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-23 Wildlife Restoration Grant FY2018

PROJECT NUMBER : 1.70

PROJECT TITLE: Moose population dynamics in southeastern Alaska

PERIOD OF PERFORMANCE: 1 July 2010–30 June 2018

REPORT DUE DATE: 1 September 2018

PRINCIPAL INVESTIGATOR: Kevin S. White

COOPERATORS: Glacier Bay National Park, DOT/PF

I. PROGRESS ON PROJECT OBJECTIVES DURING PERIOD OF PERFORMANCE

OBJECTIVE 1A: Estimate reproductive performance of radio-marked adult female moose

ACCOMPLISHMENTS: We monitored pregnancy rates by collecting fresh fecal pellets and blood serum samples from radio-marked adult female moose during February-March 2018 (Gustavus, n = 8, Berners Bay, n = 5). Fecal pellets were analyzed for progesterone concentration (Corrinne Kozlowski, St. Louis Zoo) and blood serum analyzed for pregnancy-specific protein B (PSPB; Biotracking, Moscow, ID) to determine pregnancy status. During May-June 2018, we conducted aerial (Gustavus, n = 2; Berners Bay, n = 2) and ground-based surveys to determine calf status of radio-marked adult female moose (Gustavus, n = 34, Berners Bay, n = 31).

OBJECTIVE 1b: Estimate survival of radio-marked adult female moose.

ACCOMPLISHMENTS: We monitored survival of radio-marked adult female moose (Gustavus, n = 43; Berners Bay, n = 32) each month via ground- or air-based radio- telemetry surveys. During 2017–2018, we investigated 6 mortality events involving radio-marked moose (Gustavus, n = 4; Berners Bay, n = 2).

OBJECTIVE 1c: Estimate survival of calves associated with radio-marked adult female moose

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ACCOMPLISHMENTS: We monitored survival of calves associated with radio-marked adult female moose (Gustavus, n = 29; Berners Bay, n = 26) during May–June 2017, November 2017 and April 2018 via ground- or air-based radio-telemetry surveys. In March 2018, we deployed 7 time-lapse cameras on radio-marked adult females in Gustavus to validate calf status determinations.

OBJECTIVE 1d: Estimate moose population size and composition.

ACCOMPLISHMENTS: We conducted 1 aerial survey during winter in order to estimate moose population size and composition (Gustavus, n = 1; Berners Bay, n = 0); exceptionally mild winter conditions severely limited opportunity to conduct aerial surveys this period. During this survey, moose sighting probabilities were estimated using mark-resight techniques based on data collected from radio-marked adult female moose.

OBJECTIVE 1e: Capture and radio-mark adult female moose

ACCOMPLISHMENTS: We conducted moose capture activities during this reporting period in both Gustavus and Berners Bay. In Gustavus, we captured 12 moose (March 2018, n = 8 adult females and four 10-month old calves) using ground-based capture methods. In Berners Bay, we captured 6 animals (adult females) in March 2018.

OBJECTIVE 1f: Prepare annual reports.

ACCOMPLISHMENTS: We prepared a progress report detailing activities conducted in the Gustavus area, to satisfy ADF&G Federal Aid reporting requirements.

OBJECTIVE 2a: Synthesize population-specific demographic data.

ACCOMPLISHMENTS: We estimated annual and seasonal survival (adult female and calf) and reproductive (calving, twinning and fecundity) rates for radio-marked adult female moose and associated calves monitored in Gustavus (adult females, 2003–2018, n = 112, 524 moose years; calves, 2004–2018, n = 346) and Berners Bay (2006–2018, n = 86, 378 moose years; 2007–2018, n = 249). We also estimated reproductive rates (pregnancy, twinning and fecundity) for each population.

OBJECTIVE 2b: Develop a moose population model for management applications

ACCOMPLISHMENTS: We developed and validated a 2-stage matrix population model parameterized using vital rate data summarized in Objective 2a. In 2015, the model was extended to estimate the proportion of legal (spike/fork and 3-brow tine/50 inch) and non-legal bulls in the population. The model was used to inform harvest management decisions for the Gustavus and Berners Bay populations.

II. SUMMARY OF WORK COMPLETED ON PROJECT TO DATE.

Since 2010, we have captured and handled 198 moose in the Gustavus (n = 142) and Berners Bay (n = 56) study areas. In each area, we have annually conducted aerial surveys to derive population estimates via mark-resight analytical techniques. In addition, we have monthly, and seasonally, monitored survival and reproduction of radio-collared moose in order to derive estimates of survival and fecundity. Vital rate estimates (i.e. survival and reproduction) along with population estimates have enabled development of population models that can be used to project population trajectories into the future and are used for research and management purposes.

III. SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS.

None

IV. PUBLICATIONS

None

V. RECOMMENDATIONS FOR THIS PROJECT

This project should be continued as described in the study plan and project statement.

Prepared by: Kevin White

Date: 1 September 2018