

## **Dall Sheep Management Report and Plan, Game Management Units 13B, 20A, and 20D, Delta Controlled Use Area:**

Report Period 1 July 2011–30 June 2016, and  
Plan Period 1 July 2016–30 June 2020

**Robert Schmidt**



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Plan Period 1 July 2016–30 June 2020

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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, Fairbanks.

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## **Purpose of this Report**

This report provides a record of survey and inventory management activities for Dall sheep in portions of Units 13B, 20A, and 20D, the eastern Alaska Range area near Delta Junction, for the 5 regulatory years 2011–2015 and plans for survey and inventory management activities in the following 5 regulatory years, 2016–2020. 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 it 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 and supersedes the 1976 draft Alaska wildlife management plan (ADF&G 1976). The next 5-year sheep management report and plan is scheduled for 2021.

## **I. RY11–RY15 Management Report**

### **Management Area**

The Delta Controlled Use Area (DCUA) is located in eastern Interior Alaska and encompasses the eastern Alaska Range mountains. The land in the DCUA is owned by the State of Alaska with the exception of 2 small parcels of military training land; Black Rapids Training Area and Whistler Creek Training Area. The community of Delta Junction lies to the north of the Alaska Range and land ownership there consists of private agricultural lands, state lands, and military training lands. Maps for the Delta Junction Area boundaries and special management areas are found at: <http://www.adfg.alaska.gov/index.cfm?adfg=maps.main>.

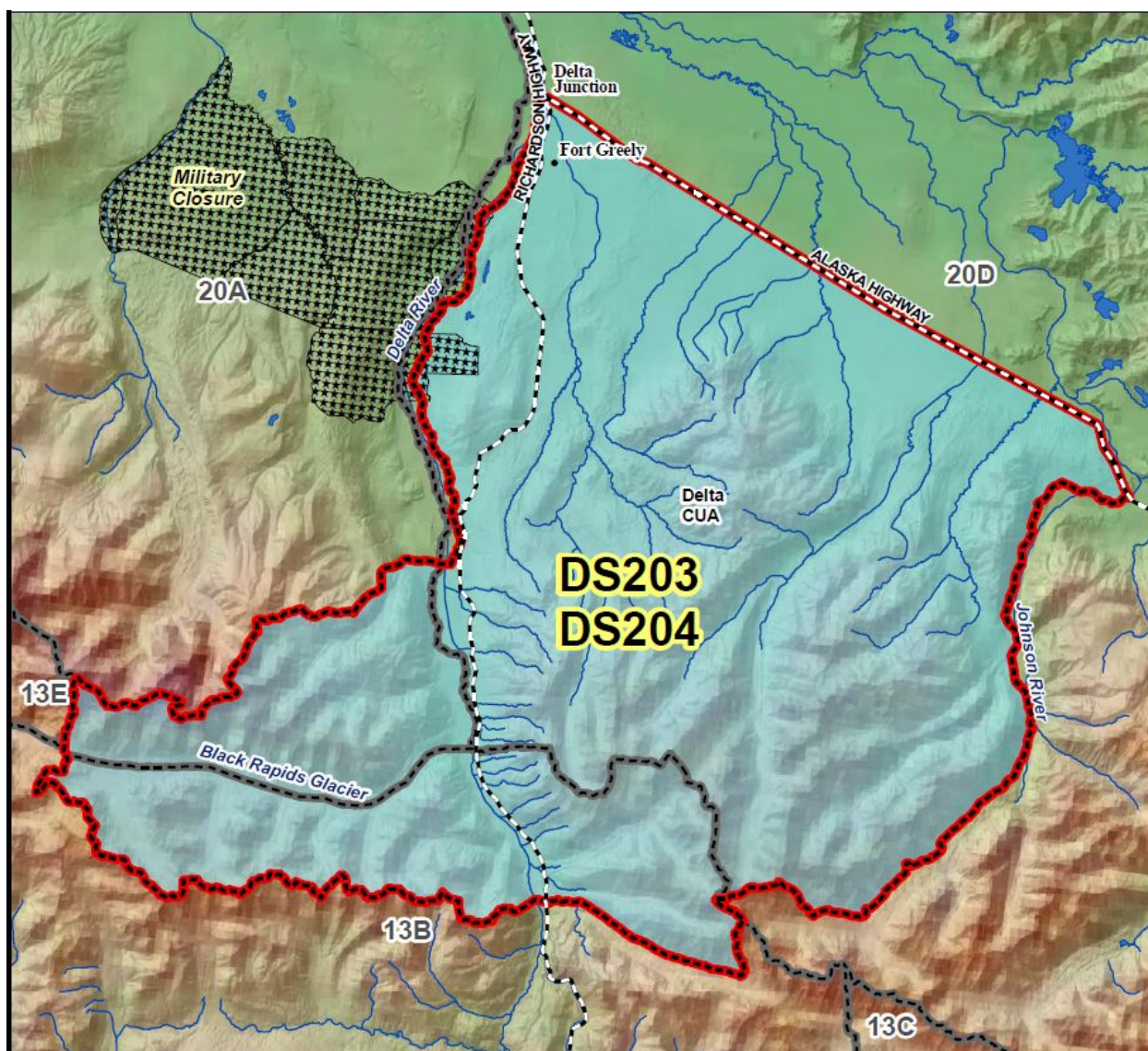
### **Summary of Status, Trend, Management Activities, and History of Dall Sheep in the Delta Controlled Use Area**

Providing the opportunity to hunt sheep under aesthetically pleasing conditions is the current consumptive use goal for this species in the Delta Controlled Use Area. This goal has remained in place since the Alaska Department of Fish and Game management plans for Dall sheep (ADF&G 1976) were written.

Hunting seasons for sheep and legal harvest have become progressively more restrictive in the eastern Alaska Range where the DCUA is located. As hunting pressure increased, Dall sheep conservation required more active management. As this process evolved, hunters began to demand assurance of certain types of hunting experiences. The DCUA, formerly known as the Delta management area, was the first attempt to meet these demands. This area was established prior to the hunting season in 1971 to provide sheep hunters with high-quality, walk-in hunting opportunities free from competition with other transportation types.

Regulations initially prohibited use of motorized vehicles and pack animals for transporting hunters, hunting gear, or game for the first 15 days of the 10 August–20 September hunting





**Figure 1. Map showing the boundaries of the Delta Controlled Use Area in Interior Alaska.**

season. After 25 August, hunting access by mechanized transport and pack animal was permitted. The bag limit was 1 ram with  $\frac{3}{4}$ -curl or larger horns.

Designation of the Delta management area as a walk-in-only area successfully provided walk-in-only hunting opportunity but failed to reduce harvest to the desired level or provide high-quality hunting experiences. The harvest and the quality hunting experience objectives were formally selected as consumptive use guidelines during the public planning project of the mid-1970s (ADF&G 1976). Rams in the Delta management area were still subjected to heavy hunting pressure, resulting in excessive harvest, reduced horn size, and a great deal of hunter competition for available rams. In 1977, hunters killed 78 rams even though the desired harvest objective was 40 rams (Larson 1979).

In an effort to achieve the harvest and aesthetic quality objectives, sheep hunting in the Delta management area was restricted by drawing permit in 1978. Sixty permits were issued for a 10–



25 August walk-in season, and 60 permits were issued for a 26 August–20 September open access season. The bag limit was 1 ram with  $\frac{3}{4}$ -curl horns or larger. As expected, the permit hunt reduced the hunting pressure, and harvest was reduced from 78 rams in 1977 to 31 rams in 1978. However, average horn size also decreased to an all-time low of 31.2 inches (Larson 1980).

In 1979 the minimum horn size for legal sheep in the Delta management area was increased from  $\frac{3}{4}$ - to  $\frac{7}{8}$ -curl. The  $\frac{7}{8}$ -curl regulation did not affect the number of rams harvested in the Delta management area, but average horn size increased from 31.2 inches in 1978 to 34.6 inches in 1979 (Larson 1979).

The Delta management area was renamed the DCUA in 1981 to more accurately reflect its classification as a controlled use area rather than a management area. In 1982 the number of drawing permits issued was increased to 75 for each portion of the drawing permit hunt.

Minimum horn size for legal sheep was raised from  $\frac{7}{8}$ -curl to full curl in 1984. The season and bag limit in DCUA have not changed since 1984, with the exception of 1985, when Tier II subsistence regulations were adopted for that year only. Since the full-curl regulation was adopted the DCUA sheep population and harvest have been stable with natural fluctuations occurring.

The size of the DCUA was reduced in July 1992 to exclude a portion of non-sheep habitat between the Richardson Highway and the Delta River. This area of non-sheep habitat was popular for hunting small game, and DCUA access restrictions unnecessarily complicated hunting in the area and confused hunters. This area was again included in DCUA beginning in 2002 to facilitate Macomb caribou herd management. However, access restrictions applied to only big-game hunters. Hunters have been pleased with the quality of the hunt in the DCUA and the area has been meeting its management objectives.

With the ease of access of sheep within the DCUA the area provides for excellent nonconsumptive uses such as wildlife photography of sheep.

## **Management Direction**

ADF&G will continue to manage the DCUA sheep population for both consumptive and nonconsumptive uses to allow for maximum human use. Management will include disease screening, population abundance surveys, and harvest monitoring.

## **EXISTING WILDLIFE MANAGEMENT PLANS**

- None presently specific to the Delta Controlled Use Area Dall sheep.
- Direction for the management of DCUA Dall sheep was outlined in the draft wildlife management plans (ADF&G 1976), which were reviewed and modified through public comments, staff recommendations, and Board of Game actions over the years. A record of the changes can be found in the division's management report series. The plan portion of this report contains the current management plan for Dall sheep in the DCUA.

## **GOALS**

G1. Provide aesthetically pleasing hunting conditions.

G2. Maintain a harvestable population of Dall sheep fluctuating within historical limits of abundance and the carrying capacity of DCUA habitat.

G3. Maintain sheep abundance sufficient to allow for nonconsumptive uses.

## **CODIFIED OBJECTIVES**

### Amounts Reasonably Necessary for Subsistence Uses

C1. None.

Much of the Delta Controlled Use Area is in the Fairbanks nonsubsistence area, so there is no customary and traditional use (C&T) finding or amount reasonably necessary for subsistence uses (ANS), and the C&T finding for Dall sheep in the Delta Controlled Use Area outside of the Fairbanks nonsubsistence area is negative.

### Intensive Management

The DCUA sheep population is not in an intensive management program.

## **MANAGEMENT OBJECTIVES**

M.1 Manage for a population of approximately 1,800 sheep.

M.2 Manage for a mean annual harvest of at least 35 full-curl rams with a mean horn length of more than 36 inches.

M.3 Manage for mean age of harvested rams exceeding 8 years.

## **MANAGEMENT ACTIVITIES**

### 1. Population Status and Trend

ACTIVITY 1.1. Conduct aerial minimum count sheep abundance and composition surveys to estimate population status and trend (Objective M1).

#### *Data Needs*

Annual abundance estimates are needed in Unit 20D to evaluate whether the management objective of a population of approximately 1,800 sheep has been met.

#### *Methods*

All available sheep habitat in the DCUA is surveyed annually if weather and funding allow via a minimum count survey. Sheep occur throughout 1,680 mi<sup>2</sup> of sheep habitat within the DCUA,

which encompasses portions of Units 13B, 20A, and 20D. All available sheep habitat was surveyed each regulatory year of the reporting period except RY11.

ADF&G staff surveyed the DCUA in a Piper PA-18 Super Cub. Surveys were timed to avoid turbulence by conducting flights in the early morning, generally starting about 0530 hours, or evening, starting about 1900 hours. Survey altitude was 300–700 feet above ground level. Data and search times were recorded in reference to major drainages and recorded on 1:250,000 scale USGS topographic maps. Sheep were classified as lambs, rams  $\geq \frac{1}{2}$ -curl, and others (includes ewes and rams  $\leq \frac{1}{2}$ -curl). Full-curl rams were noted when possible. Photographs were taken of aggregations that were difficult to observe from the air (i.e., in a steep canyon, too windy, etc.) and classified from the photographs. Photographs were taken with a digital single lens reflex camera and a 70–300 mm image stabilized lens, using ISO 400–800 depending on light conditions. Photographs were also taken of many ram aggregations to compare ram horn size from visual observations to the photographs.

### *Results and Discussion*

RY11. A portion of DCUA was aerially surveyed during 24 June–8 July 2011 for 20.1 hours of survey time. All available sheep habitat from the Johnson River west to Jarvis Creek was surveyed. A total of 1,135 sheep were observed including 246 lambs, 208 rams  $\geq \frac{1}{2}$ -curl and less than full-curl, 33 full-curl rams, 600 other sheep (ewes and rams  $< \frac{1}{2}$  curl), and 48 unidentified sheep (Table 1). Composition of identified sheep in the subsampled area included 23% lambs, 19% rams  $\geq \frac{1}{2}$ -curl, and 3% full curl rams.

RY12. A complete minimum count sheep abundance aerial survey of all available sheep habitat in the DCUA was flown 30 June–10 July 2012 for 29.9 hours of survey time. A total of 1,683 sheep were observed, including 306 lambs, 421 rams  $\geq \frac{1}{2}$ -curl with 50 of those rams being full curl, 943 other sheep (ewes and rams  $< \frac{1}{2}$ -curl), and 13 unidentified sheep (Table 1). Composition of identified sheep from the observed data included 18% lambs, 22% rams  $\geq \frac{1}{2}$ -curl, and 3% full-curl rams.

The number of sheep observed in the Johnson River west to Jarvis Creek portion of the DCUA during both RY11 and RY12 was comparable. A total of 1,135 sheep were observed in this area during RY11 and 1,169 sheep were observed in the same area during the RY12 survey.

RY13. A complete minimum count sheep abundance aerial survey of all available sheep habitat in the DCUA was flown 18 June–2 August 2013 for 21.1 hours of survey time. A total of 625 sheep were observed, including 55 lambs, 236 rams  $\geq \frac{1}{2}$ -curl with 21 of those rams being full curl, and 334 other sheep (ewes and rams  $< \frac{1}{2}$ -curl) (Table 1). Composition of identified sheep from the observed data included 9% lambs, 34% rams  $\geq \frac{1}{2}$ -curl, and 3% full-curl rams. High snow depths and a late break up likely contributed to the low lamb recruitment and the drop in overall sheep numbers. The winter of 2012–2013 was a particularly hard winter for sheep across the state, especially for lambs.

Table 1. Aerial survey data for sheep seen in the Delta Controlled Use Area, Alaska, during 2010 through 2016.

Drainage	Lambs	Rams			Others	Unk	Total	Survey minutes	Survey hours
		$\geq 1/2$ curl <full curl	Full Curl	Total Rams					
2011 <sup>b</sup>									
Johnson River	8	41	5	46	32	0	86	167	2.8
Spur Creek	41	29	6	35	117	0	193	176	2.9
Boulder Creek	4	16	4	20	15	1	40	58	1.0
Gerstle River	57	44	6	50	107	15	229	204	3.4
Granite Mountains–Bradford Creek	19	11	0	11	59	0	89	131	2.2
Southern McCumber, Morningstar	67	41	6	47	104	11	229	215	3.6
July Creek	8	1	0	1	13	21	43	55	0.9
Pegmatite, Little Gerstle, Sheep Creek	25	12	1	13	78	0	116	76	1.3
Jarvis Creek	17	13	5	18	75	0	110	120	2.0
Subtotal	246	208	33	241	600	48	1,135	1,202	20.0
2012									
Johnson River	5	44	4	48	35	0	88	177	3.0
Spur Creek	29	39	4	43	124	0	196	149	2.5
Boulder Creek	2	18	5	23	23	0	48	57	1.0
Gerstle River	41	38	4	42	117	0	200	181	3.0
Granite Mountains–Bradford Creek	30	38	5	43	74	0	147	144	2.4
Southern McCumber, Morningstar	48	51	6	57	112	0	217	199	3.3
July Creek	12	3	0	3	38	0	53	54	0.9
Riley Creek	6	5	1	6	23	10	45	31	0.5
Pegmatite, Little Gerstle, Sheep Creek	12	8	1	9	65	0	86	62	1.0
Jarvis Creek	22	28	4	32	80	0	134	103	1.7
Ruby–Trims Creek	32	22	2	24	103	0	159	187	3.1
Pillsbury–McGinnis Creek	24	40	2	42	24	0	90	98	1.6
Castner Glacier	9	7	1	8	5	0	22	78	1.3

Drainage	Lambs	Rams		Total Rams	Others	Unk	Total	Survey minutes	Survey hours
		$\geq 1/2$ curl <full curl	Full Curl						
Eel Glacier	0	5	1	6	11	0	17	41	0.7
Canwell Glacier	0	3	2	5	8	0	13	43	0.7
Augustana–S. Black Rapids	5	0	0	0	13	0	18	50	0.8
N Black Rapids	19	17	6	23	63	3	108	145	2.4
Little Gold Creek	10	5	2	7	25	0	42	14	0.2
Subtotal	306	371	50	421	943	13	1,683	1,813	30.2
2013									
Granite Mountains–Bradford Creek	12	56	5	61	71	0	144		
St. Anthony's Pass	0	14	1	15	1	0	16		
Southern McCumber, Morningstar	6	12	2	14	29	0	49		
July Creek	0	3	0	3	11	0	14		
Riley Creek	2	0	0	0	5	0	7		
Rhoads Creek	4	19	1	20	14	0	38		
Panoramic Peak	1	0	0	0	5	0	6		
Jarvis Creek	11	19	3	22	40	0	73		
Little Gold Creek	0	6	0	6	0	0	6		
Ruby Creek	0	3	0	3	0	0	3		
Bear Creek	0	4	1	5	0	0	5		
Upper Bear Creek	2	0	0	0	5	0	7		
Pillsbury–McGinnis Creek	2	11	1	12	19	0	33		
Darling Creek	1	5	1	6	26	0	33		
One Mile Creek	0	8	0	8	0	0	8		
N. Black Rapids	5	27	1	28	46	0	79		
S. Black Rapids–Augustana Creek	0	0	0	0	2	0	2		
Gunny Sack Creek	0	0	0	0	9	0	9		
Falls Creek	4	2	0	2	18	0	24		



Drainage	Lambs	Rams		Total Rams	Others	Unk	Total	Survey minutes	Survey hours
		$\geq 1/2$ curl <full curl	Full Curl						
Whistler Creek	2	0	0	0	8	0	10		
Castner Glacier	3	10	1	11	25	0	39		
Eel Glacier	0	16	4	20	0	0	20		
Subtotal	55	215	21	236	334	0	625	1,269 <sup>c</sup>	21.1 <sup>c</sup>
2014									
Johnson River	14	69	7	76	66	0	156		
Spur Creek	22	30	4	34	115	0	171		
Gerstle River	11	21	2	23	60	0	94		
Granite Mountains–Bradford Creek	3	63	8	71	44	0	118		
Southern McCumber, Morningstar	6	23	0	23	42	0	71		
July Creek	22	14	1	15	89	0	126		
Riley Creek	0	10	2	12	14	0	26		
Pegmatite, Little Gerstle, Sheep Creek	6	4	0	4	76	0	86		
Jarvis Creek	7	15	4	19	38	0	64		
Little Gold Creek	1	1	0	1	2	0	4		
Pillsbury–McGinnis Creek	5	28	8	36	45	0	86		
S. Black Rapids–Augustana Creek	2	19	4	23	31	0	56		
Trims Creek	2	2	0	2	8	0	12		
Castner Glacier	0	12	5	17	6	0	23		
Eel Glacier	0	4	0	4	0	0	4		
Canwell Glacier	0	1	0	1	0	0	1		
Subtotal	101	316	45	361	636	0	1,098	1,608 <sup>c</sup>	26.8 <sup>c</sup>
2015									
Johnson River	36	28	6	34	71	0	141		
Spur Creek	40	51	5	56	93	0	189		

Drainage	Lambs	Rams		Total Rams	Others	Unk	Total	Survey minutes	Survey hours
		$\geq 1/2$ curl <full curl	Full Curl						
Boulder Creek	17	2	1	3	33	0	53		
Gerstle River	59	44	2	46	91	0	196		
Granite Mountains–Bradford Creek	19	71	3	74	58	0	151		
St. Anthony’s Pass	0	4	1	5	1	0	6		
Southern McCumber, Morningstar	16	28	0	28	48	0	92		
July Creek	26	12	5	17	75		118		
Riley Creek	5	18	2	20	10	0	35		
Pegmatite, Little Gerstle, Sheep Creek	28	7	1	8	78	0	114		
Jarvis Creek	2	17	2	19	4	0	25		
Little Gold Creek	0	4	0	4	1	0	5		
Bear Creek	0	0	0	0	2	0	2		
Pillsbury–McGinnis Creek	12	32	4	36	26	0	74		
Black Rapids	13	18	1	19	27	0	59		
S. Black Rapids-Augustana Creek	7	0	0	0	15	0	22		
Whistler Creek	5	0	0	0	6	0	11		
Flood Creek	2	0	0	0	5	0	7		
Trims Creek	0	2	0	2	0	0	2		
Castner Glacier	3	6	2	8	15	0	26		
Subtotal	290	344	35	379	659	0	1,328	1,884 <sup>c</sup>	31.4 <sup>c</sup>

<sup>a</sup> Incomplete survey due to weather and wind conditions.

<sup>b</sup> Partial survey, the western portion of the DCUA (Jarvis Creek to Black Rapids glacier) was not surveyed.

<sup>c</sup> Survey time was not recorded by drainage.

RY14. A complete minimum count sheep abundance aerial survey of all available sheep habitat in DCUA was flown 21 July–6 August 2014 for 26.8 hours of survey time. A total of 1,098 sheep were observed, including 101 lambs, 361 rams  $\geq \frac{1}{2}$ -curl with 45 of those rams being full curl, and 636 other sheep (ewes and rams  $< \frac{1}{2}$ -curl) (Table 1). Composition of identified sheep from the observed data included 9% lambs, 29% rams  $\geq \frac{1}{2}$ -curl, and 4% full curl rams.

RY15. A complete minimum count sheep abundance aerial survey of all available sheep habitat in DCUA was flown 22 July–4 August 2015 for 31.4 hours of survey time. A total of 1,328 sheep were observed including 290 lambs, 379 rams  $\geq \frac{1}{2}$ -curl with 35 of those rams being full curl, and 659 other sheep (ewes and rams  $< \frac{1}{2}$ -curl) (Table 1). Composition of identified sheep from the observed data was 22% lambs, 26% rams  $\geq \frac{1}{2}$ -curl, and 3% full curl rams.

The number of sheep observed in the entire DCUA is similar for all years during RY11–RY15, with the exception of RY13. Numbers appear to be stable to increasing since RY13, in which surveys indicated a low of 625 sheep. A high of 1,328 sheep were observed in RY15.

#### *Recommendations for Activity 1.1.*

Continue minimum count sheep abundance aerial surveys to determine minimum count of the DCUA sheep population. Also to gather trend data to ensure the DCUA sheep population has had no major declines and that no health concerns are detected.

## 2. Mortality–Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor Dall sheep harvest through hunter contacts, permit reports, and horn sealing data. (Objectives M2 and M3).

#### *Data Needs*

Harvest and horn measurement data are necessary to determine whether the following management objectives are achieved:

M.1. Manage for a mean annual harvest of 35 full-curl rams with a mean horn length of more than 36 inches.

M. 2. Manage for mean age of harvested rams exceeding 8 years.

#### *Methods*

Hunters selected in the permit drawing are required to report on their activities and have ADF&G personnel seal and measure horns of harvested rams. Horn measurements are taken with a steel tape measure or other inflexible measuring tape. The length of the horn is measured by beginning the measurement where the horn comes out of the skull, laying the tape on the horn and following it all the way to the tip of the horn. The circumference of the horn is measured at the base of the horn, as close to the skull as possible. Harvest and sealing data are stored and summarized from the department database housed on the Wildlife Information Network (Winfonet) server (<http://winfonet.alaska.gov/index.cfm>). Data are analyzed to determine hunter success, residency, and effort; ram horn size, hunt location, transportation type, and other

information. Data are summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY11 = 1 July 2011 through 30 June 2012).

### *Season and Bag Limit*

Sheep hunting regulations for the DCUA during RY11–RY15 can be found in the *Alaska Hunting Regulations* booklets, numbers 52, 53, 54, 55, and 56. Current regulations can be found on the ADF&G website at <http://www.adfg.alaska.gov/index.cfm?adfg=wildliferegulations.hunting>.

The DCUA sheep hunting season was open 10 August–20 September and was split between 2 drawing permit hunts, DS203 and DS204. For DS203, the season was 10–25 August. Motorized vehicles and pack animals were not permitted for transport of big game hunters, hunting gear, or big game within DCUA. Vehicle travel was permitted only on the Richardson Highway and at recognized air strips within DCUA boundaries. For DS204, the season was 26 August–20 September with no access restrictions. Each permit hunt had a bag limit of 1 full-curl ram. Up to 75 permits were issued for each of the 2 hunts. The bag limit was 1 full-curl ram, every 4 regulatory years.

### *Alaska Board of Game Actions and Emergency Orders*

The Board of Game adopted a change to allocation of permits for DS203 and DS204 at its February 2012 Interior meeting. This change allocated a maximum of 10% of drawing permits to nonresidents and a minimum of 90% of drawing permits to residents. The change went into effect in RY13.

There were no emergency orders pertaining to DCUA sheep during RY11–RY15.

### *Results and Discussion*

#### Harvest by Hunters-Trappers

DCUA combined harvest for hunts DS203 and DS204 met the harvest objective of a mean annual harvest of 35 full-curl rams in RY11–RY15 (Table 2), averaging 40 sheep/year. However, annual mean horn length for all sheep taken during RY11–RY15 was below the 36-inch objective each year, averaging 34.7 inches (Table 2). Mean age of all sheep taken in DCUA met the management objective of older than 8 years each year during RY11–RY15, with mean age ranging 8.2–8.5 years old (Table 2).

**Table 2. Delta Controlled Use Area, Alaska, sheep harvest data by permit hunt, regulatory years<sup>a</sup> 2010–2015.**

Hunt no.	Regulatory year	Permits issued	Percent did not hunt	Percent unsuccessful hunters	Percent successful hunters	Ram harvest	$\bar{x}$ Horn length (inches)	$\bar{x}$ Age (yr)	Percent $\geq 40''$
DS203	2010	74	30	71	29	15	36.1	8.5	0
	2011	75	31	63	37	19	35.0	8.5	0
	2012	75	28	59	41	22	35.3	8.2	0
	2013	76	30	63	37	20	34.6	8.7	0
	2014	60	32	56	44	18	34.6	8.7	0
	2015	61	24	50	50	22	35.7	8.1	5
DS204	2010	75	27	60	40	22	35.2	8.0	5
	2011	75	27	46	54	29	35.1	8.5	3
	2012	75	27	65	35	19	35.1	8.4	6
	2013	75	46	57	43	17	32.5	7.7	0
	2014	60	30	60	40	17	34.5	7.8	0
	2015	61	28	51	49	19	34.6	7.8	0
Total for all permit hunts	2010	149	28	65	35	37	35.5	8.2	3
	2011	150	29	54	46	48	35.1	8.5	2
	2012	150	27	62	38	41	35.2	8.2	3
	2013	151	76	60	40	37	33.6	8.2	0
	2014	120	31	59	41	35	34.6	8.3	0
	2015	122	26	52	42	41	35.2	8.2	3

<sup>a</sup> Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2005 = 1 July 2005–30 June 2006).



### Permit Hunts

The number of drawing permit applicants for DS203 and DS204 continued to slowly increase from 3,637 in RY11 to 4,037 in RY15 (Table 3). DS204 received the most applicants, averaging 2,105 a year compared to 1,749 for DS203 during RY11–RY15 (Table 3).

**Table 3. Number of applications received for Delta Controlled Use Area, Alaska, hunts DS203 (restricted access) and DS204 (unrestricted access), regulatory years<sup>a</sup> 2010–2015.**

Regulatory year	Hunt DS203	Hunt DS204	Total applications
2010	1,742	2,175	3,917
2011	1,667	1,970	3,637
2012	1,658	2,063	3,721
2013	1,727	2,126	3,853
2014	1,845	2,174	4,019
2015	1,847	2,190	4,037

<sup>a</sup> Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2005 = 1 July 2005–30 June 2006).

### Hunter Residency and Success

Most DCUA hunters continued to be Alaska residents, with an annual average of 5 (6%) nonresident hunters each year during RY11–RY15 (Table 4). Nonresidents as a group continued to have a higher success rate than residents for DS203 and DS204. The annual average success rate for nonresidents during RY11–RY15 was 67% compared to 43% for resident hunters.

### Harvest Chronology

For DS203 and DS204, the largest percentage of the harvest generally occurred during the first 7 days of each hunting season (Table 5). During RY11–RY15, harvest occurred throughout the DS204 hunt periods, although the first 7 days had the highest harvest rate in every year except RY15.

### Transport Methods

No changes in mode of transportation were detected during RY11–RY15. Highway vehicles were the most popular mode of transportation during hunt DS203 because most hunters walked into the hunt area from the Richardson or Alaska Highway due to access restrictions. Aircraft were used along the Johnson River. Airplanes, 3- or 4-wheelers, and highway vehicles were most commonly used during hunt DS204 (Table 6).

**Table 4. Delta Controlled Use Area, Alaska, sheep hunter residency and success, regulatory years<sup>a</sup> 2010–2015.**

Hunt no.	Regulatory year	Successful					Unsuccessful					Total hunters
		Local <sup>b</sup> resident	Nonlocal resident	Nonres	Unk	Total (%)	Local <sup>b</sup> resident	Nonlocal resident	Nonres	Unk	Total (%)	
DS203	2010	1	12	2	0	15 (29)	2	34	1	0	37 (71)	52
	2011	0	15	4	0	19 (37)	2	29	1	0	32 (63)	51
	2012	1	21	0	0	22 (41)	2	29	1	0	32 (59)	54
	2013	2	17	1	0	20 (38)	2	31	0	0	33 (62)	53
	2014	0	16	2	0	18 (43)	1	21	2	0	24 (57)	42
	2015	3	18	1	0	22 (49)	2	21	0	0	23 (51)	45
DS204	2010	1	17	4	0	22 (40)	5	27	1	0	33 (60)	55
	2011	4	23	2	0	29 (54)	2	22	1	0	25 (46)	54
	2012	2	14	3	0	19 (35)	1	34	1	0	36 (65)	55
	2013	0	16	1	0	17 (41)	0	21	2	0	23 (58)	40
	2014	2	21	2	0	25 (50)	2	21	2	0	25 (50)	50
	2015	1	18	0	0	19 (45)	3	20	0	0	23 (55)	42
Total for all permit hunts	2010	2	29	6	0	37 (35)	7	61	2	0	70 (65)	107
	2011	4	38	6	0	48 (46)	4	51	2	0	57 (54)	105
	2012	3	35	3	0	41 (38)	3	63	2	0	68 (62)	109
	2013	2	33	2	0	37 (39)	2	52	2	0	56 (60)	93
	2014	2	37	4	0	43 (47)	3	42	4	0	49 (53)	92
	2015	4	36	1	0	41 (47)	5	41	0	0	46 (53)	87

<sup>a</sup> Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2005 = 1 July 2005–30 June 2006).<sup>b</sup> Local is a hunter who resides in Unit 20D.

**Table 5. Delta Controlled Use Area, Alaska, sheep harvest chronology percent by month/day, regulatory years<sup>a</sup> 2010–2015.**

Hunt	Regulatory year	Harvest chronology percent by month/day						Unknown	n
		8/10–8/16	8/17–8/23	8/24–8/30	8/31–9/6	9/7–9/13	9/14–9/20		
DS203 <sup>b</sup>	2010	93	7	0				0	15
	2011	95	5	0				0	19
	2012	86	14	0				0	22
	2013	80	20	0				0	20
	2014	78	22	0				0	18
	2015	86	14	0				0	22
DS204 <sup>c</sup>	2010			59	14	18	9	0	22
	2011			55	21	14	10	0	29
	2012			37	21	16	26	0	19
	2013			35	29	24	12	0	17
	2014			35	18	24	24	0	17
	2015			16	26	42	16	0	19
Total for all permit hunts	2010	38	3	35	8	11	5	0	37
	2011	38	2	33	13	8	6	0	48
	2012	47	7	17	10	7	12	0	41
	2013	43	11	16	14	11	5	0	37
	2014	40	11	17	9	11	11	0	35
	2015	46	7	7	12	20	7	0	41

<sup>a</sup> Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2005 = 1 July 2005–30 June 2006).

<sup>b</sup> Season open from 10 August to 25 August.

<sup>c</sup> Season open from 26 August to 20 September.

**Table 6. Delta Controlled Use Area, Alaska, sheep harvest percent by transport method, regulatory years<sup>a</sup> 2010–2015.**

Permit hunt	Regulatory year	Sheep harvest percent by transport method									<i>n</i>
		Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Other	Unknown	
DS203	2010	13	7	0	0	0	0	60	20	0	15
	2011	21	0	0	5	0	0	74	0	0	19
	2012	32	0	5	0	0	0	55	4	4	22
	2013	20	0	0	0	0	0	70	10	0	20
	2014	0	0	6	0	0	0	94	0	0	18
	2015	23	0	5	0	0	0	73	0	0	22
DS204	2010	32	0	0	50	0	4	14	0	0	22
	2011	31	0	3	55	0	0	10	0	0	29
	2012	53	0	5	26	0	0	16	0	0	19
	2013	24	0	12	53	0	0	12	0	0	17
	2014	41	0	0	35	0	0	24	0	0	17
	2015	47	0	0	37	0	0	16	0	0	19
Total for all permit hunts	2010	24	0	3	30	0	3	32	8	0	37
	2011	27	0	2	35	0	0	36	0	0	48
	2012	42	0	5	12	0	0	37	2	2	41
	2013	22	0	5	24	0	0	43	5	0	37
	2014	20	0	3	17	0	0	60	0	0	35
	2015	34	0	2	17	0	0	46	0	0	41

<sup>a</sup> Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2005 = 1 July 2005–30 June 2006).

<sup>b</sup> Transportation mode of “foot” is combined with “highway vehicle” on the assumption that hunters used a highway vehicle to get to where they started walking.

### *Other Mortality*

The carcass of a ewe was observed in upper July Creek during aerial surveys in July 2012. A live lamb was also observed near the carcass. An attempt was made to recover the carcass from the ground to opportunistically monitor health, but it had been scavenged prior to our arrival.

The carcass of a ewe was recovered from the Bear Creek drainage in May of 2017 after hikers reported it. The ewe had been dead for approximately 48 hours, so it was in very good condition. Lab results showed severe dental disease and old scarring from lung worm along with some signs of pneumonia. No pathogens commonly found in domestic livestock were found. Delta area staff will continue opportunistic disease surveillance of Dall sheep whenever possible.

Predation rates on sheep in DCUA are unknown. Wolf, coyote, grizzly bear, black bear, wolverine, and golden eagle inhabit the area and undoubtedly prey on sheep. Coyotes and golden eagles have been observed pursuing sheep in the DCUA. A freshly killed lamb was observed in Granite Creek during the 2017 surveys.

Weather is not thought to adversely affect the sheep population in the DCUA in most years. In 2013 however, weather played a role in a short-term population decline. DCUA is located at the north end of the 2,443-foot Isabel Pass through the Alaska Range. Winter storms frequently bring high winds and warm temperatures, so much of the area is either snow-free or has little snow during much of the winter. Hence, it provides suitably stable winter range for Dall sheep.

### *Recommendations for Activity 2.1.*

Harvest data should continue to be collected through the mandatory sealing of sheep to ensure in harvest levels are sustainable, and to help further detect any major declines or health concerns in this sheep population.

## **3. Habitat Assessment–Enhancement**

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

### *Data Needs*

Data are not needed at this time. Sheep habitat appears sufficient to support the population at its current level; however, we have not conducted habitat assessment surveys. Military operations and mining present the greatest potential impact to sheep habitat. Both of these activities occur within DCUA.

## **NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS**

Ongoing military activity within DCUA is expected, particularly in the Black Rapids area and military exercises may overlap with Dall sheep habitat. Meetings with the U.S. Army to assess the potential frequency, scope, duration, and locations of future military activities in the DCUA took place during RY11–RY15 to reduce conflicts. We will continue to coordinate with the U.S. Army to manage and reduce interactions between sheep and military operations. Colorado State University (CSU) staff contracted by the U.S. Army completed a camera trap study in the Black Rapids Training Area during 2013–2015 to help determine peak sheep presence in the Black



Rapids Training Area so military training could avoid these times of the year (Dertien et al. 2016). CSU also conducted a comparison of using ground-based road versus aerial survey techniques in the Black Rapids Training Area. This study determined that only 30% of sheep observed from the air were seen from the ground (Jochum 2016).

Active mining occurred within DCUA during RY11–RY15, but not in core sheep habitat. Ongoing and future mining development will be monitored to assess the potential of disturbance to sheep and sheep habitat.

As agriculture continues to develop in the Delta Junction Area so does the disease risk between livestock and DCUA Dall sheep. Currently no pack animal can be used in the nonmotorized portion of the DCUA hunt. However, only domestic goats and sheep are prohibited as pack animals during the motorized portion of the hunt. The potential adverse effects of disease on wild sheep populations is a high priority among management challenges and issues. Emphasis will be placed as logistics and funding allow on opportunistic health monitoring of the DCUA sheep population by collecting samples off any known sheep mortalities, and having hunters collect samples as a permit condition to improve our knowledge of the presence of pathogens and to increase our preparedness for disease management.

#### Data Recording and Archiving

- Harvest data are stored on an internal database housed on a server (<http://winfonet.alaska.gov/index.cfm>).
- All other electronic data and files such as survey memos and reports are located on the Delta Area Biologists computer; bwschmidt Home Drive (H:) Sheep and archived in Winfonet Data Archive, Project Title ‘Unit 20D Sheep’.
- Field data sheets, paper files, hard copies, etc. are located in the file cabinet located in Delta Junction Area Biologist office.

#### Agreements

None

#### Permitting

None

### **Conclusions and Management Recommendations**

The DCUA harvest with age objective was met during RY11–RY15, but the horn length objective was not met. Average horn length from the total annual DCUA harvest has been below the objective since RY03. If this trend continues it may be necessary to review the horn length objective and assess its applicability to the DCUA sheep population. It is possible the objective cannot be consistently met due to prevalence of broken horns. Also, it is possible that rams from this subpopulation of sheep are not growing 36 inches of horn length in the amount of time it takes them to reach full-curl horn length and/or 8 years of age (legal harvest status). Because hunters have not voiced concern about shorter horn length, this objective will be monitored

during the next reporting period, but no changes to the horn length objective will be suggested at this time. However, an analysis of horn measurement data from sheep harvested in DCUA with emphasis on prevalence of broken horns and horn length-age relationships should be conducted. The Delta Fish and Game advisory committee and the public will be consulted if a change to the horn length objective is considered.

The DCUA minimum count was incomplete in RY11 due to poor flying conditions; therefore the counts are incomplete for this regulatory year. The entire DCUA was surveyed during RY12–RY15. With the exception of RY13, the minimum count ranged 1,098–1,683. Because these surveys are considered a minimum count, the management objective of 1,800 sheep was likely met. In RY13 only 625 sheep were observed, so, the population objective may not have been met that year (Table 1).

Minimum counts generated for the reporting period averaged 1,173 sheep and the latest full minimum count survey in RY15 for the entire DCUA (1,328) was slightly above the long-term minimum count average for the DCUA. Therefore, the data suggests the DCUA sheep population continued to be stable during RY11–RY15.

Hunters were not queried during RY11–RY15 to quantify satisfaction with sheep hunting aesthetics in the DCUA. However, anecdotally talking with long time sheep hunters, they seem to have been very satisfied with their hunting experience in the DCUA up until around the early to mid-2000s. This seems to be around the time that the human population and therefore the hunting population began to spike in Alaska. Hunters in the DCUA still seem to be relatively satisfied, just less satisfied than a decade ago. This satisfaction rating is different from a recent statewide survey commissioned by the department (Brinkman et al. 2014) which included hunter satisfaction throughout the state, which included many harvest ticket hunt areas. That survey suggested hunters were dissatisfied in many areas, primarily due to some form of overcrowding. We will continue to monitor hunter satisfaction in the DCUA. We also recommend ongoing communication with the U.S. Army to discuss plans for military operations within the DCUA and the potential impact to sheep.

We would also like to manage for some any ram permits. This would be a limited number of permits if the population can withstand the additional harvest. This would allow for increased hunting opportunity for sheep in a quality accessible sheep hunting area.

## **II. Project Review and RY16–RY20 Plan**

### **Review of Management Direction**

ADF&G will manage the DCUA sheep population to provide for human uses and to ensure that sheep remain abundant and healthy throughout their historic range for uncrowded hunting opportunity, photography, viewing, listening, and scientific and educational purposes.

#### **MANAGEMENT DIRECTION**

##### **GOALS**

The RY11–RY15 management goals for the DCUA were generally appropriate; however, the goals will be altered slightly for RY16–RY20. This is to more clearly reflect management direction. Specifically, the goals for the RY16–RY20 reporting period will be as follows:

G1. Provide for uncrowded hunting conditions.

G2. Maintain a harvestable population of Dall sheep fluctuating within historical limits of abundance and the carrying capacity of DCUA habitat.

G3. Maintain sheep abundance sufficient to allow for nonconsumptive uses.

##### **CODIFIED OBJECTIVES**

###### Amounts Reasonably Necessary for Subsistence Uses

C1. None. No new codified objectives are expected for RY16–RY20.

###### Intensive Management

The DCUA sheep population is not expected to be in an intensive management program RY16–RY20.

##### **MANAGEMENT OBJECTIVES**

The RY11–RY15 management objectives were generally appropriate; however, the objectives will be altered slightly for RY16–RY20. This is to more clearly reflect clear and measurable objectives which are the primary purpose for conducting management activities. Specifically, the objectives for the RY16–RY20 reporting period will be as follows:

M1. Manage for a population of approximately 1,800 sheep.

M2. Manage for a mean annual harvest of  $\geq 35$  full-curl rams.

M3. Manage for mean age of harvested rams exceeding 8 years.

M4. Manage for some any ram permits.

## **REVIEW OF MANAGEMENT ACTIVITIES**

### **1. Population Status and Trend**

ACTIVITY 1.1. Conduct aerial minimum count sheep abundance and composition surveys to estimate population status and trend (Objective M1).

#### *Data Needs*

Annual abundance estimates are needed in Unit 20D to evaluate whether the management objective of approximately 1,800 sheep has been met. If populations are high enough manage for a select number of any ram permits (Objective M4).

#### *Methods*

Same as previous reporting period.

### **2. Mortality-Harvest Monitoring**

ACTIVITY 2.1. Monitor Dall sheep harvest through hunter contacts, permit reports, and sealing data. (Objectives M2–M4)

#### *Data Needs*

Harvest and horn measurement data are necessary to determine whether the following management objectives have been achieved:

M2. Manage for a mean annual harvest of 35 full-curl rams.

M3. Manage for mean age of harvested rams exceeding 8 years.

#### *Methods*

Same as previous reporting period.

### **3. Habitat Assessment-Enhancement**

There were no habitat assessment or enhancement activities.

#### *Data Needs*

Data are not needed at this time. Sheep habitat appears sufficient to support the population at its current level.

## NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

- Conduct opportunistic and targeted health surveillance of DCUA sheep, with emphasis placed on sheep in accessible areas and in areas in close proximity to agriculture, especially domestic sheep and goats. Disease surveillance will be conducted for the presence of certain pathogens or diseases, such as *Mycoplasma ovipneumoniae* that may pose a risk to wild sheep populations. Hunters may also be required to submit samples as one of the permit conditions. Also, opportunistic captures may be conducted to obtain further disease screening tests. Samples will be submitted to a laboratory or laboratories for identification of any disease pathogens.
- Ongoing military activity within DCUA is expected, particularly in the Black Rapids area. Military exercises may overlap with Dall sheep habitat. ADF&G will meet with the U.S. Army to assess the potential frequency, scope, duration, and locations of future military activities in DCUA, and coordinate with the U.S. Army to manage and reduce interactions between sheep and military operations.
- Active mining takes place within the DCUA, but not within core sheep habitat. Ongoing and future mining development will be monitored to assess the potential of disturbance to sheep and sheep habitat.

### Data Recording and Archiving

- Harvest data are stored on an internal database housed on a server (<http://winfonet.alaska.gov/index.cfm>).
- Electronic data and files such as raw data forms, survey memos, and reports are located on the WinfoNet Data Archive, Project Title 'Unit 20D Sheep.'
- All other electronic data and files such as survey memos, and reports are located on the Delta Area Biologists computer; bwschmidt Home Drive (H:)
- Field data sheets, paper files, hard copies, etc. are located in the file cabinet located in Delta Junction Area Biologist office

### Agreements

- Memorandum of Understanding between U.S. Army Garrison Ft. Wainwright, the U.S. Fish and Wildlife Service, and ADF&G regarding the Ft. Wainwright Integrated Natural Resource Management Plan, dated June 10, 2013. This plan details what each agency is responsible for in regards to wildlife management on Ft. Wainwright lands.

### Permitting

None.



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