

Wildlife Restoration
FINAL PERFORMANCE REPORT

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
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Alaska Department of Fish and Game
Wildlife Restoration Grant

GRANT NUMBER: AKW-29

PROJECT NUMBER: 9.0

PROJECT TITLE: Western Arctic Caribou Calf Mortality Evaluation

PERIOD OF PERFORMANCE: March 23rd, 2018 – June 30th, 2020

REPORT DUE DATE: Submit to Coordinator November 30, 2021

PRINCIPAL INVESTIGATORS: Alex Hansen (PI), Lincoln Parrett

This is the final report for a multi-year project. This template is applicable to both:

- the final closeout report of a multi-year grant; or
- the final closeout report of a multi-year *project* within the annual operating grant, summarizing all accomplishments for all objectives.

Authorities: 2 CFR 200.328
2 CFR 200.301
50 CFR 80.90

I. SUMMARY OF WORK COMPLETED ON PROJECT

Year one of the study (2018), 76 neonates were collared, and radio tracked from the date of capture through June the following year. Calving ground survival of marked individuals was 87% and the annual survival rate was estimated at 45%.

In 2019 a total of 74 neonates were collared and radio-tracked, survival of the cohort on the calving grounds was 95%. This high rate of survival on the calving grounds did not carry over to high annual survival however, annual survival was estimated at 26%.

Captures and initial radio-tracking efforts were successful for both cohorts, and we feel that cause of mortality has been determined with a reasonable degree of accuracy for all mortality events to date. Calving ground and post-calving aggregation mortality has been low with minimal predation events being detected through post calving aggregations for both cohorts. Late summer and early fall distribution made consistent radio-tracking challenging given the large geographic area occupied by the herd. Winter distribution has been equally challenging with caribou being scattered over a large portion of the annual range.

We elected to focus on factors that might be limiting WAH recruitment, specifically spatial patterns of calf mortality and causes of mortality during the first year (birth to yearling). We found that caribou calf survival was high while still on the calving grounds. This suggests that calf mortality on the calving grounds is unlikely to limit recruitment. However, annual survival was much lower, indicating first-year mortality after leaving the calving grounds may be a limiting factor. We visited 73 mortality sites and in 49 cases (67%) predators were identified as the cause of death. This is a conservative estimate as 16 mortalities (22%) were classified as unknown cause and some of those could be undetected predation events. By the end of the first year (birth to yearling), 55% to 74% of the WAH calves had died. This study demonstrates that predation caused at least 67% of these mortalities and that predation events were almost exclusively outside of the calving grounds.

Objective 1: Measure calf survival rates from birth through the first year of life with a primary focus on calving ground survival. We hypothesize that brown bears will be the primary predator on the calving grounds and that predation rates will vary annually based on the portion of the historic calving ground occupied by the WAH on a given year.

Accomplishments:

Between June 2nd and June 8th, 2018, a total of 76 neonates were captured and fitted with VHF collars (2018 cohort). A total of 70 collars were purchased for deployment, 6 collars were re-deployed on new calves following mortalities on the calving ground. Calves were radio-tracked daily through June 10th. Following June 10th the capture crew left the project and radio-tracking efforts were reduced to more manageable intervals. Post capture radio-tracking flights occurred at least once a month through the summer and fall and were limited during the winter by weather and reduced daylight hours. Extensive efforts were made in the Spring to detect collars and continued until the first week of June. Calving ground survival was estimated at 87% and annual survival of the collared individuals was 45% in 2018.

The 2019 cohort was collared between June 2nd and June 8th, 2019, a total of 74 neonates were captured and fitted with VHF collars. A total of 70 collars were purchased for deployment, 4 of the collars were re-deployed on new calves following mortalities on the calving ground. Calves were radio tracked daily through June 8th. Calving ground survival was estimated at 95%. Following June 8th, radio-tracking efforts were reduced to more manageable intervals throughout the summer and into the fall. Radio-tracking efforts were minimal during the winter and resumed during the spring. A total of 48 mortalities were detected for this cohort, the final annual survival estimate was 26%.

Objective 2: Identify specific causes of mortality.

Accomplishments:

For the 2018 cohort a total of 37 mortalities were detected, mortality sites were visited, and cause was attributed as follows: unknown predator (11), brown bear (5), abandonment (4), wolf (3), unknown cause (9), and unable to retrieve (5).

48 total mortalities were detected from the 2019 cohort, we were able to visit 42 of those sites to retrieve collars and determine cause of death. During site visits all evidence was examined to assign mortality cause to the best of our ability. Cause of mortality for this cohort is as follows; unknown predator (19), brown bear (4), wolf (8), unknown (7), capture (1), abandonment/birth defect (2), and hunter harvest (1). Only 4 mortalities were detected on the calving grounds, with one of those mortality events being classified as predation.

II. SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS.

No significant developments, changes or amendments have been made to the project.

III. PUBLICATIONS

The data collected during this study will be included in management reports. No formal publications are planned at this time.

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

This study was modeled after similar studies conducted by the department for other Alaskan Caribou Herds including the Forty-Mile and Teshekpuk Herds and was intended to serve as a baseline for neonate survival. The timing of the study coincided with the bottom of a 12+ year population decline for the WAH.

The Western Arctic Caribou herd (WAH) declined from a high of nearly 500,000 caribou in 2003 to approximately 200,000 in 2016. The causes for the decline are uncertain, but underlying the overall decline was a steady decline in calf recruitment. This reduction in recruitment may have precipitated the era of steepest declines in recent years, as adult female caribou, born during the increase phase, when recruitment was high, aged out of the population. Current abundance is on the threshold of falling below intensive management population objectives, and harvestable surplus is close to being unable to meet both intensive management harvest objectives and falling below the upper threshold of the amount necessary for subsistence.

Date: 11/29/2021