

**Alaska Department of Fish and Game
Division of Wildlife Conservation
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Effects of snowshoe hare population cycles on demography of Dall sheep and their predators

Stephen M. Arthur

**Research Annual Performance Report
1 July 2007–30 June 2008
Federal Aid in Wildlife Restoration
W-33-6
Study 6.14**

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FEDERAL AID ANNUAL RESEARCH PERFORMANCE REPORT

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

PROJECT TITLE: Effects of snowshoe hare population cycles on demography of Dall sheep and their predators

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 NO. W-33-6

PROJECT NO. 6.14

WORK LOCATION: Central Alaska Range, Unit 20A

STATE: Alaska

PERIOD: 1 July 2007 – 30 June 2008

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 through September 2005 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 (2M, 1F; 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 shortly after birth during late May–early June 1999–2004, and monitored through their first year of life 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 1998–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 in May to estimate birth rates and approximately twice per month during other months through September 2005 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 1998–2007. Surveys consisted of intensive searches conducted with R-22 and R-44 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/ACTIVITY 5: Data analysis and report writing.

A manuscript was prepared for submission to the journal *Ecological Applications*. Additional data analysis and manuscript preparation/revision will continue in FY09.

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

None.

IV. PUBLICATIONS

The following publications describe work conducted as part of this project. Publication costs were provided by other (non-Federal Aid) sources.

Prugh, L.R. 2004. Foraging ecology of coyotes in the Alaska Range. Thesis, University of British Columbia, Vancouver, Canada.

Prugh, L.R. 2005. Coyote prey selection and community stability during a decline in food supply. *Oikos* 110:253–264.

Prugh, L.R., S.M. Arthur, and C.E. Ritland. 2008. Use of fecal genotyping to determine individual diet. *Wildlife Biology* 14:in press.

Prugh, L.R., and C.J. Krebs. 2004. Snowshoe hare pellet decay rates and aging in different habitats. *Wildlife Society Bulletin* 32:386–393.

Prugh, L.R., and C.E. Ritland. 2005. Molecular testing of observer identification of carnivore feces in the field. *Wildlife Society Bulletin* 33:189–194.

Prugh, L.R., C.E. Ritland, S.M. Arthur, and C.J. Krebs. 2005. Monitoring coyote population dynamics by genotyping feces. *Molecular Ecology* 14:1585–1596.

V. RECOMMENDATIONS FOR THIS PROJECT

None.

VI. APPENDIX

None.

Project Number 6.14 - Dall sheep & snowshoe hare
FY08 Annual Performance Report

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APPROVAL DATE: _____