

**Wildlife Restoration MULTI-YEAR GRANT
INTERIM 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-19

PROJECT NUMBER: 3.0

PROJECT TITLE: Black bear (*Ursus americanus*) abundance, harvest rate, and diet in the Kenai Peninsula coast and Prince William Sound regions

PERIOD OF PERFORMANCE: 1 July 2017 – 30 June 2018

PERFORMANCE YEAR: FY 2018

REPORT DUE DATE: 26 November 2018

PRINCIPAL INVESTIGATOR: Sean Farley

COOPERATORS: Dr. Sandra Talbot, USGS Molecular Ecology Laboratory; Dr. Karyn Rode, USGS Alaska Science Center; Dr. Craig Stricker, USGS Denver Federal Center; ADFG Division of Commercial Fisheries Gene Conservation Laboratory.

Authorities: 2 CFR 200.328
2 CFR 200.301
50 CFR 80.90

I. PROGRESS ON PROJECT OBJECTIVES DURING PERFORMANCE YEAR

Objective 1.

Estimate black bear abundance in PWS and southern Kenai Peninsula by using Close Kin Mark Recapture (CKMR) and/or pedigree reconstruction.

Accomplishments: Bait stations were established via helicopter access in May 2018. Bears were to be snared, collared, weighed, have body composition measured, and have biological samples for stable isotope-based diet determination collected from them at these bait stations in late May and early June 2018 from a boat-based operation. Inclement weather with 10' seas prevented the boat from traveling to the site in time to safely begin and end snaring activity. Thus, snaring operations for 2018 were cancelled. Snaring operations will be attempted again in Spring of 2019. Note that field operations (biopsy darting) were conducted fall 2018, outside the

reporting window for the IPR. These samples are mentioned here to show that action is being taken on this project.

Table 1. Hair, muscle, and bone samples were collected from sealed bears and genetics samples were collected from the biopsy darting of free ranging animals. The sample number, type and location (by GMU) are listed below. Samples were collected in 2017 and 2018. Sealed bears were sampled at the time of sealing. Biopsy samples were collected in fall 2018. The samples will provide data for CK-MR and Pedigree analysis, as well as for estimating diet.

| Species | Game Management Unit | Sample Type | Sample Source | Number of samples |
|------------|----------------------|------------------------|---------------|-------------------|
| Black bear | 6 | Hair only | Sealed bear | 1 |
| Black bear | 6 | Hair and Muscle | Sealed bear | 15 |
| Black bear | 6 | Hair, Muscle, and Bone | Sealed bear | 18 |
| Black bear | 7 | Hair only | Sealed bear | 3 |
| Black bear | 7 | Hair and Muscle | Sealed bear | 11 |
| Black bear | 7 | Hair, Muscle, and Bone | Sealed bear | 19 |
| Black bear | 7 | Muscle only | Sealed bear | 1 |
| Black bear | 14 | Hair only | Sealed bear | 1 |
| Black bear | 14 | Hair and Muscle | Sealed bear | 2 |
| Black bear | 14 | Hair, Muscle, and Bone | Sealed bear | 4 |
| Black bear | 15 | Hair and Epidermis | Biopsy dart | 101 |
| Black bear | 15 | Hair and Muscle | Sealed bear | 4 |
| Black bear | 15 | Hair, Muscle, and Bone | Sealed bear | 5 |
| Black bear | 16 | Hair and Muscle | Sealed bear | 3 |
| | | | | |
| Black bear | | Total # samples | | 188 |

Objective 2.

Determine dispersal distances and locations from natal area by black bears in PWS and southern Kenai Peninsula, and estimate susceptibility to harvest based upon natal area dispersion.

Genetic analyses have not progressed pending the hire of a post-doctoral, scientist-level geneticist. This hire has proven problematic and a timeline of the project and the issues surrounding the hire are detailed under Section III, Significant Development Reports.

In anticipation of the geneticist hire, collaborators at the USGS Molecular Ecology Laboratory in Anchorage had begun initial sequencing of microsatellites for black and brown bear genotyping. When hired, the geneticist will incorporate and expand on these techniques in support of this study.

Objective 3.

Determine levels of genetic diversity and population structuring in PWS and Kenai Peninsula black bears.

Sample collections are noted above, as well as technique development. Further work is pending the hire of a post-doctoral scientist level geneticist (see Section III).

Objective 4.

Determine the facultative dietary niche breadth and depth of black bears on Kenai Peninsula (south) and PWS using stable isotope analyses of black bear hair, muscle, and bone.

Biological samples that have been collected are listed in Table 1. Laboratory processing is ongoing and final data collection requires establishing contracts with USGS laboratory facilities in Anchorage and Denver. No contracts can be finalized at this time but will be upon approval of proposed amendment (see Section III).

II. SUMMARY OF WORK COMPLETED ON PROJECT TO DATE.

Biological samples of hair, bone, muscle, and teeth have been collected from sealed bears, and biopsy samples of muscle and epidermis collected from darted individuals (See Table 1). Samples are being held in a freezer pending final budget decisions, which includes the mechanism for hiring a post-doctoral level geneticist.

III. SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS.

This project's original proposal was written in 2015-2016 to address concern by area management staff over apparent decreasing bear abundance in Prince William Sound, AK, and high harvest rates on the Kenai Peninsula. The proposal included adaptation of two new, but similar, methods for enumerating animal populations. Both techniques require generating DNA based identification of individual bears and using that data to identify their relatives. The two methods are Close-Kin Mark Recapture (CKMR) and Pedigree analysis. Both may ultimately provide biologists the tool for enumerating populations in locations where animals are not able to be counted by traditional means. These techniques have great potential across species and geographic areas, and already are being modified for use on European bear populations. The proposed work would estimate black bear abundance in two areas with suspected heavy harvest, the lower Kenai Peninsula and Prince William Sound. In addition to the genetics work, understanding differences in foraging ecology between PWS and Kenai bears is critical to properly managing both populations.

A critical member of the research team was to be a dedicated post-doctoral level geneticist with extensive laboratory experience. The original draft proposal included funding for a long term, nonpermanent position for the genetics post-doctoral researcher. That individual would adapt equipment and technology utilized by the USGS Molecular Ecology laboratory and the ADFG Gene Conservation Laboratory (GCL). The proposed short-term hire was intended to foster collaboration between the two labs and to assist in bringing wildlife capabilities to the GCL, as

exemplified by the black bear CKMR and Pedigree analysis work. The adaptation of CKMR and Pedigree analysis requires a highly skilled genetic specialist as part of the research group.

However, prior to grant submission, ADFG HQ staff removed the post-doctoral geneticist position from the original Pittman Robertson proposal. This alteration from the original proposal was due to the inability to hire additional staff during a time of Administration transition. In the interim, HQ staff submitted the position funding request as its own proposal. Both proposals were submitted to Federal Aid, however, only the fieldwork proposal was approved by Federal Aid. USFWS deemed this project a complete proposal and approved it. This change resulted in a significant level of misunderstanding between the DWC HQ intent, USFWS understanding, and DWC regional staff needs. The result has substantially delayed work critical to this project to be conducted by a geneticist.

In late 2016 Dr. Farley began working with the ADFG Access Program staff and the USFS Chugach Forest staff on the paperwork required for approval for helicopter use in the PWS Wilderness Study Area.

In early 2017 ADFG Supervisory staff and Dr. Farley met with the USFWS Federal Aid Coordinator to learn how to correctly draft a proposal funding the geneticist position. The meeting produced instructions and subsequent email with specific wording to assist with drafting a new proposal. Dr. Farley wrote a new proposal, using the directions and some of the exact wording provided. Nevertheless, the rewritten proposal was not approved—again, due to the above misunderstanding of what was being proposed.

Due to ADFG HQ staff turnover, the approved project spending authority and budget codes were not available until late in calendar 2017, well after any possibility of conducting field work. Nevertheless, samples were opportunistically collected from sealed animals during this time frame.

In spring 2018 a major field operation to capture bears on the outer coast of the Kenai Peninsula was attempted. Trap sites and bait stations were established and pre-baited via helicopter, permits were obtained from Kachemak Bay State Park, and a boat was put on contract. Poor weather and 10'+ seas did not allow the chartered vessel to make it to the research site in time for samples to be collected and the bait sites were removed by helicopter. It was not possible to safely snare bears using helicopter access.

In fall 2018, Dr. Farley was finally awarded a permit to use helicopters for this research in designated wilderness areas of Prince William Sound.

In summer 2018, ADFG HQ and Region II staff worked together to amend the original proposal to include funding for the geneticist. The amended proposal included a revised timeline and budget adjustments. The amendment was submitted to ADFG HQ staff in August but required further clarification (as is outlined in this SDR) before forwarding to the USFWS Federal Aid office. This discussion did not happen as a result of other Division priorities to submit new grants. Unfortunately, the PI drafted the IPR with the misunderstanding that the amendment was approved, leading to the need to redraft this IPR.

The inability to hire the geneticist position has placed Dr. Farley in a difficult situation as he is reluctant to continue to collect samples without a clear understanding of staffing availability.

The dietary analysis and stable isotope work both require establishing contracts with USGS specialists, who are intrigued with the project and see strong merit in continuing.

IV. PUBLICATIONS

Publications of results will be prepared and submitted once adequate samples and analyses have been completed.

V. RECOMMENDATIONS FOR THIS PROJECT

With the approval of this revised IPR, we intend to submit a no-cost amendment to revise the project statement to include the geneticist and any other budgetary adjustments necessary to continue the project. The timeline will be adjusted, and we will review all activities to ensure they conform to the necessities of the project resulting from the delay. The postdoctoral-level geneticist is critical; without which this project cannot proceed. We will work closely with ADF&G Federal Coordination staff and the USFWS Federal Aid Office staff to produce a path forward.

Prepared by: Sean Farley and Brenda Bowers

Date: November 15, 2018