Alaska Department of Fish and Game
Division of Wildlife Conservation
2007

Response of moose and their predators to wolf reduction and short-term bear removal in a portion of Unit 19D East

Mark A. Keech

Research Annual Performance Report
1-July 2006-30 June 2007
Federal Aid in Wildlife Restoration
W-33-5
Project 1.62

This is a progress report on continuing research. Information may be refined at a later date

FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 115526
Juneau, AK 99811-5526

PROJECT TITLE: Response of moose and their predators to wolf reduction and short-term bear removal in a portion of Unit 19D East

PRINCIPAL INVESTIGATOR: Mark A. Keech

COOPERATORS: None.

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR.: W-33-5

PROJECT NR.: 1.62

WORK LOCATION: Interior, Alaska. Unit 19D East, the upper Kuskokwim River drainage upstream of the Selatna River. Intensive study area (also known as the "Experimental Micro-Management Area" or "EMMA"): The 528-mi^2 area along the Kuskokwim and Takotna Rivers within Unit 19D East that immediately surrounds the community of McGrath.

STATE: Alaska

PERIOD: 1 July 2006 – 30 June 2007

I. PROGRESS ON PROJECT OBJECTIVES SINCE PROJECT INCEPTION

OBJECTIVE 1: Monitor response of moose to recent management actions.

Since the start of this project we have completed 2 moose population estimates, as well as monitored survival of two cohorts of both calf and yearling moose. In addition, we have monitored calving, twinning, and survival rates of adult moose.

OBJECTIVE 2: Characterize winter moose browse in Unit 19D East, with emphasis on the intensive study area.

No browse surveys have been completed since the start of this project. We anticipate completing a browse survey in March 2008.

OBJECTIVE 3: Estimate wolf numbers in Unit 19D East with emphasis on the intensive study area.

We completed a wolf population estimate in the study area in spring 2006.

OBJECTIVE 4: Estimate black bear numbers in the intensive study area.

We completed a black bear population estimate in the study area in spring 2007.

OBJECTIVE 5: Analyze hair and tissue samples for species, sex, and age information.

No DNA analysis been completed since the start of this project. We anticipate age analysis of our marked bear population will be completed by spring 2008.

OBJECTIVE 6: Review literature, write annual progress reports, write final project report, and publish results in peer-reviewed journals.

Since the start of this project the principal investigator reviewed literature on moose calf mortality, DNA analysis, bear population estimation techniques, and methods to evaluate browsing intensities by moose. The 2006 annual research performance report for this project was also completed during this reporting period.

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

JOB/ACTIVITY 1A: Moose population estimation.

During 28 November–5 December 2006 we conducted aerial moose surveys within the EMMA and its immediate vicinity. We estimated 691 moose in the 528-mi^2 EMMA and 1307 moose within the buffered EMMA. We used 5 fixed-wing aircraft to complete the survey and funds were used to provide for charter costs, fuel, lodging, and food for pilots and observers.

JOB/ACTIVITY 1B: Calf mortality study.

In May 2007 we captured and radiocollared 51 newborn moose calves in the EMMA. Ten additional calves were captured but censored from the mortality study because they were either considered capture mortalities or were abandoned by their cows. Calf survival through 31 July 2006 was approximately 49% (24 of 51 lived, plus 2 censored individuals). We attributed 7 deaths (28%) to black bears, 14 deaths (56%) to grizzly bears, 2 deaths (8%) to wolves, 1 death (4%) to nonpredation causes, and 1 death (4%) to unknown cause. During this reporting period we also monitored the survival of the 2006 calf cohort, their annual survival rate (May 2006–May 2007) was approximately 65% (33 of 51 lived). During this reporting period we purchased 50 moose calf collars and paid for helicopter time (R-44) to conduct captures and onsite mortality investigations. We also used funds for fuel, food, and lodging for pilots and biologists participating in the study. We also purchased fuel for state aircraft and boats to monitor collared calves and investigate mortality sites.

JOB/ACTIVITY 1C: 10-month-old capture and radiocollaring.

We captured 15 10-month-old female moose 31 March thru 1 April 2007. The average weight of these 10-month-old moose was 409 lb. Due to the near completion of this project none of these moose were fitted radiotransmitters. Survival of radioed yearlings was 100% from May 2007 through July 2007. During this reporting period we also monitored the survival of the 2006 yearling cohort, their annual survival rate (May 2006–May 2007) was approximately 87%. Capturing yearlings, as well as monitoring movements and mortality of yearling moose, required expenditures for aircraft fuel, aircraft charters, food, and lodging for pilots and biologists.

JOB/ACTIVITY 1D: Monitor moose during calving and twinning surveys.

During May and June 2007 we conducted approximately 30 flights to determine parturition and twinning rates among both radiocollared and non-radiocollared cows. Five of 7 radiocollared 3-year-old moose were observed with calves, giving an observed parturition rate of 71% for that age class during spring 2007. Overall parturition rate for 2007 was 95%. Twinning rate was 52% among collared cows and 50% for non radiocollared cows. Funds were used to provide fuel, food and lodging for pilots and biologists participating in these parturition and twinning flights.

JOB/ACTIVITY 1E: Monitor collared moose for survival and movements.

During this reporting period we conducted approximately 12 radio tracking flights for survival and movements of adult and yearling moose. Funds were used to provide fuel, food, and lodging for pilots and biologists participating in these flights. We also purchased fuel for state aircraft and boats used to investigate mortality sites.

JOB/ACTIVITY 2: Browse surveys.

This was not accomplished during this reporting period. Funds and time allocated for this job were used to help complete the black bear population estimate.

JOB/ACTIVITY 3: Wolf population estimation.

This job was not accomplished during this reporting period due to unfavorable spring survey conditions. Funds and time allocated for this job were used to help complete the black bear population estimate.

JOB/ACTIVITY 4: Black bear population estimation.

During 1–8 May 2007 we completed a mark–recapture population estimate of black bears within the EMMA. During that time we also captured and marked 17 black bears to assist with the estimate. We calculated an estimate of 72 black bears (95% CI: 60–91) within the EMMA. Funds were used to purchase radio collars and capture supplies for bears, as well as to pay for charter time for the helicopter captures and the fixed-wing aircraft used during the survey. In addition, funds were also used to purchase fuel, food and lodging for pilots and biologists participating in these activities.

Procedure: We will systematically sample late winter browse characteristics in riparian and nonriparian areas to estimate browse species composition, availability (kg/ha), utilization (kg/ha), and the relationship between diameter at point of browse and current annual growth diameters in spring 2007 and 2009. We will use methods that provide results that can be readily compared with current and historic browse research. These methods were recently implemented in Unit 20A in a cooperative project with ADF&G and the University of Alaska Fairbanks.

JOB/ACTIVITY 5: DNA Analysis.

No DNA samples were submitted for analysis during this reporting period, therefore no funds were spent on this job.

Procedure: Hair or tissue samples taken from captured bears, or from mortality sites of moose calves, will be submitted for DNA analysis on an alternating year basis to determine genetic information regarding numbers, sex, and age classes of bears involved in calf predation. DNA analysis may also contribute to mark–recapture population estimates. In addition, hair from unknown sources located at calf mortality site may also be submitted to help identify species presence at a given site.

JOB/ACTIVITY 6: Literature review, data analysis, reporting writing.

During this reporting period the principal investigator reviewed literature on moose calf mortality, DNA analysis, bear population estimation techniques, and methods to evaluate browsing intensities by moose. The 2006 annual research progress report for this project was also completed during this reporting period. No operating funds were used on this job.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

None.

IV. PUBLICATIONS

Keech, M.A. 2006. Response of moose and their predators to wolf reduction and short-term bear removal in a portion of Unit 19D East. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration. Annual research performance report. Project 1.62. Grant W-33-4. Juneau, Alaska, USA.

V. RECOMMENDATIONS FOR THIS PROJECT

None.

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