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: 1.65

PROJECT TITLE: Age-specific natural mortality rates of male vs. female moose

PROJECT DURATION: 1 July 2006–30 June 2012

REPORT DUE DATE: 1 September 2011

PRINCIPAL INVESTIGATOR: Rodney D. Boertje, ADF&G

COOPERATORS: Layne G. Adams (USGS) and Brad Griffith (University of Alaska Fairbanks)

WORK LOCATION: Fairbanks

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

JOB/ACTIVITY 1: Literature review.

We continued weekly literature reviews using web-based search engines through ARLIS.

JOB/ACTIVITY 2: Estimate reproductive/condition parameters.

We recaptured 10 adult female moose during October 2010 to replace aging collars. We detected no capture-related mortality during this reporting period. To determine reproductive rates, we radiotracked 49 adult females on alternate days from 11 May to 16 June 2011.

We observed a birth rate of 42/47 or 90% and a twinning rate of 8/42 or 19% among adult females aged 7 to 15 years of age. We also observed a birth rate of 23/36 or 64% among adult females 36 months of age in northcentral and western Unit 20A (project 1.67).

JOB/ACTIVITY 3: Assess causes and rate of mortality of moose.

We recaptured 10 adult male moose during October 2010 to replace aging collars. To assess causes and rates of moose mortality, we radiotracked moose at least monthly and used a helicopter to examine mortality sites. We began 1 July 2010 with 106 moose (59 females and 47 males) and ended on 30 June 2011 with 79 moose (48 females and 31 males). Wolf predation was the chief cause of death followed by hunting.

Excluding mortality from human causes, moose survival rates remained high for 2-year-old males (97%, n = 97) and females (98%, n = 164), 3-year-old males (98%, n = 87) and females (97%, n = 163), 4-year-old males (96%, n = 65) and females (100%, n = 156), 5-year-old males (100%, n = 41) and females (99%, n = 146), 6-year-old males (96%, n = 24) and females (96%, n

= 147), and 7-year-old males (100%, *n* = 11) and females (95%, *n* = 135). A former study showed that female survival rates decline substantially after 7 years of age, primarily because of wolf predation. For male moose, we have insufficient data to determine at which age these high rates begin to decline. However, few male moose remain past the age of 7 years because they are shot at a high rate. During this reporting period, 16 radiocollared male moose died of which 14 (88%) were shot. Causes of death among all 59 radiocollared male moose ≥2 years of age were as follows: hunters shot 51 (86%), wolves killed 3 (7%), 3 died presumably from malnutrition or disease (5%), a grizzly bear killed 1 (2%), and 1 died after falling from a cliff (2%).

JOB/ACTIVITY 4: Write reports and publications.

We published a commentary on Alaska's predator control programs to increase moose.

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

We completed our testing of the accuracy of Matson's Laboratory (Milltown, MT) in counting annuli in known-age moose teeth. We collected the teeth from dead moose in Game Management Unit 20A. We published results of preliminary data in Boertje et al. (2009, JWM 73:314–327), but no moose teeth >9 years of age were available during the preliminary analysis.

III. PUBLICATIONS

BOERTJE, R. D., M. A. KEECH, AND T. F. PARAGI. 2010. Science and values influencing predator control for Alaska moose management. Journal of Wildlife Management 74:917–928.

IV. RECOMMENDATIONS FOR THIS PROJECT

Continue documenting mortality rates and causes of mortality among male moose until sample sizes diminish to <10. Continue documenting similar mortality data among females, as well as birth rates, until sample sizes diminish to <10. Three writing projects remain: 1) summarize reproductive parameters of nutritionally-stressed moose 2–17 years of age, 2) summarize mortality rates of male versus female moose in this nutritionally-stressed moose population, and 3) summarize accuracy rates of annuli counts in teeth from known-age moose.

PREPARED BY: Rodney D. Boertje

DATE: 3 August 2011