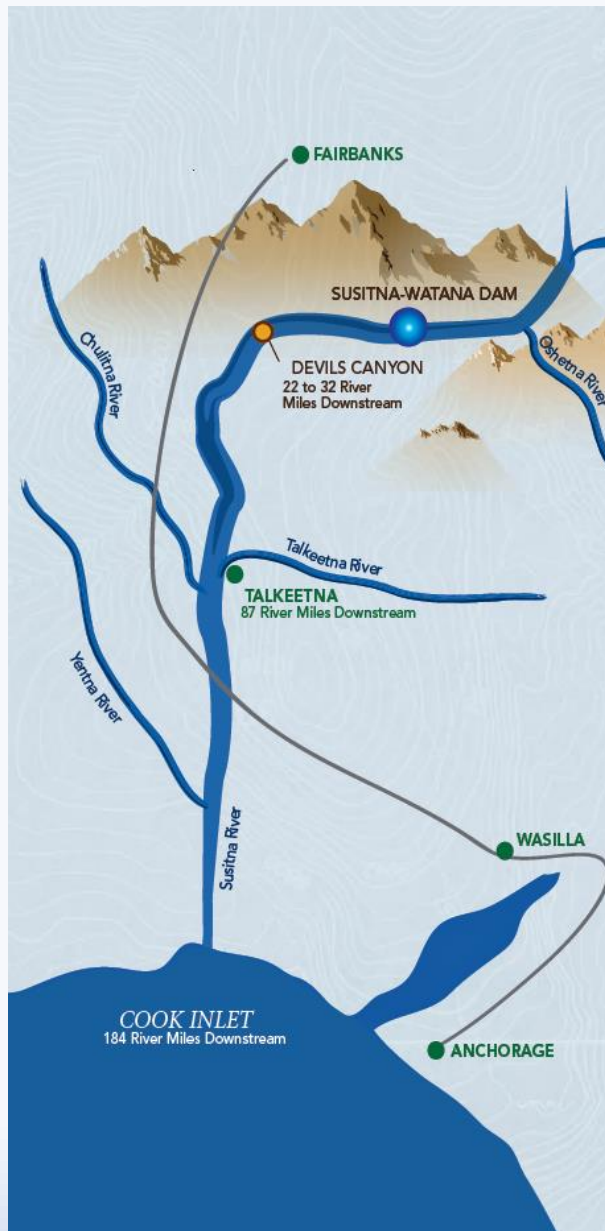


# Initial Study Report Meeting

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

March 29, 2016

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and  
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& Services



# Study 10.8 Status

## ISR Documents (ISR Part D Overview)

- Initial Study Report (June 3, 2014)
- 2014–2015 Study Implementation Report (November 4, 2015)

## STATUS

- Completed density estimates of brown bear and black bear populations in the study area based on existing ADF&G survey data (ISR Part A, Section 4.1.1).
- Completed 2 years of nonlethal snare deployment to collect hair samples from brown bears and black bears in the downstream study area (ISR Part A, Section 4.1.2).
- Described the seasonal distribution of wolves in the study area using existing ADF&G data (ISR Part A, Section 4.2).
- Conducted aerial survey in January 2015 to obtain a minimum count of wolves in GMU 13E (not required by FERC-approved Study Plan).

## 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 were excluded from the population estimation analysis. The study team concluded that its exclusion had no appreciable effect on the ability to meet the study objectives.
- In 2013, researchers were unable to access some anadromous streams on Cook Inlet Regional Working Group (CIRWG), Alaska Railroad Corporation (ARRC), and some private lands due to lack of land-access agreements or to avoid areas of high human activity. More sampling sites were accessible in 2015. Hence, the study team was successful in sampling a large number of locations used by bears. Supported by this sampling effort, the study team will be able to produce a minimum estimate of the number of black bears and brown bears using the spawning streams sampled over both years and to provide information on the diet composition of both species of bears along the middle segment of the Susitna River.
- ADF&G conducted an aerial survey in January 2015 to obtain a minimum count of wolves in GMU 13E. This survey was an additional task that complemented the literature review described in the Study Plan, thereby enhancing the ability of AEA to meet the study objectives.

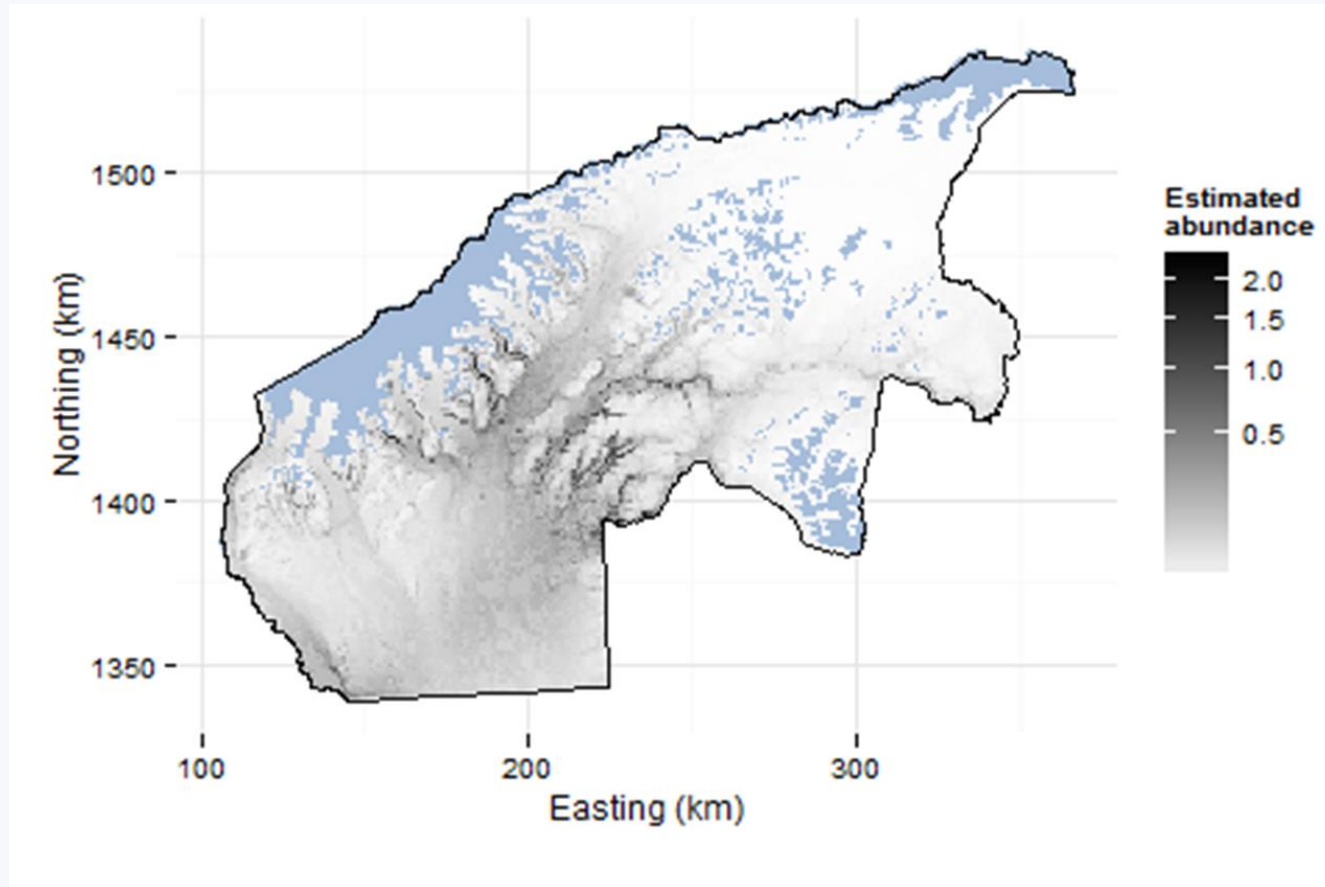
# Study 10.8: Summary of Results

## (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 density surface modeling.
- 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).

# Study 10.8: Summary of Results

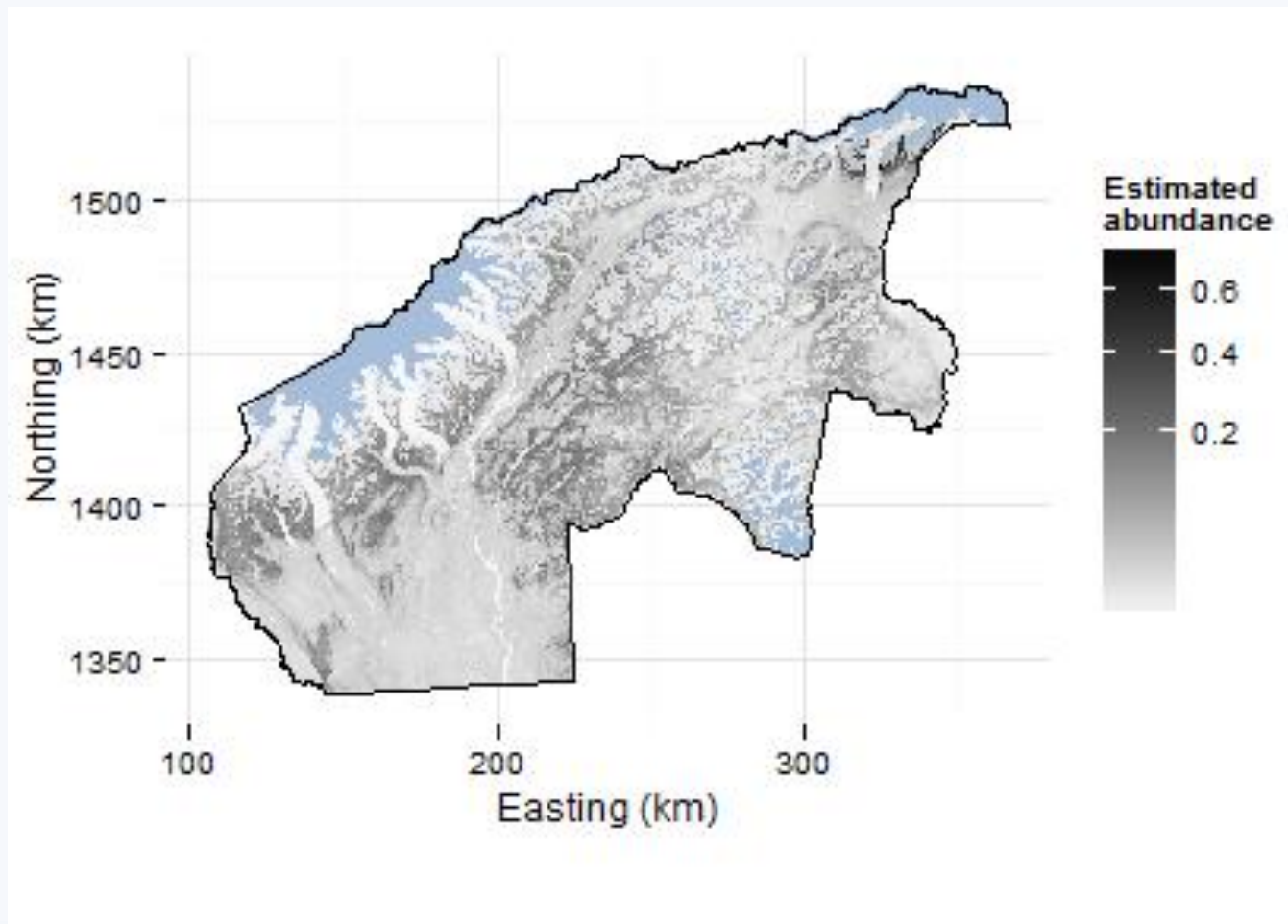
(ISR Part A, Section 5)



Density Surface Map of the Estimated Number of Black Bears per km<sup>2</sup>

# Study 10.8: Summary of Results

(ISR Part A, Section 5)



Density Surface Map of the Estimated Number of Brown Bears per km<sup>2</sup>



# Study 10.8: Summary of Results

## (ISR Part A, Section 5)

- In 2013, a total of 52 modified, nonlethal, single-catch cable snares were set to snag bear hair samples in 12 different locations, for an average of 49.8 days each between July 22 and September 25.
- In 2013, 77 different hair samples (including multiple clumps of hair from some snares) were collected from 34 different snares at 9 sampling locations.



# Study 10.8: Summary of Results

## (ISR Part B)

- In 2013, DNA analysis was conducted successfully on 37 hair samples from 33 tripped snares, identifying 27 different individuals:
  - 16 black bears: 9 females, 6 males, 1 of unknown sex.
  - 11 brown bears: 9 females, 1 male, 1 of unknown sex.
- Stable-isotope analysis was successfully conducted on 79 hair samples.
- Brown bears had higher  $\delta^{13}$  carbon signatures and a greater range of  $\delta^{15}$  nitrogen signatures than did black bears, indicating greater proportions of meat and salmon in the diets of the brown bears.



# Study 10.8: Summary of Results

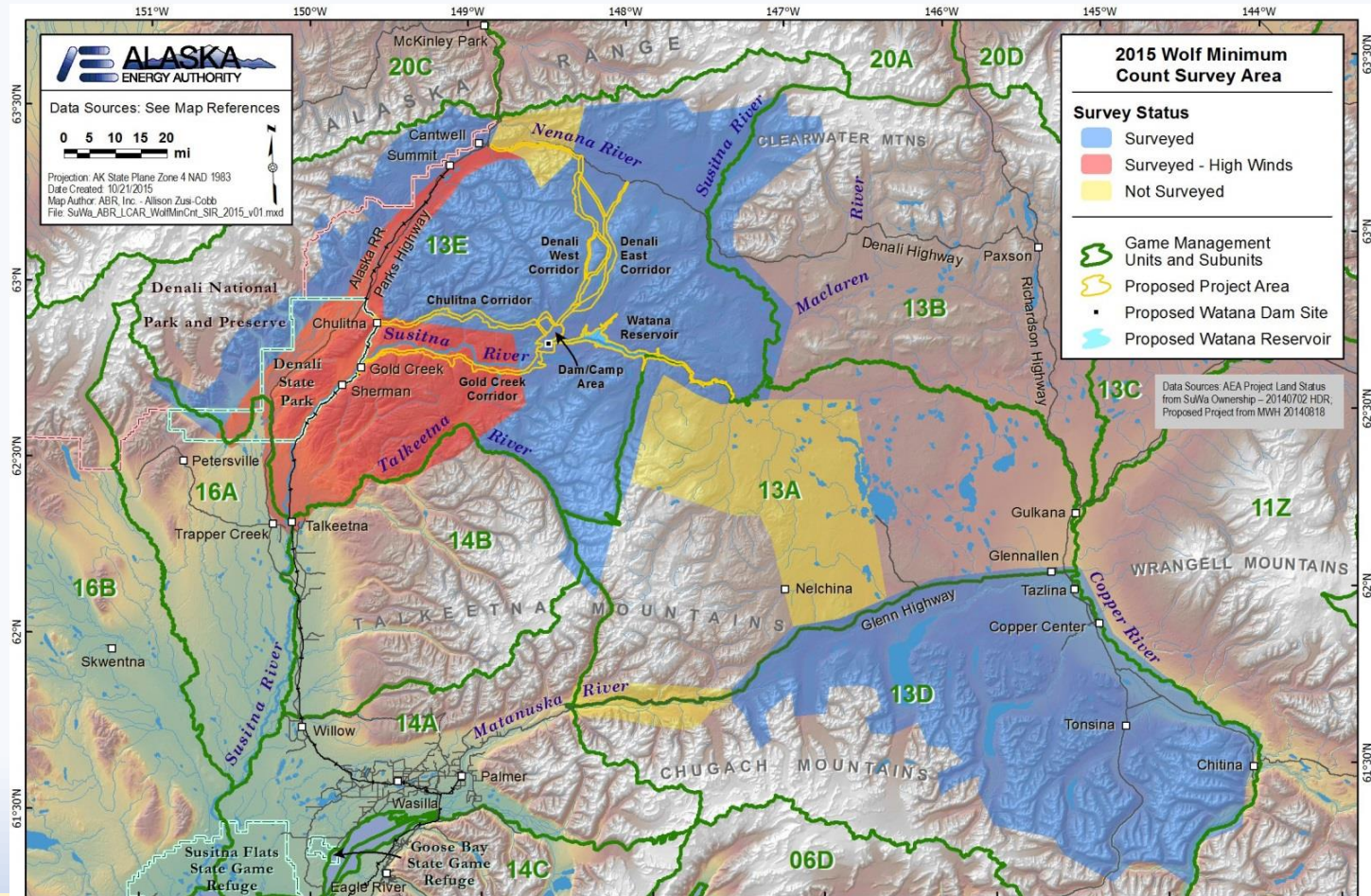
## (SIR Section 5)

- In 2015, a total of 64 modified, nonlethal, single-catch cable snares were set to snag bear hair samples in 19 different locations, for an average of 59.4 days each between July 20 and September 20.
- In 2015, 134 different hair samples (including multiple clumps of hair from some snares) were collected from 58 different snares at 18 sampling locations.



# Study 10.8: Summary of Results (SIR Section 5)

- ADF&G conducted a wolf survey in January 2015.
- Within the GMU 13E survey area, 27 wolves were observed in 6 groups. The largest pack comprised 16 animals.



## AEA Proposed Modifications to Study 10.8

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

# Steps to Complete Study 10.8

(ISR Part D, Section 8)

- Complete DNA and stable-isotope analyses of bear hair samples to generate a minimum estimate of the number of bears using salmon-spawning areas and to estimate the major components of the diets of those bears.
- Synthesize historical and current data on bear and wolf populations and habitat use for presentation in the USR.

# Licensing Participants' Comments and Proposed Modifications to Study 10.8?

- Agencies
- CIRWG members and Ahtna
- Public

