**Wildlife Restoration**
**FINAL 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:** AKW-R-4-2019 Region 4 Intensive Management CIP15

**PROJECT NUMBER:** 1.0

**PROJECT TITLE:** Intensive Management for Moose Calf Survival in GMU 9 – Region IV

**PERIOD OF PERFORMANCE**: July 1, 2018 – June 30, 2019

**REPORT DUE DATE:**

**PRINCIPAL INVESTIGATOR:** Todd A. Rinaldi, Regional Management Coordinator

**COOPERATORS:**  Dave Crowley, King Salmon Area Biologist
Chris Peterson, King Salmon Assistant Area Biologist

Authorities: 2 CFR 200.328
2 CFR 200.301
50 CFR   80.90

## I.      SUMMARY OF WORK COMPLETED ON PROJECT

**Objective 1:** Estimate calf production, twinning, survival and causes of mortality using radio collars to determine if a) calf mortality can be reduced to meet IM population and/or harvest objectives or b) to evaluate the effects of the IM treatment.

**Accomplishments:**

Ten additional adult cow moose were captured and fitted with very high frequency (VHF, Mod-600) radio telemetry collars in March 2019 via helicopter darting. Three fixed-wing aircraft were used to search portions of Units 9B and 9C (approximately 8,500 mi$^2$) for potential captures. Body condition for each captured cow was assessed using Franzmann evaluation criteria (Franzmann 1977). Six cow moose scored 8 – 9, good to choice with evidence by feel of rump fat and no bony prominences in back and loin; two cows scored 7.5, average with no evidence of rump fat and some bony prominences in back and loin but well fleshed; and two scored 4, moderate with obvious definition of neck and shoulder, upper foreleg musculature distinct and prominent rib cage. The proportion of cows (20%) with moderate scores correlated with a general aerial condition assessment of all moose seen during the capture work. No biological samples were taken. The 10 additional captures and adoption of seven collared cows from the

Becharof National Wildlife Refuge (Refuge) resulted in a total of 35 collared cows available for calf mortality and twinning rate assessment compared to 20 collars last year. Cost of monitoring the additional collars was partially offset by a Refuge pilot assisting with the monitoring. The larger sample size contributed to the success of the project during this third and final year. Cost of the captures was $22,375 including fuel. There was a cost savings associated with conducting moose captures along with caribou captures using the same aircraft.

Twinning rate is an index for nutritional body and habitat condition.  Thirty-eight adult female moose were monitored during May–June 2019 using fixed-wing aircraft and classified based on the number of calves-at-heel. From that sample, a twinning rate was successfully calculated as the percentage of cows that twin calves in proportion of the total number of cows with calves. Twinning rate was high (69%), similar to the previous two years.

In addition to twinning rate, 55 calves born to 35 cows were monitored for neonatal (first two weeks of life) and monthly survival rate with daily flights in May–June 2019. Presence of yearlings with collared cows were recorded to determine annual survival rate of calves from the previous reporting period. Survival rates were calculated by month, season, and year as the number of calves that survive in proportion to those born. When possible, mortality sites were investigated on the ground to determine cause of death , however only one of these was accessible during this reporting period. Twenty-two calves survived the neonatal period (41.5%). Staff flew 25 days (172 hours) and used 1,466 gallons of fuel (about 59 gallons per day) for flying twinning and calf survival surveys at a cost of $18,429.

Survival rates for month, season and year have not yet been calculated for this reporting period, but we know from previous years that annual calf survival is low, brown bear predation is likely the largest source of calf mortality and therefore our intensive management programs that would target wolves probably do not adequately benefit moose calf survival enough to affect a change in the moose population.

**Objective 2: Determine seasonal movements and survival of adult moose survival rates using radio collars.**

**Accomplishments:** Thirty-eight radiocollared adult cow moose were tracked in October 2018, and March, May and June of 2019 during the course of other field work including moose composition surveys, moose captures and calf survival monitoring. Location and movement data were mapped using ArcGIS (ESRI, Redlands, CA). Annual survival rates of adult moose were calculated from previous reporting periods. Adult female survival of the 2018 moose to May 2019 was high (91%) based on 34 moose. Three cows died of unknown causes during the reporting period. As in 2017, we did not find three collared cows and we believe they migrated out of Unit 9 into Unit 17. The cost of locating radiocollared moose and retrieving 7 collars from dead moose in October 2019 was $3,853. There was a large cost savings associated with completing this portion of the project during moose composition surveys, maximizing how aircraft were used (*see* Significant Developments)

## II.       SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS.

This grant award of $60,000 was allocated for the project during this reporting period however only $45,189 was spent. Several operations of this project were completed at less cost than anticipated by sharing resources, mainly aircraft-related, with other projects that are routinely completed each year. Scheduling projects to run concurrently or consecutively saved many hours of aircraft transit time from Anchorage and Palmer, as well as transit time throughout the 8,500 mi$^2$ study area on the Alaska Peninsula. Having the assistance of a Refuge pilot in King Salmon also contributed considerably to cost savings during the calf monitoring period.

## III.      PUBLICATIONS

In progress.

## IV.      REVIEW OF PRIOR RESEARCH AND STUDIES IN PROGRESS ON THE PROBLEM OR NEED

History of moose colonization, management and harvest in Unit 9 is available in our 2015 Moose Management Report and Plan:

http://www.adfg.alaska.gov/static/research/wildlife/speciesmanagementreports/pdfs/moose_2015_2020_smr_gmu_9.pdf

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