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: 1.65

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

PROJECT DURATION: 1 July 2006–30 June 2013

REPORTING PERIOD: 1 July 2011 – 30 June 2012

REPORT DUE TO HQ: 1 September 2012

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 5 adult female moose during October 2011 to replace aging collars; 1 moose died from capture-related causes. Since 1996, capture-related causes have totaled 3 (<1%) of 405 moose aged ≥1 year.

To determine reproductive rates, we radiotracked 35 adult females on alternate days from 11 May to 13 June 2012. We observed a birth rate of 28/35 or 80% and a twinning rate of 3/28 or 11% among adult females 8–16 years of age. We also observed a birth rate of 17/33 or 52% among adult females 36 months of age in northcentral and western Unit 20A (project 1.67). Reproductive rates indicated continued low moose condition relative to other moose populations in Alaska, yet condition appeared to improve slightly.

JOB/ACTIVITY 3: Assess causes and rate of mortality of moose.
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 79 moose (48 females and 31 males) and ended on 30 June 2012 with 54 moose (34 females and 20 males).

Male moose aged ≥2 years largely died from hunters, whereas female moose largely died from wolves. During this reporting period, 11 radiocollared male moose died of which 10 (91%) were

shot and 1 (9%) was killed by wolves. In contrast, 13 radiocollared female moose died of which 2 (17%) were shot and 7 (58%) were killed by wolves. During 1999–2012, causes of death among 70 radiocollared male moose ≥2 years of age were as follows: hunters shot 61 (87%), wolves killed 4 (6%), 3 died presumably from malnutrition or disease (4%), a grizzly bear killed 1 (1%), and 1 died after falling from a cliff (1%).

Excluding mortality from human causes, moose survival rates were 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 (97%, $n = 74$) and females (100%, $n = 156$), 5-year-old males (98%, $n = 59$) and females (99%, $n = 146$), 6-year-old males (96%, $n = 34$) and females (96%, $n = 146$), and 7-year-old males (100%, $n = 15$) and females (95%, $n = 138$). Former project 1.57 showed that female survival rates declined substantially after 7 years of age, primarily because of wolf predation. Female moose reached a maximum of 17 years of age, compared with 10 years for males.

JOB/ACTIVITY 4: Write reports and publications.
We wrote no other summaries of data 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

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

None during this reporting period.

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 2012