

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: 4.40

PROJECT TITLE: Grizzly bear use of the North Slope oil fields and surrounding region

PROJECT DURATION: 1 July 2008–30 June 2012

REPORT DUE DATE: 1 September 2011

PRINCIPAL INVESTIGATOR: Richard Shideler, ADF&G

WORK LOCATION: Game Management Units 26B and 26C, oil field region

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

OBJECTIVE 1: Develop a grizzly bear den habitat selection model that can be applied at the landscape level to remote sensing imagery to predict high, medium, and low probability denning habitat.

JOB/ACTIVITY 1A: Develop a grizzly bear den habitat selection model.

We reviewed literature on habitat selection models and searched for available digital map products (e.g., land cover maps, Digital Terrain Models) at a scale useable in a selection model. We populated a land cover map (*Jorgenson, M. T. and M. Heiner. 2003. Ecosystems of Northern Alaska. Unpublished 1:2.5 million-scale map produced by ABR, Inc., Fairbanks, AK and The Nature Conservancy, Anchorage, AK*) with locations of 274 dens inspected since 1992 to compare land cover we identified at the den with land cover on the map. Resolution scale errors were apparent. Fifty-four percent of the mapped den locations were in habitats unsuitable for denning (e.g., lakes, flooded marsh). Therefore, we will need a Digital Terrain Map (DTM) at sufficient resolution to precisely locate the den. We are awaiting publication of Alaska Statewide Mapping Initiative DTM's which were acquired at 2.5 m resolution. Initial schedule for release of this imagery was May 2011 but they have yet to become available.

We used circular statistics to analyze den aspect from 265 dens, including 55 dens in pingos which have all 360° available for selection. Dens, including those on pingos, were oriented in a SSW aspect significantly more than random. Because prevailing winds are from the ENE, this aspect is probably selected to capture drifting snow for insulation.

JOB/ACTIVITY 1B: Collect data on habitat characteristics of radiomarked bears, and field verify areas of high, medium and low probability denning habitat based on the predictive model generated in Job 1a.

We inspected 24 dens of radiomarked bears to augment the existing database of ~250 dens previously inspected. Data on habitat characteristics of these dens will be used to develop the den habitat model in Job 1a. We located 47 dens of radiomarked bears and 1 unmarked bear during early winter radiotracking surveys. These dens will be inspected in the 2011 and 2012 summer field seasons.

JOB/ACTIVITY 1C: Evaluate the efficacy of den detection methods (e.g., hand-held and airborne Forward Looking infrared “FLIR” imagers, trained scent dogs).

We flew an airborne FLIR survey in January 2011. We detected 2 putative dens, may have detected a third, and could not detect 2 others. We later learned that the coordinates on one of the missing dens had been transcribed incorrectly and the putative den location was >400 m from the location we surveyed. In February we surveyed the same 5 dens with a hand-held FLIR (FLIR Systems Inc. P660 ThermaCam™) transported in a Haggglunds tracked vehicle. Blowing snow on the surface prevented us from obtaining an image of 3 dens but we acquired images for the remaining 2. Between 16 and 19 April we surveyed the 5 original dens and the 2 new ones dens with 2 Karelian bear dogs. Both dogs detected 6 dens. We ran only one dog on the seventh den and he was successful. We will confirm the true locations of the 7 dens in summer 2011 when the excavations are visible.

JOB/ACTIVITY 1D: Construct and instrument an artificial den to test the accuracy of FLIR under varying snow conditions.

We excavated and instrumented an artificial den in a pingo in October 2010, and installed heaters in December. We conducted 5 hand-held FLIR surveys of the den, and were able to detect it at distances <40 m during December and January. Power was interrupted for several periods during the winter and the dens cooled down. Therefore, we were unable to use infrared data from the final 3 surveys, but were able to continue monitoring snow and ground surface temperatures.

OBJECTIVE 2: Investigate the response of bears feeding on naturally-available foods to the removal of food-conditioned bears.

JOB/ACTIVITY 2A: Prepare grizzly bear DNA specimens for analysis.

We collected tissue samples for DNA “fingerprinting” and individual relationships from the 7 newly captured bears and from 3 hair samples caught in our power pole hair snares scattered around the periphery of the oil fields. These specimens are awaiting analysis at Wildlife Genetic International, Nelson, British Columbia.

JOB/ACTIVITY 2B: Capture bears and replace radio collars.

We recaptured 25 radiomarked bears and replaced their VHF radio collars, and captured 7 unmarked bears and fitted them with VHF radio collars. We flew 8 radiotracking flights and relocated up to 39 bears on each flight. We also located 3 bears from the oil field road system. No bears new to the study have become food-conditioned. However one existing food-conditioned female continues to periodically use anthropogenic food available in Deadhorse and

at the North Slope Borough landfill. A second female that was originally food-conditioned has shifted to a natural food diet and has not obtained anthropogenic food in the past 4 years.

JOB/ACTIVITY 2C: Analyze grizzly bear tissue for stable isotopes.

We collected hair and blood samples from the 32 bears we captured and 2 bears that were killed by hunters in or near the study area. Those samples are awaiting processing by the University of Alaska Fairbanks Stable Isotope Facility.

OBJECTIVE 4: Prepare annual and final progress reports, interim and final technical reports, and give presentations at scientific forums.

JOB/ACTIVITY 4: Data analysis and reporting.

Data analysis was ongoing. Our manuscript entitled “Effects of food-conditioning on grizzly bears in the North Slope oil fields, Alaska” was submitted to *Ursus* and returned with suggested revisions. We gave an invited presentation about the effects of food-conditioning on grizzly bears at the USFWS Polar Bear Diversionary Feeding Workshop 8–9 June 2011, in Anchorage, Alaska.

III. PUBLICATIONS

HOPKINS, J. B. III, S. HERRERO, R. T. SHIDELER, K. A. GUNTHER, C. C. SCHWARTZ, AND S. T. KALINOWSKI. 2010. A proposed lexicon of terms and concepts for human-bear conflict management in North America. *Ursus* 21:154–168.

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