

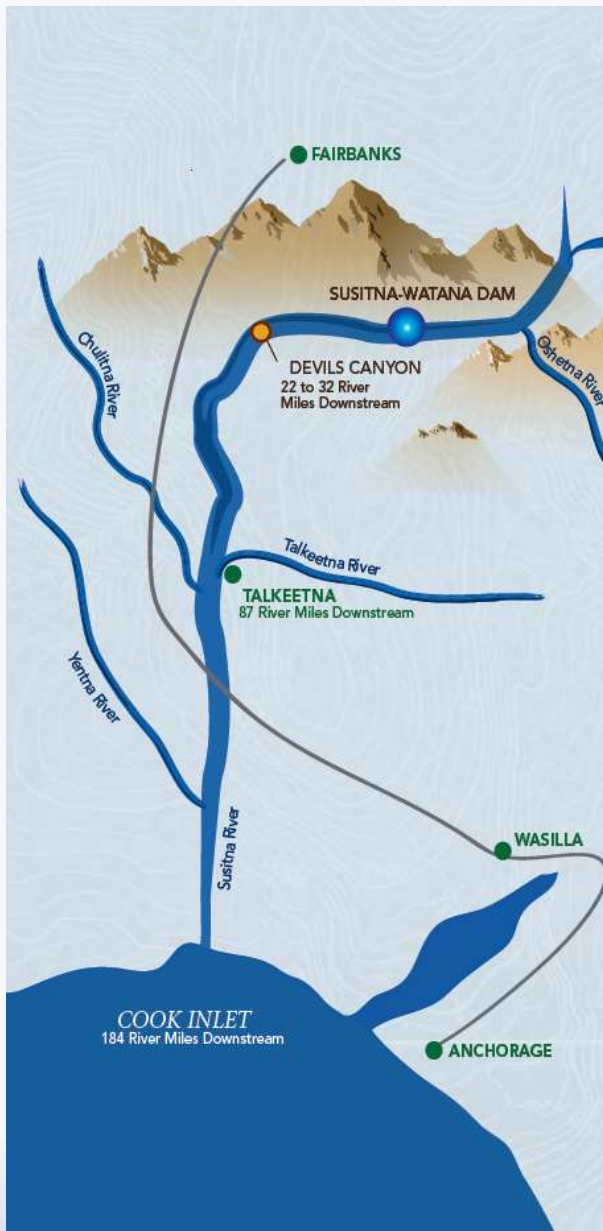
Initial Study Report Meeting

Study 10.5 Moose Distribution, Abundance, Movements, Productivity, and Survival

March 29, 2016

Prepared by

Alaska Department of Fish and Game



Study 10.5 Status

- **ISR Documents (ISR Part D Overview)**
 - Initial Study Report (Jun 3, 2014)
 - 2014-2015 Study Implementation Report (Nov 5, 2015)
- **STATUS**
 - Collared bull and cow moose with VHF and GPS collars October 2012 and March 2013.
 - Documented moose distribution, movements, productivity and survival and monitored population 2012 through March 2016.
 - Estimated moose populations above and below dam site in 2013 using GSPE.
 - Completed late-winter use surveys of reservoir inundation zone (2012, 2013 and 2015).
 - Conducted moose browse survey in 2013, to be completed spring 2016; habitat assessment ongoing.

Study 10.5 Objectives

- Document the moose population and composition in the study area.
- Assess the relative importance of the habitat in the proposed inundation zone, access/transmission corridors, and riparian area downstream from the proposed dam.
- Document the productivity and calf survival of moose using the study area.
- Document the level of late-winter use of the proposed inundation zone by adults and calves.
- Document moose browse utilization in and adjacent to the proposed inundation zone and the riparian area downstream from the proposed dam.
- Document the amount of habitat potentially available for improvement through enhancement.
- Analyze and synthesize data from historical and current studies of moose as a continuation of the 2012 big-game distribution and movements study.

Study 10.5 Components

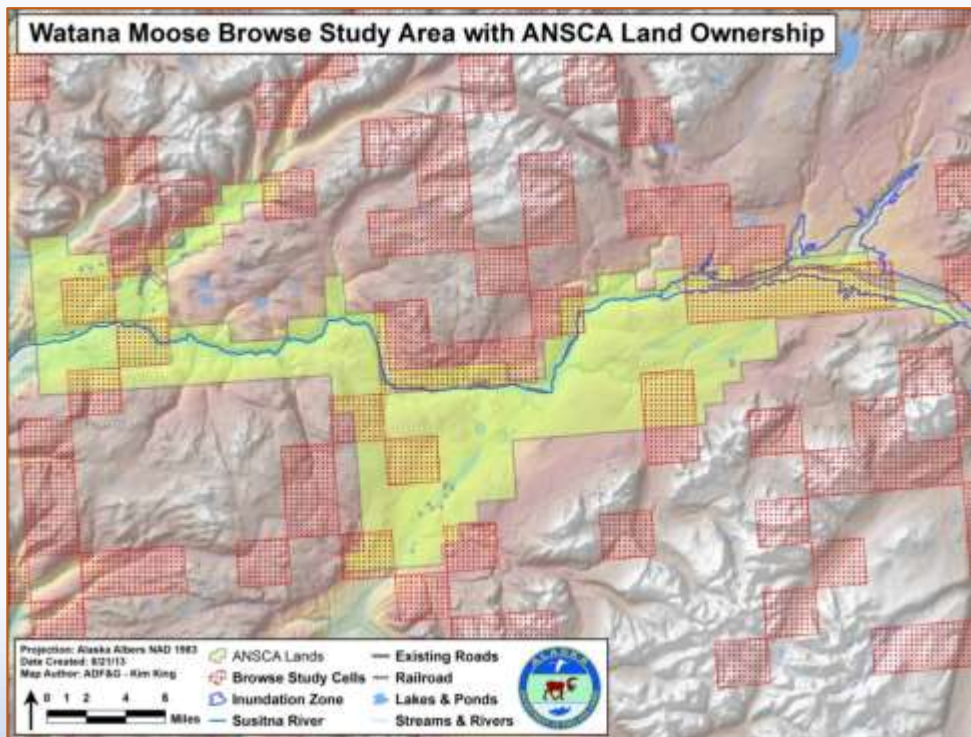
- **Moose Distribution, Movements, Productivity, and Survival**
(ISR Part A, Section 4.1, pg 2)
- **Population Monitoring** (ISR Part A, Section 4.2, pg 3)
- **Moose Browse Survey and Habitat Assessment**
(ISR Part A, Section 4.3, pg 4)



Study 10.5 Variances

Browse survey methods (RSP Section 10.5.4.3):

- Randomly chosen cells on Cook Inlet Regional Working Group (CIRWG) lands were unavailable for sampling in 2013.
- **Flexibility of the browse survey methods allowed the study team to work around those lands in 2013 and still meet the study objectives.** (ISR Part A, Section 4.3.1; Table 4.3-1)
- Fine-scale browse assessment completed in March 2016 (SIR Section 4.3.1).



Study 10.5 Variances

- **AEA suspended monthly radio-tracking flights of VHF-collared moose in winter months** (December, January, February, April) in 2014 – 2015. Because little movement occurs during these months, monitoring during this period is not needed to meet study objectives (proposed modification in ISR Part C, Section 7.1.2; SIR Section 4.1.1).
- **Monitoring of collared animals was extended one year, through March 2016.** (SIR Section 4.1.1)



Study 10.5 Variances

- **20 additional collars were deployed on moose distributed along the Middle Susitna River** between dam site and Denali State Park. (SIR Section 4.1.1)
- **Third late-winter inundation zone survey** conducted in March 2015. (SIR Section 4.2.1)
- **Conducted late-winter population survey along Middle Susitna River** in March 2015. (SIR Section 4.2.1)



Photo by Kim Jones ADF&G



Photo by Kim Jones ADF&G

Study 10.5: Summary of Results in ISR

(ISR Part A, Section 5)

100 VHF and GPS moose collars deployed in 2012 and 2013 (ISR Part A Table 5.1-1).

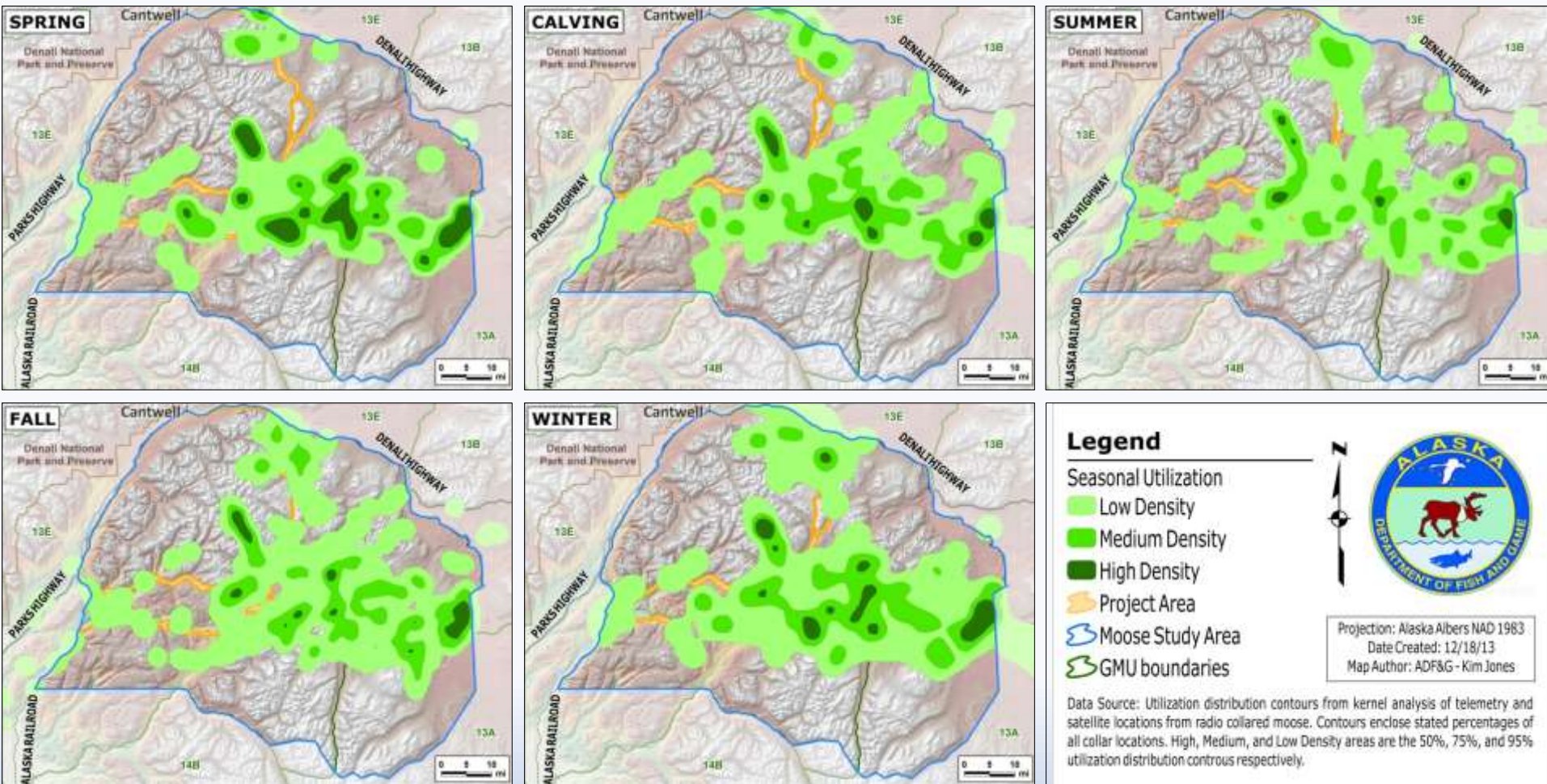


Collar Type	Sex	Oct 2012	Mar 2013	Total
VHF	Bulls	3	17	20
	Cows	7	33	40
GPS	Bulls	14	0	14
	Cows	26	0	26
TOTAL		50	50	100

Study 10.5: Summary of Results in ISR

(ISR Part A – Section 5)

VHF- and GPS-collared Moose Locations, Oct 2012–Sep 2013 (ISR Part A Figure 5.1-1)



Study 10.5: Summary of Results in ISR

(ISR Part A, Section 5)

Twinning and calf survival rates were assessed using daily twinning surveys.

60 cows located

57 calves born

44 cows with calves

13 cows with twins

73% of cows were parturient

30% of parturient cows had twins



57 calf births

25 calf deaths by June 10

27 calf deaths by July 1

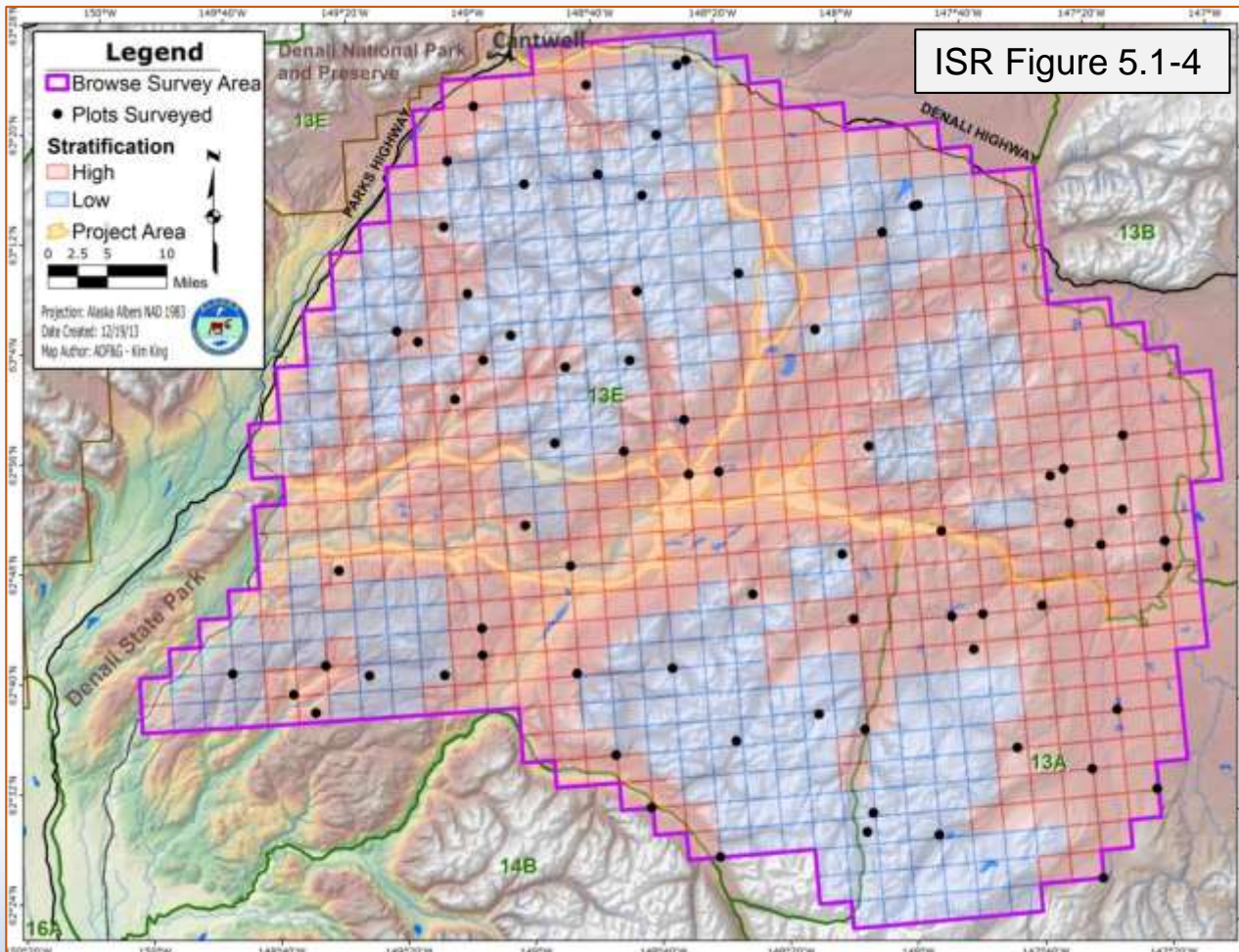
53% of calves survived to July 1

74% of calf deaths within 1st week of observation

Study 10.5: Summary of Results in ISR

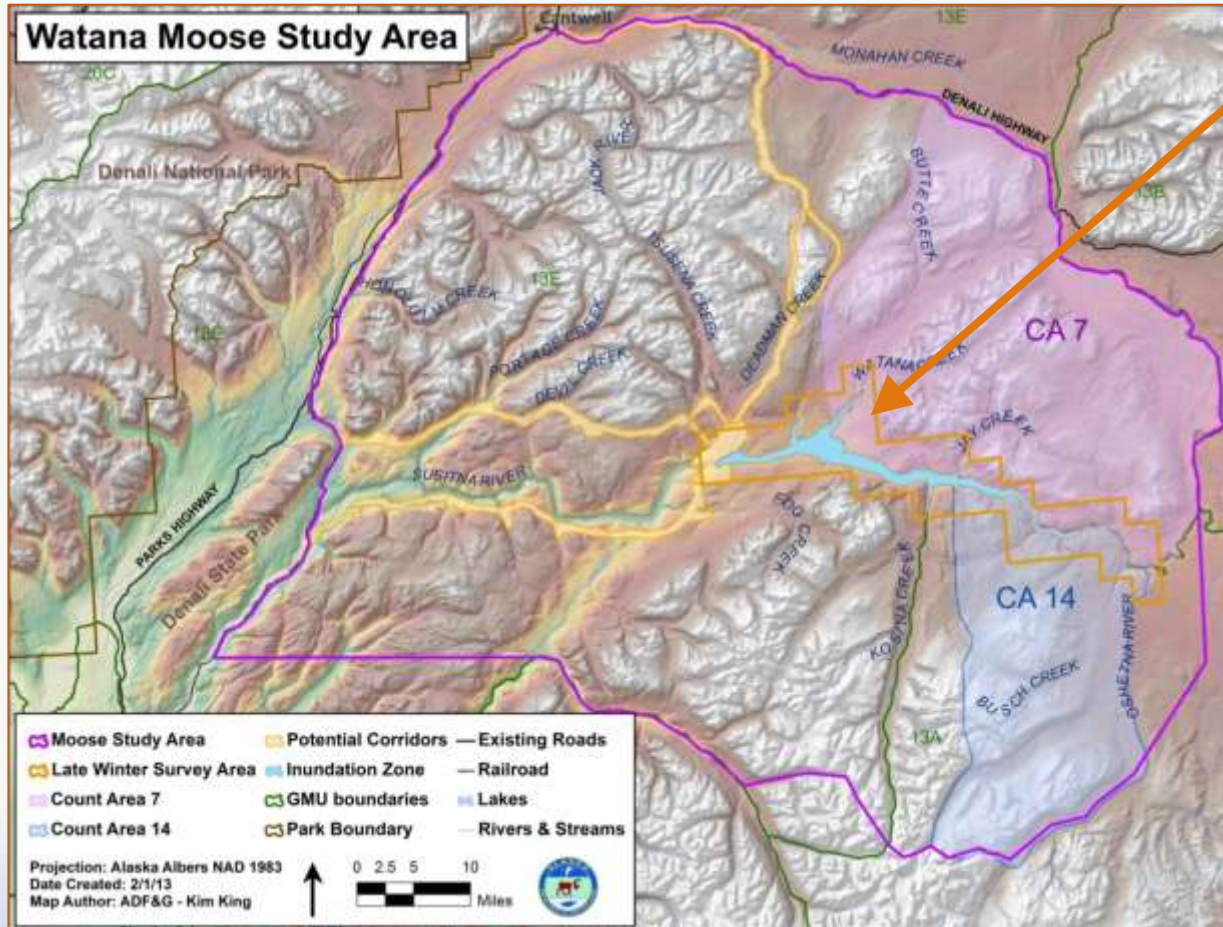
(ISR Part A, Section 5)

A browse survey was conducted in the study area in March 2013.



Study 10.5: Summary of Results since ISR

Late-winter surveys were conducted in the proposed Watana Reservoir inundation zone in March 2012 and 2013.



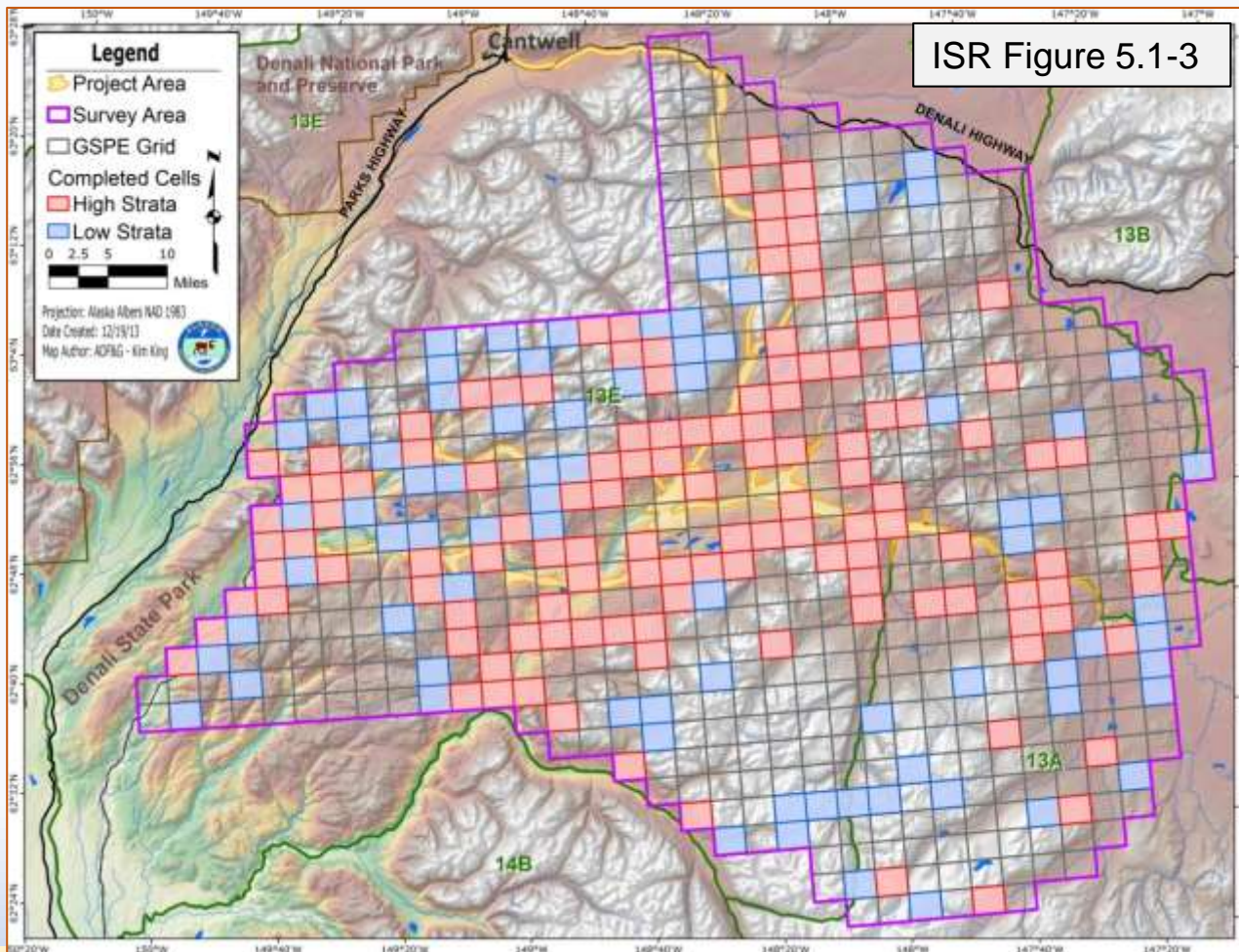
Survey Results

2012: 481 ± 26
(1.97 moose/mi²)

2013: 502 ± 26
(2.06 moose/mi²)

Study 10.5: Summary of Results since ISR

A GeoSpatial Population Estimator (GSPE) survey was conducted in the study area in November 2013.



Survey Results

3,683 ± 274 with
SCF = 1.25

(0.95 moose/mi²)



AEA's Proposed Modifications to Study 10.5

In addition to the implemented variances, ADF&G proposed and AEA supported the following modification (SIR Section 7.1):

- Continuation of telemetry and GPS collar monitoring through March 2016.
- Second late-winter survey in Middle Susitna River in March 2016.



Steps to Complete Study 10.5

(ISR Part D, Section 8)

- Continue monitoring moose distribution, movements, productivity, and survival through March 2016.
- Late-winter inundation zone and downstream surveys in March 2016.
- Fine-scale browse survey in March 2016 and habitat assessment.



Photo by Kim Jones ADF&G



Photo by Kim Jones ADF&G

Licensing Participants' Comments and Proposed Modifications to Study 10.5?

- Agencies
- CIRWG members and Ahtna
- Public