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| **FEDERAL AID FINAL RESEARCH PERFORMANCE REPORT** | **ALASKA DEPARTMENT OF FISH AND GAME** <br> DIVISION OF WILDLIFE CONSERVATION <br> PO Box 115526 <br> Juneau, AK 99811-5526 |

**PROJECT TITLE:** Black bear (*Ursus americanus*) population and exploitation rate in Prince William Sound, Alaska:  Determination of bear movements for modeling a DNA-Mark-Recapture population estimate.

**PRINCIPAL INVESTIGATOR:** Sean D. Farley, ADF&G, Dave Crowley, ADF&G, and Earl Becker, ADF&G

**COOPERATORS:** N/A

**FEDERAL AID GRANT PROGRAM:** Wildlife Restoration

**GRANT AND SEGMENT NO.:** W-33-10 through W-33-11

**PROJECT NO.:** 17.81

**WORK LOCATION:** Region II

**STATE:** Alaska

**PERIOD:** 1 July 2012–30 June 2014

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## I.     PROBLEM OR NEED THAT PROMPTED THIS RESEARCH

Black bear size and harvest levels have been decreasing in Prince William Sound (PWS; D. Crowley, pers. com.) and there is concern that high harvest is reducing population viability.  It is theoretically possible to conduct a DNA based population estimate of discrete areas in PWS, however conducting a cost-effective estimate requires prior understanding of bear movements and timing of movements in order to place hair traps in the most effective locations.

## II.     REVIEW OF PRIOR RESEARCH AND STUDIES IN PROGRESS ON THE PROBLEM OR NEED

Hunting pressure on the Prince William Sound (PWS) black bear population has increased as human access has increased, beginning with the first monitoring begun in the late 1960's (C. McLLRoy, 1970) through 2005 (Ginblett and Lace 2005) and to current times (D. Crowley, pers. Comm.).  Throughout, the harvest has been biased for larger older male bears harvested off beaches.  Renovation of the Whittier tunnel in 2000 enabled vehicle traffic in the tunnel, and since that time overall recreational use of PWS has increased dramatically.  Alaska Department of Fish and Game records indicate Angler days increased from 225,000 in 2001 to approximately 275,000 in 2006, and black bear harvest levels doubled from 1995 -2001.  Whittier Tunnel visitor counts increased from 270,000 in 2000 to around 500,000 in 2007.   Today most hunters come

through the tunnel at Whittier, and as has been the case since the 1960's, hunters prefer larger older male bears.

## III.   APPROACHES USED AND FINDINGS RELATED TO THE OBJECTIVES AND TO PROBLEM OR NEED

1.  OBJECTIVE 1: Deploy <u>Global Positioning System (GPS) radio-collars on up to 15 black bears in the Culross Passage area of Prince William Sound, Alaska.</u>

2.  OBJECTIVE 2: <u>Interpret bear movement data to determine accessible locations and proper timing for placement of DNA-based mark-recapture population study.</u>

## IV.   MANAGEMENT IMPLICATIONS

This pilot study will enable us to deploy GPS collars with automatic drop-offs on up to 15- black bears to determine daily and seasonal movement patterns.  While a traditional DNA-MR would involve a single, 30 day capture session, we believe two shorter sessions will be required in the PWS area.  The first session will likely involve bear movements directed to salmon stream use, while the second would be when bear movements are heavily influenced by the presence of ripening berry fields.  We need to test the assumption that there are two major movement periods for PWS black bears, and if so, determine how to then develop a project plan for a DNA-MR.  Collecting black bear movements will provide us with the needed data, and the most expeditious method for collecting the data will involve the use of GPS -vhf collars.

While the primary impetus for this project is to provide data for application of a scientifically valid estimate of Culross passage black bear population, information collected will improve our understanding of Prince William Sound black bear genetics and enable the formulation of management strategies based upon conservation genetics.

## VI.   SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN <u>FOR LAST SEGMENT PERIOD ONLY</u>

This project was originally proposed by Dave Crowley and Sean Farley as co-PIs, and was slated to begin in FY 2012 and run into FY 2013.   Before the project was initiated, Dave left his position as the Cordova area management biologist.  During subsequent discussions, our regional leadership  team (Larry Van Daele, Gino Del Frate, and myself, in collaboration with Sean) determined that due to the highly contentious situation surrounding brown bear management on the Kenai Peninsula, the region's  research priority was to focus on and add to Sean's  data set on Kenai Peninsula Brown Bear demographics.

We tabled 17.81 and rolled the money into Sean's project #4.38, R2 Brown Bear Demographics, with the understanding that a similar black bear project would be initiated at a later date.  Sean submitted a slightly revised project proposal which we funded for FY 2014, which I believe was assigned project number 17.82.  That work is slated to begin later this FY.

**VII.    ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE
THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THE LAST
SEGMENT PERIOD, IF NOT REPORTED PREVIOUSLY**

None.

**VIII.   PUBLICATIONS**

None.

**IX.    RESEARCH EVALUATION AND RECOMMENDATIONS**

Closed out early.

**X.    APPENDICES**

None.

**PREPARED BY:** Nathan J. Soboleff, ADF&G