
Number	85.3
Percentage	45.8%
Large land mammals	
Hunt	
Number	53.7
Percentage	28.8%
Process	
Number	49.0
Percentage	26.3%
Small land mammals	
Hunt or trap	
Number	17.4
Percentage	9.3%
Process	
Number	11.1
Percentage	5.9%
Marine mammals	
Hunt	
Number	0.0
Percentage	0.0%
Process	
Number	0.0
Percentage	0.0%
Birds and eggs	
Hunt/gather	
Number	49.0
Percentage	26.3%
Process	
Number	44.2
Percentage	23.7%
Vegetation	
Gather	
Number	123.2
Percentage	66.1%
Process	
Number	121.7
Percentage	65.3%
Any resource	
Attempt harvest	
Number	132.7
Percentage	71.2%
Process	
Number	132.7
Percentage	71.2%

Source ADF&G Division of Subsistence household surveys, 2016.

Table D4-5.–Estimated salmon harvests by gear type, Anderson, 2015.

	Removed from commercial catch		Subsistence methods													
			Dip net		Gillnet or seine		Fish wheel		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**0.0**	**0.0**	**451.1**	**2,142.5**	**0.0**	**0.0**	**366.6**	**1,777.9**	**104.3**	**506.5**	**922.0**	**4,426.9**	**522.2**	**2,420.8**	**1,444.1**	**6,847.7**
Summer chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	22.4	4.7	22.4
Fall chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	37.3	7.9	37.3
Coho salmon	0.0	0.0	8.1	43.4	0.0	0.0	0.0	0.0	0.0	0.0	8.1	43.4	228.8	1,231.9	236.8	1,275.3
Chinook salmon	0.0	0.0	0.0	0.0	0.0	0.0	4.7	37.5	1.6	12.5	6.3	50.1	53.7	425.5	60.0	475.5
Pink salmon	0.0	0.0	14.2	36.3	0.0	0.0	0.0	0.0	0.0	0.0	14.2	36.3	172.2	440.0	186.4	476.4
Sockeye salmon	0.0	0.0	428.9	2,062.8	0.0	0.0	361.8	1,740.4	102.7	494.0	893.4	4,297.1	54.8	263.7	948.2	4,560.8
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2016.

Table D4-6.–Estimated nonsalmon fish harvests by gear type, Anderson, 2015.

				Subsistence methods											
		Removed from commercial catch		Fish wheel		Gillnet or seine		Ice fishing		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Unit[a]	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**0.0**		0.0		**33.2**		**39.8**		**73.0**		**1,828.8**		**1,901.8**
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	9.5	1.6	9.5	0.0	0.0	1.6	9.5
Pacific herring roe	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eulachon (hooligan, candlefish)	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown smelts	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific tomcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.7	11.3	53.7	11.3
Starry flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	10.4	9.5	10.4	19.0	20.9	28.4	31.3
Lingcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific halibut	lb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,439.1	1,439.1	1,439.1	1,439.1
Arctic lamprey	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Black rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	4.7	3.2	4.7
Unknown rockfishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.6	75.8	50.6	75.8
Unknown skates	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	47.4	9.5	47.4
Burbot	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	19.9	4.7	19.9	0.0	0.0	4.7	19.9
Dolly Varden	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	25.3	6.3	25.3
Arctic grayling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	104.3	93.9	104.3	93.9
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4	57.4	17.4	57.4
Sheefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Longnose sucker	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cutthroat trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rainbow trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	23.7	33.2	0.0	0.0	23.7	33.2	37.9	53.1	61.6	86.3
Unknown trouts	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broad whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bering cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Least cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Humpback whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Round whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2016.

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

a. The harvested number of each resource is measured by the unit in which the resource harvest information was collected; the unit of measurement is provided for each resource.

Table D4-7.–Estimated large land mammal harvests by month and sex, Anderson, 2015.

Resource	Estimated harvest by month													**Total**
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**	**0.0**	**1.6**	**7.9**	**0.0**	**4.7**	**0.0**	**0.0**	**15.8**
Black bear	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.6**
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	**1.6**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mule deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	**4.7**
Mountain goat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	6.3	0.0	0.0	0.0	0.0	**7.9**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	**6.3**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	**1.6**
Moose, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Dall sheep	0.0	0.0	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, 2016.

Table D4-8.–Estimated small land mammal harvests by month, Anderson, 2015.

Resource	Estimated harvest by month													**Total**
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All small land mammals	**11.1**	**9.5**	**3.2**	**0.0**	**41.1**	**0.0**	**0.0**	**0.0**	**4.7**	**4.7**	**41.1**	**52.1**	**3.2**	**170.6**
Beaver	3.2	4.7	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	**12.6**
Coyote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	3.2	**4.7**
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	4.7	0.0	**7.9**
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	4.7	0.0	**7.9**
Lynx	4.7	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	**11.1**
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Marten	3.2	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2	14.2	0.0	**34.8**
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.8	15.8	0.0	**31.6**
Muskrat	0.0	0.0	0.0	0.0	41.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**41.1**
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.7	0.0	0.0	0.0	**9.5**
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.7	0.0	**9.5**
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D4-9.–Estimated bird harvests by season, Anderson, 2015.

Resource	Estimated harvest by season					
	Spring	Summer	Fall	Winter	Season unknown	**Total**
All birds	**0.0**	**0.0**	**347.6**	**131.1**	**0.0**	**478.7**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneyes	0.0	0.0	0.0	0.0	0.0	**0.0**
Mallard	0.0	0.0	7.9	0.0	0.0	**7.9**
Northern pintail	0.0	0.0	0.0	0.0	0.0	**0.0**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Green-winged teal	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ducks	0.0	0.0	0.0	0.0	0.0	**0.0**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown Canada/cackling geese	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	0.0	0.0	0.0	0.0	0.0	**0.0**
White-fronted goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown geese	0.0	0.0	0.0	0.0	0.0	**0.0**
Tundra (whistling) swan	0.0	0.0	0.0	0.0	0.0	**0.0**
Sandhill crane	0.0	0.0	0.0	0.0	0.0	**0.0**
Spruce grouse	0.0	0.0	159.6	42.7	0.0	**202.2**
Sharp-tailed grouse	0.0	0.0	66.4	12.6	0.0	**79.0**
Ruffed grouse	0.0	0.0	107.4	47.4	0.0	**154.8**
Unknown grouses	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ptarmigans	0.0	0.0	6.3	28.4	0.0	**34.8**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D4-10.–Use of firewood for home heating, Anderson, 2015.

Percentage of home heating from wood	Households using wood for home heating	
	Anderson	
	Number	Percentage
0%	21	42.0
1–25%	6	12.0
26–50%	9	18.0
51–75%	3	6.0
76–99%	9	18.0
100%	2	4.0

Source ADF&G Division of Subsistence household surveys, 2016.

Table D4-11.–Comparison of median income estimates, Anderson, 2015.

Data source	Median[a]	Range[b,c]
2015 Division of Subsistence estimate	$86,538	$57,748 – $102,806
2011–2015 ACS (Anderson city)	$87,708	$77,535 – $97,881
2011–2015 ACS (All Alaska)	$72,515	$71,677 – $73,353

Sources ADF&G Division of Subsistence household surveys, 2016, for 2015 estimate; U.S. Census Bureau for American Community Survey (ACS) 5-year survey estimate.

a. Division of Subsistence 2015 estimate does not include categories of income excluded by the 2011–2015 ACS median estimate, including food stamps, housing assistance, and one-time payments.

b. Range is a 95% confidence interval of the estimated median.

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

Table D4-12.–Changes in household uses of resources compared to recent years, Anderson, 2015.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
All resources	50	50	48	96.0%	24	48.0%	18	36.0%	6	12.0%	2	4.0%
Salmon	50	48	40	83.3%	12	25.0%	21	43.8%	7	14.6%	8	16.7%
Nonsalmon fish	50	46	32	69.6%	11	23.9%	15	32.6%	6	13.0%	14	30.4%
Large land mammals	50	49	38	77.6%	15	30.6%	19	38.8%	4	8.2%	11	22.4%
Small land mammals	50	50	9	18.0%	3	6.0%	5	10.0%	1	2.0%	41	82.0%
Marine mammals	50	50	1	2.0%	1	2.0%	0	0.0%	0	0.0%	49	98.0%
Birds	50	50	21	42.0%	8	16.0%	9	18.0%	4	8.0%	29	58.0%
Marine invertebrates	50	49	9	18.4%	7	14.3%	1	2.0%	1	2.0%	40	81.6%
Vegetation	50	49	40	81.6%	15	30.6%	19	38.8%	6	12.2%	9	18.4%

Source ADF&G Division of Subsistence household surveys, 2016.

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

Table D4-13.–Reported impact to households that did not get enough of a type of resource, Anderson, 2015.

Resource category	Sample households	Households not getting enough _____ .: Valid responses[a] Number	Valid responses[a] Percentage	Did not get enough Number	Did not get enough Percentage	Impact to those not getting enough _____ .: No response Number	No response Percentage	Not noticeable Number	Not noticeable Percentage	Minor Number	Minor Percentage	Major Number	Major Percentage	Severe Number	Severe Percentage
All resources	50	48	96.0%	14	29.2%	3	21.4%	2	14.3%	5	35.7%	4	28.6%	0	0.0%
Salmon	50	41	82.0%	10	24.4%	0	0.0%	1	10.0%	5	50.0%	4	40.0%	0	0.0%
Nonsalmon fish	50	31	62.0%	6	19.4%	0	0.0%	2	33.3%	3	50.0%	1	16.7%	0	0.0%
Large land mammals	50	38	76.0%	11	28.9%	0	0.0%	1	9.1%	5	45.5%	4	36.4%	1	9.1%
Small land mammals	50	8	16.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	50	1	2.0%	1	100.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Birds	50	20	40.0%	4	20.0%	0	0.0%	1	25.0%	3	75.0%	0	0.0%	0	0.0%
Marine invertebrates	50	9	18.0%	2	22.2%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	0	0.0%
Vegetation	50	38	76.0%	9	23.7%	0	0.0%	1	11.1%	6	66.7%	2	22.2%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2016.

a. Includes households failing to respond to the question and those households that never used the resource.

Table D4-14.–Reasons for less household uses of resources compared to recent years, Anderson, 2015.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/ environment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	50	24	8	33.3%	6	25%	0	0.0%	1	4%	0	0%	3	13%	4	16.7%	2	8.3%
Salmon	48	12	3	25.0%	0	0%	0	0.0%	0	0%	1	8%	5	42%	1	8.3%	0	0.0%
Nonsalmon fish	46	10	3	30.0%	1	10%	0	0.0%	0	0%	1	10%	1	10%	0	0.0%	1	10.0%
Large land mammals	49	15	3	20.0%	2	13%	0	0.0%	0	0%	1	7%	2	13%	5	33.3%	0	0.0%
Small land mammals	50	3	1	33.3%	0	0%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	2	66.7%
Marine mammals	50	1	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	0	0.0%
Birds	50	8	0	0.0%	5	63%	0	0.0%	0	0%	1	13%	3	38%	0	0.0%	0	0.0%
Marine invertebrates	49	6	2	33.3%	0	0%	2	33.3%	0	0%	1	17%	1	17%	0	0.0%	0	0.0%
Vegetation	49	15	2	13.3%	9	60%	0	0.0%	0	0%	0	0%	4	27%	0	0.0%	2	13.3%

-continued-

Table D4-14.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for less use	Other reasons		Working/ no time		Regulations		Small/ diseased animals		Did not get enough		Did not need		Equipment/ fuel expense		Used other resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	50	24	1	4%	2	8.3%	2	8.3%	0	0.0%	0	0.0%	2	8.3%	0	0.0%	0	0.0%
Salmon	48	12	0	0%	4	33.3%	0	0.0%	0	0.0%	0	0.0%	2	16.7%	0	0.0%	0	0.0%
Nonsalmon fish	46	10	0	0%	4	40.0%	0	0.0%	0	0.0%	0	0.0%	1	10.0%	0	0.0%	0	0.0%
Large land mammals	49	15	0	0%	1	6.7%	1	6.7%	0	0.0%	0	0.0%	2	13.3%	0	0.0%	0	0.0%
Small land mammals	50	3	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	50	1	1	100%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	50	8	0	0%	1	12.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	49	6	0	0%	1	16.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	49	15	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	13.3%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2016.

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

Table D4-15.–Resources of which households reported needing more, Anderson, 2015.

Resource	Households needing	Percentage of households
Salmon	6	12.0%
Coho salmon	2	4.0%
Chinook salmon	4	8.0%
Sockeye salmon	8	16.0%
Pacific halibut	6	12.0%
Large land mammals	3	6.0%
Black bear	1	2.0%
Caribou	2	4.0%
Moose	13	26.0%
Whale	1	2.0%
Geese	1	2.0%
Upland game birds	1	2.0%
Grouse	1	2.0%
Ptarmigan	1	2.0%
Crabs	1	2.0%
Tanner crab, opillio	1	2.0%
Berries	4	8.0%
Blueberry	6	12.0%
Raspberry	1	2.0%
Strawberry	1	2.0%
Plants, greens, and mushrooms	2	4.0%
Unknown mushrooms	1	2.0%
Unknown	3	6.0%

Source ADF&G Division of Subsistence household surveys, 2016.

Table D4-16.–Reasons for more household uses of resources compared to recent years, Anderson, 2015.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	50	6	2	33.3%	0	0.0%	2	33.3%	2	33.3%	1	16.7%	0	0.0%	0	0.0%
Salmon	48	7	1	14.3%	0	0.0%	2	28.6%	3	42.9%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	46	6	1	16.7%	0	0.0%	0	0.0%	1	16.7%	2	33.3%	1	16.7%	0	0.0%
Large land mammals	49	4	2	50.0%	0	0.0%	1	25.0%	1	25.0%	0	0.0%	1	25.0%	0	0.0%
Small land mammals	50	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Marine mammals	50	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	50	4	1	25.0%	0	0.0%	2	50.0%	0	0.0%	1	25.0%	0	0.0%	0	0.0%
Marine invertebrates	49	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Vegetation	49	6	1	16.7%	0	0.0%	3	50.0%	0	0.0%	1	16.7%	0	0.0%	1	16.7%

-continued-

Table D4-16.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	50	6	0	0.0%	1	16.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salmon	48	7	0	0.0%	0	0.0%	1	14.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	46	6	1	16.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	49	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	50	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	50	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	50	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	49	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	49	6	0	0.0%	1	16.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2016.

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

Table D5-1.–Population estimates, Nenana, 2010 and 2015.

	Census (2010)[a]	5-year American Community Survey (2011–2015)[a]		This study (2015)[c]	
		Estimate	Range[b]	Estimate	Range[d]
Total population					
Households	171	227.0	201 – 253	243.0	
Population	378	406.0	358 – 454	583.9	545 – 622
Alaska Native					
Population	161	171.0	137-205	203.1	171 – 235
Percentage	42.6%	42.1%	33.7% – 50.5%	34.8%	29.3% – 40.3%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2015 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2016, for 2015 estimate.

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

a. Sample includes only Nenana City CDP.

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

c. Sample includes includes Nenana City CDP, Four-Mile Road CDP, and portions of the Tanana Flats tract of the Yukon-Koyukuk Census area.

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

Table D5-2.–Population profile, Nenana, 2015.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	12.7	4.1%	4.1%	16.3	6.0%	6.0%	29.0	5.0%	5.0%
5–9	19.9	6.4%	10.5%	23.6	8.7%	14.7%	43.5	7.5%	12.4%
10–14	16.3	5.2%	15.7%	16.3	6.0%	20.7%	32.6	5.6%	18.0%
15–19	32.6	10.5%	26.2%	9.1	3.3%	24.0%	41.7	7.1%	25.2%
20–24	9.1	2.9%	29.1%	7.3	2.7%	26.7%	16.3	2.8%	28.0%
25–29	7.3	2.3%	31.4%	9.1	3.3%	30.0%	16.3	2.8%	30.7%
30–34	10.9	3.5%	34.9%	14.5	5.3%	35.3%	25.4	4.3%	35.1%
35–39	7.3	2.3%	37.2%	12.7	4.7%	40.0%	19.9	3.4%	38.5%
40–44	14.5	4.7%	41.9%	19.9	7.3%	47.3%	34.5	5.9%	44.4%
45–49	21.8	7.0%	48.8%	12.7	4.7%	52.0%	34.5	5.9%	50.3%
50–54	25.4	8.1%	57.0%	21.8	8.0%	60.0%	47.1	8.1%	58.4%
55–59	43.5	14.0%	70.9%	32.6	12.0%	72.0%	76.2	13.0%	71.4%
60–64	34.5	11.0%	82.0%	34.5	12.7%	84.7%	68.9	11.8%	83.2%
65–69	25.4	8.1%	90.1%	14.5	5.3%	90.0%	39.9	6.8%	90.1%
70–74	16.3	5.2%	95.3%	9.1	3.3%	93.3%	25.4	4.3%	94.4%
75–79	7.3	2.3%	97.7%	1.8	0.7%	94.0%	9.1	1.6%	96.0%
80–84	3.6	1.2%	98.8%	1.8	0.7%	94.7%	5.4	0.9%	96.9%
85–89	3.6	1.2%	100.0%	5.4	2.0%	96.7%	9.1	1.6%	98.4%
90–94	0.0	0.0%	100.0%	0.0	0.0%	96.7%	0.0	0.0%	98.4%
95–99	0.0	0.0%	100.0%	0.0	0.0%	96.7%	0.0	0.0%	98.4%
100–104	0.0	0.0%	100.0%	0.0	0.0%	96.7%	0.0	0.0%	98.4%
Missing	0.0	0.0%	100.0%	9.1	3.3%	100.0%	9.1	1.6%	100.0%
Total	**311.9**	**100.0%**	**100.0%**	**272.0**	**100.0%**	**100.0%**	**583.9**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D5-3.–Birthplaces of population, Nenana, 2015.

Birthplace	Percentage
Anchorage	2.5%
Anderson	0.3%
Bettles/Evansville	0.3%
Circle	0.3%
Fairbanks	9.9%
Fort Wainwright	0.3%
Holy Cross	0.9%
Huslia	0.3%
Kodiak City	0.3%
Koyukuk	0.6%
Manley Hot Springs	0.6%
Nenana	29.8%
Nulato	0.9%
Palmer	1.2%
Ruby	0.3%
Seward	0.3%
Stevens Village	0.3%
Tanana	1.6%
Tatalina Station Census Designated Place	0.3%
Wasilla	0.6%
Ferry	0.3%
Old Minto	0.3%
District 6 Tanana River	0.3%
Other Alaska	2.2%
Other U.S.	41.0%
Foreign	2.2%
Missing	1.9%

Source ADF&G Division of Subsistence household surveys, 2016.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.
Note The Nenana sample includes Nenana City CDP, Four-Mile Road CDP, and portions of the Tanana Flats tract of the Yukon-Koyukuk Census area.

Table D5-4.–Individual participation in subsistence harvesting and processing activities, Nenana, 2015.

Total number of people	**583.9**
Fish	
Fish	
Number	170.9
Percentage	29.0%
Process	
Number	195.3
Percentage	33.0%
Large land mammals	
Hunt	
Number	116.8
Percentage	20.0%
Process	
Number	131.6
Percentage	23.0%
Small land mammals	
Hunt or trap	
Number	57.5
Percentage	10.0%
Process	
Number	64.9
Percentage	11.0%
Marine mammals	
Hunt	
Number	0.0
Percentage	0.0%
Process	
Number	1.9
Percentage	0.0%
Birds and eggs	
Hunt/gather	
Number	131.6
Percentage	23.0%
Process	
Number	146.4
Percentage	25.0%
Vegetation	
Gather	
Number	327.4
Percentage	56.0%
Process	
Number	333.1
Percentage	57.0%
Any resource	
Attempt harvest	
Number	383.7
Percentage	66.0%
Process	
Number	389.3
Percentage	67.0%

Source ADF&G Division of Subsistence household surveys, 2016.

Table D5-5.–Estimated salmon harvests by gear type, Nenana, 2015.

	Removed from commercial catch		Subsistence methods													
			Dip net		Gillnet		Fish wheel		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**181.3**	**856.2**	**890.4**	**4,405.0**	**3,119.1**	**17,292.7**	**616.6**	**3,003.3**	**18.1**	**143.6**	**4,644.2**	**24,844.5**	**183.1**	**1,021.5**	**5,008.6**	**26,722.2**
Summer chum salmon	0.0	0.0	0.0	0.0	331.9	1,566.8	72.5	342.5	0.0	0.0	404.4	1,909.2	0.0	0.0	404.4	1,909.2
Fall chum salmon	181.3	856.2	0.0	0.0	790.7	3,732.8	326.4	1,541.1	0.0	0.0	1,117.1	5,273.9	0.0	0.0	1,298.4	6,130.1
Coho salmon	0.0	0.0	16.3	87.9	1,507.0	8,115.0	126.9	683.6	0.0	0.0	1,650.2	8,886.5	137.8	742.2	1,788.0	9,628.6
Chinook salmon	0.0	0.0	36.3	287.2	489.7	3,878.1	0.0	0.0	18.1	143.6	544.1	4,308.9	19.8	157.2	563.9	4,466.1
Pink salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sockeye salmon	0.0	0.0	837.8	4,029.8	0.0	0.0	90.7	436.1	0.0	0.0	928.5	4,466.0	25.4	122.1	953.9	4,588.1
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2016.

Table D5-6.–Estimated nonsalmon fish harvests by gear type and resource, Nenana, 2015.

		Removed from commercial catch		Subsistence methods											
				Fish wheel		Gillnet or seine		Ice fishing		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Unit[a]	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**1,733.0**		**1,859.5**		**134.7**		**715.9**		**4,443.1**		**3,353.0**		**7,796.1**
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring roe	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eulachon (hooligan, candlefish)	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown smelts	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saffron cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Starry flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lingcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific halibut	lb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	453.4	453.4	453.4	453.4
Arctic lamprey	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown rockfishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burbot	ind	0.0	0.0	12.7	53.3	12.7	53.3	0.0	0.0	152.3	639.8	177.7	746.4	9.1	38.1	186.8	784.5
Arctic char	ind	0.0	0.0	0.0	0.0	0.0	0.0	18.1	16.3	0.0	0.0	18.1	16.3	0.0	0.0	18.1	16.3
Dolly Varden	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.0	70.2	78.0	70.2
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	172.3	689.1	172.3	689.1
Arctic grayling	ind	0.0	0.0	0.0	0.0	359.1	323.2	54.4	49.0	0.0	0.0	413.5	372.1	977.5	879.7	1,390.9	1,251.8
Northern pike	ind	0.0	0.0	3.6	12.0	5.4	18.0	1.8	6.0	0.0	0.0	10.9	35.9	233.9	772.0	244.8	807.9
Sheefish	ind	0.0	0.0	41.7	229.4	45.3	249.3	0.0	0.0	0.0	0.0	87.0	478.7	10.9	59.8	97.9	538.6
Longnose sucker	ind	0.0	0.0	18.1	25.4	3.6	5.1	0.0	0.0	0.0	0.0	21.8	30.5	0.0	0.0	21.8	30.5
Cutthroat trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rainbow trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	18.1	25.4	0.0	0.0	18.1	25.4	232.1	325.0	250.3	350.4
Unknown trouts	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.9	55.9	39.9	55.9
Broad whitefish	ind	0.0	0.0	181.3	580.3	81.6	261.1	0.0	0.0	0.0	0.0	262.9	841.4	0.0	0.0	262.9	841.4
Bering cisco	ind	0.0	0.0	108.8	152.3	0.0	0.0	0.0	0.0	0.0	0.0	108.8	152.3	0.0	0.0	108.8	152.3
Least cisco	ind	0.0	0.0	108.8	76.2	272.0	190.4	0.0	0.0	0.0	0.0	380.8	266.6	0.0	0.0	380.8	266.6
Humpback whitefish	ind	0.0	0.0	253.9	533.1	353.6	742.6	18.1	38.1	36.3	76.2	661.9	1,390.0	0.0	0.0	661.9	1,390.0
Round whitefish	ind	0.0	0.0	54.4	38.1	23.6	16.5	0.0	0.0	0.0	0.0	78.0	54.6	0.0	0.0	78.0	54.6
Unknown whitefishes	ind	0.0	0.0	18.1	32.9	0.0	0.0	0.0	0.0	0.0	0.0	18.1	32.9	5.4	9.9	23.6	42.7

Source ADF&G Division of Subsistence household surveys, 2016.

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

a. The harvested number of each resource is measured by the unit in which the resource harvest information was collected; the unit of measurement is provided for each resource.

Table D5-7.–Estimated large land mammal harvests by month and sex, Nenana, 2015.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**12.7**	**18.1**	**1.8**	**1.8**	**1.8**	**10.9**	**47.1**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	**1.8**
Black bear, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	**1.8**
Black bear, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Black bear, unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0	0.0	1.8	0.0	**7.3**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	1.8	0.0	**5.4**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	**1.8**
Caribou, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mountain goat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	18.1	0.0	1.8	0.0	10.9	**38.1**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	18.1	0.0	0.0	0.0	7.3	**27.2**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0	1.8	0.0	3.6	**10.9**
Moose, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Dall sheep	0.0	0.0	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, 2016.

Table D5-8.–Estimated small land mammal harvests by month, Nenana, 2015.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All small land mammals	**68.9**	**59.8**	**56.2**	**70.7**	**0.0**	**7.3**	**7.3**	**0.0**	**21.8**	**21.8**	**47.1**	**76.2**	**1.8**	**438.9**
Beaver	5.4	10.9	43.5	38.1	0.0	0.0	0.0	0.0	5.4	0.0	1.8	9.1	0.0	**114.2**
Coyote	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3.6**
Red fox–cross phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red fox–red phase	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	3.6	0.0	**9.1**
Snowshoe hare	27.2	32.6	12.7	0.0	0.0	0.0	0.0	0.0	12.7	19.9	25.4	21.8	0.0	**152.3**
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.8	0.0	**3.6**
Lynx	5.4	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	0.0	**21.8**
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Marten	19.9	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	18.1	0.0	**50.8**
Mink	5.4	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**10.9**
Muskrat	0.0	0.0	0.0	30.8	0.0	7.3	7.3	0.0	0.0	0.0	0.0	0.0	0.0	**45.3**
Porcupine	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	3.6	1.8	1.8	0.0	1.8	**10.9**
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	**1.8**
Gray wolf	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	9.1	0.0	**14.5**
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D5-9.–Estimated bird harvests by season, Nenana, 2015.

Resource	Estimated harvest by season					
	Spring	Summer	Fall	Winter	Season unknown	**Total**
All birds	**792.5**	**117.9**	**1,452.6**	**282.9**	**0.0**	**2,645.8**
Bufflehead	9.1	0.0	0.0	0.0	0.0	**9.1**
Canvasback	0.0	0.0	45.3	0.0	0.0	**45.3**
Spectacled eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneyes	21.8	0.0	10.9	0.0	0.0	**32.6**
Mallard	132.4	0.0	273.8	0.0	0.0	**406.2**
Long-tailed duck	18.1	0.0	0.0	0.0	0.0	**18.1**
Northern pintail	45.3	0.0	217.6	0.0	0.0	**262.9**
Scaups	0.0	0.0	0.0	0.0	0.0	**0.0**
Black scoter	36.3	0.0	39.9	0.0	0.0	**76.2**
Surf scoter	36.3	0.0	0.0	0.0	0.0	**36.3**
Northern shoveler	14.5	0.0	14.5	0.0	0.0	**29.0**
Green-winged teal	21.8	0.0	39.9	0.0	0.0	**61.7**
American wigeon	43.5	0.0	47.1	0.0	0.0	**90.7**
Unknown wigeons	18.1	0.0	0.0	0.0	0.0	**18.1**
Unknown ducks	19.9	0.0	10.9	0.0	0.0	**30.8**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	78.0	0.0	63.5	0.0	0.0	**141.4**
Canada goose	72.5	0.0	0.0	0.0	0.0	**72.5**
Unknown Canada/cackling geese	14.5	0.0	0.0	0.0	0.0	**14.5**
Snow goose	7.3	0.0	0.0	0.0	0.0	**7.3**
White-fronted goose	150.5	0.0	45.3	0.0	0.0	**195.9**
Unknown geese	5.4	0.0	0.0	0.0	0.0	**5.4**
Tundra (whistling) swan	1.8	0.0	0.0	0.0	0.0	**1.8**
Sandhill crane	12.7	0.0	27.2	0.0	0.0	**39.9**
Spruce grouse	10.9	32.6	214.0	85.2	0.0	**342.7**
Sharp-tailed grouse	0.0	5.4	7.3	7.3	0.0	**19.9**
Ruffed grouse	0.0	25.4	223.1	92.5	0.0	**340.9**
Unknown grouses	21.8	45.3	121.5	61.7	0.0	**250.3**
Unknown ptarmigans	0.0	9.1	50.8	36.3	0.0	**96.1**

Source ADF&G Division of Subsistence household surveys, 2016.

Table D5-10.–Use of firewood for home heating, Nenana, 2015.

Percentage of home heating from wood	Households using wood for home heating	
	Nenana	
	Number	Percentage
0%	41	30.8
1–25%	9	6.8
26–50%	14	10.5
51–75%	21	15.8
76–99%	25	18.8
100%	23	17.3

Source ADF&G Division of Subsistence household surveys, 2016.

Table D5-11.–Comparison of median income estimates, Nenana, 2015.

Data source	Median[a]	Range[b,c]
2015 Division of Subsistence estimate	$41,216	$32,636 – $58,312
2011–2015 ACS (Nenana city)	$43,250	$31,226 – $55,274
2011–2015 ACS (All Alaska)	$72,515	$71,677 – $73,353

Sources ADF&G Division of Subsistence household surveys, 2016, for 2015 estimate; U.S. Census Bureau for American Community Survey (ACS) 5-year survey estimate.

Note Division of Subsistence sample includes Nenana City CDP, Four-Mile Road CDP, and portions of the Tanana Flats tract of the Yukon-Koyukuk Census area.

a. Division of Subsistence 2015 estimate does not include categories of income excluded by the 2011–2015 ACS median estimate, including food stamps, housing assistance, and one-time payments.

b. Range is a 95% confidence interval of the estimated median.

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

Table D5-12.–Changes in household uses of resources compared to recent years, Nenana, 2015.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
All resources	134	131	128	97.7%	63	48.1%	57	43.5%	8	6.1%	3	2.3%
Salmon	134	134	116	86.6%	57	42.5%	42	31.3%	17	12.7%	18	13.4%
Nonsalmon fish	134	133	98	73.7%	39	29.3%	48	36.1%	11	8.3%	35	26.3%
Large land mammals	134	133	114	85.7%	56	42.1%	40	30.1%	18	13.5%	19	14.3%
Small land mammals	134	134	38	28.4%	23	17.2%	13	9.7%	2	1.5%	96	71.6%
Marine mammals	134	133	25	18.8%	10	7.5%	11	8.3%	4	3.0%	108	81.2%
Birds	134	134	67	50.0%	27	20.1%	25	18.7%	15	11.2%	67	50.0%
Marine invertebrates	134	133	25	18.8%	17	12.8%	4	3.0%	4	3.0%	108	81.2%
Vegetation	134	132	118	89.4%	46	34.8%	63	47.7%	9	6.8%	14	10.6%

Source ADF&G Division of Subsistence household surveys, 2016.

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

Table D5-13.–Reasons for less household uses of resources compared to recent years, Nenana, 2015.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/ environment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	131	61	17	27.9%	12	20%	1	1.6%	5	8%	7	11%	9	15%	8	13.1%	3	4.9%
Salmon	134	57	8	14.0%	9	16%	2	3.5%	4	7%	9	16%	16	28%	2	3.5%	0	0.0%
Nonsalmon fish	133	37	11	29.7%	1	3%	2	5.4%	3	8%	9	24%	4	11%	1	2.7%	0	0.0%
Large land mammals	133	54	6	11.1%	5	9%	0	0.0%	2	4%	12	22%	7	13%	15	27.8%	1	1.9%
Small land mammals	134	23	7	30.4%	4	17%	0	0.0%	2	9%	5	22%	5	22%	2	8.7%	1	4.3%
Marine mammals	133	9	0	0.0%	1	11%	0	0.0%	0	0%	9	100%	0	0%	0	0.0%	0	0.0%
Birds	134	26	7	26.9%	7	27%	0	0.0%	3	12%	2	8%	4	15%	2	7.7%	0	0.0%
Marine invertebrates	133	16	5	31.3%	0	0%	3	18.8%	0	0%	6	38%	5	31%	0	0.0%	0	0.0%
Vegetation	132	45	11	24.4%	13	29%	0	0.0%	2	4%	3	7%	3	7%	0	0.0%	12	26.7%

-continued-

Table D5-13.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for less use	Other reasons		Working/ no time		Regulations		Small/ diseased animals		Did not get enough		Did not need		Equipment/ fuel expense		Used other resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	131	61	0	0%	19	31.1%	5	8.2%	0	0.0%	1	1.6%	2	3.3%	0	0.0%	0	0.0%
Salmon	134	57	0	0%	14	24.6%	11	19.3%	0	0.0%	1	1.8%	5	8.8%	0	0.0%	0	0.0%
Nonsalmon fish	133	37	2	5%	12	32.4%	2	5.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	133	54	1	2%	11	20.4%	2	3.7%	0	0.0%	0	0.0%	2	3.7%	0	0.0%	0	0.0%
Small land mammals	134	23	0	0%	4	17.4%	1	4.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	133	9	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	134	26	0	0%	6	23.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	133	16	0	0%	1	6.3%	1	6.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	132	45	0	0%	12	26.7%	0	0.0%	0	0.0%	0	0.0%	3	6.7%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2016.

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

Table D5-14.–Resources of which households reported needing more, Nenana, 2015.

Resource	Households needing	Percentage of households
All resources	8	6.0%
Fish	10	7.5%
Salmon	30	22.4%
Chum salmon	6	4.5%
Fall chum salmon	5	3.7%
Coho salmon	4	3.0%
Chinook salmon	16	11.9%
Sockeye salmon	6	4.5%
Nonsalmon fish	3	2.2%
Cod	2	1.5%
Pacific halibut	17	12.7%
Rockfish	2	1.5%
Burbot	2	1.5%
Arctic grayling	4	3.0%
Northern pike	3	2.2%
Unknown trout	1	0.7%
Whitefishes	8	6.0%
Humpback whitefish	2	1.5%
Land mammals	4	3.0%
Large land mammals	2	1.5%
Bison	1	0.7%
Black bear	5	3.7%
Caribou	12	9.0%
Moose	62	46.3%
Dall sheep	2	1.5%
Small land mammals	1	0.7%
Beaver	9	6.7%
Fox	1	0.7%
Snowshoe hare	5	3.7%
Lynx	5	3.7%
Muskrat	4	3.0%
Porcupine	2	1.5%
Gray wolf	3	2.2%
Wolverine	1	0.7%
Unknown small land mammals or furbearers	1	0.7%
Unknown seal oil	7	5.2%
Whale	1	0.7%
Beluga whale	1	0.7%
Bowhead whale	4	3.0%
Migratory birds	2	1.5%
Ducks	9	6.7%
Black scoter	1	0.7%
Geese	9	6.7%
White-fronted goose	1	0.7%
Sandhill crane	1	0.7%

-continued-

Table D5-14.–Page 2 of 2.

Resource	Households needing	Percentage of households
Grouse	8	6.0%
Spruce grouse	1	0.7%
Ruffed grouse	1	0.7%
Ptarmigan	2	1.5%
Bird eggs	1	0.7%
Marine invertebrates	1	0.7%
Clams	5	3.7%
Freshwater clams	1	0.7%
Razor clams	2	1.5%
Crabs	3	2.2%
King crab	2	1.5%
Tanner crab, opillio	1	0.7%
Limpets	1	0.7%
Scallops	1	0.7%
Shrimp	2	1.5%
Berries	21	15.7%
Blueberry	18	13.4%
Lowbush cranberry	7	5.2%
Highbush cranberry	3	2.2%
Cloudberry	1	0.7%
Raspberry	7	5.2%
Salmonberry	1	0.7%
Plants, greens, and mushrooms	1	0.7%
Wild potato	1	0.7%
Unknown mushrooms	3	2.2%
Wood	8	6.0%
Unknown	21	15.7%

Source ADF&G Division of Subsistence household surveys, 2016.

Table D5-15.–Reported impact to households that did not get enough of a type of resource, Nenana, 2015.

		Households not getting enough _____ .				Impact to those not getting enough _____ .									
	Sample	Valid responses[a]		Did not get enough		No response		Not noticeable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	134	122	91.0%	56	45.9%	6	10.7%	1	1.8%	17	30.4%	27	48.2%	5	8.9%
Salmon	134	113	84.3%	49	43.4%	2	4.1%	5	10.2%	19	38.8%	20	40.8%	3	6.1%
Nonsalmon fish	134	97	72.4%	38	39.2%	2	5.3%	8	21.1%	16	42.1%	11	28.9%	1	2.6%
Large land mammals	134	113	84.3%	57	50.4%	2	3.5%	2	3.5%	24	42.1%	27	47.4%	2	3.5%
Small land mammals	134	39	29.1%	18	46.2%	0	0.0%	2	11.1%	8	44.4%	7	38.9%	1	5.6%
Marine mammals	134	29	21.6%	11	37.9%	0	0.0%	4	36.4%	5	45.5%	2	18.2%	0	0.0%
Birds	134	66	49.3%	22	33.3%	1	4.5%	3	13.6%	10	45.5%	6	27.3%	2	9.1%
Marine invertebrates	134	28	20.9%	16	57.1%	0	0.0%	3	18.8%	8	50.0%	4	25.0%	1	6.3%
Vegetation	134	116	86.6%	41	35.3%	0	0.0%	5	12.2%	18	43.9%	18	43.9%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2016.

a. Includes households failing to respond to the question and those households that never used the resource.

Table D5-16.–Reasons for more household uses of resources compared to recent years, Nenana, 2015.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	131	6	0	0.0%	0	0.0%	0	0.0%	4	66.7%	2	33.3%	1	16.7%	0	0.0%
Salmon	134	16	0	0.0%	1	6.3%	0	0.0%	7	43.8%	4	25.0%	2	12.5%	0	0.0%
Nonsalmon fish	133	11	0	0.0%	0	0.0%	1	9.1%	7	63.6%	4	36.4%	0	0.0%	0	0.0%
Large land mammals	133	18	1	5.6%	0	0.0%	0	0.0%	13	72.2%	0	0.0%	5	27.8%	1	5.6%
Small land mammals	134	2	0	0.0%	0	0.0%	1	50.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%
Marine mammals	133	3	0	0.0%	0	0.0%	0	0.0%	3	100.0%	0	0.0%	0	0.0%	0	0.0%
Birds	134	15	0	0.0%	0	0.0%	4	26.7%	1	6.7%	7	46.7%	3	20.0%	0	0.0%
Marine invertebrates	133	4	0	0.0%	0	0.0%	0	0.0%	3	75.0%	1	25.0%	0	0.0%	0	0.0%
Vegetation	132	9	1	11.1%	1	11.1%	2	22.2%	3	33.3%	2	22.2%	2	22.2%	0	0.0%

-continued-

Table D5-16.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	131	6	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salmon	134	16	2	12.5%	1	6.3%	0	0.0%	0	0.0%	0	0.0%	1	6.3%	0	0.0%
Nonsalmon fish	133	11	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	133	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	134	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	133	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	134	15	0	0.0%	1	6.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	133	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	132	9	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, 2016.

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