ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 115526
Juneau, AK 99811-5526

Alaska Department of Fish and Game
Wildlife Restoration Grant

GRANT NUMBER: AKW-20 Wildlife Restoration FY2017

PROJECT NUMBER: 6.0

PROJECT TITLE: The Status of Dall Sheep and Factors Influencing Their Populations

PERIOD: July 1, 2016 – June 30, 2017

PROJECT LOCATION: Statewide

REPORT DESCRIPTION: This performance report describes Dall sheep survey and inventory activities. Activities are listed by game management unit.

The Status of Alaska Dall Sheep and Factors Influencing Their Populations in Region V

Region wide Activities:

Provide information to state and federal regulatory processes on Dall sheep management.

Area management staff reviewed State and Federal regulatory proposals, attended regulatory process meetings, and presented Dall sheep information to the State Board of Game, State Fish and Game Advisory Committees, Federal Subsistence Board, and Federal Subsistence Regional Advisory Councils.

Mountain Range or Use Area Activities:

Baird Mountains:

Conduct aerial sex and age composition surveys in established count areas.

The National Park Service (NPS) and ADFG staff conducted an aerial sex and age composition survey during June 2017. Results from the June 2017 sheep survey are pending.

Monitor the population by conducting minimum counts or generating population estimates with survey data.

The survey conducted by NPS and ADF&G in June 2017 will also produce a population estimate.

Monitor harvests through, federal permit hunts, Community-based Harvest Assessments, public contacts and field observations.

All sheep hunts in the Baird Mountains in Units 23 and 26A were closed due to low populations. For the Baird and Trail Creek area, the 2016 point estimate for total sheep is 72 and 78% lower than the 2011 estimates.

Update population objectives in cooperation with the public and other agencies.

Sheep information was reported at Advisory Committee meetings and no hunting in Unit 23 and Unit 26A west of the Etivluk River drainage was recommended due to low populations and poor recruitment.

DeLong Mountains:

Conduct aerial sex and age composition surveys in established count areas.

NPS and ADFG conducted an aerial sex and age composition survey during June 2017. Results from the June 2017 sheep survey are pending.

Monitor the population by conducting minimum counts or generating population estimates with survey data.

The survey conducted by NPS and ADF&G in June 2017 will also produce a population estimate.

Monitor harvests through the harvest ticket system, permit hunts, Community-based Harvest Assessments, public contacts and field observations.

All sheep hunts in the De Long Mountains in Units 23 and 26A were closed due to low populations. For the Baird and Trail Creek area, the 2016 point estimate for total sheep is 72 and 78% lower than the 2011 estimates.

Community-based Harvest Assessments were completed by Division of Subsistence in Kotzebue in Unit 23, and in Point Hope in nearby neighboring Unit 26A. Data analysis is currently ongoing and results are not available.

Update population objectives in cooperation with the public and other agencies.

Sheep information was reported at Advisory Committee meetings and no hunting in Unit 23 and Unit 26A west of the Etivluk River drainage was recommended due to low populations and poor recruitment.

Schwatka Mountains:

Monitor harvests through the harvest ticket system, permit hunts, Community-based Harvest Assessments, public contacts and field observations.

All sheep hunts in the Schwatka Mountains in Units 23 and 26A west of Etivluk River, were closed due to low populations.

Submitted by: Phillip Perry, Region V Management Coordinator

Alaska Department of Fish and Game
Division of Wildlife Conservation

Grant No. AKW-20
Project No. 6.0
Project Duration
From: July 1, 2016
To: June 30, 2017

DALL SHEEP SURVEY AND INVENTORY PROJECT STATEMENT

PROJECT TITLE: The Status of Alaskan Dall Sheep and Factors Influencing their Populations

PROJECT LOCATION: Statewide

NEED:

1. Statement

Dall sheep are found throughout Alaska's mountain ranges where alpine habitat is extensive and snowfall is restricted to levels which allow Dall sheep occupancy. Mature Dall sheep rams are a highly sought-after resource. Harvest of fully mature rams has no negative impact on population productivity, and the traditional selectivity for mature rams by hunters has been formalized in harvest regulations. To efficiently manage Dall sheep, we need to regularly determine the status of various indicator populations and monitor the impacts of factors influencing the well-being of Alaska's Dall sheep.

2. Justification

In the mid-1980s, at the time of the last population estimate, there were approximately 73,000 Dall sheep in Alaska. Since that time, there have been significant, naturally-caused declines or increases in several major areas. There is no post-decline estimate. Roughly 30% of Alaska's Dall sheep are managed for nonconsumptive uses, 28% for maximum hunting opportunity, 39% for high quality hunting, and 3% for trophy hunting. Many people photograph sheep throughout Alaska, and consider it very rewarding just to observe an adult ram. Trophy hunters are supportive of a strong sheep management program. In the majority of the game management units, harvest by hunters is limited to fully mature rams, which are at least 8 years of age, have both horns broken, or have full-curl horns. These regulations have been shown to minimize the impact of ram harvests on Dall sheep ecology. However, in a few hunt areas, such as Gates of the Arctic National Park, subsistence hunters may harvest ewes and may harvest more than one animal. Expanded human land use may adversely affect sheep through the alteration of habitat, by disturbance of sheep use in critical areas, or through introduction of diseases from domestic animals. Mineral licks, winter ranges, lambing areas, and migration routes are particularly susceptible to damage or interference from activities such as mining,

grazing of domestic animals, construction of transportation or utility corridors, and development of alpine recreation sites. Sheep habitats must be protected from alteration or undue disturbance. Management measures to maintain or increase the benefits to the Alaska economy and general wellbeing of the people of the state will receive emphasis. This statewide study is designed to meet the demand for all uses of sheep at the current population level. Dall sheep management in Alaska conforms to Alaska Wildlife Species Management Policies (1980).

PROJECT GOAL

The purposes of this project are to measure and interpret changes in the status of Dall sheep populations and their habitats and to facilitate conservation and management of Dall sheep by communicating this information to the Alaskan public. These efforts will raise the status of Dall sheep in the consciousness of Alaskans. Assessments will focus on examination of distribution, migration and concentration, population sex and age composition, productivity, mortality, hunting seasons with their associated harvests and hunting pressures, population trends, and habitat condition trend and use.

EXPECTED RESULTS AND BENEFITS

Information on the status and trend of Dall sheep populations is used to manage this species for long-term public use benefits. Dall Sheep provide over 16,000 hunting recreational days each year and over 3,000 hunters harvest nearly 1,000 sheep. Our survey and inventory data keep the interested public informed about the status of populations confined to specific mountain ranges and provide useful information to the board of game to set regulations for this species. Our surveys and inventories on sheep will allow managers to:

1. Protect or improve public benefits derived from Dall sheep populations by influencing land use decisions to conserve Dall sheep habitats as well as the Dall sheep that use them.

2. Protect or improve public benefits derived from Dall sheep by conducting public information and education programs which raise the status of Dall sheep in the social consciousness of Alaskans, thus benefiting populations of sheep and their habitats.

3. Protect or improve public benefits derived from Dall sheep by assessing the success of predator management programs involving Dall sheep.

4. Protect or improve public benefits derived from Dall sheep by recommending regulations to the Board of Game and Federal Subsistence Board governing the methods, locations, and timing of sheep harvests and other uses.

APPROACH

Dall sheep survey and inventory procedures have been specifically designed for monitoring this species. (All animal capture activities will follow the protocols established in the ADF&G Division of Wildlife Conservation “Animal Welfare Policy” and its wildlife capture and restraint

manual.) They include:

1. Hunter Effort and Harvest Assessment

Hunters must be licensed, and are required to report on their hunting and harvest activities and success each year. This is done by requiring each hunter to obtain the mandatory license, tag and/or harvest ticket, or drawing/registration/Tier II permit, and hunt report form. Hunters are required to carry these permits in the field, and after the hunt they must be returned to the Department of Fish and Game for compilation and analysis. These data provide most of the basis for hunter use and harvest assessment programs. Additional information concerning hunter opinions and satisfaction may be obtained through periodic questionnaires, during sealing of horns, and through hunter contacts in the field.

Harvest of sheep by residents of remote villages is also assessed through community-based harvest assessments. This is a house by house survey lasting about 10 minutes per family in which the occupants are asked questions regarding their harvest of big game and furbearers during the year.

2. Aerial Surveys

A variety of general survey flights are typically performed at low level, 100-700 feet above ground level, in Piper PA-18 Supercub aircraft. These aircraft carry a pilot and one observer the flights provide data on minimum numbers of sheep in surveyed areas. It is impossible to accurately determine population size, or population composition from these flights. However, population trends may be inferred if general survey flights are replicated with the same pilot/observer teams in the same area at the same time of the year under similar conditions and search intensities. General surveys may serve to document severe population fluctuations, and may be used to provide information when unusual circumstances, such as heavy snow accumulation or high predator abundance prevail. For lack of a specific name for the flights, the following surveys are used to monitor trends in sheep populations:

On selected areas, Dall sheep will be captured, marked, and resighted to determine the range of specific populations. These ranges will be surveyed to determine population size and composition using the most efficient methods for each area. Long-term markers should be used on sheep that we wish to recognize on future surveys. Both visual neckbands and radio collars have been efficiently used in the past.

Population size estimates will be based on low-level aerial intensive searches of the defined home ranges during the summer following lambing. Efforts will be made to see all sheep in the area. In typical sheep habitat, this requires a search intensity of at least 3 minutes per square mile using an experienced pilot and observer in a PA-18 Supercub. The number of collared sheep in the population should be known before the aerial survey. The percentage of these collars observed on the survey will be used to calculate survey efficiency and a population estimate using tag-recapture methodology.

Sheep will also be classified to the extent possible from the survey flights. This classification will include "ewes" (i.e., all sheep that look like ewes) including young males because it is impossible to accurately distinguish yearlings, young rams, and ewes from an aircraft. Lambs should be identified, and older rams may be classified by degree of horn development.

3. Ground Counts

Accurate classification counts of a representative portion of the indicator sheep population can be made from the ground. Most Dall sheep populations visit mineral licks with great predictability. When possible, these licks will be monitored during the last half of June to determine lamb production, and survival to yearling age. All sheep using these licks will be classified, and the number of true ewes per "ewe" in the populations will be calculated. This estimate, in conjunction with the lambs:100 true ewe ratio (and the same for yearlings) will then be used to estimate the number of lambs and yearlings in each population at assessment time each year. In indicator populations where gathering these data at mineral licks is not practical, foot surveys of the area may provide the same composition data.

4. Population Modeling

Once indicator populations have been defined by marked animals, and population ranges have been intensively surveyed to provide a ewe population estimate, population estimates can be produced from a model if adult ewe mortality is known. Mortality will be determined by monitoring the return frequency of marked individual sheep to their traditional mineral licks. Ewes not resighted each year may be considered dead for purposes of morality estimates. Adult mortality will be factored into the model along with the number of ewes recruited as yearlings. The accuracy of the model should be confirmed periodically with additional known-efficiency aerial surveys. In the event that mineral lick observations are impractical, radio-marked sheep can be used to estimate mortality for each year.

5. Ram Surveys

Ram abundance and composition may also be determined from survey flights during rut, when rams are distributed on ewe population ranges.

6. Age Determination

Ages of Dall sheep are readily determined by counting the annual rings which form on the horns of both sexes each winter.

7. Population Health Assessment

As development of domestic animal husbandry increases in Alaska, it becomes progressively more important to prevent introduction of domestic animal diseases to Dall sheep populations. Consistent monitoring of high risk populations for endemic and introduced diseases will be conducted by capturing Dall sheep in order to collect blood, hair, fecal samples, and bacteriological biopsies. Should it become necessary to kill any sheep for collection of samples which cannot be obtained from living Dall sheep, public

review of the process will be conducted, and alternative funding sources developed for collection procedures.

8. Assessment of Economic Values of Dall Sheep
Human uses of Dall sheep in Alaska are associated with economic values to the State. These economic values are increasingly important as criteria for evaluating competing uses of Dall sheep habitat. Suitable expenditure and contingent valuation methodologies may be employed to assess the economic value of Dall sheep uses.

9. Communication of Findings Relating to Dall Sheep Status and Welfare
It is important to keep those affected by management and conservation informed of developments relating to use and management of their resources. Information gathered in the Dall sheep survey and inventory program will be disseminated through workshops, articles in the media, symposia and at public meetings to inform and educate the public on the status of Dall sheep to maintain or increase the value status of Dall sheep among all human users of the resource.

10. Write Management reports
Department biologists gather data from various sources regarding Alaska's Dall sheep populations into a triennial statewide management report that includes historical and current data, management directions, methods, Board of Game actions, harvests and natural mortality, habitat assessments, and local and statewide non-regulatory issues. Division biologists use this report to retain an ongoing record of our sheep management efforts in Alaska. Biologists use the report in management planning and in presentations to the Board of Game. User-groups and land management agencies also use this report in their planning processes. This report often takes more than one year to prepare so biologists maybe either drafting or finalizing it in any given year.

11. Develop Population Objectives
Population objectives represent planned statewide management strategies to maintain established goals for population size and composition. Population objectives are derived from years of survey techniques and research and are necessary to balance harvests to population size, promote evenly aged composition within a population, estimate future population characteristics and derive the carrying capacity of different sheep habitats. These objectives are integral to the planning process for sustained public uses, consumptive and nonconsumptive, and for the sustainability of statewide sheep populations. Although population objectives may not always be achieved in some areas of the state, they remain important standards for thorough quantitative analysis to monitor population trends.

12. Hunter Opinion Surveys
Periodically, questionnaires will be mailed to specific groups of hunters (e.g. permit holders to hunt a specific area) to assess their sheep hunting experience. This information will be used to evaluate population objectives and hunt conditions for the area. Also, opportunistic interviews will be performed as hunters are encountered in the field or office.

13. Provide Information to State and Federal regulatory processes
Whenever a proposal to change a regulation affecting Dall sheep is before the Board of Game or the Federal Subsistence Board, department biologists responsible for Dall sheep management in the area affected provide information regarding the status of the population and past harvest information collected in this area to the boards, to state fish and game advisory committees, and to federal regional advisory councils.

The Dall sheep survey and inventory procedures outlined above provide most of the information required to manage Alaska's sheep populations. Not all procedures are utilized for each population each year. Information collected is used to monitor progress toward attaining management objectives of Alaska's Dall sheep populations.

PROJECT ACTIVITIES (Federal Aid Objectives)

Region III (Units 12, 19, 20, 21, 24, 25, 26B and 26C)

1. Prepare information for 5-year sheep management reports and operational plans.

Compiled information and wrote drafts of 9 Dall Sheep Management Reports and Plans for Units 12, 19, 20, 21, 24, 25, 26B, and 26C.

2. Collect data from sheep presented for sealing by hunters

Collected data from sheep harvested in Units 12, 19, 20, 21, 24, 25, 26B and 26C at the time of sealing via measurements and required harvest reports, including days hunted, location of hunt, date of kill, method of take, commercial services used, length and diameter of horns, sheep age, and curl class. Data were analyzed and summarized.

3. Conduct aerial surveys to monitor population trends.

Aerial trend count surveys were conducted to assess trend, distribution, productivity, and sex and age composition of the sheep population during July 2016 or June 2017. Survey areas included the following areas:

- Mentasta Mountains in Unit 12 (1 survey unit);
- Tok Management Area in Units 12, 20D, and 20E (7 survey units);
- Glacier Mountain Controlled Use Area in Unit 20E (1 survey unit);
- Western Alaska Range in Unit 19C (3 days);
- Central Alaska Range in Unit 20A (2 days);
- Delta Controlled Use Area in Unit 20D (36 hours flight time);
- Mt. Harper and Tanana Hills area of Units 20B, 20D, and 20E (11 hours flight time);
- Central Brooks Range in Units 24A and 25A;
- Eastern Brooks Range in Units 25 and 26B.

4. Monitor harvest through hunter contacts, surveys and harvest or permit reports and analyze harvest data.

Contacted most successful hunters individually and monitored harvest by 1,385 hunters who harvested 586 sheep via required harvest reports and sealing records in harvest ticket, registration, and drawing permit hunts in Units 12, 19, 20, 21, 24, 25, 26B, and 26C. Harvest trends were analyzed.

5. Provide Dall Sheep management information to state and federal regulatory processes.

Communicated and coordinated with and attended meetings of 15 local Fish and Game Advisory Committee, the Alaska Board of Game, 3 Federal Regional Advisory Councils, the Federal Subsistence Board, Office of Subsistence Management, numerous local village councils, Native corporations, and the Wrangell-St. Elias Subsistence Resource Commission about Dall Sheep management and to review and analyze regulation proposals for the Alaska Board of Game and the Federal Subsistence Board.

Compliance: Cooperate with State of Alaska Office of History and Archaeology to obtain review of projects funded by Department of Fish and Game for potential impacts to historic and archaeological resources under Section 106 of the National Historic Preservation Act if potential disturbance to cultural resources is expected.

Project Budget:
See attached TAZ budget summary for activities by project.

Category:
71000: Wildlife Biologists, Fish & Wildlife Technicians, Programming Technician
73000: Air Charter Services – Field Surveys, contracted out

Cooperators

US Fish and Wildlife Service
US National Park Service

Reporting:
Annual reports will be in headquarters by 1 September of each year describing specific activities during the grant segment.

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ANNUAL SURVEY AND INVENTORY

GRANT AND SEGMENT NO. AKW-20 Wildlife Restoration FY2017

PROJECT NO. 6.0 Dall Sheep

PERIOD: July 1, 2016 – June 30, 2017

PROJECT LOCATION: Region IV (Units 11, 13, 14, and 16B)

PROJECT TITLE: The Status of Dall Sheep and Factors Influencing Their Populations

REPORT DESCRIPTION: This performance report describes Dall sheep survey and inventory activities. Regionwide activities are listed before specific activities by game management unit.

The Status of Alaska Dall Sheep and Factors Influencing Their Populations in Region IV

Regionwide Activities:

ACTIVITY 1: Prepare triennial sheep management reports.

The triennial sheep management reports were not due in this reporting period. The transition to the new 5-year operational plans will occur in FY18.

ACTIVITY 2: Monitor sheep harvest through field observations, hunter harvest reports and contact with hunters. Collect data from sheep presented for sealing by hunters.

	Rams Harvested	Ewes Harvested	Unknown Sex Harvested
Unit 11	54	0	0
Unit 13A	46	0	0
Unit 13B	1	0	0
Unit 13C	12	0	0
Unit 13D	13	0	0
Unit 13E	13	0	0
Unit 14A	21	0	0
Unit 14B	6	0	1
Unit 16B	8	0	0

ACTIVITY 3: Survey selected sheep areas to determine distribution, sex and age.

2016 Summer Surveys	< Full Curl	Full Curl	Ewe-like	Lambs	Total
Unit 13D Taz East	80	11	216	84	385
Unit 13D Taz West	86	10	261	57	414
Unit 13D Tonsina CUA	12	8	66	21	107
Unit 14A Marcus Baker	1	-	-	-	1
Unit 14A Grasshopper	-	-	-	-	-
Unit 14A Metal Creek	53	3	139	55	250
Unit 14A Friday Creek	70	1	54	19	145
Unit 14A Wolverine Creek	15	0	35	13	63
Unit 14A Carpenter Creek	30	1	102	24	157

Submitted by: Todd A. Rinaldi, Region IV Management Coordinator

Date: 1 September 2017

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Alaska Department of Fish and Game
Wildlife Restoration Grant

GRANT NUMBER: AKW-20 Wildlife Restoration FY2017

PROJECT NUMBER: 6.0

PROJECT TITLE: The Status of Dall Sheep and Factors Influencing Their Populations

PERIOD: July 1, 2016 – June 30, 2017

PROJECT LOCATION: Region 2

REPORT DESCRIPTION: This performance report describes Dall sheep survey and inventory activities. Activities are listed by game management unit.

The Status of Alaska Dall Sheep and Factors Influencing Their Populations in Region II

Regionwide:

ACTIVITY 1: Prepare 5-year sheep management operational plans

Dall sheep 5-year management report and plan was prepared and submitted for publication in May 2017. Staff continued to collect information in preparation for drafting next report. The report is scheduled for publication in 2018.

ACTIVITY 2: Provide information to state and federal regulatory processes on Dall sheep management. Collect data from sheep presented for sealing by hunters.

All sheep taken in Region II were presented to staff for measuring and sealing. In addition, approximately 25% of all rams taken in Alaska are sealed in Region II. See area specific activities for additional information. Staff routinely interact with federal staff and discuss management of Dall sheep relative to the respective regulatory systems.

ACTIVITY 3: Monitor the sheep harvest through field observations, hunter harvest reports and contact with hunters.

Information was collected during interviews with hunters and from information provided on harvest reports from permit hunts and general seasons. See area specific activities for additional information.

ACTIVITY 4: Collect data from sheep presented for sealing by hunters

Sheep brought in for sealing are aged, measured, and photographed for a morphometric study. Disease sampling is conducted on viable specimens.

ACTIVITY 5: Conduct summer aerial survey to determine status, trend, productivity and mortality of sheep.

Surveys were completed in selected hunt areas within individual GMUs. See Area specific activities.

Activities by Unit:

Units 7&15

ACTIVITY 1: Three rams were taken during the general season. Eighty-five hunters participated in the general season. Eight of 9 drawing permit hunters participated, and three rams were harvested.

ACTIVITY 2: Eight count areas were surveyed during the performance period. Overall sheep numbers for Game Management Units 7 and 15 continue to steadily decline despite restrictive hunting regulations.

ACTIVITY 3: Fall survey methodology is being examined for potential comparisons to traditional summer survey techniques.

Unit 14C

ACTIVITY 1: Sheep harvest was monitored through hunter harvest reports and sealing records. Harvest for GMU 14C was 22 rams. Sheep horn size, sheep age and location of kill was collected from sheep horns and interviews with hunters at the time of sealing.

ACTIVITY 2: Sheep surveys were conducted from July 2017 in the Unit 14C portion of the Chugach Mountain Range.

ACTIVITY 3: Research was ongoing in GMU 14C to determine productivity and mortality. Results will be reported under a separate project.

Submitted by: Cynthia M. Wardlow, Management Coordinator