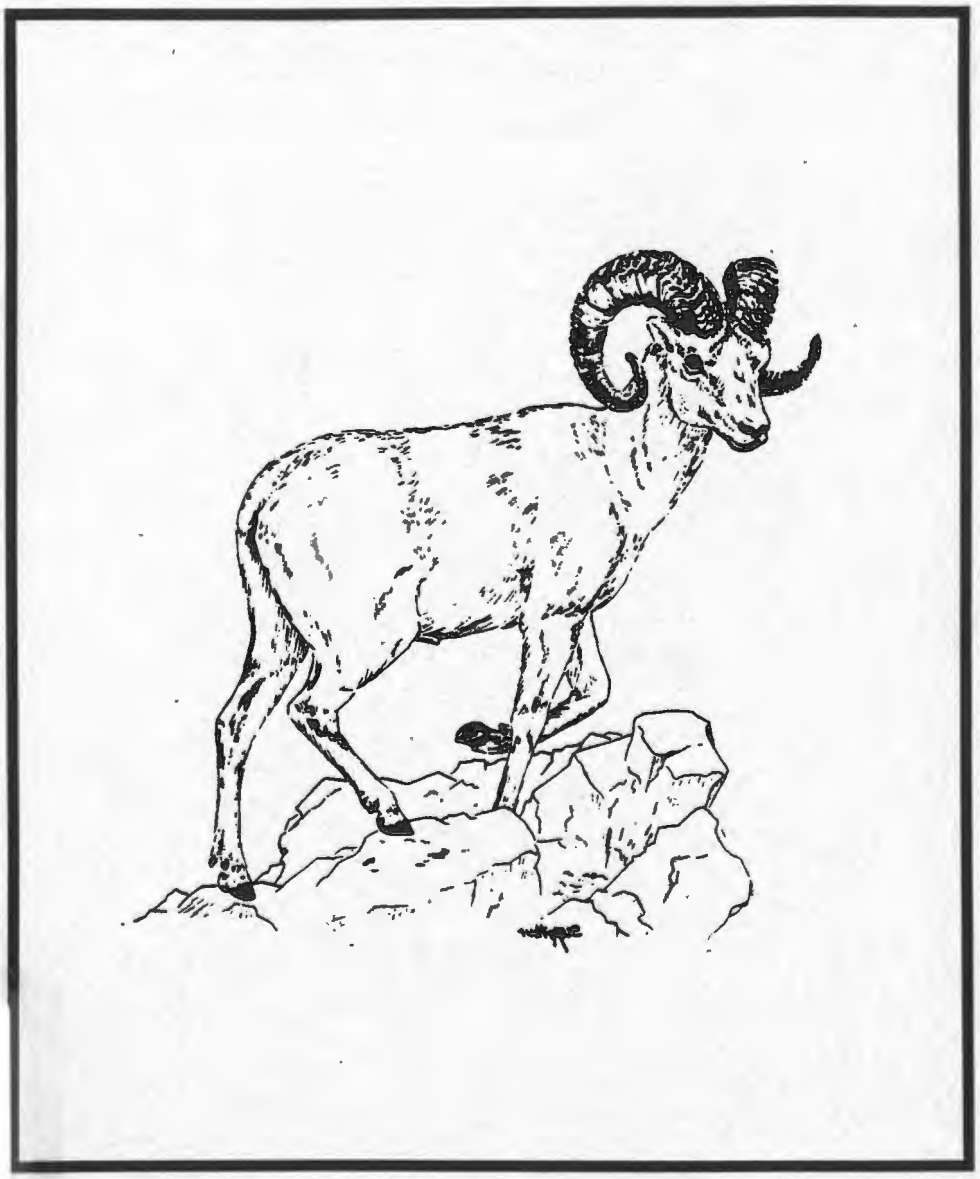
Alaska Department of Fish and Game
Division of Wildlife Conservation

Federal Aid in Wildlife Restoration
Annual Performance Report of
Survey-Inventory Activities
1 July 1991 - 30 June 1992

DALL SHEEP

Susan M. Abbott, Editor



Volume XXIII, Part II
Project W-23-5, Study 6.0
November 1992

STATE OF ALASKA
Walter J. Hickel, Governor

DEPARTMENT OF FISH AND GAME
Carl L. Rosier, Commissioner

DIVISION OF WILDLIFE CONSERVATION
David G. Kelleyhouse, Director
Wayne L. Regelin, Deputy Director

Additional copies of this report and other Division of Wildlife Conservation publications may be obtained from:

Publications Specialist
ADF&G, Wildlife Conservation
P.O. Box 22526
Juneau, AK 99802
(907) 465-4190

Project Title: **Southcentral Alaska Dall Sheep Management**

Sheep populations in the region are managed by mountain range or special hunt area. Mountain ranges frequently divide Game Management Units, therefore unit numbers may be repeated in sections of the text.

Project Location: Units 7 and 15 - Kenai Mountains

Project Objectives and Activities: Maintain a population of sheep that will sustain an annual harvest of 25 rams. Identify critical sheep habitat (e.g., mineral licks and lambing areas). Monitor the harvest through hunter contacts and harvest reports. Conduct composition surveys.

Work Accomplished During the Project Segment Period: During 1991, 208 hunters harvested 40 rams (19% success rate). The mean horn length of rams was 35 inches (range 30 to 38.5), and average age was 7.6 years (range 6 to 10). Alaska residents harvested 35 rams (88%), nonresidents killed three sheep (7%), and the residency of two successful hunters (5%) was unknown.

Ten of 15 count areas open to hunting in the Kenai Mountains were surveyed during 1991. We observed 926 sheep and classified them as follows: 40 legal rams (full-curl), 201 sublegal rams, 512 unidentified sheep, and 173 lambs. Lambs comprised 19% of the sheep observed.

The Cooper Landing area (closed to sheep hunting) was also surveyed in 1991. We observed 291 sheep which we classified as follows: 12 legal rams, 74 sublegal rams, 159 unidentified sheep and 46 lambs. Lambs comprised 16% of the sheep observed.

Progress Toward Meeting Project Objectives: We estimated the fall population at 1,200-1,500 sheep. The harvest of 40 rams exceeded the management objective. Hunting pressure in the Kenai Mountains has increased, resulting in the harvest of most legal rams annually. In an effort to satisfy the increasing interest in harvesting large rams, the harvest should be reduced in certain areas to allow the average age of rams to increase. Hunting should be limited by permits to accomplish this objective. Additionally, we recommend a limited harvest of ewes in areas with large numbers of female sheep.

Project Location: Subunits 13A, 13E, 14A, and 14B - Talkeetna Mountains

Project Objectives and Activities: Maintain a population of sheep that will sustain an annual harvest of 75 rams.

Identify critical sheep habitat (e.g., mineral licks and lambing areas). Monitor the harvest through hunter contacts and harvest reports. Conduct composition surveys.

Work Accomplished During the Project Segment Period: Hunters reported harvesting 88 sheep in 1991; harvest reports were analyzed. We did not conduct composition surveys during this report period.

Progress Toward Meeting Project Objectives: Harvest objectives for the Talkeetna Mountains were exceeded. The status of the sheep population is unknown, however, sufficient numbers of full-curl rams were available to meet the management objective.

Project Location: Unit 11 and Subunits 13D, 14A, and 14C - Chugach Mountains

Project Objectives and Activities: Maintain a population of sheep that will sustain an annual harvest of 120 rams.

Identify critical sheep habitat (e.g., mineral licks and lambing areas). Monitor the harvest through hunter contacts, harvest or permit reports, and ageing/measuring sheep horns. Conduct composition surveys.

Work Accomplished During the Project Segment Period: The sheep harvest for the Chugach Mountains (except Subunit 14C) was 99 full-curl rams; harvest reports were analyzed. All Subunit 14C sheep hunters were required to bring their permit and horns to an ADF&G office within 10 days of taking the sheep. All horns were aged by horn annuli, and length and base measurements were recorded.

Hunters in Subunit 14C killed 83 sheep including 28 full-curl or larger rams, 21 7/8-curl rams, 10 3/4-curl or less rams, and 24 ewes. The mean horn length of rams 7/8-curl or larger was 34.6 inches and the mean age was 7.6 years. This was the third season that hunters could take any sheep in Subunit 14C.

Sheep population size and composition for Subunit 14C was determined by aerial surveys in July. We counted 2,282 sheep which we classified as follows: 228 7/8-curl or larger rams, 416 1/2 to 3/4-curl rams, 410 lambs, and 1,228 ewes and 1 or 2-year-old rams.

Progress Toward Meeting Project Objectives: Harvest objectives for the Chugach Mountains were exceeded. Sheep populations in southcentral Alaska ranges were at relatively high levels although declines may have occurred in some areas. Sufficient numbers of rams were available in 1991 to meet management objectives.

Project Location: Unit 11 - South Wrangell Mountains

Project Objectives and Activities: Maintain a sheep population that will sustain an annual harvest of 60 rams.

Identify critical sheep habitat (e.g., mineral licks and lambing areas). Monitor the harvest through hunter contacts and harvest reports. Conduct composition surveys.

Work Accomplished During the Project Segment Period: Hunters reported taking 163 sheep during 1991. We analyzed harvest reports, but did not conduct composition surveys.

Progress Toward Meeting Project Objectives: Harvests in 1991 exceeded the management objective of maintaining a population in the South Wrangell Mountains that could sustain an annual harvest of 60 rams. Hunting pressure in this area has increased and management objectives and harvest strategy should be reevaluated.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	6.1	1.2	7.3
Actual	6.1	3.1	9.2
Difference		-1.9	-1.9

Submitted by:

John Trent and Kenneth Pitcher
Management Coordinators

Project Title: **Interior Dall Sheep Population and Habitat Management**

Project Location: Unit 12 - North Wrangell, Nutzotin, and Mentasta Mountains

Project Objectives and Activities:

1. Manage to maintain a population of approximately 12,000 Dall sheep.
   a. Monitor the Dall sheep harvest through hunter contacts and harvest reports.

Work Accomplished During the Project Segment Period: Four hundred eighty-six hunters (364 residents, 100 nonresidents, 22 unknown residency) reported taking 269 full-curl rams during FY92, for a hunter success rate of 55% that equals the success rate for the 1990-91 season. This is a high harvest success rate for an area managed to provide maximum opportunity to participate in hunting Dall sheep. The mean horn length was 34.3 inches, and the average age of harvested rams was 8.8 years.

Progress Towards Meeting Project Objectives: The human use objective of providing the maximum opportunity to participate in Dall sheep hunting was attained. The population objective needs to be modified because of management priorities and land ownership in most of this sheep population's range. No aerial surveys are planned nor budgeted to census the population, and because of federal land ownership there are no means of action to maintain a population of 12,000 Dall sheep. The new objectives will be to provide the greatest level of sustainable annual opportunity to participate in hunting Dall sheep and provide the greatest level of sustainable annual harvest of mature rams.

Project Location: Units 12, 13, and 20 - Tok Management Area

Project Objectives and Activities:

1. Manage for a harvest of 30-45 Dall sheep rams each year with a mean horn length of 36-37 inches among harvested rams and a mean age of 8-9 years.
   a. Monitor the Dall sheep harvest through hunter contacts and harvest reports.
   b. Conduct aerial or ground composition surveys of Dall sheep.
2. Manage to obtain an average of 7-10% of Dall sheep rams with 40-inch or greater horns in the harvest.
3. Manage to prevent unacceptable increases in hunter concentration and maintain the existing aesthetically pleasing qualities associated with Dall sheep hunting in the Tok Management Area.

Work Accomplished During the Project Segment Period: ADF&G issued 120 drawing permits fall 1991; 94 hunters reported taking 52 full-curl rams for a hunting success rate of 55.3%. Average horn length was 36.5 inches, and the mean age of rams harvested was

8.9 years. Nine (17.3%) of the 52 rams harvested had horn lengths of 40 inches or more. The harvest was higher than normal probably because of excellent weather throughout the season. The horn size and age of harvested rams met the project objectives.

ADF&G staff and volunteers classified 73 sheep at the Sheep Creek mineral lick during the first week of July 1991. The ratio of lambs:ewes was 37:100 and yearlings:ewes was 24:100. Lamb production and yearling recruitment during 1991-92 were at levels that are capable of sustaining the population, but probably not high enough for population growth.

Progress Towards Meeting Project Objectives: Management objectives in the Tok Management Area have been achieved throughout the last decade and were maintained this year. Continued attainment is probable because of the current drawing permit system.

Project Location: Subunit 20A - Eastern Alaska Range

Project Objectives and Activities:

1. Provide the greatest level of sustainable annual opportunity to participate in hunting Dall sheep.
2. Provide the greatest level of sustainable annual harvest of Dall sheep.
   a. Monitor the Dall sheep harvest through hunter contacts and harvest reports.
3. Provide the opportunity to view and photograph Dall sheep under natural conditions.
4. Manage for a Dall sheep population of approximately 5,000 sheep.
   a. Conduct aerial or ground composition surveys of Dall sheep.
5. Maintain naturally regulated Dall sheep ewe and subadult ram segments of the population.

Work Accomplished During the Project Segment Period: From 1985 through 1989, Dall sheep harvests steadily increased from 102 to 160 rams, with hunter success rates of 35-40%. In 1990, reported harvest dropped to 122 and hunter success to 33%. In 1991, sheep harvest reports indicate that harvest was even lower but the success rate was nearly the same (109 rams taken by 337 hunters for 32% success). Successful hunters included 70% residents and 30% nonresidents. Unsuccessful hunters included 90% residents, 7% nonresidents, and 3% unspecified residency.

In 1991, the area west and south of the Wood River drainage had 54% (52/109) of the Dall sheep harvest and 65% (220/337) of the hunters. The Wood River drainage had 17% (19/109) of the harvest and 14% (47/337) of the hunters. The Little Delta River had 15% (16/109) of the harvest and 11% (37/337) of the hunters.

We monitored Dall sheep hunters from a check station on Healy Creek from 12 to 15 August 1991. Only 4 of the 16 (25%) sheep hunters we contacted was successful. Most

hunters commented on how few sheep they saw relative to other years. The four sheep harvested included two 7-year-old full-curl rams and two 9-year-old 7/8-curl rams (no broomed horns). The latter rams were legal based on age, not horn size, with horn length ranging from 30.50 to 32.25 inches.

We aerially surveyed 220 mi^2 of sheep habitat between the Wood River and the West Fork of the Little Delta River on 22, 23, and 25 July 1991. Conditions were good-to-excellent and the same survey boundaries were used as during the last survey in 1984. We observed only 698 sheep during the 1991 survey, which represented a 47% decline from the 1,313 seen in 1984. Although the decline was evident in all sex/age categories, the largest discrepancy was in the number of lambs. The 1991 lamb:ewe ratio (18:100) was substantially lower than in 1984 (38:100), and the percent lambs in the population (11%) was also substantially lower (21%).

Progress Toward Meeting Project Objectives: We met our objective of providing the greatest opportunity to participate in hunting Dall sheep by maintaining a resident and nonresident open season for full-curl rams from 10 August through 20 September. The restriction for full-curl rams also allows us to meet our objective to maintain naturally regulated ewe and subadult ram segments of the population.

We are probably not meeting our objective to manage for a population of approximately 5,000 Dall sheep. Based on our aerial survey in July 1991, hunter and pilot reports, and harvest, I estimate a population of 2,000-4,000 sheep. We anticipate surveying additional portions of Subunit 20A in 1992 to investigate this decline. However, because the harvest is restricted to the taking of full-curl rams, we do not recommend any changes in sheep hunting regulations.

The decline in the sheep population is probably because of several hard winters and predation. During the early 1980s several cohorts were also apparently relatively few in number, which would influence current population size. We are in the process of finalizing area-specific wolf management plans for this area and are examining the possible range of impacts of wolf predation on ungulates in Subunit 20A.

Project Location: Unit 20 - Tanana Hills

Project Objectives and Activities:

1. Manage for aesthetically pleasing Dall sheep hunting conditions.
2. Manage to increase Dall sheep numbers from an estimated 350 to 700 by the year 2000.
    a. Monitor the Dall sheep harvest through hunter contacts and harvest or permit reports.

Work Accomplished During the Project Segment Period: We issued a total of 12 drawing permits to hunters for the Mount Harper (hunt 1106), Seventymile River (hunt 1107), and Charley River (hunt 1108) areas. Hunters needed only harvest tickets to hunt in the Glacier Mountain Controlled Use Area. Three hunters participated in hunt 1106, harvesting two full-curl rams with horn lengths of 35 and 38 inches. In hunt area 1107, one hunter participated but was not successful. In hunt area 1108, two hunters participated and harvested one 38-inch full-curl ram. In the Glacier Mountain area, 11 hunters (all residents) reported hunting sheep and harvested three full-curl rams. The horn length ranged between 31 and 37 inches.

Progress Towards Meeting Project Objectives: The use objective to provide an aesthetically pleasing hunting opportunity was achieved. All hunters were pleased with the quality of their hunting experience, and trophy size was good. During the fall 1992 meeting, the Board of Game will decide if wolf control will occur in a portion of Subunits 20D and 20E. If the board adopts the wolf control plan, we anticipate an increase in the Tanana Hills sheep population.

Project Location: Units 9, 16, 17, and 19 - Alaska Range West

Project Objectives and Activities:

1. Manage the existing Dall sheep populations at recently recorded levels of abundance and productivity.
   a. Conduct aerial or ground composition surveys of Dall sheep.
2. Manage for uncrowded Dall sheep hunting conditions and an average success rate of at least 50%.
3. Manage for a mean Dall sheep horn length of not less than 34 inches and a reported mean age above 7.5 years among harvested rams.
   a. Monitor the Dall sheep harvest through hunter contacts and harvest permits.

Work Accomplished During the Project Segment Period: We monitored and assessed Dall sheep harvests in the Alaska Range West by evaluating hunter harvest reports. We did not assess hunter distribution or success during the open season.

According to preliminary harvest reports, 139 rams were harvested during fall 1991. Ram horn lengths averaged 35.5 inches, with a reported mean age of 8.9 years. These figures are not statistically different from the previous year. We did not conduct aerial surveys of the Dall sheep population in the Alaska Range West during this report period.

Progress Towards Meeting Project Objectives: The management objectives listed above for the Alaska Range West Dall sheep population were fulfilled. Changes in

regulations allowing only the harvest of full-curl or larger rams probably serves to maintain a healthy population with the take restricted to older-aged rams.

Project Location: Units 13 and 20 - Delta Controlled Use Area

1. Manage a population of approximately 1,800 Dall sheep to provide a mean annual harvest of 35 full-curl rams with a mean horn length of more than 36 inches and mean age exceeding 8 years.
   a. Monitor the Dall sheep harvest through hunter contacts and permit reports.
   b. Conduct aerial or ground composition surveys of Dall sheep.
   c. Capture Dall sheep in the Delta Controlled Use Area in Subunit 20D; collect and analyze blood samples.
   d. Mail a questionnaire to hunters and quantify their satisfaction with aesthetics of Dall sheep hunting in the Delta Controlled Use Area.
2. Manage to provide aesthetically pleasing Dall sheep hunting conditions.

Work Accomplished During the Project Segment Period: Fifty-four people (49 residents and 5 nonresidents) hunted Dall sheep during the first season (permit hunt 1103), harvested 23 sheep, and had a 43% success rate. Sheep harvested during hunt 1103 had a mean horn length of 35.9 inches and a mean age of 9.9 years.

Forty-seven residents hunted during the second season (permit hunt 1104), harvested 19 sheep, and had a 40% success rate. Sheep harvested during hunt 1104 had a mean horn length of 36.5 inches and a mean age of 9.1 years.

Overall, 101 people hunted Dall sheep in the Delta Controlled Use Area (96 residents and 5 nonresidents) and harvested 42 sheep for a success rate of 42%. Mean horn length of all Dall sheep harvested was 36.2 inches and mean age was 9.5 years.

ADF&G staff and volunteers collected Dall sheep composition data from the ground at the Granite Creek mineral lick during June 1992, but results are not available.

We captured 17 Dall sheep during June 1992 at the Granite Creek mineral lick. Blood was taken from each sheep and will be analyzed for the Granite Creek serological survey. We marked all captured sheep with neck collars or ear tags.

We mailed questionnaires to all Dall sheep hunters using the Delta Controlled Use Area during the 1991 season. Twenty-six hunters with hunt 1103 permits responded and 88% were satisfied with the aesthetics of their hunt. Seventeen hunters with hunt 1104 permits responded and 87% were satisfied with the aesthetics of their hunt.

Progress Towards Meeting Project Objectives: Management objectives were met during the 1991 season for number of Dall sheep harvested, horn size, and age of

harvested sheep. Most hunters were satisfied with the quality of their hunt. We collected composition data, captured sheep, and collected blood at the Granite Creek mineral lick.

Project Location: Subunit 25C - White Mountains

Project Objectives and Activities:

1. Manage for a population of at least 250 Dall sheep.
   a. Conduct aerial or ground composition surveys of Dall sheep.
2. Establish guidelines by 1990 for protection of Dall sheep habitat in the White Mountains in cooperation with other land management agencies and potentially affected interest groups.
3. Determine by 1991 if the management goal of providing aesthetic hunting conditions for Dall sheep is consistent with current public interest.
4. Monitor Dall sheep harvest through hunter contacts and harvest or permit reports.

Work Accomplished During the Project Segment Period: Biologists from the Bureau of Land Management (BLM) flew an aerial survey in the vicinity of Mount Prindle, Lime Peak, the White Mountains, and most of Mount Schwatka from 30 September to 3 October 1991. During 8.8 hours of surveying, they classified 354 Dall sheep (220 ewes, 53 lambs, 9 greater than or equal to full-curl rams, and 72 less than full-curl rams). This represented a considerable increase from the 237 sheep seen during the most recent survey in August 1989. Survey coverage in 1992 was more complete than in 1989, therefore this does not necessarily represent a population increase. In addition, distribution of sheep may be different in August than in October.

To reduce ORV traffic into Dall sheep habitat, BLM closed the Mount Prindle portion of the Quartz Creek trail to ORVs. The BLM biologist believes this may be an important pre-rut area for lambs and ewes.

In 1991, 19 resident Dall sheep hunters reported harvesting two rams in the White Mountains.

Progress Toward Meeting Project Objectives: According to an aerial survey of Dall sheep in 1991 during which 354 sheep were observed, we are well exceeding our objective to manage for a population of at least 250 sheep.

Several activities have also occurred to benefit Dall sheep habitat in this area. BLM's plans for future development and expansion of facilities, particularly in the Nome Creek area, should be closely monitored to ensure that sheep habitat is not undesirably compromised.

Dall sheep hunting activities continue to be minimal in the White Mountains. Since at least 1984, harvest has not exceeded five rams per year and the number of hunters has not exceeded 25 per year.

Objectives should be revised for the next report period as follows:

1. Manage for the sustained opportunity to harvest full-curl Dall sheep rams from a population of at least 250 sheep.
   a. Conduct aerial or ground composition surveys of Dall sheep.
   b. Monitor the Dall sheep harvest through harvest reports and/or hunter contacts.
2. Cooperate with BLM and potentially affected interest groups to protect Dall sheep habitat.
   a. Provide input to interagency fire management plans when necessary.
   b. Review plans for development of the Nome Creek area, including plans to build an improved road above Nome Creek in 1993.

Project Location: Unit 24 - Central Brooks Range

Project Objectives and Activities:

1. Maintain or increase the Dall sheep population within the Gates of the Arctic National Park and provide for opportunities to view and photograph sheep while allowing for a subsistence harvest of up to 50 sheep per year.
   a. Monitor subsistence Dall sheep hunting success through periodic visits to villages in the unit.
2. In other areas of the unit, maintain or increase the Dall sheep population to provide an average annual harvest of at least five rams under aesthetically pleasing hunting conditions.

Work Accomplished During the Project Segment Period: Within the Gates of the Arctic National Park, 34 hunters registered to hunt Dall sheep during a subsistence season. Hunters reported harvesting 19 sheep (16 rams and 3 ewes) between August and October. We obtained harvest data through direct contact after the hunt and from reminder letters sent to registered hunters who did not report.

Outside the park, 30 hunters harvested 10 Dall sheep rams; 9 were taken from the John River drainage and 1 from the Wild River drainage. Seven of the successful hunters were nonresidents.

Progress Toward Meeting Project Objectives: Objectives to monitor harvest through harvest tickets and permits were met. We did not conduct any aerial surveys. Management objectives are being met through the low harvest.

Project Location: Units 24, 25, and 26 - Eastern Brooks Range

Project Objectives and Activities:

1. Select trend indicator areas for determination of herd size, composition, productivity, and population trends of Dall sheep by 1991.
   a. Conduct aerial or ground composition surveys of Dall sheep.
2. Develop subsistence Dall sheep harvest assessment techniques by 1991.
3. Manage for a harvest of Dall sheep rams with a mean horn length exceeding 34 inches and a mean age of more than 8 years.
   a. Monitor the Dall sheep harvest through hunter contacts and harvest or permit reports.
4. Manage for an annual hunter harvest success of at least 40% among recreational Dall sheep hunters.
5. Determine hunter attitudes regarding the aesthetic quality of Dall sheep hunting in the eastern Brooks Range by 1991.
6. Identify suitable sites for viewing and photographing Dall sheep and cooperate with other agencies in promoting those sites by 1992.

Work Accomplished During the Project Segment Period: We analyzed hunter reports and determined that the number of recreational hunters participating in Dall sheep hunting declined slightly from 493 in 1990 to 415 in 1991. Of these 415 hunters, 53% were successful, resulting in a harvest of 221 rams with 7/8-curl or larger horns. Most of the harvest (169 or 76%) was taken in Unit 26. Resident hunters took 53% of the harvest and nonresident hunters took 36%. Eleven percent of hunters did not specify residency. Hunters spent an average of 5.3 days afield and took rams with horns averaging 34.4 inches in length and 12.8 inches in base circumference. The mean age of rams harvested was 9.0 years. Subsistence sheep harvest information from permits issued in Wiseman and Fairbanks indicated two sheep (one adult male and one adult female) were taken by one hunter. Nine permits were issued. No permits were reportedly issued in Kaktovik or Arctic Village. The U.S. Fish and Wildlife Service (USFWS) assumed responsibility for administering the hunt in the Arctic Village Sheep Management Area in 1991.

ADF&G did not conduct any surveys in the eastern Brooks Range during this report period. Aerial composition counts in Subunits 26B and 26C by Arctic National Wildlife Refuge personnel during June 1992 indicated that lamb production and survival were extremely low in the eastern Brooks Range. The poor productivity is thought to be related to the severe winter and late spring.

Progress Toward Meeting Project Objectives: Cooperative work with the USFWS resulted in surveys of the Atigun, Hulahula, and Chandalar count areas and radio-collaring of 19 sheep in the Junjik and Hulahula river drainages. Serological samples collected at

that time are being processed. We have not analyzed composition data collected during June 1992 yet, but it is clear that lambing success was very poor in 1992.

We expanded population trend indicator areas from two to three during the year by adding a trend area on the Hulahula River. Progress toward subsistence harvest assessment techniques was achieved by description of a federal subsistence zone for residents of Arctic Village. Sheep population stability in this area was enhanced by reducing the bag limit from three sheep to two rams. The possibility of overharvesting ewe sheep was reduced in 1991 by moving the boundary for subsistence harvest of sheep under state regulations eastward from the Dalton Highway to the Middle Fork of the Chandalar River. The harvest management objectives were attained, with hunters indicating they experienced an aesthetically pleasing hunting opportunity.

Suitable sites for viewing and photographing sheep were jointly identified with the USFWS and forwarded to the Watchable Wildlife Program in the department. Program personnel conducted an exploratory trip up the Dalton Highway in 1990. We have received no feedback on earlier recommendations.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	52.1	7.0	59.1
Actual	52.1	3.8	55.9
Difference	0.0	3.2	3.2

Submitted by:

Kenton P. Taylor
Management Coordinator

Project Title: **Western Alaska Dall Sheep Survey and Inventory**

Project Location: Unit 23 and Subunit 26A (99,000 mi^2)
Western Brooks Range

Project Objectives:

1. Maintain a sheep population capable of sustaining harvests at the 1983-84 to 1988-89 levels, recognizing that populations will fluctuate in response to environmental factors.
   a. Conduct aerial sex and age composition surveys in established trend count areas.
   b. Monitor hunter harvest and other mortality factors through harvest reporting, permit hunts, public contacts, and field observations.
2. Develop a management plan for Dall sheep in Unit 23 in cooperation with the public and land management agencies.

Work Accomplished During the Project Segment Period: We conducted aerial sex and age composition surveys in the Baird and DeLong mountains during July 1991. We counted 400 sheep in the Baird Mountains with the following composition: 7/8-curl rams and larger - 35; total rams (1/2-curl and larger) - 108. The ratio of lambs:100 ewes and 1/4-curl rams was 7 compared to 29 in 1990. The ratio of 7/8-curl and larger rams per 100 ewes and 1/4-curl rams was 15 compared to 7 in 1990.

We surveyed the Kugururok/Trail Creek area, and the Wulik Peaks in the DeLong Mountains. We counted 265 sheep in the Kugururok/Trail Creek area: 7/8-curl or greater rams - 38; total rams (1/2-curl and larger) - 81; ewes and 1/4-curl rams - 161; and 24 lambs. The ratio of lambs:100 ewes and 1/4-curl rams was 15. Of 137 sheep counted in the Wulik Peaks area, 17 were rams with 7/8-curl or greater, 38 were 1/2-curl or greater rams, 78 were ewes or 1/4-curl rams, and 11 were lambs. The Wulik Peaks lamb:ewe and 1/4/-curl ram ratio was 14.

We usually monitor harvest in the fall hunt through the statewide harvest ticket system for the DeLong Mountains, and a special registration harvest report for the Baird Mountains. We monitor harvest in the winter hunt through a subsistence registration report for the entire unit. Because of the emergency order closure of the hunting season in the Baird Mountains, hunters used standard statewide harvest tickets and the subsistence registration report to report harvest during 1991-92. For the fall hunt, 17 hunters reported, 10 were successful and 7 were unsuccessful. One sheep was reported harvested during the winter subsistence hunt.

Progress Towards Meeting Project Objectives: Aerial survey data indicated a severe decline in sheep numbers, recruitment, and lamb production in the Baird Mountains. We

attributed the decline to severe winter conditions which included ground fast ice and deep snow. After extensive public input, the Baird Mountains were closed to both recreational and subsistence hunting by emergency order. The season in the DeLong Mountains was shortened from 10 August - 20 September to 1 September - 20 September. We will assess the status of the Unit 23 sheep populations before the 1992-93 hunting season.

Segment Period Project Costs:

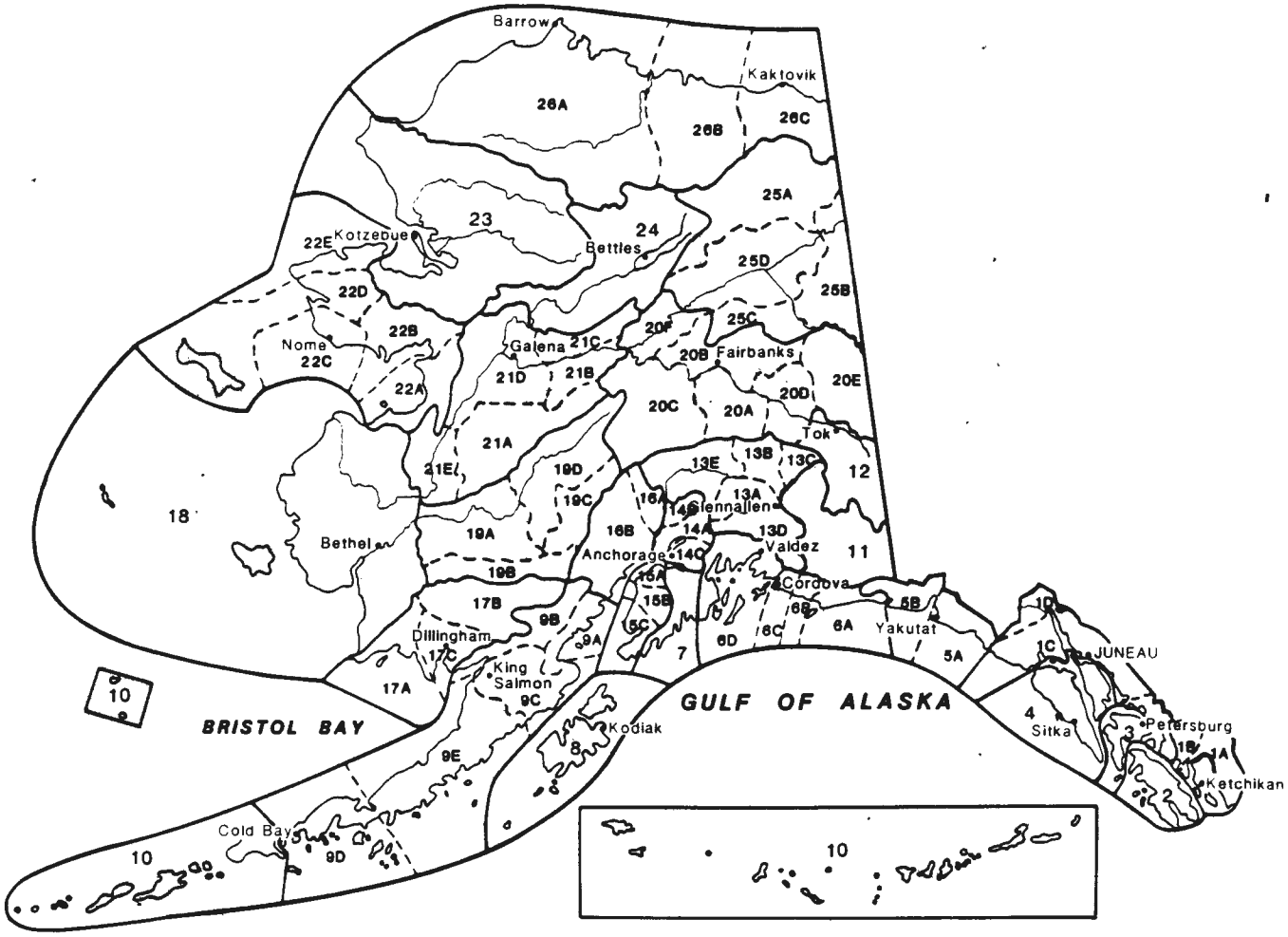
	Personnel	Operating	Total
Planned	11.5	6.0	17.5
Actual	11.5	5.0	16.5
Difference	0	-1.0	-1.0

Explanation: Additional funds from the National Park Service for aerial survey charters resulted in a slight decrease in required operating expenses.

Submitted by:

Steve Machida
Survey-Inventory Coordinator

Alaska's Game Management Units



WILDLIFE RESTORATION

Project funded by Federal Aid in Wildlife Restoration