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# **Subsistence Wildlife Harvests in Nunapitchuk, Alaska, 2012**

by

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and

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February 2016

Alaska Department of Fish and Game

Division of Subsistence



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<b>Weights and measures (metric)</b>		<b>General</b>		<b>Mathematics, statistics</b>	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly-accepted abbreviations		alternate hypothesis	$H_A$
gram	g		e.g.,	base of natural logarithm	e
hectare	ha		Mr., Mrs.,	catch per unit effort	CPUE
kilogram	kg		AM, PM, etc.	coefficient of variation	CV
kilometer	km	all commonly-accepted professional titles	e.g., Dr., Ph.D.,	common test statistics	(F, t, $\chi^2$ , etc.)
liter	L		R.N., etc.	confidence interval	CI
meter	m	at	@	correlation coefficient (multiple)	R
milliliter	mL	compass directions:		correlation coefficient (simple)	r
millimeter	mm	east	E	covariance	cov
		north	N	degree (angular)	$^\circ$
<b>Weights and measures (English)</b>		south	S	degrees of freedom	df
cubic feet per second	ft <sup>3</sup> /s	west	W	expected value	E
foot	ft	copyright	©	greater than	>
gallon	gal	corporate suffixes:		greater than or equal to	≥
inch	in	Company	Co.	harvest per unit effort	HPUE
mile	mi	Corporation	Corp.	less than	<
nautical mile	nmi	Incorporated	Inc.	less than or equal to	≤
ounce	oz	Limited	Ltd.	logarithm (natural)	ln
pound	lb	District of Columbia	D.C.	logarithm (base 10)	log
quart	qt	et alii (and others)	et al.	logarithm (specify base)	log <sub>2</sub> , etc.
yard	yd	et cetera (and so forth)	etc.	minute (angular)	'
		exempli gratia (for example)	e.g.	not significant	NS
<b>Time and temperature</b>		Federal Information Code	FIC	null hypothesis	$H_0$
day	d	id est (that is)	i.e.	percent	%
degrees Celsius	$^\circ\text{C}$	latitude or longitude	lat. or long.	probability	P
degrees Fahrenheit	$^\circ\text{F}$	monetary symbols (U.S.)	\$, ¢	probability of a type I error (rejection of the null hypothesis when true)	$\alpha$
degrees kelvin	K	months (tables and figures)first	three	probability of a type II error (acceptance of the null hypothesis when false)	$\beta$
hour	h	letters (Jan.,...,Dec)		second (angular)	"
minute	min	registered trademark	®	standard deviation	SD
second	s	trademark	™	standard error	SE
		United States (adjective)	U.S.	variance	
<b>Physics and chemistry</b>		United States of America (noun)	USA	population	Var
<i>all atomic symbols</i>		U.S.C.	United States Code	sample	var
alternating current	AC	U.S. state	two-letter abbreviations		
ampere	A		(e.g., AK, WA)		
calorie	cal				
direct current	DC	<b>Measures (fisheries)</b>			
hertz	Hz	fork length	FL		
horsepower	hp	mideye-to-fork	MEF		
hydrogen ion activity (negative log of)	pH	mideye-to-tail-fork	METF		
parts per million	ppm	standard length	SL		
parts per thousand	ppt, ‰	total length	TL		
volts	V				
watts	W				

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NUNAPITCHUK, ALASKA, 2012**

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

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

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# ABSTRACT

This report summarizes the results of land mammal subsistence harvest surveys conducted in Nunapitchuk in June 2013. Since 2011, the Alaska Department of Fish and Game Division of Subsistence, with support from the Division of Wildlife Conservation and a one-time appropriation by the Alaska Legislature, conducted community household land mammal harvest surveys in Bethel (Runfola et al. 2014) and Nunapitchuk. Previous research has demonstrated that harvest ticket reports often fail to capture a significant portion of land mammal harvests by residents of rural Alaska communities (Andersen and Alexander 1992; Schmidt and Chapin 2014). Door-to-door household surveys serve to supplement harvest ticket reports to better support sustainable resource management and to ensure that a priority for customary and traditional uses is provided by the Alaska Board of Game consistent with state law (AS 16.05.258). Household surveys in Nunapitchuk asked heads of households about their harvests of caribou, moose, other large land mammals, and furbearers between January 1, 2012 and December 31, 2012. Researchers documented the number, sex, and harvest timing for key land mammal subsistence resources, as well as observations and comments from survey respondents. Reported results from 96 contacted Nunapitchuk households were expanded to account for 21 unsurveyed households. In the 2012 study year, Nunapitchuk hunters harvested an estimated 31 moose, 15 caribou, 2 black bears, 62 beavers, 39 snowshoe hares, 24 river otters, and 9 mink. Most (94%) Nunapitchuk households reported using large land mammals, although only 57% attempted to harvest large land mammals, and only 28% were successful.

Key words: caribou, moose, black bears, beavers, snowshoe hares, river otters, mink, Nunapitchuk, Mulchatna caribou herd, Andreafsky caribou herd, Kilbuck caribou herd, subsistence hunting, subsistence trapping, search and harvest area maps, Game Management Unit (GMU) 18.

# INTRODUCTION

Alaska Department of Fish and Game (ADF&G) Division of Subsistence is obligated by law to provide information to the public, agencies, resource managers, and fish and wildlife regulators (i.e., Alaska Board of Fisheries, Alaska Board of Game) about the role of subsistence hunting, fishing, and trapping in the lives of Alaska residents (AS 16.05.094). The division studies and reports on harvest amounts; seasonality; methods and means of harvest, sharing, and trading; subsistence resource and land use areas; cultural and economic values; trends in subsistence harvests and uses; and observations about changes in the environment. This information is necessary for sustainable resource management, especially in light of proposed development projects throughout rural areas of Alaska and the effects of a changing environment. Documenting and understanding subsistence harvests also is necessary to evaluate reasonable opportunities for customary and traditional uses of wild resources and to support sustainable wildlife management, as required by law. Other duties of the division identified in Alaska statutes 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 Alaska Board of Game and Alaska Board of Fisheries regarding adoption, amendment, and repeal of regulations affecting subsistence hunting and fishing.

ADF&G Division of Subsistence utilizes a variety of research methods to collect information on the subsistence harvests and uses of fish and wildlife. These include systematic, door-to-door household surveys; key respondent interviews; harvest calendars; mapping of subsistence resource and land use activities; and participant observation of subsistence hunting, fishing, gathering, and trapping activities. Most division research is conducted in rural communities and involves direct interaction with subsistence users through interviews and household surveys. Division policy continues to stress the importance of collaborative research by using local, community-based research technicians to assist in data collection efforts and by complying with the ethical principles of conducting research as outlined by the Alaska Federation of Natives in 1993 and the Interagency Arctic Research Policy Committee on June 28, 1990. All research personnel are to work in a manner that develops, rather than jeopardizes, relations among cooperators, and between the cooperators and the public.

## **NUNAPITCHUK WILDLIFE HARVEST STUDY**

### **Development of the Study**

ADF&G Division of Wildlife Conservation obtained funding for this project from the Alaska Legislature in 2011 to assist managers in better understanding and enumerating caribou harvest amounts from the Mulchatna caribou herd by residents of Game Management Unit (GMU) 18 (Figure 1). The Mulchatna caribou herd had been in decline since 1999. Division of Wildlife Conservation biologists suspect a combination of causes for this decline, including poor nutrition, disease, weather events, and predation. The Mulchatna caribou herd was identified by the Alaska Board of Game as a population important for providing high levels of harvest for human consumptive use and is currently associated with an active Intensive Management program for caribou through the use of predator management (5 AAC 92.108). The Intensive Management population objective is 30,000–80,000 Mulchatna caribou with a harvest objective of 2,400–8,000 caribou. The department has also noted several changes in hunter effort and harvest: the

# Alaska Caribou Herds

Herd Name	Herd Size (2011*)
1. Adak	3,000
2. Beaver Mountains	70
3. Central Arctic	67,000
4. Chisana	700
5. Delta	2,985
6. Denali	2,100
7. Farewell-Big River	750
8. Fortymile	52,000
9. Fox River	75
10. Galena Mountain	100
11. Hodzana Hills	780
12. Kenai Lowlands	100
13. Kenai Mountains	275
14. Killey River	250
15. Macomb	1,300
16. Mentasta	350
17. Mulchatna	30,000
18. Nelchina	46,500
19. Northern Peninsula	2,000
20. Nushagak Peninsula	800
21. Porcupine	169,000
22. Rainy Pass	1,500
23. Ray Mountains	1,370
24. Southern Peninsula	900
25. Sunshine Mountains	370
26. Teshekpuk	55,000
27. Tonzona	1,000
28. Unimak	300
29. Western Arctic	325,000
30. White Mountains	650
31. Wolf Mountain	450

\* Update completed in 2011, year of herd size varies



Figure 1.—Alaska caribou herd ranges, Mulchatna caribou herd range (17), Harper 2011.

majority of harvest has shifted geographically from GMU 17 to GMU 18, and the majority of hunters have shifted from nonresidents and nonlocal Alaskans from outside the range of the herd to local Alaska residents, particularly those from GMU 18 in the Yukon-Kuskokwim Delta region (ADF&G, Division of Wildlife Conservation 2014). ADF&G also noted a shift in hunters accessing the herd from aircraft for fall hunting of bulls to snowmachines in late winter hunting of bulls and cows in approximately equal proportions. Returns of harvest tickets by hunters in the range of the herd indicate the annual harvest rate is less than 5% of the herd (Woolington 2009:22). However, harvest tickets returned by hunters from rural areas tend to consistently underestimate actual harvest (Andersen and Alexander 1992; Schmidt and Chapin 2014).

The special funding provided for this project was first used to document land mammal harvests and uses, particularly of caribou, by residents of Bethel, results of which are reported elsewhere (Runfola et al. 2014). The selection of communities to approach about participating in this land mammal harvest survey was conducted by GMU 18 Area Biologist Phillip Perry and Subsistence Northern Regional Program Manager Jim Simon. Perry provided a list of communities for which he suspected that the harvest ticket reporting database failed to capture the majority of caribou harvest occurring in lower Kuskokwim River communities. The largest source of concern was associated with Bethel, so after a number of smaller communities declined participation in this study, ADF&G Division of Subsistence began working with the Orutsararmiut Native Council and the Bethel City Council to conduct household surveys there (see Runfola et al. 2014). Following the Bethel study, and after additional communities declined participation, this project was developed through working with the tribal council in Nunapitchuk, because wildlife managers were interested in caribou harvests from this community.

## Community Background

Nunapitchuk is located 22 miles northwest of Bethel, approximately 20 air miles up the Johnson River, a tributary of the lower Kuskokwim River.<sup>1</sup> The area is inhabited by Central Yup'ik speakers who identify themselves as the *Akulmiut* and who have occupied the region since prehistory (Andrews 1989). The *Akulmiut* now live in the Johnson River communities of Kasigluk, Nunapitchuk, and Atmautluak, which are collectively known as “the tundra villages.” Originating from the Yup'ik base *akula*, meaning “area between” (Jacobson 2012:84), the *Akulmiut* territory refers to the low marshy tundra centered around the Johnson River drainage that lies between the Yukon and Kuskokwim deltas (Andrews 1989:67, 113, 1994). Information regarding subsistence harvests for Nunapitchuk is limited; however, various sources have documented Nunapitchuk residents' historical harvests of a variety of subsistence resources, including Pacific salmon, nonsalmon fishes, migratory waterfowl, large land mammals, small land mammals, furbearers, and berries and greens (Andrews 1989, 1994; Hamazaki 2011; Ray et al. 2010; Simon et al. 2007). This past research suggests that Nunapitchuk's pattern of subsistence hunting, fishing, trapping, and gathering has much in common with other communities in the region. However, because the Johnson River does not support any salmon runs, Nunapitchuk residents must travel to the Kuskokwim River to harvest salmon. Andrews (1989) suggested that, because no salmon migrate up the Johnson River, Nunapitchuk relies more heavily on nonsalmon fishes such as northern pike and Alaska blackfish compared to other lower Kuskokwim River communities.

## Project Overview

In June 2013, Division of Subsistence researchers conducted land mammal subsistence harvest surveys with Nunapitchuk households. The survey instrument (Appendix A) was designed to record amounts of several land mammal species harvested and used by Nunapitchuk hunters and trappers, including large land mammals, small land mammals, and furbearers. The survey also recorded evidence of sharing of land mammal resources by Nunapitchuk households, locations of caribou and moose search and harvest areas,

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1. 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 November 1, 2015. <http://commerce.state.alaska.us/cra/DCRAExternal/community>

and household demographic characteristics. Research results are discussed in detail in the Results section of this report. This study advances the department's understanding of the nature of subsistence land mammal use in Nunapitchuk. It also provides data that will inform the Board of Game (BOG) in development of subsistence hunting and trapping regulations and subsistence findings to continue to provide reasonable opportunities for customary and traditional subsistence uses (AS 16.05.258).

## **Regulatory Context of Subsistence Caribou and Moose Hunting in GMU 18**

The Alaska Constitution, which was adopted as part of the statehood compact, included standards of "common use," "equal access," and "sustained yield," which ultimately resulted in statutes and regulations requiring the Alaska boards of Fisheries and Game to ensure that Alaska's fish and wildlife were managed for sustained yield and common beneficial human uses. Although the passage of the Alaska Native Claims Settlement Act (ANCSA) by the U.S. Congress in 1971 extinguished aboriginal hunting and fishing rights, customary and traditional uses (i.e., subsistence uses) of Alaska's fish and wildlife was a topic left to be resolved in the future by the State of Alaska. In 1975, the Alaska Legislature authorized, for the first time, the Board of Game to regulate subsistence hunting apart from other types of hunting (Kelso 1981:3). Then, in 1976, the legislature changed the subsistence hunting provisions so that local residents could petition the Board of Game to define subsistence hunting areas (AS 16.05.257).

[T]raditional dependence on fish and game resources is a continuing and necessary way of life in many areas of the state and... the protection of subsistence usage of these resources is essential to the health, safety and general welfare of the citizens of the state in those areas. (Kelso 1981:3)

Various legislative attempts to provide for a priority for subsistence uses took place between 1975 and 1978, ultimately resulting in passage of the first subsistence law in 1978 (Kelso 1981:Appendix 1). The intent of the legislature was as follows:

The legislature finds that there is a need to develop a statewide policy on the utilization, development and conservation of fish and game resources, and to recognize that those resources are not inexhaustible and that preferences must be established among beneficial users of the resources. The legislature further determines that it is in the public interest to clearly establish subsistence use as a priority use of Alaska's fish and game resources and to recognize the needs, customs and traditions of Alaskan residents. The legislature further finds that beneficial use of those resources by all state residents should be carefully monitored and regulated, with as much input as possible from the affected users, so that the viability of fish and game resources is not threatened and so that resources are conserved in a manner consistent with the sustained-yield principle.

In the same year, the legislature set out the duties of what is today known as the ADF&G Division of Subsistence, as discussed above (AS 16.05.094).

With the passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980, the U.S. Congress supplied intent language that ANILCA was to provide for the protection of Alaska wildlife species, habitats, and subsistence ways of life for the people of Alaska and the United States. Customary and traditional uses of fish and wildlife were addressed specifically in Title VIII of ANILCA. ANILCA invoked the federal authority to "protect the resources related to subsistence needs...[and] provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so" (16 U.S. Code § 3101)<sup>2</sup>. The federal intent to protect subsistence ways of life was implemented through the establishment of a rural subsistence priority (not an Alaska Native priority), which the State of Alaska subsequently attempted to implement with passage of the second subsistence law in 1986.<sup>3</sup> However, in 1989 the Alaska Supreme Court ruled that the State of Alaska could not utilize residential location as a criterion for allocating

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2. Public Law 96-487, 96th Congress, December 2, 1980.

3. See Alaska Board of Game finding #86-41-GB

<http://webdev.dfg.alaska.local/static/regulations/regprocess/gameboard/pdfs/findings/8641bog.pdf>

resources for subsistence uses and that all Alaskan residents are potentially eligible subsistence users due to Article VIII of the Alaska Constitution, sections 3, 15, and 17.<sup>4</sup>

In response to this Supreme Court decision, commonly known as the *McDowell* decision, the Alaska Legislature passed the current subsistence law in 1992 (AS 16.05.258) that required the Alaska Board of Game and the Alaska Board of Fisheries to provide

...a reasonable opportunity [for customary and traditional uses]...that allows a subsistence user to participate in a subsistence hunt or fishery that provides a normally diligent participant with a reasonable expectation of success of taking of fish or game. (AS 16.05.258(f))

Despite efforts to resolve the issue with the State of Alaska's inability to comply with the federal law requiring a rural priority for subsistence, in 1990 the federal government began managing subsistence hunting on federal public lands in order to provide a rural subsistence priority. Since then, the resulting "subsistence dilemma" has been referred to as "Dual Management."

Dual state and federal subsistence management programs require Alaska residents, especially rural Alaskans, to be familiar with 2 overlapping regulatory systems and sets of hunting and fishing regulations. The complexity with which subsistence users have to contend in pursuing customary and traditional ways of life are exemplified in tables B-1 through B-4, which provide the State of Alaska's subsistence caribou and moose hunting regulations from 1961 to 2015 for GMU 18 (tables B-1 and B-3, respectively), as well as the federal subsistence caribou and moose hunting regulations from 1990 to 2016 for GMU 18 (tables B-2 and B-4, respectively). Subsistence hunters also need to know the various patchwork of land status in the areas in which they hunt, because the State of Alaska regulation book applies to state lands and private lands, including Alaska Native allotments and Alaska Native villages and regional corporation lands, while federal subsistence regulations apply only to federal public lands. A brief review of these regulations quickly demonstrates the challenges faced by subsistence hunters in GMU 18 to stay informed about changes to regulations that are intended to respond to fluctuations in caribou and moose populations in the Yukon-Kuskokwim Delta region.

The Alaska boards of Fisheries and Game acting jointly ("the Joint Board") established 8 customary and traditional use criteria to determine whether a particular fish stock or game population was associated with customary and traditional uses, and therefore managed for a subsistence priority (5 AAC 99.010). The first customary and traditional use worksheet (CTW) for caribou in GMU 18 was prepared by the ADF&G Division of Subsistence in 1989 and the Alaska Board of Game found there were positive C&T uses of caribou in GMU 18 in the same year (Appendix C). This CTW focused on uses of caribou only by residents of Kwethluk because an emergency caribou hunt petition submitted by the Kwethluk IRA Council ended in litigation.<sup>5</sup> Eventually, a court-sanctioned emergency 10-day caribou hunting season, April 5–15, 1990, was provided only to residents of Kwethluk with a harvest quota of 50 caribou. This first CTW also contained a map of Kwethluk caribou hunting areas used in GMU 18 between 1920 and 1987 (Appendix C:5). In 1991, CTWs for both the Andreafsky and Kilbuck caribou herds were prepared for the Alaska Board of Game (appendices D and E, respectively). Given that the 1989 and 1992 subsistence findings in current regulations relate to the Andreafsky and Kilbuck caribou herds, 2 herds that no longer exist (Perry 2009), the department has prepared a revised CTW for GMU 18 caribou for the board's consideration at a future regulatory meeting.<sup>6</sup>

The current Alaska Board of Game finding related to the amount reasonably necessary for subsistence uses (ANS) of caribou in GMU 18 was made on November 12, 1992 and set at 350–500 caribou per year (5 AAC 99.025(a)(4)). This ANS finding, required under the subsistence statute (AS 16.05.258(b)), was based upon

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4. *McDowell v. State of Alaska*, 785 P.2d 1 (1989) <http://law.justia.com/cases/Alaska/supreme-court/1989/s-2732-1.html>

5. *Kwethluk IRA Council, Plaintiff, v. State of Alaska*. 1990. 740 F.Supp. 765 (1990), No. A90-107 CIV [http://www.leagle.com/decision/19901505740FSupp765\\_11421](http://www.leagle.com/decision/19901505740FSupp765_11421) See also Alaska Board of Game finding #90-49-GB <http://www.adfg.alaska.gov/static/regulations/regprocess/gameboard/pdfs/findings/9049bog.pdf>

6. Simon, J. *In prep*. Customary and traditional use worksheet, caribou, Game Management Unit 18. Alaska Department of Fish and Game Division of Subsistence, Fairbanks.

historical harvests of caribou from both the Andreefsky and Kilbuck caribou herds in GMU 18. Also in 1992, the Alaska Board of Game identified the Mulchatna caribou herd as being associated with customary and traditional subsistence uses; the current ANS found in regulation for the Mulchatna herd is 2,100–2,400 caribou. The ANS for the Mulchatna caribou herd, however, does not include the historical caribou harvest information from GMU 18, because the Mulchatna herd had not yet absorbed the Kilbuck herd at the time the Mulchatna ANS was established by the Board of Game (also on November 12, 1992).

Tables B-3 and B-4 include state and federal moose regulatory histories. In 1988, the Alaska Board of Game determined that moose in GMU 18 were associated with customary and traditional subsistence uses, and in 1992, it set the ANS in GMU 18 at 80–100 moose, including 20–30 in the winter. Based upon public proposals, the Alaska Board of Game revised the GMU 18 moose ANS in November 2009 to 100–200 moose, and revised the ANS again in November 2011 to 200–400 moose throughout GMU 18. Moose regulatory histories will not be further discussed, because the primary focus of this project is developing GMU 18 community caribou harvest estimates.

# METHODS

In 2013, division staff collected subsistence harvest information in Nunapitchuk with the survey instrument found in Appendix A. Division staff processed and analyzed all survey data from participating households and expanded harvest estimates to account for unsurveyed households.

The division's long-standing policy is to seek community approval before conducting local research. The division obtained community approval from the Native Village of Nunapitchuk in May 2013. In June 2013, Subsistence Resource Specialist Jeff Park led a team of researchers from the Division of Subsistence to Nunapitchuk, where the researchers hired and trained local surveyors, who helped conduct household surveys. The survey recorded use of large and small land mammals and furbearers by each Nunapitchuk household. Researchers asked Nunapitchuk households about their harvest of caribou, other large game, small game, and furbearers between January 1, 2012 and December 31, 2012. Use of land mammals was defined as the harvesting, eating, processing, sharing, or making of handicrafts from the nonedible byproducts of land mammals. Species listed in the survey included caribou *Rangifer tarandus*, moose *Alces alces*, brown bear *Ursus arctos*, black bear *Ursus americanus*, Dall sheep *Ovis dalli*, muskox *Ovibos moschatus*, gray wolf *Canis lupus*, beaver *Castor canadensis*, wolverine *Gulo gulo*, river otter *Lutra canadensis*, lynx *Lynx canadensis*, red fox *Vulpes vulpes*, Arctic fox *Alopex lagopus*, snowshoe hare *Lepus americanus*, and Alaska hare *Lepus othus*.

## 2013 NUNAPITCHUK SURVEY DESIGN

The Division of Subsistence'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. Before starting the project, survey workers compile an updated list of every household present in the community during the study period. Confidentiality is protected by using randomly assigned household numbers instead of names on the survey form. Participation in surveys is voluntary—people may refuse to answer any or all questions. Surveyors try to contact each household on 3 separate occasions on different days. If no contact is made, then that household is recorded as “no contact.” There are a variety of reasons that a household may be marked “no contact:” household members may be out of town during the survey effort; they may have moved to another community; or they may have passed away during or after the study year. Surveyors often go door to door, but make appointments for surveys when necessary. In order to participate in the survey, respondents were required to be a head of household and to be 15 years of age or older and have resided in Nunapitchuk for at least 3 months during 2012. Respondents were permitted to refuse to answer any survey questions or to stop the survey at any time during its administration.

In Nunapitchuk, 96 out of 117 existing households were contacted (Table 1). The original household list included only 112 households, obtained from ADF&G Division of Commercial Fisheries for the annual postseason subsistence salmon surveys conducted in September 2012. This list was reviewed by 5 Nunapitchuk residents who were hired as local research assistants for this project and updated to include a total of 117 households. Researchers attempted to contact and survey all 117 Nunapitchuk households, but only 96 households were surveyed, representing a 82% response rate. Of the 108 households contacted, 12 households refused to participate, representing a 10% refusal rate. Only 9 households were unable to be contacted. In addition to harvest enumeration, the big game survey used in 2013 gathered demographic information for each household member: his or her age, sex, and relationship to the head(s) of household, and whether he or she was Alaska Native.

The estimated population of Nunapitchuk was 544 individuals, of whom 52% were male and 48% female (Table 1). The mean (i.e., average) household size was 4.8 people, with a minimum of 1 and a maximum of 12 people. The mean age of the surveyed population in years was 27 with a minimum of 0 (infant[s] less than 1) and a maximum of 84. Approximately 99% of the surveyed population was Alaska Native, and about 97% of households had at least 1 Alaska Native head of household.

Table 1.—Demographic characteristics, Nunapitchuk, 2012.

Characteristics	Community Nunapitchuk
<b>Sample achievement</b>	
Sampled households	96
Eligible households	117
Percentage sampled	82.1%
<b>Household size</b>	
Mean	4.8
Minimum	1
Maximum	12
<b>Age</b>	
Mean	27.0
Minimum <sup>a</sup>	0
Maximum	84
Median	20
<b>Sex</b>	
Estimated male	
Number	285.3
Percentage	51.9%
Estimated female	
Number	264.4
Percentage	48.1%
<b>Alaska Native</b>	
Estimated households <sup>b</sup>	
Number	113.3
Percentage	96.8%
Estimated population	
Number	543.5
Percentage	98.9%

*Source* ADF&G Division of Subsistence household surveys, 2013.

a. Minimum age of 0 indicates infant under 1 year of age.

b. Alaska Native households are those in which one or both household heads identify as Alaska Native.

The survey included questions about harvests and uses of land mammals and about sharing (i.e., if the household gave away a resource to other households or if the household received it) (Appendix A). 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 several thousand square miles. Respondents were asked about the locations of harvests, the sex of harvested animals for caribou and moose, and the months in which harvests occurred. Respondents were also asked if they had any questions, comments, or concerns regarding their observations of fish and wildlife populations. The surveys typically took less than 5 minutes each to administer, but they sometimes took longer with heavy harvesting households.

## 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, since household level information is confidential (AS 16.05.815(d)). The statistical program SPSS<sup>1</sup> 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 members. As the first step in data validation, the 2 versions of the entered data were compared and corrected according to the actual values recorded on paper surveys. Once entered and validated, data were then extracted using SPSS v21.0 and analyzed using standard division methods. Harvest amounts and demographic information were extrapolated to unsurveyed households to derive total harvest and human population estimates for the community. Fractional estimates are the direct result of this expansion procedure and are rounded to the nearest one-tenth in accompanying report tables and usually to whole numbers for discussion in the text. Estimated harvests are converted to usable pounds using standard conversion factors (Table 2). Participation levels, presented in percentages, are derived directly from the sampled data, which are assumed to be representative of participation levels for the entire community.

*Table 2.—Conversion factors, Nunapitchuk, 2012.*

The following table presents the conversion factors used in determining how many pounds were harvested of each resource surveyed.

<u>Resource name</u>	<u>Reported units</u>	<u>Conversion factor</u>
Black bear	Ind.	100.00
Brown bear	Ind.	141.00
Caribou	Ind.	130.00
Moose	Ind.	540.00
Muskox	Ind.	295.00
Dall sheep	Ind.	198.00
Beaver	Ind.	15.00
Arctic fox	Ind.	0.50
Red fox	Ind.	0.50
Arctic hare	Ind.	2.50
Snowshow hare	Ind.	2.50
River otter	Ind.	3.00
Lynx	Ind.	4.00
Mink	Ind.	2.00
Gray wolf	Ind.	0.00
Wolverine	Ind.	0.00

*Source* ADF&G Division of Subsistence household surveys, 2013.

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

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. The formula applied for this method is:

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

where:

$x$  = household harvest

$i$  =  $i$ th household in the community

$n$  = number of sampled households in the community

$N$  = number 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 percentage 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:

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

where:

$t_{\alpha/2}$  = student's  $t$  statistic for alpha level ( $\alpha = 0.95$ ) 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, less than about 140, the appropriate value must be identified from a look-up table

$s$  = the sample standard deviation

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

$n$  = sample size for the community

$N$  = total households in the community

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

Relative precision of the mean (CL%):

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

where:

$s$  = the sample standard deviation

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

$n$  = sample size for the community

$N$  = total households in the community

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.

### **COMMUNITY APPROVAL AND DATA REVIEW**

In May 2013, SRS Park attended a regularly scheduled meeting of the Native Village of Nunapitchuk (NVN) tribal council; he proposed this project and requested their approval to conduct the research in their community. NVN approved the project and provided the department with a tribal resolution of support. Then, in January 2014, after completion of the data collection and data analysis, Park returned to NVN and presented preliminary household survey results at a regularly scheduled meeting of the NVN tribal council. This data review meeting provided an opportunity for community members and community leadership to review the preliminary results for any inconsistencies and make recommendations for inclusion in the final report.

# RESULTS

In 2012, 94% of Nunapitchuk households used land mammals for subsistence and 67% attempted to harvest land mammals, of which 42% were successful (Table 3). Large land mammals constituted 94% (18,598 lb) of Nunapitchuk residents' total land mammal harvest (19,718 lb) in 2012. Ninety-four percent of Nunapitchuk households used large land mammals, 57% attempted to harvest, and 28% of households succeeded in harvesting them in 2012. Sharing of large land mammals among Nunapitchuk households was extensive: 43% of households gave large land mammal meat to other households, and 88% received such meat from other households. Small land mammals were not used at the same levels as large land mammals: only 26% of Nunapitchuk households used small mammals, and 22% attempted to harvest them, all of whom were successful (22%). Only 8% of households gave small mammals to other households, and only 11% received small land mammals from other households in 2012. The remainder of this section focuses on caribou and moose harvest information, which when combined, represented 93% of the total land mammal harvests by Nunapitchuk residents in 2012.

## CARIBOU

In 2012, Nunapitchuk residents harvested an estimated 15 caribou, representing an estimated total community harvest of 1,901 lb of usable caribou (Table 3). Survey results indicated that 42% of Nunapitchuk households used caribou in 2012, while only 6% attempted to harvest caribou, and only 4% of those households were successful, demonstrating the importance of sharing caribou meat with other households in the community. Eleven percent of Nunapitchuk households gave caribou to another household, and 41% received caribou from another household. The estimated usable weight of caribou harvested by Nunapitchuk residents in 2012 was 16 lb per household or 3.5 lb per person.

Table 3.—Harvests and uses of wild resources, Nunapitchuk, 2012.

Resource	Percentage of households					Harvest weight (lb) <sup>a</sup>			Harvest quantity (individual)		95% CI (±%)
	Using	Attempting harvest	Harvesting	Giving away	Receiving	Total	Per household	Per capita	Total	Per household	
<b>Land mammals</b>	<b>94%</b>	<b>67%</b>	<b>42%</b>	<b>46%</b>	<b>88%</b>	<b>19,718.2</b>	<b>168.5</b>	<b>35.9</b>	<b>181.6</b>	<b>1.6</b>	<b>13%</b>
<b>Large land mammals</b>	<b>94%</b>	<b>57%</b>	<b>28%</b>	<b>43%</b>	<b>88%</b>	<b>18,598.1</b>	<b>159.0</b>	<b>33.8</b>	<b>47.5</b>	<b>0.4</b>	<b>14%</b>
Black bear	4%	4%	2%	3%	2%	243.8	2.1	0.4	2.4	0.0	59%
Brown bear	2%	0%	0%	1%	2%	0.0	0.0	0.0	0.0	0.0	0%
Caribou	42%	6%	4%	11%	41%	1,901.3	16.3	3.5	14.6	0.1	48%
Moose	93%	57%	26%	41%	82%	16,453.1	140.6	29.9	30.5	0.3	15%
Muskox	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%
<b>Small land mammals</b>	<b>26%</b>	<b>22%</b>	<b>22%</b>	<b>8%</b>	<b>11%</b>	<b>1,120.0</b>	<b>9.6</b>	<b>2.0</b>	<b>134.1</b>	<b>1.1</b>	<b>22%</b>
Beaver	20%	17%	17%	5%	7%	932.3	8.0	1.7	62.2	0.5	24%
Arctic fox	0%	0%	0%	0%	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%
Arctic hare	2%	0%	0%	1%	2%	0.0	0.0	0.0	0.0	0.0	0%
Snowshoe hare	7%	4%	4%	2%	4%	97.5	0.8	0.2	39.0	0.3	69%
River otter	8%	7%	6%	4%	3%	73.1	0.6	0.1	24.4	0.2	40%
Lynx	0%	0%	0%	0%	0%	0.0	0.0	0.0	0.0	0.0	0%
Mink*	1%	1%	1%	1%	0%	17.1	0.1	0.0	8.5	0.1	84%
Gray wolf	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%

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2013.

\* Mink was not included on the survey, but was reported harvested by one household.

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

Table 4.–Subsistence moose and caribou hunter effort and participation, Nunapitchuk, 2012.

Description	Caribou	Moose
<b>Community households</b>		
Total number of hunters	7.4	99.4
Number of hunters per household	0.1	0.8
Estimated total days hunted	4.9	723.6
Estimated total harvest	14.6	30.5
<b>Hunting households</b>		
Number of households that hunted	7.3	67.0
Number of hunters per household	1.0	1.5
Number of days hunted	4.9	723.6
Number of harvests per hunter	2.0	0.3
Number of days hunted per hunter	0.7	7.3
<b>Successful hunting households</b>		
Number of successful households	4.9	30.5
Number of successful hunters	6.1	30.5
Number of days hunted	3.7	277.7
Number of hunters per household	1.3	1.4
Number of days hunted per hunter	0.6	6.5
Number of harvests per hunter	2.4	0.7
Number of harvests per successful household	3.0	1.0

Source ADF&G Division of Subsistence household surveys, 2013.

In 2012, members of approximately 7 Nunapitchuk households attempted to harvest caribou, and 5 of these households were successful (Table 4). The 7 individuals who attempted to harvest caribou in 2012 typically spent less than a full day hunting (tables 4 and 5). Hunters reported taking day trips to harvest caribou when the animals were nearby. Hunters harvested an estimated 10 caribou in March and 5 in November (Table 6). All caribou of known sex were bulls (7 individuals), however, one-half of the caribou harvested were reported as unknown sex.

Survey respondents reported the Uniform Coding Units (UCUs) where hunters harvested caribou. All caribou harvests with known locations were reported to be in UCU 18ZW001501 (Figure 2, Table 7). Approximately 12 caribou were harvested in this UCU, which is located south of the Kuskokwim River and south and southeast of Kwethluk, and which extends southwesterly from the Kisaralik River drainage from a point just upriver from Kwethluk, then downriver to the Kwethluk River drainage, and southward to the Kilbuck Mountains. Two caribou were harvested from unknown locations.

## MOOSE

In 2012, Nunapitchuk residents harvested an estimated 31 moose (16,453 lb), representing 83% of all land mammal harvest by usable weight (Table 3). Ninety-three percent (93%) of Nunapitchuk households reported using moose in 2012; 57% attempted to harvest moose, but only 26% of those households were successful. Moose meat was more widely shared among Nunapitchuk households than caribou in 2012, likely a result of the greater availability and greater quantities of meat resulting from moose harvests: 41% of households gave moose to another household, and 82% received moose from another household. In 2012, Nunapitchuk residents' moose harvest represented an average of 141 lb per household or 30 lb per person.

In 2012, members of approximately 67 Nunapitchuk households attempted to harvest moose, with 99 moose hunters residing in those households, or approximately 1.5 moose hunters per hunting household (Table 4). Among all hunting households, individuals who attempted to harvest moose hunted for an estimated total of 724 days, approximately 7 hunting days per moose hunter. An estimated 31 Nunapitchuk households

Table 5.—Estimates of caribou and moose hunting effort by hunters, Nunapitchuk, 2012.

Species	All hunters				All households	Successful (harvesting) households		
	Estimated total harvest	Number of hunters	Estimated days hunted	Hunting days per hunter	Hunting days per harvest	Number of hunters*	Estimated days hunted	Hunting days per hunter
Caribou	14.6	7.4	4.9	0.7	0.3	6.1	3.7	0.6
Moose	30.5	99.4	723.6	7.3	23.7	30.5	277.7	6.5
<b>All species</b>	<b>45.1</b>	<b>106.8</b>	<b>728.5</b>	<b>6.8</b>	<b>16.2</b>	<b>36.6</b>	<b>281.4</b>	<b>7.7</b>

Source ADF&G Division of Subsistence household surveys, 2013.

\* A maximum of one hunter is counted per moose or caribou harvested.

Table 6.—Harvests of caribou by sex and month of harvest, Nunapitchuk, 2012.

Community	Sex	2012												Total	
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		Unknown
Nunapitchuk	Male	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	7.3
	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
	Unknown	0.0	0.0	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3

Source ADF&G Division of Subsistence household surveys, 2013.

Table 7.—Harvests of caribou by sex, month, and location of harvest, Nunapitchuk, 2012.

Polygon		Sex	2012												Total	
GMU	UCU		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		Unknown
18Z	W001501	Male	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	4.9
		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
		Unknown	0.0	0.0	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3
Unknown	Unknown	Male	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	2.4
		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
		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

Source ADF&G Division of Subsistence household surveys, 2013.

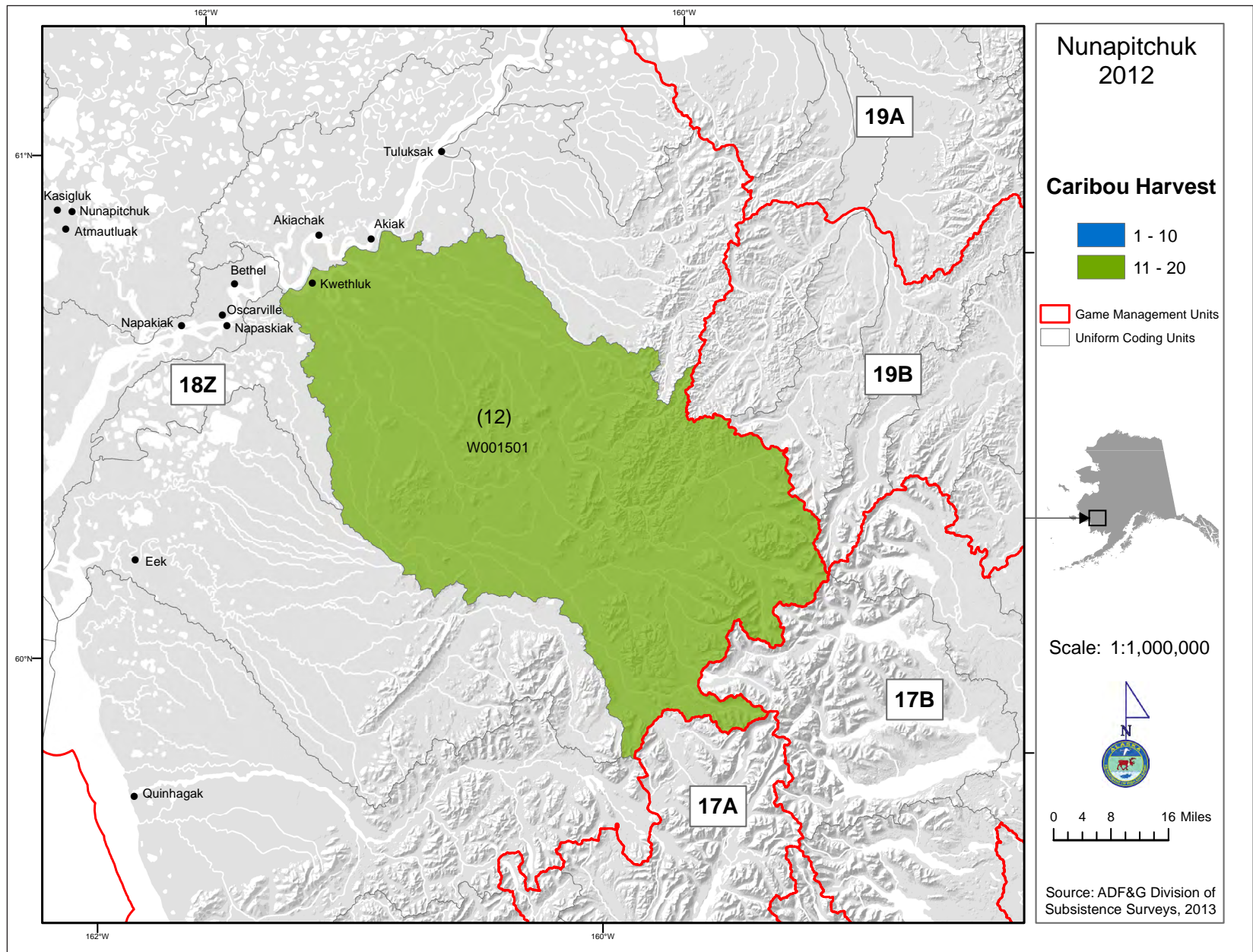


Figure 2.—Caribou search and harvest areas, Nunapitchuk, 2012.

Table 8.—Harvests of moose by sex and month of harvest, Nunapitchuk, 2012.

Community	Sex	2012														Total
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Unknown		
Nunapitchuk	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	21.9	0.0	0.0	3.7	0.0	26.8	
	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	1.2	1.2	
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.2	2.4	

Source ADF&G Division of Subsistence household surveys, 2013.

successfully harvested a moose (Table 4). Each moose hunter who successfully harvested moose hunted an average of 7 days with an average harvest of 1 moose per hunter. Hunters harvested an estimated 23 moose in September, 4 in December, and 1 in August (Table 8). All moose of known sex were bulls (27 individuals) with the exception of 1 cow moose that was harvested during an unknown month. One moose of unknown sex was harvested in September.

Survey respondents reported that Nunapitchuk hunters harvested moose in 6 UCUs, primarily along the Johnson River drainage, with a few additional moose taken in nearby UCUs west of the Kuskokwim River (Figure 3, Table 9). Only 1 moose was taken east of the Kuskokwim River in the Kwethluk River drainage. All of these harvests occurred in GMU 18. An estimated 7 moose were harvested from unknown locations.

The primary area used for moose hunting by Nunapitchuk residents in 2012 was UCU W11402, which encompasses the entire upper Johnson River drainage (Figure 3; Table 9). Sixty-three percent (14.6) of moose reported with a known harvest location were harvested in this area. Also, UCU W11402 was the only location in which moose were reported to be harvested in a month other than September (Table 9). Approximately 1 moose was harvested in UCU W11402 in August, and 1 in December. All other moose harvests reported with known locations took place in September. UCU W11401 was the only other area with more than 1 moose harvest reported. Four moose were taken in this UCU, which includes the entire lower Johnson River, as well as the immediate area around the 3 tundra villages of Nunapitchuk, Atmautluak, and Kasigluk. Successful moose hunts took place in 4 additional UCUs, with 1 moose taken in each: UCUs Y000202 and Y000204 include the area directly south of the Yukon River extending from Pilot Station to Paimiut; UCU W001201 makes up the area west of the lower Kuskokwim River from Bethel to near the river mouth; UCU W001501 extends southeast from the community of Kwethluk to the Kilbuck Mountains and includes the Kisaralik and Kwethluk rivers.

## OTHER LAND MAMMALS

The only other large land animals harvested by Nunapitchuk households in 2012 were 2 black bears, which provided approximately 2 lb of meat per household. Only 4% of households reported using black bears; 4% attempted to harvest black bears, but only 2% of households were successful in 2012. Three percent of households gave black bear meat to other households, and 2% received black bear meat from other households (Table 3). Both black bears were harvested from the Johnson River drainage in September, likely opportunistically during moose hunting, and included 1 female and 1 male bear (Table 10). No harvest was reported for the remaining large land mammal species that were included in the survey: brown bears, muskoxen, and Dall sheep.

In 2012, Nunapitchuk households harvested an estimated 134 individual small land mammals, including 62 beavers, 39 snowshoe hares, 24 river otters, and 9 mink (Table 3). No harvest was reported for the remaining small land mammal species that were included in the survey: gray wolves, wolverines, red foxes, Arctic foxes, Alaska hare, or lynx. All small land mammals harvested were reported as being used for human food. Harvests of small land mammals composed 6% of the total usable pounds from harvests of land mammal resources by Nunapitchuk residents in 2012. Most notable was the harvest of 932 lb of beavers, which represented 83% of the total usable pounds of small land animals harvested. Beavers supplied an average of 8 lb of meat per household, followed by snowshoe hares and river otters, each of which provided approximately 1 lb per household.

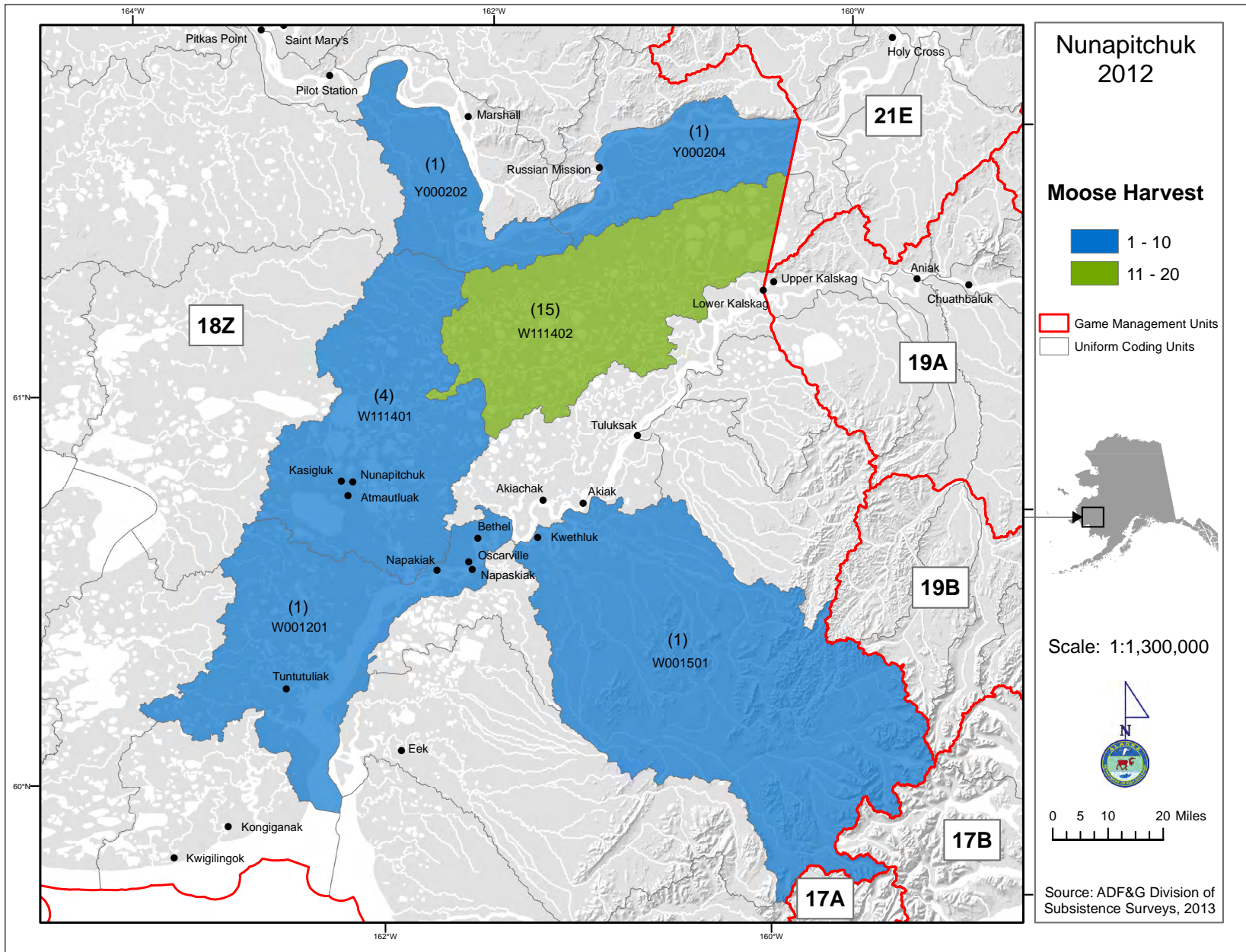


Figure 3.—Moose search and harvest areas, Nunapitchuk, 2012.

Table 9.—Harvests of moose by sex, month, and location of harvest, Nunapitchuk, 2012.

Polygon			2012													Total		
GMU	UCU	Sex	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Unknown			
18Z	W001201	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	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
		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
	W001501	Male	0.0	0.0	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	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
		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
	W111401	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	3.7
		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
		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
	W111402	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	12.2	0.0	0.0	1.2	0.0	0.0	14.6
		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
		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
	Y000202	Male	0.0	0.0	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	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
		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
Y000204	Male	0.0	0.0	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	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	
	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	
Unknown	Unknown	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	2.4	0.0	3.7	
		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	1.2	1.2	
		Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.2	2.4	

Source ADF&G Division of Subsistence household surveys, 2013.

Table 10.—Harvests of black bear by sex, month, and location of harvest, Nunapitchuk, 2012.

Polygon			2012													Total	
GMU	UCU	Sex	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Unknown		
18Z	W111401	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
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.2
		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
	W111402	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	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
		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
Unknown	Unknown	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
		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
		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

Source ADF&G Division of Subsistence household surveys, 2013.

## SUMMARY OF RESPONDENT COMMENTS

Nunapitchuk residents provided a total of 62 comments during the land mammal household harvest surveys (Table 11). Twelve households requested ADF&G provide them with confiscated moose, caribou, and bear meat; these accounted for the majority of the comments received (19%). An additional 10 comments (16%) were related to the season length of moose hunting opportunities in the lower Kuskokwim River drainage, which were deemed too short, and as a result are viewed as unfair (e.g., not a reasonable opportunity for a reasonable chance of success in harvesting a moose). The next most common comment received was related to the high costs of fuel, and how difficult it was for Nunapitchuk residents to hunt moose, trap fur animals, and harvest salmon as a result of the high costs of fuel (n=6; 10% of comments). Next in ranked order were comments that ADF&G needs to provide better information about moose hunt openings, closures, and bag limits, because the management of moose and associated regulations is confusing. People do not know where the boundaries are from year to year, so ADF&G should send out maps to community households (n=5; 8% of comments). Four households (6%) reported that they got no king salmon and that boat fuel cost too much for only a few fish. Three households (5%) commented that when there were no restrictions, there were more animals around to harvest. Three households also stressed the importance of subsistence resources, including meat and fish, to their community, which they said were a much better alternative than food stamps. Two households (3%) made comments about their concerns with the Bering Sea pollock fishery. Two households also reported that there are lots of moose in the area until the hunting season opens. An additional 15 individual household comments were recorded; these are listed in Table 11. Of particular note for this project is that households stated that 1 moose per hunter is not enough, because successful hunters share and give meat to the widowed, elderly, and those who cannot hunt for themselves. Another household commented that its members would hunt caribou if the animals were closer to the community. One household noted that fur-bearing animals were mainly used as a source of cash and exchange, although furbearers are not used as much today. Another household reported that beavers were causing declines in the community's fish resources. Finally, 1 elderly household reported that they used to trap a lot in the past and that they ate a lot of small game in those days; also, they used to go to spring muskrat camp and they trapped mink in the fall. However, this elderly household noted that little trapping is done by younger people now because kids are in school, which has affected their subsistence way of life. However, members of this household also reported that their son now hunts for them, and they receive meat from other community members, too.

Table 11.–Household survey comments, Nunapitchuk, 2012.

Household survey comments	Number of comments
ADF&G should give us confiscated meat of moose, caribou, and bears.	12
Local moose hunting season is too short; it's not fair.	10
Fuel costs too much, especially for trapping and moose hunting.	6
ADF&G needs better information about moose openings, closures, and bag limits as they are confusing. We don't know where boundaries are, so ADF&G should send out maps.	5
No king salmon last year, and fuel is too costly for only a few fish.	4
Subsistence is important for us; we need meat and fish, which are much better than food stamps.	3
When there were no restrictions, there were more animals.	3
Concerned about deep sea pollock fishing.	2
Lots of moose in remainder area until season opens.	2
One moose is not enough because we share and give to the widowed, elderly, and those who cannot hunt.	1
Why does ADF&G only open the left side of Johnson River to moose hunting?	1
Please open cow moose season in Nunapitchuk area.	1
Household would hunt caribou if they were closer.	1
People complain about needing a hunting license. Years ago they didn't need one. Nowadays they need a license and people don't like it.	1
Some families don't have a large enough boat to take everything they need to go so far and for so long.	1
Can Division of Subsistence document and put into law our use and dependence on game? It's not documented, but it is regulated.	1
There's more and more musk oxen. When will a hunt open?	1
Didn't get to hunt because back and forth to hospital.	1
How does proxy/disability permit work?	1
Our house is too crowded.	1
Stupid planes chase away my catch.	1
Fur-bearing animals are mainly used as a source of cash and exchange; not used as much today as in the past.	1
One elderly household mentioned that they used to trap a lot in the past and ate a lot of small game in those days. Used to go to spring muskrat camp and fall trapping for mink, but very little of this is done now by younger people. Kids are in school and our subsistence life is changing. Noted that his son now hunts for them, and others give them meat.	1
Beavers are causing declines in our fish resources.	1
<b>Total number of comments</b>	<b>62</b>

Source ADF&G Division of Subsistence household surveys, 2013.

# DISCUSSION

## CARIBOU

Caribou were an important source of food and of materials for clothing, bedding, and other customary and traditional uses for the Akulmiut prior to contact with non-Natives. Such importance and history is demonstrated by a variety of factors including, for example, the terms used by the Akulmiut for the months of August (*Amirairun*) and September (*Amiraayaaq*), which refer to the time when caribou begin shedding their antler velvet (August) and the time when there is little shedding of velvet because most of it is already shed (September) (Andrews 1989:255, 263, 1994:73). However, caribou were virtually absent from the region inhabited by the Akulmiut by 1880 and remained so for over 100 years (Andrews 1989:3, 374). Although caribou began to reoccupy the region in the 1980s, Andrews (1989) reported that caribou were not hunted nor harvested by Nunapitchuk residents in 1983.

In 2012, Nunapitchuk residents reported harvesting approximately 15 caribou, which amounted to 3.5 lb per capita: far less than any other recently surveyed community on the lower Kuskokwim River<sup>1</sup> (Table 3). Nunapitchuk hunters harvested caribou with a 67% success rate (roughly measured by dividing the number of household attempting to harvest by the percentage of households that successfully harvested) (Table 4). This rate of hunting success is comparable to nearby Kuskokwim River communities.<sup>2</sup> Nunapitchuk hunters went to the same areas to hunt caribou as those in several other nearby communities. However, Nunapitchuk is over 20 miles further from the primary caribou hunting areas than nearby Kuskokwim River communities. This extra distance from the caribou hunting area could be a factor explaining the relatively few households targeting caribou in 2012, particularly during years with low snowfall like 2012, which made snowmachine travel extremely difficult. As mentioned by 1 Nunapitchuk household, discussed above, more residents would hunt caribou if the caribou were located closer to the community.

Histories of State of Alaska and federal subsistence caribou hunting regulations for Game Management Unit 18 are found in tables B-1 and B-2. State caribou hunting regulations had grown more conservative since the 2005–2006 regulatory year, during which hunters were allowed to harvest 5 caribou south of the Yukon River under general harvest regulations. The federal bag limit remained 5 caribou through June 30, 2007, but also became more conservative. The caribou bag limit for all of GMU 18 was decreased to 3 caribou per year in the 2006–2007 state regulatory year and in the 2007–2008 federal regulatory year. Then, in the 2007–2008 state regulatory year, the Board of Game decreased the bag limit to 2 caribou per year, but no more than 1 bull caribou could be taken, and only 1 caribou could be taken from August 1 through January 31 each year. The Federal Subsistence Board lowered the bag limit to 2 caribou under federal subsistence regulations beginning July 1, 2010, with the same restrictions as the state bag limits. In 2009, the Alaska Board of Game eliminated the nonresident caribou hunt in GMU 18, but kept the same resident season and bag limits adopted in 2007 through the 2011–2012 regulatory year. Although subsequent to the study period reported here, during the 2013–2014 regulatory year, the Alaska Board of Game continued to allow 2 caribou per hunter per year with the same season length and bag limits. However, the hunt was changed from a general hunt, which requires only a harvest ticket to be returned, to a registration permit hunt (RC503) in an effort to improve the department’s ability to track harvest and effort, provide timely harvest updates, and manage sustainably. Any hunter that does not return a permit report for this registration permit hunt within a specified period of time is not be eligible to receive a permit the following year and may receive a citation for failing to report (as per 5 AAC 92.050(a)(8)). Beginning July 1, 2012, the federal caribou subsistence regulations were diversified into several different hunts, but the hunt opportunities remained relatively consistent with the state caribou hunt. By July 1, 2014, the Federal Subsistence Board required federally qualified subsistence caribou hunters in GMU 18 to obtain a state registration permit, and the season and bag limits are now identical.

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1. Simon, J. *In prep.* Customary and traditional use worksheet, caribou, Game Management Unit 18. Alaska Department of Fish and Game Division of Subsistence, Fairbanks.

2. Simon, J. *In prep.* Customary and traditional use worksheet, caribou, Game Management Unit 18. Alaska Department of Fish and Game Division of Subsistence, Fairbanks.

The change to a registration permit hunt, which occurred after completion of the research conducted in Nunapitchuk, and potential repercussions for hunters who do not return a harvest report are intended to provide much greater accuracy and timeliness in determining caribou harvest and hunting effort in GMU 18, which was the main issue this research also attempted to mitigate (see also Runfola et al. 2014).

In 2012, harvest of only 6 caribou was documented by returned harvest tickets by Nunapitchuk hunters in the Division of Wildlife Conservation's harvest ticket database.<sup>3</sup> This, compared to the estimated community total of 15 caribou harvested in 2012 documented by this household survey research, indicates that approximately one-third of Nunapitchuk residents reported their caribou harvest through the paper harvest ticket reporting program. In recent years, Division of Wildlife Conservation biologists have estimated the unreported harvest of Mulchatna caribou at an additional 1,500 to 2,500 animals annually (Woolington 2009:20). However, previous research conducted by the Division of Subsistence, and which was recently reconfirmed, has demonstrated that the paper harvest ticket and permit reporting programs capture only a small proportion of the total subsistence harvest, especially of such big game animals as moose and caribou (Andersen and Alexander 1992; Schmidt and Chapin 2014).

## **MOOSE**

Moose have historically occurred at low densities in the lower Kuskokwim River region and were virtually absent from the region prior to 1940, becoming more common, but still at low densities, in the late 1950s and early 1960s (Andrews 1989:329; Charnley 1983:3; Perry 2010). Moose gradually colonized the region throughout the latter 20th century and became a major component of subsistence harvests.

Heavy hunting pressure from residents of lower Kuskokwim River communities limited moose population growth in the area (Perry 2010). Beginning in the 2004–2005 regulatory year, and with strong local support, the BOG established a moratorium on moose hunting in the lower Kuskokwim River drainage, in an area roughly extending from the GMU 18 boundary with GMU 19 south to the Eek River and west to a line from the Ishkowik River and north into the upper Johnson River drainage (Table B-3). This moratorium was based upon the demonstrated effect of a similar moratorium on the lower Yukon River portion of GMU 18 in the 1990s. The lower Kuskokwim River moose moratorium continued until the 2009–2010 regulatory year, when ADF&G administered a registration permit hunt for the same area with a quota of 75 bull moose, which was to be closed by emergency order once hunters reached the quota. In the 2011–2012 regulatory year, ADF&G increased this quota to 100 bull moose. Additional moose hunting opportunities exist in GMU 18 that are not limited by a harvest quota, including autumn and winter hunts extending north from the upper Johnson River. A history of State of Alaska moose hunting regulations in GMU 18 is found in Table B-3, and federal subsistence moose hunting regulatory history is found in Table B-4.

The results of this study indicate that moose are by far the most utilized large land mammal in Nunapitchuk and the only big game animal that makes up a significant portion of Nunapitchuk's subsistence diet. People in Nunapitchuk harvested an estimated 30 lb of moose per capita in 2012 (Table 3). This is far more than the other 2 large land mammals harvested by Nunapitchuk residents: caribou (3.5 lb per capita), and black bears (0.4 lb per capita). Nunapitchuk's harvest of approximately 140 lb of moose per household in 2012 is comparable to recently studied lower Kuskokwim River communities. For example, the nearby community of Akiak harvested 163 lb per household, and Kwethluk harvested 116 lb per household in 2010 (Brown et al. 2013). However, because caribou were targeted to a lesser degree in Nunapitchuk, moose made up 88% of the community's large land mammal harvest, compared to several nearby communities, for which moose accounted for 50% to 70% of the large land mammal harvest (e.g., Brown et al. 2013; Ikuta et al. 2014).

Andrews' (1989) study in Nunapitchuk estimated the 1983 moose harvest to be 124 lb per household. This is comparable to the 141 lb per household estimated by the current study, suggesting that moose, when available, have played a consistent role in Nunapitchuk's subsistence for several decades. Andrews (Andrews 1989:328) also documented areas utilized by Nunapitchuk moose hunters, which are very

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3. Winfonet is the ADF&G Division of Wildlife Conservation's intranet website. The site provides a wide variety of tools to allow users to access, update, and download different kinds of data, including caribou harvest data.

consistent with the results of this study. Andrews (1989) reported that all moose hunting areas were on the Johnson River and nearby tributaries. Although the current study did not document exact harvest locations, only UCUs, approximately 83% of moose harvest reported with known locations were centered in the 2 UCUs around the Johnson River (W111401 and W111402) (Table 9).

The results of this study suggest that a typical Nunapitchuk moose hunt involves a boat trip and several nights (average of 5 days) of camping up the Johnson River in September. This trip to the upper Johnson River into UCU W111402 closely follows the boundary that separates the lower Kuskokwim area of GMU 18, and the Yukon River portion of GMU 18, and adjacent areas in the upper Johnson River drainage. This boundary separates a fall registration hunt for 1 antlered bull moose to the south of the area around Nunapitchuk, and more liberal fall and winter general hunts to the north along the Yukon River drainage, including the adjacent upper Johnson River drainage, which requires only a harvest ticket (Table B-3). The fall registration moose hunt in the lower Kuskokwim area (RM615) is associated with a 100 bull moose quota, which is typically closed by emergency order prior to the 10-day season found in regulation depending upon weather and other conditions that affect how long the season can remain open until the quota is reached. In 2012, 1,456 Alaska residents registered to hunt moose in the RM615 hunt, although only 1,131 reported hunting, with 102 permittees successfully harvesting a moose.<sup>4</sup> In 2012, the RM615 moose hunting season was closed after 8 days, and only 1 Nunapitchuk resident reported harvesting a moose in the RM615 hunt. However, the majority of moose harvested by Nunapitchuk residents in 2012 were taken from the more liberal general moose hunt area upriver of the RM615 hunt. It should be noted, however, that 10 out of the 62 household comments received from the Nunapitchuk household survey research were concerns that the moose hunting season was too short. It is unclear whether these households were referring specifically to the RM615 hunt.

Harvest reports returned to ADF&G by Nunapitchuk hunters for these various moose hunts indicated that only 5 moose were harvested in 2012—far fewer than the estimated community total harvest of 31 moose documented in this study. This low rate of harvest ticket return is consistent with return rates of communities throughout the Yukon-Kuskokwim Delta and elsewhere in rural Alaska as reported by Andersen and Alexander (1992) and recently reconfirmed by Schmidt and Chapin (2014).

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4. Personal communication, Area Biologist Phillip Perry, May 13, 2015.

## **ACKNOWLEDGEMENTS**

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## **APPENDIX A–SURVEY INSTRUMENT**

# LOWER KUSKOKWIM BIG GAME SURVEY

## NUNAPITCHUK, ALASKA

January 2012 through December 2012

### COOPERATING ORGANIZATIONS

Division of Subsistence  
Alaska Dept of Fish and Game  
1300 College Road  
Fairbanks, AK 99701

Native Village of Nunapitchuk  
PO BOX 130  
Nunapitchuk, AK 99641

(907) 459-7320

(907) 527-5705



We are conducting this survey to get a better understanding of subsistence in Alaska. Similar surveys have been completed in more than 100 Alaska communities, including several villages on the Kuskokwim River. This survey will help the Department of Fish and Game estimate subsistence harvests of big game animals by Nunapitchuk households.

The survey asks about the animals your household harvested in 2012, where the animals were harvested, and how much time members of your household spent hunting. It also asks about who lived in your household and their age(s).

Data from this survey will be analyzed and described in a written report that the Department of Fish and Game will publish in 2013. We will NOT identify your household. We will NOT use this information for enforcement purposes. Participation in this survey is

<b>HOUSEHOLD ID:</b>		
<b>COMMUNITY ID:</b>	<b>NUNAPITCHUK</b>	<b>259</b>
<b>RESPONDENT ID:</b>		
<b>INTERVIEWER:</b>		
<b>INTERVIEW DATE:</b>		
<b>START TIME:</b>		
<b>STOP TIME:</b>		
	DATA CODED BY:	
	DATA ENTERED BY:	
	SUPERVISOR:	

Lower Kuskokwim Big Game Survey (6/4/2013)

<b>HOUSEHOLD MEMBERS</b>	<b>HOUSEHOLD ID</b> <input style="width: 80%; height: 20px;" type="text"/>
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First, I will ask about the people living in your household. Please give information only about permanent members of your household, including college or high school students who return home every summer, or anyone else who stayed with you for at least three months during 2012. We will begin with the head of the household.

Between January 2012 and December 2012  
 ...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?	In 2012, did this person hunt for CARIBOU?	How many days did this person hunt for CARIBOU in 2012?	In 2012, did this person hunt for MOOSE?	How many days did this person hunt for MOOSE in 2012?
	<i>relation</i>	<i>circle</i>	<i>age</i>	<i>circle</i>	<i>circle</i>	<i>circle</i>	<i>number days</i>	<i>circle</i>	<i>number days</i>
HEAD	SELF	M F		Y N	Y N	Y N		Y N	
1									
<i>NEXT, enter spouse or partner. If household has a SINGLE HEAD, leave HEAD 2 blank.</i>									
HEAD		M F		Y N	Y N	Y N		Y N	
2									
<i>BELOW, enter children (oldest to youngest), grandchildren, grandparents, brothers, sisters, and other household members.</i>									
PERSON 3		M F		Y N	Y N	Y N		Y N	
3									
PERSON 4		M F		Y N	Y N	Y N		Y N	
4									
PERSON 5		M F		Y N	Y N	Y N		Y N	
5									
PERSON 6		M F		Y N	Y N	Y N		Y N	
6									
PERSON 7		M F		Y N	Y N	Y N		Y N	
7									
PERSON 8		M F		Y N	Y N	Y N		Y N	
8									
PERSON 9		M F		Y N	Y N	Y N		Y N	
9									
PERSON 10		M F		Y N	Y N	Y N		Y N	
10									
PERSON 11		M F		Y N	Y N	Y N		Y N	
11									
PERSON 12		M F		Y N	Y N	Y N		Y N	
12									
PERSON 13		M F		Y N	Y N	Y N		Y N	
13									
PERSON 14		M F		Y N	Y N	Y N		Y N	
14									
PERSON 15		M F		Y N	Y N	Y N		Y N	
15									

<b>PERMANENT HH MEMBERS: 01</b>	<b>NUNAPITCHUK: 259</b>
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**HARVESTS: LARGE LAND MAMMALS (continued)** HOUSEHOLD ID

In 2012 did your household...				
Use?	Receive?	Give Away?	Try to Harvest?	Harvest?
circle one				

*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. If the respondent does not know the sex of an animal circle "?". Do not enter the same animal in two lines.*

WHERE were these animals killed <i>enter UCU</i>	Were these animals MALE or FEMALE? <i>circle one</i>	HOW MANY animals were killed? <i>enter number</i>	In which MONTH in 2012 were these animals killed? <i>enter one month</i>
---	---	--	---

MOOSE      Y N   Y N   Y N   Y N   Y N  
211800000

M F ?  
M F ?  
M F ?  
M F ?

GRIZZLY BEAR      Y N   Y N   Y N   Y N   Y N  
210800000

M F ?  
M F ?  
M F ?

BLACK BEAR      Y N   Y N   Y N   Y N   Y N  
210600000

M F ?  
M F ?  
M F ?

DALL SHEEP      Y N   Y N   Y N   Y N   Y N  
212200000

M F ?  
M F ?  
M F ?

MUSKOXEN      Y N   Y N   Y N   Y N   Y N  
212000000

M F ?  
M F ?

**HARVESTS: FURBEARERS**

HOUSEHOLD ID

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

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

Between January 2012 and December 2012

...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 CAUGHT 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 2012 did your household...					In 2012, how many did your HH use for FUR ONLY? <i>enter number</i>	In 2012, how many did your HH use for FOOD? <i>enter number</i>	In 2012, what was your HH's TOTAL HARVEST? <i>enter number</i>	Comments
	Use?	Receive?	Give Away?	Try to Harvest?	Harvest?				
	<i>circle one</i>								
WOLF	Y N	Y N	Y N	Y N	Y N				
223200000									
BEAVER	Y N	Y N	Y N	Y N	Y N				
220200000									
WOLVERINE	Y N	Y N	Y N	Y N	Y N				
223400000									
RIVER OTTER	Y N	Y N	Y N	Y N	Y N				
221200000									
LYNX	Y N	Y N	Y N	Y N	Y N				
221600000									
RED FOX	Y N	Y N	Y N	Y N	Y N				
220804000									
ARCTIC FOX	Y N	Y N	Y N	Y N	Y N				
220802000									
SNOWSHOE HARE	Y N	Y N	Y N	Y N	Y N				
221004000									
ALASKA HARE	Y N	Y N	Y N	Y N	Y N				
221002000									

**FURBEARERS: 14**

**NUNAPITCHUK: 259**



**APPENDIX B—STATE AND FEDERAL CARIBOU AND  
MOOSE REGULATORY HISTORY, GMU 18**

Table B-1.—State caribou subsistence hunting regulations, GMU 18, 1961–2015.

Regulatory year	Seasons	Total days	Bag limit	Areas affected	Conditions
<b>1961–1963</b>	No open season	0			
<b>1963–1964</b>	Aug. 10–Mar. 31	234	3 caribou	South of the Yukon River	
	July 1–June 30	365	No limit	North of the Yukon River	
<b>1964–1965</b>	Aug. 10–Mar. 31	234	4 caribou	South of the Yukon River	
	July 1–June 30	365	No limit	North of the Yukon River	
<b>1965–1970</b>	Aug. 10–Mar. 31	234	3 caribou	South of the Yukon River	
	July 1–June 30	365	No limit	North of the Yukon River	
<b>1970–1974</b>	Aug. 10–Mar. 31	234	5 caribou	South of the Yukon River	
	July 1–June 30	365	No limit	North of the Yukon River	
<b>1974–1976</b>	Aug. 10–Mar. 31	234	3 caribou	South of the Yukon River	
	July 1–June 30	365	No limit	North of the Yukon River	
<b>1976–1977</b>	Aug. 10–Mar. 31	234	3 caribou	South of the Yukon River	
	July 15–Dec. 20	301	15 caribou	North of the Yukon River	No more than 5 per day; no more than 2 may be transported south of the Yukon River per regulatory year
	Jan. 6–May 31				
<b>1977–1978</b>	Aug. 10–Sept. 30	52	1 caribou		
<b>1978–1980</b>	Feb. 1–Mar. 31	59	1 caribou		
<b>1980–1985<sup>a</sup></b>	Feb. 1–Feb. 28	28	1 caribou	South of the Yukon River	
	Feb. 1–Mar. 31	59	1 caribou	North of the Yukon River	
<b>1985–1989<sup>b</sup></b>	Closed	0		South of the Yukon River	
	Feb. 1–Mar. 31	59	1 caribou	Remainder of GMU 18	

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Table B-1.—Page 2 of 3.

Regulatory year	Seasons	Total days	Bag limit	Areas affected	Conditions
<b>1989–1990</b>	Closed	0		South of the Yukon River	
	Feb. 1–Mar. 31	59	1 caribou		
	Apr. 5–15	10			Emergency court-sanctioned hunt for residents of Kwethluk only; quota 50 caribou
<b>1990–1992<sup>c</sup></b>	Closed	0		South of the Yukon River	
	Feb. 1–Mar. 31	59	1 caribou	Remainder of GMU 18	
<b>1992–1993<sup>d</sup></b>	Feb. 1–Mar. 31	59	1 caribou	North of the Yukon River	
	Sept. 1–15	15	1 bull caribou by registration permit	South of the Kuskokwim River	Evidence of sex required
	Closed	0		Remainder of GMU 18	
<b>1993–1995<sup>d</sup></b>	Feb. 1–Mar. 31	59	1 caribou	North of the Yukon River	
	Sept. 1–30	30	1 bull caribou by registration permit	South of the Kuskokwim River	Evidence of sex required
	Closed	0		Remainder of GMU 18	
<b>1995–1997<sup>e</sup></b>	July 1–May 15	304	1 caribou per day	North of the Yukon River	
	May 16–June 30	45	1 bull caribou per day	North of the Yukon River	
	Sept. 1–30	30	2 caribou total, 1 bull by registration permit only	South of the Yukon River	
	TBA between Oct. 1 and Mar. 31 by EO	≤182	2 caribou total	South of the Yukon River	
<b>1997–2002<sup>e</sup></b>	July 1–May 15	304	1 caribou per day	North of the Yukon River	
	May 16–June 30	45	1 bull caribou per day	North of the Yukon River	
	Season may be announced by EO	?	Up to 5 caribou	South of the Yukon River	

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Table B-1.—Page 3 of 3.

Regulatory year	Seasons	Total days	Bag limit	Areas affected	Conditions
<b>2002–2004<sup>f</sup></b>	July 1–May 15	304	1 caribou per day	North of the Yukon River	
	May 16–June 30	45	1 bull caribou per day	North of the Yukon River	
	Aug. 1–Mar. 31	243	Up to 5 caribou	South of the Yukon River	
	Sept. 1–Oct. 1	31	Nonresidents: 1 bull caribou	South of the Yukon River	
<b>2004–06<sup>f</sup></b>	Aug. 1–Apr. 15	258	5 caribou		Only 1 bull caribou may be taken Aug. 1–Nov. 30
	Sept. 1–30	30	Nonresidents: 1 bull caribou		
<b>2006–07<sup>f</sup></b>	Aug. 1–Mar. 15	227	3 caribou		Only 1 caribou may be taken Aug. 1–Nov. 30
	Sept. 1–30	30	Nonresidents: 1 bull caribou		
<b>2007–09<sup>f</sup></b>	Aug. 1–Mar. 15	227	2 caribou		No more than 1 bull may be taken, and only 1 caribou may be taken from Aug. 1– Jan. 31
	Sept. 1–15	15	Nonresidents: 1 caribou		
<b>2009–13<sup>f</sup></b>	Aug. 1–Mar. 15	227	2 caribou		No more than 1 bull may be taken, and only 1 caribou may be taken from Aug. 1– Jan. 31
<b>2013–2015<sup>f</sup></b>	Aug. 1–Mar. 15	227	2 caribou by registration permit		No more than 1 bull may be taken, and only 1 caribou may be taken from Aug. 1– Jan. 31

Source Alaska Department of Fish and Game, Division of Wildlife Conservation. Alaska hunting regulations. ADF&G, 1961–2013.

a. Required in GMU 18.

b. In 1985–1989, hunting seasons were divided into subsistence and general hunts.

c. In 1990, all Alaskan residents became eligible for subsistence hunts.

d. Under federal subsistence hunting regulations, federal public lands in Unit 18 north of the Yukon River are closed to all caribou hunting.

e. Bag limit may be increased to 5 per day by Emergency Order (EO).

f. Meat taken in GMU 18, south of the Yukon River, taken before Oct. 1 must remain on the bones of the front quarters, evidence of sex also required.

Table B-2.—Federal caribou subsistence hunting regulations, GMU 18, 1990–2016.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:
<b>1990–1991</b>	Closed	0		South of the Yukon River		N/A
	Feb. 1–Mar. 31	59	1 caribou	Remainder of GMU 18		Kwethluk
<b>1991–1992</b>	Feb. 1–Mar. 31	59	1 caribou	North of the Yukon River		Kwethluk
	Closed	0		Remainder of GMU 18		N/A
<b>1992–1995</b>	Dec. 15–Jan. 9	26	1 bull caribou by federal registration permit	South of the Yukon River	Annual state/federal bull quota of 130	For Kilbuck herd only: Tuluksak, Akiak, Akiachak, Kwethluk, Bethel, Oscarville, Napaskiak, Napakiak, Kasigluk, Atmautluak, Nunapitchuk, Tuntutuliak, Eek, Quinhagak, Goodnews Bay, Platinum, Togiak, and Twin Hills For caribou except Kilbuck herd: Kwethluk only
	Feb. 23–Mar. 15	22	1 bull caribou by federal registration permit	South of the Yukon River	Annual state/federal bull quota of 130	For Kilbuck herd only: Tuluksak, Akiak, Akiachak, Kwethluk, Bethel, Oscarville, Napaskiak, Napakiak, Kasigluk, Atmautluak, Nunapitchuk, Tuntutuliak, Eek, Quinhagak, Goodnews Bay, Platinum, Togiak, and Twin Hills For caribou except Kilbuck herd: Kwethluk only
	Closed	0	Remainder of GMU 18			N/A
<b>1995–1997</b>	Dec. 15–Jan. 9 <sup>b</sup>	26	TBA number of caribou by federal registration permit	South of the Yukon River	Closed when total harvest reaches guidelines in Quailnguut (Kilbuck) caribou herd cooperative management plan	For Kilbuck herd only: Tuluksak, Akiak, Akiachak, Kwethluk, Bethel, Oscarville, Napaskiak, Napakiak, Kasigluk, Atmautluak, Nunapitchuk, Tuntutuliak, Eek, Quinhagak, Goodnews Bay, Platinum, Togiak, and Twin Hills only For caribou except Kilbuck herd: Kwethluk only
	Aug. 1–Mar. 31	243	5 caribou per day by federal registration permit	North of the Yukon River		For caribou except Kilbuck herd: Alakanuk, Andreafsky, Chevak, Emmonak, Hooper Bay, Kotlik, Kwethluk, Marshall, Mountain Village, Pilot Station, Pitka's Point, Russian Mission, St. Mary's, St. Michael, Scammon Bay, Sheldon Point, and Stebbins
	Closed	0	Remainder of GMU 18	Remainder of GMU 18		N/A
<b>1997–2000</b>	TBA by the Yukon Delta NWR Manager between Aug. 25 and Mar. 31 <sup>b</sup>	TBD	Up to 5 caribou	South of the Yukon River		For Kilbuck herd only: Tuluksak, Akiak, Akiachak, Kwethluk, Bethel, Oscarville, Napaskiak, Napakiak, Kasigluk, Atmautluak, Nunapitchuk, Tuntutuliak, Eek, Quinhagak, Goodnews Bay, Platinum, Togiak, and Twin Hills only For caribou except Kilbuck herd: Kwethluk only

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Table B-2.—Page 2 of 3.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:
<b>1997–2000, continued</b>	Aug. 1–Mar. 31	243	5 caribou per day	North of the Yukon River		For caribou other than Kilbuck herd: Alakanuk, Andreafsky, Chevak, Emmonak, Hooper Bay, Kotlik, Kwethluk, Marshall, Mountain Village, Pilot Station, Pitka's Point, Russian Mission, St. Mary's, St. Michael, Scammon Bay, Sheldon Point, and Stebbins
<b>2000–2002</b>	TBA by the Yukon Delta NWR Manager between Aug. 25 and Mar. 31 <sup>b</sup>	TBD	Up to 5 caribou	South of the Yukon River		For caribou other than Kilbuck herd: Kwethluk, Akiachak, Akiak, Eek, Goodnews Bay, Mountain Village, Napaskiak, Platinum, Quinhagak, St. Marys, and Tuluksak For Kilbuck herd: Tuluksak, Akiak, Akiachak, Kwethluk, Bethel, Oscarville, Napaskiak, Napakiak, Kasigluk, Atmautluak, Nunapitchuk, Tuntutuliak, Eek, Quinhagak, Goodnews Bay, Platinum, Togiak, and Twin Hills Alakanuk, Andreafsky, Chevak, Emmonak, Hooper Bay, Kotlik, Kwethluk, Marshall, Mountain Village, Nunam Iqua, Pilot Station, Pitka's Point, Russian Mission, St. Mary's, St. Michael, Scammon Bay, and Stebbins
<b>2002–2003</b>	Aug. 1–Mar. 31	243 <sup>c</sup>	5 caribou	South of the Yukon River		Rural residents of GMU 18 and residents of St. Michael, Stebbins, Togiak, Twin Hills, Upper Kalskag, and Manokotak
	Aug. 1–Mar. 31	243	5 caribou per day	North of the Yukon River		Rural residents of GMU 18 and residents of St. Michael, Stebbins, Togiak, Twin Hills, Upper Kalskag, and Manokotak
<b>2003–2004</b>	Aug. 1–Mar. 31	243 <sup>d</sup>	5 caribou	South of the Yukon River		Rural residents of GMU 18 and residents of St. Michael, Stebbins, Togiak, Twin Hills, Upper Kalskag, and Manokotak
	Aug. 1–Mar. 31	243	5 caribou per day	North of the Yukon River		Rural residents of GMU 18 and residents of St. Michael, Stebbins, Togiak, Twin Hills, Upper Kalskag, and Manokotak
<b>2004–2007</b>	Aug. 1–Apr. 15	258	5 caribou			Rural residents of GMU 18 and residents of St. Michael, Stebbins, Togiak, Twin Hills, Upper Kalskag, and Manokotak
<b>2007–2010<sup>e</sup></b>	Aug. 1–Mar. 15	227	3 caribou		No more than 1 caribou may be taken from Aug. 1–Nov. 30	Rural residents of GMU 18 and residents of St. Michael, Stebbins, Togiak, Twin Hills, Upper Kalskag, and Manokotak
<b>2010–2012</b>	Aug. 1–Mar. 15	227	2 caribou		No more than 1 bull caribou may be taken; no more than 1 caribou may be taken Aug. 1–Jan. 31.	Rural residents of GMU 18 and residents of St. Michael, Stebbins, Togiak, Twin Hills, Upper Kalskag, and Manokotak
<b>2012–2014</b>	Aug. 1–Sept. 30	61	2 caribou	That portion to the east and south of the Kuskokwim River	No more than 1 bull caribou may be taken; no more than 1 caribou may be taken Aug. 1–Sept. 30 and Dec. 20–Jan. 31.	Rural residents of GMU 18 and residents of Manokotak, St. Michael, Stebbins, Togiak, Twin Hills, and Upper Kalskag

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Table B-2.—Page 3 of 3.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:
<b>2012–2014, continued</b>	Dec. 20–last day of February	71	2 caribou	That portion to the east and south of the Kuskokwim River	No more than 1 bull caribou may be taken; no more than 1 caribou may be taken Aug. 1–Sept. 30 and Dec. 20–Jan. 31.	Rural residents of GMU 18 and residents of Manokotak, St. Michael, Stebbins, Togiak, Twin Hills, and Upper Kalskag
	Aug. 1–Mar. 15	227	2 caribou	Remainder of GMU 18	No more than 1 caribou may be a bull and no more than 1 caribou may be taken Aug. 1–Jan. 31.	Rural residents of GMU 18 and residents of Manokotak, St. Michael, Stebbins, Togiak, Twin Hills, and Upper Kalskag
<b>2014–2016</b>	Aug. 1–Mar. 15	227	2 caribou by state registration permit			Rural residents of GMU 18 and residents of Manokotak, St. Michael, Stebbins, Togiak, Twin Hills, and Upper Kalskag

Source U.S. Fish and Wildlife Service Office of Subsistence Management. Subsistence management regulations for the harvest of fish and wildlife on federal public lands in Alaska. Anchorage: USFWS, 1990–2014.

- a. The Federal Subsistence Board first promulgated federal subsistence hunting regulations in 1990.
- b. The season will be closed when the total harvest reaches guidelines described in the approved Qavilnguut (Kilbuck) Caribou Herd Cooperative Management Plan.
- c. Edible meat must remain on the bones of the front and hind quarters until the meat is removed from the field.
- d. Edible meat of the front quarters and hind quarters from a harvested caribou may be processed and consumed in the field; however, meat may not be removed from the bones of the front quarters for purposes of transport out of the field.
- e. The Federal Subsistence Board shifted from annual regulations to biennial regulations beginning in 2008, such that federal subsistence regulations began to cover a period of 2 years (e.g., July 1, 2008–June 30, 2010).

Table B-3.—State moose subsistence hunting regulations, GMU 18, 1961–2015

Regulatory Year	Seasons	Total days	Bag limit	Areas affected	Conditions
<b>1961–1962</b>	Aug. 20–Sept. 30 Nov. 10–Dec. 10	73	1 bull moose		
<b>1962–1975</b>	Aug. 20–Dec. 31	134	1 bull moose		
<b>1975–1982<sup>a</sup></b>	Sept. 1–20	20	1 bull moose	Yukon River delta <sup>b</sup>	
	Sept. 1–Dec. 31	122	1 bull moose	Remainder of GMU 18	
<b>1982–1985</b>	Sept. 1–20	20	1 bull moose	Yukon River delta redefined <sup>c</sup>	
	Sept. 1–30	77	1 bull moose	Remainder of GMU 18	
	Nov. 15–Dec. 31	77	1 bull moose	Remainder of GMU 18	
<b>1985–1988<sup>d</sup></b>	Sept. 1–20	20	1 bull moose	Yukon River delta <sup>c</sup>	
	Sept. 1–30	40	1 bull moose	Remainder of GMU 18	
	Feb. 1–10	40	1 bull moose	Remainder of GMU 18	
<b>1988–1993<sup>e</sup></b>	Closed	0	1 bull moose	Yukon River delta <sup>c</sup>	
	Sept. 1–30	41	1 bull moose	Remainder of GMU 18	
	Dec. 20–30	41	1 bull moose	Remainder of GMU 18	
<b>1993–1994</b>	Closed	0		Yukon River delta <sup>c</sup>	
	Sept. 1–30	30	1 bull moose	remainder of GMU 18	
	Winter season to be announced <sup>f</sup>	10	1 bull moose		Remainder of GMU 18
<b>1994–2000</b>	Sept. 5–25	21	1 bull moose		Remainder of GMU 18
	Sept. 1–30	30	1 bull moose		Remainder of GMU 18
	Winter season to be announced <sup>f</sup>	10	1 bull moose		Remainder of GMU 18
<b>2000–2002</b>				North and west of a line from Cape Romanzof to Kuzilvak Mountains, and then to Mountain Village, and excluding all Yukon River drainages upstream from Mountain Village	
	Sept. 5–25	21	1 bull moose		
	Sept. 1–30	30	1 bull moose		Remainder of GMU 18
	Winter season to be announced <sup>f</sup>	10	1 bull moose		Remainder of GMU 18
<b>2002–2004</b>				All Yukon River drainages north of the south banks of Kwiklauk Pass and the Yukon River, including sloughs, downstream of Mountain Village	
	Sept. 5–25	21	1 bull moose		
	Sept. 5–25	21	1 bull moose	South of the south banks of Kwiklauk Pass and the Yukon River, and north and west of a line from Cape Romanzof to Kuzilvak Mountains, and then to Mountain Village	
	Sept. 1–30	30	1 bull moose	All Yukon River drainages north of the south bank of the Yukon River, including sloughs, upstream from Mountain Village	
	Winter season to be announced <sup>f</sup>	10	1 bull moose	All Yukon River drainages north of the south bank of the Yukon River, including sloughs, upstream from Mountain Village	
	Sept. 1–30	30	1 bull moose		Remainder of GMU 18
	Winter season to be announced <sup>f</sup>	10	1 bull moose		Remainder of GMU 18

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Table B-3.—Page 2 of 5

Regulatory Year	Seasons	Total days	Bag limit	Areas affected	Conditions
<b>2004–2005</b>	Closed	0		Lower Kuskokwim Closed Area <sup>g</sup>	
	Sept. 1–30	30	1 bull moose	South of the Eek River drainage	
	Winter season may be announced <sup>h</sup>	–	1 bull moose	South of the Eek River drainage	
	Sept. 1–30	30	1 bull moose	Remainder of GMU 18	
	Winter season may be announced <sup>h</sup>	–	1 bull moose	Remainder of GMU 18	
<b>2005–2006</b>	Closed	0		Lower Kuskokwim Closed Area <sup>g</sup>	
	Sept. 1–30	30	1 bull moose	South of the Eek River drainage and north of Goodnews River drainage	
	Closed	0		South of and including the Goodnews River drainage	
	Sept. 1–30	30	1 bull moose	Remainder of GMU 18	
	Winter season may be announced <sup>h</sup>	–	1 bull moose	Remainder of GMU 18	
<b>2006–2008</b>	Closed	0		Lower Kuskokwim Closed Area <sup>g</sup>	
	Sept. 1–30	30	1 antlered bull moose	South of the Eek River drainage and north of Goodnews River drainage	
	Sept. 1–30	30	1 antlered bull moose	North and west of a line from Cape Romanzof to Kusilvak Mountains to Mountain Village and excluding all Yukon River drainages upriver from Mountain Village (Lower Yukon Area)	
	Dec. 20–Jan. 10	22	1 antlered bull moose or 1 calf <sup>i</sup>	Lower Yukon Area (see above)	
	Sept. 1–30	30	1 antlered bull moose	Remainder of GMU 18	
	Dec. 20–Jan. 10	22	1 antlered bull moose	Remainder of GMU 18	
<b>2008–2009</b>	Closed	0		Lower Kuskokwim Closed Area <sup>g</sup>	
	Sept. 1–30	30	1 antlered bull moose	South of the Eek River drainage and north of Goodnews River drainage	
	Aug. 25–Sept. 20	27	1 antlered bull moose by registration permit	That portion south of and including the Goodnews River drainage	Registration permits available in person in Goodnews Bay Aug. 1–20. Season will be closed by EO when 10 bulls are taken
	Aug. 10–Sept. 30	52	1 antlered bull moose	That portion north and west of a line from Cape Romanzof to Kusilvak Mountains to Mountain Village and excluding all Yukon River drainages upriver from Mountain Village (Lower Yukon Area)	
	Dec. 20–Jan. 20	31	1 antlered bull moose or 1 calf	Lower Yukon Area (see above)	
	Aug. 10–Sept. 30	52	1 antlered bull moose	Remainder of GMU 18	
	Dec. 20–Jan. 10	21	1 antlered bull moose	Remainder of GMU 18	

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Table B-3.—Page 3 of 5

Regulatory Year	Seasons	Total days	Bag limit	Areas affected	Conditions
<b>2009–2010</b>					
	Sept. 1–10	10	1 antlered bull moose by registration permit	Lower Kuskokwim, easterly of a line from the mouth of the Ishkowiik River to the closest point of Dall Lake then to easternmost point of Takslesluk Lake then along the Kuskokwim River drainage boundary to the GMU 18 border, and north of and including the Eek River drainage	
	Sept. 1–30	30	1 antlered bull moose	That portion south of the Eek River drainage and north of the Goodnews River drainage	
	Aug. 25–Sept. 20	27	1 antlered bull moose	That portion south of and including the Goodnews River drainage	
	Aug. 10–Sept. 30	52	1 antlered bull moose	That portion north and west of a line from Cape Romanzof to Kusilvak Mountains to Mountain Village and excluding all Yukon River drainages upriver from Mountain Village (Lower Yukon Area)	
	Dec. 20–Jan. 20	31	1 moose	Lower Yukon Area (see above)	
	Aug. 10–Sept. 30	52	1 antlered bull moose	Remainder of GMU 18	
	Dec. 20–Jan. 10	21	1 antlered bull moose	Remainder of GMU 18	
<b>2010–2012</b>					
	Sept. 1–10	10	1 antlered bull moose by registration permit	Kuskokwim Area, east of a line from the mouth of the Ishkowiik River to Dall Lake, then to the Johnson River at its entrance into Nunavakanukakslak Lake (N 60° 59.41' Lat; W 162° 22.14' Long), then upstream 1/2 mile south of the south bank of the Johnson River to Crooked Creek, then upstream along the creek to Arhymot Lake to the GMU 18 boundary, and north of and including the Eek River drainage	
	Sept. 1–30	30	1 antlered bull moose	That portion south of the Eek River drainage and north of the Goodnews River drainage	
	Sept. 1–30	30	1 antlered bull moose by registration permit	That portion south of and including the Goodnews River drainage	
	Aug. 10–Sept. 30	52	1 antlered bull moose	Lower Yukon Area, that portion north and west of the Kashunuk River including the north bank from the mouth of the river upstream to the old village of Chakaktolik, west of a line from Chakaktolik to Mountain Village, excluding all Yukon River drainages upriver from Mountain Village	
	Dec. 20–Feb. 28	70	1 moose	Lower Yukon Area (see above)	
	Aug. 10–Sept. 30	52	1 antlered bull moose	Remainder of GMU 18	
	Dec. 20–Jan. 10	21	1 antlered bull moose	Remainder of GMU 18	

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Table B-3.-Page 4 of 5

Regulatory Year	Seasons	Total days	Bag limit	Areas affected	Conditions
<b>2012–2014</b>					
	Sept. 1–10	10	1 antlered bull moose by registration permit	Kuskokwim Area, east of a line from the mouth of the Ishkowik River to Dall Lake, then to the Johnson River at its entrance into Nunavakanukakslak Lake (N 60° 59.41' Lat; W 162° 22.14' Long), then upstream 1/2 mile south of the south bank of the Johnson River to Crooked Creek, then upstream along the creek to Arhymot Lake to the GMU 18 boundary, and north of and including the Eek River drainage	
	Sept. 1–30	30	1 antlered bull moose	That portion south of the Eek River drainage and north of the Goodnews River drainage	
	Sept. 1–30	30	1 antlered bull moose by registration permit	That portion south of and including the Goodnews River drainage	
	Aug. 1–Sept. 30	61	2 moose, only one of which may be an antlered bull	Lower Yukon Area, that portion north and west of the Kashunuk River including the north bank from the mouth of the river upstream to the old village of Chakaktolik, west of a line from Chakaktolik to Mountain Village, excluding all Yukon River drainages upriver from Mountain Village	Taking cows accompanied by calves or calves is prohibited
	Oct. 1–Feb. 28	151	2 antlerless moose	Lower Yukon Area (see above)	
	Aug. 10–Sept. 30	52	1 antlered bull moose	Remainder of GMU 18	
	Dec. 20–Feb. 28	70	1 moose	Remainder of GMU 18	
<b>2014–2015</b>					
	Sept. 1–10	10	1 antlered bull moose by registration permit	Kuskokwim Area, east of a line from the mouth of the Ishkowik River to Dall Lake, then to the Johnson River at its entrance into Nunavakanukakslak Lake (N 60° 59.41' Lat; W 162° 22.14' Long), then upstream 1/2 mile south of the south bank of the Johnson River to Crooked Creek, then upstream along the creek to Arhymot Lake to the GMU 18 boundary, and north of and including the Eek River drainage	
	Sept. 1–30	30	1 antlered bull moose	That portion south of the Eek River drainage and north of the Goodnews River drainage	
	Sept. 1–30	30	1 antlered bull moose by registration permit	That portion south of and including the Goodnews River drainage	
	Aug. 1–Sept. 30	61	2 moose, only 1 of which may be an antlered bull	Remainder of GMU 18	Taking cows accompanied by calves or calves is prohibited
	Oct. 1–Nov. 30	61	2 antlerless moose	Remainder of GMU 18	
	Dec. 1–Mar. 15	105	2 moose	Remainder of GMU 18	

Source Alaska Department of Fish and Game. Alaska hunting regulations. ADF&G, 1961–2013.

- a. The Alaska Board of Game established the Kalskag Controlled Use Area in 1977, incorporating a triangular-shaped region from Russian Mission upriver to the old Paimiut village site, south to Lower Kalskag, northwest back to Russian Mission.
- b. That area north and west of a line from Cape Romanzof to Mountain Village, & west of & excluding the Andreafsky River drainage.
- c. That portion north and west of a line from Cape Romanzof to Kuzilvak Mountain, to Mountain Village, and west of, but excluding the Andreafsky River drainage.
- d. In 1985-1989, hunting regulations were divided into subsistence and general hunts. In 1988, residents of communities within GMU 18 and Upper Kalskag were found to have customary and traditional uses of moose in GMU 18.
- e. In 1990, all Alaskan residents became eligible for subsistence hunts.
- f. A 10-day winter season to be announced by Emergency Order during the period Dec. 20–Jan. 20.
- g. Lower Kuskokwim Closed Area: easterly of a line from the mouth of Ishkowiik River to the closest point of Dall Lake, then to the easternmost point of Takslesluk Lake, then along the Kuskokwim River drainage boundary to the GMU 18 border, and north of and including the Eek River drainage.
- h. 10-day season may be announced between Dec. 1 and Feb. 28.
- i. ADF&G may close some areas to taking of calves.

Table B-4.—Federal moose subsistence hunting regulations, GMU 18, 1990–2016.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>1990–1991</b>							
	Closed	0		That portion north and west of a line from Cape Romanzof to Kuzilvak Mountain, and then to Mountain Village, and west of (but not including) the Andreafsky River drainage		N/A	Closed
	Sept. 1–30	30	1 bull moose	Remainder of GMU 18		GMU 18 and Upper Kalskag	Open
	Dec. 20–30	11	1 bull moose	Remainder of GMU 18		GMU 18 and Upper Kalskag	Open
<b>1991–1992</b>							
	Closed	0		That portion north and west of a line from Cape Romanzof to Kuzilvak Mountain, and then to Mountain Village, and west of (but not including) the Andreafsky River drainage; and those portions contained in the Kanektok and Goodnews drainages		N/A	Closed
	Sept. 1–30	30	1 antlered moose	Remainder of GMU 18		GMU 18 and Upper Kalskag	Open
	Winter season to be announced	10	1 antlered moose	Remainder of GMU 18	A 10-day hunt falling sometime between Dec. 1 and Feb. 28 shall be opened by announcement of the Federal Subsistence Board	GMU 18 and Upper Kalskag	Open
<b>1992–1994</b>							
	Closed	0		That portion north and west of a line from Cape Romanzof to Kuzilvak Mountain, and then to Mountain Village, and west of, but not including, the Andreafsky River drainage; and those portions contained in the Kanektok and Goodnews drainages		N/A	Closed
	Sept. 1–30	30	1 antlered moose	Remainder of GMU 18		GMU 18 and Upper Kalskag	Closed
	Winter season to be announced <sup>b</sup>	10	1 antlered moose	Remainder of GMU 18	A 10-day hunt falling sometime between Dec. 1 and Feb. 28 shall be opened by announcement of the Federal Subsistence Board	GMU 18 and Upper Kalskag	Closed
<b>1994–1995</b>							
	Sept. 5–25	21	1 antlered bull moose	That portion north and west of a line from Cape Romanzof to Kuzilvak Mountain, and then to Mountain Village, and west of, but not including, the Andreafsky River drainage.		GMU 18 and Upper Kalskag	Closed
	Closed	0		Goodnews River and Kanektok River drainages		N/A	Closed
	Aug. 25–Sept. 25	32	1 antlered bull moose	Remainder of GMU 18		GMU 18 and Upper Kalskag	Closed
	Winter season to be announced	10	1 bull moose (evidence of sex required)	Remainder of GMU 18	A 10-day hunt falling sometime between Dec. 1 and Feb. 28 shall be opened by announcement of the Federal Subsistence Board	GMU 18 and Upper Kalskag	Closed

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Table B-4.—Page 2 of 11.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>1995–1997</b>							
	Sept. 5–25	21	1 antlered bull moose	That portion north and west of a line from Cape Romanzof to Kuzilvak Mountain, and then to Mountain Village, and west of, but not including, the Andreafskey River drainage.		GMU 18 and Upper Kalskag	Closed
	Closed	0		Goodnews River and Kanektok River drainages		N/A	Closed
	Aug. 25–Sept. 25	32	1 antlered bull moose	Kuskokwim River drainage		GMU 18 and Upper Kalskag	Closed
	Winter season to be announced	10	1 bull moose (evidence of sex required)	Kuskokwim River drainage	A 10-day hunt falling sometime between Dec. 1 and Feb. 28 shall be opened by announcement of the Federal Subsistence Board	GMU 18 and Upper Kalskag	Closed
	Sept. 1–30	30	1 antlered bull moose	Remainder of GMU 18		GMU 18 and Upper Kalskag	Closed
	Winter season to be announced	10	1 bull moose (evidence of sex required)	Remainder of GMU 18	A 10-day hunt falling sometime between Dec. 1 and Feb. 28 shall be opened by announcement of the Federal Subsistence Board	GMU 18 and Upper Kalskag	Closed
<b>1997–2004</b>							
	Sept. 5–25	21	1 antlered bull moose	That portion north and west of a line from Cape Romanzof to Kuzilvak Mountain, and then to Mountain Village, and west of, but not including, the Andreafskey River drainage.		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed
	Closed <sup>c</sup>	0		Goodnews River and Kanektok River drainages		N/A	Closed
	Aug. 25–Sept. 25	32	1 antlered bull moose	Kuskokwim River drainage		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed
	Winter season to be announced	10	1 bull moose (evidence of sex required)	Kuskokwim River drainage	A 10-day hunt falling sometime between Dec. 1 and Feb. 28 shall be opened by announcement of the Federal Subsistence Board	That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed

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Table B-4.—Page 3 of 11.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>1997–2004, continued</b>							
	Sept. 1–30	30	1 antlered bull moose	Remainder of GMU 18		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed
	Winter season to be announced	10	1 bull moose (evidence of sex required)	Remainder of GMU 18	A 10-day hunt falling sometime between Dec. 1 and Feb. 28 shall be opened by announcement of the Federal Subsistence Board	That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed
<b>2004–2006</b>							
	Closed	0		That portion easterly of a line from the mouth of the Ishkwik River to the closest point of Dall Lake, then to the easternmost point of Takslesluk Lake, then along the Kuskokwim River drainage boundary to the Unit 18 border and north of (and including) the Eek River drainage.		N/A	Closed
	Closed	0		South of and including the Kanektok River drainage		N/A	Closed
	Sept. 1–30	30	1 antlered bull moose	Remainder of GMU 18		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed
	Winter season to be announced	10	1 bull moose (evidence of sex required)	Remainder of GMU 18	A 10-day hunt falling sometime between Dec. 1 and Feb. 28 shall be opened by announcement of the Federal Subsistence Board	That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed

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Table B-4.—Page 4 of 11.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>2006–2007</b>							
	Closed	0		That portion easterly of a line from the mouth of the Ishkowiik River to the closest point of Dall Lake, then to the easternmost point of Takslesluk Lake, then along the Kuskokwim River drainage boundary to the Unit 18 border and north of (and including) the Eek River drainage.		N/A	Closed
	Closed	0		South of and including the Kanektok River drainage		N/A	Closed
	Sept. 1–30	30	1 antlered bull moose	That portion north and west of a line from Cape Romanzof to Kusilvak Mountain to Mountain Village, and excluding all Yukon River drainages upriver from Mountain Village		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed
	Dec. 20–Jan. 10 <sup>d</sup>	22	1 antlered bull moose or 1 calf	That portion north and west of a line from Cape Romanzof to Kusilvak Mountain to Mountain Village, and excluding all Yukon River drainages upriver from Mountain Village		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk; Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed
	Sept. 1–30	30	1 antlered bull moose		Remainder of GMU 18	That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed
	Dec. 20–Jan. 10	22	1 antlered bull moose		Remainder of GMU 18	That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Closed
<b>2007–2008</b>							
	Closed	0		That portion easterly of a line from the mouth of the Ishkowiik River to the closest point of Dall Lake, then to the easternmost point of Takslesluk Lake, then along the Kuskokwim River drainage boundary to the Unit 18 border and north of (and including) the Eek River drainage		N/A	Closed
	Closed	0		South of and including the Kanektok River drainage		N/A	Closed

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Table B-4.-Page 5 of 11.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>2007-2008, continued</b>						That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk	
	Aug. 10-Sept. 30	52	1 antlered bull moose	That portion north and west of a line from Cape Romanzof to Kusilvak Mountain to Mountain Village, and excluding all Yukon River drainages upriver from Mountain Village		That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18:GMU 18 and Upper and Lower Kalskag	Open
	Dec. 20-Jan. 20 <sup>d</sup>	32	1 moose	That portion north and west of a line from Cape Romanzof to Kusilvak Mountain to Mountain Village, and excluding all Yukon River drainages upriver from Mountain Village		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk	
						That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
	Aug. 10-Sept. 30	52	1 antlered bull moose	Remainder of GMU 18		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk	
						That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open

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Table B-4.—Page 6 of 11.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>2007–2008, continued</b>						That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk	
	Dec. 20–Jan. 10	22	1 antlered bull moose	Remainder of GMU 18		That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
<b>2008–2010</b>	Closed	0		That portion easterly of a line from the mouth of the Ishkowiik River to the closest point of Dall Lake, then to the easternmost point of Takslesluk Lake, then along the Kuskokwim River drainage boundary to the Unit 18 border and north of (and including) the Eek River drainage		N/A	Closed
	Aug. 10–Sept. 30	52	1 antlered bull moose	That portion north and west of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and excluding all Yukon River drainages upriver from Mountain Village		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
	Dec. 20–Jan. 20	32	1 moose	That portion north and west of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and excluding all Yukon River drainages upriver from Mountain Village		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open

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Table B-4.—Page 7 of 11.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>2008–2010, continued</b>	Closed	0		GMU 18, south of and including the Kanektok River drainages to the Goodnews River drainage		N/A	Closed
	Aug. 25– Sept. 20 <sup>f</sup>	27	1 antlered bull moose by state registration permit	Goodnews River drainage and south to the Unit 18 boundary		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk  That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag  Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
<b>2010–2012</b>	Closed	0		That portion east of a line running from the mouth of the Ishkowiik River to the closest point of Dall Lake, then to the east bank of the Johnson River at its entrance into Nunavakanukakslak Lake (N 60°59.41' Latitude; W 162°22.14' Longitude), continuing upriver along a line 1/2 mile south and east of and paralleling a line along the southerly bank of the Johnson River to the confluence of the east bank of Crooked Creek, then continuing upriver to the outlet at Arhymot Lake, then following the south bank east of the Unit 18 border and then north of and including the Eek River drainage.		Federal public lands are closed to the harvest of moose except by residents of Tuntutuliak, Eek, Napakiak, Napaskiak, Kasigluk, Nunapitchuk, Atmautluak, Oscarville, Bethel, Kwethluk, Akiachak, Akiak, Tuluksak, Lower Kalskag, and Kalskag	Closed
	Aug. 10– Sept. 30	52	1 antlered bull moose	That portion north and west of the Kashunuk River including the north bank from the mouth of the river upstream to the old village of Chakaktolik, west of a line from Chakaktolik to Mountain Village and excluding all Yukon River drainages upriver from Mountain Village		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk  That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag  Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open

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Table B-4.—Page 8 of 11.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>2010-2012, continued</b>							
	Dec. 20– Feb. 28 <sup>g</sup>	71	1 moose by federal registration permit	That portion north and west of the Kashunuk River including the north bank from the mouth of the river upstream to the old village of Chakaktolik, west of a line from Chakaktolik to Mountain Village and excluding all Yukon River drainages upriver from Mountain Village	If 1 antlered bull is taken during the fall season in this area, 1 additional moose may be taken during the winter season; if no moose are taken in the fall season, 2 moose may be taken in the winter season. No more than 2 moose may be harvested in this area in a regulatory year.	That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk  That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
	Closed	0		South of and including the Kanektok River drainages to the Goodnews River drainage		N/A	Closed
	Aug. 25– Sept. 20 <sup>f</sup>	27	1 antlered bull moose by state registration permit	Goodnews River drainage and south to the Unit 18 boundary		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk  That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
	Aug. 10– Sept. 30	52	1 antlered bull moose	Remainder of GMU 18		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk  That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
	Dec. 20– Jan. 10	22	1 antlered bull moose	Remainder of GMU 18		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk  That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: residents of GMU 18 and Upper and Lower Kalskag	Open

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Table B-4.—Page 9 of 11.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>2012–2014</b>							
	Closed	0		That portion east of a line running from the mouth of the Ishkowiik River to the closest point of Dall Lake, then to the east bank of the Johnson River at its entrance into Nunavakanukakslak Lake (N 60°59.41' Latitude; W 162°22.14' Longitude), continuing upriver along a line 1/2 mile south and east of and paralleling a line along the southerly bank of the Johnson River to the confluence of the east bank of Crooked Creek, then continuing upriver to the outlet at Arhymot Lake, then following the south bank east of the Unit 18 border and then north of and including the Eek River drainage.		Federal public lands are closed to the harvest of moose except by residents of Akiachak, Akiak, Atmautluak, Bethel, Eek, Kalskag, Kasigluk, Kwethluk, Lower Kalskag, Napakiak, Napaskiak, Nunapitchuk, Oscarville, Tuluksak, and Tuntutuliak	Closed
	Aug. 1—the last day of February	212	2 moose, only 1 of which may be antlered	That portion north and west of the Kashunuk River including the north bank from the mouth of the river upstream to the old village of Chakaktolik, west of a line from Chakaktolik to Mountain Village and excluding all Yukon River drainages upriver from Mountain Village	Antlered bull may only be harvested from Aug. 1–Sept. 30	That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
	Closed	0		South of and including the Kanektok River drainages to the Goodnews River drainage		N/A	Closed
	Sept. 1–30 <sup>f</sup>	30	1 antlered bull moose by state registration permit	Goodnews River drainage and south to the Unit 18 boundary		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open

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Table B-4.—Page 10 of 11.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>2012–2014, continued</b>							
	Aug. 10–Sept. 30	52	1 moose	Remainder of GMU 18		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk	
						That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
	Dec. 20–last day of February	81	1 moose	Remainder of GMU 18		That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk	
						That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
<b>2014–2016</b>							
	Sept. 1–30 <sup>b</sup>	30	1 antlered bull moose by state registration permit	That portion east of a line running from the mouth of the Ishkowiik River to the closest point of Dall Lake, then to the east bank of the Johnson River at its entrance into Nunavakanukakslak Lake (N 60°59.41' W 162°22.14'), continuing upriver along a line 1/2 mile south and east of and paralleling a line along the southerly bank of the Johnson River to the confluence of the east bank of Crooked Creek, then continuing upriver to the outlet at Arhymot Lake, then following the south bank east of the Unit 18 border and then north of and including the Eek River drainage		Federal public lands are closed to the harvest of moose except by residents of Akiachak, Akiak, Atmautluak, Bethel, Eek, Kalskag, Kasigluk, Kwethluk, Lower Kalskag, Napakiak, Napaskiak, Nunapitchuk, Oscarville, Tuluksak, and Tuntutuliak	Closed
	Closed	0		South of and including the Kanektok River drainages to the Goodnews River drainage			N/A Closed

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Table B-4.—Page 11 of 11.

Regulatory year <sup>a</sup>	Seasons	Total days	Bag limit	Areas affected	Conditions	Eligible federally qualified residents of:	Federal public lands closed to non-federally qualified users?
<b>2014–2016, continued</b>						That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk	
	Sept. 1–30 <sup>f</sup>	30	1 antlered bull moose by state registration permit	Goodnews River drainage and south to the Unit 18 boundary		That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open
	Aug. 1–Mar. 31	243	2 moose, only one of which may be antlered	Remainder of GMU 18	Antlered bulls may not be harvested from Oct. 1 through Nov. 30	That portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including the Tuluksak River drainage: GMU 18 and Upper and Lower Kalskag, Aniak, and Chuathbaluk That portion north of a line from Cape Romanzof to Kuzilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall: rural residents of GMU 18, St. Michael, Stebbins, and Upper Kalskag Remainder of GMU 18: GMU 18 and Upper and Lower Kalskag	Open

Source U.S. Fish and Wildlife Service Office of Subsistence Management. Subsistence management regulations for the harvest of fish and wildlife on federal public lands in Alaska. Anchorage: USFWS, 1990–2014.

a. The Federal Subsistence Board first promulgated federal subsistence hunting regulations in 1990.

b. In the winter hunt, the 1 antlered moose bag limit was changed to 1 bull moose, evidence of sex required in 1993–1994 season.

c. Beginning in 1998–1999, the hunt area was changed to "Unit 18–South of and including the Kanektok River drainages."

d. The Yukon Delta National Wildlife Refuge Manager may restrict the harvest to only antlered bulls after consultation with ADF&G.

e. The Federal Subsistence Board shifted from annual regulations to biennial regulations beginning in 2008, such that federal subsistence regulations began to cover a period of two years (e.g., July 1, 2008–June 30, 2010).

f. Any needed closures will be announced by the Togiak National Wildlife Refuge Manager after consultation with BLM, ADF&G, and the Chair of the Yukon-Kuskokwim Delta Subsistence Regional Advisory Council.

g. The Yukon Delta National Wildlife Refuge Manager may restrict the harvest in the winter season to only 1 antlered bull or only 1 moose per regulatory year after consultation with ADF&G and the Yukon-Kuskokwim Delta Subsistence Regional Advisory Council chair.

h. Quotas will be announced annually by the Yukon Delta National Wildlife Refuge Manager.

**APPENDIX C–EIGHT CRITERIA WORKSHEET,  
KWETHLUK, 1989**

**EIGHT CRITERIA WORKSHEET, BOARD OF GAME 1989**

**PROPOSAL NO.:** 141  
**GMU:** 17A, 17B, 18, 19A, 19B  
**SPECIES:** CARIBOU

**RURAL COMMUNITIES USING THE SPECIES**

**Kwethluk**

**1. LENGTH AND CONSISTENCY OF USE (long-term, consistent, excluding interruptions by circumstances beyond the user's control)**

Archaeological evidence suggests that caribou have been hunted in the mountain areas southeast of Kwethluk since prehistoric times. Information gathered by the Division of Subsistence while conducting research in Kwethluk during 1986 and 1987 indicates a pattern of long term consistent use. Residents report that they have hunted caribou in the mountain areas of Game Management Units 17B, 18 and 19B as long as they can remember. During the early part of this century, residents report that caribou were relatively scarce near the mountains southeast of Kwethluk. Animals were occasionally encountered and harvested in the upper Holitna River drainage and along the King Salmon River and Tikchik Lakes area. Families having spring and fall camps located near where the boundaries of Game Management Units 17, 18 and 19 converge, travelled extensively throughout the area harvesting caribou as well as a variety of other resources. During winter, hunters would travel from Kwethluk to these hunting areas and during spring would travel through the mountain passes to hunt in areas east of the Tikchik Lakes. In the late 1930s and early 1940s, hunters travelled up the Kuskokwim River by boat with outboard motors as far as the Holokuk and Oskawalik rivers, hunting the tributaries along the way hunting areas in Game Management Unit 19A. By the late 1940s and early 1950s, Kwethluk hunters were using boats to access the Holitna River area.

Since the early 1960s, sightings of caribou in the upper drainages of the Kwethluk, Kisaralik, Aniak and Holitna rivers became more common place and hunters have come to expect to find caribou when hunting in these areas. Starting in 1985, the caribou season in Game Management Unit 18, south of the Yukon River has been closed, therefore harvest efforts have been concentrated in Units 17B, 19A and 19B. Hunters report that in the past they have harvested caribou in the vicinity of Whitefish Lake, west of Aniak, in Unit 19A. During late November 1988, caribou once again returned to that area and were harvested by hunters from several communities including Kwethluk.

## **2. SEASONALITY (recurring in specific seasons of each year)**

Depending on the specific Game Management Unit in question, caribou are harvested periodically from late August through mid-May. The Holitna River and the middle Kuskokwim River area are hunted primarily during September. Hunters that use spring or fall camps near the mountains harvest caribou from early April through late May and mid-August through September. Caribou are also harvested between early December and late March by hunters who travel to Game Management Units 19 and 17 by snowmachine.

## **3. MEANS AND METHODS OF HARVEST (efficient, economic, conditioned by local circumstances)**

During August and September, caribou in Game Management Unit 19 are harvested by hunters using boats. Hunters may find caribou near river crossings or may hike back from a river to areas where they can climb a hill and watch for animals. When hunting during August and September from camps in the mountains near Heart Lake and along the upper Kwethluk River, in GMUs 17 and 18, hunters travel on foot several miles from their camp taking advantage of the hills and lookouts from where they scan the surrounding country watching for animals.

After freeze-up, provided that there is adequate snowcover, hunters use snowmachines to move about looking for a variety of game including caribou, furbearers, moose and small game. In April and May people again return to their camps in the mountains near the boundary of Game Management Units 17 and 18. These camps serve as a hub for a variety of hunting, trapping and fishing activities. As in the fall, the men travel extensively on foot in search of caribou, bear and moose while the women hunt, trap, and fish in the areas more immediate to the camp.

Some individuals have lived much of the year in the mountains, returning to Kwethluk for a few brief weeks during Christmas. Traditionally, people used dogteams or simply walked from Kwethluk to their mountain camps. Today, hunters and other family members are shuttled from Kwethluk to their spring or fall camps by small charter aircraft. Flying costs, like the subsistence resources that are harvested, are shared among several people. In the spring, following breakup, people customarily float downstream to Kwethluk in skin-covered boats or are picked up with small charter aircraft.

## **4. GEOGRAPHIC AREAS (near or reasonably accessible from the user's residence)**

Caribou are harvested in headwaters of the Aniak, Eek, Holitna, Kisaralik, Kwethluk, and King Salmon Rivers and in the Tikchik Lakes area. Caribou are also harvested on an opportunistic basis while fall moose hunting and some hunters travel to the upper Holitna River to harvest caribou. In GMU 19A, caribou are harvested south and east of Whitefish Lake during the winter and spring, and in the Holokuk, Kolmakof, and George rivers, and along the mainstem Kuskokwim between Sleetmute and Stony River during September.

**5. MEANS OF HANDLING, PREPARING, PRESERVING, AND STORING**  
(traditionally used by past generations, but not excluding recent technological advances)

Caribou meat may be cut into strips, dried and prepared as jerky when hunters are on foot in the mountains and immediate transportation back to Kwethluk is not possible. Animals that are harvested several miles from camp are sometimes cut and hung for jerky near the harvest site before being packed back to the main camp. Drying the meat this way not only preserves the meat but also greatly reduces the weight that must be packed to camp. When hunting in GMU 19 using a boat, animals are usually cut into portions that are easily packed and then hung near camp until the hunters are ready to return home. Caribou harvested in winter are cut into portions which can be easily managed before being loaded into a sled and hauled home.

Most of the animal is utilized including the marrow from the leg bones, the heads, and the greens in the stomach. Caribou meat is preserved by drying and freezing and cooked in a variety of ways such as roasting, boiling and in soups and stews. The hides are dried for use as sleeping pads and are also used by hunters in the mountains for building skin boats used to transport them downstream to Kwethluk. Antlers are used for making fishing lures, small tools and crafts.

**6. INTERGENERATIONAL TRANSMISSION OF KNOWLEDGE, SKILLS, VALUES AND LORE (handed down between generations)**

Knowledge and skills associated with all aspects of hunting caribou, butchering, preservation and preparation of the meat are learned largely through participant observation. Family members are taken along on hunting trips beginning at an early age and are shown, by example and by helping, the proper ways to care for and prepare the meat and hide.

**7. DISTRIBUTION AND EXCHANGE (customary trade, barter, sharing, and gift giving within a definable community of persons)**

Caribou meat is shared with other households in Kwethluk, with relatives in other communities and may be exchanged for other kinds of fish or game not locally available, such as seal. In 1985, 30 percent of households reported receiving caribou from other households.

**8. DIVERSITY OF RESOURCES IN AN AREA; ECONOMIC, CULTURAL, SOCIAL, AND NUTRITIONAL ELEMENTS (wide diversity, substantial elements in a subsistence user's life)**

A wide variety of fish and game resources are harvested by residents of Kwethluk. In 1985, two percent of Kwethluk households were successful harvesting caribou.

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**APPENDIX D–EIGHT CRITERIA WORKSHEET,  
ANDREAFSKY MOUNTAINS, 1991**

**EIGHT CRITERIA WORKSHEET, BOARD OF GAME 1991**

**GMU:** 18, Andreafsky Mountains

Positive C & T Findings: 1989  
(entire GMU 18)

**SPECIES:** Caribou

**ALASKA RESIDENTS USING THE SPECIES:**

Alakamk, Andreafsky, Emmonak, Kotlik, Marshall, Mountain Village, Pilot Station, Pitka's Point, Russian Mission, St. Mary's, St. Michael, Sheldon Point, and Stebbins.

**1. LENGTH AND CONSISTENCY OF USE** (long-term, consistent, excluding interruptions by circumstances beyond the user's control):

Caribou populations in the Andreafsky Mountains have fluctuated widely within historic time (Burch 1972; Ray 1975; Nelson 1979; Wolfe 1979; Sheppard 1983) and these changes have affected human uses of them in the area. Residents of southern Norton Sound and the lower Yukon River and delta have changed their uses of the herds depending on the caribou populations and their range. Although, early historic sources (Zagoskin 1967; Nelson 1979) report that lower Yukon River residents obtained much of their caribou products by trade with Inupiaq-speaking people from the Seward Peninsula, they produced their own caribou when herds expanded to nearby areas in the southern Andreafsky Mountains (Wolfe 1979). Early historic sources report Athabaskan Indians from Anvik hunting caribou in the mountains in the fall. Since the early 1900s, caribou in the areas have mixed with domestic reindeer. Hunting of caribou or feral reindeer in the Andreafsky Mountains by residents of southern Norton Sound and the Yukon River delta has continued to the present (Ray 1975; Wolfe 1979; Koutsky 1982; Sheppard 1983; Wolfe and Pete 1984).

**2. SEASONALITY** (recurring in specific seasons of each year):

Traditionally, caribou were harvested year-round by residents of southern Norton Sound when encountered throughout their migratory pattern (Wolfe 1979). Lower Yukon residents primarily hunted caribou in the spring and fall from camps. More recently, caribou hunting in the Andreafsky Mountains occurs in conjunction with moose and bear hunting in the fall and multipurpose large and small game hunting and furbearer hunting and trapping trips in the late winter (Wolfe and Pete 1984; Fienup-Riordan 1986). Late winter is commonly a difficult time of year, when food stores are running low and any fresh meat, such as caribou is a welcome addition and change from a diet consisting predominantly of dried food (Wolfe 1979).

**3. MEANS AND METHODS OF HARVEST** (efficient, economic, conditioned by local circumstances):

Small parties of men travel together in boats in the fall or snowmachines in the winter to hunt large game, including caribou. These trips often last over a week spent in tents, and require considerable outlays of cash for gasoline. Rifles (30.06, .270, and .223 caliber) are used to shoot caribou. Caribou are reported to be difficult to catch, as they occur in small numbers in this area. In the winter, hunting parties attempt to herd the animal(s) into cul-de-sacs or brush lines before shooting at them. If a hunter is alone, he may try to approach the caribou on foot until he gains a vantage point from which to shoot at the caribou (Wolfe and Pete 1984). Caribou are gutted, skinned and quartered in the field.

**4. GEOGRAPHIC AREAS (near or reasonably accessible for the user's residence):**

Access to the Andreafsky Mountains occurs along networks of river, many of which are historic travel routes for hunting, trapping, and trading among communities in Norton Sound and along the Yukon River (Wolfe 1979; Zagoskin 1967; Koutsky 1982). Hunters from Stebbins and St. Michael travel up the Nunakogok, Pikmiktalik, and Golsovia rivers the headwaters of the Andreafsky River. Kotlik hunters reach the area via Pikmiktalik River, and by traveling up the Pastolik and Kotlik River drainages. Emmonak, Alakanuk, and Sheldon Point hunters travel to the Andreafsky Mountains through a pass above Fish Village on the Yukon River, then travel down Allen Creek to the Andreafsky River (Wolfe and Pete 1984).

The Stebbins Indian Reorganization Act Council owns a herd of reindeer that primarily forage in the northwestern portion of the Andreafsky Mountains and Stuart Island (Wolfe and Pete 1984). Recent intensive herding and tagging attempts have documented a herd size of about 1,000 head (F. Pete, pers. comm. 1990). Further, intensified herding and monitoring of reindeer has effected a more pronounced differentiation of the locally-owned reindeer from the caribou/feral reindeer herds which are reported to forage further south and east relative to the reindeer herd.

**5. MEANS OF HANDLING, PREPARING, AND STORING (traditionally used by past generations, but not excluding recent technological advances):**

Caribou meat is prized for its taste and is shared widely. It is cooked in stews and soups, fried, roasted, and eaten frozen dipped in seal oil. Rarely is enough caught to preserve for later use, but in the unlikely event that many are caught, they can be preserved by drying and freezing. Organs, such as tongue, the head and brain, heart, and marrow are considered delicacies. The back fat rendered usually by frying, is used to make an especially favored type of *akutaq* (local ice cream with berries).

Caribou skins were traditionally an important trade item for many purposes, but especially to make clothing, particularly parkas and leggings of mukluks. Skins were dried on sides of structures or hung over racks. Currently caribou skins are still important as mattresses, leggings for mukluks, as well as for dance fans, and in mask making. Antlers were and are still used to make tools and handicrafts, such as *uluq* (semi-lunar knife) handles, earrings, belt buckles, bag handles, and decorations.

**6. INTERGENERATIONAL TRANSMISSION OF KNOWLEDGE, SKILLS, VALUES, AND LORE (handed down between generations):**

Participant observation by young people of the productive areas, methods of tracking, hunting, butchering, and processing caribou meat, skins, and antler products is the primary means of transmitting this knowledge. Most subsistence activities are done by family-based groups, so that learning and skills acquired by younger members is monitored.

**7. DISTRIBUTION AND EXCHANGE (customary trade, barter, sharing, and gift giving within a definable community of persons):**

As mentioned, caribou meat is widely shared within and outside the community, primarily along kinship networks. First kills are completely distributed, especially to elders to ensure future good luck for the hunter. Caribou meat is a popular contribution to community feasts by households who have it. Caribou manes (*ungat*, in Yup'ik Eskimo, meaning "beard") are common trade items or gifts for elder female relatives, particularly those active in Eskimo dancing, for making dance fans.

**8. DIVERSITY OF RESOURCES IN AN AREA; ECONOMIC, CULTURAL, SOCIAL, AND NUTRITIONAL ELEMENTS (wide diversity, substantial elements in a subsistence user's life):**

Residents of these communities harvest and use considerable amounts of a wide variety of locally available resources. Fish species, including salmon, herring, and many fresh water fish, comprised the majority of pounds harvested, with fluctuating contributions depending on locale from harvest of marine mammals, small and large game, waterfowl, furbearers, and plants and berries. According to one study, per capita harvests of subsistence resources by residents of five lower Yukon River communities and Stebbins ranged between 510 to 1,397 pounds (Wolfe 1981).

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**APPENDIX E-EIGHT CRITERIA WORKSHEET,  
KILBUCK MOUNTAINS, 1991**

**EIGHT CRITERIA WORKSHEET, BOARD OF GAME 1991**

**GMU:** 18 Kilbuck Mountains

Positive C & T Findings: 1989  
(entire GMU 18)

**SPECIES:** Caribou

**ALASKA RESIDENTS USING THE SPECIES:**

Platinum, Goodnews Bay, Quinhagak, Eek, Napakiak, Napaskiak, Bethel, Kwethluk, Akiachak, Akiak, Tuluksak, Togiak, Twin Hills.

**1. LENGTH AND CONSISTENCY OF USE** (long-term, consistent, excluding interruptions by circumstances beyond the user's control):

Archeological evidence suggests that caribou have been hunted in the region within and adjacent to the Kilbuck Mountains since prehistoric times. Prior to moving their permanent residence to villages, people lived in scattered settlements and seasonal camps from which they hunted caribou. Many of these settlement and camp locations were selected based on the availability of wildlife resources. Today, hunters and their families continue to use the camps and harvest areas on a seasonal basis to harvest caribou and other wildlife resources. Although caribou have not always been abundant in the area, people have continued to harvest and use them when animals have been available. Harvest efforts and harvest success have fluctuated year to year due to variations in overall caribou population levels, seasonal abundance, and distribution patterns over time. Some families may have harvested caribou and other wildlife resources when involved in reindeer herding activities in the mountain areas between Bethel and Dillingham from 1901 to the 1940s.

**2. SEASONALITY** (recurring in specific seasons of each year):

Caribou are harvested between mid-August and mid-May. Primary harvest effort occurs from mid-August through early October and from early December through mid-April, depending on snow conditions.

**3. MEANS AND METHODS OF HARVEST** (efficient, economic, conditioned by local circumstances):

During periods of adequate snow cover, caribou hunting areas are accessed by snowmachine. Hunters generally carry enough gear to make a tent camp from which they base subsistence activities aimed at harvesting caribou as well as a variety of wildlife resources such as moose, bear, furbearers, ground squirrels, small game, and fish.

During August, September, and April, hunters hunt on foot from camps situated in the mountain areas. Prior to the 1960s, hunters accessed these spring and fall camps either on foot, by dog team, or a combination of boating and walking. Since the 1960s, families have pooled their moneys in order to pay for small-aircraft charters from Bethel to get them to camp.

**4. GEOGRAPHIC AREAS** (near or reasonably accessible for the user's residence):

Caribou are harvested in the mountain and foothill areas of Game Management Unit 18 and western GMU 17 where they are found. Hunting activities and harvests are not confined to the Kilbuck Mountain

area but extends southward to the Kuskokwim Mountains, Eek Mountains, Ahklun Mountains, and Wood River Mountains.

**5. MEANS OF HANDLING, PREPARING, AND STORING** (traditionally used by past generations, but not excluding recent technological advances):

During winter when caribou can be easily preserved by freezing, the animals are processed into 6 to 8 manageable pieces, depending on the size of the animal, before being transported to the community where further processing takes place. During the spring and fall when the temperatures are above freezing, animals are cut into pieces that can be packed to camp. There the pieces are hung from racks constructed for hanging meat and protected from the rain and sun and allowed to cool and "crust over." The meat is kept in this manner until it can be taken home. Hunters who plan to stay in the field for an extended period of time usually cut the meat into thin strips and dry the meat into jerky.

Most of the animal is used including the hooves, bones, head, internal organs, stomach contents, and hides. The hides are used for sleeping pads to cover tent floors, for making mukluk leggings, and for making covers for skin boats used to carry hunters home in the spring.

**6. INTERGENERATIONAL TRANSMISSION OF KNOWLEDGE, SKILLS, VALUES, AND LORE** (handed down between generations):

Knowledge and skills associated with all aspects of hunting caribou, butchering, preservation, and preparation of the meat are learned largely through participant observation. Family members are taken along on hunting trips beginning at an early age and are shown, by example and by helping, the proper ways to care for and prepare the meat and hide.

**7. DISTRIBUTION AND EXCHANGE** (customary trade, barter, sharing, and gift giving within a definable community of persons):

Caribou meat is shared widely with other households and relatives in the community where the hunter resides and with relatives in other communities. It is not unusual for a hunter to give another household an entire animal.

**8. DIVERSITY OF RESOURCES IN AN AREA; ECONOMIC, CULTURAL, SOCIAL, AND NUTRITIONAL ELEMENTS** (wide diversity, substantial elements in a subsistence user's life):

Residents in the above communities that hunt caribou harvest a wide variety of wildlife resources. Several of the traditional spring and fall camps used by hunters are directly associated with caribou hunting.

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