

**Alaska Department of Fish and Game
Wildlife Restoration Grant**

Grant Number: W-33 **Segment Number:** 12
Project Number: 12.01
Project Title: Mountain goat population dynamics in southeastern Alaska
Project Duration: July 1, 2010-June 30, 2017
Report Due Date: September 1, 2014
Principal Investigators: Kevin S. White, Neil Barten, Ryan Scott, Phil Mooney, Boyd Porter, Dave Gregovich
Cooperators: Bureau Land Management, City of Sitka, Coeur Alaska, Glacier Bay National Park, U.S. Forest Service
Work Location: Lynn Canal (GMU 1C/1D), Haines (GMU 1D), Baranof Island (GMU 4), Cleveland Peninsula (GMU 1A/1B), Kodiak Island (GMU 8), Alaska

I. PROJECT OBJECTIVES DURING LAST SEGMENT

OBJECTIVE 1: Capture and radio-collar a sample of mountain goats in each study area.

We captured and deployed GPS/VHF radio-collars on mountain goats in Lynn Canal (n = 9), Haines (n = 9), Baranof Island (n = 5) and Kodiak Island (n = 15) during Aug-Oct 2012 and June 2013. All mountain goats were captured using helicopter darting methods.

OBJECTIVE 2: Annually estimate mountain goat population size and composition in each study area.

We conducted aerial surveys during September-October 2012 in order to estimate mountain goat population size and composition (Lynn Canal, n = 3; Haines, n = 3, Baranof, n = 1, Cleveland Peninsula, n = 2). During these surveys mountain goat sighting probabilities were estimated based on data collected from radio-marked adult female moose.

OBJECTIVE 3: Monitor reproductive success and survival of mountain goats in each study area.

We conducted aerial surveys in May-June 2013 (Lynn Canal, n = 4; Haines, n = 3; Baranof, n = 2; Cleveland Peninsula, n = 0) to determine kid status of radio-marked adult female mountain goats (Lynn Canal, n = 12; Haines, n = 9; Baranof, n = 6; Cleveland Peninsula, n = 6).

We monitored survival of radio-marked mountain goats (Lynn Canal, n = 37; Haines, n = 29, Baranof, n = 23; Cleveland Peninsula, n = 8) via air-based radio-telemetry surveys and/or from examining GPS-telemetry data. During 2012-2013, we investigated 21 mortality events involving radio-marked mountain goats (Lynn Canal, n = 13; Haines, n = 4; Baranof, n = 3; Cleveland Peninsula, n = 1).

OBJECTIVE 4: Determine seasonal habitat selection patterns.

We developed resource selection function (RSF) models using GPS location data collected from 124 mountain goats in the Lynn Canal area. These data were combined with remote sensing covariate data to derive models for the summer and winter periods. Resulting models were validated using the k-fold cross validation technique. Complete technical details are described in White et al. 2012.

OBJECTIVE 5: Analyze data and prepare reports.

We prepared annual progress reports detailing activities conducted in Lynn Canal, Haines and Baranof Island, as required by funding agreements with the BLM, Coeur Alaska and the City of Sitka. We also prepared a report describing aerial survey technique development activities to satisfy funding requirements for the USFS. We had one paper accepted for publication in a peer-reviewed journal.

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

JOB/ACTIVITY 1: Capture and radio-mark mountain goats.

Accomplishments: We captured and deployed GPS/VHF radio-collars on mountain goats in Lynn Canal (n = 5), Haines (n = 8), Baranof Island (n = 7) during Aug-Sept 2013. All mountain goats were captured using helicopter darting methods.

JOB/ACTIVITY 2: Estimate mountain goat population size and composition.

Accomplishments: We conducted aerial surveys during September-October 2013 in order to estimate mountain goat population size and composition (Lynn Canal, n = 2; Haines, n = 3, Baranof, n = 1, Cleveland Peninsula, n = 2). During these surveys mountain goat sighting probabilities were estimated based on data collected from radio-marked mountain goats.

JOB/ACTIVITY 3: Estimate reproductive performance and survival of radio-marked mountain goats

Accomplishments: We conducted aerial surveys in May-June 2014 (Lynn Canal, n = 3; Haines, n = 3; Baranof, n = 2; Cleveland Peninsula, n = 0) to determine kid status of radio-marked adult female mountain goats (Lynn Canal, n = 10; Haines, n = 11; Baranof, n = 10; Cleveland Peninsula, n = 5).

We monitored survival of radio-marked mountain goats (Lynn Canal, n = 27; Haines, n = 34, Baranof, n = 27; Cleveland Peninsula, n = 7) via air-based radio-telemetry surveys and/or from examining GPS-telemetry data. During 2013–2014, we investigated 15 mortality events involving radio-marked mountain goats (Lynn Canal, n = 6; Haines, n = 3; Baranof, n = 4; Cleveland Peninsula, n = 2).

JOB/ACTIVITY 4: Determine seasonal habitat selection patterns.

Accomplishments: We developed resource selection function (RSF) models using GPS location data collected from 124 mountain goats in the Lynn Canal area. These data were combined with remote sensing covariate data to derive models for the summer and winter periods. Resulting models were validated using the k-fold cross validation technique. Complete technical details are described in White et al. (2012).

JOB/ACTIVITY 5: Data analysis and reporting.

Accomplishments: We prepared annual progress reports detailing activities conducted in Lynn Canal, Haines and Baranof Island, as required by funding agreements with the BLM, Coeur Alaska and the City of Sitka. We also prepared a report describing aerial survey technique development activities to satisfy funding requirements for the USFS. We had two papers published in peer-reviewed journals.

IV. SIGNIFICANT DEVIATIONS AND/OR ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

None.

V. PUBLICATIONS

White, K. S., D. P. Gregovich, G. W. Pendleton, N. L. Barten, A. Crupi, R. Scott and D. N. Larsen. 2012. Modeling resource selection of mountain goats in southeastern Alaska: applications for population management and highway development planning. Proceedings of the Northern Wild Sheep and Goat Council, 18: 32-42.

J. H. Richard, K. S. White and S. D. Cote. 2014. Mating effort and space use of an alpine ungulate during the rut. Behavioral Ecology and Sociobiology. DOI: 10.1007/s00265-014-1772-1

White, K. S., A. Crupi, R. Scott, and B. Seppi. 2013. Mountain goat movement patterns and population monitoring in the Haines-Skagway area, Alaska. Research progress report. Alaska Department of Fish and Game, Juneau, AK.

White, K. S., P. Mooney and K. Bovee. 2013. Mountain goat movement patterns and population monitoring on Baranof Island. Research progress report. Alaska Department of Fish and Game, Juneau, AK.

White, K. S. and G. W. Pendleton. 2013. Mountain goat population monitoring and survey technique development. Research progress report. Alaska Department of Fish and Game, Juneau, AK.

White, K. S., D. P. Gregovich, G. W. Pendleton, N. L. Barten, R. Scott, A. Crupi and D. N. Larsen. 2013. Mountain goat population ecology and habitat use near the Kensington Mine, Alaska. Research progress report. Alaska Department of Fish and Game, Juneau, AK.

VI. RECOMMENDATIONS FOR THIS PROJECT

This project should be continued as described in the study plan.

Prepared by: Kevin White

Date: 8/22/14