

**Customary and Traditional Use Worksheet:  
Dall Sheep in GMU 19, McGrath Area**

**Prepared by the  
Alaska Department of Fish and Game  
Division of Subsistence  
for the February–March 2010 Fairbanks Board of Game meeting**

February 2010

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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

<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	™
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, $\chi^2$ , 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

***SPECIAL PUBLICATION NO. BOG 2010-02***

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**DALL SHEEP IN GMU 19, MCGRATH AREA**

by

Alaska Department of Fish and Game, Division of Subsistence  
Fairbanks

Alaska Department of Fish and Game  
Division of Subsistence  
1300 College Road, Fairbanks, Alaska, 99701-1599

February 2010

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*Alaska Department of Fish and Game, Division of Subsistence,  
1300 College Rd., Fairbanks, AK, 99701-1599, USA*

*This document should be cited as:*

*ADF&G Division of Subsistence. 2010. Customary and traditional use worksheet: Dall sheep in GMU 19, McGrath area. Alaska Department of Fish and Game Division of Subsistence Special Publication No. BOG 2010-02, Fairbanks.*

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## INTRODUCTION

Proposal 82 for the February–March 2010 Alaska Board of Game (BOG) meeting in Fairbanks requests the establishment of a subsistence registration hunt for Dall sheep *Ovis dalli* with  $\frac{3}{4}$ -curl or smaller horns, excluding ewes with lambs, in Game Management Unit (GMU) 19C. The proposal also recommends a small number of permits in addition to other stipulations.<sup>1</sup> However, there is currently no customary and traditional use finding in regulation for sheep in GMU 19. This worksheet pertaining to the 8 criteria in 5 AAC 99.010 has been developed by the Alaska Department of Fish and Game (ADF&G) to assist the BOG in making a customary and traditional use determination prior to considering the proposed limited registration permit hunt.

## 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.**

While sheep meat is still highly prized by Nikolai residents, changes in the seasonal round and resources use patterns have resulted in a decrease of sheep hunting among local residents (Holen et al. 2006; Stokes 1985:157). For example, technological advances such as fish wheels, firearms, and steel traps have focused harvest patterns on fish, particularly salmon resources, as well as caribou *Rangifer tarandus* and furbearers. Also, moose *Alces americanus* began to repopulate the area in the late 1880s; according to sources, this coincided with a decline in the caribou populations in the 1920s and 1930s, allowed moose to become a major source of winter meat and shifted hunting pressure from the Alaska Range foothills to the river corridors (Stokes 1985:73).

Additionally, state hunting regulations have also inhibited traditional sheep hunting practices [Collins 2004 (revised)]. Holen et al. (2006:107,109) note that in the 1960s, Nikolai hunters traveled by dog team up the Little Tonzona River to hunt sheep in November, when snow conditions were ideal for travel. Accumulated snowfall also pushed sheep off the high mountains, making them more accessible to hunters, who harvested both ewes and rams. However, currently in GMUs 19 and 20, sheep can be hunted only between August 10 and September 20, and only mature rams with a full curl can be harvested, animals that are traditionally of less interest to local hunters. Finally, social changes, including missionization, sedentarization in villages, decreases in the human population due to disease, and shifts in seasonal economic patterns cemented the declining use of the Alaska Range foothills (Hosley 1966; Stokes 1985; Stickney [1981]).

Historical use of sheep in GMU 19 has been documented for residents of Lime Village, McGrath, Nikolai, and Telida (Bishop 1978; Kari 1983; Stokes 1985; Holen et al. 2006). Small but consistent harvests have been reported to ADF&G by local residents since the 1980s (Table 1). No household reported a harvest of Dall sheep during a comprehensive baseline survey in Nikolai residents in 2002 (Holen et al. 2006:107). However, Stokes (1985) notes that

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<sup>1</sup> The proponent would like this hunt to disallow the use of aircraft and to make permits available only in Nikolai, Telida, McGrath, and Takotna.

Nikolai hunters historically traveled great distances to obtain sheep, or *drodeya* in Upper Kuskokwim Athabascan, in the Alaska Range. While harvest estimates are not available for the earlier period, Stokes (1985) reported that residents believe that sheep were far more numerous than reflected by contemporary harvest levels: likely averaging approximately 5 per year during the 1960s, ranging from 1–8 in the 1980s, and 0–3 in the 2000s (Table 1).<sup>2</sup>

## **CRITERION 2: SEASONALITY**

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

Sheep were traditionally harvested by Upper Kuskokwim residents between August and October, with additional harvests occurring in June and July and again in November (Stokes 1985:70). Nikolai hunters traditionally hunted sheep in November by dog team when snow conditions were ideal for travel (e.g., there was enough snow for sleds but not so much that trails had to be broken) and when accumulated snow forced sheep off high, mountainous areas, making them more accessible to hunters (Ray Collins, area resident, personal communication February 11, 2010; Holen et al. 2006).

During a 1983 harvest survey, Stokes documented that Nikolai residents reported harvesting sheep primarily in September, October, and February, and they reported fewer harvests in January and March. McGrath residents reported harvests in September (Stokes 1985:77,79). As noted above, changes in transportation technologies, resource availability, and regulatory changes affect the seasonal round.

Today, sheep hunting is restricted to the legal fall season of August 10 to September 20, with a bag limit of 1 full-curl ram. Most of the harvest takes place in August, due to the lack of a winter season.

## **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.**

Oral reports of historical sheep hunting by Nikolai residents documented by Stokes (1985) suggest that, in the pre-firearm period, hunters employed multiple strategies to harvest sheep. Hunters used camouflage clothing made from white animal skins, and canvas in later periods, when hunting in the snowy areas characteristic of sheep habitats. Knowledge of sheep movements allowed hunters to approach and then disperse sheep into brushy canyon bottoms or lure them towards hunters hidden in the brush during the fall rut. Larger hunting parties sometimes engaged in “drives,” during which sheep were chased past concealed hunters who harvested them with spears, hatchet-like weapons, and arrows.

Today, sheep are taken with firearms, usually incidental to other activities (Stokes 1985:156–157). More than half of the sheep hunters report the use of registered guides in this area,<sup>3</sup> and most hunters report the use of airplanes to access sheep hunting areas in the current fall hunt.

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<sup>2</sup> Current regulations carry a harvest reporting requirement (5 AAC 92.010 (h)).

<sup>3</sup> Current statute stipulates nonresident sheep hunters must be accompanied by a registered guide (AS 16.05.407).



#### **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.**

According to Stokes (1985), Nikolai hunters historically often traveled great distances to obtain sheep. Hunters followed sheep in the mountainous portions of the headwaters of the Big River in GMU 19C; other hunt areas included the upper Middle, Windy, South, and East forks of the upper Kuskokwim River and the headwaters of the Stony, Swift, and Big rivers (Figure 1). In the 1960s, Nikolai hunters also reportedly traveled up the Little Tonzana River into the Alaska Range.

#### **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.**

Information pertaining to the methods and means of handling, preparing, and preserving sheep resources in GMU 19C is available in the ethnographic literature [Collins 2004 (revised)]. Traditionally, big game meat was eaten fresh or preserved for future use by freezing or drying, depending on the season. Today, sheep meat is probably eaten fresh or preserved by freezing.

In addition to being an important historical component of local diets, sheep skins also provided materials for mattresses, bedding, and moccasin liners (Stokes 1985:156–157).

#### **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.**

As with many subsistence practices, the knowledge and skills needed to successfully harvest sheep were handed down from generation to generation, typically through participation in hunting and processing practices. For example, young hunters would have the opportunity to learn about sheep movements by participating in large hunting parties described above and in smaller hunting groups that lured and/or chased sheep for harvest (Stokes 1985). Knowledge of traditional sheep hunting methods remains part of the local oral tradition (Ray Collins, area resident, personal communication February 11, 2010) and a limited numbers of local hunters have continued to pursue sheep hunting during the contemporary regulatory fall hunt.

#### **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.**

According to Collins [2004 (revised)], local residents have always shared sheep meat with community members. Oral historical sources document the hunting, processing, and sharing of sheep meat, and that all households had equal portions. Additionally, local residents note that sheep have been served at potlatches, important community ceremonial events where the entire community participates [Collins 2004 (revised)].

Today, much of the sheep meat distributed to residents of the communities of Nikolai and Telida is provided by locally based guides of trophy hunting clients (Stokes 1985).

## **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.**

Sheep are just one of the many wild resources that are typically harvested for subsistence uses by residents of GMU 19. Other major resources harvested for subsistence by residents of GMU 19 include salmon; nonsalmon fish species; large land mammals, such as moose, caribou, and black bears *Ursus americanus*; small land mammals such as beavers, snowshoe hares, and porcupines; ducks, geese, and other birds; marine invertebrates; and berries and other plants (see the ADF&G CSIS<sup>4</sup>).

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<sup>4</sup> Community Subsistence Information System (<http://www.subsistence.adfg.state.ak.us/CSIS>).

Table 1.—GMU 19C sheep harvests by residents of Nikolai and McGrath, 1983–2009.

Year	Number of sheep harvested	Number of hunters
1983	2	8
1984	8	10
1985	3	6
1986	1	7
1987	1	8
1988	0	6
1991	1	2
1996	1	1
1997	0	1
1998	0	1
1999	0	1
2005	n/d	n/d
2006	0	3
2007	3	6
2008	0	1
2009	2	3

*Note:* No data are available for 2005.

*Source:* ADF&G Division of Wildlife Conservation.

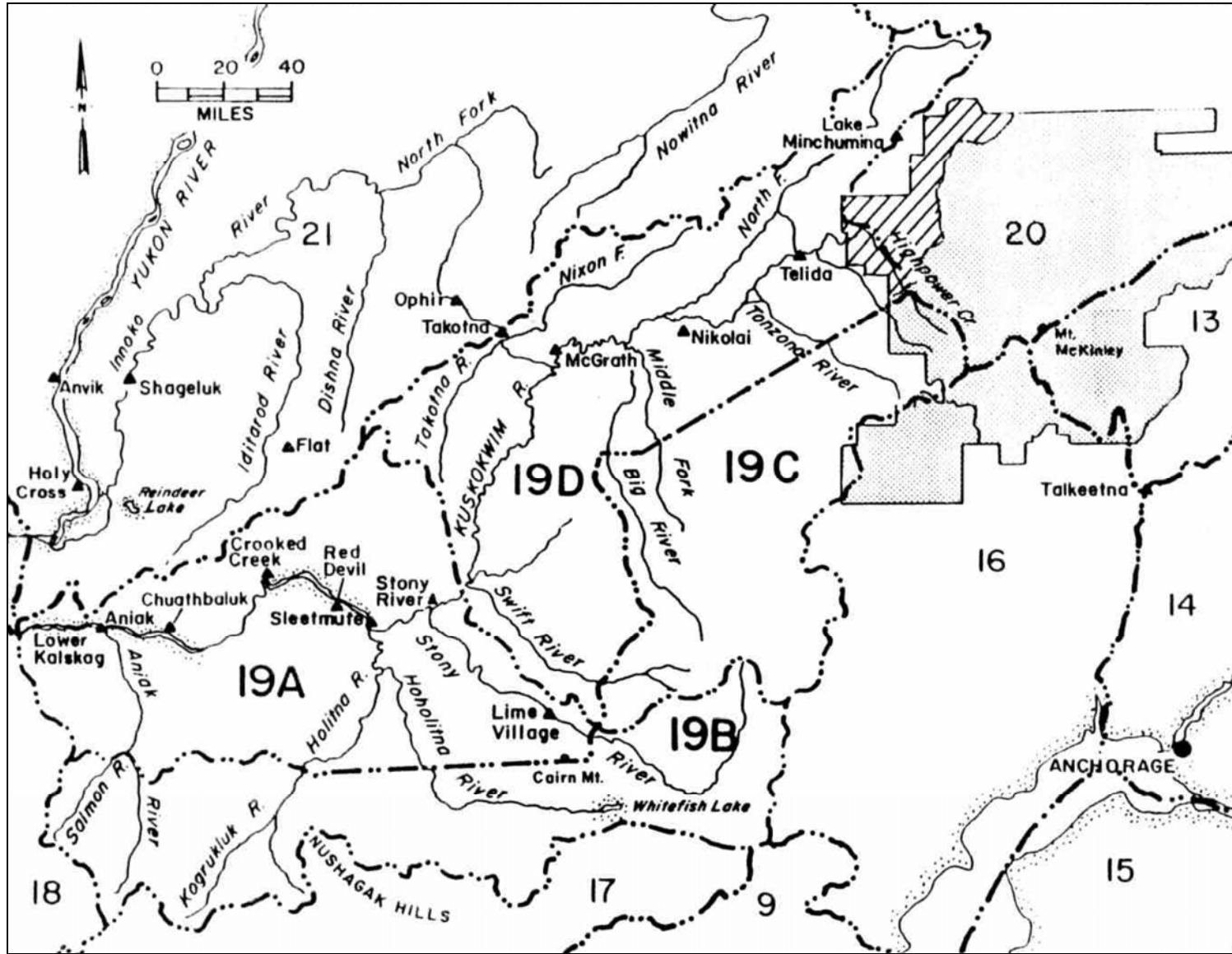


Figure 1.-Map of Game Management Unit 19.