

FEDERAL AID ANNUAL 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-7 **Segment Number:** 1

Project Number: 1.0

Project Title: Statewide Intensive Management for Caribou Populations Identified as Important for Providing High Levels of Harvest for Human Consumptive Use and Predators Influencing Caribou Population Status.

Project Duration: April 1, 2015 – March 31, 2020

Report Period: April 1, 2015 – March 31, 2016

Report Due Date: June 29, 2016

PRINCIPAL INVESTIGATOR: Torsten Bentzen (RIII)

WORK LOCATION: Fortymile Caribou Herd for Region III, Onion Portage Region V

I. PROGRESS ON PROJECT OBJECTIVES DURING LAST SEGMENT

Objective 1: Conduct more frequent and more robust summer surveys to estimate the population size and fall composition (bulls, cows and calves) of caribou to evaluate if IM treatments are successful.

Region III

ACTIVITY 1: Maintain a sample of at least 50 GPS collared cows.

PROCEDURE: During October 5-6, 2015 we recaptured 9 known age female caribou and fitted them with new GPS collars. On March 14 and 31, 2016 we collaborated with YDE staff in Dawson to recapture 6 VHF collared cows of known age in Yukon Canada and fit them with new GPS collars. Again on April 13 we deployed an additional 7 GPS collars on known age adult females in Alaska. An additional 36 short yearling female caribou were captured during this report period and fitted with VHF collars to maintain an adequate sample (~20) of collared three-year-old cows to monitor parturition rate. This maintains a current sample of 165 collared FCH cows (67 GPS, 98 VHF).

ACTIVITY 2: Conduct radiotracking flights to assess range size and use and evaluate appropriate sample of GPS collars to evaluate range use relative to VHF collars.

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PROCEDURE:

- 1) Comprehensive radio tracking flights were conducted in October, November and December 2015, and January, March, April, May, and June 2016 to evaluate distribution of GPS to VHF collared cows.
- 2) Evaluation of seasonal distribution maps and caribou density is ongoing. 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: Estimate calf production, survival and causes of mortality using radio-collars and or camera-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.

Region V

We bought 30 calf collars and deployed them on 4 month old caribou at Onion Portage to look at over-winter mortality as an initial step. Calves weighed 10% higher than the long-term average. We radiotracked those collars on a monthly basis (except for the shortest daylight months) from September 2015 through July 2016. We planned to conduct regular site visits to conduct more timely investigation of mortalities, but calf mortality was very low over winter (>75% survival rate). We recently used that code to conduct site visits in this fiscal year (last week).

Objective 3: Estimate adult caribou survival rates using radio-collars to evaluate the effects of the IM treatment.

Region III

ACTIVITY 1: Reassess newborn calf weights as index of changing nutritional condition in the FCH.

PROCEDURE: In May 2016 we captured and weighed 70 newborn (≤ 3 days old) calves randomly selected throughout the calving area during May 18–24 which spanned the peak of calving (May 19). Based on preliminary analysis of the 2016 data, neonate weights of both sexes were similar to those observed 1994-2002.

ACTIVITY 2: Model FCH demographics

PROCEDURE: All collared cows 3-years-old or older were observed from the air daily during 12–26 May to determine parturition.

ACTIVITY 3: Determine timing and source of mortality relative to changes in herd status and predator abundance.

PROCEDURE:

- 1) 69 newborn calves (33 females 36 males) were collared during May 18-28.
- 2) All calves were radiotracked daily during May 19th to the 31st. 11 calves died during this period. All kill sites were visited within 4 hours of observation and cause of death determined. No capture related abandonment was observed.

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- 3) We were able to redeploy 8 collars from calves that died during the calving period. This boosted our sample of collared calves from 61 to 69.
- 4) We radiotracked all collared calves 13 times (roughly every other day) in June. Nine collared calves died during June. All kill sites were visited the same day they were observed and cause of death determined.
- 5) We continue to radiotrack all calves weekly during July and August and visit kill sites. Three calves died during July.

ACTIVITY 4: Determine perinatal mortality rate.

PROCEDURE: Daily radiotracking of all parturient cows until calves were collared 24-48 hrs after birth allowed us to determine perinatal mortality rates among a sample of 78 cows. We observed one instance of non-predator related perinatal mortality.

Objective 4: Monitor moose nutritional status to evaluate the influence of nutrition on Caribou population status and evaluate IM population objectives.

Region III

ACTIVITY 1: Reassess newborn calf weights as index of changing nutritional condition in the FCH.

PROCEDURE: In May 2016 we captured and weighed 70 newborn (≤ 3 days old) calves randomly selected throughout the calving area during May 18–24 which spanned the peak of calving (May 19). Based on preliminary analysis of the 2016 data, neonate weights of both sexes were similar to those observed 1994-2002.

ACTIVITY 2: Model FCH demographics

PROCEDURE: All collared cows 3-years-old or older were observed from the air daily during 12–26 May to determine parturition.

Objective 5: Monitor forage abundance and utilization to evaluate browse abundance and quality and determine habitat capability to develop reasonable IM population objectives.

No activity to report.

Objective 6: Investigate and monitor wolf, black bear and brown bear abundance relative to defined IM objectives.

No activity to report.

Objective 7: Report findings in appropriate scientific and popular publications.

No activity to report.

Prepared by: Nathan Soboleff

Date: September 22, 2016

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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-7 **Segment Number:** 1

Project Number: 2.0

Project Title: Statewide Intensive Management for Moose Populations Identified as Important for Providing High Levels of Harvest for Human Consumptive Use and Predators Influencing Moose Population Status.

Project Duration: April 1, 2015 – March 31, 2020

Report Period: April 1, 2015 – March 31, 2016

Report Due Date: December 29, 2016

PRINCIPAL INVESTIGATOR: Cynthia Wardlow (RII), Doreen Parker-McNeil (RIII), Kevin Colson (RIV)

WORK LOCATION: Regions II, III, and IV

I. PROGRESS ON PROJECT OBJECTIVES DURING LAST SEGMENT

Objective 1: Conduct more frequent and more robust surveys to estimate the population size and composition (bulls, cows and calves) of moose to evaluate if IM treatments are successful.

Region II

Weather conditions in the 2015-2016 reporting period did not allow for a regular winter S&I census to be completed. No additional surveys were planned during this period.

Region III

As part of our assessment of on-going predation control we conducted Geospatial Population Estimator (GSPE) surveys during November in Unit 19D East Bear Control Focus Area (preliminary results found 2014 moose) and the Unit 24B Upper Koyukuk Management Area (preliminary results found 509 moose).

Two other surveys were planned for spring in Unit 19A, but were not accomplished due to unsatisfactory survey conditions.

Region IV

Between November 22 and December 2 RII performed an early winter GSPE survey in game management subunit 13B preliminary estimates are 4,762 moose (80% CI 4,232-5,293). This survey is post wolf control activity (which last occurred in FY2014) which ceased in FY2015. We are comparing the GSPE results to results from annual trend surveys and we are evaluating composition with results from GSPE survey (results not available at this time).

Objective 2: Estimate calf production, survival and causes of mortality using radio-collars and or camera-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.

Region II

Since 2012, calf production and calf survival in Units 15A and 15C has been assessed each year under regional moose research protocols not associated with the Intensive Management grant. Region II did not conduct any activities relevant to this grant objective in FY2016.

Region III

We deployed 60 radio collars on moose calves in Unit 24B and completed 12 tracking flights throughout the year. Calf mortality study were conducted in Unit 19D, beginning in May. In that survey, 64 calves were radiocollared to determine survival and cause of death. Results are pending. Hair was collected, when present, at calf kill sites. However, the calf mortality study is still ongoing and thus the hair has not yet been submitted for DNA analysis.

Region IV

Region IV is not planning to conduct work which would address this objective in the near term.

Objective 3: Estimate adult moose survival rates using radio collars to evaluate the effects of the IM treatment.

Region II

Adult cow survival in 15A and 15C has been assessed each year since 2012 under regional research protocols not associated with the Intensive Management grant. Region II did not conduct any activities relevant to this grant objective in FY2016.

Region III

Region III did not conduct any activities relevant to this objective in FY2016.

Region IV

Region IV did not conduct any activities relevant to this objective in FY2016 but is planning to do so in FY2017.

Objective 4: Monitor moose nutritional status to evaluate the influence of nutrition on moose population status and evaluate IM population objectives.

Region II

Region II did not conduct any activities relevant to this objective in FY2016 associated with the Intensive Management grant.

Region III

During 1-5 March 2016, we captured 60 short-yearlings in Unit 20A. Fifty-nine of which were weighed (n=30 females and 29 males). Twinning survey was conducted in Unit 19D during May. We observed a twinning rate ranging 4% to 18%.

Region IV

Region IV is conducting work to address this objective through other funding sources.

Objective 5: Monitor forage abundance and utilization to evaluate browse abundance and quality and determine habitat capability to develop reasonable IM population objectives.

Region II

Forage abundance and utilization surveys have not been planned in Unit 15A. Measurement of forage availability in Unit 15C began in spring of 2016 and will be included in the next report period.

Region III

Region III does not plan on using AKW-7 to fund work on objective 5 at this time.

Region IV

Region IV address this objective using other funding sources in Unit 14A, and has plans to use AKW-7 funds in FY2017 for conducting work in Unit 16.

Objective 6: Investigate and monitor wolf, black bear and brown bear abundance relative to defined IM objectives.

Region II

Weather conditions have not allowed surveys of wolf numbers in Units 15A or 15C to be completed for the last several years. Bear abundance studies were not completed during FY2016.

Region III

A black bear survey was conducted in Unit 19D. We attempted to estimate black bear harvest rates. However, No radiomarked bears were harvested in the study area during the report period.

Region IV

Bear survey work in Unit 16 did not come together due to staffing issues in FY2016. In FY2016 the division has planned to deploy wolf collars in Units 13, 16, and 17 in FY2017. Surveys will be completed in those areas but management may decide to use other sources of funding.

Objective 7: Report findings in appropriate scientific and popular publications.

The Division did not publish any findings from survey work conducted in FY2016.

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

For FY2016 statewide weather conditions (lack of snow) prevented many routine aerial surveys under the existing Moose Survey & Inventory project to occur. This has prevented many of AKW-7 2.0 activities to occur (thus the lack of reportable activities on objectives).

III. RECOMMENDATIONS FOR THIS PROJECT

Possible revision of AKW-7 2.0 project objectives many need to occur if weather conditions persist into the future which prevent snow-dependent surveys from happening. Additional project objective planning will be undertaken to revise AKW-7. Annual project statements may be a better grant management practice for AKW-7.

Prepared by: Nathan Soboleff

Date: December 22, 2016

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DIVISION OF WILDLIFE CONSERVATION
PO Box 115526
Juneau, AK 99811-5526

Alaska Department of Fish and Game Wildlife Restoration Grant

Grant Number: AKW-7 **Segment Number:** 1

Project Number: 3.0

Project Title: Statewide Intensive Management for Deer Populations Identified as Important for Providing High Levels of Harvest for Human Consumptive Use and Predators Influencing Deer Population Status.

Project Duration: April 1, 2015 – March 31, 2020

Report Period: April 2, 2015 – March 31, 2016

Report Due Date: June 29, 2016

PRINCIPAL INVESTIGATOR: Richard Lowell (RI) & Tony Carnahan (RII)

COOPERATORS: None

WORK LOCATION: GMU 3 (RI), GMU 6 (RII)

I. PROGRESS ON PROJECT OBJECTIVES DURING LAST SEGMENT

Objective 1: Conduct more frequent and more robust surveys to estimate the population size and fall composition (bucks, does and fawns) of deer to evaluate if IM treatments are successful.

Region I

- In late 2015, we received the laboratory results for the fecal pellet DNA surveys conducted on Mitkof Island in spring 2014. The DNA based mark-recapture data were analyzed and a preliminary population density estimate was developed for deer on Mitkof Island.
- During late-July and early August 2015 we completed the 3rd consecutive season of aerial alpine deer surveys. Alpine deer surveys were conducted on Lindenberg Peninsula (IM Treatment Area), western Kupreanof (IM Comparison Area), South Admiralty Island, and Kuiu Island.

Region II

Ten trail cameras were purchased with the intent of monitoring doe:buck ratios and placed at several locations on Green Island in March 2016 and were rechecked in June 2016 and again in August 2016 to assess deer encounter rates and total number of cameras needed to assess composition accurately.

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Green and Hawkins Islands were identified as potential study areas for genetic mark-recapture using pellet (fecal) DNA. Instead of using microsatellites to identify sex and individual deer, single nucleotide polymorphisms (SNPs) will be assessed as possible markers. The use of SNPs would be more cost effective (\$35/sample for SNPs vs. \$85/sample for microsatellites) and SNPs could be used to identify fitness-related markers in ungulate populations. These markers include major histocompatibility complex (MHC) (linked to immune response), growth hormone gene (antler growth), prion protein gene (relative susceptibility to chronic wasting disease) (Kasarda et al. 2014), and foraging efficiency (Trujillo et al. 2013). No genetic mark-recapture surveys using deer pellets were conducted during this period but are planned for spring 2017 or 2018 depending on GPS collar deployment success.

Objective 2: Estimate fawn production, survival and causes of mortality using radio-collars and or camera-collars to determine if a) fawn mortality can be reduced to meet IM population and/or harvest objectives or b) to evaluate the effects of the IM treatment.

Region II

Lotek video camera GPS collars were purchased in February 2016 with the intention of placing collars on preparturient does. Capture attempts were unsuccessful in the spring of 2016 so no video camera collars were deployed. Deployment will be attempted again in spring 2017.

In March 2016, the principal investigator (T. Carnahan) traveled to California to work with the California Department of Fish and Wildlife to learn how to use a portable ultrasound device to assess reproductive status (both pregnancy and twinning) and body condition in mule deer does. No Federal or state funds were used for travel. We intend to capture and ultrasound 15 does per island per year for reproductive status starting March 2017.

Objective 3: Estimate adult deer survival rates using radio-collars to evaluate the effects of the IM treatment.

Region II

In November and December 2015, 60 GPS GlobalStar collars were purchased for monitoring deer survival rates, home range size, and resource selection. Deer captures were planned to coincide with habitat analysis on Green Island February 23 – March 4, 2016. Captures were to be ground-based with the anticipation that snow cover would yard deer up on the beaches to facilitate capture. Rough seas prohibited deployment to Green Island until March 1, leaving only four days to capture deer. The lack of snow further complicated captures, as there were no deer on beaches and very little sign of deer within a quarter-mile of beachfront. Since this was the first time visiting Green Island and deer were not readily available for capture, we concentrated our effort on habitat analysis of Green Island. No deer were captured during this period. More captures are planned for June, July, August, and October 2016.

Objective 4: Monitor deer nutritional status to evaluate the influence of nutrition on deer population status and evaluate IM population objectives.

Region II

Deer nutritional status will be monitored using ultrasound measurement of rump fat thickness (MAXFAT) and body condition scores (BCS) as outlined by Cook et al. (2010). No deer were evaluated during this period.

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Objective 5: Monitor forage abundance and utilization to evaluate browse abundance and quality and determine habitat capability to develop reasonable IM population objectives.

Region II

Habitat carrying capacity for deer will be determined using the Forage Resource Evaluation System for Habitat – deer (FRESH –deer) program developed by Hanley et al. (2012). To evaluate habitat, an MS graduate student was brought on at Alaska Pacific University under the advisement of Dr. Roman Dial. This graduate student's project will focus on determining biomass availability of critical deer forage using the combination of remotely sensed data and ground control plots. The MS graduate student started classes in September 2015. Two trips were conducted to evaluate habitat classification on Hawkins Island (September 2015) and Green Island (March 2016). Formal field work will begin in May 2016.

Objective 6: Investigate and monitor wolf, black bear and brown bear abundance relative to defined IM objectives.

Region I

- From mid-October 2015 to late February 2016, we used a helicopter to deploy and maintained remote camera traps for wolves at 8 individual locations within the IM treatment and comparison areas on Kupreanof Island. Camera traps were not baited, but were instead positioned along prominent game trails in an effort to obtain information on the distribution of wolf packs, and minimum pack size for wolves inhabiting portions of the Kupreanof Island IM area.
- From late-February through mid-April 2016, we designed and tested 6 different devices for obtaining hair and viable DNA samples from free ranging wolves. The purpose of this project was to test, and if possible improve, a variety of techniques for collecting hair samples for future use in developing a DNA mark-recapture population estimate for wolves in parts of Unit 3. We used a helicopter to established 15 individual hair-snagging and camera trap stations where we evaluated the effectiveness of 6 different hair snagging devices at sites baited with scent lures and/or meat and bones from carcasses. The IM operational plan for Unit 3 references objectives for only deer and wolf abundance.
- The current operational plan and predator control technique is specific to wolves, and does not target black bears or brown bears for population reduction. Therefore, no attempt was made to evaluate black bear or brown bear abundance within the Unit 3 IM area.

Region II

No natural predators for deer occur on Green Island, which will be used as a control for predation on Hawkins Island. No predator abundance surveys have been conducted in Prince William Sound; however, a black bear exploitation rate using genetic mark-recapture is planned to start in 2017.

Objective 7: Report findings in appropriate scientific and popular publications.

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This has yet to be accomplished. We are currently in the process of conducting IM related research activities and gathering information that will ultimately be summarized and reported on in internal and external scientific publications.

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

Region I

- During the hide sealing process, we opportunistically collected hair and tissue samples from hunter and trapper harvested wolves for both DNA extraction and wolf diet analysis. Whenever possible, we also collected wolf leg bones for aging, obtained condylobasal skull measurements, and weighed harvested wolves for subspecies analysis.
- We also obtained the skinned carcasses from 16 Unit 3 wolves harvested by trappers in Rocky Pass, including specimens from both Kupreanof and Kuiu islands, for diet analysis (examination of stomach contents).
- While engaged in other IM related activities we opportunistically collect wolf scats for diet analysis.
- In conjunction with the deployment of remote camera traps for wolves, we also deployed camera monitored snow stakes at select locations within the IM treatment area in order to monitor trends in winter snow depth.

Prepared by: Nathan Soboleff

Date: September 22, 2016