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Division of Wildlife Conservation

Federal Aid in Wildlife Restoration
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1 July 1992 - 30 June 1993

DALL SHEEP

Susan M. Abbott, Editor



Illustration by Sue Arthur

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Project Title: Southcentral Alaska Dall Sheep Management

Project Location: Units 7, 11, 13, 14, and 15

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.

Kenai Mountains (Units 7 and 15):

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: All count areas in Unit 15, the Cooper Landing Closed Area and 4 of the 8 count areas in Unit 7 were censused during June and July of 1992 resulting in 1,290 sheep observed. Composition was 334 rams, 214 lambs and 742 ewes. Percentage of lambs was 17%. Fifty-three legal rams were observed, however, 23 of these were in the area closed to hunting.

The 4 count areas in Unit 7 not counted in 1992 were surveyed in 1991 and we found 189 sheep. Using the combined survey results from these years suggest 1,479 sheep would have been observed during a complete survey. Assuming sightability was no greater than 90%, we estimated the fall population of sheep in the Kenai Mountains at 1,643.

Preliminary harvest reports indicate 208 hunters harvested 33 rams in Units 7 and 15 during 1992. Hunter success rate was 16%. Mean horn length from reported harvest was 35.0 inches and ranged from 26.0 to 42.0. Average age was 7.9 years, with a range of 5 to 10. Thirty two (97%) rams were reported by Alaska residents and 1(3%) by a nonresident.

Progress Toward Meeting Project Objectives: The harvest of 33 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, a limited harvest of ewe sheep is recommended in areas with large numbers of female sheep.



Talkeetna Mountains (Subunits 13A, 13E, 14A, and 14B):

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 75 sheep taken by 301 hunters in 1992; harvest reports were analyzed. We did not conduct composition surveys during this report period. No work was directed specifically at identifying and documenting critical sheep habitat in the Talkeetna Mountains.

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

Chugach Mountains (Units 11, 13D, 14A, and 14C):

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 65 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 79 sheep including 33 full-curl or larger rams, 20 7/8-curl rams, 13 3/4-curl or less rams, and 13 ewes. The mean horn length of rams 7/8-curl or larger was 35.6 inches and the mean age was 8.0 years. This was the fourth season that hunters could take any sheep in Subunit 14C.

Early August surveys in Subunit 14A found 867 sheep comprised of 25 4/4 curl or larger rams, 157 1/2 to 7/8 curl rams, 176 lambs, 503 ewes and 3 unidentified sheep.

We surveyed only the Tonsina Management Area in Subunit 13D in 1992. The late July count of 312 sheep was the largest on record. Inclement weather precluded meaningful composition data.

We determined sheep population size and composition for Subunit 14C by aerial surveys in July. We counted 2,322 sheep and classified them as follows: 235 7/8-curl or larger rams, 419 1/2 to 3/4-curl rams, 344 lambs, and 1,324 ewes and 1 or 2-year-old rams.

Progress Toward Meeting Project Objectives: Harvest objectives for the Chugach Mountains were exceeded, however, a 37% decline in the Subunit 13D harvest probably reflects a reduced population as the result of several recent severe winters. Unusually cold weather during September also substantially reduced hunting effort. Sufficient numbers of rams were available in 1992 to meet management objectives.

South Wrangell Mountains (Unit 11):

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: Sheep surveys were not flown in 1992. The last survey completed in Unit 11 was in July 1990 when 361 sheep were counted, down 35% from a July 1987 count of 559 sheep. The decline was observed in all sex and age classes.

Hunters reported taking 140 sheep during 1992. The harvest included 87 mature rams taken by sport hunters as well as 19 small rams and 34 ewes taken by subsistence hunters. The mature ram harvest was substantially lower than the previous 5-year mean harvest of 112 rams. The number of smaller subsistence rams taken increased by 6% from last years take of 18. The subsistence ewe harvest was up 42% from 24 the previous year, and up 162% from 1990.

Progress Toward Meeting Project Objectives: Sheep populations have been high in Unit 11 throughout the early and mid-1980s. Incidental observations of sheep made over the past few years in the unit suggest sheep numbers had declined. A survey flown in 1990 also indicated a decline in sheep numbers. Because the decline was in all sex and age classes, it was not attributed to overhunting. Neither specific reasons nor the magnitude of the decline is known. Because unitwide counts were not conducted it is unknown if the decline occurred throughout the unit. The observed decline in the 1 count

area could be attributed to movement. Wolf predation may be affecting the sheep population; during winter 1989 surplus killing of sheep by wolves was observed.

Harvest objectives were met for Unit 11. The decrease in mature rams harvested was attributed to heavy snow fall in early September. Though mature ram harvests declined, small ram harvests remained about the same. Ewe harvests increased and may indicate increased subsistence hunting for sheep in the unit. The definition of a subsistence hunter in Unit 11 was broadened under state law during 1990 to include all state residents. Previously only local rural residents were considered subsistence sheep hunters. The current subsistence harvest of small rams is low, dispersed throughout the unit and has little impact on ram numbers. The subsistence ewe harvest is also low but not as well dispersed. Sixty-two percent (n=21) of the ewes taken came from areas adjacent to the Chitina-McCarthy Road and 21% (n=7) came from areas adjacent to the Nabesna Road. Ewe populations in both areas are quite high and the present level of ewe harvest is not considered too high at this time. I recommend no changes in season dates or bag limits at this time.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	6.1	4.0	10.1
Actual	6.1	4.0	10.1
Difference	0	0	0

Submitted by:

Jeff Hughes
Wildlife Biologist

Project Title: Region III Dall Sheep Population and Habitat Management

Project Location: Units 12, 19, 20, 24, 25 and 26

North Wrangell, Nutzotin, and Mentasta Mountains (Unit 12)

Project Objectives and Activities:

1. Provide the greatest level of sustainable annual opportunity to participate in hunting Dall sheep.; and provide the greatest level of sustainable annual harvest of Dall sheep.
 - 1a. Monitor the harvest through hunter contacts and harvest reports.

Work Accomplished During the Project Segment Period:

- 1a. Preliminary harvest statistics indicate that 397 hunters (283 residents, 94 nonresidents, and 20 unknown residency) harvested 173 full-curl rams during FY93 for a hunter success rate of 44%. Overall harvest and success rate declined from the 1990-91 and 1991-92 seasons. Inclement weather conditions throughout most of the season were probably the primary factor for the reduced harvest. The mean horn length and average age of the harvested rams was 34.4 and 8.6 years old, respectively which are comparable to the 5-year average.

Progress Toward Meeting Project Objectives: The human use objectives of providing the maximum opportunity to participate in sheep hunting and allowing the greatest sustainable harvest were attained.

Tok Management Area (Units 12 and 20D)

Project Objectives and Activities:

1. Manage for a harvest of 30-45 rams each year with a mean horn length of 36-37 inches among harvested rams and a mean age of 8-9 years.
 - 1a. Monitor the harvest through hunter contacts and harvest reports.
 - 1b. Conduct aerial or ground composition surveys.
2. Manage to obtain an average of 7-10% of 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 sheep hunting in the Tok Management Area (TMA).

Work Accomplished During the Project Segment Period:

- 1a. We issued 120 drawing permits for fall 1992; 90 hunters reported taking 37 full-curl rams for a hunting success rate of 41%. Average horn length was 37.1 inches, and the mean age of rams harvested was 8.6 years. Six (16.2%) of the 37 rams harvested had horn lengths of 40 inches or more. The total harvest, horn size and age of harvested rams all met the project objectives.
- 1b. Between 20 June and 7 July 1992, we classified 898 sheep at the Sheep Creek mineral lick. The ratio of lambs:100 ewes and yearlings:100 ewes was 17:100 and 24:100, respectively. The low lamb crop is probably because of a combination of inclement spring weather and a higher than normal proportion of old ewes in the population. The FY93 yearling:ewe ratio was slightly below the long term mean of 28 yearlings:100 ewes.

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

Central Alaska Range (Subunit 20A)

Project Objectives and Activities:

1. Provide the greatest sustainable annual opportunity to participate in hunting Dall sheep.
2. Provide the greatest sustainable annual harvest of Dall sheep.
 - 2a. Monitor the 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.
 - 4a. Conduct aerial or ground composition surveys of Dall sheep.
5. Maintain naturally regulated ewe and subadult ram segments of the population.

Work Accomplished During the Project Segment Period:

- 2a. From 1985 through 1989, reported annual sheep harvests steadily increased from 102 to 163 rams, with hunter success rates of 35-40%. Since 1989, harvest and hunter success rates have steadily decreased. In 1992, only 62 rams were harvested, with a hunter success of 27% (62/230).

In 1992, successful hunters included 56% residents, 39% nonresidents, and 5% unspecified. Unsuccessful hunters included 87% residents, 12% non-residents, and 1% unspecified residency.

The distribution of sheep harvest and hunting pressure in 1992 was similar to 1991. The area west and south of the Wood River drainage had 53% (33/62) of the harvest and 62% (139/230) of the hunters. The Wood River drainage had 13% (8/62) of the harvest and 17% (40/230) of the hunters. To the east, Dry Creek and the Little Delta River had 32% (20/62) of the harvest and 19% (44/230) of the hunters.

- 4a. On 28-29 July 1992, we observed only 222 sheep during a survey of 153 mi² of sheep habitat west of the Wood River. Lambs were nearly absent from the area, with the lamb:"ewe" ratio (5:100) even lower than that we observed in 1991 (18:100) east of the Wood River. During this survey, we observed 133 "ewes", 7 lambs, and 82 rams. We classified 8 of the rams as legal, 63 as sublegal, and 11 had unknown horn size.

We surveyed the post-lambing sheep population in 1993 to determine if the low lamb:"ewe" ratios we have observed during the late-July surveys in the last 2 years were a result of (a) poor production of lambs or (b) poor survival of lambs. We delayed our surveys by 2 weeks because lambing was late. On 8 June 1993, we counted 364 sheep, including 235 "ewes", 29 lambs, and 99 rams in a 121 mi² area between the Wood River and the West Fork of the Little Delta. This represents a 29% decline from the number of sheep counted in the same area in 1991 (508). Although the decline was evident in all sex/age categories, the largest discrepancy was in the number of lambs. The 1993 lamb:"ewe" ratio (12:100) and the percent lambs in the population (8%) were even lower than in 1991 (18:100 and 11%, respectively).

Progress Toward Meeting Project Objectives: We are currently meeting 3 of the 5 objectives for sheep in Subunit 20A. We continue to meet the objective of providing the greatest sustainable annual opportunity to hunt Dall sheep by maintaining a resident and nonresident open season for full-curl rams from 10 August through 20 September. The restriction to full-curl rams also allows us to meet the objective to maintain naturally regulated ewe and subadult ram segments of the population. The objective to provide the

opportunity to view and photograph sheep under natural conditions is easily met with access into many areas of sheep habitat.

However, with the current estimates of 2,000-4,000 sheep in Subunit 20A, we are not meeting the objective to manage for a sheep population of approximately 5,000 sheep. Recruitment has been very poor for sheep throughout much of the Interior. The 1992 lamb:ewe ratio was lowest in Subunit 20A (5:100), but was also low in the Delta Controlled Use Area (11:100) and the White Mountains (15:100).

I believe that the lack of sheep seen during the 1991 and 1992 aerial surveys reflects a substantial decline in the population. Sightability during the survey should have been very high; survey conditions were good/excellent and the pilots and observer were experienced. Sheep tend to have a high fidelity to their home ranges so a shift in distribution was probably not responsible for the low number of sheep seen. The decline is probably primarily because of several years of relatively severe winters that decreased survival rates. Sheep in poor physical condition because of severe winter/snow conditions may be more vulnerable to predation. Although weather will continue to be unpredictable, the Implementation Plan to remove a substantial number of wolves from Subunit 20A should result in fewer sheep being killed by wolves.

With this decline in the sheep population, we are probably not meeting the objective to provide for the greatest sustainable harvest of sheep. Hunting is restricted to the taking of full-curl (or larger) rams, so we are not concerned about an overharvest of sheep and have no recommendations for changes in hunting regulations. However, we expect harvest to decline as weak cohorts from the last few years mature and become legal to hunt. Increased mortality of adults may also contribute to a smaller number of legal rams in future years.

We recommend that in 1993-94 we gather more information on the Subunit 20A sheep population size, productivity, and/or mortality after reviewing Ver Hoef's (1992) analysis of techniques most appropriate to each objective. We recommend changing the objective "to manage for 5,000 sheep" because this level cannot be maintained during periods of adverse weather, over which we have no control. Rather, we recommend managing for a population that fluctuates between 3,000 and 5,000 sheep. Within this range, we anticipate open hunting seasons for full-curl rams. If the population declines below this level, we will examine more closely factors limiting the population and discuss management options.

Therefore, we recommend that the new objectives are as follows:

1. Manage for 3,000-5,000 Dall sheep in Subunit 20A.
 - 1a. Conduct aerial or ground sheep composition surveys.

- 1b. Evaluate the need for management actions if the population is estimated to include less than 3,000 sheep.
- 1c. Identify the factors limiting growth of the Dall sheep population in Subunit 20A.
- 1d. Monitor response of the Dall sheep population to the wolf control program by comparing Subunit 20A data with data from other Interior sheep populations.
- 2. Provide for the greatest sustainable annual opportunity to hunt and harvest full-curl Dall sheep rams.
 - 2a. Monitor the sheep harvest through hunter contacts and harvest reports.
 - 2b. Maintain a hunting season for full-curl rams throughout all of Subunit 20A.
- 3. Provide for the sustainable opportunity for the public to view and photograph Dall sheep.
 - 3a. Identify suitable sites for viewing and photographing sheep and promote these sites by 1995.

Delta Controlled Use Area (Subunit 20D)

- 1. Manage a population of approximately 1,800 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.
 - 1a. Monitor the Dall sheep harvest through hunter contacts and permit reports.
 - 1b. Conduct aerial and ground composition surveys of Dall sheep.
 - 1c. Capture Dall sheep in the Delta Controlled Use Area in Subunit 20D; collect and analyze blood samples.
 - 1d. 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 hunting conditions.

Work Accomplished During the Project Segment Period:

- 1a. Sheep harvest was monitored with permit reports for drawing permit hunts 1103 and 1104. Preliminary data indicates that 51 hunters killed 19 sheep during hunt 1103, and 58 hunters killed 22 sheep during hunt 1104. Combined harvest totalled 41 sheep. Preliminary data is not available on mean horn length or age of harvested sheep.
- 1b. We flew a Dall sheep trend count area in July 1992 in the Granite Mountains, upper July Creek, portions of upper Gerstle River, and several small drainages east of the Richardson Highway. The following sheep were classified: 428 ewe-like sheep, 48 lambs, 147 sublegal rams, and 39 legal rams. These data indicate that the current population compares in size to the population in the mid-1970's through 1980.

No ground composition data was collected during this report period, however, the department plans to collect data during late FY93.
- 1c. Analysis was received for blood samples collected during 1991. There was no evidence of exposure to infectious bovine rhinotracheitis virus, bovine viral diarrhea virus, parainfluenza 3 virus, respiratory syncytial virus, bluetongue virus, *Brucella* spp bacteria, and 5 serovarieties of *Leptospira interrogans* bacteria. Three samples were positive for epizootic hemorrhagic disease, and the remainder were negative. No sheep will be captured during FY93.
- 1d. Questionnaires were not mailed to hunters during the 1992-93 season to quantify hunter satisfaction with aesthetics.

Progress Towards Meeting Project Objectives: Harvest met management objectives during the 1991 season for number of sheep harvested, however, data on mean horn length and age is not available at this time. We collected composition and population trend data and received serological data.

Tanana Hills (Subunits 20D and 20E)

Project Objectives and Activities:

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

Work Accomplished During the Project Segment Period:

- 1a. We issued 12 drawing permits to hunters for the Charley River (1108), Seventymile River (1107), and Mount Harper (1106) areas. Hunters needed only a sheep harvest ticket to hunt in the Glacier Mountain Controlled Use Area. Four hunters participated in hunt 1106, killing 2 full-curl rams averaging 34.5 inches horn length and 7.5 years old. In hunt area 1107, 2 hunters participated but were not successful. In hunt area 1108, 1 hunter participated but was not successful. In the Glacier Mountain area, 5 hunters (3 residents, 2 unspecified) reported hunting sheep and harvested 1 full-curl ram. The horn length and age of the harvested ram was 33 inches and 10 years old, respectively.

Progress Toward Meeting Project Objectives: The objective to provide an aesthetically pleasing hunting opportunity was achieved. All hunters were pleased with the quality of their hunting experience. Beginning in August 1993, sheep hunts 1107 and 1108 will no longer be on drawing permit. Hunters will need only a harvest ticket to participate. Sheep hunting aesthetics are expected to remain high due to the remoteness and the limited accessibility into these areas.

During the June 1993 meeting, the Board of Game took no action on a proposal to control wolves in portions of Subunits 20D and 20E. An increase in the Tanana Hills sheep population would be anticipated if wolf populations were reduced in this area.

White Mountains (Subunit 25C)

Project Objectives and Activities:

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

Work Accomplished During the Project Segment Period:

- 1a. Biologists from BLM aerially surveyed the White Mountains 1-4 August 1992 and classified 324 sheep in 11.8 hours of search time. The sample consisted of 215 "ewes", 33 lambs, and 76 rams, including 8 \geq full-curl and 68 <full-curl.
- 1b. In 1992, 6 rams were reported harvested by 26 hunters in the White Mountains. The average longest horn length for 5 of the 6 rams was 35.4 inches (range 30-40.5) and the average age from counting horn rings was 10 years (range 9-11). One ram had broomed horns on both sides.
- 2b. We gathered information on the status of development of the Nome Creek Recreation Area through communications with BLM staff. The only work being completed during summer 1993 is the further reclamation of the Nome Creek mine site. The State Department of Transportation will begin breaking ground for the proposed road and associated facilities in spring 1994.

Progress Toward Meeting Project Objectives: The 1992 aerial survey of 324 sheep indicates we are exceeding the objective to manage for a population of at least 250 sheep. The number of sheep observed decreased in 1992 from 354 in 1991, with a difference in lambs accounting for most of this decrease.

Recruitment was low in sheep populations throughout much of the Interior in 1992. The lamb:"ewe" ratio in the White Mountains (15:100) was higher than in the Delta Controlled Use Area (11:100) or the central Alaska Range (5:100).

Reported sheep hunting pressure in the White Mountains continues to be low relative to other areas. Since 1984, the annual reported harvest has not exceeded 6 rams and the number of hunters has not exceeded 26 per year. Declines in other Interior sheep populations might cause an increase in hunting pressure in this area and should be monitored closely.

Reclamation work on the old mine on Nome Creek will continue through at least the summer of 1993. Ground breaking for the road along Nome Creek, associated campgrounds, and hiking trails are due to begin in Spring 1994. The State DOT is cooperating with BLM and will be constructing the road using Federal ISTEA money. Continued monitoring of the development and expansion of facilities in the Nome Creek area by the BLM should be conducted to protect and maintain existing sheep habitat.

Central Brooks Range (Unit 24)

Project Objective and Activities:

1. Maintain or increase the 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.
 - 1a. Monitor subsistence sheep hunting success through periodic visits to villages in the unit.
2. In other areas of the unit, maintain or increase the sheep population to provide an average annual harvest of at least 5 rams under aesthetically pleasing hunting conditions.

Work Accomplished During the Project Segment Period:

- 1a. Within the Gates of the Arctic National Park, 44 hunters signed up to hunt sheep under a subsistence season. Hunters reported harvesting 23 sheep of which 16 were adult rams, 2 immature rams and 5 were ewes. Most were harvested between August and October, but 4 were taken in March. We obtained harvest data through post-hunt, direct contact and letters.

Outside the park, 25 hunters harvested 11 rams, 9 of the successful hunters were nonresidents.

Progress Toward Meeting Project Objectives: Objectives to monitor harvest through harvest tickets and permits were met. No aerial surveys were conducted. Management objectives are being met through the low harvest.

Eastern Brooks Range (Units 24, 25, and 26)

Project Objectives and Activities:

1. Select trend indicator areas for determination of herd size, composition, productivity, and population trends of Dall sheep by 1991.
 - 1a. 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.

- 3a. 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: Field work involved cooperating with USFWS biologists to radio-collar about 20 additional sheep in the Junjik, Hulahula, and Atigun trend areas. Field work occurred in September. We conducted 4 monitoring flights during winter 1992-93, and we obtained information on sheep movements and mortality.

The ADF&G proposed increasing minimum horn size to full curl in view of the increase in hunting pressure, a decline in ram harvest in the last few years, and poor recruitment and survival resulting from recent severe winters. This proposal was adopted by the Board of Game and become effect 1 July 1993. It has considerable public support.

In December 1992 a questionnaire was sent to 750 hunters who reported hunting sheep in Subunits 26A, 26B, 26C, and 25A during 1990 and 1991. Hunters returned 432 questionnaires. A preliminary analysis conducted before the March Board of Game meeting indicated most hunters preferred large rams and considered full-curl rams as true trophies. A complete analysis of the responses is being prepared.

Progress Toward Meeting Objectives: Objectives 1, 3, 4, 5, and 6 have been or continue to be met. The application of a full-curl regulation will contribute to maintaining the harvest of large rams. Because of socio-political factors, progress on Objective 2 has been limited.

The following are suggested revised management objectives:

1. In cooperation with USFWS, continue to monitor sheep population status using trend indicator areas.
2. Manage for a harvest of Dall sheep rams with full-curl or larger horns.
3. Monitor the effects of the full-curl minimum size limit that will take effect in fall 1993.

4. Work with ADF&G Subsistence Division and USFWS to manage subsistence sheep harvests.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	55.2	7.0	62.2
Actual	30.5	4.4	34.9
Difference	24.7	2.6	27.3

Explanation: Budget reductions and increased costs of caribou and furbearer management necessitated reprogramming at the beginning of the fiscal year.

Submitted by:

Kenton P. Taylor
Regional Management Coordinator

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

Project Location: Unit 23 and Subunit 26A (99,000 mi²)
Kotzebue Sound and the western Brooks Range

Project Objectives:

1. Maintain a post-hunt population in the Baird Mountains of 450-600 adult sheep and a minimum ratio of 7-10 7/8+ curl rams:100 "ewes"^a unitwide.
2. Develop a management plan for Dall sheep in Unit 23 in cooperation with the public and land management agencies by 1996.

Work Accomplished During the Project Segment Period:

1. We conducted aerial sex and age composition surveys in the Baird and DeLong mountains during July 1992.

	Baird Mountains 1992	Kugururok/ Trail Crk.	Wulik Peaks
Rams 1/2-curl and larger	130	72	27
Rams 7/8-curl and larger	42	26	7
"Ewes" ^a	267	99	67
Adults	397	171	94
Lambs	59	20	26
Total	456	191	120
Lambs:100 "ewes"	22	20	39
Total Rams:100 "ewes"	49	73	40
Rams 7/8-curl and larger: 100 "ewes"	16	26	10

^a "Ewes" defined as adult female, yearling, and 1/4-curl ram

2. We observed 5 sheep carcasses while surveying the Kugururok/Trail Creek count units. We necropsied 2 of the carcasses. Serologic tests were inconclusive. Deaths were attributed to an unknown pathogen.
3. We monitored the fall harvest using the statewide harvest ticket system for the DeLong Mountains. For the second year, the season in the DeLong Mountains was shortened from 10 August - 20 September to 1 September - 20 September. Hunters reported harvesting 7 rams. All hunts in the Baird Mountains were closed by emergency order. During the winter hunt local hunters, harvested 3 ewes in the DeLong Mountains and residents of Ambler reported harvesting 1 ram and 1 ewe in the upper Noatak River above Douglas Creek.

Progress Toward Meeting Project Objectives: Aerial survey data indicated sheep in the Baird Mountains have not recovered from the severe decline which occurred during the winter of 1990-91. The decline was attributed to severe winter conditions which included groundfast ice and deep snow. Lamb production in the Baird Mountains remained low. Disease and predation may also be adversely affecting the rate of recovery of this population.

Only 2 years of data exist for count areas in the DeLong Mountains. At least 5 years is needed to determine the status of DeLong sheep populations. Once these data are obtained, management objectives need to be established.

The Board of Game made the following changes in Unit 23 sheep hunting regulations:

- The minimum size for rams during the fall hunt was increased from 7/8 curl to full-curl throughout Units 23 and 26A.
- The Baird Mountains were redefined as that area south and east of the Noatak River and west of the Cutler and Redstone Rivers excluding the upper Noatak River Canyons.
- The Baird Mountains winter hunt was changed to a registration permit hunt, and use of aircraft is not permitted.

Period Segment Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Actual	10.0	7.5	17.5
Actual	10.0	8.0	18.0
Difference	0	0.5	0.5

Explanation: Additional funds from the National Park Service for aerial survey charters resulted in a slight decrease in required operating expenses (NPS - \$11,000, ADF&G \$5,300 and 20 observer days). This was offset by the need to survey additional count areas.

Submitted by:

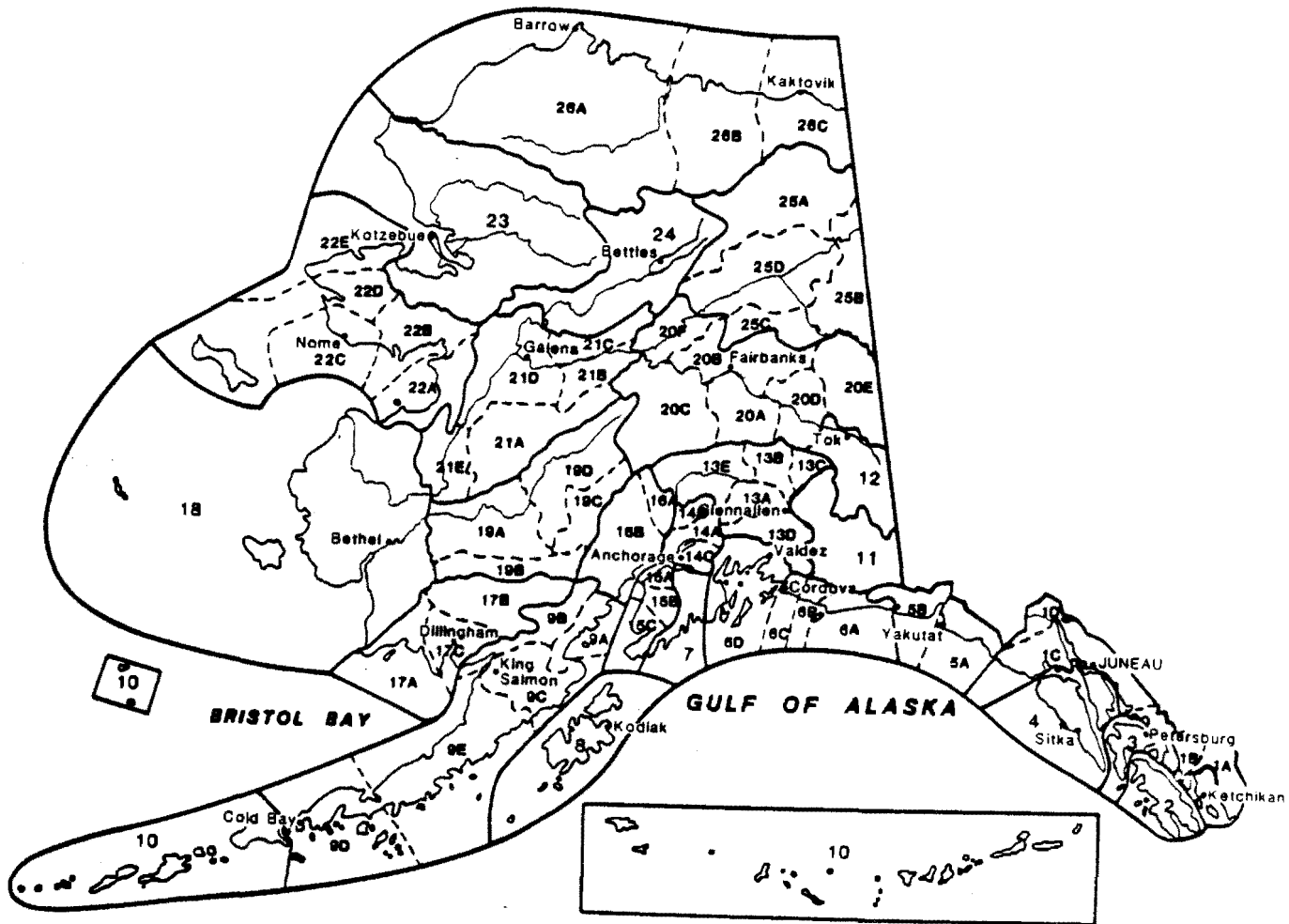
Steve Machida
Survey-Inventory Coordinator



ARLIS

Alaska Resources
Library & Information Services
Anchorage, AK

Alaska's Game Management Units



Federal Aid in Wildlife Restoration

The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program then allots the funds back to states through a for-

each state's area and of paid censehold- s t a t e . ceives 5% enues col- year, the lowed. The

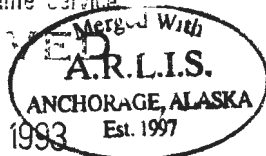


mula based on geographic the number hunting li- ers in the Alaska re- of the rev- lected each maximum al- Alaska Depart-

ment of Fish and Game uses the funds to help restore, conserve, manage, and enhance wild birds and mammals for the public benefit. These funds are also used to educate hunters to develop the skills, knowledge, and attitudes necessary to be reponsible hunters. Seventy-five percent of the funds for this project are from Federal Aid.

U.S. Fish & Wildlife Service

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Federal Aid Division
Anchorage, Alaska