

**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:** AKW-10 Wildlife Restoration FY2016

**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 2017

**REPORT DUE DATE:** 1 September 2017

**PRINCIPAL INVESTIGATOR:** Kalin Ann Kellie Seaton

**COOPERATORS:** John Haddix (U.S. Army)

**WORK LOCATION:** Interior Alaska (Units 20A, 20B, 20C, and 20D)

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

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

I continued work on an analysis comparing nutritional condition among the 6 populations, as well as several other populations at different nutritional levels across the state. Trace mineral levels, 10-month weights and pregnancy rates were compared at individual and population levels. I had ADF&G biometrician John Merickel review the analysis and incorporated his suggestions.

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

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

**JOB/ACTIVITY 6A:** Evaluate use of recent burns by collared moose

I continued to collect location information to determine home ranges of GPS-collared moose relative to burn perimeters to examine whether these moose shifted use further into burn areas over time.

**JOB/ACTIVITY 6B: Determine nutritional differences between burned and unburned habitat.**

In March 2016, I worked with Fairbanks Area staff to capture and weigh an additional 60 male and female moose calves in Central and Western GMU 20A as part of their long-term monitoring program. Where possible, we captured and weighed moose calves that were offspring of known-age moose from project 1.67 that were originally captured and weighed at 10 months. These generational changes in weight will be incorporated into analyses examining long-term changes in nutrition relative to burns.

**JOB/ACTIVITY 6C: Collect fine-scale movement information to determine movement and use patterns in burned and unburned habitat**

I continued to collect GPS location information via satellite from GPS-collared adult female moose in burned and unburned habitats in GMU 20A and adjacent 20C.

**JOB/ACTIVITY 6D: Prepare long-term monitoring strategy for GMU 20A population response to wildfires**

I worked with Fairbanks Area staff to examine whether male calf weights were improving to a larger degree than female calf weights, which may affect recommendations for long-term monitoring of nutritional response to wildfire. I also worked with Tom Paragi to develop recommendations for prioritizing recent burn scars for active monitoring and management based on several criteria such as proximity to access, burn severity and prior moose density.

**OBJECTIVE 7: Write annual progress reports, write final report, and publish in peer-reviewed journals.**

I wrote a progress report for this project in August 2015.

I drafted a preliminary report containing analyses comparing nutritional condition among the 6 populations using calf weights, pregnancy rates and trace minerals. The report also provides context for these high-density populations by including similar information for populations across Alaska. I sent this report to ADF&G collaborators John Crouse, Thomas McDonough and Kevin White for review.

## **II. RECOMMENDATIONS FOR THIS PROJECT**

Among trace minerals examined, zinc levels in blood serum may provide some indication of nutritional status in moose. It correlates well with two well-established indices of nutrition: pregnancy rates and 10-month calf weights. However, more data collection and analysis are needed to confirm the relationship. If zinc proves to be a good indicator of nutritional condition, it may be logistical compliment to existing indices in terms of season and methods for data collection.

Male calf weights may increase more quickly than females following an improvement in range quality (or decreased intraspecific competition). The exact mechanism for this is unclear, though accelerated weight/size gain may be more important to fitness for males than females. This has ramifications for the use of calf weights as an index to nutritional

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condition- especially when monitoring changes in nutrition following habitat improvement or population decline. Recent calf weight data from Fairbanks Area fieldwork should be used in combination with weights collected in 2009-2010 and 2001-2006 for this project and Fed Aid Project 1.51 to determine whether observed differences in weights among females and males over the last 15 years are biologically significant.

**PREPARED BY:** Kalin A. Kellie Seaton

**DATE:** 20 June 2016