FEDERAL AID ANNUAL RESEARCH PERFORMANCE REPORT

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: W-33 **Segment Number:** 10

Project Number: 12.01

Project Title: Mountain goat population dynamics in southeastern Alaska

Project Duration: July 1, 2010-June 30, 2014

Reporting Period: July 1, 2011 – June 30, 2012

Report Due to HQ: September 1, 2012

Principal Investigators: Kevin S. White, Neil Barten, Ryan Scott, Anthony Crupi, Phil Mooney, Boyd Porter, Dave Gregovich

Cooperators: Bureau Land Management, City of Sitka, U.S. Forest Service

Work Location: Lynn Canal (GMU 1C/1D), Haines (GMU 1D), Baranof Island (GMU 4), Cleveland Peninsula (GMU 1A/1B), Alaska

I. PROJECT OBJECTIVES DURING LAST SEGMENT

OBJECTIVE 1: Capture and radiocollar a sample of mountain goats in each study area.
We captured and deployed GPS/VHF radio-collars on mountain goats in Lynn Canal (n = 8), Haines (n = 23), Baranof Island (n = 12) and the Cleveland Peninsula (n = 5). 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 2010 in order to estimate mountain goat population size and composition (Lynn Canal, n = 4; Haines, n = 3, Baranof, n = 1, Cleveland Peninsula, n = 0). 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 (Lynn Canal, n = 3; Haines, n = 3; Baranof, n = 1; Cleveland Peninsula, n = 0) to determine kid status of radio-marked adult female mountain goats (Lynn Canal, n = 23; Haines, n = 7; Baranof, n = 4; Cleveland Peninsula, n = 6).

We monitored survival of radio-marked mountain goats (Lynn Canal, n = 49; Haines, n = 23, Baranof, n = 12; Cleveland Peninsula, n = 12) via air-based radio-telemetry surveys and/or from examining GPS-telemetry data. During 2010/2011, we investigated 15 mortality events involving radio-marked mountain goats (Lynn Canal, n = 5; Haines, n = 7; Baranof, n = 1; Cleveland Peninsula, n = 2).

OBJECTIVE 4: Determine seasonal habitat selection patterns.

GPS location data were compiled and archived from 124 radio-marked mountain goats in preparation for resource selection function (RSF) modeling data analyses planned for winter 2012.

OBJECTIVE 5: Analyze data and prepare reports.
We prepared annual progress reports detailing activities conducted in Lynn Canal and Baranof Island, as required by funding agreements with AKDOT/PF, 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 accepted for publication in peer-reviewed journals. One paper detailed patterns of mountain goat survival in coastal Alaska. Another paper characterized population genetics of mountain goats on Baranof Island.

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

JOB/ACTIVITY 1: Capture and radio-mark mountain goats.
We captured and deployed GPS/VHF radio-collars on mountain goats in Lynn Canal (n = 8), Haines (n = 10), Baranof Island (n = 7). All mountain goats were captured using helicopter darting methods.

JOB/ACTIVITY 2: Estimate mountain goat population size and composition.
We conducted aerial surveys during September-October 2010 in order to estimate mountain goat population size and composition (Lynn Canal, n = 4; Haines, n = 4, Baranof, n = 1, Cleveland Peninsula, n = 0). During these surveys mountain goat sighting probabilities were estimated based on data collected from radio-marked adult female moose.

JOB/ACTIVITY 3: Estimate reproductive performance and survival of radio-marked mountain goats
We conducted aerial surveys (Lynn Canal, n = 3; Haines, n = 3; Baranof, n = 1; Cleveland Peninsula, n = 0) to determine kid status of radio-marked adult female mountain goats (Lynn Canal, n = 14; Haines, n = 9; Baranof, n = 6; Cleveland Peninsula, n = 6).
We monitored survival of radio-marked mountain goats (Lynn Canal, n = 52; Haines, n = 26, Baranof, n = 18; Cleveland Peninsula, n = 10) via air-based radio-telemetry surveys and/or from examining GPS-telemetry data. During 2010/2011, we investigated 15 mortality events involving radio-marked mountain goats (Lynn Canal, n = 10; Haines, n = 4; Baranof, n = 0; Cleveland Peninsula, n = 2).

JOB/ACTIVITY 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.

JOB/ACTIVITY 5: Data analysis and reporting.

We prepared annual progress reports detailing activities conducted in Lynn Canal and Baranof Island, as required by funding agreements with DOT/PF, 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 three papers published in peer-reviewed journals. One paper detailed patterns of mountain goat survival in coastal Alaska. Another paper characterized population genetics of mountain goats on Baranof Island. The third paper characterized relationships between habitat selection and genetic relatedness of mountain goats in the Lynn Canal area.

V. PUBLICATIONS

Shafer, A. B. A., K. S. White, S. D. Cote, D. W. Coltman. 2011. Deciphering translocations from relicts in Baranof Island mountain goats: Is an endemic genetic lineage at risk? Conservation Genetics 12:1261-1268.

Shafer, A. B. A., J. M. Northrup, K. S. White, M. S. Boyce, S. D. Cote, D. W. Coltman. 2012. Habitat selection predicts genetic relatedness in an alpine ungulate. Ecology, 93:1317-1329.
White, K. S., A. Crupi, R. Scott, and B. Seppi. 2011. 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. 2011. 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. 2011. Mountain goat population monitoring and survey technique development. Research progress report. Alaska Department of Fish and Game, Juneau, AK.

White, K. S., G. W. Pendleton, D. Crowley, H. Griese, K. Hundertmark, T. McDonough, L. Nichols, C. Smith, and J. Schoen. 2011. Mountain goat survival in coastal Alaska: effects of age, sex, and climate. Journal of Wildlife Management 75:1731-1744.

White, K. S., D. P. Gregovich, G. W. Pendleton, N. L. Barten, R. Scott, A. Crupi and D. N. Larsen. 2012. Mountain goat population ecology and habitat use along the Juneau Access road corridor, Alaska. Final wildlife research report, ADF&G/DWC/WRR-2012-02. Alaska Deprtment 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: 9/01/12