Susitna-Watana Hydroelectric Project Terrestrial Wildlife Resources ADF&G Project Updates
September 2013

Mark Burch and Kimberly King Jones

The Wildlife Study Plans will provide baseline data for assessments of potential Project impacts.

ADF&G is involved in six of the Terrestrial Wildlife Studies in the Susitna-Watana Project vicinity.

- **Moose**

- **Caribou**

- **Dall's Sheep**

- **Wolverines**

- **Large Carnivores***

- **Ptarmigan**

ADF&G is monitoring the distribution, abundance, productivity, and survival of **moose** in the Project vicinity.
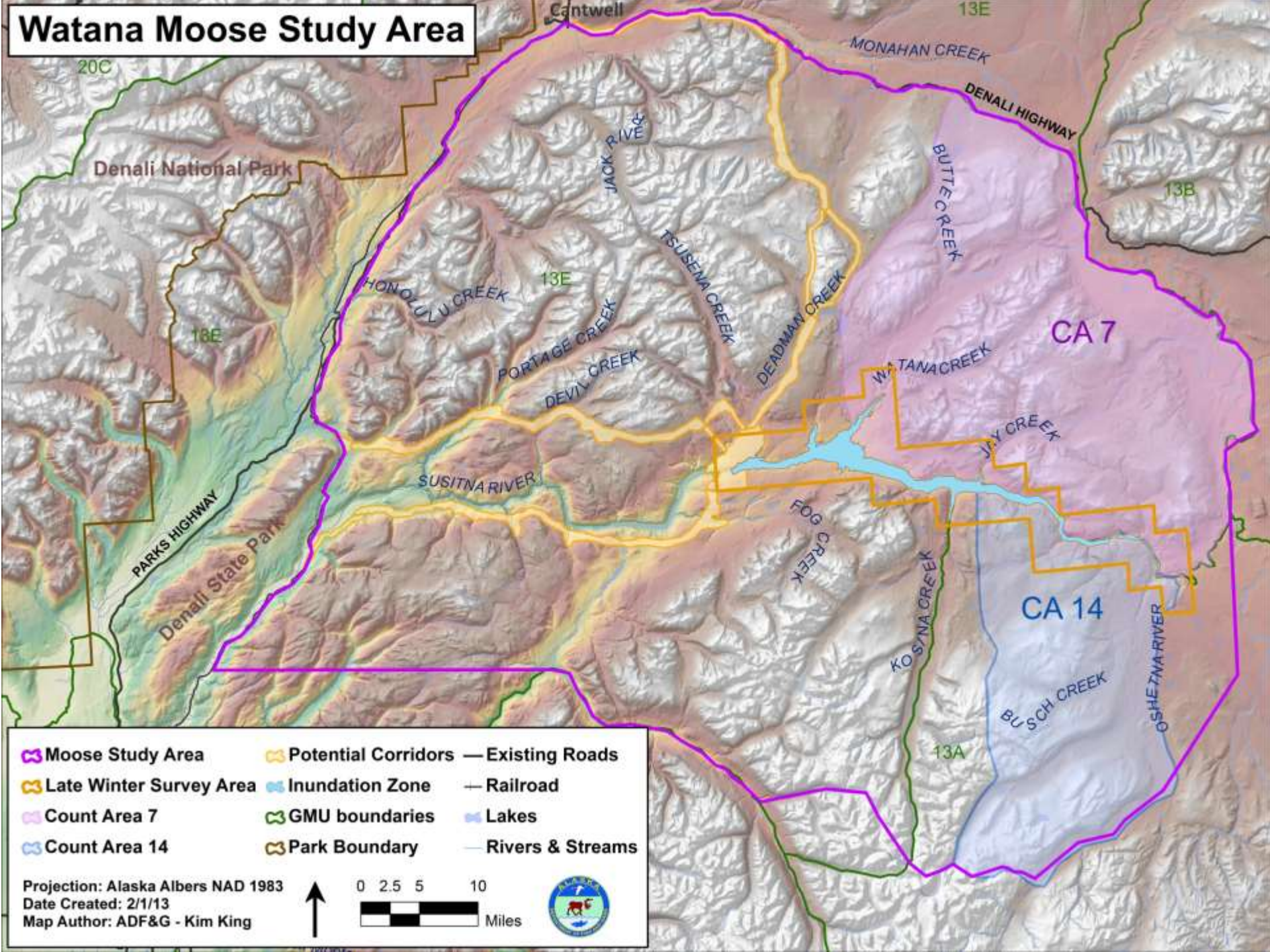
This study involves:

- Monitoring ARGOS Satellite-linked GPS collars
- Monthly Telemetry of VHF Radio collars
- A GeoSpatial Population Estimation (GSPE) Survey
- Traditional Count Area Surveys
- Late Winter Inundation Surveys
- Twinning/Calving Surveys
- Browse Surveys

Photo by Kim King ADF&G

Watana Moose Study Area

20C

Denali National Park

13E

18E

PARKS HIGHWAY

Denali State Park

SUSITNA RIVER

HONOLULU CREEK

PORTAGE CREEK

DEVIL CREEK

JACK RIVER

TSUSENA CREEK

DEADMAN CREEK

Cantwell

13E

MONAHAN CREEK

DENALI HIGHWAY

13B

BUTTE CREEK

WATANA CREEK

CA 7

JAY CREEK

FOG CREEK

KOSINA CREEK

OSHETNA RIVER

BUSCH CREEK

CA 14

13A

Legend

Moose Study Area	**Potential Corridors**	— **Existing Roads**
Late Winter Survey Area	**Inundation Zone**	— **Railroad**
Count Area 7	**GMU boundaries**	**Lakes**
Count Area 14	**Park Boundary**	**Rivers & Streams**

Projection: Alaska Albers NAD 1983
Date Created: 2/1/13
Map Author: ADF&G - Kim King

0 2.5 5   10
Miles
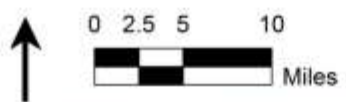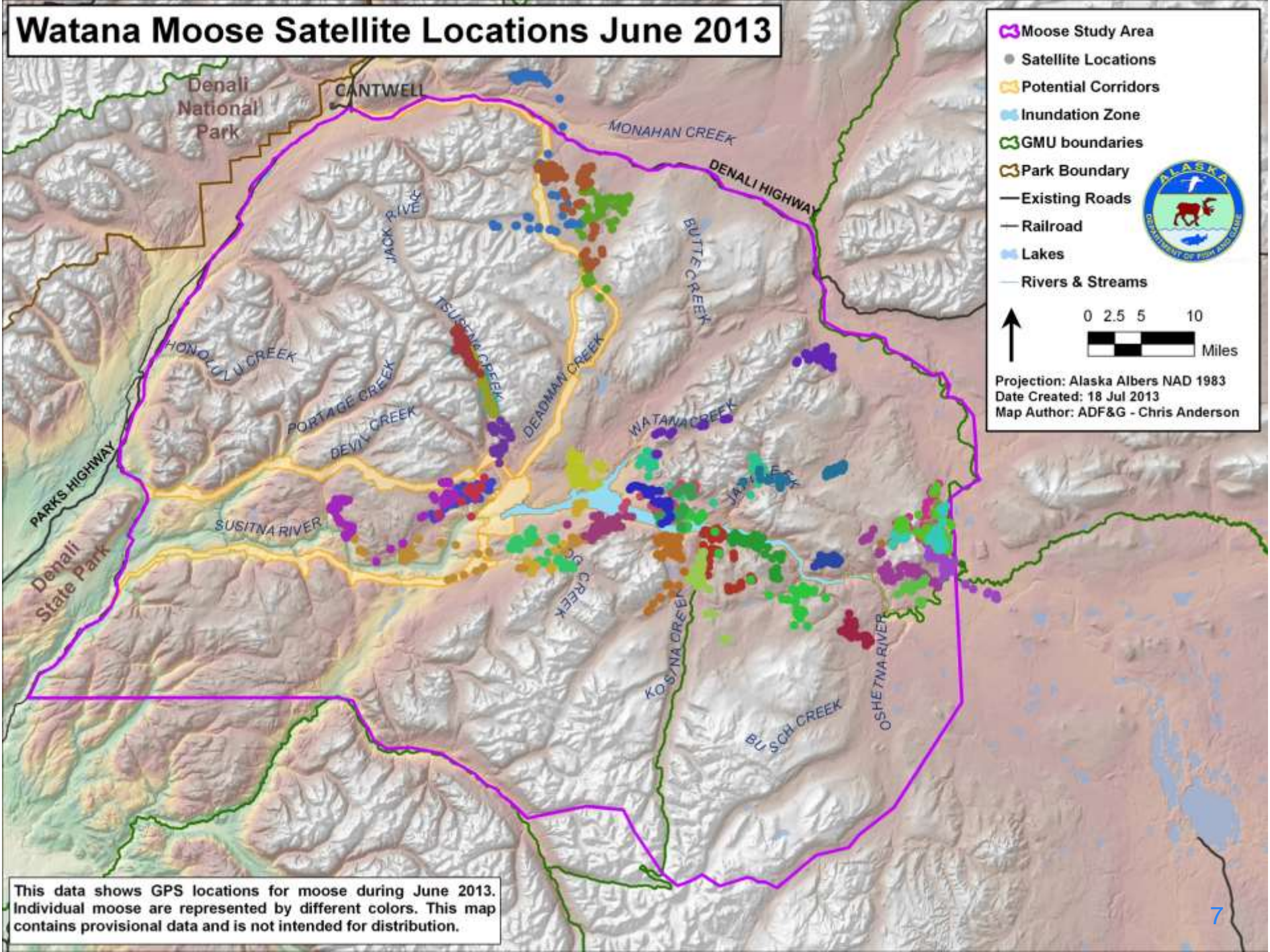
100 Moose VHF and GPS collars have been deployed in the study area.

Photo by Kim King ADF&G

Photo by Kim Jones ADF&G

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

Watana Moose Satellite Locations June 2013

Legend:
- Moose Study Area
- Satellite Locations
- Potential Corridors
- Inundation Zone
- GMU boundaries
- Park Boundary
- Existing Roads
- Railroad
- Lakes
- Rivers & Streams

0 2.5 5 10 Miles

Projection: Alaska Albers NAD 1983
Date Created: 18 Jul 2013
Map Author: ADF&G - Chris Anderson

Denali National Park

CANTWELL

MONAHAN CREEK

DENALI HIGHWAY

JACK RIVER

BUTTE CREEK

TSUSENA CREEK

HONOLULU CREEK

PORTAGE CREEK

DEVIL CREEK

DEADMAN CREEK

WATANA CREEK

PARKS HIGHWAY

SUSITNA RIVER

Denali State Park

JAY CREEK

KOSINA CREEK

OSHETNA RIVER

BUSCH CREEK

This data shows GPS locations for moose during June 2013. Individual moose are represented by different colors. This map contains provisional data and is not intended for distribution.

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ADF&G conducted moose twinning surveys May-June to assess productivity and calf survival.

Photo by Kim Jones ADF&G

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

Photo by Kim Jones ADF&G

57 calf births
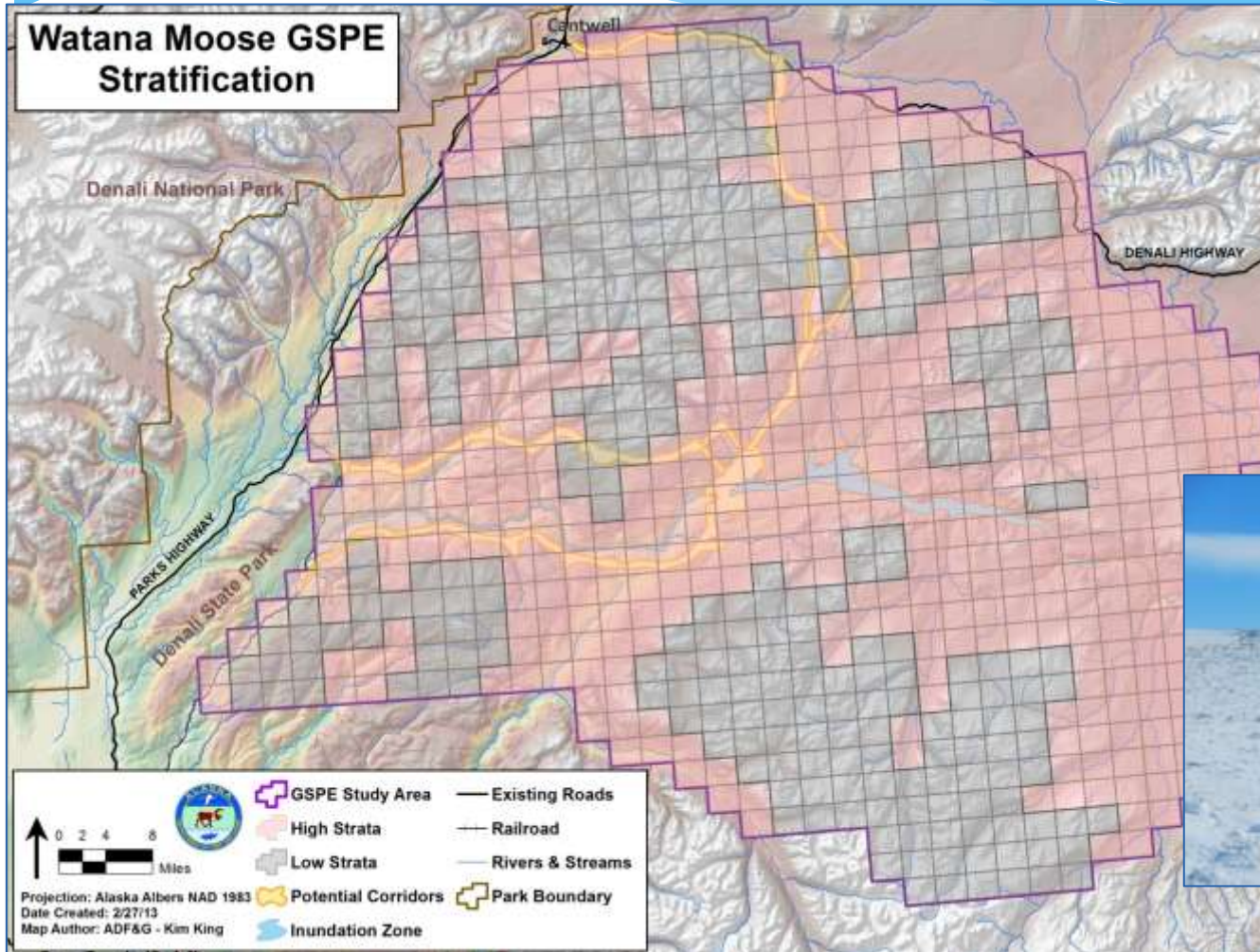
25 calf deaths by June 10

27 calf deaths by July 1
_____
53% of calves survived to July 1

74% of calf deaths within 1st week of observation

A moose GeoSpatial Population Estimation Survey is planned for November 2013 or March 2014.

Watana Moose GSPE Stratification

Photo by Kim Jones ADF&G

ADF&G conducted late winter surveys in the proposed inundation zone March 2012 and 2013.
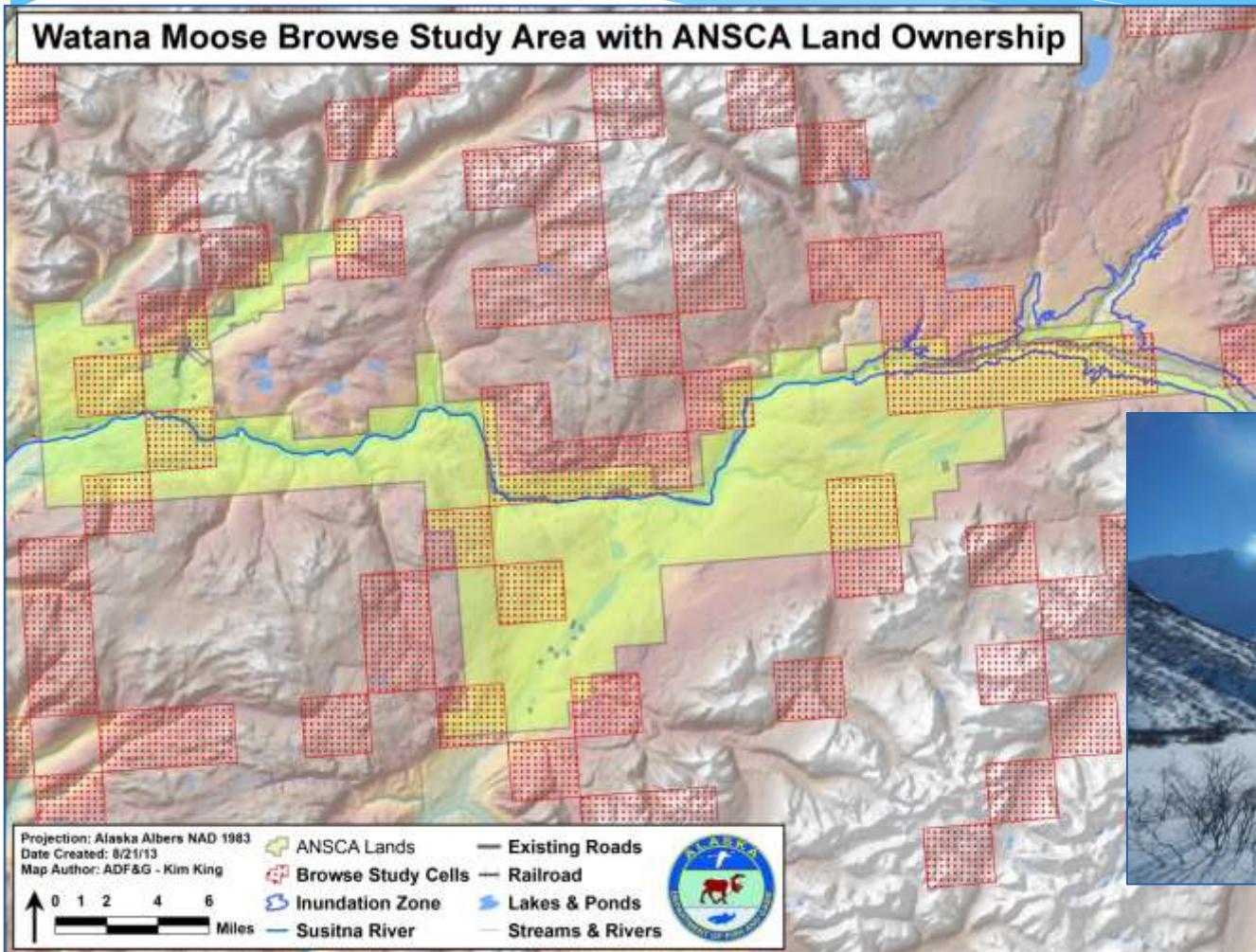
427 moose were counted in 2012 & 2013

March 2012 Late Winter Survey

March 2013 Late Winter Survey

Moose Locations
Late Winter Study Area
Inundation Zone
Lakes
Rivers & Streams
0 2 4 Miles
Projection: Alaska Albers NAD 1983
Date Created: 13 Aug 2013
Map Author: ADF&G - Chris Anderson
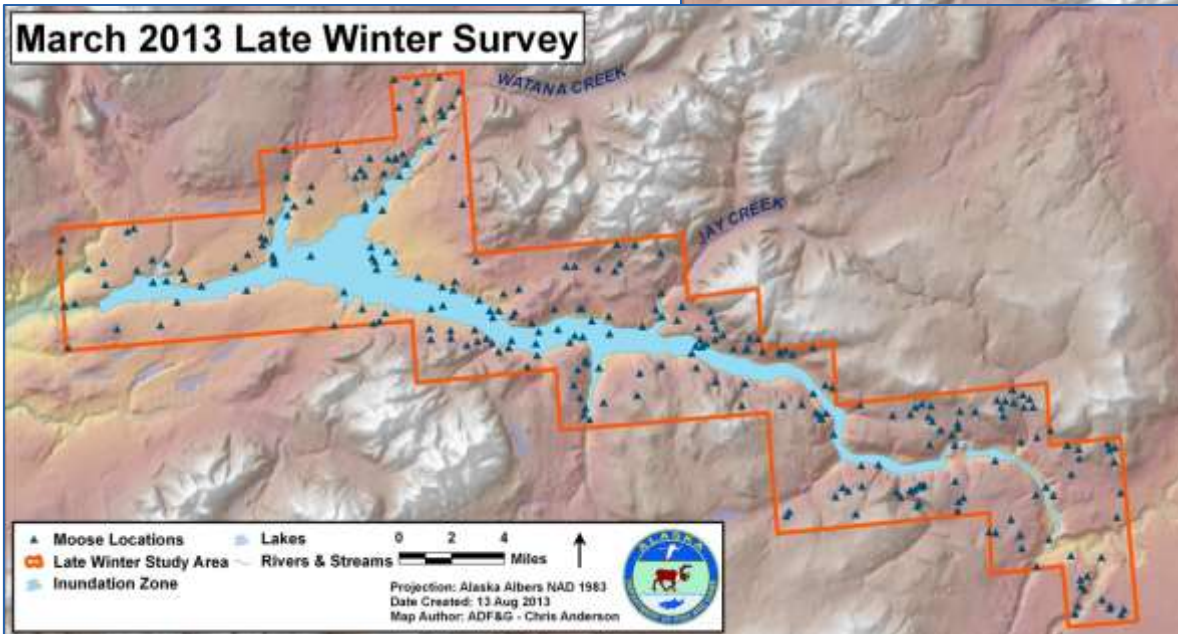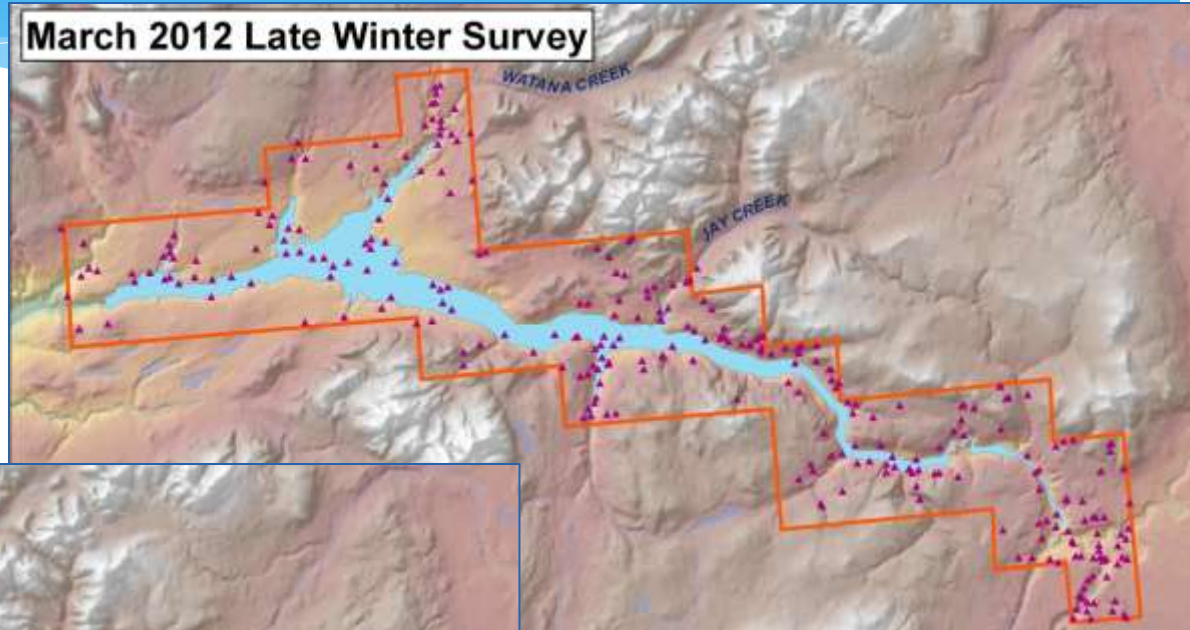
Photo by Kim Jones ADF&G

March 2013 Browse Surveys will be used to calculate the % biomass consumed by moose in the Project vicinity.
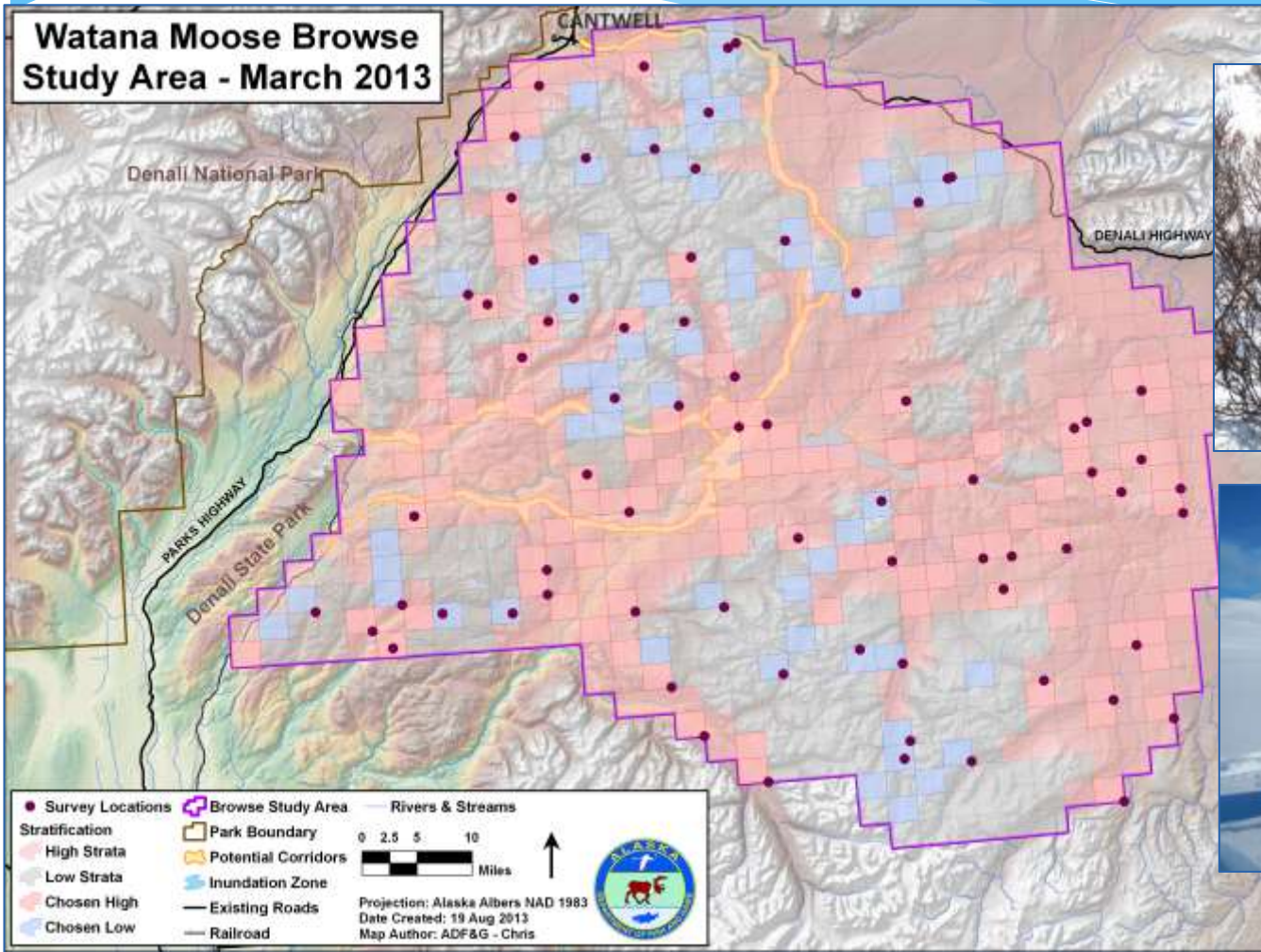
We are hoping to obtain land-access permission for Browse Surveys on ANSCA corporation lands for the March 2014 Browse Surveys.

Watana Moose Browse Study Area with ANSCA Land Ownership

Projection: Alaska Albers NAD 1983
Date Created: 8/21/13
Map Author: ADF&G - Kim King

0 1 2   4   6   Miles

ANSCA Lands — Existing Roads
Browse Study Cells — Railroad
Inundation Zone — Lakes & Ponds
Susitna River — Streams & Rivers

ADF&G is monitoring the distribution, abundance, movements, and productivity of Nelchina and Delta **caribou** in the Project vicinity.

This study involves:

- Monthly Telemetry of VHF Radio collars

- Monitoring ARGOS Satellite-linked GPS collars

- Calving Surveys

Photo by Kim Jones ADF&G

Photo by Kim Jones ADF&G

Watana Caribou Study Area

Legend:
- Caribou Study Area
- Inundation Zone
- Proposed Corridors
- Park Boundary
- GMU boundaries
- Existing Roads
- Railroad
- Rivers & Streams

0 2 4 8 Miles

Projection: Alaska Albers NAD 1983
Date Created: 2/1/13
Map Author: ADF&G - Kim King

Cantwell

13E
20A
13B
13A
14B
16A

MONAHAN CREEK
DENALI HIGHWAY
JACK RIVER
TSUSENA CREEK
DEADMAN CREEK
BUTTE CREEK
WATANA CREEK
JAY CREEK
HONOLULU CREEK
PORTAGE CREEK
DEVIL CREEK
SUSITNA RIVER
FOG CREEK
KOSINA CREEK
BUSCH CREEK
OSHETNA RIVER
PARKS HIGHWAY
Denali National Park
Denali State Park

14
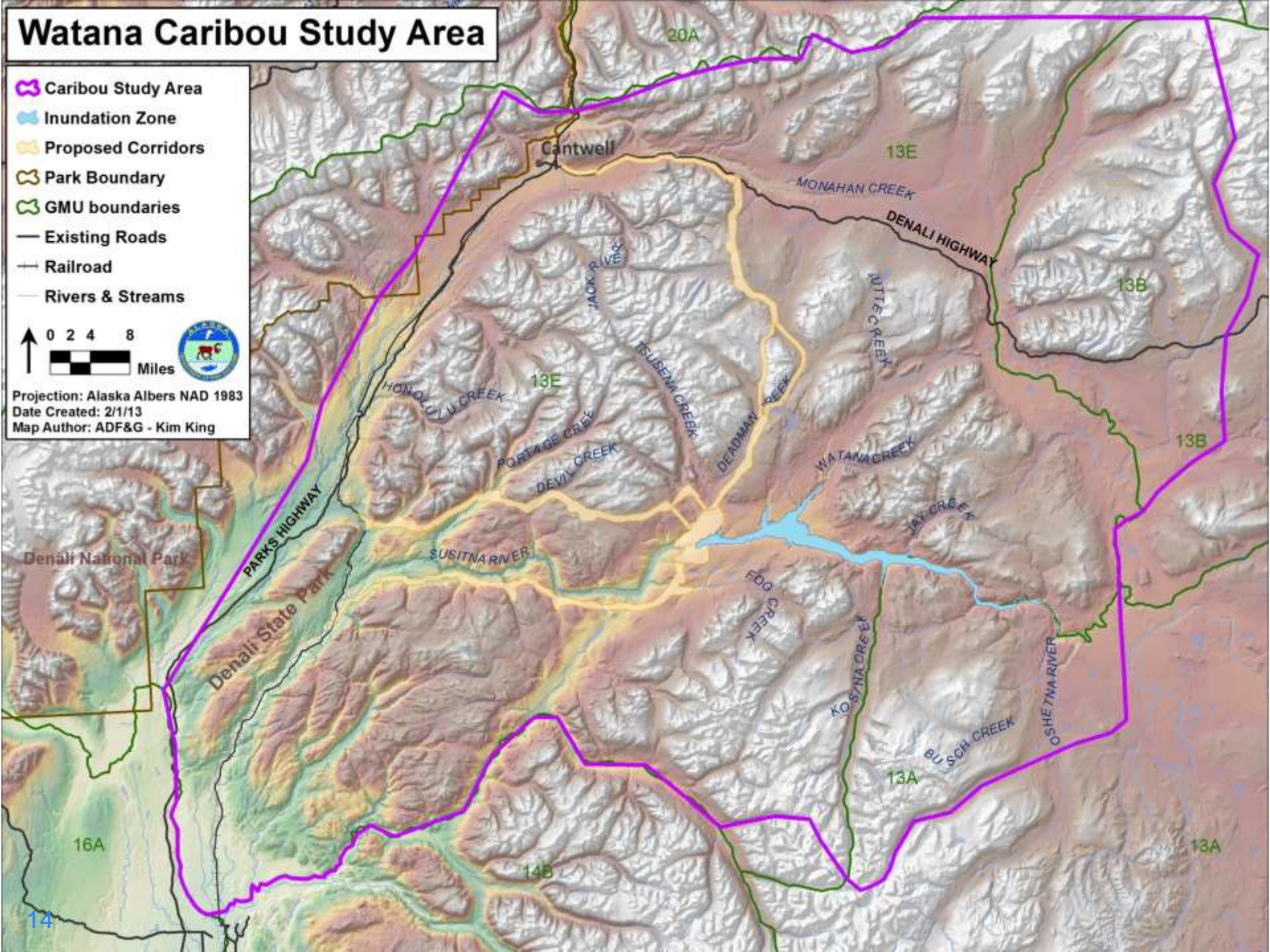
Susitna-Watana Hydro Caribou Study Area and Herd Ranges
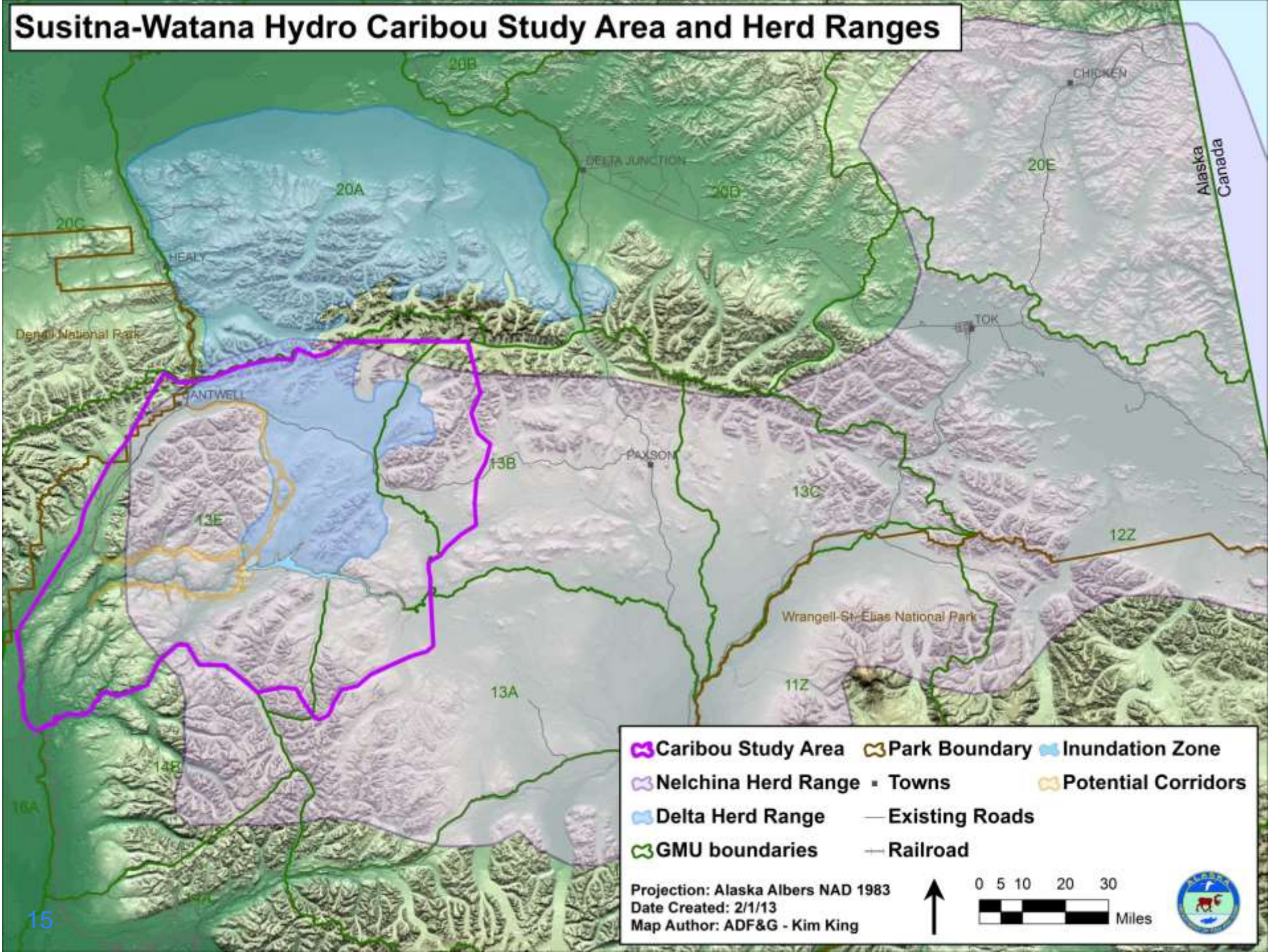
Legend:

- Caribou Study Area
- Nelchina Herd Range
- Delta Herd Range
- GMU boundaries
- Park Boundary
- Towns
- Existing Roads
- Railroad
- Inundation Zone
- Potential Corridors

Projection: Alaska Albers NAD 1983
Date Created: 2/1/13
Map Author: ADF&G - Kim King

0 5 10 20 30 Miles

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Caribou Captures 2012					
Collar Type	Sex	Apr 2012	Oct 2012	Apr 2013	Total
VHF	Bulls	15	15	9	39
GPS	Bulls	8	10	9	27
	Cows	0	42	1	43
TOTAL		23	67	19	109

Photo by Kim Jones ADF&G

Photo by Kim King ADF&G

Photo by Kim Jones ADF&G

Caribou Radiotracking Flights June-July 2013

Dates	Season	# Caribou Collared	Total Located	# in Study Area	# in Rest of Range	Flight Area/Plan
June 3-6	summer	174 cows	107	50	57	study & calving areas (cows w/ calves only)
June 11-13	summer	174 cows	108	65	43	study & calving areas (cows w/ calves only)
June 19-21	summer	214 total	123	59	64	study & calving areas (VHF cows and bulls)
June 25-30	summer	174 cows	36	16	20	study & calving areas (cows w/ calves only)
July 1-2	summer	165 VHF	9	9	0	study & calving areas (cows w/ calves only)
July 15-16	summer	165 VHF	95	91	4	study & calving areas (VHF cows and bulls)

ADF&G conducted caribou calving surveys May-June to assess productivity and calf survival.

128	cows located
84	cows parturient
39	calves lost
66%	of cows were parturient
46%	of calves lost
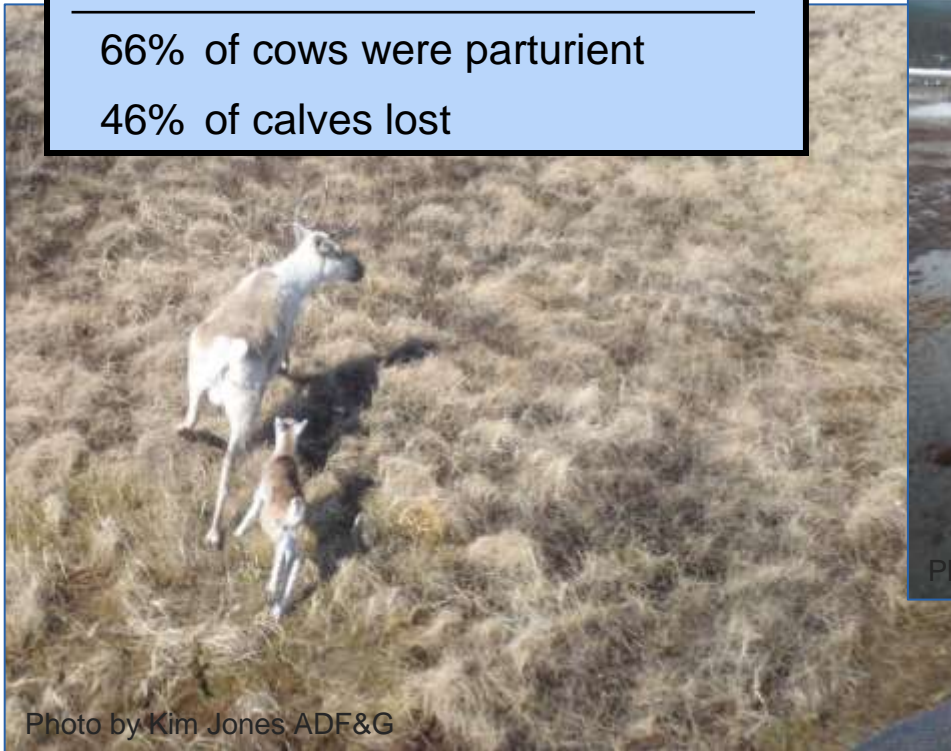
Photo by Kim Jones ADF&G

Photo by Kim Jones ADF&G

Watana Caribou Satellite Locations June 2013

Legend:
- Satellite Locations
- Caribou Study Area
- GMU boundaries
- Park Boundary
- Existing Roads
- Railroad
- Inundation Zone
- Potential Corridors

NCH Spring Migration was delayed this year (peak calving is typically May 25-30)
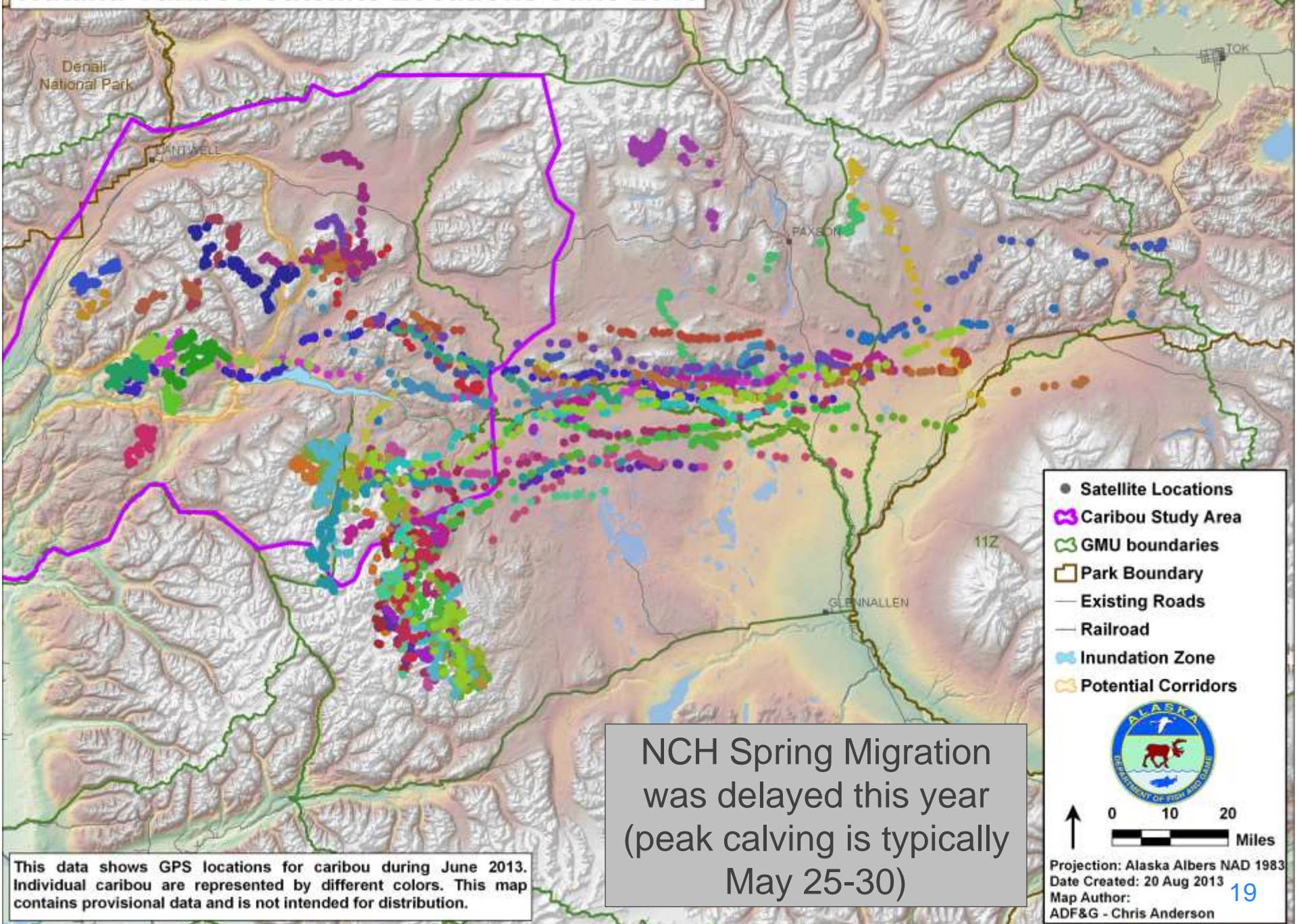
This data shows GPS locations for caribou during June 2013. Individual caribou are represented by different colors. This map contains provisional data and is not intended for distribution.

0   10   20
Miles

Projection: Alaska Albers NAD 1983
Date Created: 20 Aug 2013
Map Author:
ADF&G - Chris Anderson

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Watana Caribou Calving Locations - May 2012 & May 2013

Legend:
- ● 30 May 2012
- ▲ 30 May 2013
- Caribou Study Area
- GMU boundaries
- Park Boundary
- — Existing Roads
- — Railroad
- Inundation Zone
- Potential Corridors

NCH Spring Migration was delayed this year (peak calving is typically May 25-30)
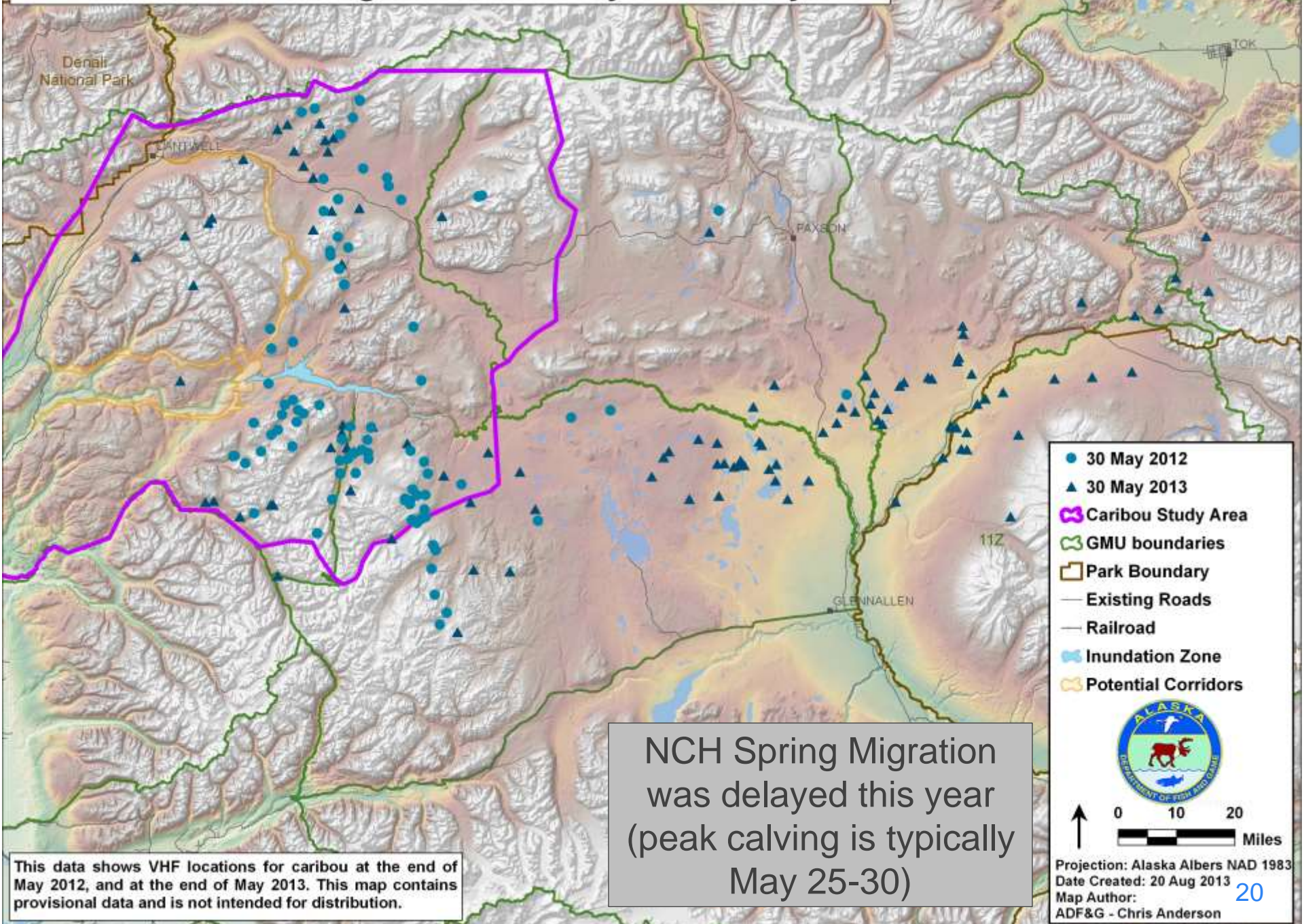
This data shows VHF locations for caribou at the end of May 2012, and at the end of May 2013. This map contains provisional data and is not intended for distribution.

Projection: Alaska Albers NAD 1983
Date Created: 20 Aug 2013
Map Author:
ADF&G - Chris Anderson

0 10 20 Miles

ADF&G flew a survey of all suitable **Dall's Sheep** habitat in the Project vicinity this summer.

Photo by Kim Jones ADF&G
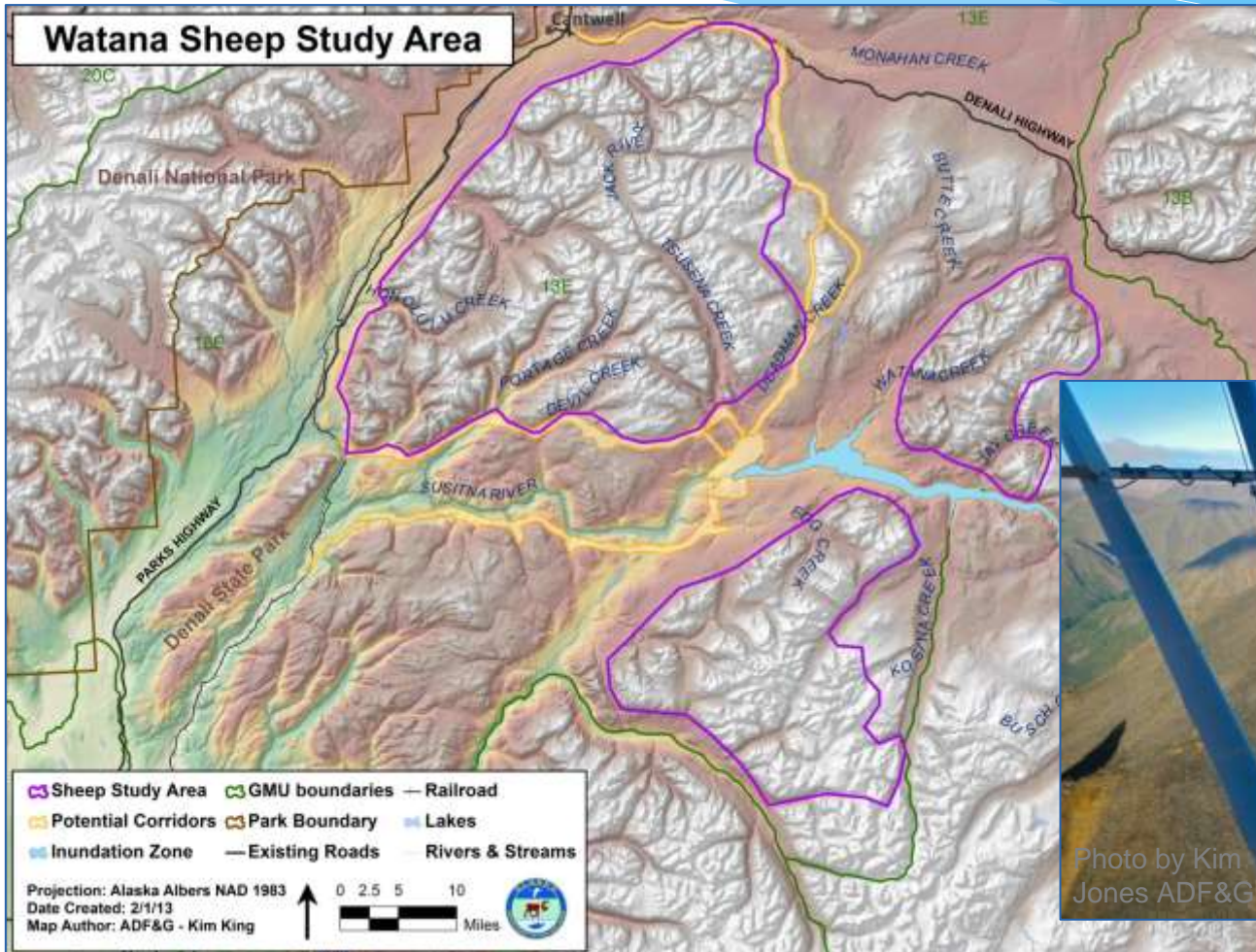
ADF&G flew a survey of all suitable **Dall's Sheep** habitat in the Project vicinity this summer.

Sheep Surveys - July 2013
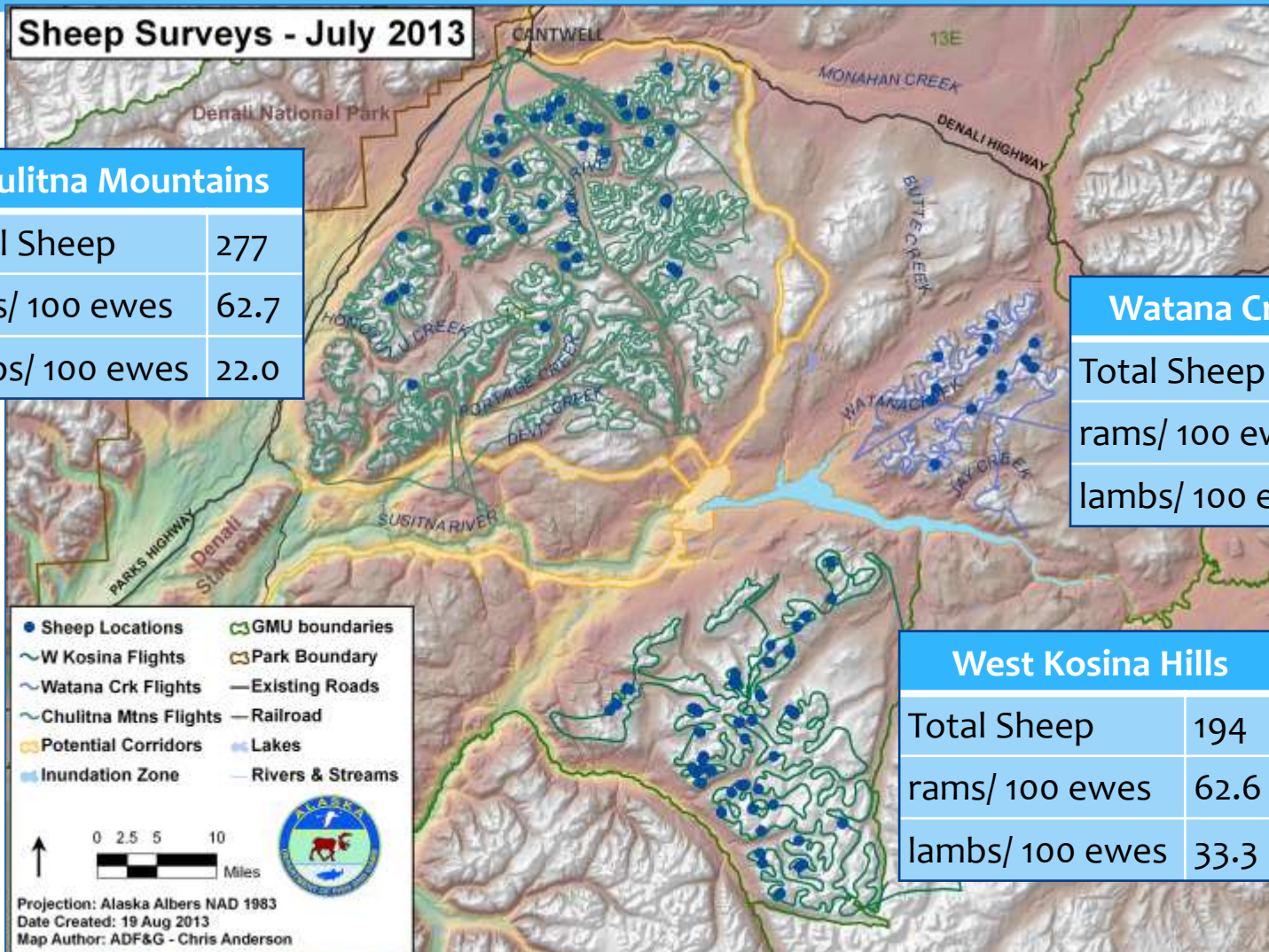
Chulitna Mountains

Total Sheep	277
rams/ 100 ewes	62.7
lambs/ 100 ewes	22.0

Watana Creek Hills

Total Sheep	41
rams/ 100 ewes	63.6
lambs/ 100 ewes	22.7

West Kosina Hills

Total Sheep	194
rams/ 100 ewes	62.6
lambs/ 100 ewes	33.3

Legend:
- Sheep Locations
- ~ W Kosina Flights
- ~ Watana Crk Flights
- ~ Chulitna Mtns Flights
- Potential Corridors
- Inundation Zone
- GMU boundaries
- Park Boundary
- Existing Roads
- Railroad
- Lakes
- Rivers & Streams

0 2.5 5 10 Miles

Projection: Alaska Albers NAD 1983
Date Created: 19 Aug 2013
Map Author: ADF&G - Chris Anderson

ADF&G conducted Occupancy Modeling (OM) on **wolverines** in 2013. We expect to do both Sample Unit Probability Estimator (SUPE) and OM in 2014
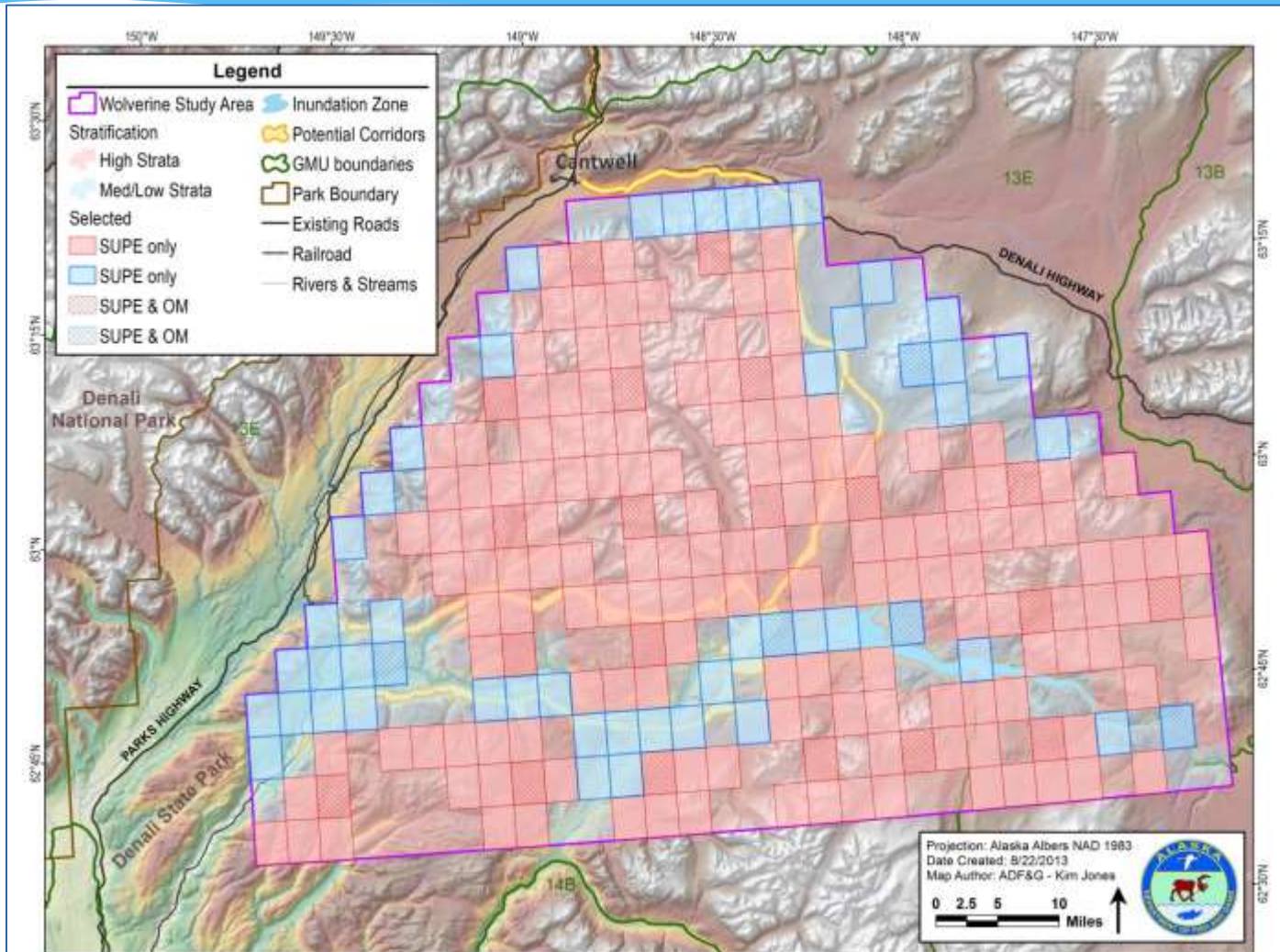
Initial Draft Results of Wolverine Occupancy Modeling (OM).

- Survey Dates: April 11 & 15 2013

- Tracks in 23/25 Sample Units
    (23/25 high, 5/5 Low)

- Uncorrected Occupancy .92

- Density estimate 5.5 wolverines/1000km2
    (CI = 4.5-7.6)

Optimal conditions like this developed late in 2013.

Photo by Becky Schwanke ADF&G

ADFG has **black and brown bear** distance sampling data available for GMU 16, and parts of GMU 13 from ADF&G 2000-2004 data.
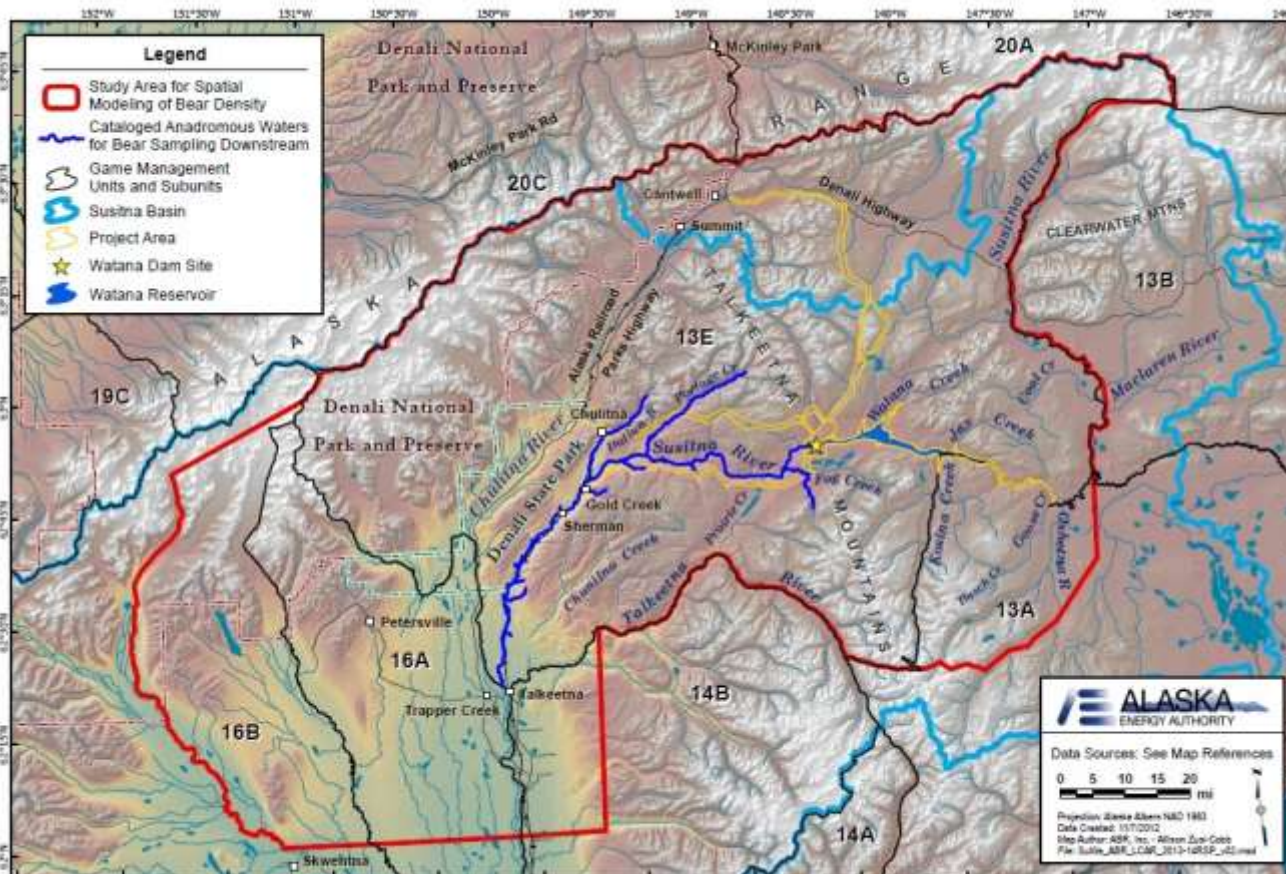
ADF&G is preparing transect segmented database for spatial modeling of **bear** populations.
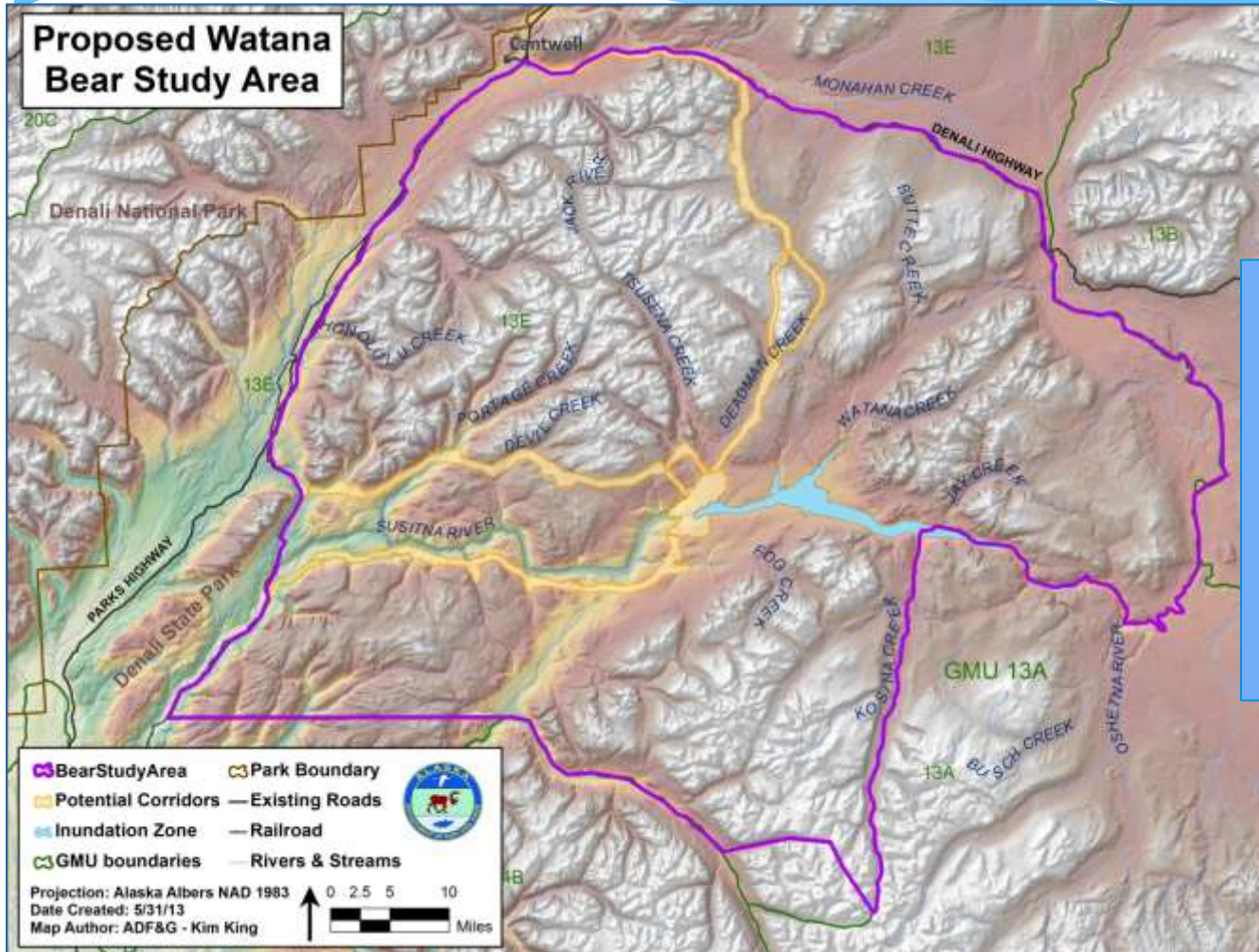
GIS data preparation for spatial modeling is taking more time than anticipated.

Have fit two-piece normal distance model to the black bear data set.
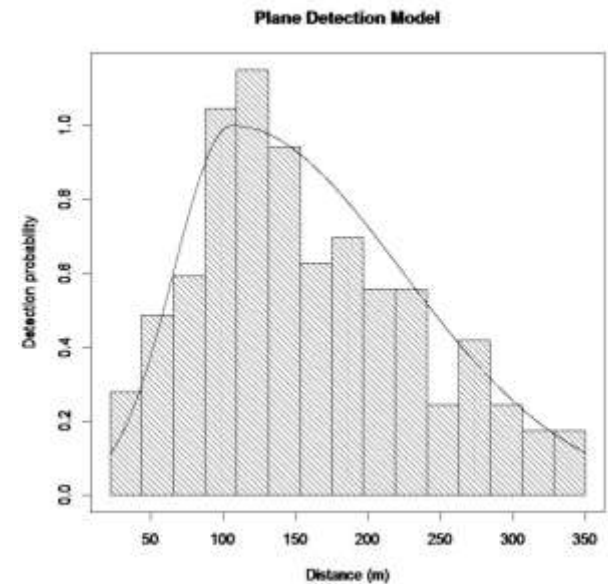
Example only: 16B data

Logistic model corrects for imperfect detection at peak detection.
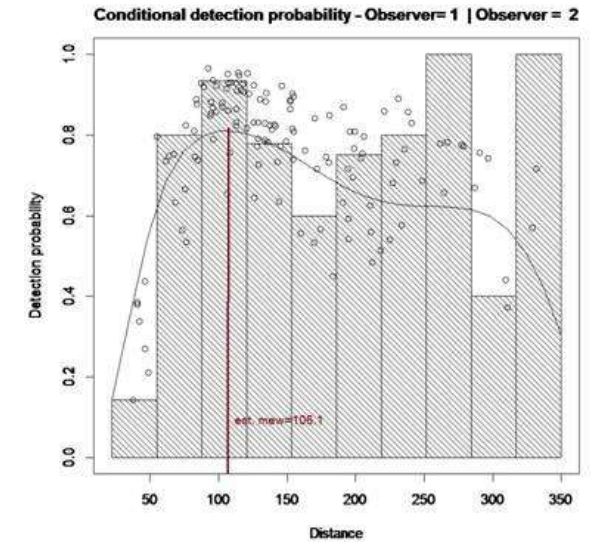
Example only: 16B data

31 Adult **Ptarmigan** have been captured in the study area to date.
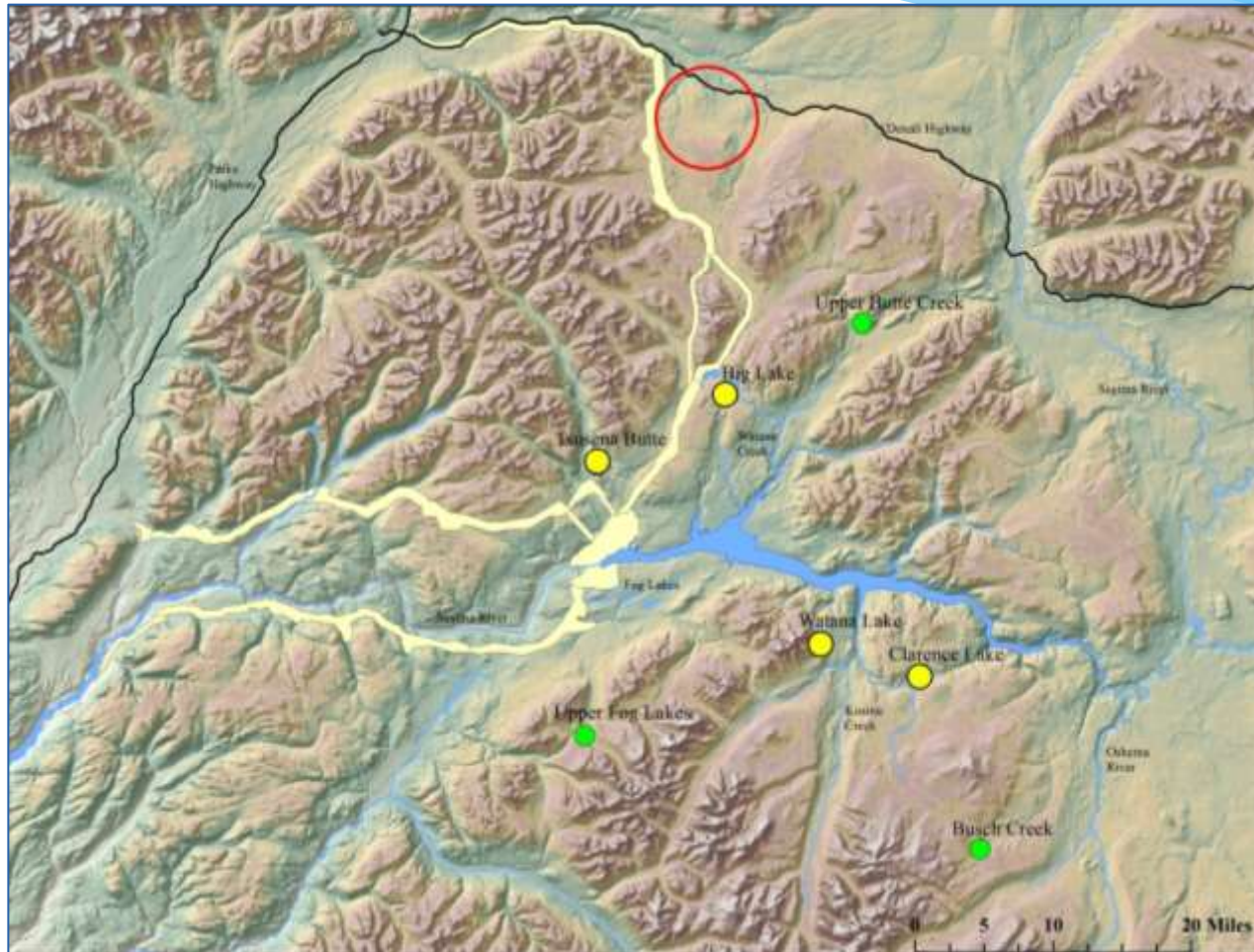
Relocation telemetry flights took place in June and July 2013 and are planned to occur monthly.
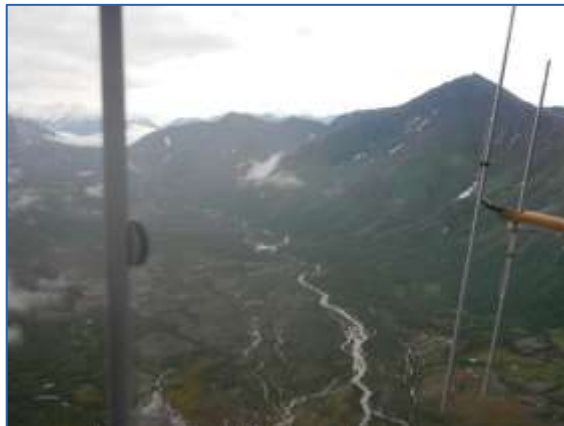
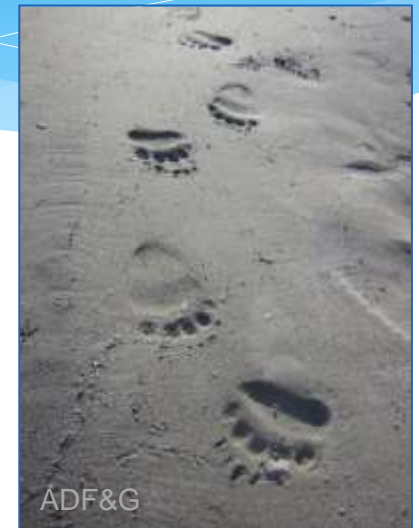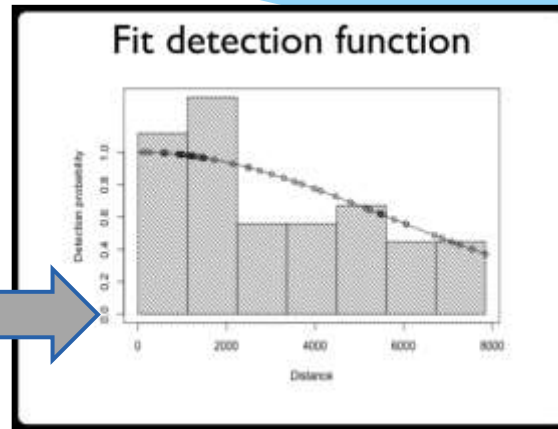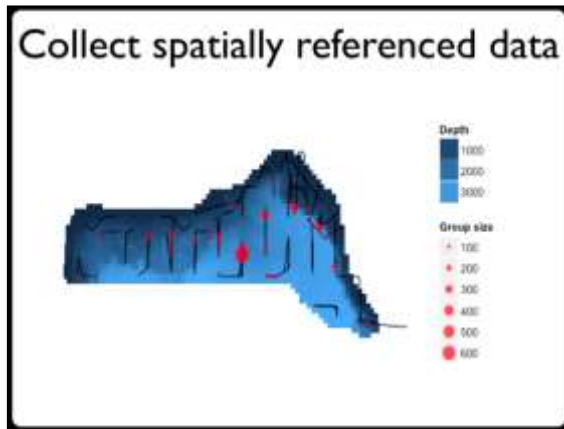# Planning a capture effort in early August at Upper Fog and Watana Lakes.
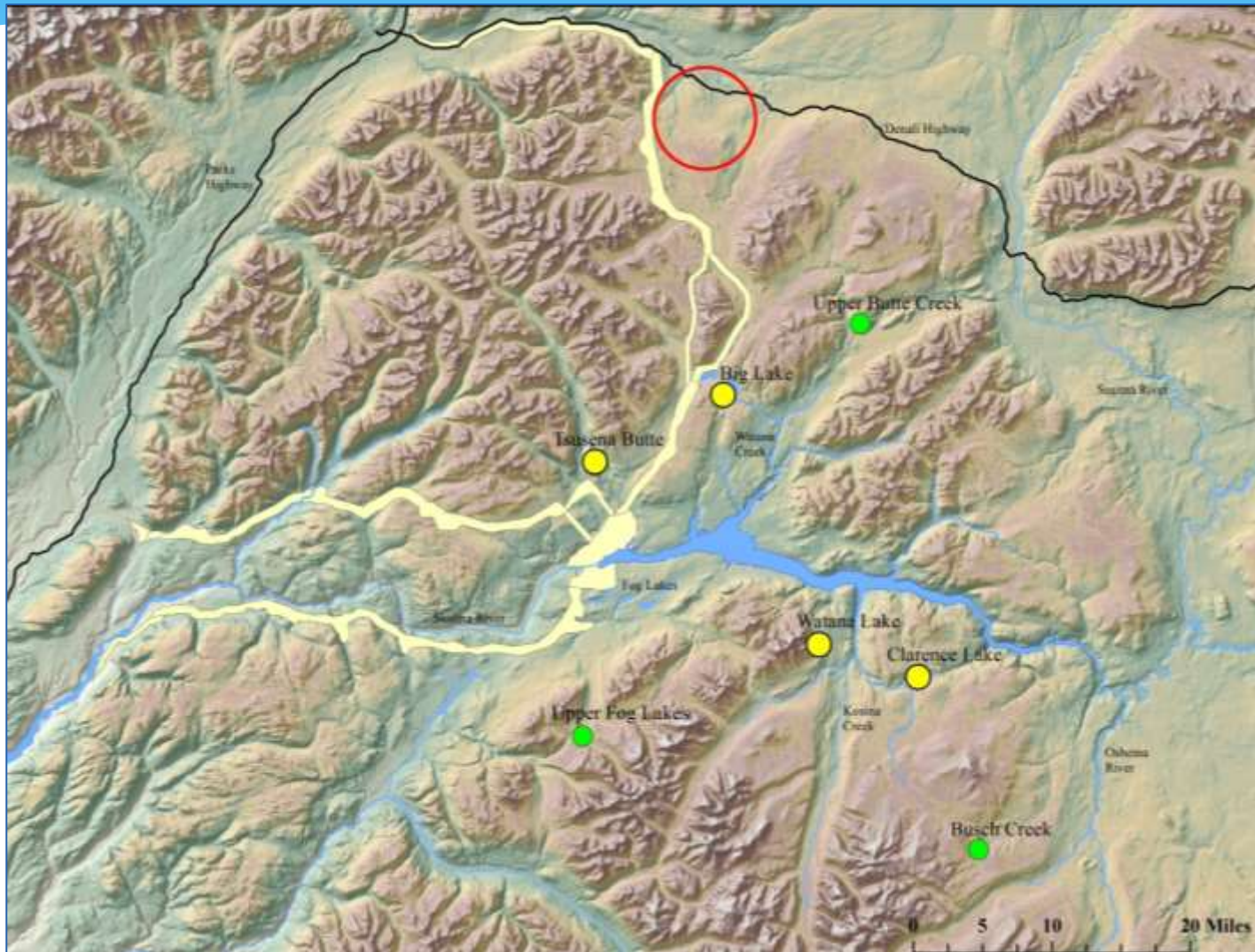
Looking downstream from the proposed dam site
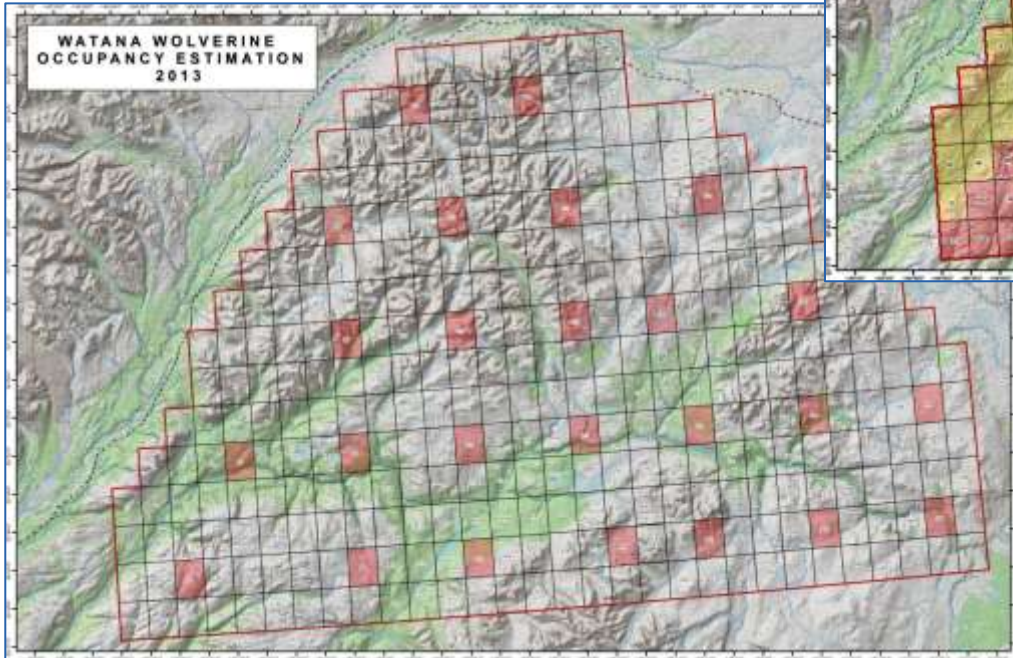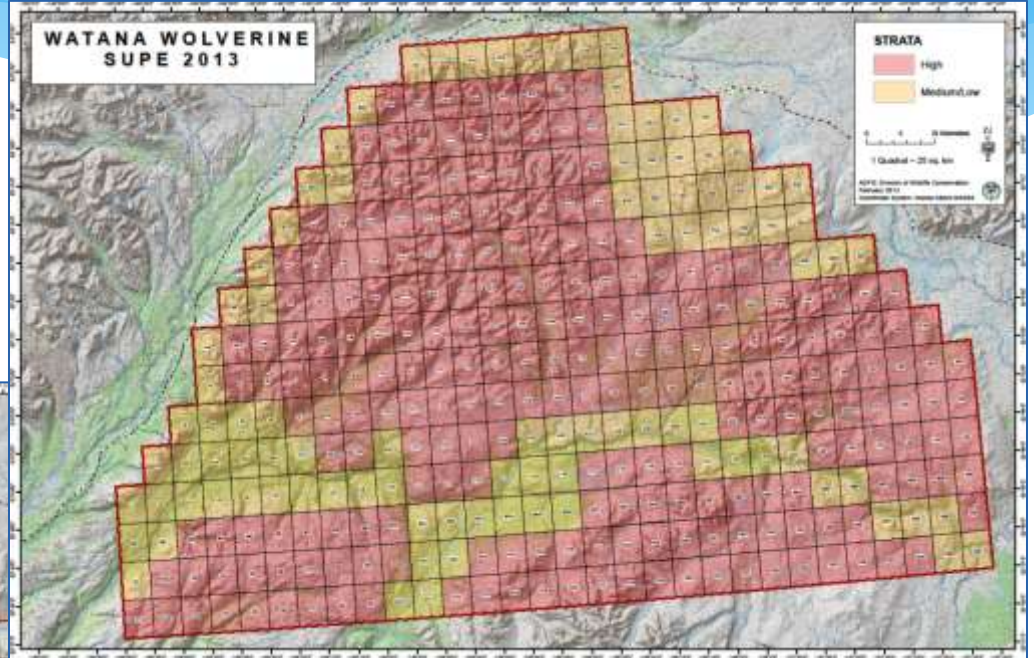
Mount McKinley
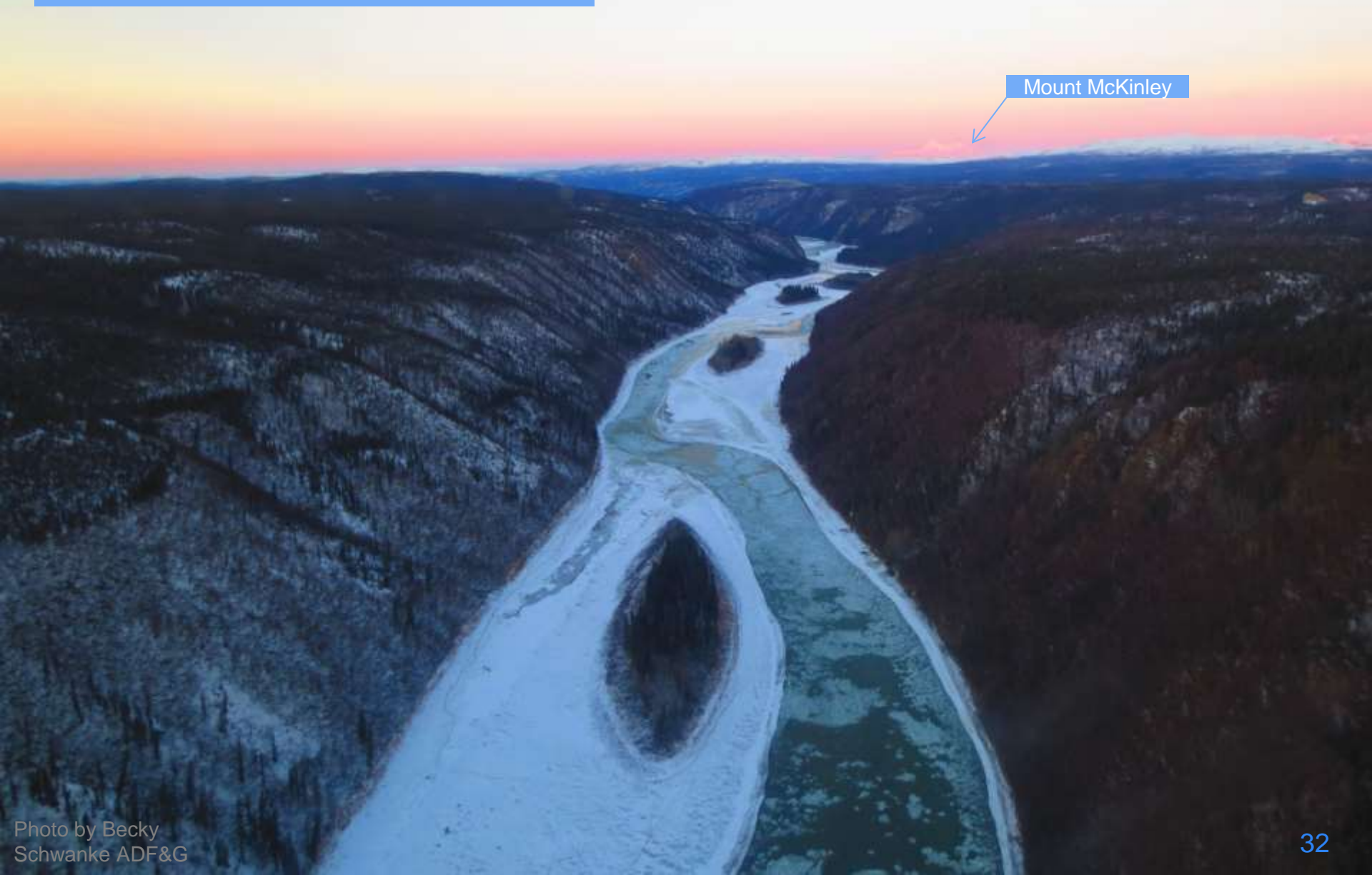
Spatial-line transect modeling will be used to estimate **bear** populations in the Project vicinity from ADF&G 2000-2004 data.
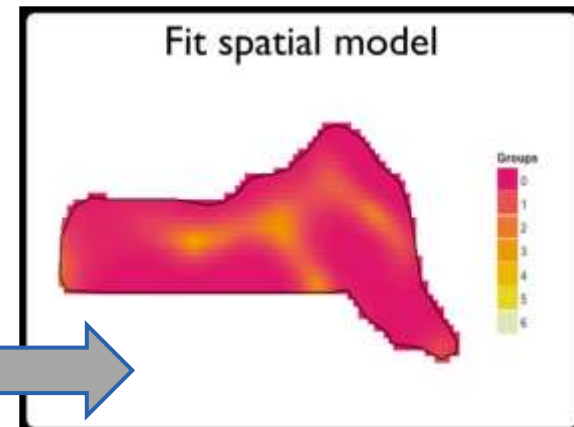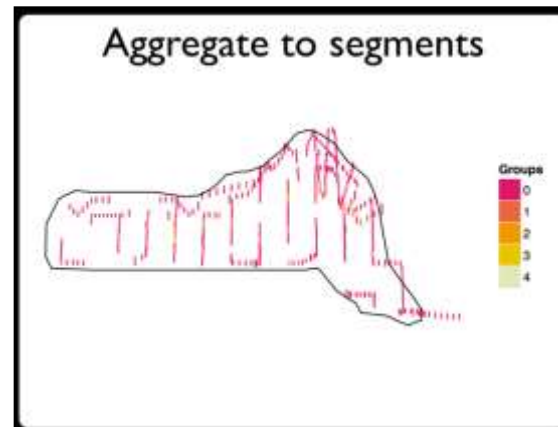
Spatial density surface estimation from distance sampling surveys David L. Miller, Len Thomas, Laura Marshall

ADF&G conducted Occupancy Modeling (OM) on **wolverines** in 2013. We expect to do both Sample Unit Probability Estimator (SUPE) and OM in 2014

SUPE Grid →

← **OM Grid**