

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-10 Wildlife Restoration FY2016
PROJECT NO. 4.38
PROJECT TITLE: Kenai Peninsula brown bear population demographics
PROJECT DURATION: July 1, 2013 - June 30, 2020
REPORT PERIOD: July 1, 2015 – June 30, 2016
PRINCIPAL INVESTIGATOR: Sean Farley
STATE: Alaska

I. PROGRESS ON PROJECT OBJECTIVES SINCE PROJECT INCEPTION

OBJECTIVE 1: Determine the finite rate of change (λ) for the Kenai brown bear population.

Job/activity: collect demographic data

Data will be collected by collaring a subset of peninsula bears with vhf radio collars and following them for several years to collect data cub production, litter size, cub survival, adult survival, age of weaning, estimated age of first reproduction (where possible), inter birth interval, and annual natural mortality rate.

OBJECTIVE 2: Complete data analysis on differential reproductive fitness of Kenai brown bears.

Job/activity: data analysis

Collaborate with Dr. Sandy Talbot of the USGS Molecular Ecology laboratory in Anchorage, Alaska to look for individual maternal lineages of Kenai Peninsula brown bears. The data to be used will include recent genotypes determined for Jackson et al. (2008) as well as any additional bears handled. Where possible, perform a genealogical reconstruction of maternal lineages for the past 10 years. Relate that information with reproductive success from past radio-collared work.

OBJECTIVE 3: Develop a model predicting demographic vigor of Kenai Peninsula brown bears.

Job/activity: model development

Explore analysis of data from jobs 1 and 2 to construct predictive model(s) combining biological covariates (genetic relatedness, differential reproductive fitness, demographic data) of Kenai brown bears.

Objective 4: Attend conferences and training, write and present papers.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

OBJECTIVE 1:

JOB/ACTIVITY __1: There are 43 collars being monitored. Two bears were dropped from monitoring as they have not been located for 4 years. One bear has gone missing in the last 6 months and remains in the database. Figure 1 shows vhf and capture locations for the reporting period.

JOB/ACTIVITY _2_: Animal Captures... Fall 2015 4 bears were captured (all adult females). One bear was new to the dataset, one bear had shed its collar in 2013, and 2 bears had old collars replaced. During spring of 2016 we captured 5 bears (all adult females). Two had old collars replaced and three were new to the dataset.

JOB/ACTIVITY _3_: Data Analysis...Demographic data are being updated and the 2015-2016 calculations will be updated later in the fall after monitoring has been completed and animals enter dens for the winter.

OBJECTIVE 2:

JOB/ACTIVITY: No additional work has been reported on this activity.

OBJECTIVE 3:

JOB/ACTIVITY: No additional work has been reported on this activity

OBJECTIVE 4:

JOB/ACTIVITY: Presented at the 2015 Wildlife-human attacks response training held in Whitehorse, Canada. Participated as organizer in the 2016 International Association of Bear Research and Management, held in Anchorage, Alaska. Professional actions included acting as associate editor for Canadian J. Zoology and reviewer for National Science Foundation Ecology-Physiology.

III. Publications:

The following manuscripts were completed, submitted, accepted or provide supporting data under this grant for this period.

Fortin, J. K., K. D. Rode, G. V. Hilderbrand, J. Wilder, S. Farley, C. Jorgensen, and B. Marcot. (2016). Impacts of human recreation on brown bears (*Ursus arctos*): a review and new management tool. [PLoS One](https://doi.org/10.1371/journal.pone.0141983). 2016; 11(1): e0141983. Published online 2016 Jan
doi: [10.1371/journal.pone.0141983](https://doi.org/10.1371/journal.pone.0141983)

Keay, J.A., C. T. Robbins, S.D. Farley, G.V.Hilderbrand, L.G. Adams, and J.L. Belant. (submitted JWM). Population Regulation of Denali Grizzly Bears

Mashintonio, A. G. Harris, S. Farley, G. Russell (in prep) Using lasso to inform model selection: A case study: Understanding habitat preferences of brown bears in a complex landscape by using lasso to inform model selection.

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T.Lan, J. Cheng, A. Ratan, W. Miller, S. Schuster, S. Farley, R. Shideler, T. Mailund, and C. Lindqvist. (in manuscript). Genome-wide evidence for a hybrid origin of modern polar bears. doi: <http://dx.doi.org/10.1101/047498>

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Date: September 1, 2016

I. APPENDIX.

