

**Customary and Traditional Use Worksheets:  
Caribou (Feral Reindeer) in GMU 8, Kodiak Island;  
Brown Bears in GMU 10, Unimak Island;  
and  
Dall Sheep in GMU 13A, Nelchina-Upper Susitna**

**Prepared by the  
Alaska Department of Fish and Game  
Division of Subsistence  
for the February-March 2009 Anchorage Board of Game meeting**

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February 2009

Alaska Department of Fish and Game

Division of Subsistence



## Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Syst me International d'Unit s (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

<i>all atomic symbols</i>	
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	TM
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

<i>all standard mathematical signs, symbols and abbreviations</i>	
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, � <sup>2</sup> , 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)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

***SPECIAL PUBLICATION NO. BOG 2009-05***

**CUSTOMARY AND TRADITIONAL USE WORKSHEETS:**

**CARIBOU (FERAL REINDEER) IN GMU 8, KODIAK ISLAND; BROWN BEARS IN GMU 10, UNIMAK ISLAND; AND DALL SHEEP IN GMU 13A, NELCHINA-UPPER SUSITNA**

by

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February 2009

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# CUSTOMARY AND TRADITIONAL USE WORKSHEET: CARIBOU IN GAME MANAGEMENT UNIT 8

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## INTRODUCTION

This worksheet contains background information on the uses of caribou *Rangifer tarandus* (feral reindeer) on Kodiak Island. The Alaska Board of Game (board) requires this information in order to determine whether there are customary and traditional (subsistence) uses of caribou (feral reindeer) in this Alaska Department of Fish and Game (ADF&G) Game Management Unit (GMU) prior to acting on Proposals 159 or 160. It is intended that the information in this worksheet be supplemented by written and oral public testimony delivered during the board meeting. The board will evaluate this information before reaching its decisions.

Note that hunting of this wildlife population occurs under regulations for caribou in GMU 8. Hunters are required to have a hunting license and a caribou harvest ticket. There is no bag limit and no closed season. Same-day-airborne hunting of caribou is allowed in GMU 8.

This worksheet has been reprinted, with updated formatting, from the ADF&G Division of Subsistence worksheet prepared for the March 1991 meeting of the Alaska Board of Game.

## 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.**

Reindeer arrived at Kodiak Island in 1921, as part of a program organized by the U.S. Bureau of Indian Affairs. Fifty reindeer from Lapland were landed at Lazy Bay near Akhiok, two years before deer were transplanted on Kodiak Island. Akhiok residents participated in reindeer herding, used the animals for meat, and sold the surplus to the canneries at Olga Bay and Cape Alitak. A fire in the early 1950s burned a great deal of the reindeer pasture. The replacement corral was not effective, and the reindeer scattered. In the 1960s, the reindeer were declared feral (Rostad 1988; Woodward-Clyde Consultants 1981). Presently, the herd occupies the more remote portions of the Ayakulik and Sturgeon river drainages, with occasional reindeer observed along the Karluk River or Olga Bay.

The reindeer population has declined since the late 1950s. A 1977 population estimate put the herd at 250 animals, down from 740 in 1957. Over the last 30 years, estimates of herd size have been stable, in the 250 – 300 range (L. Van Daele, ADF&G Wildlife Biologist III, Kodiak, personal communication, February 2009).

The Division of Subsistence has conducted household harvest surveys in Kodiak Island communities in various study years from 1983 through 2003. Specific questions about uses and harvests of “feral reindeer” (separate from questions about caribou) were asked beginning in

1986. Survey findings are summarized in Table 1. As shown, most uses and harvests of feral reindeer documented in these harvest surveys have occurred in Larsen Bay and Karluk.

Table 2 summarizes harvest information for GMU 8 caribou (feral reindeer) compiled by ADF&G Division of Wildlife Conservation Kodiak staff, based on harvest ticket returns, from 1998 through 2007 (L. Van Daele, ADF&G Wildlife Biologist III, Kodiak, personal communication, February 2009). These reported harvests should be considered minimums because unreported harvests likely occur. Over that 10-year period, the average annual reported harvest was about 16 animals by 11 hunters. Of all hunters, about 41% were GMU 8 residents, 36% were other Alaska residents, and 21% were non-Alaska residents.

## **CRITERION 2: SEASONALITY**

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

We have no information on this criterion specific to caribou/feral reindeer for local communities.

## **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.**

We have no information on this criterion specific to caribou/feral reindeer for local communities.

## **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.**

The Division of Subsistence has not mapped areas used to hunt caribou/feral reindeer by community residents. As noted under Criterion 1, the herd generally inhabits portions of the Ayakulik and Sturgeon river drainages, with some presence along Olga Bay and the Karluk River.

## **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.**

We have no information on this criterion specifically related to caribou/feral reindeer.

## **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.**

We have no specific information on this criterion related to caribou/feral reindeer. See Criterion 1.

## **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.**

General information about patterns of sharing of wild resources in Kodiak Island communities is available based on Division of Subsistence research and can be provided if needed. Table 1 reports the percentage of households that received or gave away meat from feral reindeer in each year for which household surveys were conducted.

## **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.**

Detailed harvest data for 1982-1983, 1986, 1989, 1990, 1991, 1992, 1993, 1997, and 2003 are available for Kodiak Island Borough communities based on Division of Subsistence research and can be provided as needed (CSIS<sup>1</sup>; Fall 2006). Harvests of fish and wildlife are relatively high and diverse in borough communities, consisting primarily of Pacific salmon, Pacific halibut, and other fishes; deer; harbor seals and sea lions; numerous species of marine invertebrates and birds; and wild plants. The entire borough is outside the nonsubsistence areas as identified by the Joint Board of Fisheries and Game, recognizing that subsistence uses of fish and wildlife are a principal characteristic of the economy, culture, and way of life of borough residents.

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<sup>1</sup> ADF&G Division of Subsistence Community Subsistence Information System (CSIS): <http://www.subsistence.adfg.state.ak.us/CSIS>.

Table 1.—Uses and estimated harvests of feral reindeer in GMU 8, Kodiak Island Borough communities.

Community	Study year	Percentage of Households					Estimated Harvest
		Using	Hunting	Harvesting	Receiving	Giving	
Akhiok	1986	0.0	0.0	0.0	0.0	0.0	0
Akhiok	1992	0.0	0.0	0.0	0.0	0.0	0
Akhiok	2003	0.0	0.0	0.0	0.0	0.0	0
Karluk	1986	0.0	0.0	0.0	0.0	0.0	0
Karluk	1990	23.5	5.9	5.9	17.6	5.9	4
Karluk	1991	15.4	7.7	7.7	7.7	7.7	2
Kodiak City	1991	2.0	0.0	0.0	2.0	0.0	0
Kodiak City	1992	2.0	0.0	0.0	2.0	2.0	0
Kodiak City	1993	1.9	0.0	0.0	1.0	0.0	0
Kodiak Coast Guard	1991	3.2	0.0	0.0	3.2	0.0	0
Kodiak Road	1991	2.6	0.0	0.0	2.6	0.0	0
Larsen Bay	1986	0.0	0.0	0.0	0.0	0.0	0
Larsen Bay	1990	25.7	2.9	2.9	22.9	5.7	2
Larsen Bay	1991	10.5	2.6	2.6	7.9	2.6	3
Larsen Bay	1992	21.6	8.1	8.1	13.5	8.1	7
Larsen Bay	1993	7.5	0.0	0.0	7.5	0.0	0
Larsen Bay	1997	3.8	0.0	0.0	3.8	0.0	0
Larsen Bay	2003	0.0	0.0	0.0	0.0	0.0	0
Old Harbor	1986	0.0	0.0	0.0	0.0	0.0	0
Old Harbor	1991	2.4	0.0	0.0	2.4	2.4	0
Old Harbor	1997	0.0	0.0	0.0	0.0	0.0	0
Old Harbor	2003	0.0	0.0	0.0	0.0	0.0	0
Ouzinkie	1986	2.9	0.0	0.0	2.9	0.0	0
Ouzinkie	1990	0.0	0.0	0.0	0.0	0.0	0
Ouzinkie	1991	0.0	0.0	0.0	0.0	0.0	0
Ouzinkie	1992	0.0	0.0	0.0	0.0	0.0	0
Ouzinkie	1993	0.0	0.0	0.0	0.0	0.0	0
Ouzinkie	1997	2.1	0.0	0.0	2.1	0.0	0
Ouzinkie	2003	0.0	0.0	0.0	0.0	0.0	0
Port Lions	1986	3.1	1.5	1.5	1.5	0.0	7
Port Lions	1993	0.0	0.0	0.0	0.0	0.0	0
Port Lions	2003	0.0	0.0	0.0	0.0	0.0	0

Sources CSIS; Fall 2006.

Table 2.—Reported harvests of caribou (feral reindeer), GMU 8, 1998-2007.

Year	Residency of Successful Hunters				Total Successful Hunters	Total Reported Caribou Harvest <sup>1</sup>
	Other Alaska Resident	Local (GMU 8) Residents	Non-Alaska Residents	Unknown Residence		
1998	4	1	3	0	8	11
1999	3	3	0	0	6	12
2000	2	0	0	0	2	5
2001	4	1	2	0	7	9
2002	2	6	6	0	14	18
2003	3	7	1	1	12	19
2004	5	7	1	1	14	22
2005	6	3	4	0	13	17
2006	5	5	4	0	14	18
2007	7	13	3	0	23	31
2008	No data yet available					
Average, 1998 - 2007	4.1	4.6	2.4	0.2	11.3	16.2

<sup>1</sup> These reported harvests should be considered minimums, as unreported harvests likely occur.

Source L. Van Daele, ADF&G Wildlife Biologist III, Kodiak, personal communication, February 2009.

# **CUSTOMARY AND TRADITIONAL USE WORKSHEET: BROWN BEARS IN GMU 10 (UNIMAK ISLAND)**

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## **INTRODUCTION**

This worksheet contains background information on the uses of brown bears *Ursus arctos* on Unimak Island, the only portion of GMU 10 with a population of brown bears. The Alaska Board of Game requires this information in order to decide whether there are customary and traditional (subsistence) uses of brown bears in this area in the context of deliberations on Proposal 48. It is intended that the information in this worksheet be supplemented by written and oral public testimony delivered during the board meeting. The board will evaluate this information before reaching its decisions.

Presently, brown bear hunting in GMU 10 (Unimak Island) is managed through a drawing permit system. Hunts occur during fall (October 1 – December 31) and spring (May 10 – May 25) seasons, with a limit of 1 bear every 4 regulatory years.

This worksheet has been reprinted, with updated formatting, from the ADF&G Division of Subsistence worksheet prepared for the March 1991 meeting of the Alaska Board of Game.

## **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.**

In November 1988, the Division of Subsistence interviewed 20 of the 22 year-round households in False Pass, the only permanent community on Unimak Island. None of the interviewed households reported using or hunting brown bears in 1988, the study year (Table 3). The final report on this research includes the following statement concerning use of brown bears (Fall et al. 1996):

No sampled households in False Pass used or hunted brown bear during the study year. Respondents reported that brown bears are no longer used for subsistence in the community, although they had been in the past. For example, a village elder said that brown bear had not been eaten at False Pass "in years" in part because the meat is in the best condition in the spring but bears are not available near the village at that time of year. A middle-aged woman from another household reported that when she was a child at Belkofsky (in GMU 9D), men hunted brown bears which were taken for their meat and hides.

In 1993, the Division of Subsistence conducted systematic household surveys in King Cove and Sand Point, two communities in GMU 9D that conduct subsistence activities on Unimak Island. One percent of households in Sand Point reported using brown bears that had been received from

other households for food. No surveyed Sand Point households hunted brown bears in the study year. In King Cove, 1.3% of households hunted and harvested brown bears, for an estimated harvest of 2 bears. These bears were not used for food, and the location of the harvest was not recorded (Table 3).

For the period from 1983 through 1989, based upon ADF&G Division of Wildlife sealing records, a total of 40 brown bears were harvested in GMU 10 (Unimak Island). Of these, 6 were taken by “local residents” living in Cold Bay (3), King Cove (2), and Port Moller (1). Most of the rest were taken by Alaska residents of road system communities (20 bears), 4 were taken by nonresidents, and 3 were taken in defense of life and property (DLP) (ADF&G 1983–1989).

During the period 1981-1996, annual harvests of brown bears on Unimak Island averaged about 6 bears, and for the period 1997-2005, the annual average was about 11 bears. For the period 2001-2005, nonAlaska residents accounted for 41% of the permits and 60% of the harvest (Butler 2007:122,124).

## **CRITERION 2: SEASONALITY**

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

We have no information for this criterion.

## **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.**

We have no information for this criterion.

## **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.**

We have no information for this criterion.

## **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.**

We have no information for this criterion; see Criterion 1.

## **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.**

We have no information for this criterion; see Criterion 1.

## 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.**

Resources are widely shared in False Pass, as well as in King Cove and Sand Point, but brown bears appear to be no longer part of these exchange patterns.

## 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.**

See also Criterion 1. The communities of GMUs 10 and 9D are outside the nonsubsistence areas as defined by the Joint Board of Fisheries and Game. Subsistence uses are a principal characteristic of the economy, culture, and way of life of the residents of these communities. Information about fish and wildlife harvests is available in the Division of Subsistence CSIS and in Fall and Stanek (1996), Fall et al. 1993a), and Fall et al. 1993b).

Table 3.—Uses and estimated harvests of brown bears, False Pass, King Cove, and Sand Point, 1988 and 1992.

Community	Study Year	Percentage of Households					Estimated Harvest
		Using	Hunting	Harvesting	Receiving	Giving	
False Pass	1988	0.0	0.0	0.0	0.0	0.0	0
King Cove	1992	1.3	1.3	1.3	0.0	0.0	2 <sup>a</sup>
Sand Point	1992	1.0	0.0	0.0	1.0	0.0	0

<sup>a</sup> These bears were not eaten. The location of the harvest was not recorded.

Source ADF&G CSIS.

# **CUSTOMARY AND TRADITIONAL USE WORKSHEET: DALL SHEEP IN GMU 13A, NELCHINA – UPPER SUSITNA**

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## **INTRODUCTION**

This worksheet contains background information on the uses of Dall sheep *Ovis dalli* in the eastern Talkeetna Mountains (Game Management Unit 13A). The Alaska Board of Game (board) requires this information in order to determine whether there are customary and traditional (subsistence) uses of Dall sheep in this Alaska Department of Fish and Game (ADF&G) Game Management Unit (GMU) prior to acting on Proposal 108. It is intended that the information in this worksheet be supplemented by written and oral public testimony delivered during the board meeting. The board will evaluate this information before reaching its decisions.

Sheep hunters in GMU 13A are required to have a hunting license and a sheep harvest ticket. The bag limit is one ram with full-curl horn or larger. The season is August 10 – September 20.

## **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.**

Traditionally, Dall sheep in the Talkeetna Mountains were hunted by Ahtna and Dena'ina Athabascan communities.

The Division of Subsistence has conducted comprehensive household harvest surveys in communities of GMU 13 pertaining to harvests during 1983 and 1987, as well as a 1987 study that mapped areas in which residents of GMU 13 communities hunted sheep and other large game animals. Almost all the sheep hunting reported by GMU 13 residents during these studies took place in GMU 11 (Wrangell Mountains) or in GMU 13C. Virtually no contemporary sheep hunting was reported in GMU 13A by individuals who were interviewed for these studies.

Table 4 summarizes harvest information for GMU 13A sheep derived from harvest ticket returns compiled by the Division of Wildlife Conservation for the period 1998 through 2008. An annual average of 209 individuals hunted sheep in GMU 13A during this period, and an average of 32 were successful. An annual average of about 5 GMU 13 residents hunted sheep in GMU 13A from 1998 through 2008, with fewer than one hunter per year having success. Most individuals who hunted sheep in GMU 13A during the period 1998 through 2008 lived in the Matanuska-Susitna Borough (94 per year), Anchorage (78 per year), and outside Alaska (22 per year).

## **CRITERION 2: SEASONALITY**

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

We have no information for this criterion.

## **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.**

We have no information for this criterion.

## **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.**

We have no information for this criterion.

## **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.**

We have no information for this criterion.

## **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.**

We have no information for this criterion.

## **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.**

We have no information for this criterion.

## **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.**

Detailed harvest data for 1983 and 1987 are available for Copper Basin (GMUs 13 & 11) communities based on Division of Subsistence research and can be provided as needed (CSIS<sup>2</sup>).

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<sup>2</sup> ADF&G Division of Subsistence Community Subsistence Information System (CSIS): <http://www.subsistence.adfg.state.ak.us/CSIS>.

Harvests of fish and wildlife are important, and consist primarily of Pacific salmon and other fishes; caribou; moose; small game and birds; and wild plants. All of GMU 13 is outside the nonsubsistence areas as identified by the Joint Board of Fisheries and Game, recognizing that subsistence uses of fish and wildlife are a principal characteristic of the economy, culture, and way of life of the residents of these GMUs.

Table 4.—Number of hunters of sheep and number of successful hunters, GMU 13A, by area of residence, 1998-2008.

	Municipality of Anchorage		Matanuska-Susitna Borough		Kenai Peninsula Borough		GMU 13		Other residents		Nonresident hunters		All hunters	
	Total	Successful	Total	Successful	Total	Successful	Total	Successful	Total	Successful	Total	Successful	Total	Successful
1998	90	9	102	12	5	0	3	0	7	0	28	20	235	41
1999	83	9	111	14	7	0	9	2	10	1	26	15	246	41
2000	82	5	98	3	4	0	11	0	4	1	35	15	234	24
2001	67	6	70	9	3	0	9	1	5	1	20	6	174	23
2002	76	17	103	19	3	1	6	0	6	0	25	15	219	52
2003	78	11	113	24	4	0	2	0	7	0	21	10	225	45
2004	93	8	111	18	2	0	6	0	2	0	24	12	238	38
2005	66	5	86	6	9	2	5	1	4	0	20	6	190	20
2006	65	6	91	10	4	0	3	0	4	0	16	5	183	21
2007	76	6	87	15	5	1	4	0	3	0	14	9	189	31
2008	84	6	56	7	8	1	0	0	4	0	8	3	160	17
Average	78.2	8.0	93.5	12.5	4.9	0.5	5.3	0.4	5.1	0.3	21.5	10.5	208.5	32.1

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