

**Special Publication No. BOG 2013-04**

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**Customary and Traditional Use Worksheet and  
Options for Amounts Reasonably Necessary for  
Subsistence Uses of Muskoxen in Game Management  
Unit 18**

**Prepared by**

**Hiroko Ikuta and Jeff Park,**

**for the January 2014 Kotzebue Board of Game meeting**

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December 2013

Alaska Department of Fish and Game

Division of Subsistence



## Symbols and Abbreviations

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

### Weights and measures (metric)

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

### Weights and measures (English)

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

### Time and temperature

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

### Physics and chemistry

*all atomic symbols*

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

### General

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

### Measures (fisheries)

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

### Mathematics, statistics

*all standard mathematical signs, symbols and abbreviations*

alternate hypothesis	H <sub>A</sub>
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, $\chi^2$ , etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	log <sub>2</sub> , etc.
minute (angular)	'
not significant	NS
null hypothesis	H <sub>0</sub>
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	$\alpha$
probability of a type II error (acceptance of the null hypothesis when false)	$\beta$
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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Management Unit 18**

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December 2013

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## ABSTRACT

This report provides a description of the customary and traditional uses of muskoxen in Game Management Unit (GMU) 18. It also provides options for amounts reasonably necessary for subsistence (ANS) for consideration by the Alaska Board of Game (BOG) should it make a positive customary and traditional use finding for muskoxen.

Key words: Subsistence, amount necessary for subsistence, customary and traditional uses, Yukon–Kuskokwim Delta, Nelson Island, Nunivak Island, transplant, muskoxen, Board of Game.

## INTRODUCTION

This report has been prepared for the Alaska Board of Game (BOG) for reference when considering proposals 5<sup>1</sup> and 6, which have implications for subsistence hunting for muskoxen *Ovibos moschatus* in Game Management Unit (GMU) 18, during its January 2014 meeting (Figure 1). Under AS 16.05.258(a), the BOG is charged with identifying game populations, or portions of populations, that “are customarily taken or used for subsistence” (a “C&T finding”). If a portion of these populations can be harvested consistent with sustained yield principles, the BOG “shall determine the amount of the harvestable portion that is reasonably necessary for subsistence uses” (AS 16.05.258(b)). This is called the amount reasonably necessary for subsistence, or an “ANS finding.” The proposals provide an opportunity for the BOG and public to review new information, revisit the C&T finding, and potentially determine an ANS for muskoxen in GMU 18.

The BOG has made both positive and negative C&T findings for introduced (including reintroduced) game populations (Table 1). In 1988, the BOG considered C&T uses for muskoxen on Nunivak and Nelson islands in GMU 18 and made a negative finding partially because muskoxen were an introduced species in the region (Appendix A).

This report provides a description of harvest and use practices for muskoxen in Western Alaska. Jeff Park, Alaska Department of Fish and Game (ADF&G) Subsistence Resource Specialist, conducted 4 ethnographic interviews with a total of 7 people from Bethel, Nunivak Island, and Nelson Island on October 27–31, 2013. In this report, “Nunivak Island community” refers to Mekoryuk, while “Nelson Island communities” include Nightmute, Toksook Bay, and Tununak on Nelson Island, as well as Newtok and Chefornek on the mainland; details will be described below.

Harvest data are from the WinfoNet database provided by ADF&G Division of Wildlife Conservation (DWC) Information Services (accessed November 29, 2013). After consulting with DWC, WinfoNet data are presented in this report, although additional effort is needed to update this database due to difficulties in transitioning to WinfoNet (Peter Bente, ADF&G Wildlife Biologist, Nome, personal communication with Hiroko Ikuta, ADF&G Subsistence Resource Specialist, Fairbanks December 17, 2013). Blanks in all the tables and figures in this report are incomplete data or zero harvest. DWC can provide additional background regarding WinfoNet.

## BACKGROUND

Muskoxen were once widely distributed on the Seward Peninsula, Kotzebue, and North Slope, Alaska (Magdanz 1995, 2 citing Angnaboogok; Beechey 1831; Buckland 1831; Burch 1977; Ford 2000; Giddings and Anderson 1986; Hadleigh-West 1966; Magdanz 1995; Pedersen, Haynes, and Wolfe 1991; Stanford 1976). However, they appeared destined for extinction by the late 1800s. Historically, muskoxen presented an opportunity for one of the most efficient and economical big game harvests. When

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1. Proposal 66 will be before the BOG at its February 2014 regulatory meeting and represents the GMU 19 portion of Proposal 5. Due to the absence of muskoxen in GMU 19, a C&T worksheet has not been developed.

encountered by hunters, muskoxen cluster and stand their ground. It is relatively easy for hunters to approach them, even within the range of simple weapons. As a result, the major cause of muskox extinction in the 19th century is considered to be overhunting with traditional and contemporary weapons, rather than climate change (Stefansson 1924).

In 1927, in order to re-establish the population, the Alaska Territorial Legislature urged Congress to appropriate money to obtain muskoxen for domestication or husbandry experiments at various locations in Alaska (Burris and McKnight 1973, 12). In 1930, 15 bull and 19 cow muskoxen from Greenland arrived in New York City; they were then shipped to Seattle by train (Spencer and Lensink 1970). The herd traveled by steamboat from Seattle to Seward, Alaska, and by train from Seward to Fairbanks. All of the muskoxen were retained at the University of Alaska Fairbanks for 5 years. Even though at least 19 calves were born, various losses reduced the herd to 31 animals prior to release (Burris and McKnight 1973, 12 citing Elvins and U.C. Nelson 1954).

In 1935–1936, 31 muskoxen were transplanted on Nunivak Island. The island is not a historical range of the species, and according to some researchers, it was not typical muskox habitat (Alaska Department of Fish and Game 1984, 7). However, the success of the transplanted herd has shown that historical vegetation and climatic conditions in high arctic ranges are not essential to herd survival and growth. In addition, the dispersal of the transplanted animals on Nunivak Island was limited, and group cohesion and social interactions, including breeding, on the island was ensured. The herd grew. By 1965, the population of muskoxen rose to more than 500. The growth of the Nunivak herd was the source of subsequent transplants. In 1967–1968, with assistance from residents on Nunivak Island, ADF&G, the U.S. Bureau of Land Management, and the U.S. Fish and Wildlife Service initiated a pilot program to develop procedures for transplanting 31 muskoxen from Nunivak Island to Nelson Island (Alexander, Griffin, and Wood 1968). Originally dispersing from Nelson Island, today, a minimum of 100 muskoxen inhabit the mainland of the Yukon–Kuskokwim Delta (Jones and Perry In prep, 1<sup>2</sup>).

Muskox hunting under a permit system began on Nunivak Island in 1975 and on Nelson Island in 1981. The regulatory history on Nunivak Island from 1968 to 2013 appears in Appendix B and the regulatory history for Nelson Island from 1980 to 2013 appears in Appendix C. The current hunting regulations on both islands are described below. Table 2 and Figure 2 show muskox harvests by type of hunt (registration and drawing) from 1986 to 2013.

For Nunivak Island, the department issues drawing permits for bull hunts (DX001 and DX003) and registration permits for cow hunts (RX060 and RX061). Hunters who receive drawing permits have been primarily Alaska residents from outside of GMU 18 or nonresidents. Drawing permits have bull bag limits. Before hunting, an Alaska resident is required to buy a \$500 metal locking tag, while a nonresident is required to purchase a \$1,100 metal locking tag. Registration permits have cow bag limits. Before hunting, an Alaska resident is required to buy a \$25 metal locking tag, while a nonresident is required to purchase a \$1,100 metal locking tag. RX060 is limited to a maximum of 5 permits, which are issued in the ADF&G Bethel office on a first-come first-served basis. In general, hunters who receive this permit are residents of Bethel. RX061 permits are given out in the village of Mekoryuk. In general, the majority of people competing for these permits are residents of Mekoryuk, although there are other Alaska residents who live inside and outside of GMU 18 who obtain permits as well (Patrick Jones, ADF&G Wildlife Conservation Assistant Area Biologist, Bethel, personal communication with Hiroko Ikuta, ADF&G Subsistence Resource Specialist, Fairbanks, October 9, 2013).

For Nelson Island, the department issues registration permits RX070 (bulls) and RX071 (cows) on a first-come first-served basis. A resident permit holder is required to purchase a \$25 metal locking tag; the

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2. Jones, P., and P. Perry. In prep. "Unit 18 Muskox: Muskox Management Report of Survey and Inventory Activities 1 July 2010–30 June 2012". Juneau: Alaska Department of Fish and Game, Project 16.0. Hereinafter cited as "Jones and Perry In prep."



metal locking tag fee for a nonresident permit holder in this hunt is \$1,100. Both permits are available from department staff and are given out on the same day at the same time. The department issues these permits in the 3 Nelson Island villages (Nightmute, Toksook Bay, and Tununak) and 2 close-by villages (Newtok and Cheforak) on a rotational basis. The majority of the permits issued in any year primarily go to the hosting community. Overall, most RX071 permits are issued to residents of Nelson Island (Patrick Jones, ADF&G Wildlife Conservation Assistant Area Biologist, Bethel, personal communication with Hiroko Ikuta, ADF&G Subsistence Resource Specialist, Fairbanks, October 9, 2013).

Once muskox hunting became legal on Nunivak and Nelson islands, it was incorporated into the existing local hunting pattern, and it is still important today. Table 3 and Figure 3 show historical harvests by region. Between 1986 and 2012, residents in the 5 Nelson Island communities harvested 24% (492 animals) of the total muskox harvests in GMU 18, while residents on Nunivak Island harvested 22% (456 animals) (Figure 4). Alaska residents harvested 94% of the total muskox harvests in GMU 18 (1,957 animals). Non Alaska residents harvested 2% (47 animals) and people with unknown residency harvested 4% (79 animals). Table 4 shows muskox harvests in 1986–2012 and the top communities where muskox hunters come from.

## **THE EIGHT CRITERIA**

### **CRITERION 1: LENGTH AND CONSISTENCY OF USE**

**A long-term consistent pattern of noncommercial taking, use, and reliance on the fish stock or game population that has been established over a reasonable period of time of not less than one generation, excluding interruption by circumstances beyond the user’s control, such as unavailability of the fish or game caused by migratory patterns.**

Since muskoxen were introduced to Nunivak and Nelson islands, local people have followed regulations and restrained themselves from hunting muskoxen illegally. A man from Nunivak Island explained: “When I was a boy growing up, the older people used to say we can’t hunt these animals [muskoxen] and we just left them alone. No one hunted them until ’75” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 27, 2013).

Although muskoxen are an introduced species in GMU 18, local people utilize them, incorporating them into the seasonal round of hunting activities and distribution and exchange networks. Subsistence fishing and hunting are central to the cultures, traditions, and economies in the region, and people rely on the subsistence-based economy (Ann Fienup-Riordan 1986; Ann Fienup-Riordan et al. 2000; Hensel 1996; Wolfe 1981; Wolfe and Ellanna 1983; Wolfe et al. 1984; Wolfe et al. 1986; Wolfe et al. 2009; Wolfe and Walker 1987). A man from Nelson Island said: “We didn’t subsist on muskox here on the island because there weren’t any muskox. They were introduced. But once they were introduced, they got the same designation because they are a food source of subsistence for us” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 31, 2013, Nelson Island).

### **CRITERION 2: SEASONALITY**

**A pattern of taking or use recurring in specific seasons of each year.**

The annual hunting seasons (September and February–March) are open to Alaska residents and nonresidents on Nunivak and Nelson islands. Local hunters follow the regulations, and that is the time when local people hunt muskoxen. A man from Nunivak Island explained: “We people down on the island, we don’t even poach muskox ... I’ve never heard of anyone did that. We obey the law down there ... . Even today, young generations never do that even though they like the muskox meat” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 27, 2013, Nunivak Island).

Many hunters prefer spring over fall for muskox hunting due to the quality of the meat and easier access to the animals. A hunter on Nunivak Island said: “[I prefer] spring hunt. That’s the best time to hunt ... The meat is less fatty. More lean than fall hunt meat. They [muskoxen] are pretty rich in fall time, the meat. Easier to hunt. We hunt by snowmachine. Easier than packing it from distance all the way to the boat. A lot easier trip in spring by snowmachine” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 27, 2013, Nunivak Island).

In addition, muskoxen harvested in early spring provide to diets a taste of fresh meat, which is a break from the dried or frozen stored foods used within the household. Key respondents have stated that muskoxen are a valuable addition to the local diet.

In the spring, local women and children harvest *qiviut*, the inner wool of muskoxen. Every spring, a muskox sheds 4–6 lb of qiviut (“Oomingmak Musk Ox Producers’ Co-Operative” 2013). The word “qiviut” is a word in the Iñupiaq language that means “down” or “muskox wool.”<sup>3,4</sup> Muskoxen have a 2-layered coat, and qiviut refers specifically to the soft underwool beneath the longer outer wool. A man from Mekoryuk explained: “Some older folks start[ed] gathering wool that’s been dropped off of the animals [muskoxen] on the sand dunes ... I believe it was before the hunts started [in 1975]” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 27, 2013, Nunivak Island). While some women spin qiviut into yarn at their home, others send it to a “co-op,” the “Oomingmak Musk Ox Producers’ Co-Operative” owned by approximately 250 Alaska Native women.<sup>5</sup> The co-op processes and furnishes the yarn to co-op members, primarily in Nelson and Nunivak island communities, to be knitted into hats, scarves, and other products.

### **CRITERION 3: MEANS AND METHODS OF HARVEST**

**A pattern of taking or use consisting of methods and means of harvest that are characterized by efficiency and economy of effort and cost.**

Local hunters search for muskoxen using skiffs and/or all-terrain vehicles in open water season (September) and with snowmachines and/or all-terrain vehicles in the winter season. They harvest muskoxen with high-powered rifles in the way they hunt for other big game, such as moose, reindeer, and caribou. A hunter on Nunivak Island explained: “I learned to hunt [muskoxen] in the way I learn ... how to kill an animal. I don’t shoot game on the body. I shoot them on the head or neck so I don’t spoil the meat” (Jeff Park, ADF&G Subsistence Resource Specialist, personal communication, October 27, 2013, Nunivak Island).

### **CRITERION 4: GEOGRAPHIC AREAS**

**The area in which the noncommercial, long-term, and consistent pattern of taking, use, and reliance upon the fish stock and game population has been established.**

Muskox hunting occurs on Nelson and Nunivak islands. On Nunivak Island in winter, muskoxen are distributed throughout the island but are concentrated along the south and west sides of island. In summer, muskoxen disperse throughout the interior of the island. On Nelson Island, animals are distributed throughout the island but are concentrated on the cliff of Cape Vancouver and on hills northeast of Tununak. Individuals and small groups are on the hills in the central portion of the island and along the escarpment above Nightmute (Jones and Perry In prep, 4).

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3. There is no word for “muskox” in the Central Yup’ik language. However, in Yup’ik, *qivyuq* (singular) and *qivyuut* (plural) mean underhair or down (Jacobson 1984, 335).

4. University of Alaska Anchorage, Institute of Social and Economic Research, “*Iñupiat Eskimo Dictionary*” available online: <http://www.alaskool.org/Language/dictionaries/inupiaq/default.htm> (Accessed on December 2, 2013).

5. “Oomingmak” came from *umiyimak* in the Iñupiaq language. Some Yup’ik people say *umiyimak* when they refer to muskox (Steven Jacobson, author of *Yup’ik Eskimo Dictionary* and Professor Emeritus at the Alaska Native Language Center, University of Alaska Fairbanks, personal communication with Hiroko Ikuta, Subsistence Resource Specialist, November 29, 2013).

On the mainland, muskoxen are scattered in small groups from the Kilbuck Mountains south of the Kuskokwim River to the Andrafsky Mountains north of the Yukon River (Jones and Perry In prep, 1). Hunting is currently prohibited on the mainland.

### **CRITERION 5: MEANS OF HANDLING, PREPARING, PRESERVING, AND STORING**

**A means of handling, preparing, preserving, and storing fish or game that has been traditionally used by past generations, but not excluding recent technological advances where appropriate.**

Muskox meat is primarily used as food for human consumption. It is eaten fresh, dried, or frozen for later use. A man from Nunivak Island said: “Dried. Dry the [muskox] meat. And freeze it sometimes, most of the time. It’s real good when it’s dried too. Like jerky. Beef jerky ... just slice it and wind dry it. Sun and wind, that’s all. Sun and wind, that’s how we dry it. When the weather stays dry, it is perfect when the meat is drying” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 27, 2013, Nunivak Island).

Hides are used as rugs or sitting pads when jigging for saffron cod through the ice. Long guard hairs and qiviut are used in various arts and crafts, such as hair for handmade dolls or masks. Some local artists use horns for carvings.

### **CRITERION 6: INTERGENERATIONAL TRANSMISSION OF KNOWLEDGE, SKILLS, VALUES, AND LORE**

**A pattern of taking or use that includes the handing down of knowledge of fishing or hunting skills, values, and lore from generation to generation.**

Traditionally, young boys in Western Alaska learned how to hunt by living with the other men of the community in the ceremonial men’s house (*qargiq*). Today, the institution of *qargiq* is no longer part of Central Yup’ik daily life. Yet, hunting knowledge is still passed on from grandfather, father, or uncle to children. A man on Nunivak Island explained: “They learned how to butcher the muskox, what’s edible, what you need to take, and they brought it back. So, in terms of the knowledge being passed down, my generation, we have learned it from either our fathers or uncles or grandfathers, on how to do that” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 29, 2013, Nunivak Island). A hunter on Nelson Island agreed and said: “They let their younger son or daughter. They will teach them how to shoot, how to identify the right bull or a cow, know how to tell the difference so that they don’t kill the wrong kind ... By the time they are able to do it on their own, they would have a full knowledge how to do it. It’s important that our kids do hunt with us” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 31, 2013, Nunivak Island).

As the respondent describes above, learning cannot be separated from physical involvement, and knowledge undergoes continual regeneration in the process of learning. If it is not possible for young Yup’ik children to participate immediately in hunting, they are expected to learn by observing experienced hunters, such as parents and grandparents, who know the hunting equipment and techniques, the animal’s behavior and anatomy, the geography, and the weather; then the youth are expected to participate in the actual tasks with their teachers.

### **CRITERION 7: DISTRIBUTION AND EXCHANGE**

**A pattern of taking, use, and reliance where the harvest effort or products of that harvest are distributed or shared, including customary trade, barter, and gift-giving.**

Extensive sharing and distribution of wild resources is a large part of the subsistence economy in Western Alaska (Brown et al. 2012; Brown et al. 2013; Brown et al. In prep<sup>6</sup>; Ikuta, Brown, and Koster In prep<sup>7</sup>; Ikuta, Runfola, and Koster In prep<sup>8</sup>). An elder from Mekoryuk explained: “Because there are people that are no longer able to go out hunting on their own. They rely on the younger generation of people to provide the protein for them. And that’s how we’ve survived on Nunivak Island for over 2,000 years because we shared what we caught with the elderly, with the people that aren’t capable of go hunting on their own. So sharing is very important in our culture” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 29, 2013, Nunivak Island).

Muskox meat and organs are shared widely throughout the communities particularly if only a few members of the community obtained permits. A 42-year-old man on Nunivak Island said: “I learned how to share. I mean, if I caught a big game for the first time ... I remember catching my first muskox, I gave parts of that meat away. So still today, whether it’d be seal, reindeer, muskox, bird, fish, I give a portion away, so that’s ingrained in me that I need to share because that’s our tradition. We share what we catch. So that muskox falls into that same area” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 29, 2013, Nunivak Island).

In addition, the extra subsistence foods local people produce are usually shared with elderly, single mothers with young dependent children, and young single persons or couples who are just getting started. Sharing subsistence-caught wildlife is a fundamental characteristic of communities that follow a subsistence way of life in the region (Brown et al. 2012; Brown et al. 2013; Brown et al. In prep; Fall et al. 2012; Ikuta, Brown, and Koster In prep; Ikuta, Runfola, and Koster In prep).

## **CRITERION 8: DIVERSITY OF RESOURCES IN AN AREA; ECONOMIC, CULTURAL, SOCIAL, AND NUTRITIONAL ELEMENTS**

**A pattern that includes taking, use, and reliance for subsistence purposes upon a wide variety of fish and game resources and that provides substantial economic, cultural, social, and nutritional elements of the subsistence way of life.**

A number of comprehensive subsistence and big game surveys in Western Alaska communities show local residents take, use, and rely upon a wide diversity of fish and game resources for subsistence (Brown et al. 2012; Brown et al. 2013; Brown et al. In prep; Fall et al. 2012; Ikuta, Brown, and Koster In prep; Ikuta, Runfola, and Koster In prep; Park In prep<sup>9</sup>; Runfola and Brenner In prep<sup>10</sup>).<sup>11</sup> Documented harvests range from 434 lb per capita in Lower Kuskokwim communities to 269 lb per capita in Central Kuskokwim communities in 2009–2013. The typical community harvests approximately 50 different species of plants, fish, and wildlife each year. The mix of species depends upon species availability. For some coastal communities, as much as 80% of the total harvests by weight may come from marine mammals. For other communities, terrestrial mammals, fish, and marine mammals compose approximately equal portions of the total community harvest.

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6. Brown, Caroline L., David S. Koster, Alida Trainor, Lisa J. Slayton, Brittany Retherford, Elizabeth Mikow, Hiroko Ikuta, Andrew R. Brenner, and James S. Magdanz. In prep. “Subsistence Harvests in 5 Yukon River Communities, 2010: An Index Approach”. Fairbanks: Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. NNN.

7. Ikuta, Hiroko, Caroline L. Brown, and David S. Koster. In prep. “Subsistence Harvests in 8 Communities in the Kuskokwim and Yukon River Drainages, 2011”. Fairbanks: Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. NNN.

8. Ikuta, Hiroko, David M. Runfola, and David S. Koster. In prep. “Bethel Subsistence, 2012: Wild Resource Harvests and Uses, Land Use Patterns, and Subsistence Economy in the Hub Community of the Yukon–Kuskokwim Delta”. Fairbanks: Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. NNN.

9. Park, Jeff. In prep. “Subsistence Harvests of Land Mammals in Nunapitchuk, Alaska, 2012”. Fairbanks: Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. NNN.

10. Runfola, David M., and Andrew R. Brenner. In prep. “Subsistence Harvests of Land Mammals in Bethel, Alaska, 2011”. Fairbanks: Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. NNN.

11. In 1986, ADF&G conducted a comprehensive subsistence survey in Tununak on Nelson Island; neither a comprehensive nor a big game survey has been administered in Mekoryuk, nor in Cheformak, Newtok, Nightmute, or Toksook Bay.

A man from Nunivak Island described the nutritional and economic value of muskoxen in the region: “It [muskoxen] provides protein for people ... . His skin can be used as means for providing economic opportunities for the people here ... you can comb the wool out of the muskox, you can make crafts into it ... have it woven, have it knitted into garments and provide some income for the family ... . It’s very, very costly to go out here, from Bethel to Anchorage. It costs \$536 round-trip. And one pelt of muskox could possibly even cover that” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 29, 2013, Nunivak Island).

Another man from Mekoryuk agreed and said: “They start making that [qiviut] into whatever they can make or sell to Anchorage muskox farm, qiviut cooperative ... . Some have made it into dolls, they sew the skin ... . Some guy used to sell them [horns] for \$60 or something like that, but it’s got to be separated from the skull ... . Some harvest and use the horns for carving” (Key respondent, personal communication with Jeff Park, ADF&G Subsistence Resource Specialist, October 27, 2013, Nunivak Island).

The amount of cash available in most Western Alaska communities is relatively small compared to urban parts of Alaska. At the same time, imported food costs are very high. Many people in these communities cannot afford to buy meat or fish, and wild foods are essential to the quality of their diet. The people of GMU 18 use and rely upon virtually all the edible wild game species available in their region.

The harvesting of wild foods continues a long cultural tradition for many people of the communities of this area of Alaska, a tradition which continues to evolve in many ways as social, economic, and environmental conditions change.

## **ANS OPTIONS, GMU 18 MUSKOXEN**

Followings are 4 options for the BOG to consider for ANS ranges for muskoxen in GMU 18 during its January 2014 meeting, if it determines that muskox populations, or portions of those populations, now support customary and traditional uses.

The options were developed using harvest data between 2003 and 2012 from the WinfoNet database, as provided by Division of Wildlife Conservation Information Services (tables 3 and 4). WinfoNet has data limitations, and DWC can provide background on the database (Peter Bente, ADF&G Wildlife Biologist, Nome, personal communication with Hiroko Ikuta, ADF&G Subsistence Resource Specialist, Fairbanks, December 17, 2013).

**OPTION A:**  $\pm 25\%$  of the average annual harvest (83.3 muskoxen) of GMU 18 residents and other Alaska residents, 2003–2012 = 62–104 muskoxen, **60–100 muskoxen (rounded)**.

**OPTION B:**  $\pm 25\%$  of the average annual harvest (49.1 muskoxen) of GMU 18 residents only, 2003–2012 = 37–61 muskoxen, = **40–60 muskoxen (rounded)**.

**OPTION C:** the range (low and high) of the annual harvests of GMU 18 residents and other Alaska residents, 2003–2012 = 26–119 muskoxen, = **30–120 muskoxen (rounded)**.

**OPTION D:** the range (low and high) where data gaps were addressed with mean replacement using the average annual harvests of GMU 18 only, 2003–2012 = 33.3–77 muskoxen, **30–80 muskoxen (rounded)**.





Figure 1.—Map of Game Management Unit 18.

Table 1.—Introduced/reintroduced game populations in Alaska, and their C&T status.

Species	Location	GMU	Historical range	Transplant year	Source of stock	C&T finding
Moose	Copper River	6	no	1949	Southcentral Alaska	1986 negative
Sitka black-tailed deer	Prince William Sound	6	no	1916	Sitka area	2007 positive
Elk	Kodiak/Afognak	8	no	1934	Petersburg area	1987 positive
	Kodiak/Afognak	8	no	1929	Washington state	1986 negative 1987 negative reaffirmed
Muskoxen	Nunivak Island	18	no	1935	Greenland	1987 negative
	Nelson Island	18	no	1967	Nunivak Island	1987 negative
	Seward Peninsula	22	yes	1970	Nunivak Island	1987 negative 1995 negative 1997 positive
	Barter Island	26	yes	1969	Nunivak Island	1989 positive
	Cape Thompson	26	yes	1970	Nunivak Island	1989 positive

Sources Burris and McKnight 1973, 52–57; Magdanz 1995, 10; Pedersen, Haynes, and Wolfe 1991.

Table 2.—GMU 18 muskox harvests, by type of hunt, 1986–2012.

	DX001	DX003	RX060	RX061	RX070	RX071	Unknown	<b>Total</b>
1986							96	<b>96</b>
1987							93	<b>93</b>
1988							95	<b>95</b>
1989							101	<b>101</b>
1990							101	<b>101</b>
1991							110	<b>110</b>
1995	5	15	5	15				<b>40</b>
1996	4	20		25	10	10		<b>69</b>
1997	5	21	5	25	10	10		<b>76</b>
1998	9	32	3	33	15	15		<b>107</b>
1999	5	32	3	41	15	15		<b>111</b>
2000	9	33		40				<b>82</b>
2001	4	26		32	13	9		<b>84</b>
2002	8	30	1	3	2	1		<b>45</b>
2003	4	24						<b>28</b>
2004	9	23	1	1	1			<b>35</b>
2005	5	32	2	38	15	15		<b>107</b>
2006	3	26	4	39	14	15		<b>101</b>
2007	3	37	1	38	22	18		<b>119</b>
2008	7	32	3	37	22	13		<b>114</b>
2009	5	39	1	30	21	15		<b>111</b>
2010	6	41	4	18	21	16		<b>106</b>
2011	6	25	4	5	20	15		<b>75</b>
2012	5	24		5	21	15		<b>70</b>
<b>Total</b>	<b>102</b>	<b>512</b>	<b>37</b>	<b>425</b>	<b>222</b>	<b>182</b>	<b>596</b>	<b>2,076</b>

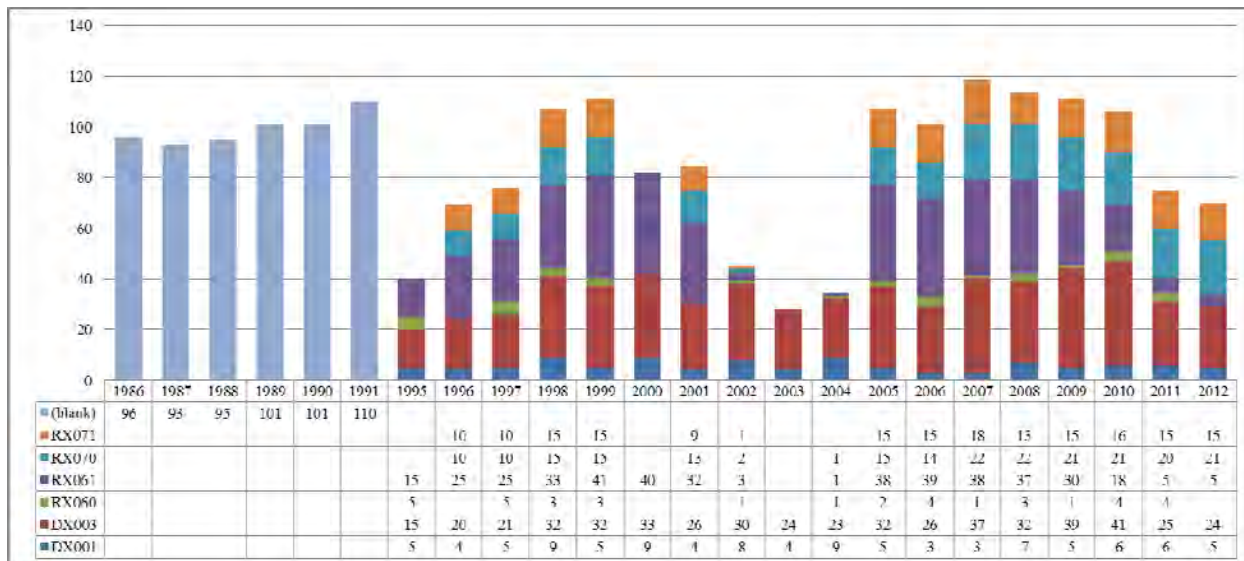


Figure 2.—GMU 18 muskox harvests, by type of hunt, 1986–2012.

Table 3.—GMU 18 muskox harvests, by region, 1986–2012.

Year	Unknown	Nonresident	Unknown Alaska resident	Other Alaska resident	Other GMU 18 resident	Nunivak Island	Nelson Island	Total
1986				2	30	9	25	30
1987					34	10	21	28
1988			1		34	11	23	26
1989			4		41	8	19	29
1990			2	1	41	5	22	30
1991			3		49	14	19	25
1995			2		18	3	17	
1996					24	6	19	20
1997			5		22	11	19	19
1998	66		1		40			
1999			3		34	8	36	30
2000			2		44	5	31	
2001					33	4	27	20
2002	3		1		35	3	3	
2003			2		25		1	
2004	3		1		31			
2005	4		1		35	11	29	27
2006			2		30	15	34	20
2007					42	14	27	36
2008			2		37	12	32	31
2009	3		3		42	6	25	32
2010			3		44	9	17	33
2011			4		30	7	5	29
2012			5		26	7	5	27
<b>Total</b>	<b>79</b>	<b>47</b>	<b>3</b>	<b>821</b>	<b>178</b>	<b>456</b>	<b>492</b>	<b>2076</b>



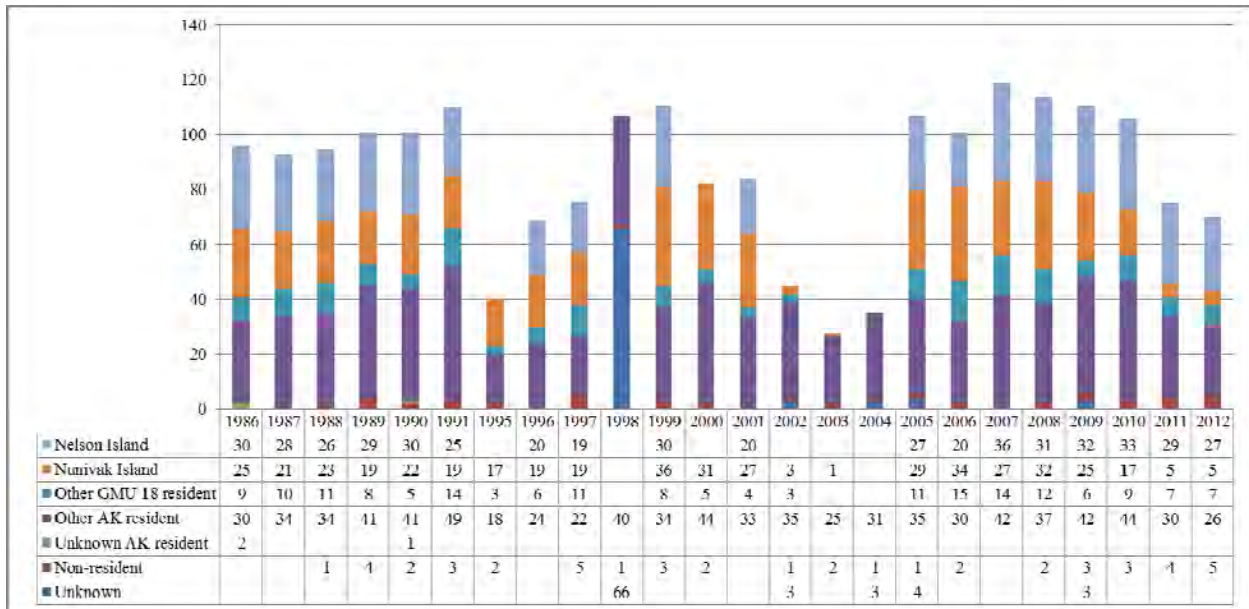


Figure 3.—GMU 18 muskox harvests, by region, 1986–2012.

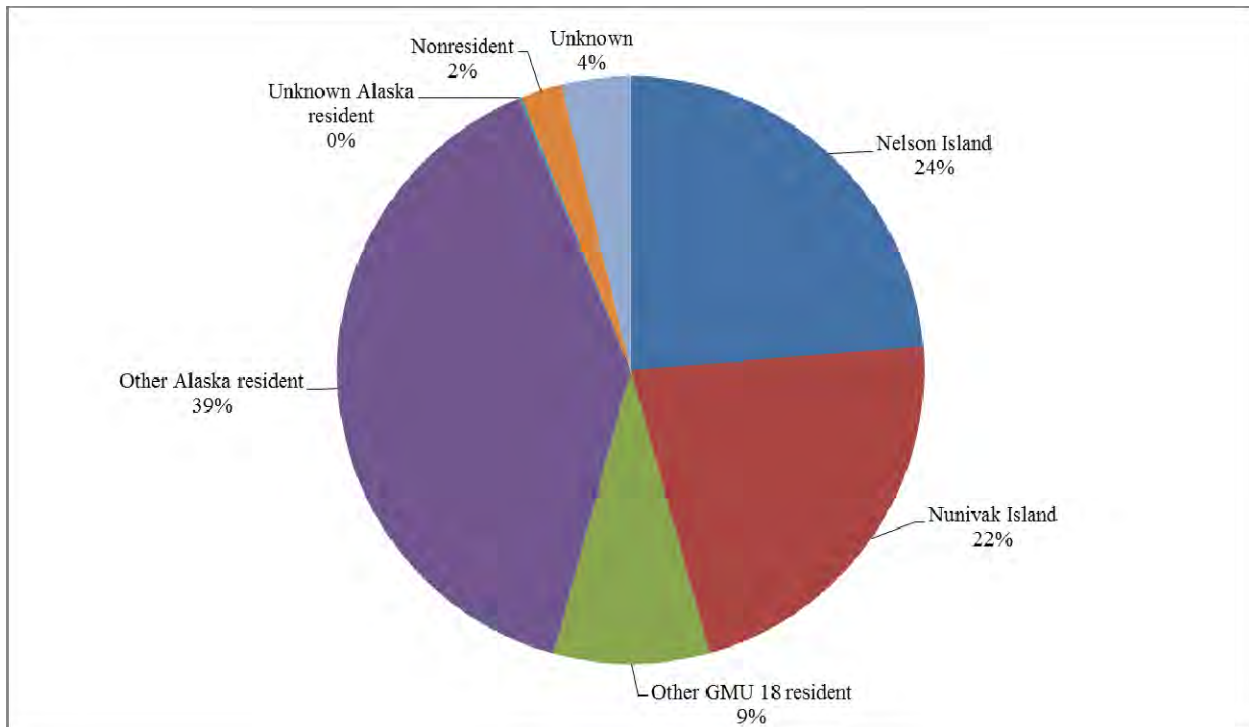


Figure 4.—GMU 18 percentage of muskox harvests, by region of permittee, 1986–2012.

Table 4.–Muskox harvests, by community, 1986–2012 and top communities where muskox hunters come from.

<b>Community</b>	<b>Total</b>	<b>Average annual harvest</b>
Mekoryuk (Nunivak Island)	456	19.00
Anchorage	284	11.83
Toksook Bay (Nelson Island)	179	7.46
Bethel	169	7.04
Tununak (Nelson Island)	110	4.58
Newtok (Nelson Island)	89	3.71
Wasilla	86	3.58
Nightmute (Nelson Island)	82	3.42
Fairbanks	68	2.83
Eagle River	53	2.21
Nonresident	46	1.92
Chefornak (Nelson Island)	31	1.29
Palmer	29	1.21
Soldotna	27	1.13
Juneau	26	1.08

*Note* No data exist for 1992, 1993, and 1994. This table includes only communities with an average annual harvest of 1 or more muskoxen. Total harvest between 1986 and 2012 is 2,076.

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**APPENDIX A: 1988 CUSTOMARY AND TRADITIONAL  
USE EIGHT CRITERIA WORKSHEET: GMU 18, NUNIVAK  
AND NELSON ISLANDS MUSKOX**

**Prepared by ADF&G Division of Subsistence**

**1988**

EIGHT CRITERIA WORKSHEET, BOARD OF GAME 1988

PROPOSAL NO. 104  
AREA GMU 18: NUNIVAK AND NELSON ISLANDS  
SPECIES MUSKOX

RURAL COMMUNITIES USING THE SPECIES

Residents of the rural communities of Mekoryuk and Bethel are primary hunters, or applicants for Nunivak Island cow muskox registration permits, which cost \$25. Non-rural residents and non-residents are the usual applicants for bull drawing permits, which cost \$500, and they have the additional expense of hiring a local guide or transporter, who is usually from Mekoryuk. Currently, 35 cow and 35 bull permits are issued annually to hunt muskoxen on Nunivak Island. Bull drawing permits are issued statewide while most cow permits are issued at Mekoryuk. Specifically, all 5 of the fall and 17 of the spring cow muskox permits are issued at Mekoryuk. Eight, 3, and 2 spring cow permits are issued at Bethel, Anchorage, and Fairbanks, respectively.

On Nelson Island, 15 cow and 15 bull permits, each costing \$25, are issued annually from the one of the 5 United Villages of Nelson Island on a rotating basis. Most of the permittees are from the five villages, which are Chefornek, Nightmute, Toksook Bay, Tununak, and Newtown. Hunting is confined to Nelson Island proper, as the mainland is closed to any hunting of muskox. Current state policy regarding mainland muskox is to allow herds to grow until they eventually are large enough to support hunting.

Other communities whose residents have obtained muskox permits to hunt on Nelson Island include Bethel, Kasigluk, and Tuntutuliak. Most of the permittees from these communities were non-native school teachers in the 1986 season.

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

Muskox were transplanted to Nunivak Island in 1935-36. Growth of the Nunivak herd was the source of subsequent transplants, such as one in 1967-68 to Nelson Island. Hunting was allowed in 1975 and 1981 on Nunivak and Nelson Island, respectively. Prior to establishment of legal seasons on Nelson Island, injured or sea ice-bound muskox were dispatched primarily, although not always, through authorization of salvage permits.

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

The annual open seasons on Nunivak and Nelson islands are open to residents and non-residents; they are listed below. Muskox are not considered a subsistence species.



Nunivak Island Seasons:

5 Cow registration permits	Sept. 1 - Sept. 20
5 Bull drawing permits	Sept. 6 - Sept. 20
30 Cow registration permits	Feb. 1 - March 15
30 Bull drawing permits	Feb. 15 - March 15

Nelson Island Season:

30 Cow & 30 Bull registration permits	Feb. 1 - March 25
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3. MEANS AND METHODS OF HARVEST (efficient, economic, conditioned by local circumstances)

On Nunivak Island, muskox are hunted by local residents with skiffs and/or all-terrain vehicles in open-water season (September) and with snowmachines and/or all-terrain vehicles in the winter season.

On Nelson Island, snowmachines are used for muskox hunting. Occasionally, a hunter may dispatch a muskox while checking snares on foot, if snow-cover is sparse. According to Nelson Island residents, most local hunters cooperate in attempting to guide small muskox herds into ravines or lower altitudes near their communities before shooting them to gain protection from the wind while they butcher the muskox.

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

Muskox hunting occurs on the total area of each island. Hunting is prohibited on the mainland off of Nelson Island.

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

Muskox meat is primarily eaten fresh or frozen for later use. Hides are used as rugs or sitting pads when jigging for saffron cod through the ice. Long guard hairs and qivyut, the soft underhair of muskox are used in various handicraft articles, such as hair for handmade dolls or masks. Qivyut, which is shed annually, is picked by women and children and most of it is sent to a Anchorage to be spun into yarn. The yarn is furnished to co-op members, primarily in Nelson and Nunivak island communities to be fashioned into hats, scarves, and other pieces of clothing. Qivyut is also used as stuffing in homemade quilts and pillows, much like down from waterfowl.

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

From permit lists for Nelson Island communities, one can see consistent annual obtaining of permits by members of several local families. They obtain muskox almost annually, travelling to the village where permits are issued, if it is not their home village. They share their catch with a large

portion of their community. In these families, the younger male members now appear on permit lists.

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

Muskox meat and organs are shared widely throughout the community, particularly if only a few members of the community obtained permits. Muskox meat is a common food served at community feasts during the Easter season, which generally coincides with the spring muskox season.

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

The communities on both Nunivak and Nelson islands harvest a wide array of wild resources; one community was documented as harvesting over 90 locally available species including several species of seal and other sea mammals, all Pacific salmon species, other non-salmon fish such as halibut, Pacific cod, herring, blackfish, burbot, pike, saffron cod, many marine invertebrates, berries, other plants, and numerous species of waterfowl. Herring alone contributed over 300 pounds per capita in the annual subsistence harvest of four Nelson Island communities in 1986.

Information Sources:

Division of Game files, Bethel, Alaska.

Technical Paper No. 144. Subsistence Use of Herring in the Nelson Island District, 1986.

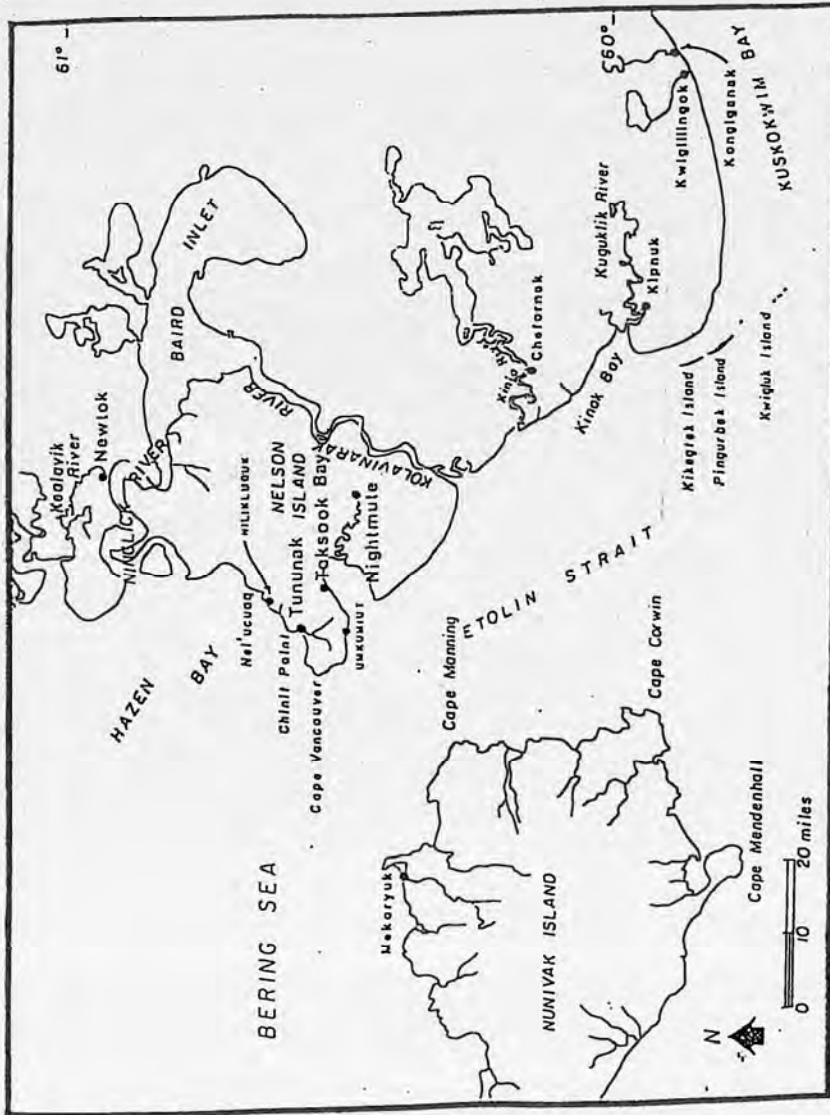
The Social Culture of the Nunivak Island Eskimo. M. Lantis.

Nelson Island Muskoxen: A Report to the Director, Game Division, Alaska Department of Fish and Game. J.W. Coady and S. Patten.

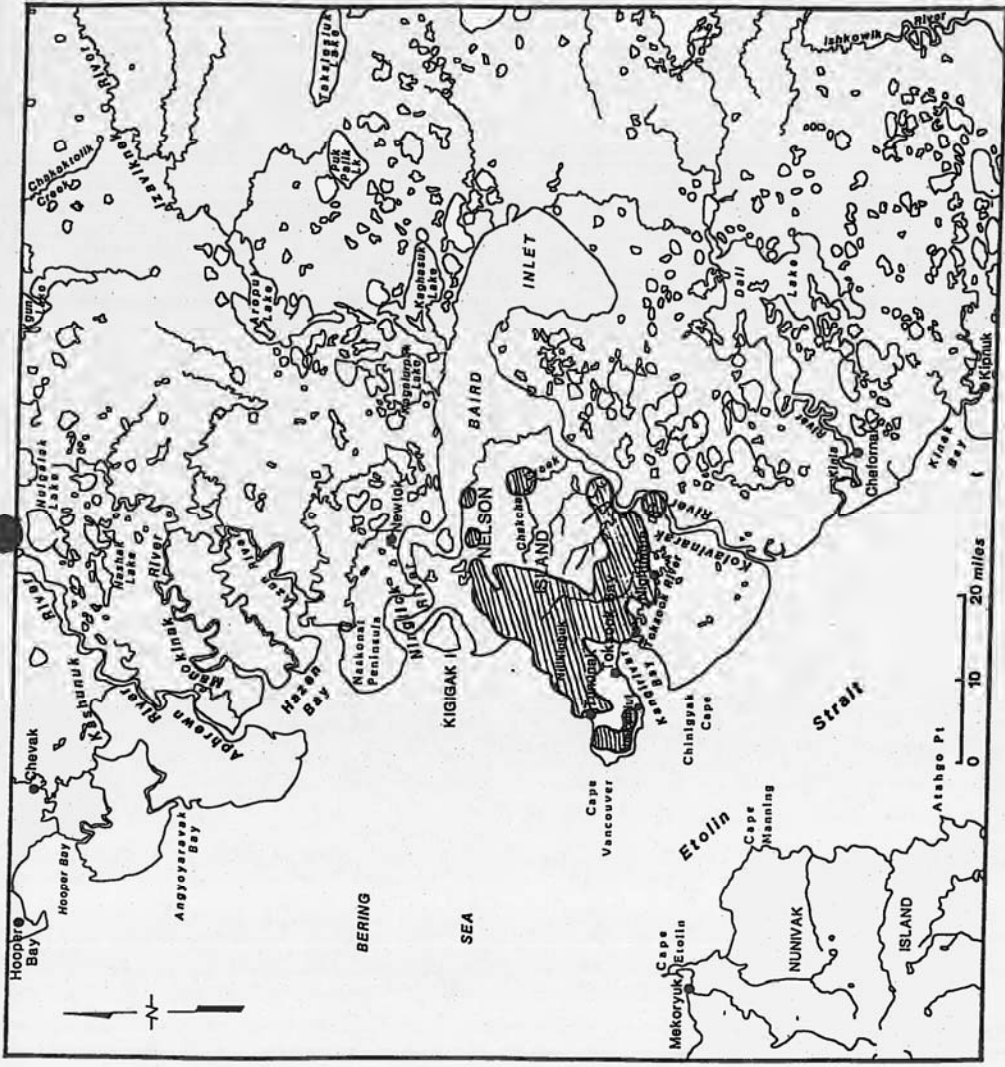
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Tununak fieldnotes, M. Pete.

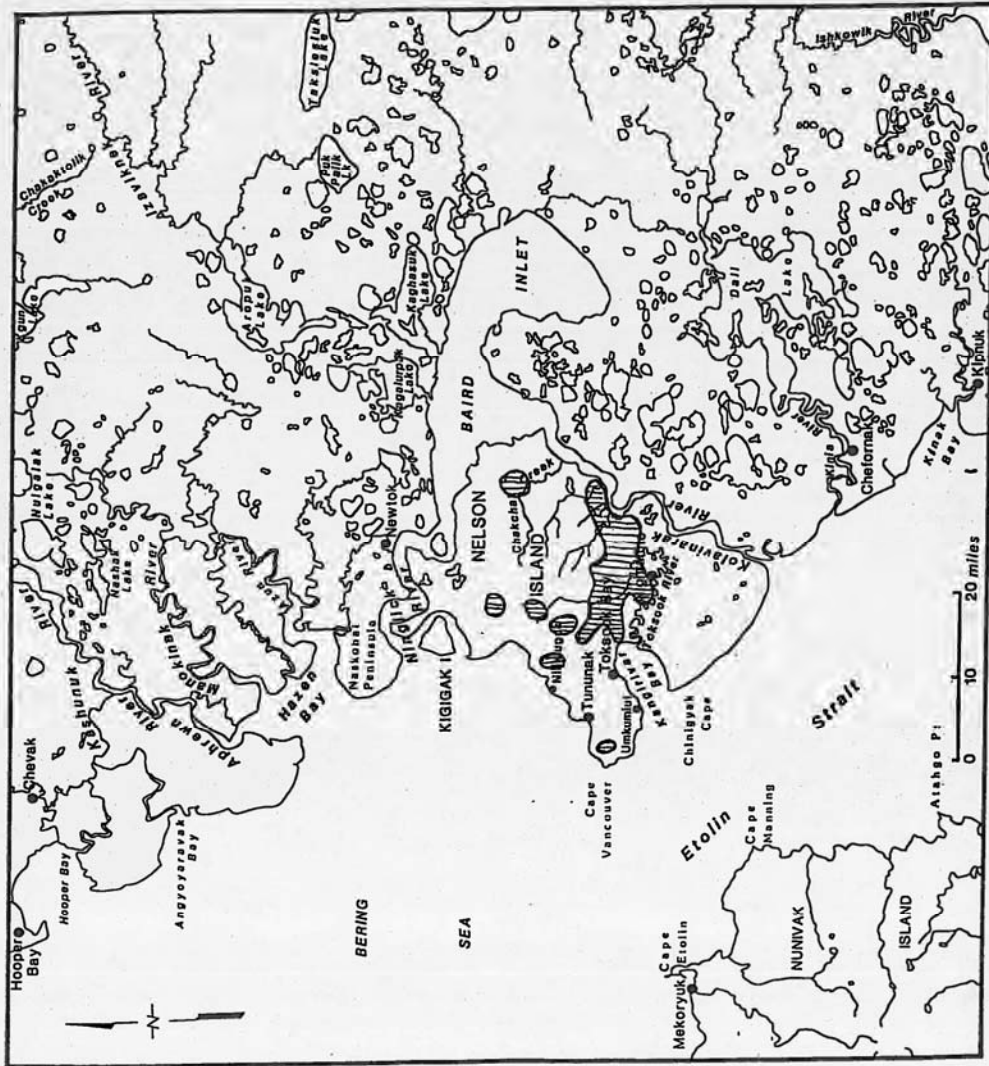




Location of Mekoryuk on Nunivak Island and communities in the Nelson Island area.



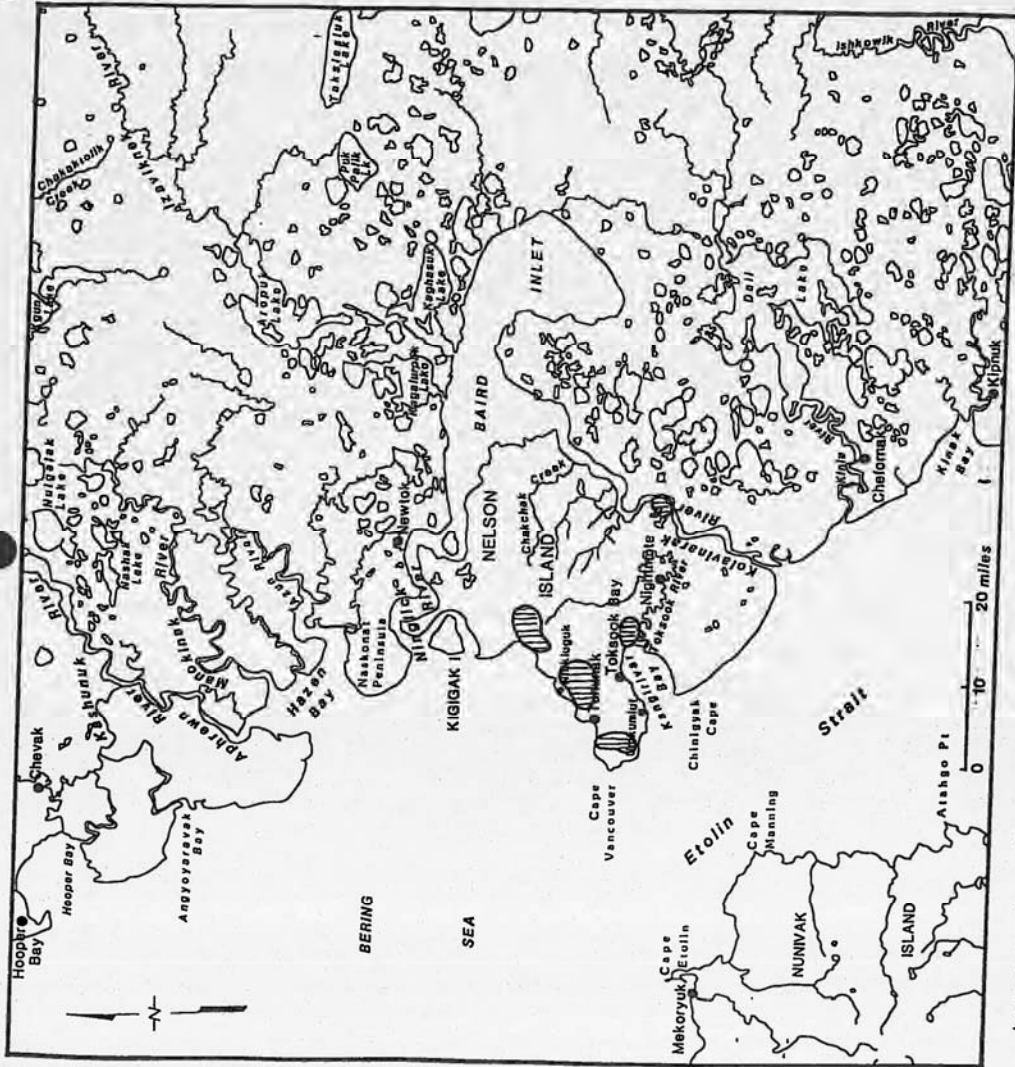
Areas used to hunt muskox by residents of the communities of Newton, Tununak, Toksook Bay, Nightmute, and Cheforanak, 1981-89.



Areas used to hunt muskox by residents of Nightmute, 1981-89.



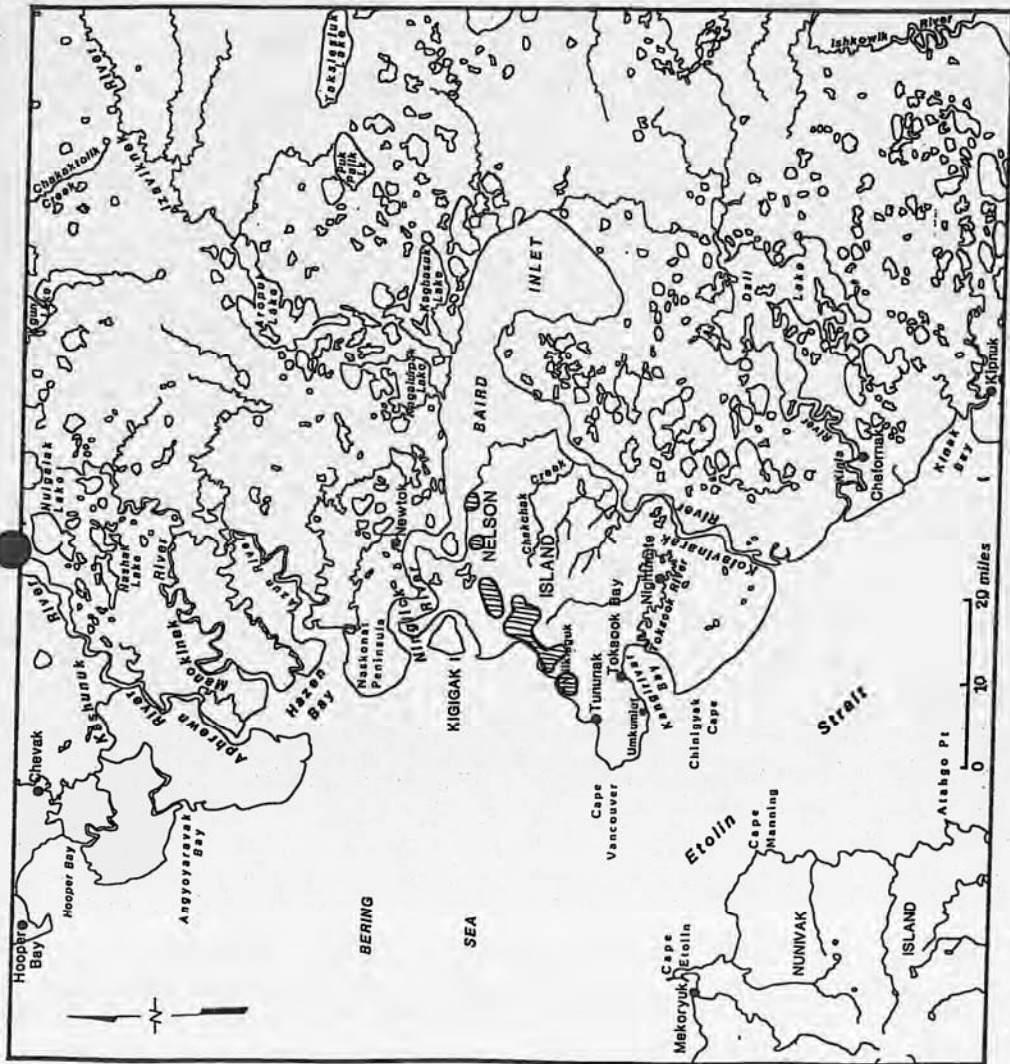




Areas used to hunt muskox by residents of Chefornak, 1981-89.







Areas used to hunt muskox by residents of Newtok, 1981-89.

**APPENDIX B: NUNIVAK ISLAND MUSKOX REGULATORY  
HISTORY, 1936–2013**



Regulatory Year	Open to	Bull/Cow	Permit Type/Hunt #	Open Season	Total Days	Bag Limits & Special Instructions	
1936 to 1967	No open season						
1968-1969	Residents & Non-Residents	BULL	N/A	Sept 1 - Oct 31	119	* 15 bulls by permit only	} * The removal of up to 30 mature bull muskoxen from the Nunivak Island herd is authorized upon determination that reproduction and survival are sufficient to warrant it.
				Feb 1 - Mar 30		* 15 bulls by permit only	
1969-1972	Residents & Non-Residents	BULL	N/A	Sept 1 - Oct 31	119	* 50 bulls by permit only	} * The removal of 100 bull muskoxen from the Nunivak Island herd is authorized.
				Feb 1 - Mar 30		* 50 bulls by permit only	
1972-1975	Residents & Non-Residents	BULL	N/A	Sept 1 - Oct 31	119	1 bull by permit only 50 bulls to be taken	} The removal of 100 bull muskoxen from the Nunivak Island herd is authorized.
				Feb 1 - Mar 30		1 bull by permit only 50 bulls to be taken	
1975-1976	Residents & Non-Residents	BULL	N/A	Sept 1 - Oct 31	119	* 50 bulls by permit only	} * The removal of 100 bull muskoxen from the Nunivak Island herd is authorized.
				Feb 1 - Mar 30		* 50 bulls by permit only	
1976-1978	Residents & Non-Residents	BULL & COW	N/A	Aug 1 - Sept 30	105	30 bulls by permit only 5 cows may be included at the discretion of the commissioner	}
				Feb 15 - Mar 30		40 bulls by permit only 5 cows may be included at the discretion of the commissioner	
1978-1979	Residents & Non-Residents	BULL & COW	N/A	Sept 1 - Sept 30	75	5 bulls by permit only Cows may be taken at the discretion of the commissioner	}
				Feb 15 - Mar 31		20 bulls by permit only* 5 cows may be included at the discretion of the commissioner (* Additional permits will be issued for any muskoxen not harvested under fall permits)	
1979-1981	Residents & Non-Residents	BULL & COW	Drawing	Aug 1 - Sept 20	80	5 bulls and 30 cows by drawing permit only	}
				Feb 15 - Mar 15		5 bulls and 10 cows by drawing permit only* (* Additional permits will be issued for any muskoxen not harvested under fall permits)	
1981-1982	Residents & Non-Residents	BULL	Drawing	Aug 1 - Sept 20	80	One bull by drawing permit	5 permits will be issued
				Feb 15 - Mar 15		One bull by drawing permit	5 permits will be issued
	Residents	COW	Registration	Sept 1 - Sept 20 Feb 1 - Mar 15	63	One cow by registration permit only	55 cows may be taken
				Aug 1 - Sept 20 Feb 15 - Mar 15		One cow by drawing permit only	10 permits will be issued
1982-1983	Residents & Non-Residents	BULL	Drawing	Aug 1 - Sept 20	80	One bull by drawing permit	5 permits will be issued
				Feb 15 - Mar 15		One bull by drawing permit	25 permits will be issued
	Residents	COW	Registration	Sept 1 - Sept 20 Feb 1 - Mar 15	63	One cow by registration permit only	40 cows may be taken
				Aug 1 - Sept 20 Feb 15 - Mar 15		One cow by drawing permit only	5 permits will be issued
1983-1984	Residents & Non-Residents	BULL	Drawing	Aug 1 - Sept 20	80	One bull by drawing permit only	5 permits will be issued
				Feb 15 - Mar 15		One bull by drawing permit only	25 permits will be issued
	Residents	COW	Registration	Sept 1 - Sept 20 Feb 1 - Mar 15	63	One cow by registration permit only	40 cows may be taken
				Aug 1 - Sept 20 Feb 15 - Mar 15		One cow by drawing permit only	5 permits will be issued

Regulatory Year	Open to	Bull/Cow	Permit Type/Hunt # <sup>1</sup>	Open Season	Total Days	Bag Limits & Special Instructions	
1984-1986	Residents & Non-Residents	BULL	Drawing	Aug 1 - Sept 20	80	One bull by drawing permit only	
				Feb 15 - Mar 15		5 permits will be issued	
1988-1989	Residents & Non-Residents	BULL	Drawing	Sept 1 - Sept 30	59	One bull by drawing permit only	
				Feb 15 - Mar 15		25 permits will be issued	
1989-1990	Residents & Non-Residents	COW	Registration	Sept 1 - Sept 30	73	One cow by registration permit only	
				Feb 1 - Mar 15		50 permits will be issued	
1990-1991	Residents & Non-Residents	BULL	Drawing	Sept 1 - Sept 30	59	One bull by drawing permit only	
				Feb 15 - Mar 15		5 permits will be issued	
1991-1992	Residents & Non-Residents	BULL	Drawing	Sept 1 - Sept 30	59	One bull by drawing permit only	
				Feb 15 - Mar 15		Up to 35 permits will be issued	
1992-1995	Residents & Non-Residents	COW	Registration	Sept 1 - Sept 30	73	One cow by registration permit only <i>(Permits issued on a first-come, first-served basis)</i>	
				Feb 1 - Mar 15		Up to 45 permits will be issued	
1995-1996	Residents & Non-Residents	BULL	Drawing	Sept 1 - Sept 30	73	One bull by drawing permit only	
				Feb 1 - Mar 15		Up to 10 permits will be issued	
1996-2001	Residents & Non-Residents	COW	Registration	Sept 1 - Sept 30	73	One cow by registration permit only <i>(Permits issued on a first-come, first-served basis)</i>	
				Feb 1 - Mar 15		Up to 35 permits will be issued	
2001-2004	Residents & Non-Residents	BULL	Drawing	Sept 1 - Sept 30	73	One bull by permit only	
				Feb 1 - Mar 15		One bull by permit only	
2004-2010	Residents & Non-Residents	COW	Registration	Sept 1 - Sept 30	73	One cow by permit only	
				Feb 1 - Mar 15		One cow by permit only	
2001-2004	Residents & Non-Residents	BULL	Drawing	Sept 1 - Sept 30	73	One bull by permit	
				Feb 1 - Mar 15		One bull by permit	
2004-2010	Residents & Non-Residents	COW	Registration	Sept 1 - Sept 30	73	One cow by permit	
				Feb 1 - Mar 15		One cow by permit	
2001-2004	Residents & Non-Residents	BULL	Drawing	DX001	73	One bull by permit	
				DX003		One bull by permit	
2004-2010	Residents & Non-Residents	COW	Registration	RX060	73	One cow by permit	
				RX061		One cow by permit	
2004-2010	Residents & Non-Residents	BULL	Drawing	DX001	73	One bull by permit	
				DX003		One bull by permit	
2004-2010	Residents & Non-Residents	COW	Registration	RX060	73	One cow by permit	
				RX061		5 permits available	
2004-2010	Residents & Non-Residents	COW	Registration	Feb 1 - Mar 15	73	One cow by permit	
						To be announced <i>(and 5 permits available in Bethel office in 2004-2006)</i>	

Regulatory Year	Open to	Bull/Cow	Permit Type/Hunt #	Open Season	Total Days	Bag Limits & Special Instructions		
2010-2012	Residents & Non-Residents	BULL	DX001	Sept 1 - Sept 30	73	or	One bull by permit	
			DX003	Feb 1 - Mar 15			One bull by permit	
		COW	RX060	Sept 1 - Sept 30	73		One cow by permit - One permit per household <i>(Permits issued on a first-come, first-served basis)</i>	5 permits available
			RX061	Feb 1 - Mar 15			One cow by permit - One permit per household <i>(Permits issued on a first-come, first-served basis)</i>	Number of permits to be announced
2012-2014	Residents & Non-Residents	BULL	DX001	Sept 1 - Sept 30	73	or	One bull by permit	
			DX003	Feb 1 - Mar 15			One bull by permit	
		COW	RX060	To be announced	N/A		One cow by permit - One permit per household <i>(Permits issued on a first-come, first-served basis)</i>	Number of permits to be announced
			RX061	Feb 1 - Mar 15			One cow by permit - One permit per household <i>(Permits issued on a first-come, first-served basis)</i>	
Hunt numbers starting with a "D" = Drawing, "R" = Registration. "X" stands for "Muskox".								

**APPENDIX C: NELSON ISLAND MUSKOX REGULATORY  
HISTORY, 1967–2013**

Regulatory Year	Open to	Permit Type/ Hunt #	Open Season	Total Days	Bag Limit & Special Instructions	
1967-1980	No open season					
1980-1981	Residents & Non-Residents	Registration	Aug 1 - Sept 20 Feb 15 - Mar 15	80	One cow by registration permit	Up to 20 cows may be taken
1981-1982	Residents & Non-Residents	Registration	Feb 1 - Mar 15	43	One cow by registration permit	Up to 30 cows may be taken
1982-1983	Residents & Non-Residents	Registration	Feb 15 - Mar 15	29	One bull by registration permit	25 bulls may be taken
1983-1986	Residents & Non-Residents	Registration	Feb 1 - Mar 25	43	One muskox by registration permit only	15 bull and 15 cow permits will be issued
1986-1989	Residents & Non-Residents	Registration	Feb 1 - Mar 25	43	One muskox by registration permit only <i>(Permits issued on a first-come, first-served basis)</i>	15 bull and 15 cow permits will be issued
1989-1992	Residents & Non-Residents	Registration	Feb 1 - Mar 25	43	One muskox by registration permit only <i>(Permits issued on a first-come, first-served basis)</i>	Up to 15 bull and up to 15 cow permits will be issued
1992-1995	Residents & Non-Residents	Registration	Feb 1 - Mar 25	43	One muskox by registration permit only <i>(Permits issued on a first-come, first-served basis)</i>	Up to 30 permits may be issued
1995-2001	Residents & Non-Residents	Registration	Feb 1 - Mar 25	43	One bull or one cow, by permit	
2001-2004	Residents & Non-Residents	RX070	Feb 1 - Mar 25	43	or {	One bull by permit
		RX071				One cow by permit
2004-2013	Residents & Non-Residents	RX070	Feb 1 - Mar 25	43	or {	One bull by permit
		RX071				One cow by permit
Number of permits to be announced						
Hunt numbers starting with a "D" = Drawing, "R" = Registration. "X" stands for "Muskox".						