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: 1.63

PROJECT TITLE: Evaluation and testing of techniques for ungulate management and operation of the Kenai Moose Research Center

PROJECT DURATION: 1 July 2011 – 30 June 2013

REPORTING PERIOD: 1 July 2011 – 30 June 2012

REPORT DUE DATE: 1 September 2012

PRINCIPAL INVESTIGATOR: John Crouse

COOPERATORS: USFWS Kenai NWR; Dr. Perry Barboza, University of Alaska - Fairbanks

WORK LOCATION: Kenai Moose Research Center

I. PROGRESS ON PROJECT OBJECTIVES DURING LAST SEGMENT

This was the first year of the new grant agreement. Please refer to Section II for a summary of work completed on jobs identified in the annual plan.

OBJECTIVE 1: MRC maintenance and operations.
See Section II, JOB/ACTIVITY 1A-1C.

OBJECTIVE 2-5: Moose nutrition, physiology, and reproductive research.
See Section II, JOB/ACTIVITY 2A-2C, 3A-3D, 4A-B, and 5A-C.

OBJECTIVE 6: Vegetation management.
See Section II, JOB/ACTIVITY 6A-C.

OBJECTIVE 7: Drug testing.
See Section II, JOB/ACTIVITY 7A.

OBJECTIVE 8: Preparation of study plans, reports and publications.
See Section II, JOB/ACTIVITY 8A-C.

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

JOB/ACTIVITY 1A-C: We maintained and cared for 19 moose, including 5 males. One adult male died post-rut during October of an unknown (non-predator) cause. One 2 ½-year-old female died during late-March and fresh tissues were submitted to the Wyoming State Veterinary Laboratory for diagnosis. The pathological findings concluded a sub-acute to chronic pneumonia with

lesions consistent with a bacterial pneumonia (features suggested *Pasturella/Mannheimia* and/or superimposed *Arcanobacterium pyogenes* infection). From our captive herd within the MRC enclosures, we removed 6 calves (all were twins; 4 females and 2 males) from their mothers within 48h of birth and began bottle feeding them. An additional orphaned female calf was obtained from the Soldotna area. The 2 male calves were subsequently transferred to the Alaska Wildlife Conservation Center in Portage. The 5 females will be trained and accustomed to handling by humans to facilitate future research.

We removed the aged and failing exterior log sealant from the Lab building and refinished with a two-part sealant that will protect the logs from further deterioration. To one of the residence cabins we applied a flexible, textured acrylic chinking to seal the open gaps between logs to eliminate heat loss and air infiltration.

Because we are currently not using the holding pens near the Lab, the repairs to the fence in this area were deferred and we opted instead to repair the perimeter fence in the southeast corner of Pen 3. We replaced approximately 200ft of fence with new materials. Rotted and falling wooden posts that have remained attached to the fence were removed from approximately 1.5 miles of the north and east perimeter fence of Pen 3.

JOB/ACTIVITY 2A-2C: We measured weight, rump fat and loin muscle thickness and collected blood, urine and feces from 4 non-pregnant adult female moose in December, April and June to further assess how well the proportion of urea nitrogen from body nitrogen (pUrea-N) indicates winter body protein loss in moose. The natural abundance of $\delta^{15}N$ in metabolite samples will be determined by Dr. Perry Barboza's lab at the University of Alaska – Fairbanks. We collected direct observations of intake for 6 hours during 1 day each month December through April.

JOB/ACTIVITY 3A-3D: We were able to obtain 10 GPS telemetry collars with activity sensors at little or no cost (from other researchers' field studies that had retrieved collars from dead animals and, in some cases, from manufacturers with a beta version ready for testing by customers). GPS collars were fitted on moose at the MRC and we have observed animals to record activity during summer and winter periods (~250 hours). The preliminary data from these collars will be downloaded in Fall 2012 and compared to direct observation measures. The results will be used to design experiments using 2-3 sampling modes and 2-3 sampling intervals to determine which are most appropriate to describe moose activity patterns.

JOB/ACTIVITY 4A-B: Feces and plant material to be used for the analyses of dietary fiber, energy, protein and tannin content were prepared for laboratory analyses (approximately 3 months of Fish and Wildlife Technician III time). Samples will be submitted to the Wildlife Habitat Analysis Lab at Washington State University during Fall 2012.

JOB/ACTIVITY 5A-C: No VITs were utilized during this segment, so the 3 pregnant cows were located by radio telemetry and directly observed every other day from mid-May until parturition (last birth was 1 June). All calves were removed from their mothers for bottle feeding efforts.

JOB/ACTIVITY 6A-C: We acquired a 1996 digital orthorectified photograph and began building a GIS database of the MRC enclosures. We are currently determining the availability of imagery

best suited to describe the existing vegetative cover. We purchased 2 handheld Garmin GPSMAP 76S to aid fieldwork.

JOB/ACTIVITY 7A: Thiafentanil (A-3080) remained unavailable during this period and as a result we were unable to evaluate its efficacy in Alaskan moose.

JOB/ACTIVITY 8A-C: The final performance report on project 1.63 was submitted.

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

A collaborative effort to assess caribou body condition and nutritional status through morphometric and physiological indices with Drs. John and Rachel Cook (National Council of Air and Stream Improvement) and Dr. Tom Stephenson (California Department of Fish and Game) was initiated. A significant amount of my time during January – April was devoted to planning, securing ADF&G Animal Welfare approvals and obtaining permission to lethally collect animals from Interior Alaska caribou herds. In addition, my participation was essential to the capture operations and subsequent carcass processing of 14 adult female caribou that occurred over a 10 day period during late-April and early-May. Samples of caribou body tissues were packaged for submission to the Wildlife Habitat Analysis Lab at Washington State University for fat, protein, mineral and water content analyses. Additional caribou will be collected in October 2012.

Research to better understand moose reproduction and survival on the Kenai Peninsula was initiated by ADF&G during February and March 2012. I was included in the capture and collaring operations of 100 adult female moose (50 each in Game Management Units 15A and 15C) to provide assessments of body condition via ultrasonography and deploy vaginal implant transmitters (VIT) to detect moose birthing events.

Snow depths on the Copper River Delta during winter 2011-12 were extreme and provided a unique opportunity to measure moose nutritional condition (body fat stores) relative to predicted nutritional carrying capacity estimates (forage based models; McCracken et al. 1997, Stephenson et al. 2006). I facilitated equipment purchases (VHF radio telemetry collars, drugs and sample kits), secured animal welfare approvals and helped capture and collar 30 adult female moose in GMU 6C and assessed their body condition via ultrasonography. This information will enhance our understanding of the nutritional influences on CRD moose population dynamics and aid in establishing population objectives under milder conditions.

V. PUBLICATIONS: None.

Prepared by: John Crouse

Date: 10 September 2012