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-29

PROJECT NUMBER: P3.0

PROJECT TITLE: Cause and rate of neonatal moose calf mortality in Unit 23 Lower Kobuk

REPORTING PERIOD: March 24, 2020 – September 30, 2021

PERIOD OF PERFORMANCE: May 1, 2018 – Dec. 30, 2021; year 4 of a 4-year grant

REPORT DUE DATE: Submit to Coordinator December 30, 2021

PRINCIPAL INVESTIGATOR: Warren Hansen

COOPERATORS: None

Authorities: 2 CFR 200.328
2 CFR 200.301
50 CFR 80.90

I. PROGRESS ON PROJECT OBJECTIVES DURING PERFORMANCE YEAR

OBJECTIVE 1: Evaluate mortality rates and cause of mortality in neonatal moose

ACCOMPLISHMENTS: In 2020 we captured 71 calves. The annual mortality rate was 80% with most of the mortalities taking place in the first 2 months after capture. Grizzly bears were attributed to 60%, drowning 10 %, unknown 10% and, wolves 20% of the total mortalities in the 2020 cohort.

OBJECTIVE 2: Monitor the population for signs of nutritional stress.

ACCOMPLISHMENTS: This sample of 71 calves included 21 singletons and 50 twins. The twinning rate from the capture period was 35% with an average weight of 41 lbs. These twinning rates and neonatal calf weights suggest that there is no nutritional limitation experienced by this cohort.

II. SUMMARY OF WORK COMPLETED ON PROJECT TO DATE.

We deployed a total of 225 radio collars between 20 May - 7 June for all 3 years. The average twinning rate during the 3-year study was 39.2 totaling 62 pairs of twins and 96 singletons which included 88 males and 132 females. There was no difference in weight between singletons and twins (single mean weight = 43 lbs., twin mean weight = 45 lbs., p=0.128).

The 3-year average survival rate was 0.29 (std.err 0.034, 95% CI 0.233 – 0.368) from collaring (<6 days) to 1 year old and did not differ significantly between years (p = 0.3). The average survival rate 3 months after collaring was 0.38 and after 6 months was 0.34. A total of 154 calves died during this study, 72% were attributed to grizzly bear, 9% wolf, 8.5% drowning, 6.5% unknown, 0.6% black bear, and 3.4% capture related. Between all three study years, the annual probability of survival from collaring to 1 year old for male and female calves was 0.31 (95% CI 0.27 – 0.45) and 0.28 (95% CI .021 – 0.382)(p=0.8) respectively. The probability of survival between singletons and twins from collaring to 1 year old was 0.35 (95% CI 0.261 – 0.468) and 0.25 (95% CI 0.175 – 0.359)(p=0.2), respectively. The probability of survival was not significantly related to capture weight (p=0.5)(weight range = 22 – 75 lbs.).

III. SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS.

A significant development to emerge from the project was the inability to conduct village travel and fieldwork during the Covid-19 pandemic. To overcome this challenge, we based the 2020 capture crew in a remote field camp where fuel and food were delivered. This eliminated the need for all village contact to help reduce the risk of spreading or contracting Covid-19. This fostered trust and respect from the communities that we had previously operated out of. These communities were happy to help us find a remote camp and help facilitate the delivery of food and fuel.

IV. PUBLICATIONS

No publication has been made from this project to date. The manuscript: "*Moose Calf Mortality in an Arctic Ecosystem of Northwest Alaska*" is currently in production and is intended to be submitted to the journal Alces.

V. RECOMMENDATIONS FOR THIS PROJECT

The field component of this project is complete, and most of the funds allocated for this project have been spent. The remaining time left on this project will be spent analyzing data and report writing. After 3 years of collaring and monitoring neonate moose, we are observing relatively consistent mortality rates, mortality timing, causes of mortality, twinning rates, and capture weights. A notable difference between years has been the increase in wolf-caused mortality in the 2020 cohort. Total wolf mortality between years accounts for 8%, but 2020 wolf mortality accounted for 20% of the calf mortalities.

The Lower Kobuk moose population declined 13% annually between 2014 – 2019. Moose nutrition is good with browse removal at 19%, twinning at 44%, and neonate weight at 44 lbs.

These metrics serve as indexes of nutrition and suggest that the population is not limited by nutrition. This study suggests that this calf mortality rate is a contributing factor to the population decline. Future direction should be spent further investigating sources of mortality in the greater than 1 year age demographic.

Prepared by: Warren Hansen

Date: 11/17/2021