

**Alaska Department of Fish and Game
Wildlife Restoration Grant**

GRANT NUMBER: AKW-16

PROJECT NUMBER: 215647484

PROJECT TITLE: Kenai Moose Habitat Enhancement

PERIOD OF PERFORMANCE: May 3, 2016 – June 30, 2020

PERFORMANCE YEAR: July 1, 2017 - June 30, 2018; year 2 of a 4-year grant

REPORT DUE DATE: September 28, 2018

PRINCIPAL INVESTIGATORS: Sue Rodman, Program Coordinator; Dan Thompson, Wildlife Biologist

COOPERATORS: Mary Jo Hill, Wildlife Biologist II, and Miles Spathelf, GIS Analyst III, ADF&G; Nathan Lojewski, Chugachmiut; Michael Hill, Kenai National Wildlife Refuge USFWS; Hans Rinke, Division of Forestry State of Alaska



I. PROGRESS ON PROJECT OBJECTIVES DURING PERFORMANCE YEAR

OBJECTIVE 1: Construct fuel breaks to enable the use of prescribed and wildland fire to enhance habitat on a landscape scale.

ACCOMPLISHMENTS:

As a component of the comprehensive fuel break approach, the Refuge continued work to the west from the Sterling fuel break to connect with the Moose River. This work was completed in winter 2017-2018.

The ‘Kenai Peninsula Fuel Break Working Group’ developed the plan to extend the Sterling fuel break to the west and north. That plan was routed to Refuge leadership for review. Chugachmiut pursued a forest stewardship plan for the Kenai Natives Association lands that connect to the Sterling fuel break and extend west across the Swanson River Road. Through the Yukon Fire Crew, Chugachmiut treated 20 acres of KNA lands in 2018.

While some sections of the fuel break are being challenged by Refuge management due to their ecological integrity, we are looking at alternative ways to connect the fuel break through this corridor with other land managers. We will seek these partnerships in the coming year and attempt to retain ecological integrity of the area for wildlife habitat while mitigating the hazard of fire to the adjacent community. ADF&G continues communication with State Forestry to review and discuss fire management strategy and tactics in these areas where the urban interface limits the use of fire for enhancing wildlife habitat.

The Kenai Peninsula Borough will be working on updating Community Wildfire Protection Plans (CWPPs) in the coming year. We will coordinate our support to review these plans to develop habitat enhancement projects within and adjacent to fuel breaks.

OBJECTIVE 2: Enhance habitat through mechanical treatments and prescribed fire on public lands.

ACCOMPLISHMENTS:

ADF&G coordinated with the Refuge Fire Management Staff to plan the 9,600 acres East Fork prescribed fire, designated for implementation in 2019. To date, objectives and the communication plan with talking points are complete and awaiting approval. The monitoring plan is in development. Preliminary field work and reconnaissance flights have been conducted by staff from both agencies. ADF&G is developing an agreement with BLM to provide expertise and capacity to support this project both in fire behavior analysis and implementation. The cultural resource review and archeological investigation permits are in progress.

This project is east of Sterling and north of the Sterling Highway. The Sterling Fuel Break is positioned between the prescribed fire area and the community. The 2017 East Fork wildfire burned 1,100 acres in this area, providing a solid anchor for the prescribed burn.

As a partner to the Kenai Peninsula All Lands All Hands group, the Forest Service is also conducting wildlife habitat enhancement treatments in the areas of Devil's Creek and Cooper Landing. They do have prescribed fires planned, but implementation is yet to be scheduled.

OBJECTIVE 3: Monitoring moose movement, body condition and productivity, to specify best practices for managing fire on the landscape and mechanical enhancements for moose habitat.

ACCOMPLISHMENTS:

In November 2016 and March 2017, we successfully captured 50 adult female moose and deployed all 50 Global Positioning System (GPS) collars. Evaluation of GPS data from moose in GMU 15A indicates that 21 of the GPS collared female moose potentially utilize the area of the proposed East Fork prescribed fire.

Body condition measurements were completed during captures in autumn 2016, spring and autumn 2017, and spring 2018. Rump fat depths were similar between GMU 15A and 15B through 2017; however, moose in GMU 15B had more rump fat than those in GMU 15A during the spring of 2018.

Parturition surveys were completed in 2017 and 2018. In 2017, parturition rates and twinning rates were similar between GMU's. In 2018, estimates of parturition rates were higher for GMU 15A; however, GMU 15B had higher twinning rates. In March 2018, we captured and weighed 27 10-month old calves but found no difference in mean body mass between GMU's. We also deployed expandable GPS collars on 15 female calves during these captures.

As we assess moose movement across both 15A and 15B (separate funding sources), ADF&G maintains that we do not have yet a population response to the 2014 Funny River fire. However, that is likely to occur in the coming years with the expectation that forage availability and nutritional quality will increase. The higher twinning rates in 15B may not yet correlate to the fire effects: these signs of increase are not yet substantial in 15B post fire. Monitoring of cow movements in 15A shows current use of the East Fork proposed fire area; we expect to continue monitoring moose use of this area after the burn is implemented.

While USFWS has collected data in the area of the 2014 Funny River Fire, we have not yet evaluated how vegetation response there may correlate to moose movement in that area. That information, a component of AKW-5, will be useful as we develop the monitoring protocol and methods for pre-fire monitoring of the East Fork proposed prescribed fire. That field work is scheduled for spring 2019 with the burn planned for as early as summer 2019. ADF&G staff is working with Kenai NWR staff to develop this protocol.

II. SUMMARY OF WORK COMPLETED ON PROJECT TO DATE.

Interagency coordination has continued and improved over the past few years. Since ADF&G began habitat work on the Kenai Peninsula through AKW-5, the partnerships with agencies and other organizations have strengthened. We are collaboratively working on the new 5-year action plan for the Kenai Peninsula All Lands All Hands, planning the East Fork prescribed burn, and making steps toward continuing the fuel break west to Soldotna and north to Nikiski.

ADF&G staff are working with the landscape ecologist and the fire ecologist at the USFWS to develop common themes for monitoring vegetation, fire effects, and post treatment responses for wildlife. These collaborations support other projects around the state as we build the science background for monitoring, vegetation response, and implementation of prescribed fire. Additionally, ADF&G staff are working with the fire management staff to develop the prescribed

fire burn plan, communications strategy, and bring in stakeholders and agency partners to ensure commonalities across land managers are identified, as well as concerns and potential conflicts.

While much coordination and field work went into the extension of the Sterling fuel break, agency partners recognize the value in adjusting the corridor to maintain Refuge values and coordinate better with adjacent land owners.

The lengthy process makes evident the timelines and coordination needed to implement projects of large scale on the landscape.

For monitoring moose movement with respect to Objective 3:

In November 2016 we successfully captured 30 adult female moose, assessed their body condition, and deployed 30 Global Positioning System (GPS) collars (GMU 15A: n = 15; GMU 15B: n = 15). Mean rump fat in November 2016 was similar between GMU 15A (3.1cm ± 1.2 SD) and GMU 15B (2.9 cm ± 1.3 SD). No capture related mortalities were observed. In March of 2017, we captured an additional 20 adult cow moose, assessed body condition, and deployed the remaining 20 GPS collars (GMU 15A: n = 10; GMU 15B: n = 10). We also deployed vaginal implant transmitters (VIT) in all moose to assist with parturition surveys. Mean rump fat in March 2017 was similar between GMU 15A (1.4 cm ± 0.8 SD) and GMU 15B (1.6 cm ± 0.7 SD). No capture related mortalities were observed. In GMU 15B, one cow moose died (March 2017) after it fell through the ice in a small creek and could not get out. In GMU 15A, 4 moose died during the spring and summer of 2017: one from brown bear predation, two suspected wolf predations, and one with no indication of cause of death. Parturition surveys were flown from early May through the middle of June 2017, which provided estimates of parturition rates (GMU 15A: 70%; GMU 15B: 73%) and twinning rates (GMU 15A: 53%; GMU 15B: 46%). In November 2017 we captured 36 moose to assess body condition, and we redeployed the 5 GPS collars from mortalities from the prior year. Mean rump fat in November 2017 was similar between GMU 15A (3.4 cm ± 1.2 SD) and GMU 15B (4.0 cm ± 1.7 SD). One capture related mortality was documented for an adult cow in GMU 15A from the November 2017 captures and the collar was retrieved at the end of the captures. From November 2017 to March 2018, we retrieved 2 collars because of collar release or nut failure. In that same time frame, we had 2 mortalities, one a result of road kill, and the other had no indication of cause of death.

In March 2018 we successfully recaptured 20 moose for body condition assessment. We also redeployed 5 GPS collars and deployed 5 VIT's to assist with parturition surveys. Mean rump fat in March 2018 was lower ($t_{18} = -3.24$, $P = 0.004$) in GMU 15A (1.0 cm ± 0.5 SD) than GMU 15B (1.8 cm ± 0.5 SD). We also captured 27 calves during March 2018 (GMU 15A: n = 12; GMU 15B: n = 15) and weighed them. Weights of 10-month old calves were similar between GMU 15A (196.6 kg ± 16 SD) and GMU 15B (192.4 kg ± 20.7 SD). In addition, we deployed expandable GPS collars on 15 female calves (n = 7 in GMU 15A; n = 8 in GMU 15B).

Parturition surveys were flown from early May through the middle of June 2018, which provided estimates of parturition rates (GMU 15A: 87%; GMU 15B: 76%) and twinning rates (GMU 15A: 40%; GMU 15B: 63%). Since March 2018, we have had 3 mortalities: one adult female was caught and killed in an illegal snare trap in GMU 15A. Another adult female (GMU 15B moose but moved into GMU 15A) was observed during parturition surveys to show behavior of parturition, but no calf was observed, the moose was accessible by ground, and upon investigation was in poor condition and euthanized. Necropsy analysis indicated the moose had severe endometritis from a retained placenta. Lastly, one female yearling died (GMU 15B), field

necropsy indicated it had been bitten on the hind leg and developed septicemia. These 3 collars will be redeployed in November 2018 (cow) and spring 2018 (calf).

GPS location data from the deployed GPS collars is offloaded every 2 months via the Iridium network, providing us up to date locations of these animals. We created minimum convex polygon home ranges for all moose in GMU 15A for the last year (July 2017-July 2018). We then overlaid these home ranges with the East Fork prescribed fire boundary delineated by ADF&G staff and the Kenai National Wildlife Refuge Fire Management Staff. We determined that 21 of the GPS collared female moose (adult: n = 17; yearling: n = 4) potentially utilize the area of the proposed East Fork prescribed fire, ranging from significant home range overlap to other moose who only pass through the area migrating to and from the coast.

III. SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS.

The Kenai Peninsula vegetation mapping effort continues. The Forest Service coordinated this project and much progress was made in the last year developing the initial draft map. Cooperating agencies participated in a map review to assess the initial cover class designations. Some areas require additional field work that the group is considering for 2019. The initial map product however, is still on track for completion in late fall 2018.

IV. PUBLICATIONS

Publications are not yet available for tasks within this project. We do have several publications in progress however, related to the outreach for the prescribed burn.

V. RECOMMENDATIONS FOR THIS PROJECT

While this project is in year 2 of a 4 year timeline, we do anticipate ramping up project work on the ground in 2019. With the challenges experienced in the last 2 years, we will assess new areas for habitat enhancement in addition to persistence on the proposed treatments and coordination with other land owners.

Prepared by: Sue Rodman and Dan Thompson

Date: August 31, 2018