

**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: 9

PROJECT NUMBER: 1.67

PROJECT TITLE: Comparative nutritional status among 6 high density moose subpopulations in Interior Alaska

PROJECT DURATION: 1 July 2008–30 June 2013

REPORT DUE DATE: 1 September 2011

PARTNER: ?

PRINCIPAL INVESTIGATOR: Kalin A. Kellie, ADF&G

COOPERATOR: Fort Wainwright, U.S. Army

WORK LOCATION: Interior Alaska

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

OBJECTIVE 1: Conduct a literature review.

JOB/ACTIVITY 1A: Literature review.

I reviewed published study designs for monitoring the nutritional response of wildlife populations to drastic changes in their habitat. I also reviewed literature on moose nutrition, moose and wildfire, habitat regeneration after wildfires, and moose movements relative to drastic changes in habitat. The information was stored and summarized for use in designing a long-term monitoring program for the recent burns in Units 20A and 20C.

OBJECTIVE 2: Estimate and evaluate nutritional differences among 6 high-density subpopulations using short-yearling weights.

JOB/ACTIVITY 2A: Immobilize and weigh March calves (short-yearlings) in 5 subpopulations.

I did not capture any moose under Federal Aid project 1.67 in FY11. However, 20 9-month-old moose calves were captured and weighed by biologist Don Young in Unit 20C under the ADF&G Fairbanks Area management program. Seven of these calves were collared to begin documenting movements of moose in Unit 20C. The capture data were provided to me for inclusion in project 1.67 and I provided 7 previously-used radio collars.

JOB/ACTIVITY 2B: Compare nutrition among 6 high-density subpopulations.

I reviewed data from 2009 and 2010 captures conducted in Units 20A, 20B, and 20D to determine if additional sampling was needed to improve power of nutritional comparisons among subpopulations. In addition, I modified the project statement to include Unit 20C as a contrasting low-density population. The data collected in Unit 20C by Fairbanks area staff in March 2011 will be used for this comparison (see job/activity 2A and 3A/B).

JOB/ACTIVITY 2C: Compare twinning rate surveys with short-yearling weights.

No additional work was completed during this reporting period.

OBJECTIVE 3: Evaluate differences in winter range for 6 subpopulations with similar high densities.

JOB/ACTIVITY 3A/B: Browse surveys: establish permanent plots in Unit 20A burns.

This job is conducted in cooperation with Federal Aid project 5.20 (PI: Tom Paragi), which incurs the operational costs for browse surveys. In late March 2011, we conducted a browse survey in Unit 20C in conjunction with the calf captures conducted by Fairbanks Area staff. We prioritized Unit 20C over Unit 20A for browse surveys in FY11 to align browse sampling with the moose capture conducted in Unit 20C by area staff. We will conduct the Unit 20A burn browse survey in FY12.

JOB/ACTIVITY 3C: Browse analyses: 2010 browse survey summary.

This job is also conducted in cooperation with Federal Aid project 5.20 (PI: Tom Paragi). In FY11 I reformatted the Microsoft® Access™ table structure used for standard browse surveys to accommodate the new permanent-plot browse survey designed for long-term browse monitoring in burns. This browse survey technique was tested in Unit 20A in FY10 (March 2010). In FY11 these browse survey data were entered, but because the sampling strategy is different for these permanent plots than previous browse surveys, we are waiting for Bob Sutherland (ADF&G, Anchorage) to complete changes to the browse analysis program before running the browse estimates for the 2010 Unit 20A survey.

OBJECTIVE 4: Connect nutritional indices, population estimates, and harvest by monitoring the movements of individual moose (% present) during survey and hunting seasons.

JOB/ACTIVITY 4A: Radiotracking: Unit 20D military and Unit 20A burn.

I conducted 18 radiotracking flights in Unit 20A, 3 flights in Unit 20C, and 20 flights in Unit 20D. In cooperation with Federal Aid project 1.65 (PI: Rod Boertje), I monitored parturition of adult moose from 10 May to 16 June 2011 in Unit 20A. The parturition rate among the 3-year-old moose used in project 1.67 was 64% ($n = 36$). In FY12 we will monitor the second segment of 3-year-old moose (weighed and radiocollared in March 2010) and use the 2-year sample to examine the influence of recent burns on age of first reproduction in Unit 20A.

JOB/ACTIVITY 4B: Determine spatial relationship between harvest and survey data.

No additional work was completed during this reporting period.

OBJECTIVE 5: Document habitat use and movement patterns on military land.

JOB/ACTIVITY 5A: Document movement patterns of moose on the Fort Wainwright Gerstle River TA with reference to the Healy Lake hunting areas.

I prepared a report that detailed the movements of collared moose in Unit 20D relative to military and ADF&G management boundaries. This was submitted on 25 June 2011 to John Haddix (CTR USA IMCOM) in fulfillment of our contract with the military for funding we received to do this project. The bulk of this report will be included, along with additional analyses of habitat selection and moose measurements, in an ADF&G technical report that will be completed in FY12.

JOB/ACTIVITY 5B: Test moose habitat suitability index models.

I prepared a GIS file of 1,699 moose locations obtained in Unit 20D and provided this to our Fort Wainwright military cooperators for use in their habitat suitability models for military lands in the Gerstle River TA area.

OBJECTIVE 6: Evaluate the progression of nutritional differences between burned and unburned areas of Unit 20A.

JOB/ACTIVITY 6: Writing: manuscript on high-density nutrition comparisons.

No additional work was completed during this reporting period.

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

None.

III. PUBLICATIONS

KELLIE, K. A., S. D. DUBOIS, T. F. PARAGI, AND C. J. CARROLL. 2011. Annual movement patterns, nutrition, and antler characteristics of moose in Game Management Unit 20D. Final Report to the U.S. Army in Fulfillment of U.S. Army Contract W912CZ-08-D-0012 DO 7. Alaska Department of Fish and Game. Fairbanks, Alaska.

IV. RECOMMENDATIONS FOR THIS PROJECT

None.

PREPARED BY: Kalin A. Kellie

DATE: 15 August 2011