Dall Sheep Management Report and Plan, Game Management Unit 20A:

Report Period 1 July 2011–30 June 2016, and Plan Period 1 July 2016–30 June 2021

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This species management report and plan was reviewed and approved for publication by Doreen Parker McNeill, Management Coordinator for Region III for the Division of Wildlife Conservation.

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Purpose of this Report

This report provides a record of survey and inventory management activities for Dall Sheep in Unit 20A for the 5 regulatory years and plans for survey and inventory management activities in the 5 years following the end of that period. A regulatory year (RY) begins 1 July and ends 30 June (e.g., RY10 = 1 July 2010–30 June 2011). This report is produced primarily to provide agency staff with data and analysis to help guide and record its own efforts but is also provided to the public to inform them of wildlife management activities. In 2016 the Alaska Department of Fish and Game's (ADF&G) Division of Wildlife Conservation (DWC) launched this 5-year report to more efficiently report on trends and describe potential changes in data collection activities over the next 5 years. It replaces the Dall sheep management report of survey and inventory activities that was previously produced every 3 years.

I. RY11–RY15 Management Report

Management Area

The Central Alaska Range consists of the north side of the Alaska Range, east of the Nenana River, west of the Delta River and south of the Tanana River (6,792 mi²).

Summary of Status, Trend, Management Activities, and History of Dall Sheep in Unit 20A

The mountains of Unit 20A remain one of the most popular Dall sheep hunting areas in Interior Alaska because of their proximity to Fairbanks, the general hunting season, and the opportunity to hunt other species. Management in Unit 20A provides for a wide variety of hunting opportunities and includes areas closed to the use of motorized vehicles (except aircraft) and an area open to hunting by bow and arrow only. Since 1984, reported harvests have ranged from 27 to 163 rams taken by 143 to 410 hunters.

Heimer and Watson (1986) summarized Unit 20A population trends. Sheep numbers grew to be relatively high by the 1960s, probably due to widespread predator control programs before statehood and favorable weather conditions. Aerial sheep surveys conducted before 1978 indicated a minimum estimate of 3,576 sheep in Unit 20A. McNay (1990) estimated 5,000 sheep inhabited the unit in 1989 based on an assumed sightability of 70–80%, incomplete survey coverage of some sheep habitat, and population growth since 1977. An extensive aerial survey conducted in 1994 indicated the sheep population declined during the early 1990s to about 2,000 sheep (Whitten and Eagan 1995). The population probably declined from reduced productivity and increased mortality due to a series of years with unfavorable weather. Overharvest was not a concern because hunting was restricted to the taking of older rams.

Research in Unit 20A included a study comparing population and horn characteristics of sheep in Unit 20A with those in Unit 12 (Heimer and Watson 1986), a study of sheep use of the Dry Creek mineral lick (Heimer 1974), and a study of movements and seasonal ecology of sheep on Fort Greely (Spiers and Heimer 1990). More recent research included evaluation of sheep monitoring methods by Whitten and Eagan (1995) and development of a double sampling

technique, Scotton's (1997) investigation of the causes and magnitude of lamb mortality, and Arthur's (2003) research on interrelationships of Dall sheep and predators.

Management Direction

EXISTING WILDLIFE MANAGEMENT PLANS

There are no current plans specific to the Central Alaska Range Dall sheep.

A 1976 plan is now outdated: Alaska Wildlife Management Plans: Interior Alaska adopted by the Alaska Board of Game (ADF&G 1976). Changes in management objectives and planning since 1976 have been reported in the division's previous species management reports. The plan portion of this report contains the management plan for RY16–RY20 for Dall sheep in Unit 20A.

GOALS

G1) Maintain a harvestable population of Dall sheep fluctuating within historical limits of abundance.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

There is no customary and traditional use finding for the Central Alaska Range sheep population.

Intensive Management

Dall sheep is not a species subject to intensive management.

MANAGEMENT OBJECTIVES

M1) Manage for a Dall sheep population of approximately 5,000 sheep.

M2) Provide the opportunity for hunters to harvest mature rams during a general hunting season.

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Population abundance (minimum count) and composition

Data Needs

Minimum count population data and composition estimates are necessary to inform the public, including hunters, advisory committees, and the Board of Game, of the population status and potential trends. The information is also used to monitor the long-term population trend and gives us an indication of the number of available rams for hunters in the Central Alaska Range.

Methods

The survey area encompassed 201 mi² (521 km²) extending from the Wood River east to the West Fork Little Delta River, and from Virginia Creek north to the edge of the foothills (Fig. 1). As seen in Figure 1, this area is broken up into 4 survey units. These survey areas were developed in the early 1980s as part of a larger survey area for all of Unit 20A. Since 1994 we have attempted to survey units 1–3, and if time and weather allow, we survey unit 4. The 2011 and 2013 surveys were conducted from R-44 helicopters and the 2014 and 2015 surveys were conducted from R-44 helicopters of all sheep habitat within the survey sections and classified sheep as lambs, yearlings, ewes, or rams, and further classified rams according to horn size (Whitten and Eagan 1995). Starting in 2013 yearling sheep were no longer classified due to potential error in identifying them. Sheep were classified as ewe-like, lamb or ram (legal or sub-legal based on horn size). Ewe-likes lumped together sheep that are ewes and yearling ewes or rams. Surveys are conducted in July after the study area was free of snow and prior to the sheep hunting season in August.



Figure 1. Unit 20A sheep survey area, Alaska.

<u>RY11.</u> Surveys were conducted 6 and 7 July. The survey area included survey units 1–4. The survey was accomplished using a Robinson R-44 helicopter piloted by Troy Cambier with Tony Hollis as an observer. Survey conditions were generally good, although there were few clouds and the bright sun made viewing difficult in a few places. Otherwise, lighting and wind conditions were favorable.

RY12. No surveys were conducted

<u>RY13.</u> Surveys were conducted 12 and 13 July. The survey area included survey units 1–4. The survey was accomplished using a Robinson R-44 helicopter piloted by Troy Cambier with Tony Hollis as an observer. Survey conditions were generally good, although bright sun made viewing difficult in a few places. Otherwise, lighting and wind conditions were favorable.

<u>RY14.</u> This survey was conducted on 18 July. The survey area encompassed 170 mi² (414 km²) and included survey units 1–3. Unit 4 was not surveyed this year due to weather; because the survey could not be completed in consecutive days, we skipped survey unit 4 so that sheep moving in or out of the area didn't bias our counts. The survey was accomplished using a PA-18 Super Cub piloted by Marty Webb with Jesse Dunshie as an observer. Survey conditions were generally good.

<u>RY15.</u> The survey was conducted on July 23 and 24, 2015. This year we surveyed areas 1–4. The survey was accomplished using a PA-18 Super Cub piloted by Marty Webb. Observers were Tony Hollis on July 23 and Brad Wendling on July 24. Survey conditions were good.

Results and Discussion

During RY11-RY15 the number of total sheep counted in survey areas 1-3 varied each year. It started at 823 sheep in RY11 and then dropped during RY13 and RY14 to 625 and 516, respectively, and then increased again to 755 in RY15 (Table 1). No surveys were conducted in RY12. The change in the total sheep count is likely due to a couple of factors. First, immigration and emigration from the study area may have contributed to the variation. Secondly, RY13 and RY14 had poor lamb recruitment likely due to late snow melt off in the area. This late snow melt may have also negatively impacted yearling sheep as well as the lambs and lowered the total count. During the RY13 and RY14 the lower counts appeared to be mostly attributed to fewer ewe or ewe-like sheep. The number of rams during RY11-RY15 remained near 200 during all surveys except RY14 when a 158 were counted. It is likely that the lower count was either due to sightability or immigration/emigration from the survey area. The number of legal rams counted in the survey area varied from 22-35 during RY11-RY14 and increased to 43 in RY15. The RY15 count included the second-highest number of legal rams counted in the survey area since 1996. Also, in RY15, the number of lambs in the survey area increased to 140 after 2 years of poor lamb recruitment in RY13 and RY14. This is likely due to more favorable weather conditions in the region. It appears the sheep population remains stable in this survey area. Although some annual variation occurs in the survey data, all metrics measured appear to be remaining at higher levels than those collected during the late 1990s and early 2000s.

			Ewes/				Legal		Lamb:	Rams:
			ewe-				rams	%	100	100
Year	Dates	Total	like	Lambs	Yearlings ^a	Rams	(n)	legal	ewes	ewes
1983	7–26 Jul	1,165	632	267	_	266			42	42
1984	11,12 Jul	1,102	605	231	—	266			38	44
1991	22–25 Jul	637	374	68	_	195			18	52
1994	4 Jun	408	211	72	_	125			34	59
1995	7 Jun	586	249	109	61	167			44	67
1996	9 Jun	657	267	137	95	158	10	6	51	59
1997	17 Jun	567	212	85	93	177	32	18	40	83
1998	17 Jun	665	287	117	69	192	42	22	41	67
1999	10,11 Jun	690	267	138	75	210	25	12	52	79
2000	24,25 Jun	615	279	84	67	185	12	6	30	66
2001	21,22 Jun	552	234	72	48	198	31	16	31	85
2002	20,22 Jun	496	219	108	17	152	18	12	49	69
2003	20 Jun	675	279	120	117	159	35	22	43	57
2004	18,19 Jun	523	208	86	60	169	30	18	41	81
2005	21,22 Jun	543	235	101	63	144	27	19	43	61
2006	24,28 Jun	717	283	124	76	234	47	20	44	83
2007	14,15 Jun	752	345	151	92	164	31	19	44	48
2009	27,30 Jun	743	352	98	110	183	13	7	28	52
2010	17,18 Jun	882	402	186	90	204	28	14	46	51
2011	6–7 Jul	823	424	127	72	200	22	11	30	47
2013	12,13 Jul	625	383	44	—	198	35	18	11	52
2014	18 Jul	516	311	47	—	158	27	17	15	51
2015	23, 24 Jul	755	417	140	—	198	43	22	34	47

Table 1. Results of aerial surveys of Dall sheep in survey units 1–3, central Alaska Range, 1983–2015.

^a Surveys during 1983–2004 and 2014–2015 used fixed-wing aircraft and classified yearlings with ewes. Surveys during 2005–2011 used helicopters and classified yearlings separate from ewes. In 2013, surveys were conducted by helicopter, but yearlings were classified with ewes.

Recommendations for Activity 1.1.

- Continue to conduct annual surveys to monitor the total number of Dall sheep and changes in demographics.
- Utilize memos to archive details of future abundance and composition surveys to reduce detail in methods and results section of future operational plans and management reports.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor and analyze harvest data.

Data Needs

Harvest data are necessary to determine whether the management objective has been achieved.

Methods

Annual harvest was estimated from mandatory harvest report cards and through the mandatory horn sealing process. Successful hunters were required to have the horns sealed within 30 days of

the date of kill at an ADF&G office. During the sealing process, a uniquely numbered aluminum plug is placed in the horn, the sheep is aged, a broken determination (both, 1, or neither horns broken) is made, and measurements (including total length and base circumference) are taken. If timely harvest reports were not received, hunters who provided contact information received a reminder email and/or letter.

Season and Bag Limit

The sheep hunting season for resident and nonresident hunters during RY11–RY15 was 10 August–20 September with a bag limit of 1 ram with a full-curl or larger horn, with both horns broken, or at least 8 years old.

Results and Discussion

Harvest by Hunters-Trappers

The full-curl harvest strategy allows for maximum opportunity to hunt Dall sheep in the Alaska Range at minimal management cost (Whitten 2001). Total number of hunters during RY11–RY15 averaged 257 hunters annually (Table 2). This is an increase of 27 hunters annually compared to RY06–RY10. During RY11–RY15 the average number of rams harvested annually was 96 rams. This was similar to the average harvest of 95 rams during RY06–RY10.

				\overline{x} Horn
Regulatory	Reported	Total	Percent	length
year	harvest	hunters	success	(inches) ^b
2003	67	180	37	35.0
2004	51	187	27	35.0
2005	81	180	45	35.0
2006	85	196	43	35.1
2007	95	234	41	34.8
2008	86	214	40	34.3
2009	97	267	36	34.3
2010	112	238	47	34.4
2011	104	252	41	34.9
2012	94	234	40	33.7
2013	95	257	37	34.0
2014	115	299	38	34.9
2015	74	241	31	33.9

 Table 2. Unit 20A, Alaska, sheep harvest, regulatory years^a 2003–2015.

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2003 = 1 July 2003–30 June 2004). ^b Includes broomed horns.

Hunter Residency and Success

During RY11–RY15 an average of 173 residents and 76 nonresidents hunted sheep in Unit 20A (Table 3). Residents harvested an average of 42 rams annually and nonresidents harvested an average of 52. The average annual success rate for all hunters was 37%; nonresidents had an average success rate of 67% while residents had a success rate of 25%.

Harvest Chronology

During RY11–RY15 an average of 57% of the sheep harvested were taken in the first 10 days of the season (Table 4). The second 10 days yielded a harvest of 23% of the harvest while the third and fourth 10-day periods yielded 10% and 2% of the harvest respectively.

Transport Methods

During RY11–RY15, an annual average of 39% of the hunters who harvested sheep were transported to their hunting area with an aircraft (Table 5). An average of 25% of the hunters used horses and 19% used 3 or 4 wheelers to gain access to the area that they harvested their sheep. Off-road vehicles, boats and highway vehicles were all used by less than 10% of the hunters that harvested sheep.

Alaska Board of Game Actions and Emergency Orders

No board actions were taken specific to Unit 20Asheep during RY11–RY15, but 2 changes to the hunting season were added for RY16. First, a youth only season was established during 1–5 August for resident and nonresident youths (11–17 years of age) when accompanied by a resident hunter 21 years of age and older. A successful harvest counts towards the bag limit of both youth and the accompanying adult. Second, the bag limit for youth and adult nonresident hunters was changed from 1 ram, with full curl horn or larger, to 1 ram, with full curl horn or larger every 4 years.

Recommendations for Activity 2.1

• Continue to monitor harvest by harvest ticket reports and sealing records.

3. Habitat Assessment-Enhancement

There were no habitat assessment or enhancement activities RY11-RY15.

Successful							Un	successful			
Regulatory	Local ^b	Nonlocal				Local ^b	Nonlocal				Total
year	resident	resident	Nonresident	Unk	Total	resident	resident	Nonresident	Unk	Total	hunters
2003	23	7	37	0	67	52	45	14	2	113	180
2004	13	3	33	2	51	58	56	19	3	136	187
2005	21	17	42	1	81	53	29	16	1	99	180
2006	15	18	51	1	85	64	25	21	1	111	196
2007	21	12	62	0	95	69	46	24	0	139	234
2008	16	13	57	0	86	62	46	19	1	128	214
2009	13	17	65	2	97	79	62	25	4	170	267
2010	26	17	66	3	112	61	47	16	5	129	241
2011	21	19	62	2	104	64	56	24	5	149	253
2012	19	22	45	8	94	62	39	22	20	143	237
2013	24	22	49	0	95	72	63	26	1	162	257
2014	23	29	61	2	115	98	61	24	1	184	299
2015	14	19	41	0	74	92	48	27	0	167	241

Table 3. Unit 20A, Alaska, sheep hunter residency and success, regulatory years^a 2003–2015.

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2003 = 1 July 2003–30 June 2004). ^b Includes all of Unit 20.

Regulatory	Harvest chronology percent by period							
year	10–20 Aug	21–31 Aug	1–10 Sep	11–20 Sep	Unknown	n		
2003	49	31	16	3	0	67		
2004	69	12	14	4	2	51		
2005	53	28	14	4	1	79		
2006	44	23	18	15	0	84		
2007	42	27	17	12	2	95		
2008	47	24	17	12	0	93		
2009	48	27	13	9	2	97		
2010	52	24	10	14	0	112		
2011	39	34	13	12	2	104		
2012	62	21	7	5	4	94		
2013	63	18	12	4	3	95		
2014	61	22	10	7	0	115		
2015	62	20	9	7	2	74		

Table 4. Unit 20A, Alaska, sheep harvest chronology percent by period, regulatory years^a 2003–2015.

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2003 = 1 July 2003–30 June 2004).

Table 5. Unit 20A, Alaska, sheep harvest percent by transport method, regulatory years^a 2003–2015.

	Harvest percent by transport method							
Regulatory				3- or		Highway		
year	Airplane	Horse	Boat	4-wheeler	ORV	vehicle	Unknown	п
2003	41	25	0	18	1	12	3	68
2004	46	29	0	17	2	4	2	52
2005	40	23	2	23	1	6	4	81
2006	42	28	4	19	2	1	4	85
2007	39	26	1	25	3	3	2	95
2008	49	17	2	16	3	5	6	93
2009	48	28	1	16	0	4	2	97
2010	34	30	0	18	5	10	3	111
2011	43	28	0	17	5	6	1	104
2012	34	28	0	23	2	11	2	94
2013	32	24	2	24	6	7	5	95
2014	44	21	0	19	9	3	4	115
2015	42	26	1	14	7	8	2	74

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2003 = 1 July 2003–30 June 2004).

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

No nonregulatory management problems or needs were identified during this reporting period.

Data Recording and Archiving

- All electronic files, such as survey memos, reports, survey data, and maps are located on the Fairbanks server (S:\Fairbanks Area\Operational Planning\Sheep\Unit 20A). All hard copy data sheets, paper files, etc. are found in the file cabinet in the room 118 of the Fairbanks office.
- Electronic copies of survey memos, survey data, and maps are stored in the Division of Wildlife Conservation's WinfoNet data archive. Project Title: Fairbanks area\Unit 20A sheep. Primary Region: Region III.

Agreements

None.

Permitting

None.

Conclusions and Management Recommendations

The management goal (G1) to maintain a harvestable population of Dall sheep fluctuating within historical limits of abundance was met during RY11–RY15. Minimum count and composition surveys suggest that the Unit 20A sheep population has remained stable. This is substantiated by harvest data that shows that though there is annual variation the annual harvest has remained fairly consistent over the last 10 years. Based on these data we met our management objective to provide the opportunity for hunters to harvest mature rams during a general hunting season (M2). It is unknown if we met the objective to manage for a Dall sheep population of approximately 5,000 sheep (M1). However, we have insufficient data to confirm the Dall sheep population in Unit 20A appears to be in good shape at this time. The population appears stable, it provides hunting opportunity for both resident and nonresident hunters, and it has sustained a high harvest for over a decade. The population also provides hunting opportunity for multiple types of access that may be available or preferred by hunters. At this time, no changes in the seasons, bag limits, or management strategy are recommended.

II. Project Review and RY15–RY19 Plan

Review of Management Direction

MANAGEMENT DIRECTION

The goals, objectives, and activities for Dall sheep management in Unit 20A will continue to be the same as those in RY11–RY15. The management program for Dall sheep in this area seems to be working well and at this time we should continue as we have over the last two decades.

GOALS

G1) Maintain a harvestable population of Dall sheep fluctuating within historical limits of abundance.

CODIFIED OBJECTIVES

There are no codified objectives for sheep in Unit 20A and no new codified objectives are anticipated for RY16–RY20.

MANAGEMENT OBJECTIVES

M1) Manage for a Dall sheep population of approximately 5,000 sheep.

M2) Provide the opportunity for hunters to harvest mature rams during a general hunting season.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Monitor population abundance (minimum count) and composition (Objective M1).

Data Needs

No change from prior reporting period, RY11–RY15. Minimum count population data and composition estimates will be used to 1) inform the public of population status and trends, and 2) for general long-term monitoring of the population for various purposes, including to meet management objective M1.

Methods

Aerial survey methods will be the same as those described for this activity for the prior reporting period.

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Monitor and analyze harvest data (Objective M1).

Data Needs

No change from prior reporting period. Harvest data are necessary to assess whether management objective M1 is achieved.

Methods

No change from prior reporting period.

3. Habitat Assessment-Enhancement

No habitat assessment or enhancement activities are planned for RY16-RY20.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

No nonregulatory management problems or needs are identified for the RY16–RY20 reporting period.

Data Recording and Archiving

- All electronic files such as survey memos, reports, survey data, and maps are located on the Fairbanks server (S:\Fairbanks Area\Operational Planning\Sheep\Unit 20A). All hard copy data sheets, paper files, etc. are found in the file cabinet in the room 118 of the Fairbanks office.
- Electronic copies of survey memos, survey data, and maps are stored in the Division of Wildlife Conservation's WinfoNet data archive. Project Title: Fairbanks area\Unit 20A sheep. Primary Region: Region III.

Agreements

None.

Permitting

None.

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