

**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: W-33

SEGMENT NUMBER: 9

PROJECT NUMBER: 4.39

PROJECT TITLE: Grizzly and black bear distribution and abundance relative to the 2004 wildfires in eastern Interior Alaska: Possible intensive management

PROJECT DURATION: 1 July 2008–30 June 2014

REPORT DUE DATE: 1 September 2011

PRINCIPAL INVESTIGATOR: Craig L. Gardner, ADF&G

COOPERATOR: None

WORK LOCATION: Game Management Unit 20E, Fortymile River drainage

**I. SUMMARY OF WORK COMPLETED THIS SEGMENT ON JOBS IDENTIFIED
IN ANNUAL WORK PLAN**

OBJECTIVE 1: Determine grizzly bear population size and distribution relative to the 2004 wildfires in Unit 20E.

During July 2008–June 2011, I deployed GPS radio collars on grizzly bears and monitored movements and distribution relative to the 2004 wildfires. My original plan was to collar both males and female grizzly bears, but after the first year I decided to limit collaring to adult females because 0 of 3 collars deployed on adult males lasted >1 month before radio structural failure. The GPS collars recorded the bear's location once every 1 1/2 hours between 15 May and 15 October. Data can be recovered by a 2-way radio frequency link between the transceiver on the bear and a modem in an aircraft. The data are also stored on board the collars and can be obtained once the collar is retrieved. The collars shut off during 16 October–14 May to save battery life. The GPS radio transmitter's projected operational life is 2 1/2 years, but only 1 of 12 have gone to term.

JOB/ACTIVITY 1A: Literature review.

Federal funds were used to pay my salary while working on this task. On a monthly basis, I conducted a literature search for information on grizzly bear habitat use, resource selection function analyses, food habits, seasonal movement patterns, DNA-based mark/recapture population estimate techniques, and statistical analyses. I have acquired numerous publications that are being used to help focus my research questions and improve methodologies.

JOB/ACTIVITY 1C: Deploy GPS radio collars on female adult grizzly bears and purchase collars for use the following year to maintain sample size.

Federal funds were used to pay my salary and for GPS radio collars and logistics to deploy the radio collars. I ordered 5 GPS collars to replace the GPS collars that were approaching the end of battery life on 5 females. Field season success in terms of maintaining long-term contact with these bears as well as maintaining sample size was dependent on being able to locate these bears for capture via VHF telemetry. Unfortunately, 4 of 5 of the radios failed for unknown reasons and I was not able to locate those 4 bears or any other adult female grizzly bears during the 2 days I had budgeted. I did replace the GPS collar on the one bear that had an operating collar. As of 30 June 2011, I was monitoring 4 bears (3 of which were collared during FY11) with operating GPS collars. Furthermore, to better understand bear distribution, I sent skin samples collected from each of the radiocollared bears to a genetics lab to determine the relationships between bears with adjacent home ranges and within the study area.

JOB/ACTIVITY 1D: Acquire bait for future DNA-based mark/recapture study.

I did not conduct this activity because adequate funding to complete a DNA-based mark/recapture population estimate for this area in FY12 was not available. This task will be rescheduled to conduct the population estimate activity during FY13.

JOB/ACTIVITY 1F: Radiotrack collared bears once every 2 weeks.

Federal funds were used to pay my salary as well as aircraft charter costs while working on this task. I radiotracked collared bears once every 2 weeks during 1 July–30 September 2010. For each individual bear, I uploaded GPS data as well as obtained a visual observation to monitor association, i.e., with cubs, yearlings or 2 year-olds, or with an adult male. Upon den emergence in May 2010, 4 of 8 radiocollared adult females had 2 cubs each and 1 had 2 yearlings. One of the 4 females still had surviving cubs prior to den entrance in October 2010. The female with 2 yearlings entered the den with both yearlings. I was not able to document status for these 2 bears following den emergence in May 2011 due to collar failure.

JOB/ACTIVITY 1G: Continue to maintain data storage for a large data set and conduct periodic analyses of individual bear movements.

Federal funds were used to pay my salary while working on this task. Most of my effort was directed toward working with department programmers in developing a database storage system for a large and increasing data set that includes programs for data retrieval, maintenance, and analyses. Furthermore, I analyzed movement data to include in our modeling efforts to estimate grizzly bear population size within the study area during 2006.

IV. RECOMMENDATIONS FOR THIS PROJECT

Ensure that adequate funding is obtained to complete the DNA-based mark/recapture study in FY13.

PREPARED BY: Craig L. Gardner

DATE: 8 August 2011