Alaska Department of Fish and Game
Division of Wildlife Conservation
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Interrelationships of Dall Sheep and Predators in the Central Alaska Range

Stephen M. Arthur

Research Performance Report
1 July 2003–30 June 2004
Federal Aid in Wildlife Restoration
Grant W-33-2, Project 6.14

This is a progress report on continuing research. Information may be refined at a later date.

FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
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PROJECT TITLE: Interrelationships of Dall sheep and predators in the Central Alaska Range

PRINCIPAL INVESTIGATOR: Stephen M. Arthur

COOPERATORS: Alaska Chapter, Foundation for North American Wild Sheep, University of British Columbia

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR: W-33-2

PROJECT NR: 6.14

WORK LOCATION: Central Alaska Range, Unit 20A

STATE: Alaska

PERIOD: 1 July 2003–30 June 2004

I. PROGRESS ON PROJECT OBJECTIVES SINCE PROJECT INCEPTION

OBJECTIVE 1: Estimate home range size and reproductive success of resident coyote pairs.

From March 1998–June 2003, 19 coyotes were captured and radiocollared as part of project 6.13. These coyotes were located approximately twice per month to determine home ranges, habitat use, movement patterns, and reproductive success. These included 15 resident adults (5 M:F pairs, plus 5 mortalities), 3 pups (2 M, 1 F; aged 10–13 months), and 1 dispersing 2-year-old male.

OBJECTIVE 2: Estimate annual survival and cause-specific mortality of Dall sheep lambs.

Lambs were captured and radiocollared during late May–early June, and monitored during June–April to estimate survival and mortality causes. Twenty-four lambs were captured in 1999, 23 in 2000, 23 in 2001, 24 in 2002, 20 in 2003, and 22 in 2004. Project 6.13 covered the period from July 1999–June 2003, when the current project began.

OBJECTIVE 3: Estimate annual survival and natality of Dall sheep ewes.

Ewes radiocollared during 1999–2002 as part of project 6.13 were located daily during May to estimate birth rates and approximately twice per month during other months to estimate survival and causes of mortality.

OBJECTIVE 4: Estimate size and age/sex composition of the Dall sheep population each year.

The sheep population in the study area was surveyed annually during June 1995–2004. Surveys consisted of intensive searches conducted with R-22 helicopters. Sheep were counted and classified as lambs, yearlings, adult ewes, or rams (4 horn size classes).

OBJECTIVE 5: Data analysis and report writing.

Analysis of survival rates and home ranges has begun.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

JOB 1: Radiocollaring and tracking resident coyote pairs to estimate home range size and reproductive success.

Movements of 6 radiocollared coyotes were monitored during FY 2004. These comprised 3 resident adult pairs plus 1 single male whose mate had died during March 2003 (one collared male was paired with a female whose collar was not functioning during this period). No evidence of denning or pup production was observed in spring and summer 2003; however, 1 pair seemed to be attending a den during May and June 2004, although no pups were observed. Data on home ranges and habitat use were collected and will be compared with sheep distributions to assess coyote foraging behavior. In addition, University of British Columbia graduate student Laura Prugh completed genetic analysis of coyote scats collected during 1999–2002 and began preparation of a Ph.D. dissertation concerning coyote foraging ecology in relation to population dynamics of sheep, hares, and other prey.

JOB 2: Estimate annual survival and cause-specific mortality of Dall sheep lambs.

Fifteen lambs collared during May 2003 as part of project 6.13 were monitored during July 2003–June 2004. Twelve lambs survived the year, one was killed by coyotes, 1 by a wolverine, and 1 by an unknown predator.

JOB 3: Estimate annual survival and natality of Dall sheep ewes.

Eighteen ewes previously collared as part of project 6.13 were monitored during FY 2004. Two were killed by wolves, 2 by unknown predators (likely wolves), and the fate of 1 ewe was not determined because the collar began transmitting a mortality signal but failed before it could be recovered. Thirteen radiocollared ewes were monitored during May and June, 2003. Of these, 7 (54%) were seen with lambs during mid–late May. The lambing rate in 2003 was lower than during 1999–2002 (75, 76, 68, and 55%, respectively), but higher than during 2004 (44%). The low observed birth rate during 2004 may have been because the onset and peak of lambing were unusually early, and some lambs may have died soon after birth but before surveys began on 13 May.

JOB 4: Estimate size and age/sex composition of the Dall sheep population each year.

The sheep population was surveyed on 18–19 June 2004 using an R-22 helicopter. The population in the survey units was 523, which was less than the 675 sheep counted during the June 2003 survey. The visibility during the 2004 survey was less than optimal, due to bright sun and dark shadows, which may be partly why the population estimate was lower than during 2003. Within the study area, the ratio of lambs:100 ewes was 41, which was less than during 2002 or 2003 but greater than during 2000 or 2001 and similar to the mean from 1994–2003 (42 lambs:100 ewes).

JOB 5: Data analysis and report writing.

Data analysis has begun. This will continue during FY05.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

In cooperation with the National Park Service, helicopter surveys of eagle nests in part of the sheep study area were conducted during April and June 2004. Eight pairs of eagles produced at least 9 young that survived until mid July (near fledging). This was similar to results from 2003 and a substantial increase from 2002 when only one occupied nest was found, and that eaglet did not survive. However, only 4 occupied nests were observed within the area first surveyed during July 2000, when 8 occupied nests were found. In addition, snowshoe hare density in the study area was estimated based on counts of fecal pellets on plots surveyed annually since 1999.

IV. PUBLICATIONS

None.

V. RECOMMENDATIONS FOR THIS PROJECT

None.

VI. APPENDIX

VII. PROJECT COSTS FOR THIS SEGMENT PERIOD

FEDERAL AID SHARE $32,100 + STATE SHARE $10,700 = TOTAL $42,800

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APPROVAL DATE: _____