FEDERAL AID ANNUAL RESEARCH 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-4 Wildlife Restoration FY2015

PROJECT NUMBER: 3.53

PROJECT TITLE: Nutritional status, range use, and demographics of the Fortymile and Central Arctic caribou herds

PROJECT DURATION: 1 July 2014–30 June 2018

REPORT DUE DATE: 1 September 2015

PARTNER: None

PRINCIPAL INVESTIGATORS: Torsten W. Bentzen

COOPERATORS: Jeffrey A. Gross (AGF&G), Elizabeth Lenart (ADF&G), Jim Herriges (U.S. Bureau of Land Management), Mike Suitor (Department of Environment Yukon), Martin Kienzler (Department of Environment Yukon), and David Gustine (U.S. Geological Survey)

WORK LOCATIONS: Fortymile caribou range including most of Units 20E, 20B, and 25C east of the Steese Highway, Unit 20D north of the Tanana River, and portions of western Yukon Territory, Canada.

Central Arctic caribou range, central arctic slope and Brooks Range including portions of Units 24A, 24B, 25A, 26A, 26B and 26C.

I. SUMMARY OF WORK COMPLETED THIS SEGMENT ON JOBS IDENTIFIED IN ANNUAL WORK PLAN

OBJECTIVE 1: Map expansion and changes in seasonal use of the Fortymile caribou herd (FCH) range to assist explaining how, when, and where overgrazing may adversely affect nutrition.

JOB/ACTIVITY 1A: Deploy GPS and VHF radio collars,conduct radiotracking flights, and produce seasonal range maps.

During 2–10 April 2015 we captured 28 adult female caribou (ages 4–11 years) to deploy GPS collars. An additional 20 short-yearling female caribou were captured and fitted with VHF collars to maintain an adequate sample (~20) of collared 3-year-old cows to monitor parturition rate. This brings the total sample of collared FCH cows to 161 (51 GPS, 110 VHF).

Comprehensive radiotracking flights were conducted in October and December 2014, and January, February, April, May and June 2015 to evaluate distribution of GPS to VHF collared cows. Evaluation of seasonal distribution maps is ongoing and VHF location data from all flights and daily GPS location data are archived in the Fairbanks office.

Work was begun to produce routinely updatable seasonal range maps and core area estimates for the FCH starting during calving 2015. We used both VHF and GPS collar data to best compare current movement information to data collected during 1992–2008.

OBJECTIVE 2: Determine change in the long-term nutritional status of the FCH.

JOB/ACTIVITY 2A: Reassess newborn calf weights as index of changing nutritional condition in the FCH.

We captured and weighed 76 newborn (≤3 days old) calves randomly selected throughout the calving area during 19–22 May which spanned the peak calving period. Females averaged 7.18 kg (SD = 0.99, range=5.40–9.90, n = 30) and the males averaged 7.93 kg (SD = 1.08, range = 5.85–10.13, n = 46). Based on preliminary analysis of the 2015 data compared to neonate weights collected during 1994-2002, males averaged 0.59 kg heavier than females across all years (P<0.001), and controlling for sex, newborn calf weights averaged 0.51 kg lighter in 2015 relative to pooled data from 1994 to 2002.

JOB/ACTIVITY 2B: Measure the isotopic abundance of $\delta^{15}N$ in serum of cow-calf pairs to evaluate the proportion of maternal N allocated to neonate calves.

Examination of maternal protein allocation among FCH cow-calf pairs was not funded during this report period. No samples were collected.

JOB/ACTIVITY 2C: Evaluate winter and spring diets using fecal analysis.

Evaluation of seasonal diets using fecal analysis was not funded during this report period. Jim Herriges (BLM) opportunistically collected fecal samples during summer 2015 and will be conducting analysis this winter.

JOB/ACTIVITY 2D: Model FCH demographics.

All collared cows 3-years old or older were observed from the air 4 times during 12–28 May to determine parturition. Out of 96 total cows included in this year's parturition survey, 82 (85%) were parturient. Of 20 3-year-old cows12/20 (60%) were parturient. Among cows 4-years old and older results were 70/76 (92%) parturient. Three-year-old parturition rates remain below rates observed in the 1990s (1994–2015, Slope = −0.10, P <0.001, R^2 = 0.32, n = 3–20) but the decline in adult parturition rate is less pronounced (1994–2015, Slope = −0.03, P = 0.033, R^2 = 0.076, sample size 30–83).

OBJECTIVE 3: Reassess newborn calf weights and survival as index of changing nutritional condition in the Central Arctic herd (CAH).

JOB/ACTIVITY 3A: Capture, weigh, and deploy VHF collars on newborn calves.

We captured and weighed 57 newborn (≤3 days old) calves during 3–6 June which spanned the peak calving period. Calves (24 female, 34 male) were randomly selected from areas both east and west of the Dalton Highway. Weights averaged 6.9 kg (SD = 0.93, range = 4.90–9.10, n = 57). Based on preliminary analysis, we detected little difference in weight between sexes or relative to pooled neonate weight data collected during 2001–2006.

Lightweight expandable VHF collars were deployed on all 57 newborn calves when they were captured for weighing. Based on preliminary analysis, perinatal survival (birth to 15 June) was 93% which appears to be similar to survival rates observed during 2001–2006. Summer (15 June–6 September), overwinter, and annual survival rates have yet to be determined.

II. SIGNIFICANT DEVIATIONS AND/OR ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

As part of objective 1, we deployed 5 GPS collars and 6 VHF collars on adult bulls in the FCH during 2–10 April. This is the first time bulls have been collared in the FCH. Based on preliminary analysis these bulls appear to have been adequately included in groups counted during the June 2015 photocensus. These collars will be used to determine the distribution of bulls relative to collared cows included in fall composition surveys.

As part of objective 2, I reassessed October –April weight change among FCH female calves an index of nutritional condition. Twenty-five 4-month-old female calves were weighed for this project during 7–10 October by Tok office staff during routine collaring for the FCH management program. The average weight 55.1 kg (SD = 5.11, range = 45.1–65.9, n = 25) was the heaviest observed since 2000. However, the long-term trend in fall calf weighs continues to decline 0.20 kg per year (1990–2014, P = 0.005, R^2 = 0.24). Short-yearling cows were weighed during April captures. The mean weight of 50.6 kg (SD = 4.16, range = 44.9–59.9, n = 14) was significantly lower (P = 0.0093) than the October average. Relatively similar weight loss was reported in 1991 which was the last time this relationship was examined in the FCH.

All CAH captures and collaring were supported by collaboration with a USGS project led by Dr. David Gustine. I collected cheek swabs and hair samples while collaring neonates. The USGS lead project will compare those to samples collected from pregnant cows during April. This will allow an assessment of the relative protein balance of late gestational cows using stable isotope analysis. Although Dr. Gustine recently moved to a new job, continued collaboration with USGS on collaring, sample collection, and laboratory analysis for CAH caribou has been assured.

III. PUBLICATIONS

None. All specific results in this report are preliminary and will be discussed in a larger context in a final report.

IV. RECOMMENDATIONS FOR THIS PROJECT

None.

PREPARED BY: Torsten W. Bentzen

DATE: 19 August 2015