

Dall Sheep Management Report and Plan, Game Management Units 19B and 19C:

Report Period 1 July 2016–30 June 2021, and
Plan Period 1 July 2021–30 June 2026

Jonathan S. Barton



Dall Sheep Management Report and Plan, Game Management Units 19B and 19C:

Report Period 1 July 2016–30 June 2021, and
Plan Period 1 July 2021–30 June 2026

PREPARED BY:

Jonathan S. Barton
Former Assistant Area Biologist

APPROVED BY:

Jason R. Caikoski
Management Coordinator

REVIEWED BY:

Brad R. Wendling
Wildlife Research Biologist

Joshua M. Peirce
Area Wildlife Biologist

PUBLISHED BY:

June C. Younkins
Publications Coordinator

©2025 Alaska Department of Fish and Game

Alaska Department of Fish and Game
Division of Wildlife Conservation
PO Box 115526
Juneau, AK 99811-5526



Hunters are important founders of the modern wildlife conservation movement. They, along with trappers and sport shooters, provided funding for this publication through payment of federal taxes on firearms, ammunition, and archery equipment, as well as paying state hunting license and tag fees. These taxes and fees fund the federal Wildlife Restoration Program and the State of Alaska's Fish and Game Fund, which provided funding for the work reported in this publication.

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 public website.

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

Species management reports and plans are available via the Alaska Department of Fish and Game's public website (www.adfg.alaska.gov) or by contacting Alaska Department of Fish and Game's Division of Wildlife Conservation, PO Box 115526, Juneau, AK 99811-5526; phone: (907) 465-4190; email: dfg.dwc.publications@alaska.gov. The report may also be accessed through most libraries, via interlibrary loan from the Alaska State Library or the Alaska Resources Library and Information Services (www.arlis.org). To subscribe to email announcements regarding new technical publications from the Alaska Department of Fish and Game, Division of Wildlife Conservation please use the following link: <http://list.state.ak.us/mailman/listinfo/adfgwildlifereport>.

This document, published in PDF format only, should be cited as:

Barton, J. S. 2025. Dall sheep management report and plan, Game Management Units 19B and 19C: Report period 1 July 2016–30 June 2021, and plan period 1 July 2021–30 June 2026. Alaska Department of Fish and Game, Species Management Report and Plan ADF&G/DWC/SMR&P-2025-37, Juneau.

Please contact the authors or the Division of Wildlife Conservation at (907) 465-4190 if you have questions about the content of this report.

The State of Alaska is an Affirmative Action/Equal Opportunity Employer. The Alaska Department of Fish and Game complies with Title II of the Americans with Disabilities Act of 1990. This document is available in alternative communication formats. If you need assistance, please contact the Department ADA Coordinator via fax at (907) 465-6078; TTY/Alaska Relay 7-1-1 or 1-800-770-8973.

ADF&G does not endorse or recommend any specific company or their products. Product names used in this publication are included for completeness but do not constitute product endorsement.

Contents

Purpose of this Report.....	1
I. RY16–RY20 Management Report	1
Management Area.....	1
Summary of Status, Trend, Management Activities, and History of Dall Sheep in Units 19B and 19C.....	1
Management Direction.....	2
Existing Wildlife Management Plans	2
Goals	2
Codified Objectives	2
Amounts Reasonably Necessary for Subsistence Uses	2
Intensive Management.....	2
Management Objectives.....	3
Management Activities	3
1. Population Status and Trend	3
2. Mortality-Harvest Monitoring and Regulations.....	5
3. Habitat Assessment-Enhancement.....	9
Nonregulatory Management Problems or Needs.....	9
Data Recording and Archiving	9
Agreements	9
Permitting.....	9
Conclusions and Management Recommendations	9
II. Project Review and RY21–RY25 Plan	10
Review of Management Direction.....	10
Management Direction.....	10
Goals	10
Codified Objectives	11
Amounts Reasonably Necessary for Subsistence Uses	11
Intensive Management.....	11
Management Objectives.....	11
Review of Management Activities.....	11
1. Population Status and Trend	11
2. Mortality-Harvest Monitoring	11
3. Habitat Assessment-Enhancement.....	12
Nonregulatory Management Problems or Needs.....	12
Data Recording and Archiving	12
Agreements	12
Permitting.....	12
References Cited	12

List of Tables

Table 1. Unit 19 Dall sheep composition counts, Interior Alaska, 2010–2020.....	4
Table 2. Units 19B and 19C Dall sheep harvest, horn length, and age, Interior Alaska, regulatory years 2016–2020.	6
Table 3. Unit 19B Dall sheep hunter residency and success, Interior Alaska, regulatory years 2016–2020.	6
Table 4. Unit 19C Dall sheep hunter residency and success, Interior Alaska, regulatory years 2016–2020.	7
Table 5. Units 19B and 19C Dall sheep percent harvest chronology by week, Interior Alaska, regulatory years 2016–2020.....	8
Table 6. Units 19B and 19C Dall sheep hunting percent by transport method, Interior Alaska, regulatory years 2016–2020.....	8

Purpose of this Report

This report provides a record of survey and inventory management activities for Dall sheep (*Ovis dalli*) in Game Management Units 19B and 19C for the 5 regulatory years 2016–2020 and plans for survey and inventory management activities in the next 5 regulatory years, 2021–2025. A regulatory year (RY) begins 1 July and ends 30 June (e.g., RY16 = 1 July 2016–30 June 2017). This report is produced primarily to provide agency staff with data and analysis to help guide and record agency 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, the department) Division of Wildlife Conservation (DWC) launched this 5-year report to report more efficiently on trends and to 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 2 years.

I. RY16–RY20 Management Report

Management Area

Units 19B and 19C are located within the Alaska Range and encompass approximately 2,880 mi² of mountainous sheep habitat above an elevation of 3,000 ft. Major drainages in these units include the Stony River, the Windy Fork, the South Fork and Tonzona Rivers. The weather in this area is characterized by a mix of interior (dry and cold winters) and coastal (warm and wet winters) weather systems, with significant snow and ice occurring in some winters.

Summary of Status, Trend, Management Activities, and History of Dall Sheep in Units 19B and 19C

Since RY88, Dall sheep harvest in all portions of Units 19B and 19C has been open to both residents and nonresidents under a general harvest ticket for 1 full-curl ram¹ during a 6-week season (August 10–September 20). Beginning in RY14, the Alaska Board of Game (BOG, the board) authorized a limited winter registration hunt for resident hunters in Unit 19C. For this particular registration hunt, a legal sheep was defined as a sheep with a three-quarter or smaller curl, excluding rams with both tips broken, lambs, and ewes accompanied by lambs. Aircraft were not allowed for this hunt, and hunters were required to call in to receive a hunt period to prevent overharvest. In RY16, a youth-only hunt (August 1–5) was established for the harvest of 1 full-curl ram.

While Unit 19B receives very low hunting pressure, Unit 19C is a popular sheep hunting area for both resident and nonresident hunters. Nonresident sheep hunters are required to hire a guide or hunt with a resident relative within the second degree of kindred throughout Alaska. Although Unit 19 is not accessible by road, it is relatively accessible from Alaska's largest population centers. Aircraft transportation is the primary mode of access to the area. From 10 August to 20

¹ A *full-curl ram* is defined as a ram with the tip of at least 1 horn that has grown through 360° of a circle described by the outer surface of the horn as viewed down the axis of the helix; or a ram with both lamb tips missing; or a ram that is at least 8 years old, as determined by counting annual horn ring segments.

September, aircraft may only be used by sheep hunters to place and remove hunters and camps, maintain existing camps, and salvage harvested sheep. A person may not use or employ an aircraft to locate sheep or direct hunters to sheep during the open sheep hunting season.

Aerial composition surveys have been consistently flown since 2010 in a portion of Unit 19C. By 2019, ADF&G staff began to see a decline in the total number of sheep counted and harvested. Deep snow conditions, late springs, and freezing rain events during the winters of 2018 and 2019 likely contributed to declines in the Unit 19 sheep population.

The sealing of sheep has been required since the fall of 2004.

Management Direction

EXISTING WILDLIFE MANAGEMENT PLANS

Over the years, the direction of the Dall sheep management plan (ADF&G 1976) has been reviewed and modified through public comments, department recommendations, and BOG actions. A record of these changes can be found in past Unit 19 sheep management reports. The plan portion of this document contains the future management plan for sheep in Unit 19.

GOALS

- G1. Provide for subsistence opportunity.
- G2. Provide an opportunity for sustainable harvest of Dall sheep rams similar to average historical levels.
- G3. Provide an opportunity to hunt under aesthetically pleasing, uncrowded conditions.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

- C1. Unit 19 has a positive customary and traditional use finding for Dall sheep, as determined by the BOG, with amounts reasonably necessary for subsistence uses of 1–5 sheep.

Intensive Management

The Units 19B and 19C Dall sheep population has not been identified as an intensive management population by the BOG.

MANAGEMENT OBJECTIVES

- M1. Using a full-curl harvest strategy, maintain harvest of rams averaging ≥ 8 years old.
- M2. Maintain a winter harvest of fewer than 10 Dall sheep with horns measuring three-quarters curl or less, excluding rams with both horn tips broken, lambs, and ewes accompanied by lambs.

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Assess population trends and composition through annual aerial surveys.

Data Needs

Minimum count population data and composition estimates will be used to 1) inform the public about population status and trends and 2) support general long-term monitoring of the population.

Methods

The population of Dall sheep in Unit 19C has been surveyed periodically since 1972. Survey methods and survey areas have varied from year to year, making comparisons to historical data challenging. Since 2010, however, surveys have been consistently conducted in the same areas (Table 1). Surveys were conducted in years with appropriate weather conditions (high ceilings and calm winds) using 2 fixed-wing aircraft with observers. Sheep were counted and classified into 4 categories: legal rams (full curl or larger), sublegal rams, ewe-like sheep, and lambs. The ewe-like category included adult ewes, all yearlings, and young rams (those with horns equal to or less than half curl) that were indistinguishable from ewes.

Results and Discussion

The mean annual population count from 2010 to 2019 was 1,142 Dall sheep. In 2019, ADF&G staff counted 770 sheep, which was a decline of approximately 30% from the 10-year mean. The lamb-to-ewe-like ratio in 2019 was 46:100, higher than the 2010–2019 mean of 33:100. In 2019, we recorded our lowest total sheep count since 2010 while also documenting the highest percentage of lambs since that same year. The percentage of legal rams identified during surveys since 2010 has averaged 5% (Table 1).

Weather conditions likely contributed to the decline in sheep numbers in 2019. Units 19B and 19C experienced significant snowfall in 2018 and 2019, along with a late spring in May 2018. We observed a similarly large decline in sheep in 2013 following a hard winter that year. This combination of weather events may have had a negative impact on ewe-like sheep and rams in particular. Declines in the western Alaska Range are similar to those in other Dall sheep populations across Alaska and may be driven by longer winters persisting into the spring and more frequent icing conditions.

Table 1. Unit 19 Dall sheep composition counts, Interior Alaska, 2010–2020.

Date ^a	Area (mi ²)	Survey time (h)	Rams						Ewe- likes ^c	(%) ^b	Lambs	(%) ^b	Lambs:100 ewes	Unknown	Total sheep
			Full curl	(%) ^b	< full curl	(%) ^b	Total rams	(%) ^b							
Jun 2010	575	24.4	72	(4)	380	(21)	452	(25)	1,040	(56)	353	(19)	34:100	0	1,845
Jun 2013	465	23.0	61	(7)	225	(26)	286	(32)	503	(57)	94	(11)	19:100	0	883
Jun 2014	453	20.8	55	(5)	319	(27)	374	(32)	639	(54)	168	(14)	26:100	0	1,181
Jun 2015	453	19.7	46	(5)	255	(26)	301	(31)	499	(52)	167	(17)	33:100	0	967
Jun 2016	453	19.7	53	(5)	202	(19)	255	(24)	593	(57)	195	(19)	33:100	0	1,043
Jun 2017	453	21.4	60	(5)	283	(22)	343	(26)	697	(53)	266	(20)	38:100	0	1,306
Jun 2019	453	20.3	33	(4)	169	(22)	202	(26)	390	(51)	178	(23)	46:100	0	770

^a Surveys were not conducted in 2011, 2012, 2018, and 2020 due to inclement weather conditions.

^b Percent is calculated based on the number of total sheep.

^c Ewe-likes include adult ewes, all yearlings, and young rams that are indistinguishable from ewes.

Recommendations for Activity 1.1

Continue to conduct annual surveys to monitor the total number of Dall sheep and changes in demographics.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor harvest by hunters and assess the age of the harvest through harvest reports and horn sealing.

Data Needs

Annual summaries of harvest are necessary for understanding harvest in relation to the department's management objectives, subsistence, and sustained yield. Also, analysis of harvest data informs our recommendations to the BOG.

Methods

ADF&G staff used mandatory harvest report data from both harvest ticket and permit hunts, along with data collected during the mandatory horn sealing process, to assess the age structure of the harvest and hunter success. We queried the department's internal harvest database, which is housed on the Wildlife Information Network (WinfoNet), to construct summaries of reported harvest. Successful hunters in all hunts 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 was placed into the horn, the sheep was aged, and it was determined if the horns were full curl, broken, or sublegal. Measurements, including total length and base circumference, were also recorded.

Season and Bag Limit

Unit(s)	Bag limit	Resident season	Nonresident season
Units 19B and 19C	1 ram with full-curl horns or larger	10 Aug–20 Sep	10 Aug–20 Sep (every 4 regulatory years)
Units 19B and 19C	1 ram with full-curl horns or larger (youth hunt only)	1–5 Aug	1–5 Aug (every 4 regulatory years)
Unit 19C	1 ram with three-quarter-curl horns or smaller, excluding rams with both tips broken, ewes with lambs, and lambs (by permit, available online or in person in McGrath and Nikolai)	1 Oct–30 Apr (RS380)	No open season

Results and Discussion

Harvest by Hunters

In RY16–RY20, the average annual reported harvest of Dall sheep in Units 19B and 19C was 104 rams, which were taken by hunters using harvest tickets during the full-curl ram hunts (Table 2). The average horn length of these rams was 35.7 inches, and the average age was 8.8 years. In general, average horn length and age of harvested rams are influenced by the full-curl regulation, as most rams become full-curl at 6–8 years of age and usually have a horn length ≥ 34 inches (Heimer and Smith 1975). The number of rams harvested with horns ≥ 40 inches ranged from a low of 4 in RY16 and RY19 to a high of 7 in RY17 and RY18.

Table 2. Units 19B and 19C Dall sheep harvest, horn length, and age, Interior Alaska, regulatory years 2016–2020.

Regulatory year	Rams harvested	\bar{x} horn length (in)	Rams harvested with horns ≥ 40 in	\bar{x} age (y)
2016	103	35.6	4	8.7
2017 ^a	110	35.5	7	8.7
2018	121	35.8	7	8.9
2019 ^b	115	35.6	4	8.8
2020	72	36.0	5	8.8
Total	521	35.7	27	8.8

^a Total includes 5 additional sheep taken during the winter season (RS380).

^b Total includes 4 additional sheep taken during the winter season (RS380).

Permit Hunts

A total of 9 Dall sheep were harvested during the winter registration hunt (RS380). This included 5 sheep (1 ram and 4 ewes) in RY17 and 4 sheep (3 rams and 1 ewe) in RY19.

Hunter Residency and Success

Unit 19B averaged 8 hunters per year, with most being residents (Table 3). Only 2 Dall sheep were harvested between RY16 and RY20.

Table 3. Unit 19B Dall sheep hunter residency and success, Interior Alaska, regulatory years 2016–2020.

Regulatory year	Successful					Unsuccessful					Total hunters
	Resident	Nonresident	Unknown	Total	(%)	Resident	Nonresident	Unknown	Total	(%)	
2016	3	0	0	3	(30)	7	0	0	7	(70)	10
2017	0	0	0	0	(0)	1	0	0	1	(100)	1
2018	1	2	0	3	(30)	7	0	0	7	(70)	10
2019	1	0	0	1	(20)	4	0	0	4	(80)	5
2020	4	0	0	4	(31)	7	2	0	9	(69)	13

During RY16–RY20 in Unit 19C, there was an average of 90 nonresident hunters and 96 resident hunters per season. The average annual success rate for nonresident hunters was 74%, while it was 35% for resident hunters. Nonresidents were more successful than residents in Unit 19C, harvesting 66% of all Dall sheep compared to 34% harvested by residents (Table 4). Success rates for nonresidents were likely higher than those for resident hunters because they were typically accompanied by guides.

Table 4. Unit 19C Dall sheep hunter residency and success, Interior Alaska, regulatory years 2016–2020.

Regulatory year	Successful					Unsuccessful					Total hunters
	Resident	Nonresident	Unknown	Total	(%)	Resident	Nonresident	Unknown	Total	(%)	
2016	34	62	4	100	(55)	54	26	1	81	(45)	181
2017	46	64	0	110	(59)	60	17	0	77	(41)	187
2018	39	79	0	118	(55)	68	28	0	96	(45)	214
2019	39	75	0	114	(60)	58	18	0	76	(40)	190
2020	14	53	1	68	(41)	69	29	0	98	(59)	166

Additional harvest information, including specific hunt types, harvest success, harvest chronology, and transportation, is available to the public for hunt planning on the ADF&G website.²

Harvest Chronology

As in previous reporting periods, most of the Dall sheep harvest in Units 19B and 19C occurred during the first week of the 6-week season (10–16 August; Table 5). During RY16–RY20, an average of 44% of the harvest occurred between 10 and 16 August, and over half of the sheep were harvested by the end of the second week. Hunter crowding is a common complaint in this area because most hunters choose to go early in the season when weather conditions are most favorable.

Harvest during the winter hunt (RY16–RY20) occurred during February (4 sheep), March (4 sheep), and April (1 sheep).

Transport Methods

There are no communities or roads in Units 19B and 19C. During RY16–RY20, most Dall sheep hunters in the fall arrived at their hunting locations using an aircraft for access (Table 6). While other methods of transportation were reported, they were secondary to aircraft access. Nearly all hunters arrived in these units by airplane, with some exceptions (e.g., snowmachines for the winter hunt). For instance, sheep harvested in Unit 19C during the winter registration hunt were all taken by residents using a snowmachine for transportation.

Other Mortality

Winter weather, nutritional status, and predation are all potential sources of mortality. During 2018 and 2019, heavy snow accumulation and prolonged winters are believed to have increased natural mortality among Dall sheep populations in the Alaska Range. Other causes, such as rockslides and avalanches, may also contribute to sheep mortality.

Alaska Board of Game Actions and Emergency Orders

Due to concern over declining Dall sheep numbers, the winter registration hunt was closed by emergency orders in RY20.

² <https://secure.wildlife.alaska.gov/index.cfm?adfg=harvest.main>.

Table 5. Units 19B and 19C Dall sheep percent harvest chronology by week, Interior Alaska, regulatory years 2016–2020.

Regulatory year	Harvest chronology by week (%)														<i>n</i>				
	8/1–8/5 ^a		8/10–8/16		8/17–8/23		8/24–8/30		8/31–9/6		9/7–9/13		9/14–9/20			Winter ^b		Unknown	
	Sheep	(%)	Sheep	(%)	Sheep	(%)	Sheep	(%)	Sheep	(%)	Sheep	(%)	Sheep	(%)		Sheep	(%)	Sheep	(%)
2016	3	(3)	51	(50)	19	(18)	11	(11)	11	(11)	6	(6)	2	(2)	0	(0)	0	(0)	103
2017	5	(5)	45	(41)	14	(13)	17	(15)	7	(6)	10	(9)	5	(5)	5	(5)	1	(1)	110 ^c
2018	6	(5)	59	(49)	12	(10)	15	(13)	11	(9)	10	(8)	8	(7)	0	(0)	0	(0)	121
2019	3	(3)	45	(39)	15	(13)	16	(14)	25	(22)	7	(6)	0	(0)	4	(3)	0	(0)	115
2020	2	(3)	30	(42)	15	(21)	12	(17)	5	(7)	5	(7)	2	(3)	0	(0)	1	(1)	72

^a Youth sheep hunt harvest during 1–5 August.

^b Winter hunt with registration permit (RS380) is open 1 October–30 April.

^c Includes 1 ram harvested 26 September 2017.

Table 6. Units 19B and 19C Dall sheep hunting percent by transport method, Interior Alaska, regulatory years 2016–2020.

Regulatory year	Hunting by transport method																<i>n</i>
	Airplane	(%)	Horse	(%)	Boat	(%)	4-wheeler	(%)	Snowmachine	(%)	ORV	(%)	Highway vehicle	(%)	Unknown	(%)	
2016	152	(80)	0	(0)	3 ^a	(2)	14	(7)	3	(2)	6	(3)	0	(0)	13	(7)	191
2017	155	(82)	0	(0)	1	(1)	10	(5)	7	(4)	10	(5)	2	(1)	3	(2)	188
2018	185	(83)	1	(0)	3	(1)	15	(7)	2	(1)	9	(4)	1	(0)	8	(4)	224
2019	148	(76)	0	(0)	2	(1)	11	(6)	6	(3)	14	(7)	1	(0)	13	(7)	195
2020	136	(76)	2	(1)	3	(2)	18	(10)	0	(0)	14	(8)	1	(0)	5	(3)	179

^a Includes 1 transport by airboat.

Recommendations for Activity 2.1

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

3. Habitat Assessment-Enhancement

No habitat assessment or enhancement activities occurred for Dall sheep in Units 19B and 19C during RY16–RY20.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

The effects of weather, nutritional status, habitat, survival, ram-to-ewe ratios, parturition, and recruitment of Dall sheep in Units 19B and 19C are poorly understood. Further research to address these questions would provide insight into sheep management in the area.

Data Recording and Archiving

Harvest data are stored on WinfoNet. Field data sheets for surveys and memos are stored on the WinfoNet server under Data Archives/McGrath Area Office. Hard copies and electronic data, such as survey memos and reports, are stored in physical and digital files at the McGrath Area office.

Agreements

None.

Permitting

None.

Conclusions and Management Recommendations

Issues in Unit 19C include hunter crowding and aggressive early-season activity by guides, which can disrupt the hunts of others. Reports from hunters about crowding in Unit 19C are common, and the department receives complaints from both resident hunters and guides as hunting pressure increases. Some resident hunters report that these conditions negatively affect the quality of the Dall sheep-hunting experience in Unit 19C.

After much deliberation and public testimony, the BOG passed Proposal 207 in RY15, which restricts the use of aircraft to locate or scout for sheep from 10 August through 20 September to provide a better experience for sheep hunters. Since its inception, informal interviews and reports suggest that support for this regulation has increased from both resident hunters and guides in Units 19B and 19C. The lack of aerial traffic throughout sheep season, as a result of the proposal, has anecdotally enhanced the hunting experience for sheep hunters. This coincides with our goal of providing aesthetically pleasing hunting conditions; however, conflicts between residents and nonresidents persist.

We met our management objective of maintaining a harvest of rams averaging ≥ 8 years old during RY16–RY20, with an average age of 8.8 years. Also, we met the management objective of maintaining a winter harvest of fewer than 10 sheep per year during this same period. We also met our management goals of providing opportunities for the sustainable harvest of Dall sheep rams and for subsistence.

Interest and participation in sheep hunting have been growing in Unit 19C. Harvest report data show an average of 193 hunters in the fall harvest ticket hunt during RY16–RY20, which is an increase from the total average of 171 hunters during RY11–RY15 and 136 hunters during RY01–RY10.

The annual harvest declined by roughly 36% in RY20 compared to the averages for RY16–RY19. Nonresidents continue to successfully harvest at a higher percentage than residents, likely because nonresidents primarily use guides in established camps.

The number of lambs declined sharply in RY13, likely related to weather events and a particularly late spring. Lamb numbers appear to have increased and stabilized through RY19, reaching a 7-year high count in RY17 (266 lambs). Reports of low lamb numbers in RY20 were received from hunters and guide-outfitters in the area. Since surveys were not completed in RY20 due to poor weather conditions, we were unable to verify these observations with composition count data. We will continue to attempt composition surveys annually; however, weather conditions may prevent us from flying every year. Also, methods to estimate statistical precision (e.g., utilizing double-count methods; Whitten 1997) are not used because they are cost-prohibitive; therefore, the unknown precision of these data limits our ability to interpret them.

The percentages of rams with both full curl and less-than-full curl have remained consistent since RY16. The total number of Dall sheep observed in RY19 (770 sheep) has declined significantly since RY16 (1,043 sheep) and RY17 (1,306 sheep). These decreases are most likely due to the harsh winter conditions in RY18 and RY19.

II. Project Review and RY21–RY25 Plan

Review of Management Direction

MANAGEMENT DIRECTION

The RY16–RY20 management direction, goals, and objectives for Units 19B and 19C will remain the same for RY21–RY25.

GOALS

No change from RY16–RY20.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

No change from RY16–RY20.

Intensive Management

No change from RY16–RY20.

MANAGEMENT OBJECTIVES

No change from RY16–RY20.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Assess population trends and composition through annual aerial surveys.

Data Needs

Conducting annual population and composition count surveys provides data to evaluate population trends. Aerial surveys continue to provide the best means to accomplish this activity.

Methods

No change from the report period. Fixed-wing aircraft will be used to fly designated survey areas to count Dall sheep populations. Each aircraft will consist of a pilot-observer team to accomplish this task. Flights will be performed in June or July, depending on weather conditions. ADF&G staff will evaluate lambs, ewe-like, and ram cohorts to determine total numbers and composition percentages (e.g., Table 1).

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Monitor harvest by hunters and assess the age of the harvest through harvest tickets and horn sealing.

Data Needs

No change from the report period. Sealing data and harvest tickets provide the best means to monitor harvest and age structure from harvested rams.

Methods

No change from the report period. Harvest data will be assessed using queries of the database accessible through WinfoNet.

3. Habitat Assessment-Enhancement

No habitat assessment or enhancement activities are expected for Dall sheep in Units 19B and 19C during RY16–RY20.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

No change from RY16–RY20.

Data Recording and Archiving

Dall sheep survey data and files will be located within the McGrath Area office. Historical data and survey data will be archived in the WinfoNet data archiving system as time permits.

Agreements

None.

Permitting

None.

References Cited

- Alaska Department of Fish and Game. 1976. Alaska wildlife management plans: A public proposal for the management of Alaska's wildlife: Interior Alaska. Draft proposal subsequently adopted by Alaska Board of Game. Division of Game, Federal Aid in Wildlife Restoration Project W-17-R, Juneau.
- Heimer, W. E., and A. C. Smith III. 1975. Ram horn growth and population quality: Their significance to Dall sheep management in Alaska. Alaska Department of Fish and Game, Division of Game, Technical Bulletin No. 5, Juneau.
- Whitten, K. R. 1997. Estimating population and composition of Dall sheep in Alaska: Assessment of previously used methods and experimental implementation of new techniques. Alaska Department of Fish and Game, Division of Wildlife Conservation, Research Final Report 1 July 1994–31 December 1996, Federal Aid in Wildlife Restoration Study 6.11, Juneau.

