
CHAPTER 10: DALL SHEEP MANAGEMENT REPORT

From: 1 July 2010

To: 30 June 2013

LOCATION

GEOGRAPHIC DESCRIPTION: Chugach Mountains

GAME MANAGEMENT UNITS: Unit 14C

BACKGROUND

Large numbers of miners, railroad workers, and market hunters probably reduced Dall sheep populations in accessible areas between Turnagain Arm and the Knik River beginning around 1900. During a thorough aerial survey of 29,000 mi² of potential sheep range in 1949, biologists discovered the number of sheep in Alaska had declined to approximately one-quarter of that estimated 9 years earlier (Scott et al. 1950). Sheep populations in the Chugach, Talkeetna, and Kenai Mountains were estimated at 600, 300, and 350 animals, respectively. The statewide population decline was attributed primarily to several severe winters; however, in accessible areas illegal hunting also was a major contributing factor in the decline.

Systematic aerial surveys have been conducted sporadically in the Chugach Mountains since 1949. In 1951, 477 sheep were estimated between Turnagain Arm and the Knik River (now Unit 14C). Current sheep populations in Unit 14C are twice as large as estimated in 1951.

Sport hunting was not considered to have had much influence on statewide sheep populations in the early twentieth century. However, the annual harvest reported to the U.S. Fish and Wildlife Service was 3 to 4 times higher in the mid-1940s compared to a decade earlier, increasing from about 200 per year to 600 per year (Scott et al. 1950). Beginning in 1942, the bag limit was reduced from 2 or 3 rams in various areas to 1 ram. Hunting pressure was heaviest near human settlements, and accessible ranges near Anchorage were closed to sheep hunting to protect sheep that otherwise might have been hunted to depletion (Scott et al. 1950). Hunting season was reopened in 1961, except for the Rainbow Closed Area, which extended along Turnagain Arm from Potter to Girdwood.

In 1968 the sheep habitat bounded by the Knik River, Turnagain Arm, Lake George, and the Twentymile River was established as the West Chugach Controlled Use Area. No motorized vehicles other than boats and airplanes were allowed for hunting or transporting game in this area during the sheep hunting season. In 1971 much of this area was incorporated into Chugach State Park, which continued to allow sheep hunting in most of the park, but prohibited all motorized access, except along the north side of Eklutna Lake. The bag limit for ¾-curl rams was further restricted to ⅞-curl rams in 1979. This regulation remained in effect for 10 years. Because of

increasing demand for sheep hunting in Unit 14C, a drawing permit was instituted in 1982 to maintain the number of large rams and aesthetic hunting conditions.

As the number of sheep increased through the 1980s, managers became concerned about exceeding the carrying capacity of the range. Sheep populations appear to be regulated primarily by deep snow and ice cover. However, if overabundant sheep deplete vegetation on winter ranges, subsequent severe snow and ice conditions could have an even greater effect. Consequently, the bag limit was changed to “any sheep” in 1989 for some drawing hunts to better control the population through ewe harvests. This regulation remained in effect through 1995. Since 1996, the bag limit for non-archery drawing permit hunts have allowed the taking of either a full curl ram or ewe, or have been ewe-only hunts. However, current non-archery sheep permits are issued for full curl rams only and no ewe-only permits have been issued since regulatory year 2008.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVE

- Maintain a minimum harvest of 30 full curl or larger rams throughout Unit 14C while maintaining aesthetically pleasing hunt conditions and avoid overcrowding of hunters in the field.

METHODS

Activities accomplished for regulatory years (RY) 2010–2012 included conducting summer aerial sex and age composition surveys and monitoring the number, horn size, and location of harvested sheep. Aerial sex and age composition surveys were completed in Unit 14C in 2010 and 2011.

All rams harvested in Unit 14C are required to be sealed by an ADF&G technician or biologist. Horns were measured, age was noted, and a permanent plug was placed in one of the horns. Any ewes taken are aged and measured by ADF&G.

Harvest data are summarized by regulatory year. A regulatory year runs from 1 July through 30 June (e.g., RY12 = 1 July 2012–30 June 2013).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

The sheep population in Unit 14C declined steadily from the late 1990s to 2007, from an estimated high of 2,400 sheep in 1998 to a low of 904 sheep counted in 2007. The long-term population decline was primarily attributed to severe snow and ice conditions during several consecutive winters. The winters of 2003–04 and 2006–07 were characterized by deep snow and severe ice, respectively, which may have significantly impacted sheep survival. Since 2009, sheep numbers have been increasing, with 1,099 sheep counted in the summer of 2009, 1,170 in 2010, and 1,051 in 2011 (Table 1).

Population Composition

The percentage of full curl and larger rams out of all sheep observed in Unit 14C has remained low during this reporting period (4–5%; Table 1). However, it is important to note that the number

of full curl rams reported is a minimum count. When conducting aerial composition counts, full curl rams are reported conservatively. Therefore, some of the rams reported as being less than full curl were probably full curl under the regulatory definition.

The percentage of lambs was 15% in RY10 and 11% in RY11. Numbers of ewes and yearling rams remain relatively high, slightly over one half of the total population.

Distribution and Movements

Sheep distribution and movements during the summer months have been documented by aerial surveys. Major late summer concentration areas have been determined from harvest records and discussions with hunters. Although sheep are found throughout the mountain range below 7,500 feet in elevation, concentrations vary greatly among drainages. The highest sheep densities in Unit 14C are found in closed areas such as the Anchorage hillside and areas with very little hunting pressure (i.e., no more than 2 permits per year), such as Falls Creek and Indian Creek drainages. These areas are closely followed in sheep numbers by Ship Creek and Peters Creek drainages.

Little is known about winter distribution patterns, except that most sheep frequent relatively snow-free areas and windblown ridges above 3,000 feet. Lambing areas are widely scattered and are usually located near precipitous terrain with a southern exposure. Major rutting areas are unknown.

Current research is underway to monitor productivity, survival, and seasonal movements of rams in Unit 14C; however, no data analyses have been completed at this time (Tom Lohuis, ADF&G biologist, personal communication).

MORTALITY

Harvest

Seasons and Bag Limits. In the Eklutna Lake Management Area of Unit 14C the season was from the day after Labor Day through 30 September. The bag limit was 1 sheep by drawing permit only and by bow and arrow only.

In the remainder of Unit 14C the season was 10 August–30 September and the bag limit was 1 full curl ram only. A late season (1–10 October) archery-only hunt had a bag limit of 1 sheep by drawing permit only.

Board of Game Actions and Emergency Orders. In March 2013, the Board of Game reopened Ram Valley and added Falls Creek to the DS123 hunt area.

Hunter Harvest. Total harvests of sheep in Unit 14C for this reporting period were: 13 (RY10), 16 (RY11), and 13 (RY12; Table 2). The number of hunters has ranged 72–120 annually in Unit 14C during the reporting period (Table 3). Illegal harvest is unknown; however, due to the popularity of Unit 14C for many user groups, it is unlikely that much illegal harvest occurs.

Permit Hunts. During this reporting period, between 139 and 188 drawing permits, including 85–105 archery-only drawing permits, were issued annually in Unit 14C (Table 2). Total number of permits issued each year was reduced annually during this reporting period. This reduction in overall permit numbers was in response to a declining sheep population. Success rates from 2010

to 2012 ranged from 11% to 18% (Table 3). Total annual harvest has declined since the beginning of the reporting period; however, this decline is, in part, a result of permit reduction (Table 3).

Hunter Residency and Success. During the reporting period, nonresident hunters took 16 sheep (38%) out of 42 harvested in Unit 14C (Table 3). Thirty-six percent (15 of 42) of successful hunters in Unit 14C were local residents.

Transport Methods. The primary method of transport used by sheep hunters in Unit 14C was highway vehicle, due to motorized access restrictions in Chugach State Park and proximity of roads (Table 4).

Other Mortality

Dall sheep natural mortality has seldom been documented in the Chugach Mountains; however, since 2012, ADF&G biologist Tom Lohuis has been conducting research on mortality of Dall sheep in Unit 14C. Preliminary data revealed a 5.7% and 5.2% annual mortality rate of collared adult ewes and rams, respectively, from April 2012 to March 2013, and a 27% and 22% mortality of ewes and rams, respectively, from April 2013 to February 2014. The majority of mortality of adult sheep during this time period was due to non-predatory events, including a high rate of avalanche deaths in late spring of 2013. Currently, only one year of lamb mortality data has been collected (2012). Out of 26 lambs monitored, 16 (62%) survived, 8 (31%) were killed by predators, and 2 (8%) were lost to non-predation events. Eagles killed 6 out of the 8 lambs that succumbed to predation.

HABITAT

Assessment

Techniques for evaluating sheep winter range in Alaska have not been developed. Snow depth and snow density, rather than range quality or quantity, may be the primary determinants of winter mortality.

CONCLUSIONS AND RECOMMENDATIONS

The sheep population in Unit 14C ranged 2,200–2,600 during the mid-1990s and early 2000s, reaching a population high in 1998. Following the late 1990s sheep numbers in 14C began to decline until 2007, when the population reached 904 sheep. This decline has been attributed primarily to several severe winters which may have reduced recruitment during those years; however, other variables undoubtedly impact the population as well. The most recent survey revealed a slight increase in sheep numbers. As a result of this recent decline and current population status, we have reduced the number of full curl permits available. Coincidentally, we have not met the harvest objectives of at least 30 full curl rams during this reporting period.

In the past, management activities in Unit 14C have been limited to aerial population surveys; however, since 2012 Tom Lohuis (ADF&G biologist) has been conducting research on sheep in this area of the Chugach. The goals of his research are to explore the demographics of sheep in Unit 14C and how they relate to weather, predation, and habitat. In addition, his research seeks to gather information on movements and survival rates of rams to better evaluate the impacts of a full curl harvest on the sheep population. Preliminary data indicated one year of low pregnancy rate in ewes (43% in 2012); however, the following year revealed a pregnancy rate of 94%. It is unclear

how one year of low pregnancy rate will impact recruitment into that cohort, and further exploration of the data is required. The study is projected to end in 2015, after which time we hope to have information that will help us better manage sheep in Unit 14C.

REFERENCES CITED

Scott, R. F., E. F. Chatelain, and W. A. Elkins. 1950. The status of the Dall sheep and caribou in Alaska. *North American Wildlife Conference* 15:612–626.

PREPARED BY:

Jessy Coltrane, Unit 14C
Wildlife Biologist III

SUBMITTED BY:

Gino Del Frate
Management Coordinator

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Table 1. Chugach Mountains, Unit 14C aerial sheep composition counts, regulatory years 2008–2012.

Regulatory Year	Rams ^a		Ewes ^b	Lambs (%)	Total sheep observed ^c
	≥ full curl (%)	<full curl			
2008–09 ^d					
2009–10	56 (5)	309	600	134 (12)	1,099
2010–11	55 (5)	276	659	180 (15)	1,170
2011–12	42 (4)	293	599	116 (11)	1,051
2012–13 ^d					

^a % of full curl rams is based on the number of total sheep observed.

^b Includes yearlings of both sexes and rams of ¼ curl or less.

^c Total includes unclassified sheep.

^d No survey conducted.

Hunt Area	Regulatory year	Permits issued	Percent did not hunt	Percent unsuccessful hunters ^a	Percent successful hunters	Rams	Horn length (inches)	% Rams \geq 40 in.	Ewes (%)	Unk	Total harvest
DS140 240, West (late season --archery)	2008	81	40	96	4	2	30.8	0	0	0	2
	2009	80	43	91	9	4	30.2	0	0	0	4
	2010	79	32	96	4	2	35.8	0	0	0	2
	2011	61	44	88	12	2	37.9	0	2 (50)	0	4
	2012	60	50	100	0	0	---	0	0	0	0
DS141, 241 West Eklutna (archery)	2008	25	24	95	5	1	14.25	0	0	0	1
	2009	25	40	100	0	0	---	---	0	0	0
	2010	26	54	100	0	0	---	---	0	0	0
	2011	26	58	80	20	1	39.75	0	1 (50)	0	2
	2012	25	76	100	0	0	---	0	0	0	0
Governor's Permit	2008	1	0	0	100	1	39.9	0	0	0	1
	2009	1	0	0	100	1	37.3	0	0	0	1
	2010	1	0	0	100	1	37.0	0	0	0	1
	2011 ^f	---	---	---	---	---	---	---	---	---	---
	2012	1	0	100	0	0	---	---	0	0	0
DS123	2008	1	0	0	100	1	35.5	0	0	0	1
	2009	1	0	100	0	0	---	---	0	0	0
	2010	1	100	100	0	0	---	0	0	0	0
	2011	1	0	100	0	0	---	---	0	0	0
	2012	1	0	100	0	0	---	---	0	0	0
Total all hunt areas	2008	248	30	83	17	18	34.6	0	7 (28)	0	25
	2009	190	35	82	18	24	35.0	0	0	0	24
	2010	188	36	89	11	13	36.8	0	0	0	13
	2011	142	37	80	20	13	36.8	7	3 (19)	0	16
	2012	139	48	82	18	13	37.2	8	0	0	13

^a % successful and unsuccessful hunters calculated based on reported hunts.

^b No permits issued for DS224-227.

^c No permits issued for DS111-112.

^d No permits issued for DS117-118.

^e No permits issued for DS119-120.

^f Sheep harvested in GMU 13D by tag recipient.

Table 3. Chugach Mountains, Unit 14C sheep hunter residency and success, regulatory years 2008–2012.

Regulatory Year	Successful				Unsuccessful				Total hunters
	Local ^a Resident	Nonlocal resident	Nonresident	Total (%) ^b	Local ^a resident	Nonlocal resident	Nonresident	Total (%) ^b	
2008	12	7	8	27 (23)	40	39	12	91 (77)	118
2009	8	3	11	22 (19)	52	45	12	109 (81)	131
2010	5	3	5	13 (11)	54	44	9	107 (90)	120
2011	6	4	6	16 (18)	38	30	5	73 (82)	89
2012	4	4	5	13 (18)	34	21	4	59 (82)	72

^a Local means residents of Unit 14C.

^b Total may exceed sum because some hunters fail to report residency.

Table 4. Chugach Mountains, Unit 14C sheep harvest percent by transport method, regulatory years 2008–2012.

Regulatory Year	Percent of harvest									<i>n</i>
	Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Other	Unknown	
2008–09	0	19	0	4	0	0	67	4	6	25
2009–10	0	9	5	5	0	0	54	18	9	22
2010–11	8	8	0	0	0	0	85	0	0	13
2011–12	7	20	0	0	0	0	67	7	0	15
2012–13	0	13	0	0	0	0	75	13	0	8