

**WILDLIFE RESTORATION OPERATING  
GRANT  
FINAL PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME  
DIVISION OF WILDLIFE CONSERVATION  
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**Alaska Department of Fish and Game  
Wildlife Restoration Grant**

**Grant Number:** AKW-C-2-2019

**Project Number:** 28.0

**Project Title:** Data processing and analytical support for research and survey & inventory projects

**Period of Performance:** 7/1/2018 – 6/30/2019

**Report Due Date:** September 1, 2019

**Principal Investigator:** Jeff Mondragon

**Cooperators:** Christine Schmale and John Skinner

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I. PROGRESS ON PROJECT OBJECTIVES DURING PERIOD OF PERFORMANCE

**Objective 1:** Provide data management support to S&I and research field biologists and biometricians focusing on: large datasets (e.g. telemetry data) and high-risk/value datasets (e.g. data at risk of loss with staff turnover; moose, caribou and carnivore research; and small game studies).

**Accomplishments:**

- Created an Access User Interface for the Region 4 wolf database to allow the biologists to interact with their data (e.g. add/edit/query).
- Created an Access User Interface template for the GIS analyst managing the Region 2 wolf database
- Worked with the Region 4 Carnivore biologist and the Dillingham Area Biologist to design and implement a database to house the capture and telemetry data for the Region 4 Mulchatna caribou project. Data from disparate sources were cleaned and imported into the database and an Access User Interface is currently being created
- Attended Region 4 staff meeting and met with the Nelchina caribou biologists to discuss the timing and requirements for a database for their project
- Attended 5-day Advanced T-SQL Querying, Programming and Tuning for SQL Server 2012-2019
- Implemented use of ER/Studio Data Architect to create project data models and reverse-engineer the structure of existing databases
- Met with the new capture veterinarian to discuss changes needed in the controlled substances (i.e. drug tracking) Access database and potential migration to a SQL Server database

- Conducted preliminary analysis on Prince William Sound black bear behavior and survival.  
The goal of this project is to better understand how black bear survival is influenced by sex and habitat selection on Knight and Ester Islands of Prince William Sound. The data from 32 collared bears were analyzed for behavior by organizing and extracting high quality ARGOS locations. Then generalized additive mixed models were used to estimate the probability bears would be found along shoreline during different times of the year and to estimate differences associated with sex and island of residence. Furthermore, the potential influence of bait stations on bear behavior was examined to better understand how to control for these effects in the overall study.
- Caribou Telemetry Data Cleansing and Archiving  
Telemetry data from approximately 2005 to 2018 were cleansed, imported, and consolidated on the ADF&G telemetry database server so that these data could be combined with relevant capture data. The data were in different formats from various sources including email attachments, DVD backup disks, and direct downloads from the website hosted by the caribou collar manufacturer.
- Willow Ptarmigan survival field work and statistical consultation  
A pilot study was undertaken by the Bethel area office to examine Willow ptarmigan population in the Yukon-Kuskokwim Delta of western Alaska. Two staff assisted with the capture efforts to deploy VHF radio telemetry collars and provided advice for analyzing these data to estimate survival.
- One staff member attended Introduction to Spatial-Capture Recapture course.

**Objective 2:** Optimize flow of data from the field through the analyses and, where possible, automate data storage, reporting requirements (e.g. drug/capture reporting), analyses, and archiving.

**Accomplishments:**

- Met with GIS Analysts and Research Analysts from every region to plan and further develop an automated unified telemetry system for all the Division's spatial data (e.g. collared animals).

**Objective 3:** Review and evaluate data management components of research operational plans to comply with Division policies.

No research operational plans were submitted for review during this time period.

II. SUMMARY OF WORK COMPLETED ON PROJECT TO DATE

Much of the Division's data is dispersed across various geographic locations, housed on an assortment of computers, and stored in disparate formats often without backups. To alleviate data loss with staff turnover and to structure and organize data in a manner that facilitates rapid analyses and use of the data, centralized databases are being created and data are being migrated into these databases on a project-by-project basis as prioritized by the Division's leadership.

## FPR AKW-C-2-2019 P28.0 Data processing and analytical support

In addition, the division has thousands of telemetry devices (e.g. collars) currently deployed and more are constantly being deployed. These collars are from a variety of vendors. Each vendor has their own proprietary data format and nuances when working with the data gathered from their collars. We are designing and developing standardized and centralized processes to automate the near real-time use and archiving of these data.

The ultimate goal of this project is to migrate all the Division's data into centralized databases and incorporate contemporary data management and analytical practices for all historical and current projects.

### III. SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS

None.

### IV. PUBLICATIONS

None.

### V. RECOMMENDATIONS FOR THIS PROJECT

This project should be continued as described in the project statement.