Initial Study Report Meeting

Study 10.8 Distribution, Abundance, and Habitat Use by Large Carnivores

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Prepared by

Alaska Department of Fish and Game

and

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10/21/2014

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1

Study 10.8 Objectives

- Estimate the current populations of brown bears, black bears, and wolves in the study area, using existing data from ADF&G.

- Evaluate bear use of streams supporting spawning by anadromous fishes in habitats downstream from the proposed dam that may be altered by the Project.

- Describe the seasonal distribution of, and habitat use by, wolves in the study area, using existing data from ADF&G.

- Synthesize historical and current data on bear movements and seasonal habitat use in the study area, including the substantial body of radio telemetry data from the 1980s, as a continuation of AEA's 2012 study of big-game movements and habitat use.

Study 10.8 Components

- Black Bear and Brown Bear (ISR Part A, Section 4.1, pg 2)
  - Spatial modeling of population density using existing data
  - DNA and stable isotope analyses of hair samples from bears using salmon spawning areas downstream from the proposed dam site

- Wolf (ISR Part A, Section 4.2, pg 5)
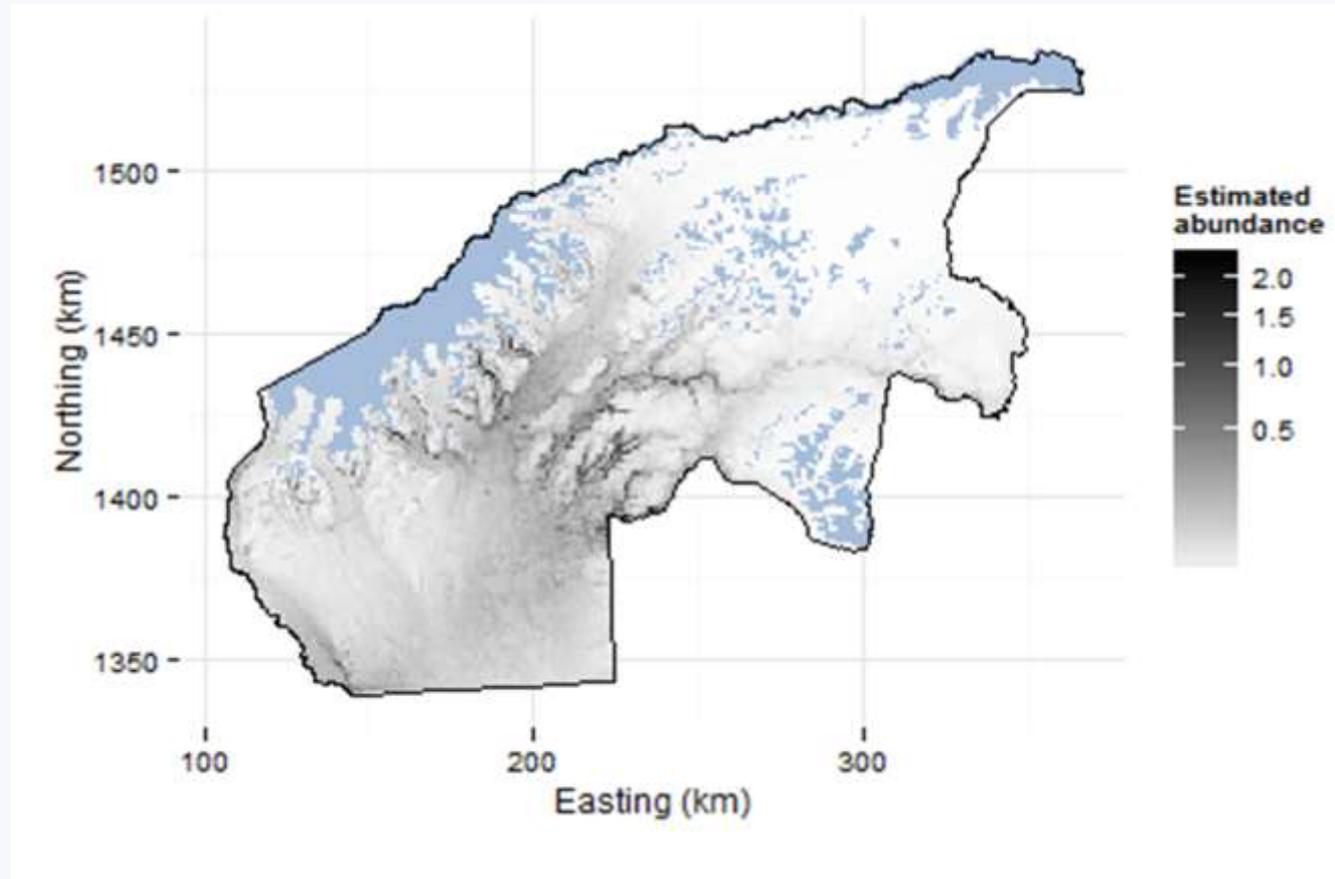 - Analysis of existing data from ADF&G

Study 10.8 Variances

- **Bear data from GMU Subunits 13A and 13B was excluded** from the population estimation analyses. The study team concluded that its exclusion had no appreciable effect on the ability to meet the study objectives.

- Researchers were **unable to access some anadromous streams in 2013** on Cook Inlet Regional Working Group (CIRWG), Alaska Railroad Corporation (ARRC), and some private lands because of a lack of land-access agreements. Therefore, some documented salmon-spawning sites in the Middle Segment of the Susitna River were inaccessible, including all portions of the Middle Segment upstream from PRM 146.5. These limitations on spatial coverage of hair sampling limited the study team's ability to estimate the minimum population size of bears using those spawning streams, as proposed in RSP Section 10.8.4.1.2.

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Study 10.8 Summary of Results in ISR
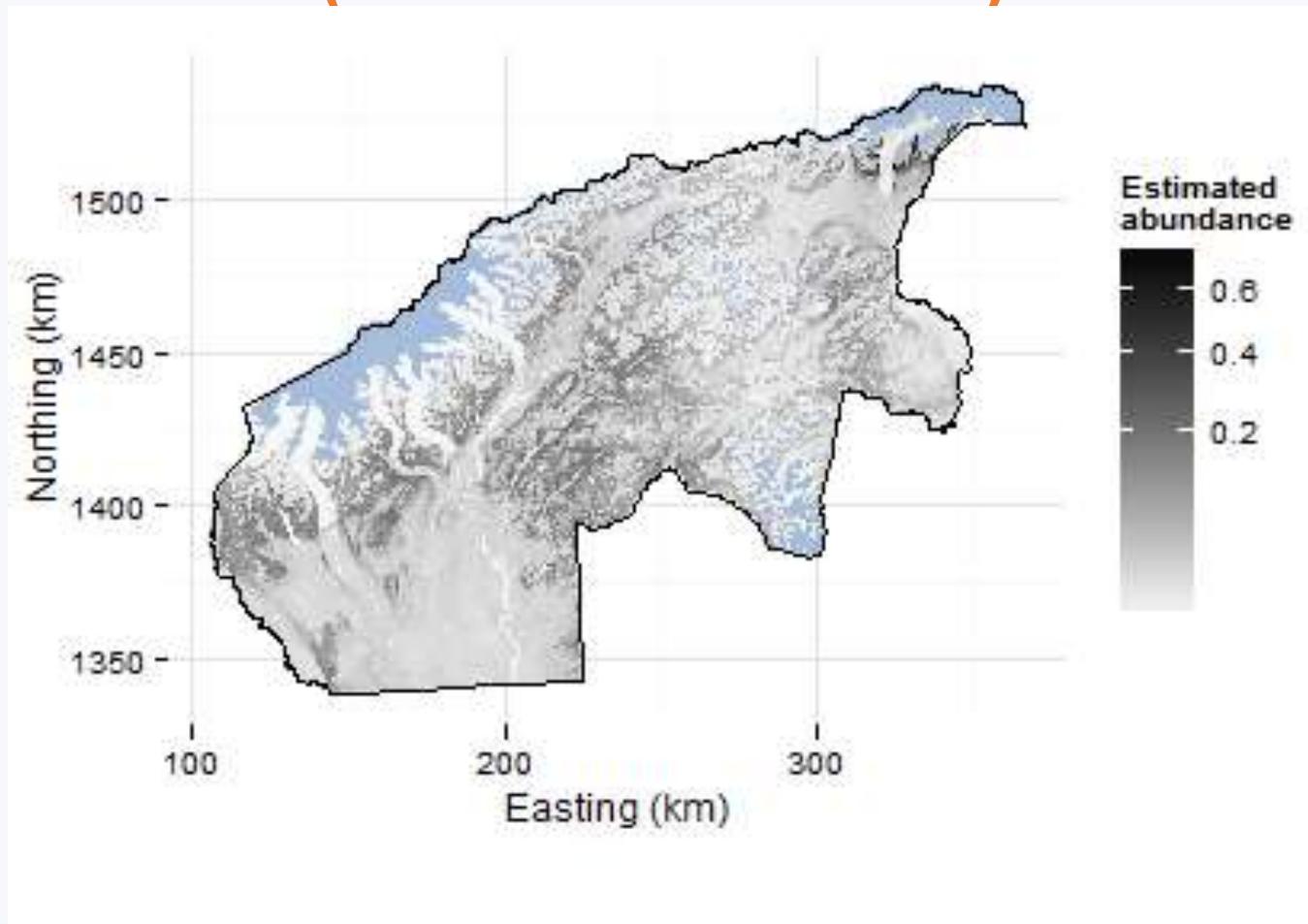## (ISR Part A – Section 5)

- Data from 1,238 random transects flown by ADF&G in 2000, 2001, and 2003 were reanalyzed by ADF&G to estimate bear density using mark–recapture, multiple-covariate distance models combined with a density surface model.

- The study team estimated that 1,262 black bears inhabited the *study area* during 2000–2003 (95% confidence interval: 972–1,639).

- The study team estimated that 841 brown bears inhabited the *study area* during 2000–2003 (95% confidence interval: 579–1,222).

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Study 10.8 Summary of Results in ISR
(ISR Part A – Section 5)

Density Surface Map of the Estimated Number of Black Bears per km^2.

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Study 10.8 Summary of Results in ISR (ISR Part A – Section 5)

Density Surface Map of the Estimated Number of Brown Bears per km^2.

Study 10.8 Summary of Results in ISR
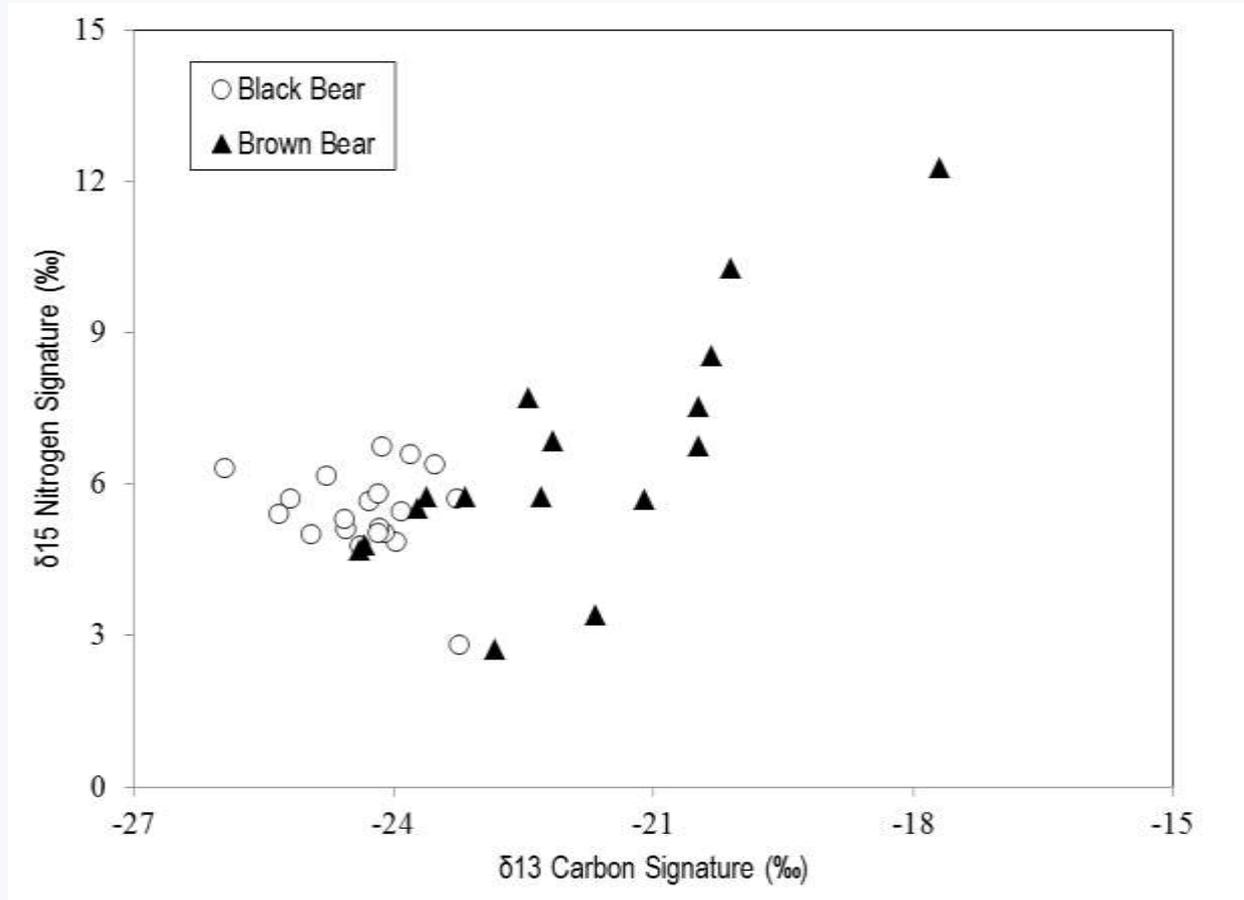## (ISR Part A – Section 5)

- A total of 52 modified, nonlethal, single-catch cable snares were set to snag bear hair samples in 12 different locations in 2013, for an average of 49.8 days each, between July 22 and September 25.

- 77 different hair samples (including multiple clumps of hair from some snares) were collected from 34 different snares at 9 sampling locations.

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Study 10.8 Summary of Results in ISR (ISR Part B)

- DNA analysis was conducted successfully on 37 samples from 33 tripped snares, identifying 27 different bears:

  ◦ 16 black bears and 11 brown bears.

  ◦ Black bears: 9 females, 6 males, 1 of unknown sex.

  ◦ Brown bears: 9 females, 1 male, 1 of unknown sex.

- Stable isotope analysis was successfully conducted on 79 hair samples.

- Brown bears had higher δ^{13} carbon signatures and a greater range of δ^{15} nitrogen signatures than did black bears, indicating greater proportions of meat and salmon in the diet of the brown bears.

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Study 10.8 Summary of Results in ISR (ISR Part B)

Stable isotope signatures for 36 bear-hair samples that were identified to species, 2013.

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AEA Proposed Modifications to Study 10.8 in ISR (ISR Part C – Section 7.1.2)

- No modifications to the Study Plan are needed to complete the study and meet the Study Plan objectives.

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Steps to Complete Study 10.8
(ISR Part C – Section 7.1)

AEA plans to finish this study in 2015 by completing the following methods, as described in RSP Section 10.8.4:

- Conduct a second year of bear-hair sampling in salmon spawning areas in the Middle Susitna River for analysis of DNA to generate a minimum estimate of the number of bears using the spawning areas and for analysis of stable isotopes to estimate the diets of those bears.

- Obtain additional ADF&G data on wolves in the study area.

- Synthesize historical and current data on bear and wolf populations and habitat use for presentation in the USR.

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Licensing Participants' Proposed Modifications to Study 10.8?

- **Agencies**
- **CIRWG members and Ahtna**
- **Public**