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Subsistence Wildlife Harvests in Ambler, Buckland, Kiana, Kobuk, Shaktoolik, and Shishmaref, Alaska, 2009–2010

by

Nicole M. Braem

September 2012

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

Symbols and Abbreviations

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

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Measures (fisheries)

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

Mathematics, statistics

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

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by

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ABSTRACT

This report summarizes the results of a big game subsistence harvest surveys conducted in Ambler, Buckland, Kiana, Kobuk, Shaktoolik, and Shishmaref, Alaska in spring 2010. Since 1999, the Alaska Department of Fish and Game Division of Subsistence, with support from the Division of Wildlife Conservation, has conducted this limited scope harvest survey in communities within game management units 22 and 23 that harvest from the Western Arctic caribou herd. The survey asked household heads in Ambler, Buckland, Kiana, Kobuk, and Shishmaref about their harvests of caribou, moose, other large land mammals, and furbearers between February 2009 and January 2010; in Shaktoolik, questions asked about the time period between May 2009 and April 2010. The survey documented the number, sex, and harvest timing of these subsistence resources, as well as observations, if any, of unhealthy animals. Reported results were expanded to account for unsurveyed households. In the 2009–2010 study year, Ambler hunters harvested an estimated 456 caribou, approximately 260 edible pounds of caribou per person. In Buckland, hunters harvested an estimated 561 caribou, 176 per capita pounds. In Kiana, hunters harvested an estimated 440 caribou, 158 pounds per capita. Kobuk hunters harvested an estimated 210 caribou, 194 pounds per person. Shaktoolik hunters harvested an estimated 134 caribou, 82 pounds per capita. Shishmaref's estimated harvest was 345 caribou, about 83 pounds per person.

Key words: caribou, moose, brown bears, Dall sheep, muskoxen, furbearers, Ambler, Buckland, Kiana, Kobuk, Shaktoolik, Shishmaref, WACH, Western Arctic caribou herd, subsistence hunting.

INTRODUCTION

Caribou *Rangifer tarandus* are an important subsistence resource for communities in the Northwest, Arctic and Interior regions of Alaska. People from more than 40 villages, from Wainwright in the north to Kotlik in the south, as well as from the regional centers of Barrow, Kotzebue, and Nome, are known to harvest caribou from the Western Arctic caribou herd (WACH; Figure 1). This herd, which roams throughout an area of 190,000 square miles, is the largest caribou herd in Alaska, with a revised estimated July 2011 population of 325,000 caribou.[1] The 2011 count represents a 5% decline from the 2009 census, which counted 348,000 caribou. The herd has declined 4–6% annually since 2003 from its peak of 490,000 caribou.

The role of caribou in the nutritional, cultural, and economic health of northwestern Alaska communities varies. In some communities, caribou meat is a large portion of the total subsistence harvest each year. In communities where other resources are more abundant, caribou may represent a smaller portion of the total subsistence harvest. Because of a village's location, residents may have only occasional access to the WACH. In villages located along key migration routes, residents might take caribou during several months of the year. A variety of other factors may also influence caribou harvests each year, including gasoline prices, user conflicts, weather, the success (or lack thereof) in harvesting other subsistence resources, migration timing, and so forth. Subsistence harvesters adapt to local conditions. Therefore, inter-annual variation in harvest numbers and characteristics is not uncommon, even within a single village.

It is the statutory responsibility of the Alaska Department of Fish and Game (ADF&G) Division of Subsistence to provide information to the public, agencies, the Board of Fisheries, and the Board of Game about the role of subsistence hunting and fishing in the lives of Alaska residents (AS 16.05.094). The division studies and reports on the seasonality, methods, sharing and trading, use areas, cultural and economic values, and trends of subsistence harvests and uses. This information is increasingly necessary as development projects are proposed throughout rural areas of Alaska. Documenting and understanding

1. State of Alaska, Department of Fish and Game, "Western Arctic Caribou Herd Numbers 325,000 Animals in Recent Survey," press release, July 3, 2012.

2012.

subsistence harvests is also necessary in order to evaluate reasonable opportunities for customary and traditional uses of wild resources. Other duties of the division set forth in statute include:

- Quantifying the amount, nutritional value, and extent of dependency on foods acquired through subsistence hunting and fishing;
- Evaluating the impacts of state and federal laws and regulations on subsistence hunting and fishing, and when corrective action is indicated, making recommendations to the department; and
- Making recommendations to the Board of Game and the Board of Fisheries regarding adoption, amendment, and repeal of regulations affecting subsistence hunting and fishing.

Subsistence harvest surveys of varying scope have been conducted in over 200 Alaska communities since the division was formed in 1980. This research helps ADF&G estimate subsistence harvests and understand the role of subsistence in local economies. Since 1999, ADF&G, in cooperation with the Maniilaq Association and Kawerak, Inc., has gathered big game harvest information in selected Kotzebue and Norton Sound area communities each year.

METHODS

THE SURVEY EFFORT IN 2010

In 2010, division staff collected subsistence harvest information in 6 communities in the Kotzebue Sound and Bering Strait regions: Ambler, Buckland, Kiana, Kobuk, Shaktoolik, and Shishmaref (Appendix A). All data were processed and analyzed by the division. Survey data were expanded to account for unsurveyed households.

Survey timing was designed to coincide with the end of a major harvest period. Ambler, Buckland, Kiana, Kobuk, and Shishmaref households were asked about their harvest of caribou, other large game and furbearers between February 2009 and January 2010. In Shaktoolik, which is located in the herd's winter range, the survey covered the time period between May 2009 and April 2010. Funding for the big game survey came from ADF&G's divisions of Wildlife Conservation and Subsistence.

The division's policy is to seek community approval before conducting local research. Community approval from the traditional councils of all study communities was obtained by the Division of Subsistence. Nicole Braem and Lisa Slayton (Division of Subsistence) traveled to Ambler, Buckland, Kiana, Kobuk, and Shishmaref in February 2010, where they trained local surveyors and helped administer surveys. Two local residents, Marie Cleveland and Sigwien Cleveland were hired in Shungnak to update the household list and complete surveys. Darlene Hadley and Dorothy Lee were hired in Buckland. Barbara Johnson, Debra Thomas Reed, and Louise Reed were hired in Kiana. Eva K. Harvey was hired in Kobuk. Shelly Kuzuguk, Travis Ningeulook, Tommy Obruk, Edward Olanna, and Donnie Pootoogooluk were hired in Shishmaref. In May 2010, Braem traveled to Shaktoolik and coordinated with Caroline K. Katchatag, Edgar Jackson, Leonard Takak, and Ralph Takak, who reviewed household lists and conducted surveys there.

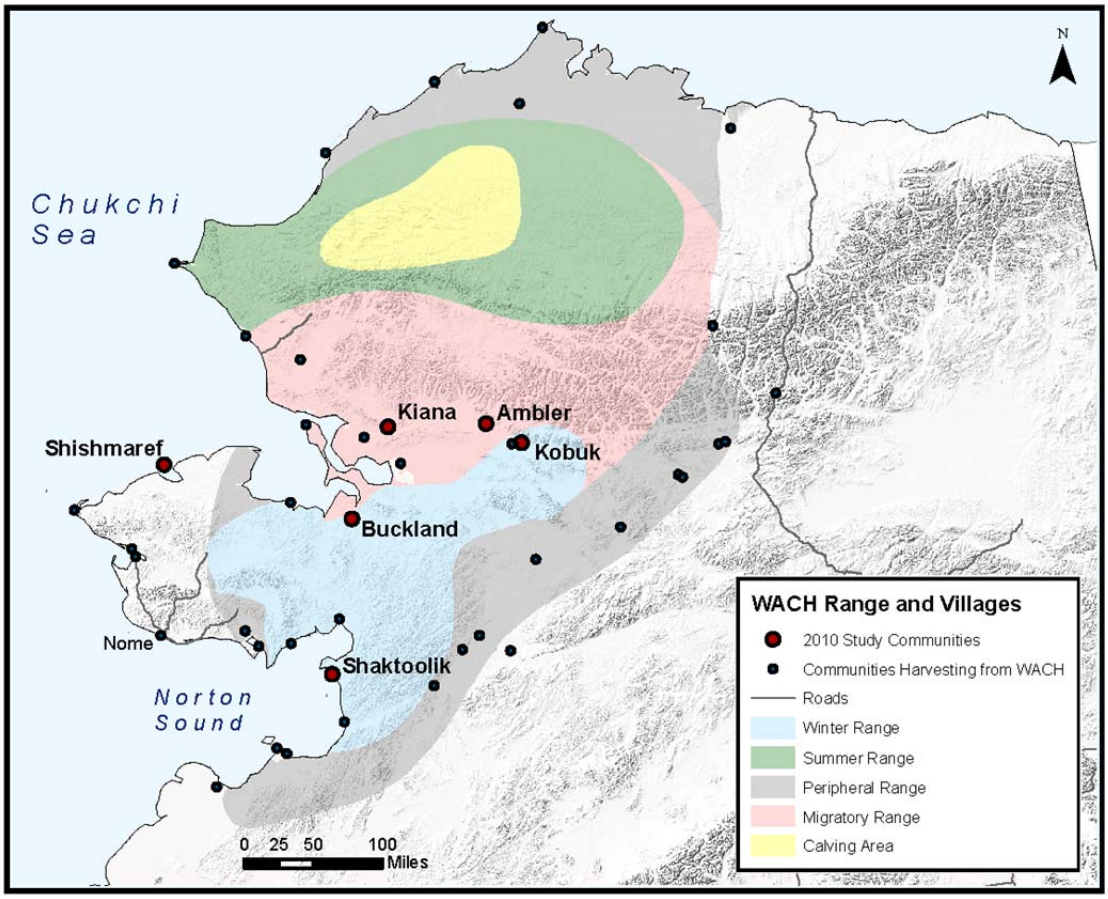

Figure 1.–Western Arctic caribou herd range and 2010 study communities.

SURVEY DESIGN IN 2010

The division's standard method for collecting harvest information in smaller communities is to attempt to survey every household, usually by talking to the head or heads of each household. Confidentiality is protected by using randomly assigned household numbers instead of names on the survey form. Before starting the project, survey workers compile an updated, accurate list of every household present in the community during the study period. Participation in surveys is voluntary—people may refuse to answer any or all questions. Surveyors try to contact each household on 3 separate occasions. If no contact is made, then that household is recorded as "no contact" on the survey form. There are a variety of reasons that a household is marked "no contact:" they may be out of town during the survey effort, they may have moved to another community, or the household members may have passed away during or after the study year. Surveyors often go door to door, but can make appointments for surveys when necessary.

The big game survey used in 2010 gathered demographic information on the number of people living in each household, the age of its members, the relationship between its head(s) and others living there, how many years each person had lived in the community, and whether members were Alaska Native (Table 1).

The survey (Appendix A) included questions about harvests and uses of caribou, moose *Alces alces*, brown bears *Ursus arctos*, Dall sheep *Ovis dalli*, muskoxen *Ovibos moschatus*, and several furbearers. It also asked about sharing (i.e., if a household gave away a resource to other households or if the household received it). Harvest location was recorded by ADF&G Division of Wildlife Conservation uniform coding

unit (UCU). These units are geographical areas that can vary in size from just a few square miles to over 11,000 square miles. Respondents were asked about the locations of harvests, the sexes of harvested animals, and the months in which harvests occurred. Respondents were also asked if any members of their household harvested animals with diseases or other physical abnormalities. Surveys typically took 5–10 minutes to administer.

Sample achievement varied in the 6 communities (Table 1): 75% of Ambler households, 79% of Buckland households, 67% of Kiana households, 85% of Kobuk households, 92% of Shaktoolik households, and 72% of Shishmaref households were surveyed.

Table 1.–Demographic characteristics of sampled households in WACH study communities, 2009–2010.

	Community						
Characteristics	Ambler	Buckland	Kiana	Kobuk	Shaktoolik	Shishmaref	Total
Sampled households	50	70	69	28	55	89	361
Eligible households	67	89	103	33	60	123	475
Percentage sampled	74.6%	78.7%	67.0%	84.8%	91.7%	72.4%	76.0%
Household size							
Mean	3.6	4.9	3.7	4.5	3.7	4.6	4.2
Minimum	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Maximum	13.0	14.0	10.0	10.0	7.0	11.0	14.0
Age							
Mean	29.3	25.1	29.7	25.4	32.3	26.1	24.4
Minimum[a]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum	87.0	89.0	86.0	93.0	85.0	83.0	93.0
Median	23.0	19.0	23.5	19.5	28.0	20.0	21.5
Sex							
Estimated male							
Number	117.2	241.3	200.0	75.4	118.9	315.1	1,068
Percentage	49.2%	55.7%	53.0%	51.2%	53.2%	55.6%	53.7%
Estimated female							
Number	121.3	192.3	177.6	71.9	104.7	251.5	919
Percentage	50.8%	44.3%	47.0%	48.8%	46.8%	44.4%	46.3%
Alaska Native							
Estimated households[b]							
Number	60.3	85.2	95.5	24.8	55.6	123.0	444
Percentage	90.0%	95.7%	92.8%	75.0%	92.7%	100.0%	93.6%
Estimated population							
Number	222.4	418.3	359.8	132.0	210.5	565.2	1,908
Percentage	93.3%	96.5%	95.3%	89.6%	94.1%	99.8%	96.0%

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

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

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

ANALYSIS

Since its establishment in 1978, the Division of Subsistence Information Management (IM) team has adopted standards based on observations and findings to analyze subsistence harvest resource data. The base unit for the majority of surveys is the household. IM generates harvest estimates and participation rates at the community level. The statistical program SPSS[2] is used to analyze data and prepare tables.

Results from surveyed households were entered into the division's data repository in MS SQL Server. Each survey was entered 2 times by different staff. As the first step in data validation, the 2 versions were compared and corrected according to the actual values recorded on paper surveys. Once entered and validated, data were then extracted using SPSS v19.0 and analyzed using standard division methods. Harvest amounts and demographic information were extrapolated to un-surveyed households to derive total harvest and human population estimates for each community. Fractional estimates are the direct result of this expansion procedure and are rounded to the nearest tenth in accompanying report tables. Participation levels, presented in percentages, are derived directly from the sampled data and are assumed to be the same as estimated participation levels for the entire community.

The standard division procedure for estimates of harvests and population in this study were calculated based upon the application of weighted means (Cochran 1977). This method applies the sample mean as a replacement value for each of the households surveyed. The sample mean is also applied for instances where data is not known, but is known to be a value other than zero. The formula applied for this method is

$$X_C = \frac{N}{n}\sum_{i=1}^{n} x_i$$

Where:

x = household harvest

i = ith household in the community

n = number of sampled households in the community

N = number of households in the community

X_C = total estimated community harvest

In addition to harvest estimates, the division reports confidence intervals (CI) to provide some context to the quality and accuracy of the sample. This value represents the relative precision of the mean, or likelihood that an unknown value falls within a certain distance from the mean. In the accompanying tables, the CI is expressed as a percent and applies to both the mean household harvest and total community harvest. The division standard is to use a 95% confidence interval. The formula applied to produce this value is

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

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

Where:

$t_{\alpha/2}$ = Student's t statistic for given alpha level (α) with n–1 degrees of freedom (95% CI with n–1 degrees of freedom). The commonly accepted standard is to use 1.96; however for very small populations (fewer than approximately 140 households), the appropriate value must be identified from a look-up table.

s = the sample standard deviation

$\overline{x}$ = sample mean for the community

n = sample size for a community

N = total households in a community

RESULTS

CARIBOU

High percentages of households in all 6 study communities reported use of caribou during the study period, ranging from 51% in Shaktoolik to 86% in Kobuk (Table 2)—regardless of total caribou or per capita harvest for a community. The percentage of households in each community that tried to catch caribou varied. In Shaktoolik, far south in the winter range of the WACH, a little more than one-half of surveyed households (51%) reported trying to harvest caribou; a higher percentage of households in communities located within the core of the herd's range (Ambler, Kiana, and Kobuk) tried to do so. In Buckland, on the northern Seward Peninsula (an area considered to be the northern extent of the winter herd range), 68% of surveyed household said they attempted to harvest caribou. In Shishmaref, a village located outside what is considered the herd's range, 72% of households tried to harvest caribou.

Table 2.–Estimated harvest and uses of caribou, WACH study communities, 2009–2010.

	Percentage of households reporting					Estimated harvest			95% confidence
Community	Use	Attempt	Harvest	Give	Receive	Total	Mean household	Per capita pounds	limit (±) harvest
Ambler	78%	78%	76%	52%	44%	456	6.8	259.8	16.5%
Buckland	68%	68%	65%	46%	45%	561	6.3	175.9	16.3%
Kiana	78%	81%	76%	54%	56%	440	4.3	158.3	13.0%
Kobuk	86%	86%	82%	68%	50%	210	6.4	193.7	16.6%
Shaktoolik	51%	51%	47%	35%	25%	134	2.2	81.6	12.4%
Shishmaref	72%	72%	65%	55%	52%	345	2.8	82.9	13.9%

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

Household success (roughly measured by dividing the number of households attempting to harvest caribou by the number of households that did so) ranged from 91% in Shishmaref and Kiana to 97% in Ambler. This rough measure of "success" does not, however, account for effort—the number of trips made, instances of trips made with no harvest, the distance traveled, and the amount spent on gasoline and other supplies. The prevalence of sharing of subsistence food accounts for the difference between harvest and uses in all 6 study communities. The case of Shishmaref illustrates this well, with 65% of households harvesting caribou, yet 52% of households saying they received caribou, resulting in 72% of Shishmaref households using caribou in the study period.

Estimates of total caribou harvests by community ranged from 134 in Shaktoolik to 561 in Buckland. Total harvests were not directly related to community size—while Shishmaref is the most populous community with an estimated 565 residents in 2009 (Table 1), it harvested fewer caribou than Ambler, Buckland, and Kiana. Caribou harvest in a given year instead is driven by several factors, including village location relative to herd range and migration routes (which vary), the availability of other resources (notably marine mammals), success in harvests of other subsistence resources, travel conditions, gas prices, food preferences, and others.

Looking at pounds per capita harvests (pounds per person) allows one to compare the results from communities of different sizes as well as results for one community over time. By that measure, Ambler harvested the most caribou in the study period, approximately 260 lb of caribou per resident (Table 2). Kobuk was the next highest, harvesting 194 lb of caribou per person. Shaktoolik, which has far less access to WACH caribou because of its location, harvested 82 lb per person. Detailed information on harvest and uses of caribou and all other resources in the survey is available in Appendix B.

The percentage of harvest made up of bulls and cows varied by community, as did harvest timing. The majority of Ambler's harvest (76%) was bulls, with cows comprising the reminder of the harvest. Buckland's harvest was split: 37% were cows, 34% were bulls, and just over 29% were of unknown sex. In Kiana, 82% of harvest was bulls, 5% was cows, with 13% of unknown sex. In Kobuk, 78% of harvest was bulls, 17% were cows, and 5% were of unknown sex. For Shaktoolik, 64% of caribou harvested were bulls, 35% were cows, and 1% were of unknown sex. Of Shishmaref's caribou harvest, 68% was bulls, 26% were cows, and 6% were of unknown sex. For a complete breakdown of harvest by sex and month, see Appendix C.

Ambler respondents could not recall the specific month of harvest for 197 caribou (Figure 2). For example, a person answering the survey questions might not have been able to remember if caribou were harvested in August or September, but knew it was fall (before freeze-up.) In this study period, Division of Subsistence staff gave people the option of naming a season of harvest. The vast majority of Ambler's caribou harvest (71%) occurred in fall 2009, with 91 taken in August and 125 taken in September, and 107 in an unknown fall month. Most harvest of cows (88 cows or 83%) occurred in winter months, which is consistent with local preferences for taking cows in winter; bulls become less desirable during the fall rut and are in poor condition afterward.

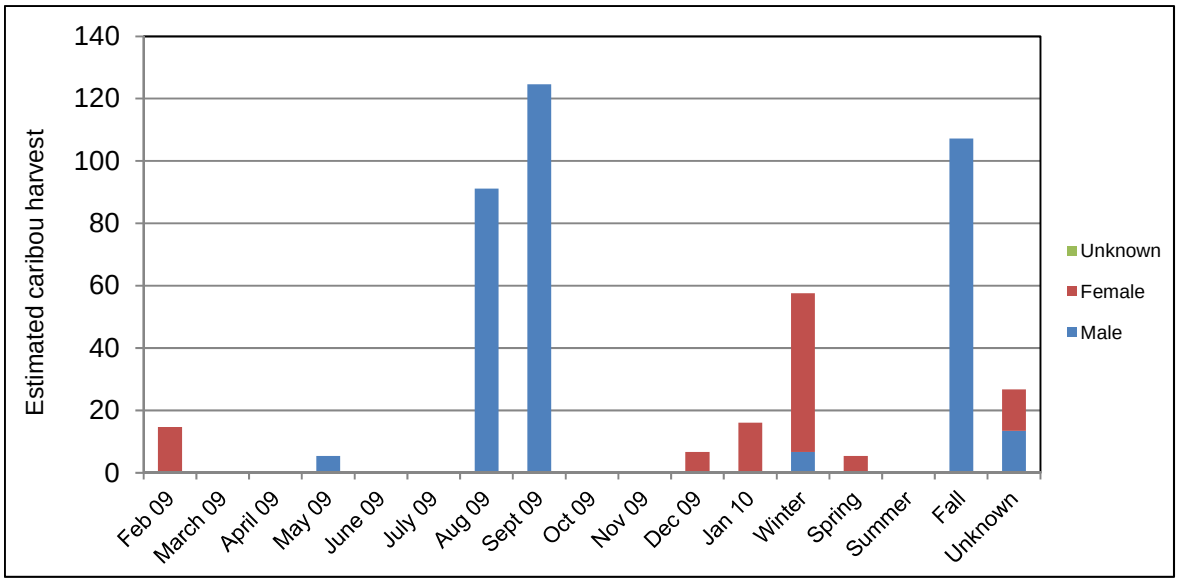

Figure 2.–Estimated caribou harvest by month, Ambler, 2009–2010.

Buckland's caribou harvest appears to have been more evenly distributed throughout the year, (Figure 3) which would be consistent with having access to caribou for many months of the year due to its location near both spring and fall migration routes of the herd. However, such an interpretation of 2009–2010 results should be made with caution due to the fact that 226 caribou, or 40% of total harvest, could not be attributed to a month or season of harvest.

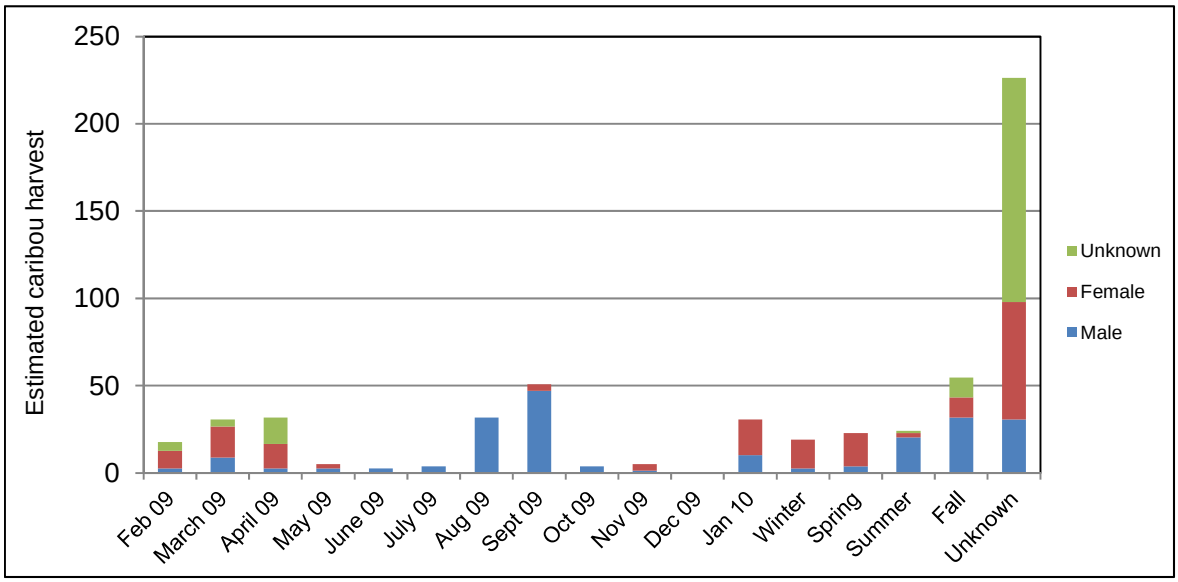

Figure 3.–Estimated caribou harvest by month, Buckland, 2009–2010.

Kiana respondents were unable to name the specific month of harvest for a significant portion (62%) of the year's harvest (Figure 4). However, most of those, 250 caribou, were attributed to fall in general, 57% of the year's total. Most of the remaining harvest occurred in September (155 caribou, 35%), with a few caribou taken in August 2009, February through April, and unknown spring months.

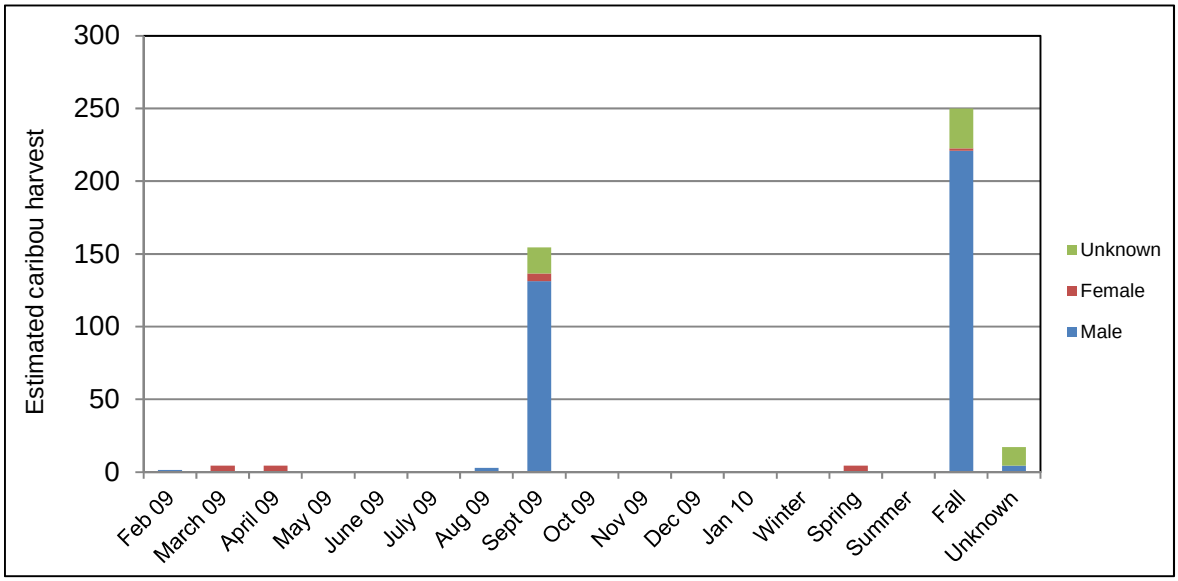

Figure 4.–Estimated caribou harvest by month, Kiana, 2009–2010.

Eighty-two percent of Kobuk's caribou harvest was taken in the months of August, September, October, and in unknown fall. Additional caribou were taken in December 2009 (1 caribou), and January 2010 (26 caribou). A few were taken earlier in the year, in March and April 2009.

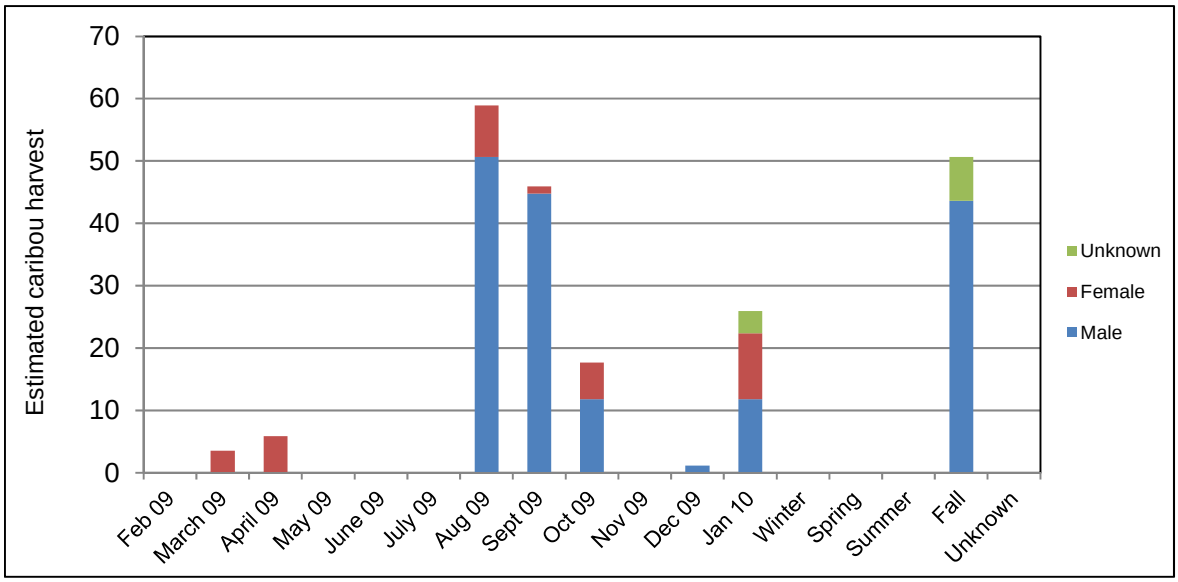

Figure 5.–Estimated caribou harvest by month, Kobuk, 2009–2010.

During the study period, the majority of Shaktoolik's caribou harvest (89%) was taken in late winter and spring (Figure 6). Fewer harvests occurred in November 2009, (8 caribou or 6% of total harvest) an unknown month, and unknown winter months. As noted earlier, harvest timing for Shaktoolik reflects its location in the southern winter range of the herd. Shaktoolik hunters have access to caribou for fewer months of the year than villages within the herd's core range or near common migration routes.

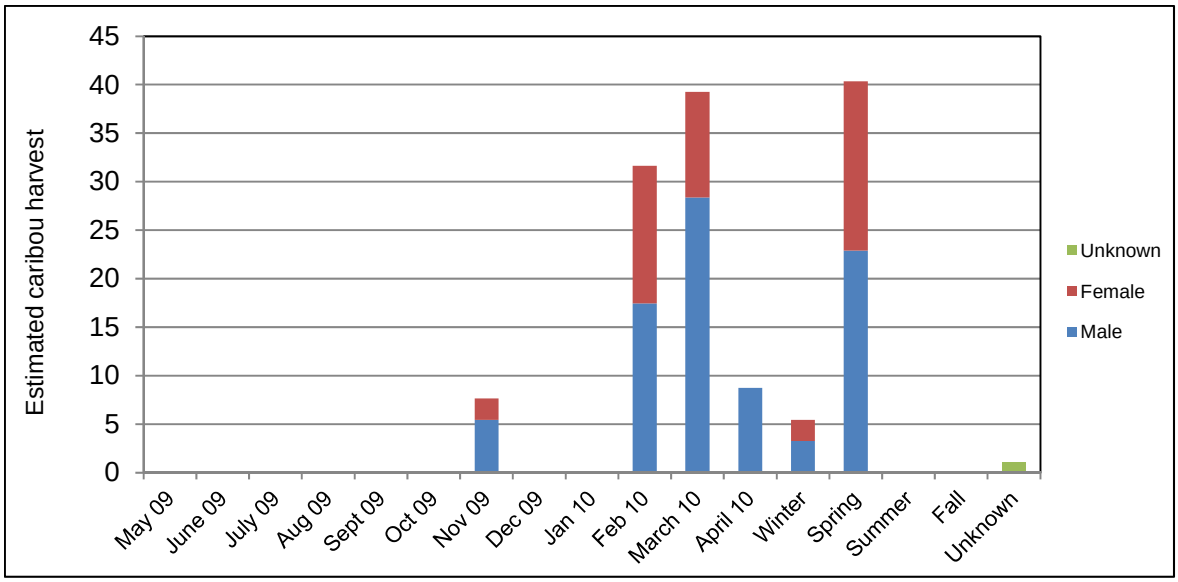

Figure 6.–Estimated caribou harvest by month, Shaktoolik, 2009–2010.

Shishmaref hunters harvested caribou in all months of the year except May and November 2009. Taking into consideration that nearly one-half (44%) of the total harvest in the study year was attributed to a season—e.g., fall or unknown—it is possible harvest occurred in those months as well.

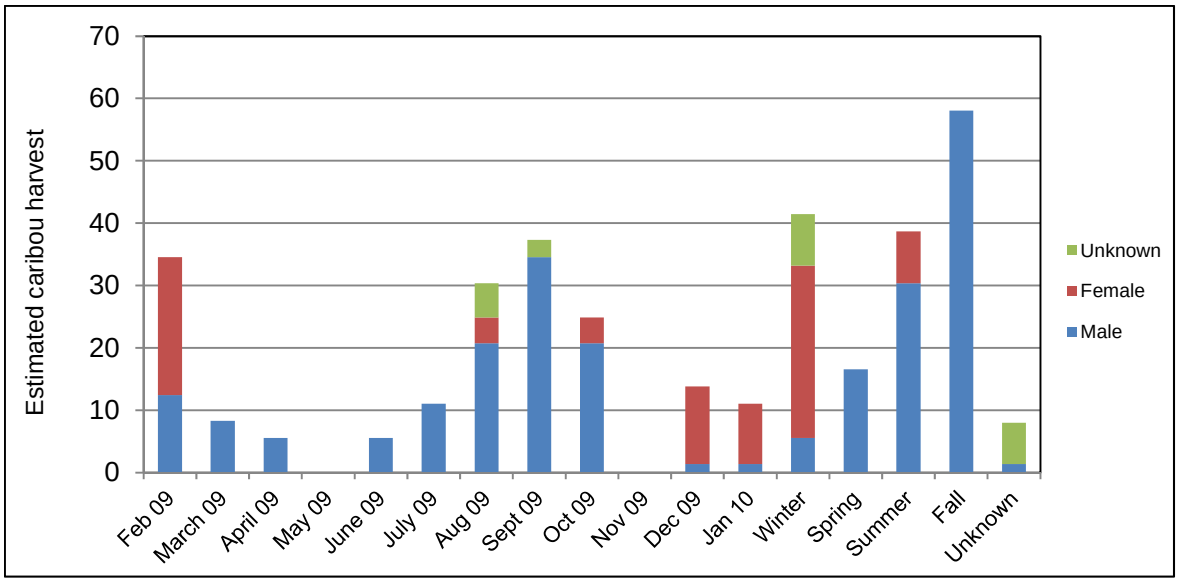

Figure 7.–Estimated caribou harvest by month, Shishmaref, 2009–2010.

Uncertainty about month of harvest can occur for several reasons: the length of the study period, the time between harvest of animals and survey administration, the sheer number of animals harvested by a particular hunter or household (in the case of caribou), and which member of the household answers the survey questions. Surveyors attempted to speak to the hunter(s), but at times they were unavailable and another member of the household was surveyed. An example of this situation is when a hunter is out of town during the survey but his wife can report how many caribou he harvested, although not recall exactly the sex of the animal or the exact month it was harvested. Often, season of harvest (for example, fall) is the most detail that can be obtained; in previous WACH studies this has been merely recorded as "unknown," in effect discarding useful information. As seen in 2009–2010 data, providing respondents the opportunity to give some detail as to season is extremely helpful in understanding harvest timing.

Reported incidences of caribou harvested but judged too unhealthy to eat ranged from 3 caribou in Ambler to 24 in Buckland. Unhealthy symptoms included parasites, cysts or tumors present, poor growth or weight, and unusual smells or textures. A complete list of observed symptoms and general comments is presented in Appendix D.

Caribou harvest took place in 12 UCUs near the study communities in 2009–2010. Harvest by sex, month, and location is presented in tabular form, broken down by community, in Appendix E. The summary map that follows (Figure 8) shows the total estimated caribou harvests of Ambler, Buckland, Kiana, Kobuk, Shaktoolik and Shishmaref for each UCU. Subsequent figures (9–14), show harvest by location by community; each community tended to harvest most heavily from the areas closest to the community.

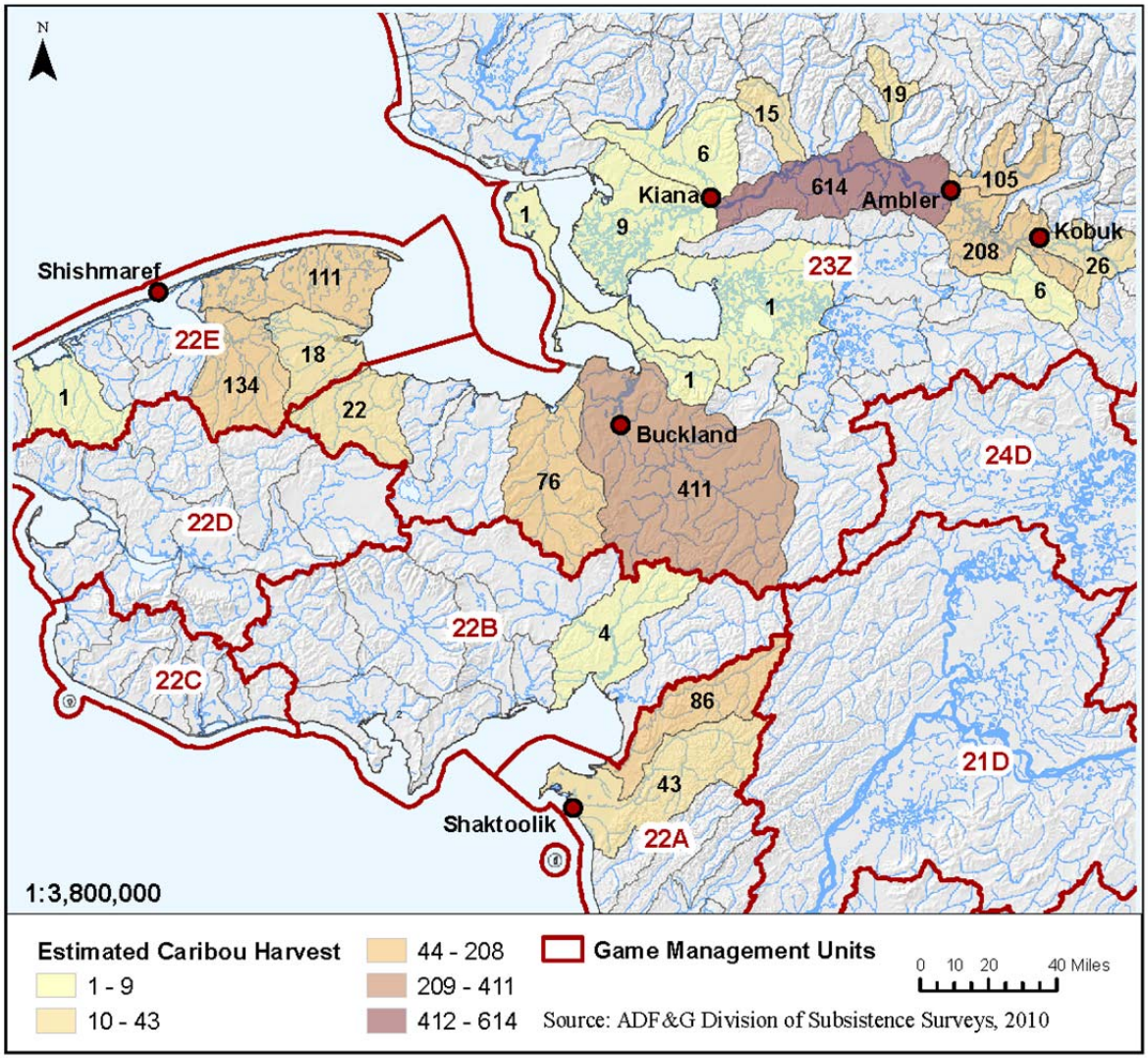

Figure 8.–Estimated caribou harvest by location, Ambler, Buckland, Kiana, Kobuk, Shaktoolik, and Shishmaref, 2009–2010.

Ambler households harvested caribou from 3 UCUs in the immediate vicinity of the community, with 59% of the year's total (271 caribou) taken from the area downriver (on the Kobuk River) of the community that extends all the way to Kiana (Figure 9). Harvests from the area east of Ambler, which includes the Ambler River and its tributary, Cross Creek, contributed another 23% of the total estimate (105 caribou). The remaining 10% (46 caribou) that could be attributed to a location were caught upriver from Ambler, in the UCU that extends all the way to Kobuk. Those surveyed in Ambler could not assign a location of harvest for 35 caribou (8% of harvest).

Buckland hunters took caribou from 5 UCUs nearby; most harvests (403 caribou, or 72% of the total harvest) occurred in the area immediately around the community (Figure 10). Another 76 (14%) caribou were harvested in the area west of Buckland containing the Kiwalik River drainage. Limited harvest (1 caribou) came from areas on the Baldwin Peninsula, near Selawik, and in the Kauk River drainage. Respondents were unable to give a harvest location for 78 caribou (14% of total harvest).

The majority of Kiana's caribou harvest, 343 caribou or 78%, came from the UCU that extends upriver (on the Kobuk River) from Kiana to Ambler (Figure 11). Fewer harvests came from the areas bounding

tributaries of the Kobuk River, including 19 caribou taken in the vicinity of Hunt Creek (called Hunt River locally) and another smaller waterway called Salmon River locally (15 caribou). A slight portion of harvest came in the area downriver of Kiana (9 caribou, 2% of harvest), near Buckland (7 caribou, 2% of harvest), and in the Squirrel River drainage (6 caribou, 1% of harvest.) Kiana respondents were unable to identify the area where 39 caribou, 9% of total harvest, were killed.

The largest portion of Kobuk's caribou harvest, (163 caribou, 78% of total harvest) came from the area downriver (on the Kobuk River) from the village that extends down to Ambler (Figure 12). Another 12% of harvest, 26 caribou, came from the UCU upriver from the community, with 3% (6 caribou) harvested in the Pick River drainage. Kobuk respondents were unable to identify the location where 15 caribou, 7% of total harvest, were killed.

Shaktoolik households harvested caribou from 3 UCUs nearby, with 96% of the total harvest coming from the 2 UCUs bounding the Shaktoolik and Ingalik River drainages (Figure 13). Sixty-four percent, 86 caribou, came from the Ingalik River drainage, while 32%, 43 caribou, came from the Shaktoolik River drainage. Four caribou, 3% of harvest, were taken in the lower Koyuk River drainage. Respondents were unable to provide the harvest location of 1 caribou, less than 1% of harvest.

The heaviest harvest of caribou by Shishmaref residents occurred in 2 UCUs just east of the community (Figure 14). Thirty-nine percent of total harvest (134 caribou) were taken in the area bounding the Serpentine River drainage; another 32% (111 caribou) came from the area north of that UCU on the coast. Lesser harvests occurred in the Nugnugaluktuk River area (18 caribou) and the Goodhope River drainage (22 caribou). One caribou was harvested to the west of the community in an area containing the Nuluk, Upkuarok, and Pinguk rivers. Respondents could not provide the harvest location of 59 caribou, 17% of total harvest.

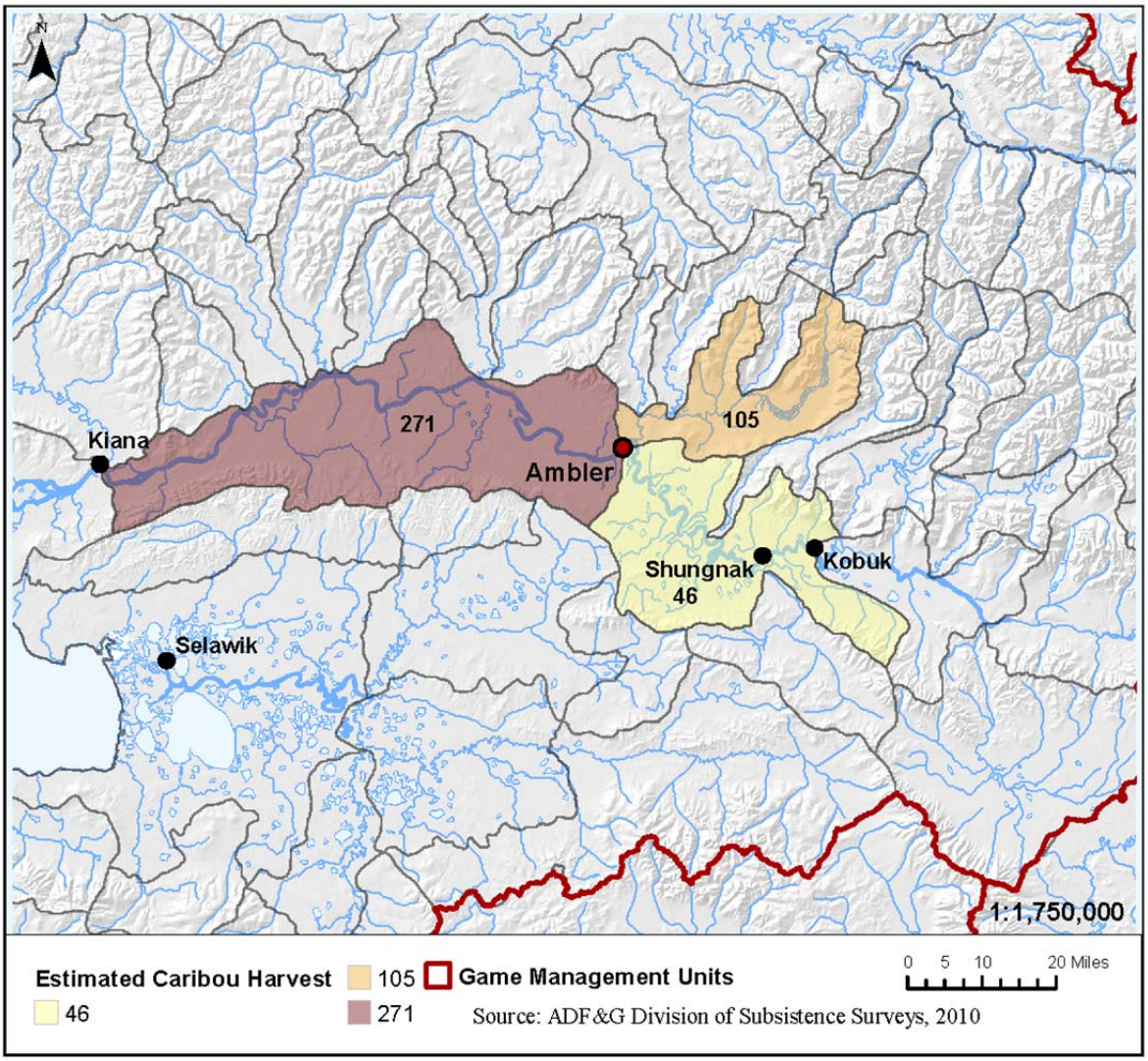

Figure 9.–Estimated caribou harvest by location, Ambler, 2009–2010.

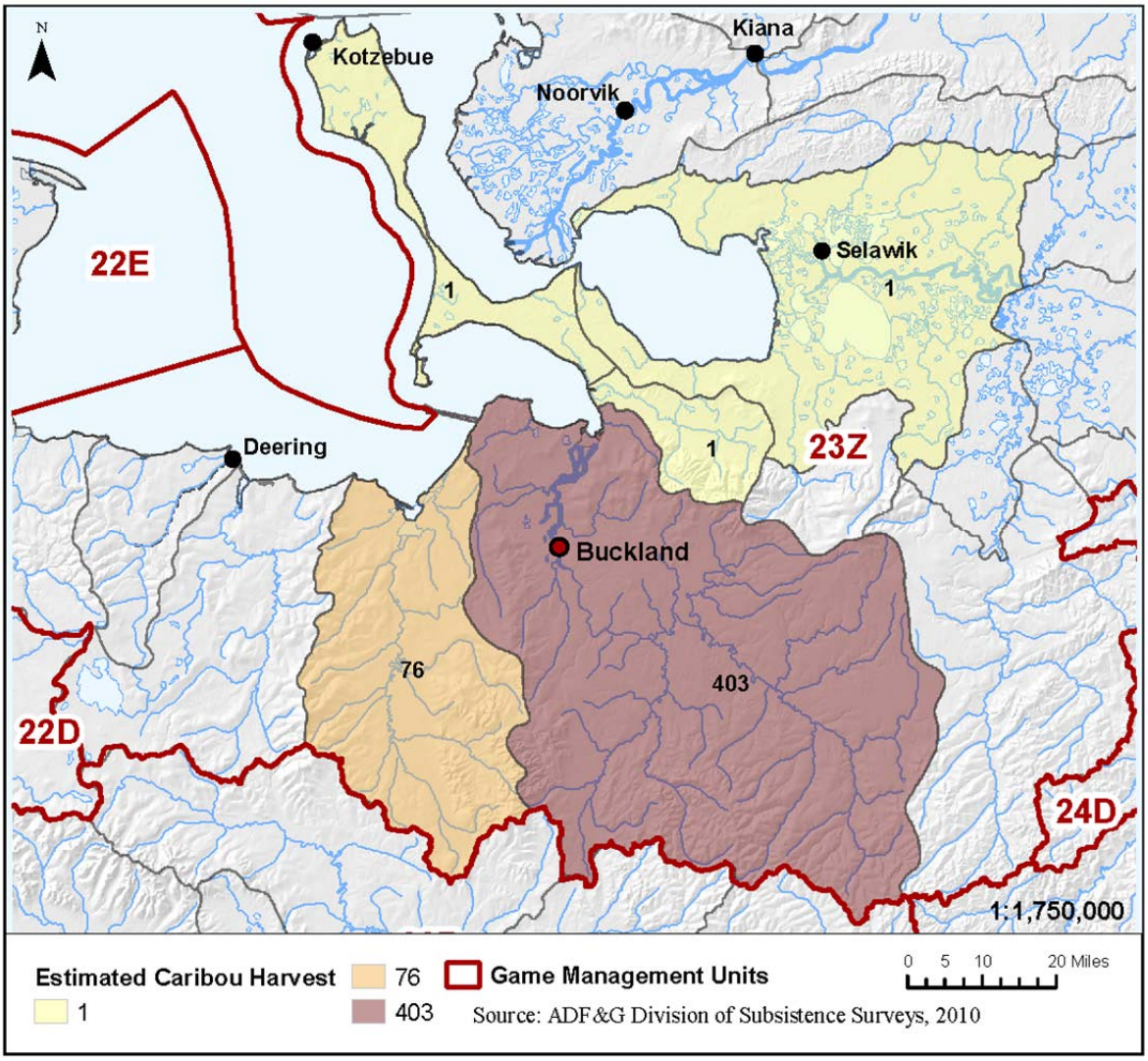

Figure 10.–Estimated caribou harvest by location, Buckland, 2009–2010.

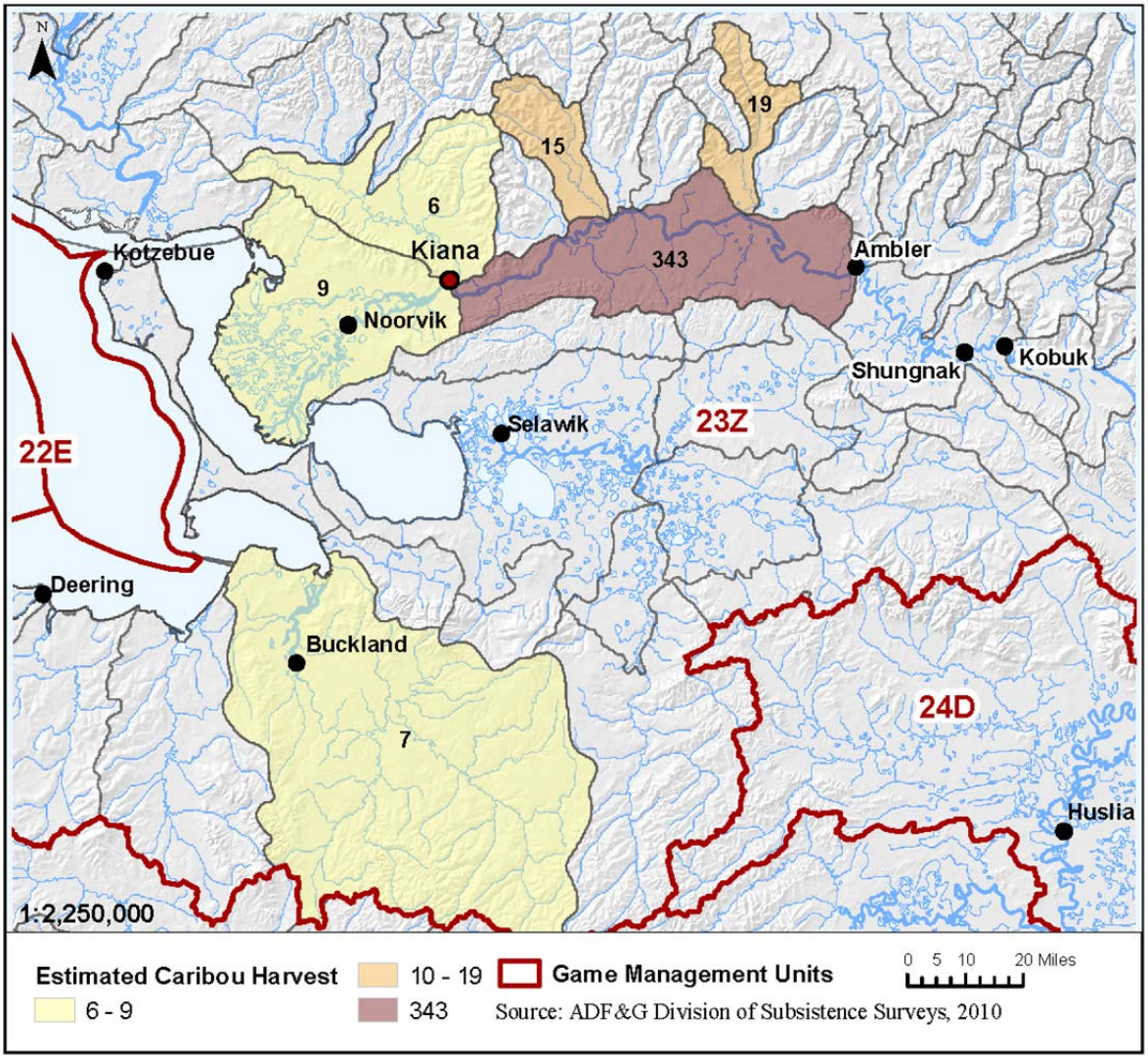

Figure 11.–Estimated caribou harvest by location, Kiana, 2009–2010.

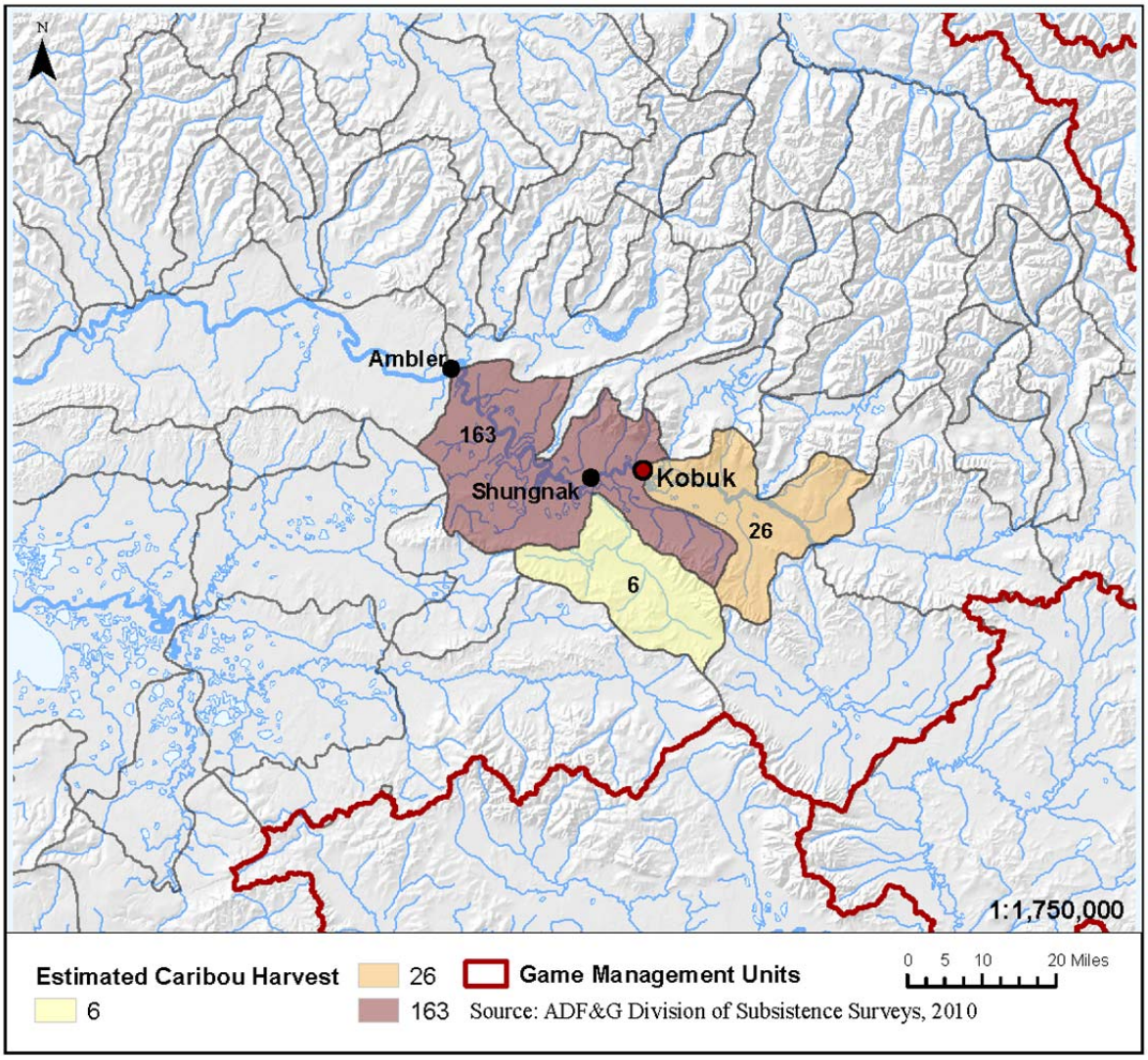

Figure 12.–Estimated caribou harvest by location, Kobuk, 2009–2010.

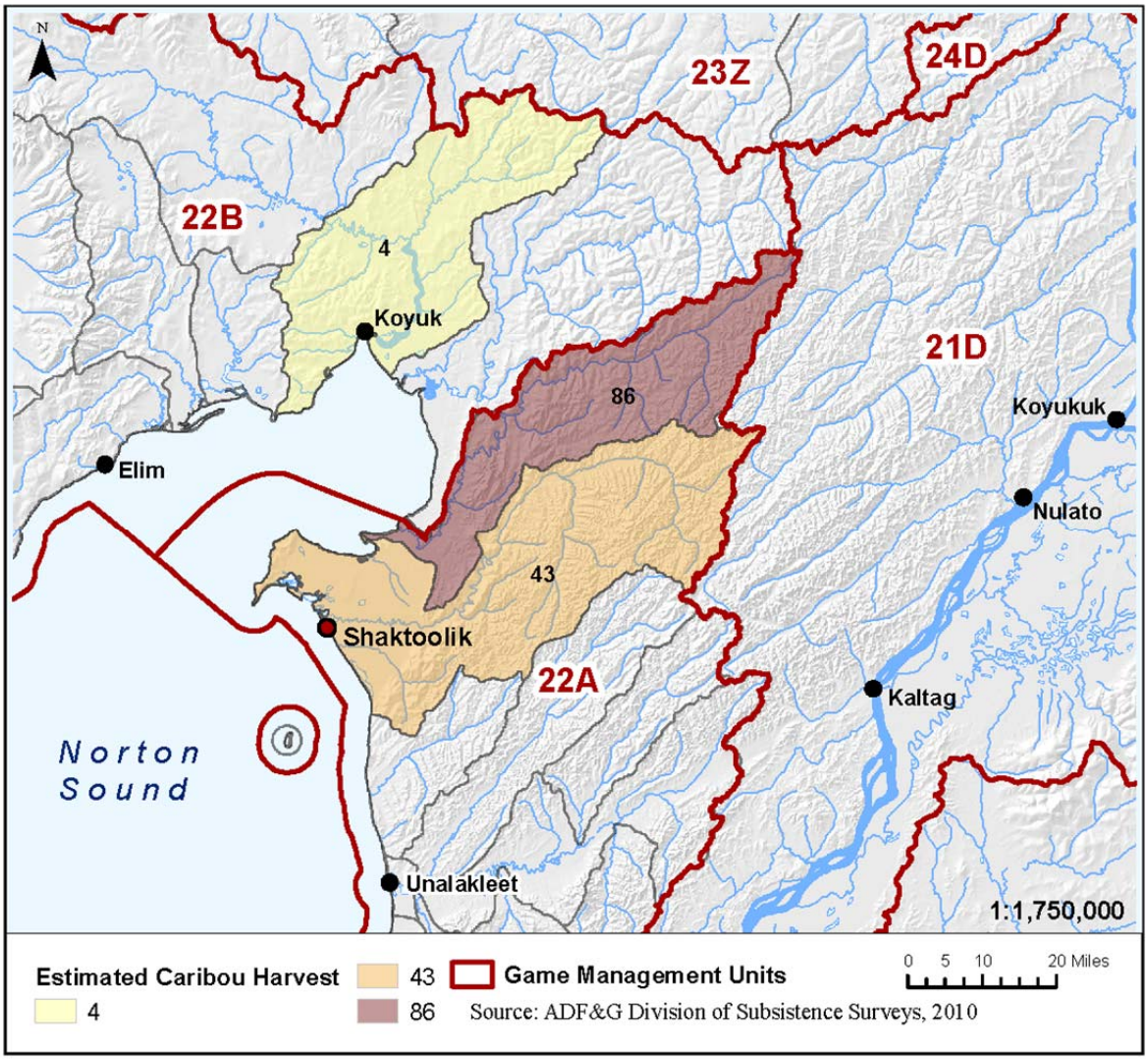

Figure 13.–Estimated caribou harvest by location, Shaktoolik, 2009–2010.

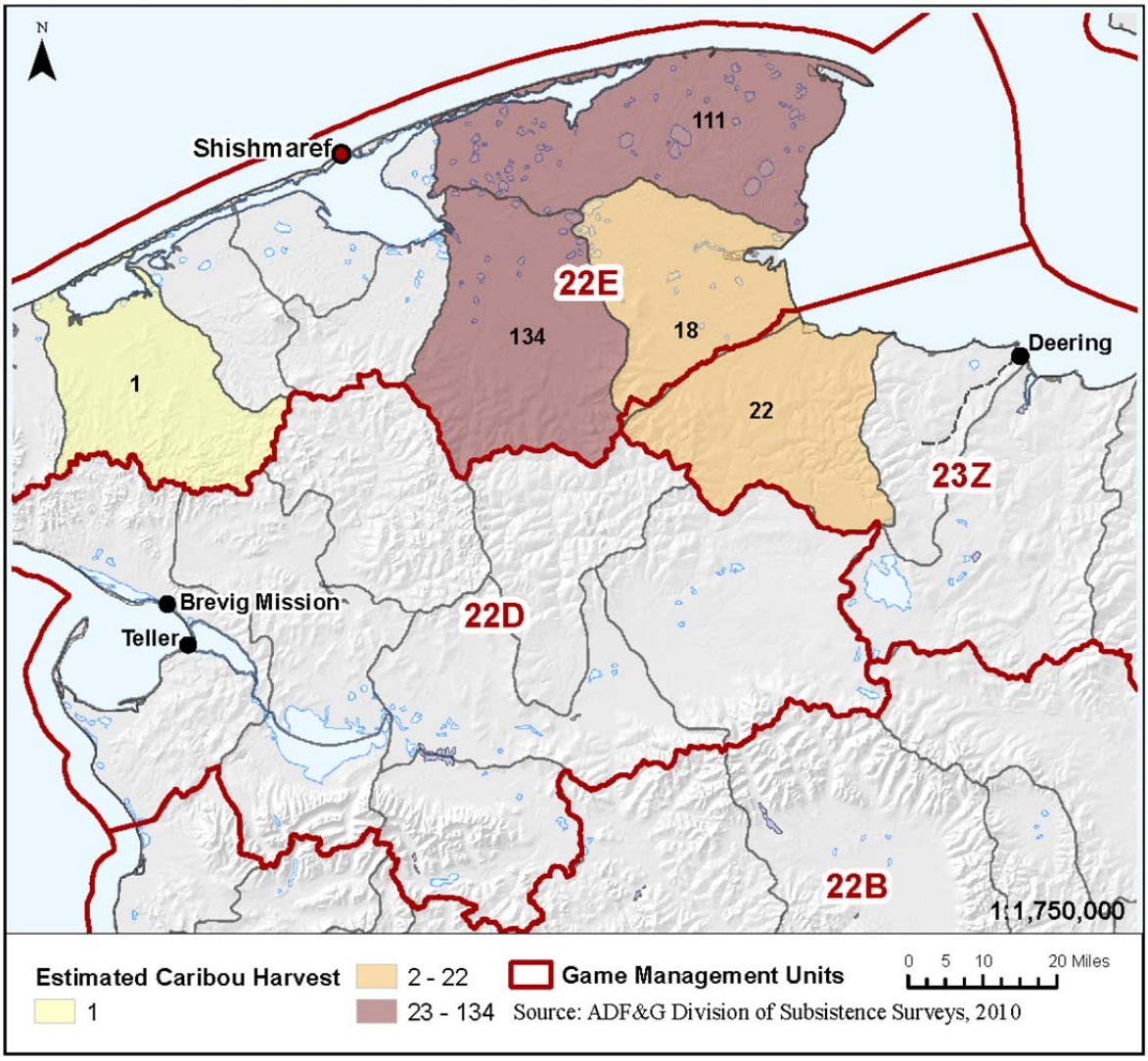

Figure 14.–Estimated caribou harvest by location, Shishmaref, 2009–2010.

MOOSE AND OTHER BIG GAME

Uses of moose by households in the 6 study communities was lower than that of caribou, ranging from 6% of households in Ambler to 35% of households in Shishmaref (Table 3). In Unit 23, Kobuk had the highest percentages of households using moose (29%), one-half of households trying to catch a moose (36%) did so (18%). In Buckland, 29% of households tried to harvest a moose, but just 9% were successful. While a lesser percentage of Kiana households tried to harvest moose (16%), all were successful. In Unit 22, similar percentages of households tried to harvest moose. Fewer than one-half as many households harvested moose in Shaktoolik (35% trying versus 13% harvesting). Thirty-five percent of Shishmaref households said they tried to harvest a moose, and 28% were successful. Sharing amongst households also varied by community, with Kobuk (25%) and Shaktoolik (18%) having the highest percentages of giving away moose.

Table 3.–Estimated harvest and uses of moose, WACH study communities, 2009–2010.

	Percentage of households reporting					Estimated harvests			95% confidence
Community	Use	Attempt	Harvest	Give	Receive	Total	Mean household	Per capita pounds	limit (±) harvest
Ambler	6%	6%	6%	0%	6%	4	0.1	9.1	57.2%
Buckland	22%	29%	9%	13%	9%	8	0.1	9.5	36.5%
Kiana	16%	16%	16%	6%	12%	16	0.2	22.3	32.5%
Kobuk	29%	36%	18%	25%	14%	6	0.2	21.5	33.0%
Shaktoolik	27%	35%	13%	18%	7%	8	0.1	18.4	20.6%
Shishmaref	35%	35%	28%	17%	22%	34	0.3	32.2	18.9%

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

Estimated moose harvest in the 6 communities in 2009–2010 was 4 in Ambler, 8 in Buckland, 16 in Kiana, 6 in Kobuk, 8 in Shaktoolik, and 34 in Shishmaref. Translated into pounds per person in each community, Ambler hunters brought home an estimated 9 lb per person; Buckland, 10; Kiana, 22; Kobuk, 22; Shaktoolik 18; and Shishmaref, 32 lb per capita. Most moose taken were bulls—only one community, Buckland, reported a cow harvest (1). In the 6 communities combined, moose harvests occurred in August through December, or were attributed to fall or winter. Moose harvest is presented in table form broken down by sex, month, and location of harvest in Appendix F.

Harvest of black bears was limited to Ambler (4 bears) and Kobuk (2 bears). A complete summary of big game harvest data appears in Appendix B. Few households in either community (8% in Ambler, 11% in Kobuk) reported trying to harvest black bears. Households in no other study communities reported use of black bears. Ambler, Buckland, Kobuk, and Shaktoolik all reported harvesting brown bears, with harvests ranging from 1 in Shaktoolik to 6 in Kobuk. Brown bear uses were minimal in 3 communities: 6% in Ambler, 3% in Buckland, and 2% in Shaktoolik. Eighteen percent of Kobuk households reported using brown bears. It is unknown if any of the brown bears were taken for food. Few communities in northwest Alaska still eat brown bears, but their use as food has previously been documented in northwest Alaska (Loon and Georgette 1989). No community reported harvest or use of Dall sheep. Harvest of muskoxen occurred only in Buckland (4) and Shishmaref (7).

FURBEARERS

Furbearers (small land mammals) were generally less widely used than caribou and moose in all communities. For a full summary of harvest and use data for furbearers see Appendix B. Beavers were the most highly used furbearer in all communities but Shaktoolik; the percentages of use ranged from 14% of Ambler households to 32% of Kobuk households. The use of wolves varied among the communities—ranging from 1% of Kiana households to 15% of Shaktoolik households reporting use. Wolves were the most highly used furbearer in Shaktoolik. No households in Ambler, Kiana, or Shishmaref reported use of lynx. The highest percentage of use of lynx was in Shaktoolik (6%). Ambler and Kiana reported no harvest or use of wolverines. Use of wolverines in other communities ranged from 4% in Kobuk to 17% of households in Shishmaref. Martens and red foxes were not heavily used by any community, with Shaktoolik having the highest incidence of marten use (6%) and Kobuk the most use of red foxes (14%).

Sharing, documented by the giving away and receiving of a resource, was generally highest for beavers. In Shishmaref, 20% of households reported receiving beavers. In Kobuk, 18% of households received beavers and 11% gave it away. In other study communities, fewer households shared beavers.

Ambler harvested the most beavers (75) of surveyed communities. Buckland harvested the most wolves (21). In summary, Ambler harvested an estimated 75 beavers, 8 martens, 4 red foxes, 12 wolves, and no lynx or wolverines. Buckland harvested 33 beavers, 4 lynx, 5 red foxes, 21 wolves, 4 wolverines, and no

martens. Kiana harvested an estimated 56 beavers, 9 red foxes, 2 wolves, and no lynx, martens or wolverines. Kobuk harvested an estimated 28 beavers, 9 red foxes, 4 wolves, 2 wolverines, and no lynx or martens. Shaktoolik harvested an estimated 7 lynx, 7 martens, 9 wolves, 6 wolverines, and no beavers or red foxes. Shishmaref harvested an estimated 1 beaver, 6 red foxes, 4 wolves, 7 wolverines, and no lynx or martens.

COMPARING THE 2009–2010 RESULTS WITH PREVIOUS SURVEY DATA

In the following section, a discussion of previously collected data describes when villages were surveyed and study periods or years. The recall period in most Division of Subsistence surveys is 12 months. Therefore, a village surveyed in January 2005 would report data for the study period January 2004 through December 2004. Information collected in this case would be referred to as 2004 data.

2010 was the second year in which big game harvest information was collected for Ambler, Buckland, and Kobuk. Ambler and Buckland had first been surveyed in 2004, and Kobuk had first been surveyed in 2005. Kiana had been surveyed in 1999 and 2007. Shaktoolik had been surveyed in 1999, 2000, and 2004. Shishmaref has the largest dataset of big game harvest information, having been surveyed previously in 1989, 1995, 2001, and 2006.

When comparing harvests between communities of different sizes through time, per capita harvest (harvest per person) is a useful measure. In the case of caribou, comparing pounds per capita (per person) allows one to compare how much caribou a community harvests per person; for example, Ambler harvested 260 lb per person while Shaktoolik harvested 82 lb per person during the 2009–2010 study year. Another way to compare harvests (while controlling for community size) is to compare per capita animals; i.e., in 2009–2010, Ambler harvested 2.0 caribou per person while Buckland harvested 1.3 caribou per person. Comparing tenths of animals is a more abstract (and unwieldy) approach; the following section will make comparisons based on pounds per capita harvest of caribou and moose. See Appendix G for a summary of total estimated caribou harvests for the study communities from 1990 through 2009.

Ambler's 2009–2010 pounds per person caribou harvest was 260 lb, compared to 176 in 2003 (Figure 15). Buckland harvested less caribou, 176 lb per person, in the study period than in 2003 (212 lb per person.) Kobuk's hunters harvested an estimated 194 lb per person, up from the 148 lb per person documented in 2004. No discussion of trends in harvest is possible for these communities with only 2 data points. Kiana's 2009–2010 pounds per person harvest, 158, falls between the 2 previous data points. A linear trend line drawn between 1999 and 2009 would show a downward trend in harvests, but with only 3 data points and a decade on record, no conclusions can be safely drawn as to whether this is indeed a trend at this time. In the case of Shishmaref, the opposite occurs: a linear trend line between 1995 and 2009 shows gradually increasing per capita harvests. It is possible that this is a trend, perhaps relating to connected events beginning in the mid 1990s—the return of the Western Arctic caribou herd in large numbers to the Seward Peninsula and the subsequent loss of local reindeer herds. Shishmaref households may be adapting to the loss of one resource, reindeer, by harvesting caribou instead. While Shaktoolik's pounds per person harvest has ranged from 82 lb in 2009–2010 to 122 lb in 2003, a linear trend line between 1998 and 2009 is flat, indicative of no trend of change in harvests.

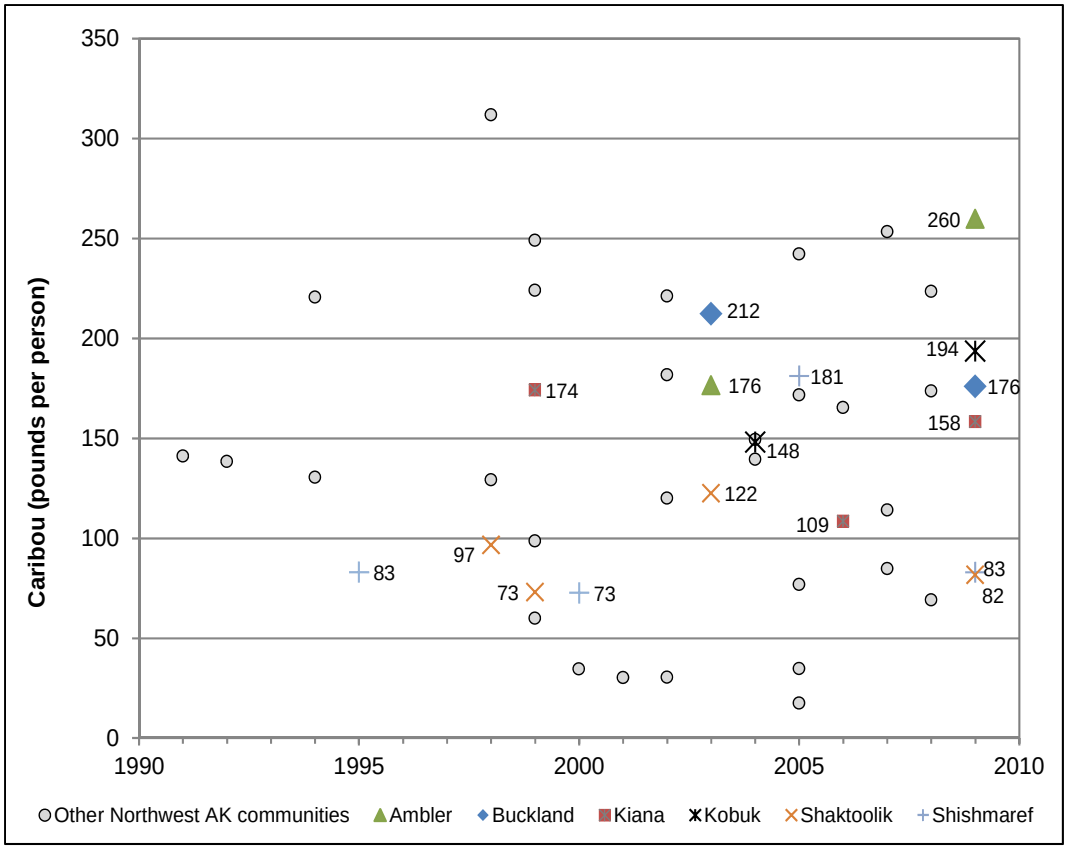

Figure 15.–Comparison of caribou harvests by pounds per capita, study communities and Northwest Alaska, 1990–2010.

Ambler's pounds per capita moose harvest of 9 lb was nearly one-third as much as in 2003, when hunters brought home 11 moose, which constituted 24 lb of moose per resident. Buckland harvested about one-half as many moose in 2009–2010 (9) than in 2003 (17), resulting in a per pounds value of 10, versus the 22 lb per person harvest in 2003. Kiana's per capita moose harvest in 2009–2010 (22 lb) was similar to results from the previous study, in 2006, when the community's harvest per person was 23 lb. Both years were higher than that of 1999, when Kiana harvested 11 lb per person. Kobuk hunters harvested 22 lb of moose per person in this study period, compared to 31 pounds in 2004. Shaktoolik's 2009–2010 moose harvest per person, (18 lb) was the lowest on record. Data collected in 1998 showed harvests of 48 lb per person; 1999, 32 lb per person; and 2003, 25 lb per person. Shishmaref's moose harvest in this study period, 32 pounds per person, was also the lowest recorded since 1989, when village residents harvested an estimated 45 lb per person. In 1995, the community's harvest per person was 66 lb; in 2000, it was 44 lb. For a more detailed comparison of data from previous study years for each village, see Appendix G.

ACKNOWLEDGEMENTS

The Alaska Department of Fish and Game is grateful to the residents of Ambler, Buckland, Kiana, Kobuk, Shaktoolik and Shishmaref for participating in this project and their courtesy to and patience with those administering surveys. Special thanks go to Mary and Martha Ramoth at the City of Ambler, Virginia Hill at the Native Village of Ambler, Tina Swan at the Native Village of Buckland, Gloria Shalebarger at the Native Village of Kiana, Eva K. Harvey at the Native Village of Kobuk, Karlene Sagoonick at the Native Village of Shaktoolik, and Fred D. Eningowuk at the Native Village of Shishmaref—coordinating travel, hiring, and community approval would be an impossible task without the assistance of folks working at the local governments. Funding for this project has been provided since

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APPENDICES

APPENDIX A: KOBUK SURVEY FORM

WESTERN ARCTIC CARIBOU HERD SUBSISTENCE SURVEY

KOBUK, ALASKA

FEBRUARY 2009 to JANUARY 2010

COOPERATING ORGANIZATIONS

DIVISION OF SUBSISTENCE
ALASKA DEPT OF FISH & GAME
BOX 689
KOTZEBUE, AK 99752

(800) 478-3420

NATIVE VILLAGE OF KOBUK
BOX 51020
KOBUK, AK 99751

(907) 948-2251

We are doing this survey to better understand subsistence in Alaska. Similar surveys have been conducted in more than 100 Alaska communities, including Deering, Buckland, Kotzebue, Kivalina, Noatak, Shungnak, Shishmaref, and Wales. Surveys help us estimate subsistence harvests. Surveys also help us describe the role of subsistence in Alaska's economy.

The survey asks how much game your household harvested last year, and for any observations you may have about the health of game you harvested.

It also asks about who lived in your household and their age(s). We will NOT identify your household. We will NOT use this information for enforcement. Participation in this survey is voluntary. If you start a survey, you may stop at any time.

HOUSEHOLD ID:		
COMMUNITY ID:	KOBUK	195
RESPONDENT ID:		
INTERVIEWER:		
INTERVIEW DATE:		
START TIME:		
STOP TIME:		
DATA CODED BY:		
DATA ENTERED BY:		
SUPERVISOR:		

HOUSEHOLD MEMBERS — HOUSEHOLD ID

First, I would like to know a few things about the people in your household. I want to know only about permanent members of your household, including college or high school students who return home every summer. I am NOT interested in people who lived with you temporarily, even if they stayed several months.

Between FEBRUARY 2009 to JANUARY 2010…
…who lived in your household?

ID#	How is this person related to head 1?	Is this person MALE or FEMALE?	How old is this person?	Is this person Alaska Native?	Is this person answering questions *on this survey*?	Comments
	relation	*circle*	*age*	*circle*	*circle*	*enter text*
HEAD 1	SELF	M F		Y N	Y N	
01	1					
NEXT, enter spouse or partner (including "play wife" or "play husband"). If household has a SINGLE HEAD, leave HEAD 2 blank.						
HEAD 2	SPOUSE	M F		Y N	Y N	
02	2					
BELOW, enter children (oldest to youngest), grandchildren, grandparents, brothers, sisters, and other household members.						
03		M F		Y N	Y N	
04		M F		Y N	Y N	
05		M F		Y N	Y N	
06		M F		Y N	Y N	
07		M F		Y N	Y N	
08		M F		Y N	Y N	
09		M F		Y N	Y N	
10		M F		Y N	Y N	
11		M F		Y N	Y N	
12		M F		Y N	Y N	
13		M F		Y N	Y N	
14		M F		Y N	Y N	
15		M F		Y N	Y N	

PERMANENT HH MEMBERS: 01 — **KOBUK: 195**

HARVESTS: LARGE LAND MAMMALS

HOUSEHOLD ID

Now I am going to ask about large land mammals such as caribou, moose, and bear.

Do members of your household USUALLY hunt large land mammals for subsistence?..... Y N

Between FEBRUARY 2009 to JANUARY 2010…

…Did members of your household USE or TRY TO CATCH large land mammals?..... Y N

IF NO, go to the next harvest page.

If YES, continue on this page…

Please estimate how many large land mammals ALL MEMBERS OF YOUR HOUSEHOLD CAUGHT for subsistence use last year. INCLUDE large land mammals you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting or trapping with others, report ONLY YOUR SHARE of the catch.

	In 2009, did your household…				In 2009, where did members of your HH catch _____? *Each line is for 1 area, 1 sex, 1 amount, and 1 month. Four bulls killed in the same area in September should be on the same line. A cow killed in the same area would be on a new line. Do not enter the same animal in two lines!*			
	Use?	Try to Harvest?	Give Away?	Receive?	WHERE were they harvested?	Were these MALE or FEMALE?	HOW MANY animals were killed?	In what MONTH were these animals harvested?
	circle one				*enter UCU*	*circle one*	*enter number*	*enter one month*
CARIBOU *Tuttu* 211000000	Y N	Y N	Y N	Y N		BULL COW ?		
						BULL COW ?		
						BULL COW ?		
						BULL COW ?		
						BULL COW ?		
						BULL COW ?		
						BULL COW ?		
						BULL COW ?		
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						BULL COW ?		
						BULL COW ?		
						BULL COW ?		
						BULL COW ?		
						BULL COW ?		
						BULL COW ?		
						BULL COW ?		

large land mammals contintued on next page…

LAND MAMMALS: 10 **KOBUK: 195**

HARVESTS: LARGE LAND MAMMALS *(continued)*

HOUSEHOLD ID

	In 2009, did your household...				In 2009, where did members of your HH catch _____? *Each line is for 1 area, 1 sex, 1 amount, and 1 month. Four bulls killed in the same area in September should be on the same line. A cow killed in the same area would be on a new line. Do not enter the same animal in two lines!*			
	Use?	Try to Harvest?	Give Away?	Receive?	WHERE were they harvested?	Were these MALE or FEMALE?	HOW MANY animals were killed?	In what MONTH were these animals harvested?
	circle one				*enter UCU*	*circle one*	*enter number*	*enter one month*
MOOSE *Tinniikaq*	Y N	Y N	Y N	Y N		BULL COW ?		
211800000								
						BULL COW ?		
						BULL COW ?		
						BULL COW ?		
GRIZZLY BEAR *Aklaq*	Y N	Y N	Y N	Y N		BOAR SOW ?		
210800000								
						BOAR SOW ?		
						BOAR SOW ?		
BLACK BEAR *Iyyagriq*	Y N	Y N	Y N	Y N		BOAR SOW ?		
210600000								
						BOAR SOW ?		
						BOAR SOW ?		
DALL SHEEP *Ipnaiq*	Y N	Y N	Y N	Y N		RAM EWE ?		
212200000								
						RAM EWE ?		
						RAM EWE ?		
MUSKOXEN *Uminmak*	Y N	Y N	Y N	Y N		BULL COW ?		
212000000								
						BULL COW ?		

LAND MAMMALS: 10 **KOBUK: 195**

HARVESTS: FURBEARERS — HOUSEHOLD ID

This page asks about furbearers such as wolf, wolverine, and beaver.

Do members of your household USUALLY hunt or trap furbearers for subsistence? ..... Y N

Between FEBRUARY 2009 to JANUARY 2010…

…Did members of your household USE or TRY TO CATCH furbearers? ..... Y N

IF NO, go to the next page.

If YES, continue on this page…

Please estimate how many furbearers ALL MEMBERS OF YOUR HOUSEHOLD for subsistence use last year. INCLUDE furbearers you gave away, ate fresh, lost to spoilage, or got by helping others. If hunting or trapping with others, report ONLY YOUR SHARE of the catch.

	In 2009, did your household…					
	Use?	Try to Harvest?	Give Away?	Receive?	How many did your HH use for FUR ONLY?	Comments?
	circle one				*enter number*	*enter text*
WOLF *Amaguq* 223200000	Y N	Y N	Y N	Y N		
WOLVERINE *Qapvik* 223400000	Y N	Y N	Y N	Y N		
MARTEN *Qapvaitchaiq* 222000000	Y N	Y N	Y N	Y N		
LYNX *Nuutuuyiq* 221600000	Y N	Y N	Y N	Y N		
RED FOX *Kayuqtuq* 220804000	Y N	Y N	Y N	Y N		

	In 2009, did your household…				In 2009, how many _____ did members of your HH catch?			
	Use?	Try to Harvest?	Give Away?	Receive?	How many did your HH use for FUR ONLY?	How many did your HH use for FOOD?	TOTAL HARVEST?	Comments
	circle				*enter number*	*enter number*	*sum of all harvests*	*enter text*
BEAVER *Paluqtaq* 220200000	Y N	Y N	Y N	Y N				

FURBEARERS: 14 — **KOBUK: 195**

WILDLIFE HEALTH

HOUSEHOLD ID

BETWEEN FEBRUARY 2009 to JANUARY 2010, did anyone in your household KILL but NOT EAT any animals because they did not seem healthy?..... Y N

If NO, go to the next page...

*If **YES**, continue on this page...*

What kinds of animals did not seem healthy?

List each species separately. If the household reports two or more different problems for a single species, use a separate row for each problem.

Species	What was wrong?	How many animals had this problem?	Units	Did you include these animals in the numbers you gave me before?	Have you ever seen problem in past years?
enter name	*describe the symptom*	*number*	*ind, gals...*	*circle one*	*circle one*
	SYMPTOM			Y N	Y N
	SYMPTOM			Y N	Y N
	SYMPTOM			Y N	Y N
	SYMPTOM			Y N	Y N
	SYMPTOM			Y N	Y N
	SYMPTOM			Y N	Y N
	SYMPTOM			Y N	Y N

COMMENTS:

ABNORMALITIES: 27 **KOBUK: 195**

COMMENTS **HOUSEHOLD ID**

DO YOU HAVE ANY QUESTIONS, COMMENTS, OR CONCERNS?

INTERVIEW SUMMARY:

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

COMMENTS: 30 **KOBUK: 195**

APPENDIX B: HARVESTS AND USES OF WILD RESOURCES, WACH STUDY COMMUNITIES, 2009–2010

Appendix B-1.–Harvests and uses of wild resources, Ambler, Alaska, 2009–2010.

Resource name	Percentage of households					Harvest weight, pounds[a]			Harvest quantity, individual		95% CI (±%)
	Use	Attempt	Harvest	Give	Receive	Total	Per household	Per capita	Total	Per household	
Land mammals	**80.0%**	**78.0%**	**76.0%**	**56.0%**	**46.0%**	**65,816.8**	**982.3**	**275.9**	**567.3**	**8.5**	**16.3%**
Large land mammals	**78.0%**	**78.0%**	**76.0%**	**54.0%**	**44.0%**	**64,823.8**	**967.5**	**271.8**	**467.7**	**7.0**	**16.3%**
Black bear	6.0%	8.0%	6.0%	6.0%	0.0%	353.8	5.3	1.5	4.0	0.1	57.2%
Brown bear	6.0%	6.0%	6.0%	2.0%	0.0%	345.7	5.2	1.4	4.0	0.1	57.2%
Caribou	78.0%	78.0%	76.0%	52.0%	44.0%	61,961.6	924.8	259.8	455.6	6.8	16.5%
Moose	6.0%	6.0%	6.0%	6.0%	0.0%	2,162.8	32.3	9.1	4.0	0.1	57.2%
Muskox	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%
Small land mammals	**20.0%**	**20.0%**	**18.0%**	**12.0%**	**6.0%**	**992.9**	**14.8**	**4.2**	**99.7**	**1.5**	**48.2%**
Beaver	14.0%	14.0%	14.0%	10.0%	2.0%	992.9	14.8	4.2	75.0	1.1	48.2%
Red fox	8.0%	6.0%	6.0%	4.0%	4.0%	0.0	0.0	0.0	4.1	0.1	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%
Marten	4.0%	4.0%	4.0%	2.0%	0.0%	0.0	0.0	0.0	8.2	0.1	0.0%
Wolf	10.0%	10.0%	8.0%	4.1	2.0%	0.0	0.0	0.0	12.3	0.2	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%

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

a. A harvest weight of zero pounds for a resource with a non-zero harvest quantity indicates that the resource was used exclusively for fur, and not eaten.

Appendix B-2.–Harvests and uses of wild resources, Buckland, Alaska, 2009–2010.

Resource name	Percentage of households					Harvest weight, pounds[a]			Harvest quantity, individual		95% CI (±%)
	Use	Attempt	Harvest	Give	Receive	Total	Per household	Per capita	Total	Per household	
Land mammals	**71.4%**	**70.0%**	**68.6%**	**50.0%**	**48.6%**	**82,939.0**	**931.9**	**191.3**	**640.7**	**7.2**	**15.4%**
Large land mammals	**68.1%**	**68.1%**	**66.7%**	**49.3%**	**47.8%**	**82,838.4**	**930.8**	**191.1**	**574.7**	**6.5**	**15.5%**
Black bear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%
Brown bear	2.9%	4.3%	2.9%	0.0%	0.0%	218.7	2.5	0.5	2.5	0.0	65.2%
Caribou	68.1%	68.1%	65.2%	46.4%	44.9%	76,253.7	856.8	175.9	560.7	6.3	16.3%
Moose	21.7%	29.0%	8.7%	8.7%	13.0%	4,104.2	46.1	9.5	7.6	0.1	36.5%
Muskox	7.2%	10.1%	4.3%	4.3%	4.3%	2,261.9	25.4	5.2	3.8	0.0	52.8%
Dall sheep	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	**28.6%**	**30.0%**	**25.7%**	**10.0%**	**8.6%**	**100.6**	**1.1**	**0.2**	**66.1**	**0.7**	**54.9%**
Beaver	22.9%	22.9%	17.1%	4.3%	4.3%	100.6	1.1	0.2	32.6	0.4	54.9%
Red fox	2.9%	4.3%	2.9%	0.0%	0.0%	0.0	0.0	0.0	5.1	0.1	0.0%
Lynx	2.9%	5.7%	2.9%	2.9%	0.0%	0.0	0.0	0.0	3.8	0.0	0.0%
Marten	0.0%	1.4%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%
Wolf	11.4%	11.4%	8.6%	5.7%	5.7%	0.0	0.0	0.0	20.6	0.2	0.0%
Wolverine	10.0%	10.0%	5.7%	1.4%	7.1%	0.0	0.0	0.0	3.9	0.0	0.0%

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

a. A harvest weight of zero pounds for a resource with a non-zero harvest quantity indicates that the resource was used exclusively for fur, and not eaten.

Appendix B-3.–Harvests and uses of wild resources, Kiana, Alaska, 2009–2010.

Resource name	Percentage of households					Harvest weight, pounds[a]			Harvest quantity, individual		95% CI (±%)
	Use	Attempt	Harvest	Give	Receive	Total	Per household	Per capita	Total	Per household	
Land mammals	**81.2%**	**81.2%**	**79.7%**	**60.9%**	**56.5%**	**69,151.6**	**671.4**	**183.1**	**521.9**	**5.1**	**12.4%**
Large land mammals	**82.4%**	**82.4%**	**80.9%**	**61.8%**	**55.9%**	**68,235.9**	**662.5**	**180.7**	**455.4**	**4.4**	**12.2%**
Black bear	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%
Caribou	77.9%	80.9%	76.5%	54.4%	55.9%	59,803.4	580.6	158.3	439.7	4.3	13.0%
Moose	16.2%	16.2%	16.2%	11.8%	5.9%	8,432.6	81.9	22.3	15.7	0.2	32.5%
Muskox	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%
Small land mammals	**15.9%**	**15.9%**	**14.5%**	**13.0%**	**4.3%**	**915.6**	**8.9**	**2.4**	**66.5**	**0.6**	**43.3%**
Beaver	14.5%	13.0%	13.0%	11.6%	4.3%	915.6	8.9	2.4	56.0	0.5	43.3%
Red fox	2.9%	2.9%	2.9%	1.4%	0.0%	0.0	0.0	0.0	9.0	0.1	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%
Marten	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%
Wolf	1.4%	2.9%	1.4%	1.4%	0.0%	0.0	0.0	0.0	1.5	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%

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

a. A harvest weight of zero pounds for a resource with a non-zero harvest quantity indicates that the resource was used exclusively for fur, and not eaten.

Appendix B-4.–Harvests and uses of wild resources, Kobuk, Alaska, 2009–2010.

Resource name	Percentage of households					Harvest weight, pounds[a]			Harvest quantity, individual		95% CI (±%)
	Use	Attempt	Harvest	Give	Receive	Total	Per household	Per capita	Total	Per household	
Land mammals	**92.9%**	**89.3%**	**85.7%**	**75.0%**	**75.0%**	**32,967.0**	**999.0**	**223.8**	**271.2**	**8.2**	**16.3%**
Large land mammals	**89.3%**	**89.3%**	**85.7%**	**75.0%**	**67.9%**	**32,415.4**	**982.3**	**220.0**	**223.9**	**6.8**	**16.5%**
Black bear	7.1%	10.7%	7.1%	7.1%	3.6%	207.4	6.3	1.4	2.4	0.1	55.4%
Brown bear	17.9%	17.9%	17.9%	17.9%	3.6%	506.8	15.4	3.4	5.9	0.2	33.0%
Caribou	85.7%	85.7%	82.1%	67.9%	50.0%	28,530.9	864.6	193.7	209.8	6.4	16.6%
Moose	28.6%	35.7%	17.9%	14.3%	25.0%	3,170.4	96.1	21.5	5.9	0.2	33.0%
Muskox	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%
Small land mammals	**42.9%**	**32.1%**	**35.7%**	**17.9%**	**25.0%**	**551.6**	**16.7**	**3.7**	**47.3**	**1.4**	**34.1%**
Beaver	32.1%	21.4%	25.0%	10.7%	17.9%	551.6	16.7	3.7	28.3	0.9	34.1%
Red fox	14.3%	14.3%	7.1%	3.6%	7.1%	0.0	0.0	0.0	9.4	0.3	0.0%
Lynx	3.6%	7.1%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%
Marten	3.6%	7.1%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%
Wolf	10.7%	14.3%	10.7%	3.7%	3.7%	0.0	0.0	0.0	3.7	0.1	0.0%
Wolverine	3.6%	7.1%	3.6%	0.0%	0.0%	0.0	0.0	0.0	2.4	0.1	0.0%

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

a. A harvest weight of zero pounds for a resource with a non-zero harvest quantity indicates that the resource was used exclusively for fur, and not eaten.

Appendix B-5.–Harvests and uses of wild resources, Shaktoolik, Alaska, 2009–2010.

Resource name	Percentage of households					Harvest weight, pounds[a]			Harvest quantity, individual		95% CI (±%)
	Use	Attempt	Harvest	Give	Receive	Total	Per household	Per capita	Total	Per household	
Land mammals	**60.0%**	**56.4%**	**50.9%**	**36.4%**	**38.2%**	**22,450.9**	**374.2**	**100.4**	**170.3**	**2.8**	**11.4%**
Large land mammals	**54.5%**	**54.5%**	**49.1%**	**36.4%**	**32.7%**	**22,450.9**	**374.2**	**100.4**	**142.9**	**2.4**	**11.4%**
Black bear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%
Brown bear	1.8%	1.8%	1.8%	0.0%	0.0%	93.8	1.6	0.4	1.1	0.0	57.9%
Caribou	50.9%	50.9%	47.3%	34.5%	25.5%	18,248.7	304.1	81.6	134.2	2.2	12.4%
Moose	27.3%	34.5%	12.7%	7.3%	18.2%	4,108.4	68.5	18.4	7.6	0.1	20.6%
Muskox	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%
Small land mammals	**18.2%**	**20.0%**	**14.5%**	**5.5%**	**7.3%**	**0.0**	**0.0**	**0.0**	**27.4**	**0.5**	**0.0%**
Beaver	5.5%	1.8%	0.0%	0.0%	5.5%	0.0	0.0	0.0	0.0	0.0	0.0%
Red fox	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%
Lynx	5.5%	9.1%	5.5%	1.8%	0.0%	0.0	0.0	0.0	6.5	0.1	0.0%
Marten	5.5%	9.1%	5.5%	0.0%	0.0%	0.0	0.0	0.0	6.5	0.1	0.0%
Wolf	14.5%	16.4%	10.9%	3.6%	5.5%	0.0	0.0	0.0	8.9	0.1	0.0%
Wolverine	9.1%	16.4%	5.5%	3.6%	3.6%	0.0	0.0	0.0	5.5	0.1	0.0%

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

a. A harvest weight of zero pounds for a resource with a non-zero harvest quantity indicates that the resource was used exclusively for fur, and not eaten.

Appendix B-6.–Harvests and uses of wild resources, Shishmaref, Alaska, 2009–2010.

Resource name	Percentage of households					Harvest weight, pounds[a]			Harvest quantity, individual		95% CI (±%)
	Use	Attempt	Harvest	Give	Receive	Total	Per household	Per capita	Total	Per household	
Land mammals	**85.4%**	**73.0%**	**67.4%**	**56.2%**	**71.9%**	**69,300.8**	**563.4**	**122.3**	**404.1**	**3.3**	**14.1%**
Large land mammals	**73.0%**	**73.0%**	**66.3%**	**56.2%**	**56.2%**	**69,300.8**	**563.4**	**122.3**	**386.0**	**3.1**	**14.1%**
Black bear	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%
Caribou	71.9%	71.9%	65.2%	55.1%	51.7%	46,948.2	381.7	82.9	345.2	2.8	13.9%
Moose	34.8%	34.8%	28.1%	22.5%	16.9%	18,254.9	148.4	32.2	33.9	0.3	18.9%
Muskox	3.4%	3.4%	3.4%	3.4%	1.1%	4,097.7	33.3	7.2	6.9	0.1	62.1%
Dall sheep	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	**28.1%**	**7.9%**	**6.7%**	**3.4%**	**23.6%**	**0.0**	**0.0**	**0.0**	**18.1**	**0.1**	**0.0%**
Beaver	20.2%	0.0%	1.1%	0.0%	20.2%	0.0	0.0	0.0	1.4	0.0	0.0%
Red fox	2.2%	2.2%	1.1%	0.0%	0.0%	0.0	0.0	0.0	5.5	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%
Marten	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%
Wolf	10.1%	5.6%	4.5%	2.2%	4.5%	0.0	0.0	0.0	4.2	0.0	0.0%
Wolverine	16.9%	6.7%	4.5%	1.1%	11.2%	0.0	0.0	0.0	6.9	0.1	0.0%

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

a. A harvest weight of zero pounds for a resource with a non-zero harvest quantity indicates that the resource was used exclusively for fur, and not eaten.

APPENDIX C: HARVESTS OF CARIBOU BY SEX AND MONTH OF HARVEST, WACH STUDY COMMUNITIES, 2009–2010.

		2009											2010				Season					
Community	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Win	Spr	Sum	Fall	Unknown	Total
Ambler	Male	0.0	0.0	0.0	5.4	0.0	0.0	91.1	124.6	0.0	0.0	0.0	0.0	–	–	–	6.7	0.0	0.0	107.2	13.4	348.4
	Female	14.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	16.1	–	–	–	50.9	5.4	0.0	0.0	13.4	107.2
	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	0.0	0.0	0.0	0.0
Buckland	Male	2.5	8.9	2.5	2.5	2.5	3.8	31.8	47.0	3.8	1.3	0.0	10.2	–	–	–	2.5	3.8	20.3	31.8	30.5	206.0
	Female	10.2	17.8	14.0	2.5	0.0	0.0	0.0	3.8	0.0	3.8	0.0	20.3	–	–	–	16.5	19.1	2.5	11.4	67.4	189.4
	Unknown	5.1	3.8	15.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–	–	–	0.0	0.0	1.3	11.4	128.4	165.3
Kiana	Male	1.5	0.0	0.0	0.0	0.0	0.0	3.0	131.4	0.0	0.0	0.0	0.0	–	–	–	0.0	0.0	0.0	220.9	4.5	361.2
	Female	0.0	4.5	4.5	0.0	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	–	–	–	0.0	4.5	0.0	1.5	0.0	20.2
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.9	0.0	0.0	0.0	0.0	–	–	–	0.0	0.0	0.0	27.7	12.7	58.3
Kobuk	Male	0.0	0.0	0.0	0.0	0.0	0.0	50.7	44.8	11.8	0.0	1.2	11.8	–	–	–	0.0	0.0	0.0	43.6	0.0	163.8
	Female	0.0	3.5	5.9	0.0	0.0	0.0	8.3	1.2	5.9	0.0	0.0	10.6	–	–	–	0.0	0.0	0.0	0.0	0.0	35.4
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	–	–	–	0.0	0.0	0.0	7.1	0.0	10.6
Shaktoolik	Male	–	–	–	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	17.5	28.4	8.7	3.3	22.9	0.0	0.0	0.0	86.2
	Female	–	–	–	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	14.2	10.9	0.0	2.2	17.5	0.0	0.0	0.0	46.9
	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	0.0	0.0	1.1	1.1
Shishmaref	Male	12.4	8.3	5.5	0.0	5.5	11.1	20.7	34.6	20.7	0.0	1.4	1.4	–	–	–	5.5	16.6	30.4	58.0	1.4	233.6
	Female	22.1	0.0	0.0	0.0	0.0	0.0	4.1	0.0	4.1	0.0	12.4	9.7	–	–	–	27.6	0.0	8.3	0.0	0.0	88.4
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	5.5	2.8	0.0	0.0	0.0	0.0	–	–	–	8.3	0.0	0.0	0.0	6.6	23.2

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

– = Data not collected. Ambler, Buckland, Kiana, Kobuk, and Shishmaref study period was February 2009 through January 2010. Shaktoolik study period was May 2009 through April 2010.

APPENDIX D: HOUSEHOLDS ACCOUNTS OF CARIBOU THAT WERE HARVESTED BUT NOT EATEN, WACH STUDY COMMUNITIES, ALASKA, 2009–2010

Community	Comments, reasons, or symptoms	Households reporting[a]	Quantity[b]
Ambler	Other abnormalities	1	1
Ambler	Parasites	1	1
Ambler	Poor condition: growth, weight	2	1
Buckland	External blemishes or discoloration	2	3
Buckland	Internal discoloration	1	2
Buckland	Cysts or tumors present	1	4
Buckland	Gross malformation: structural	1	*not known*
Buckland	Other abnormalities	12	24
Buckland	Parasites	2	*not known*
Buckland	Poor condition: growth, weight	1	2
Buckland	Behavioral changes	1	1
Kiana	External blemishes or discoloration	1	1
Kiana	Cysts or tumors present	1	2
Kiana	Other abnormalities	4	9
Kiana	Different smell	2	2
Kiana	Different texture	1	1
Kiana	Poor condition: growth, weight	1	1
Kobuk	Cysts or tumors present	2	4
Shaktoolik	Internal discoloration	1	1
Shishmaref	Poor condition: growth, weight	1	1
Shishmaref	Unknown substance	1	3

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

Note Households may list more than one symptom per animal; summing the number of animals reported by symptom may result in an over count of caribou that were not eaten.

a. "Households reporting" indicates the number of households that reported harvesting caribou that were not eaten because they were considered unfit for human consumption.

b. "Quantity" indicates the number of caribou that were harvested (not received) by households that later discarded the meat because it was considered unfit for human consumption.

APPENDIX E: HARVESTS OF CARIBOU, LOCATION OF HARVEST BY MONTH, WACH STUDY COMMUNITIES, 2009–2010

Appendix E-1.–Harvests of caribou, location of harvest by month, Ambler, Alaska, 2009–2010.

		2009											2010	Season					
Polygon	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Win	Spr	Sum	Fall	Unknown	Total
23Z 1201	Male	0.0	0.0	0.0	5.4	0.0	0.0	71.0	71.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	72.4	0.0	226.5
	Female	12.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	20.1	5.4	0.0	0.0	0.0	44.2
	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	0.0	0.0	0.0	0.0
23Z 1901	Male	0.0	0.0	0.0	0.0	0.0	0.0	20.1	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.1	13.4	91.1
	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	0.0	0.0	13.4	13.4
	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	0.0	0.0	0.0	0.0
23Z 2001	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	0.0	0.0	0.0	0.0
	Female	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	9.4	26.8	0.0	0.0	0.0	0.0	45.6
	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	0.0	0.0	0.0	0.0
Missing	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0	30.8
	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	4.0	0.0	0.0	0.0	0.0	4.0
	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	0.0	0.0	0.0	0.0

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

Appendix E-2.–Harvests of caribou, location of harvest by month, Buckland, Alaska, 2009–2010.

		2009											2010	Season					
Polygon	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Win	Spr	Sum	Fall	Unknown	Total
23Z 0401	Male	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	10.2	0.0	2.5	17.8
	Female	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.5	0.0	0.0	0.0	0.0	6.4	26.7
	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	0.0	0.0	31.8	31.8
23Z 0501	Male	2.5	6.4	2.5	2.5	2.5	3.8	21.6	44.5	3.8	1.3	0.0	10.2	0.0	3.8	10.2	26.7	28.0	170.4
	Female	6.4	17.8	14.0	2.5	0.0	0.0	0.0	3.8	0.0	3.8	0.0	3.8	7.6	19.1	2.5	11.4	47.0	139.9
	Unknown	5.1	3.8	15.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	3.8	63.6	92.8
23Z 0601	Male	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	0.0	0.0	0.0	0.0	1.3
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23Z 0602	Male	0.0	0.0	0.0	0.0	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
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23Z 0701	Male	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	0.0	0.0	0.0	0.0	1.3
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Missing	Male	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0	14.0
	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	8.9	0.0	0.0	0.0	14.0	22.9
	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	0.0	7.6	33.0	40.7

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

Appendix E-3.–Harvests of caribou, location of harvest by month, Kiana, Alaska, 2009–2010.

		2009											2010	Season					
Polygon	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Win	Spr	Sum	Fall	Unknown	Total
23Z 0501	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	0.0	6.0	0.0	6.0
	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	0.0	1.5	0.0	1.5
	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	0.0	0.0	0.0	0.0
23Z 1101	Male	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	4.5
	Female	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5
	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	0.0	0.0	0.0	0.0
23Z 1201	Male	0.0	0.0	0.0	0.0	0.0	0.0	3.0	114.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.7	4.5	297.1
	Female	0.0	0.0	4.5	0.0	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	6.4	36.6
23Z 1301	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	0.0	0.0	0.0	0.0
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	6.4
23Z 1501	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	0.0	14.9	0.0	14.9
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23Z 1801	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.9	0.0	19.4
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Missing	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.0	19.4
	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	4.5	0.0	0.0	0.0	4.5
	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	0.0	15.3	0.0	15.3

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

Appendix E-4.–Harvests of caribou, location of harvest by month, Kobuk, Alaska, 2009–2010.

		2009											2010	Season					
Polygon	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Win	Spr	Sum	Fall	Unknown	Total
23Z 2001	Male	0.0	0.0	0.0	0.0	0.0	0.0	50.7	33.0	11.8	0.0	0.0	9.4	0.0	0.0	0.0	34.2	0.0	139.1
	Female	0.0	0.0	5.9	0.0	0.0	0.0	0.0	1.2	5.9	0.0	0.0	10.6	0.0	0.0	0.0	0.0	0.0	23.6
	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	0.0	0.0	0.0	0.0
23Z 2201	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	2.4
	Female	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5
	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	0.0	0.0	0.0	0.0
23Z 2301	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	9.4	0.0	17.7
	Female	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3
	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	0.0	0.0	0.0	0.0
Missing	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.0	7.1	0.0	10.6

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

Appendix E-5.–Harvests of caribou, location of harvest by month, Shaktoolik, Alaska, 2009–2010.

		2009								2010				Season					
Polygon	Sex	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Win	Spr	Sum	Fall	Unknown	Total
22A 0501	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	3.3	3.3	16.4	0.0	0.0	0.0	29.5
	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	2.2	10.9	0.0	0.0	0.0	13.1
	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	0.0	0.0	0.0	0.0
22A 0601	Male	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	17.5	19.6	5.5	0.0	6.5	0.0	0.0	0.0	54.5
	Female	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	14.2	8.7	0.0	0.0	6.5	0.0	0.0	0.0	31.6
	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	0.0	0.0	0.0	0.0
22B 0201	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	2.2
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	2.2
	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	0.0	0.0	0.0	0.0
Missing	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	0.0	0.0	0.0	0.0
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1

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

Appendix E-6.–Harvests of caribou, location of harvest by month, Shishmaref, Alaska, 2009–2010.

		2009											2010	Season					
Polygon	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Win	Spr	Sum	Fall	Unknown	Total
22E 0103	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22E 0203	Male	1.4	0.0	0.0	0.0	0.0	4.1	19.3	19.3	0.0	0.0	0.0	1.4	5.5	8.3	5.5	35.9	0.0	100.9
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	4.1	19.3	0.0	0.0	0.0	0.0	26.3
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	6.9
22E 0301	Male	1.4	0.0	0.0	0.0	5.5	6.9	1.4	8.3	5.5	0.0	0.0	0.0	0.0	8.3	18.0	13.8	0.0	69.1
	Female	5.5	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	9.7	4.1	0.0	0.0	8.3	0.0	0.0	31.8
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	6.9	0.0	0.0	0.0	0.0	9.7
22E 0302	Male	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1
	Female	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9
	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	0.0	0.0	0.0	0.0
23Z 0101	Male	0.0	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3
	Female	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	8.3	0.0	0.0	0.0	0.0	13.8
	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	0.0	0.0	0.0	0.0
Missing	Male	9.7	0.0	0.0	0.0	0.0	0.0	0.0	5.5	9.7	0.0	1.4	0.0	0.0	0.0	6.9	8.3	1.4	42.8
	Female	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7
	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	0.0	0.0	6.6	6.6

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

APPENDIX F: HARVESTS OF MOOSE BY SEX AND MONTH OF HARVEST, WACH STUDY COMMUNITIES, ALASKA, 2009–2010

Appendix F-1.–Harvests of moose, location of harvest by month, Ambler, Alaska, 2009–2010.

		2009											2010	Season					
Polygon	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Win	Spr	Sum	Fall	Unknown	Total
23Z 1201	Male	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	0.0	0.0	0.0	0.0	1.3
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23Z 1901	Male	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Appendix F-2.–Harvests of moose, location of harvest by month, Buckland, Alaska, 2009–2010.

		2009											2010	Season					
Polygon	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Win	Spr	Sum	Fall	Unknown	Total
23Z 0401	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	0.0	1.3	0.0	1.3
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23Z 0501	Male	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1
	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	1.3	0.0	0.0	0.0	0.0	1.3
	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	0.0	0.0	0.0	0.0
Missing	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	0.0	0.0	0.0	0.0
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Appendix F-3.–Harvests of moose, location of harvest by month, Kiana, Alaska, 2009–2010.

		2009											2010	Season					
Polygon	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Win	Spr	Sum	Fall	Unknown	Total
23Z 1101	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	0.0	0.0	0.7	0.7
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23Z 1201	Male	0.0	0.0	0.0	0.0	0.0	0.0	3.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	9.0
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Missing	Male	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	4.5
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	1.5

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

Appendix F-4.–Harvests of moose, location of harvest by month, Kobuk, Alaska, 2009–2010.

		2009										2010	Season					
Polygon	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Win	Spr	Sum	Fall	Unknown	Total
23Z 2001	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23Z 2301	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23Z 2501	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Missing	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	0.0	0.0	0.0	0.0
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Appendix F-5.–Harvests of moose, location of harvest by month, Shaktoolik, Alaska, 2009–2010.

		2009								2010				Season					
Polygon	Sex	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Win	Spr	Sum	Fall	Unknown	Total
22A 0501	Male	0.0	0.0	0.0	3.3	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22A 0601	Male	0.0	0.0	0.0	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Missing	Male	0.0	0.0	0.0	0.0	1.1	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
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Appendix F-6.–Harvests of moose, location of harvest by month, Shishmaref, Alaska, 2009–2010.

		2009											2010	Season					
Polygon	Sex	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Win	Spr	Sum	Fall	Unknown	Total
22D 0303	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	0.0	1.4	0.0	1.4
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22E 0202	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0	4.1
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22E 0203	Male	0.0	0.0	0.0	0.0	0.0	0.0	5.5	6.9	0.0	0.0	1.4	0.0	0.0	0.0	0.0	1.4	0.4	15.6
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Missing	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	2.8	0.0	0.0	0.0	0.0	4.1	0.0	12.4
	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	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4

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

APPENDIX G: COMPARISON OF 2009–2010 ESTIMATES WITH PREVIOUS SURVEY RESULTS FROM AMBLER, BUCKLAND, KIANA, KOBUK, SHAKTOOLIK, AND SHISHMAREF

Appendix G-1.–Comparison of 2009–2010 estimates with previous survey results from Ambler, Buckland, Kiana, and Kobuk.

Community/Resource	Percentage of households harvesting			Total number harvested			Per capita pounds harvested		
Ambler		2003	2009		2003	2009		2003	2009
Black bear		10%	6%		5	4		1.9	1.5
Brown bear		2%	6%		1	4		0.4	1.4
Caribou		69%	76%		325	456		176.5	259.8
Moose		15%	6%		11	4		23.2	9.1
Muskox		–	0%		–	0		–	0.0
Dall sheep		–	0%		–	0		–	0.0
Buckland		2003	2009		2003	2009		2003	2009
Black bear		0%	0%		0	0		0.0	0.0
Brown bear		1%	3%		1	3		0.2	0.5
Caribou		58%	65%		637	561		212.4	175.9
Moose		13%	9%		17	8		22.4	9.5
Muskox		–	4%		–	4		–	5.2
Dall sheep		–	0%		–	0		–	0.0
Kiana	1999	2006	2009	1999	2006	2009	1999	2006	2009
Black bear	10%	0%	0%	9	0	0	2.1	0.0	0.0
Brown bear	2%	0%	0%	2	0	0	0.3	0.0	0.0
Caribou	65%	57%	76%	488	306	440	174.1	108.5	158.3
Moose	8%	14%	16%	8	16	16	10.8	22.5	22.3
Muskox	–	0%	0%	–	0	0	–	0.0	0.0
Dall sheep	–	0%	0%	–	0	0	–	0.0	0.0
Kobuk		2004	2009		2004	2009		2004	2009
Black bear		21%	7%		9	2		6.3	1.4
Brown bear		14%	18%		4	6		2.9	3.4
Caribou		61%	82%		134	210		148.2	193.7
Moose		21%	18%		7	6		30.6	21.5
Muskox		0%	0%		0	0		0.0	0.0
Dall sheep		–	0%		–	0		–	0.0

Sources ADF&G Community Subsistence Information System (CSIS)[3]; Magdanz et al. 2011.

– = Data on this species were not collected during this survey period.

3. ADF&G CSIS: http://www.adfg.alaska.gov/sb/CSIS/.

Appendix G-2.–Comparison of 2009–2010 estimates with previous survey results from Shaktoolik and Shishmaref.

Community/Resource	Percentage of households harvesting					Total number harvested					Per capita pounds harvested				
Shaktoolik		1998	1999	2003	2009		1998	1999	2003	2009		1998	1999	2003	2009
Black bear		–	–	0%	0%		–	–	0	0		–	–	0.0	0.0
Brown bear		–	0%	0%	2%		–	0	0	1		–	0.0	0.0	0.4
Caribou		53%	45%	58%	47%		167	125	198	134		97	73.1	122.5	81.6
Moose		33%	22%	15%	13%		21	14	10	8		48	32.1	25.4	18.4
Muskox		–	–	–	0%		–	–	–	0		–	–	–	0
Dall sheep		–	–	–	0%		–	–	–	0		–	–	–	0
Shishmaref	1982	1989	1995	2000	2009	1982	1989	1995	2000	2009	1982	1989	1995	2000	2009
Black bear	–	0%	–	–	0%	–	0	–	–	0	–	0.0	–	–	0.0
Brown bear	–	0%	4%	0%	0%	–	0	6	0	0	–	0.0	0.5	0.0	0.0
Caribou	12%	19%	31%	34%	65%	–	197	342	299	345	–	56.7	83.1	72.7	82.9
Moose	63%	33%	40%	25%	28%	–	39	68	46	34	–	45.0	65.5	44.2	32.2
Muskox	–	0%	0%	7%	3%	–	0	0	11	7	–	0.0	0.0	11.6	7.2
Dall sheep	–	0%	0%	–	0%	–	0	0	–	0	–	0.0	0.0	–	0.0

Source ADF&G CSIS.

– = Data on this species were not collected during this survey period.