Species Management Report and Plan ADF&G/DWC/SMR&P–2018–46

Dall Sheep Management Report and Plan, Game Management Unit 12, Mentasta, Nutzotin, and Northern Wrangell Mountains:

Report Period 1 July 2011–30 June 2016, and

Plan Period 1 July 2016–30 June 2021

Jeffrey J. Wells

2018

Alaska Department of Fish and Game Division of Wildlife Conservation

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Species management reports and plans provide information about species that are hunted or trapped and management actions, goals, recommendations for those species, and plans for data collection. Detailed information is prepared for each species every 5 years by the area management biologist for game management units in their areas, who also develops a plan for data collection and species management for the next 5 years. This type of report is not produced for species that are not managed for hunting or trapping or for areas where there is no current or anticipated activity. Unit reports are reviewed and approved for publication by regional management coordinators and are available to the public via the Alaska Department of Fish and Game's website.

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

Species management reports and plans are available via the Alaska Department of Fish and Game's website (www.adfg.alaska.gov) or by contacting Alaska Department of Fish and Game, Division of Wildlife Conservation, PO Box 115526, Juneau, AK 99811-5526;
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Purpose of this Report

This report provides a record of survey and inventory management activities for Dall sheep (*Ovis dalli*) in portions of Unit 12 (Mentasta, Nutzotin, and northern Wrangell Mountains) for the previous 5 regulatory years (RY; RY11–RY15) and plans for survey and inventory management activities in the 5 years following the end of that period (RY16–RY20). A regulatory year begins 1 July and ends 30 June (e.g., RY11 = 1 July 2011–30 June 2012). 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 reports of survey and inventory activities that were previously produced every 3 years and supersedes the 1976 draft Alaska wildlife management plans (ADF&G 1976).

I. RY11–RY15 Management Report

Management Area

The Mentasta, Nutzotin, and northern Wrangell (MNW) mountains encompass approximately 4,500 mi^2 of sheep habitat in east-central Alaska and are centered on approximately 62°6′N latitude and 142°7′W longitude. The management area is bounded by the U.S.–Canada border to the east, the Yukon–Tanana and Copper rivers divide to the south, the Unit 12 boundary to the west (although the Mentasta mountains include portions of Units 11 and 13C), and the Tetlin flats to the north. The majority of the area is within the Wrangell–St. Elias National Park and Preserve, although portions of the area are owned by the Tetlin National Wildlife Refuge, the State of Alaska, and the Tetlin Native Corporation. Major drainages within the area include the Chisana, Nabesna, and White river drainages. Elevations range from 2,000 feet to >8,000 feet at the highest peaks. Treeline varies but typically occurs at 3,000–4,000 feet. Lowland areas are dominated by spruce forest, and higher elevations are dominated by shrub communities, subalpine and alpine tundra, and large swaths of glaciated areas. The climate is typical of Interior Alaska, where temperatures at lower elevations frequently reach 80°F in summer and −40°F in winter, and overall precipitation is relatively light.

Summary of Status, Trend, Management Activities, and History of Dall Sheep in Unit 12 (Mentasta, Nutzotin, and Wrangell Mountains)

Dall sheep in the MNW mountains live at relatively high densities, mostly in rugged, glaciated habitats. Most rams from the WMN sheep population have smaller than average horns compared to other sheep populations in Alaska. In comparing horn growth qualities of Dall sheep rams inhabiting 18 areas within 7 mountain ranges in Alaska, rams in the MNW mountains had the fourteenth highest quality index value, which was based on a variety of factors including horn volume, maximum sustained growth, and diameter of curl (Heimer and Smith 1975). Based upon

the relative abundance of sheep and smaller than average horn size, the management strategy for this area since the mid-1970s has been to provide the greatest opportunity to participate in hunting sheep (Kelleyhouse and Heimer 1989). Additional information on the early history of the WNM sheep population can be found in Kelleyhouse and Heimer (1989).

Aerial sheep surveys have periodically been conducted by the U.S. Fish and Wildlife Service, National Park Service (NPS), and ADF&G within portions of the MNW mountains since 1949, although there were periods (e.g., 1980s) when few surveys were completed. Due to the periodic nature of the surveys, population trend is difficult to assess; however, sheep numbers were likely stable during RY01–RY10.

Sheep harvest within the MNW mountains has been limited to rams with full-curl or larger horns and a 6-week season (10 August–20 September) since RY84. The total number of sheep hunters has varied from a high of nearly 500 in the early 1990s to a low of approximately 250 during multiple years. Similarly, ram harvest has varied from a high near 275 in the early 1990s to a low of approximately 75 in RY10. The number of sheep hunters generally remained stable during RY01–RY10, while overall harvest generally decreased, particularly during RY09 and RY10.

Management Direction

EXISTING WILDLIFE MANAGEMENT PLANS

- Direction in the *Alaska Wildlife Management Plans: Interior Alaska* (ADF&G 1976) has been reviewed and modified through public comments, department recommendations, and Alaska Board of Game actions over the years. A record of these changes can be found in the MNW Dall sheep management reports.
- The plan portion of this document contains the management plan for Dall sheep in the MNW mountains during RY16–RY20.

GOALS

During RY11–RY15, the MNW Dall sheep management goal was as follows:

G1. Maintain a harvestable population of Dall sheep fluctuating within historical limits of abundance and the carrying capacity of their habitat.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

The Alaska Board of Game has not made a customary and traditional use finding for the MNW sheep population.

Intensive Management

Not applicable.

MANAGEMENT OBJECTIVES

During RY11–RY15, the MNW Dall sheep management objective was as follows:

M1. Maintain an average horn size on harvested rams of ≥34 inches during the report period.

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 used for 2 primary purposes. The first is to inform the public, including hunters, advisory committees, and the Board of Game, of the population status and potential trends. The second is for general long-term monitoring of the population.

Methods

Aerial population abundance (minimum count) and composition surveys were conducted annually in portions of the MNW mountains during RY11–RY15 within sheep survey units (SU) originally delineated in 1949 (Figure 1). All surveys were flown in Piper PA-18 Super Cubs during late June through early August when snow cover in the alpine is typically at or near its lowest level. Surveys were usually conducted during early morning or late evening to avoid turbulence and were not conducted when cloud cover obscured portions of sheep habitat.

Survey crews consisted of a pilot and an observer seated behind the pilot. All of the pilots were experienced with Dall sheep surveys, while observer experience levels varied. The flight path–technique varied by pilot–observer team, although typically the surveys were flown along contours in suitable sheep habitat, and flight paths were maintained at 300–700 feet above ground level at airspeeds of 60–80 mph. The goal was to thoroughly search each survey unit and to observe all of the sheep within the unit. When sheep were observed, the group size, location (latitude and longitude, although this was not recorded for all surveys during RY13), and composition were recorded. Composition was defined by the following categories: ewe (or ewe-like; this category includes yearlings of both sexes and rams of ¼ curl or less), lamb, <½-curl ram, ½- to ¾-curl ram, ¾- to <full-curl ram, and ≥full-curl ram (Appendix). During RY13–RY15, photos were taken of some of the groups with a Canon EOS 50D digital camera with an 18–200 mm lens to aid in determining the overall number and composition of sheep. No sightability correction factor was estimated during the RY11–RY15 surveys; therefore, the total number of sheep observed represents a minimum count estimate.

Beginning in RY14, survey efforts were focused within SUs 1 and 9 by alternating between these SUs every other year and surveying the remaining SUs as time and money allows. This decision was made based upon data from previous reporting periods which suggested that more consistent surveys of some SUs would allow for a better understanding of local population fluctuations (Bentzen 2011; Wells 2014b).

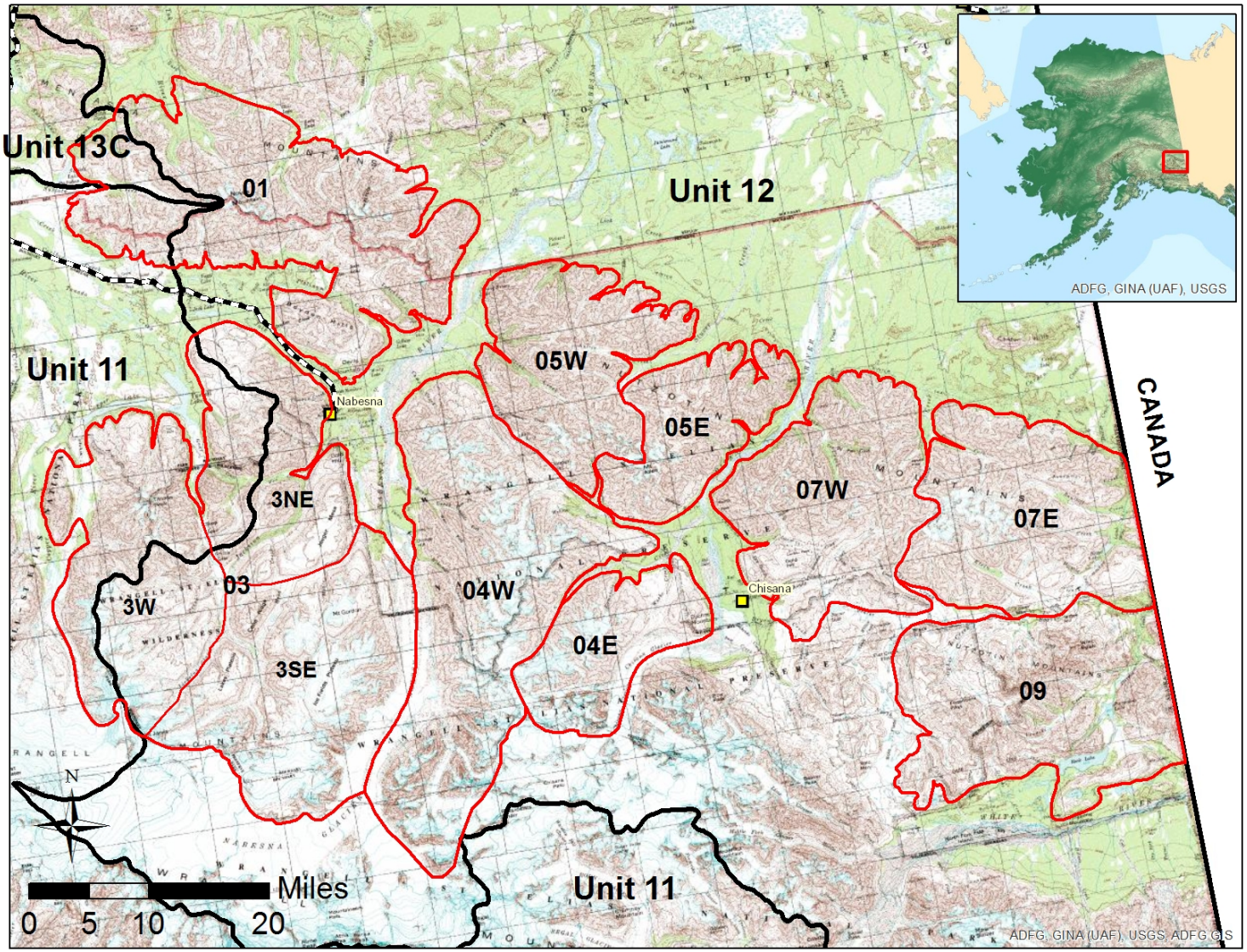

Figure 1. Aerial Dall sheep survey units within the Mentasta, Nutzotin, and northern Wrangell Mountains, Interior Alaska.

RY11

Surveys were conducted within SUs 4E, 7W, and 7E, and a portion of SU 18 during 24–25 June. Little information on survey and weather conditions was recorded. Total flight time (including ferry time) was 43.5 hours and total survey time was 1.6 hours for SU 4E, 9.2 hours for SU 7E, 7.1 hours for SU 7W, and 2.5 hours for SU 18. The SU 18 survey included only that portion of the SU within Wrangell–St. Elias National Preserve and did not include any of the portions of the SU within Wrangell–St. Elias National Park. In addition, NPS surveyed SU 9 during 8–9 July. Weather conditions were partly cloudy with calm winds and total survey time was 3.1 hours (J. A. Putera, Wildlife Biologist, NPS, Copper Center, Alaska, personal communication).

RY12

ADF&G did not conduct any surveys within the MNW mountains. However, a local resident and hunting guide paid for a survey of that portion of SU 9 east of Ophir and Divide Creeks on 27 July. This survey was conducted by a pilot that regularly conducts sheep surveys for ADF&G along with a volunteer observer. Little information on survey and weather conditions was recorded. Total survey time for SU 9 was 4.5 hours. In addition, NPS completed surveys within SUs 1 and 3 during 30–31 July and 20–30 July respectively. Total survey time was 9.7 hours for SU 1 and 14.6 hours for SU 3 (J. A. Putera, NPS, personal communication).

RY13

ADF&G conducted surveys within SUs 7E and 9 on 23 July. Survey conditions within SUs 7E and 9 were excellent. Total flight time (including ferry time) was 18.2 hours and total survey time was 4.2 hours for SU 7E (survey time was not recorded for SU 9). In addition, NPS surveyed SU 4W on 31 July. Weather conditions were mostly clear with calm winds and total survey time was 9.1 hours (J. A. Putera, NPS, personal communication).

RY14

Surveys were conducted within SUs 7W and 9 during 9–10 July and SU 1 on 22 July. Survey conditions in SUs 7W and 9 were generally excellent, although snow on some north-facing slopes may have reduced sightability of sheep in some areas. Survey conditions in SU 1 were excellent with clear to partly cloudy skies and light winds. Some snow remained on north-facing slopes at higher elevations. A local resident and hunting guide paid for the flight time and fuel for the survey within SU 9 while another local hunting guide paid for a portion of the flight time for the survey within SU 7W. ADF&G paid for all survey costs associated with SU 1. Total survey time in SU 7W was 7.2 hours and total survey time in SU 9 was 4.1 hours. Total flight time (including ferry time) for the SU 1 survey was 17.9 hours and total survey time was 13.3 hours. In addition, NPS surveyed SU 5W on 17–18 July. Weather conditions were clear with calm winds and total survey time was 6.0 hours (J. A. Putera, NPS, personal communication).

RY15

Surveys were conducted within SUs 4E and 4W on 3 August and within SU 9 on both 15 June and 1 August. Survey conditions within SUs 4E, 4W, and 9 (June survey) were excellent with clear skies and light winds. Survey conditions during the SU 9 August survey were overcast with some low clouds by the end of the survey and light winds. The low clouds that developed by the end of the survey may have resulted in missing some sheep; however, the clouds covered only a very small portion of the area and it is unlikely that significant numbers of sheep were missed. Outside of glaciated areas, very little snow remained during all of the surveys. The first survey of SU 9 was paid for by a local resident and hunting guide, although the survey was conducted by a contract pilot experienced with sheep surveys and an ADF&G observer. The remainder of the surveys were paid for by ADF&G. Total flight time for count areas 4W and 4E (including ferry time, both units were completed on the same day using 3 planes) was 18.6 hours and total survey time was 3.0 hours for count area 4E and 9.1 hours for count area 4W. Total flight time (including ferry time) for the June survey in SU 9 was 7.25 hours (1 plane) and total survey time was 4.5 hours, while total flight time for the August survey was 11.4 hours (2 planes) and total survey time was 5.6 hours. NPS conducted no surveys in the MNW mountains.

Results and Discussion

The sheep population in the MNW mountains was likely stable or slightly declining during this reporting period. The total number of sheep observed in SU 9, which was surveyed every year during this reporting period (although only a portion was surveyed during RY12), varied little from a high of 694 during the August 2015 survey to a low of 539 observed during the 2014 survey (Table 1). In addition, other SUs that were surveyed ≥2 times during this reporting period and in which similar numbers of sheep were observed between the multiple surveys include 4E, 4W, and 7W. Conversely, there is evidence that sheep populations may have declined in portions of the MNW mountains during this reporting period. Approximately 50% fewer sheep were observed during the 2013 SU 7E survey compared to the 2011 survey, while approximately 35% fewer sheep were observed during the 2014 SU 1 survey compared to the 2012 survey. This decline was likely at least in part due to low recruitment during 2013. Observed lamb:ewe ratios were lowest during 2013 compared to the rest of this reporting period. In addition, declines in some areas may have also been partially the result of decreased adult survival during winter 2012–2013. Winter conditions persisted into May in 2013, and snow pack in the upper Tanana valley on 1 May was 353% above average (U.S. Department of Agriculture 2013). Similar reductions in sheep numbers were observed in the nearby Tok Management Area (Wells 2014a).

The 2 surveys conducted in SU 9 within a span of 1½ months during 2015 gave a unique opportunity to assess a variety of topics, including differences in the total number of sheep observed, lamb mortality, and ram classification. A total of 606 and 694 sheep were observed during June and August, respectively (Table 1). The greater number of sheep observed during the August survey was largely the result of more ewes and lambs, whereas the total number of rams observed was very similar between the 2 surveys (149 and 145 rams during the June and August survey, respectively). A portion of the difference in number of ewes and lambs observed can likely be accounted for in the southwestern section of the SU along the North Fork, which was missed during the early survey and where 21 ewes and 11 lambs were observed during the late survey. Lamb:ewe ratios were similar between the 2 surveys (46 lambs:100 ewes and 44

lambs:100 ewes during the early and late survey, respectively); therefore, it is likely that little lamb mortality occurred between mid-June and early August.

Although a similar number of rams were observed during both surveys in SU 9, the number of rams in each horn size class was remarkably different between the 2. During the first survey, there were 14 rams under ½-curl, 53 rams between ½- and ¾-curl, 58 from ¾- to 7/8-curl, and 24 full-curl or larger, while during the second survey there were 28, 26, 49, and 42 in each category, respectively. What is most notable is the difference in the number of full-curl rams observed during each survey. Although it is possible that some movement of rams occurred during the time span between each survey, it is also possible that some of the difference in the number of full-curl rams recorded was due to classification differences between different pilot–observer teams. If sheep movement were to occur in and out of the count area, the most likely location would be along the Alaska–Canada border on the east side of the count area east of Ptarmigan Lake and Creek. In this section, the border cuts directly through sheep habitat, and sheep are often seen near the border on either side. However, 38 rams were observed in this section of the count area during the June survey and 39 were observed during the August survey, although there was a substantial difference in the number of legal rams recorded (7 versus 16). However, it is impossible to determine whether this difference is due to sheep movements or due to classification differences. Similarly, this section of the count area makes comparisons across years difficult, unless specific locations for each group is recorded, because sheep can be located in or out of the count area on any given day depending on which side of the Alaska–Canada border they are located. During years where the specific location is recorded, all sheep east of Ptarmigan Lake and Creek could potentially be removed from the sample to provide a second measure of comparison among years. Overall, the variability in the total number of sheep observed between the early and late surveys shows that caution must be used in interpreting population trends based upon the total number of sheep observed during minimum count surveys unless factors such as movement and sightability can be accounted for.

Recommendations for Activity 1.1

Continue.

- Utilize annual memos to archive details of each abundance and composition survey.

Table 1. Dall sheep aerial composition counts within the Mentasta, Nutzotin, and northern Wrangell mountains, Interior Alaska, summer 2011–2015.

Count area	Year	Legal rams[a]	Sublegal rams[b]	Unclassified rams	Total rams	Ewes[c]	Lambs	Unidentified	Total other sheep	Total sheep	Legal rams:100 ewes	Sublegal rams:100 ewes	Total rams:100 ewes	Lambs:100 ewes	Lambs % of total
1	2012[d]	60	321	0	381	664	167	0	831	1,212	9	48	57	25	14
	2014[e]	45	279	0	324	360	81	0	441	765	13	78	90	23	11
3	2012[d]	42	319	0	361	1,064	202	0	1,266	1,627	4	30	34	19	12
4E	2011[e]	7	42	0	49	72	29	0	101	150	10	58	68	40	19
	2015[e]	19	61	0	80	55	22	0	77	157	24	111	145	40	14
4W	2013[d]	32	135	0	167	308	67	0	375	542	10	44	54	22	12
	2015[e]	43	140	0	183	359	120	0	479	662	12	39	51	33	18
5W	2014[d]	22	74	7	103	162	41	12	215	318	14	46	64	25	13
5E	2011[d]	14	58	0	72	142	35	0	177	249	10	41	51	25	14
7W	2011[e]	15	91	0	106	235	59	0	294	400	6	39	44	25	15
	2014[e]	20	99	0	119	252	95	0	347	466	8	39	47	38	20
7E	2011[e]	9	81	0	90	193	63	0	256	346	5	42	47	33	18
	2013[e]	3	44	0	47	105	20	0	125	172	3	42	45	19	12
9	2011[d]	20	126	0	146	338	114	0	452	598	6	37	43	34	19
	2012[e,f]	6	94	0	100	394	82	0	476	576	2	24	25	21	14
	2013[e]	27	133	0	160	336	65	0	401	561	8	40	48	19	12
	2014[e]	12	113	0	125	305	109	0	414	539	4	37	41	36	23
	2015[e,g]	24	125	0	149	313	144	0	457	606	8	40	48	46	24
	2015[e,h]	42	103	0	145	380	169	0	549	694	11	27	38	44	24
18	2011[e,i]	2	7	0	9	41	10	0	51	60	5	17	22	24	20

[a] Full curl or larger.
[b] Greater than ¼ curl but less than full curl.
[c] Ewe classification also includes yearlings of both sexes and rams of ¼ curl or less.
[d] Survey conducted by the National Park Service.
[e] Survey conducted by the Alaska Department of Fish and Game.
[f] Count area 9 only included from Ophir Creek and Divide Creek east.
[g] Survey conducted during mid-June.
[h] Survey conducted during early August.
[i] Count area 18 only included from that portion within Wrangell–St. Elias National Preserve.

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 is achieved.

Methods

Annual harvest is estimated from mandatory harvest report cards and through the mandatory horn sealing process. Successful hunters are 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 horn measurements (including total length and base circumference) are taken. If timely harvest reports are not received, hunters who provided contact information received a reminder email and/or letter.

Results and Discussion

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 (broomed), or at least 8-years old.

Harvest by Hunters

Total reported harvest during RY11–RY15 averaged 83 rams (range 67–109; Table 2). Although harvest increased from RY11 to RY15, the overall average was less than the previous 5-year average of 110 rams per year. Total ram harvest has fluctuated in the past with patterns of increases and declines, but harvest during RY11 and RY12 was the lowest recorded in the MNW mountains since at least RY90.

Mean horn length and proportion of rams with large horns (≥40 inches) remained consistent during RY11–RY15 compared to previous reporting periods, while mean age of harvested rams was slightly lower and the proportion of harvested rams that were sublegal was slightly higher. Mean horn length among harvested rams was 34.6 inches, which met the management objective to maintain an average horn length of ≥34 inches (Table 3). Mean horn length among harvested rams has remained relatively stable since the inception of the full-curl regulation in RY84. Of harvested rams, 1.5% had horns ≥40 inches, which is very similar to the previous 5-years, in which 1.6% of harvested rams had horns ≥40 inches. Mean reported age was 7.8 years, which is less than the mean reported age of 8.5 years during the previous 5-years. The proportion of older rams (≥10 years old) in the harvest remained relatively stable during RY11–RY15 and ranged 9–13% of the overall harvest. The proportion of rams harvested that were sublegal during RY11–RY15 was 7.7%, which is slightly higher than the previous 5-year proportion of 5.2%.

Hunter Residency and Success

Mean success rate during RY11–RY15 was 31% (Table 2), which is slightly lower than the previous 5-year average of 37% and significantly lower than the RY01–RY05 average of 46%. This decrease is likely due to a combination of factors, including lower sheep numbers and poor weather during some of the hunting seasons during this reporting period. The annual average number of hunters during RY11–RY15 was lower than during the previous 5-year period, and RY11 and RY12 saw the fewest sheep hunters in the MNW Mountains since at least RY90.

Harvest Chronology

Similar to prior reporting periods, almost half of the total harvest during RY11–RY15 occurred during the first week of the season (Table 4).

Transport Methods

Similar to prior reporting periods, the type of transportation used by most successful hunters during RY11–RY15 was airplanes ($\bar{x}$ = 48%) followed by horses and 4-wheelers (Table 5).

Alaska Board of Game Actions

No Board of Game actions were taken specific to Unit 12 sheep within the MNW mountains during RY11–RY15.

Recommendations for Activity 2.1

Continue.

3. Habitat Assessment–Enhancement

None.

Table 2. Unit 12 Dall sheep hunter residency and success, Interior Alaska, regulatory years[a] 2011–2015.

	Successful					Unsuccessful					
Regulatory year	Local[b] resident	Nonlocal resident	Nonresident	Total[c]	(%)	Local[b] resident	Nonlocal resident	Nonresident	Total[c]	(%)	Total hunters[c]
2011	0	43	31	74	(30)	16	142	13	171	(70)	245
2012	1	45	21	67	(27)	16	151	12	180	(73)	247
2013	3	55	18	76	(30)	13	150	12	175	(70)	251
2014	1	63	26	90	(33)	17	153	9	179	(67)	269
2015	1	79	29	109	(36)	3	166	23	192	(64)	301

[a] Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2011 = 1 July 2011–30 June 2012).
[b] Resident of Unit 12.
[c] Total hunters includes hunters who did not report residency.

Table 3. Unit 12 Dall sheep harvest, Interior Alaska, regulatory years[a] 2011–2015.

Regulatory year	Rams	$\bar{x}$ Horn length	$\bar{x}$ Age	Total sheep[b]
2011	74	34.7	7.6	74
2012	67	34.5	7.6	67
2013	75	34.7	7.8	76
2014[c]	91	34.6	8.0	91
2015	109	34.7	7.9	109

[a] Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2011 = 1 July 2011–30 June 2012).
[b] Total sheep includes illegal ewe harvest and unknown sex.
[c] Includes 1 ram harvested during the federal subsistence season. No other federal subsistence rams were harvested during regulatory years 2011–2015.

Table 4. Unit 12 Dall sheep harvest chronology percent by period, Interior Alaska, regulatory years[a] 2011–2015.

Regulatory year	Harvest chronology percent by period							Total harvest
	8/10–8/16	8/17–8/23	8/24–8/30	8/31–9/6	9/7–9/13	9/14–9/20	*n*[b]	
2011	35	18	24	12	8	3	72	72
2012	42	21	13	12	3	9	67	67
2013	54	9	16	8	8	5	76	76
2014	43	25	9	8	12	3	90	90
2015	52	13	9	6	15	5	107	109

[a] Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2011 = 1 July 2011–30 June 2012).
[b] *n* (sample size) may be less than total harvest due to incomplete reporting of kill date.

Table 5. Unit 12 sheep harvest percent by transport method, Interior Alaska, regulatory years[a] 2011–2015.

Regulatory year	Harvest percent by transport method								Total harvest
	Airplane	Horse	Boat	3- or 4-wheeler	ORV[b]	Highway vehicle	Airboat	Unknown	
2011	53	23	7	7	0	10	0	0	72
2012	45	13	12	13	0	15	0	2	67
2013	45	9	9	23	3	8	3	0	76
2014	52	9	12	11	1	9	0	6	90
2015	46	12	9	12	1	19	0	1	109

[a] Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2011 = 1 July 2011–30 June 2012).
[b] ORV = off-road vehicles.

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 Tok server (S:\Wells\Sheep\Wrangell, Nutzotin, Mentasta Sheep and S:\Wells\MAPS\Unit 12 sheep). All hard copy data sheets, paper files, etc. are found in the file cabinet in the conference room in the Tok office.
- Electronic copies of survey memos, survey data, and maps are stored in the WinfoNet Data Archive. Project Title: Tok Sheep. Primary Region: Region III.

Agreements

None.

Permitting

None

Conclusions and Management Recommendations

The management goal to maintain a harvestable population of Dall sheep fluctuating within historical limits of abundance and the carrying capacity of their habitat was met during RY11–RY15. Minimum count and composition surveys suggest that the MNW mountains sheep population was likely stable in some areas and slightly decreasing in others, with the decrease likely largely related to weather events. However, the results of the 2 surveys conducted within a single summer in SU 9 in 2015 suggest that caution must be used in interpreting population trends based upon the total number of sheep observed during minimum count surveys unless factors such as movement and sightability can be accounted for.

The management objective to maintain an average horn size on harvested rams of ≥34 inches was met during RY11–RY15. Mean horn length has been relatively consistent for >25 years; however, hunter numbers, harvest, and success rates were lower than average during this reporting period. Nevertheless, there was a slight increase in hunter numbers, harvest, and success rates during RY15. No changes in seasons and bag limits are recommended at this time.

II. Project Review and RY16–RY20 Plan

Review of Management Direction

MANAGEMENT DIRECTION

The RY11–RY15 management direction and goal for the MNW mountains are generally appropriate; however, the goals will be altered slightly for RY16–RY20 to reflect a management

directive to provide maximum sheep hunting opportunity, which was the primary management goal outlined in the 1976 management plan (ADF&G 1976) and was included as a management goal in all MNW Dall sheep management reports of survey and inventory activities through RY06.

GOALS

The goals for the RY16–RY20 reporting period will be to

G1. Maintain a harvestable population of Dall sheep fluctuating within historical limits of abundance and the carrying capacity of their habitat.

G2. Provide the greatest level of sustainable annual opportunity to participate in hunting Dall sheep.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

The Alaska Board of Game has not made a customary and traditional use finding for the MNW sheep population.

Intensive Management

Not applicable.

MANAGEMENT OBJECTIVES

The RY11–RY15 management objective will be altered slightly for RY16–RY20 in order to focus the average horn size objective on a specific age class as opposed to all harvested rams. Specifically, the management objective for the RY16–RY20 reporting period will be to

M1. Maintain an average horn size on 8-year-old harvested rams of ≥34 inches. This objective will be considered to be met if the average horn size of 8-year-old rams during RY16–RY20, as measured during the mandatory sealing process, is ≥34 inches.

- The primary purpose of this management objective is to provide a benchmark (34 inches) to compare horn length over subsequent years. Changes in horn length could result from changes in the ram population, which relates to the management goal to provide the greatest level of sustainable annual opportunity to participate in hunting Dall sheep.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Population abundance (minimum count) and composition. (goal G1)

Data Needs

No change from prior reporting period. Minimum count population data and composition estimates will be used to determine whether a harvestable population of Dall sheep fluctuating within historical limits of abundance and the carrying capacity of their habitat is maintained and for general long-term monitoring of the population. Data will also be used to inform the public of population status and trends.

Methods

Aerial survey methods will be the same as those described during the prior reporting period (see "I. RY11–RY15 Management Report | 1. Population Status and Trend | Methods" this document). However, a small change will be made to SU 3. Due to its large size and inconsistent way in which it has been surveyed in the past, it will be split into 3 subunits (3W, 3NE, and 3SE; Figure 1).

RY16

Aerial surveys were completed during 15–16 June in SU 9 and 15 and 27 July in SU 1. In addition, NPS surveyed SU 5E.

RY17–RY20

Survey SU 9 during RY17 and RY19 and SU 1 during RY18 and RY20. Survey the remaining SUs (3, 4E, 4W, 5W, 7E, and 7W) at least once during RY17–RY20.

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 the management objective is achieved.

Methods

No change from prior reporting period.

3. Habitat Assessment–Enhancement

None.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

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

Data Recording and Archiving

RECORDING

- Dall sheep survey form (Appendix).
- ArcGIS version 10.3 (store and analyze spatial data).

ARCHIVING

- Harvest data will be stored in a database housed on ADF&G's Wildlife Information Network (WinfoNet) server (http://winfonet.alaska.gov/index.cfm) and archived in *WinfoNet* under *Harvest Information*.
- All electronic files such as survey memos, reports, survey data, and maps will be located on the Tok server (S:\Wells\Sheep\ Wrangell, Nutzotin, Mentasta Sheep and S:\Wells\MAPS\Unit 12 sheep). All hard copy data sheets, paper files, etc. will be stored in the file cabinet in the conference room in the Tok office.
- In addition, electronic copies of survey memos, survey data, and maps will be stored in the WinfoNet Data Archive. Project Title: Tok Sheep. Primary Region: Region III.

Agreements

None.

Permitting

None.

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Appendix. Aerial Dall sheep survey form.

Aerial Dall Sheep Survey Form Page___of___

Date:_____ Count Area:_____

Observer:_____ Pilot:_____ Aircraft:_____ Datum:_____

Depart Time:_____ Begin Survey:_____ Total Flight Time:_____

Return Time:_____ End Survey:_____ Total Survey Time:_____

Weather (record cloud cover and height, wind, snow cover, etc):_____

Additional comments:_____

Group #	Wypt #			Rams						Totals		Comments /	
		Ewes	Lambs	<1/2	1/2-3/4	3/4-7/8	Full	Unid	Total	Unid.	TOTAL	Lat.	Long.
Page totals													

Version edited June 2017 Flip page for additional observations


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