Mitigating threats to Greater sage-grouse through shrub-steppe habitat manipulations

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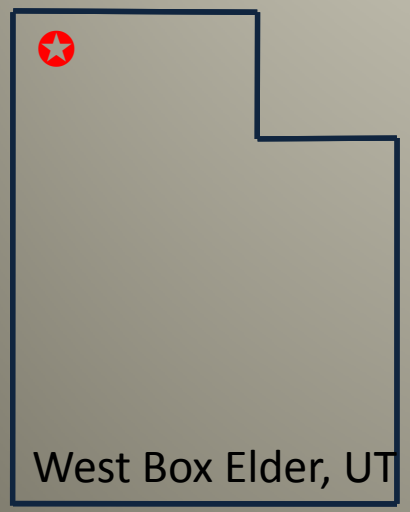
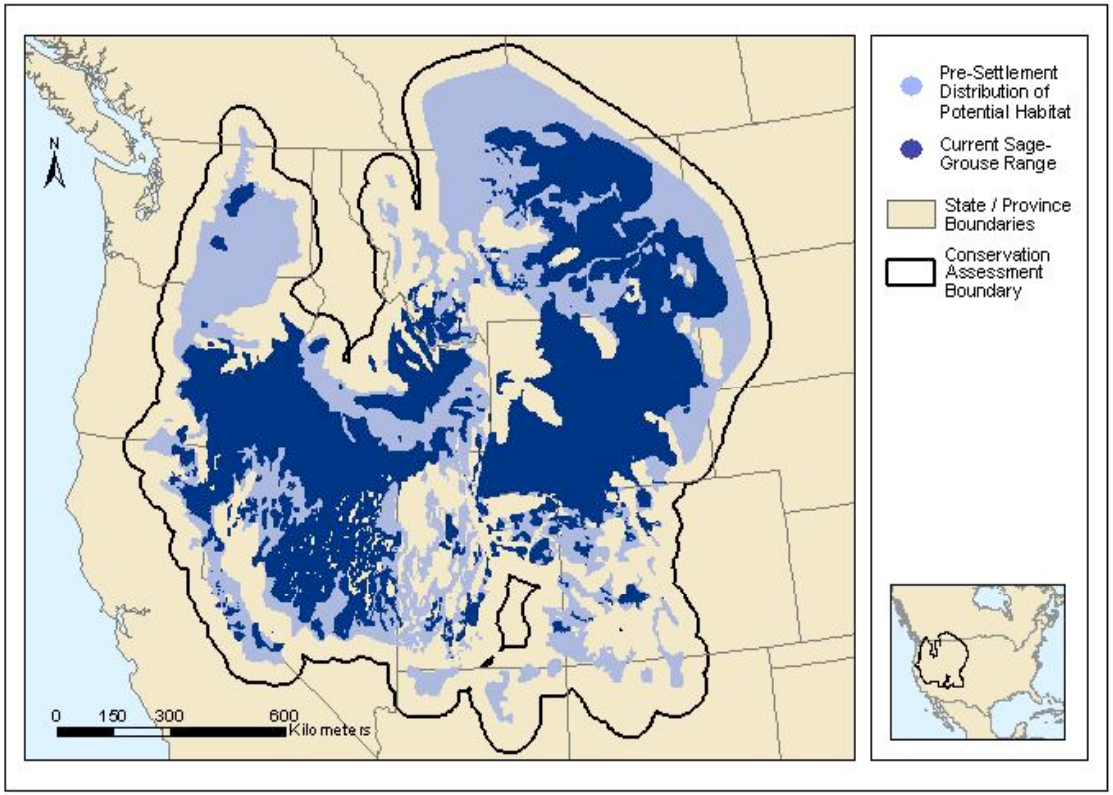
Sage-grouse status

- Sage-grouse occupy an estimated 56% of the potential habitat of pre-European settlement

- USFWS ESA
  - Warranted but precluded

- Management plans and local working groups





Courtesy of USGS

Threats to sage-grouse


Photo: USFS

- Habitat loss and fragmentation
- Disease
- Predation


Photo: Patagonia

Threats to sage-grouse

- Wildfires
  - Change in fire regime
  - Increase in junipers
  - Decreases native avian and vegetation species
  - Subsequent spread of invasive spp.

Courtesy of BLM

Photo: Forestry Images

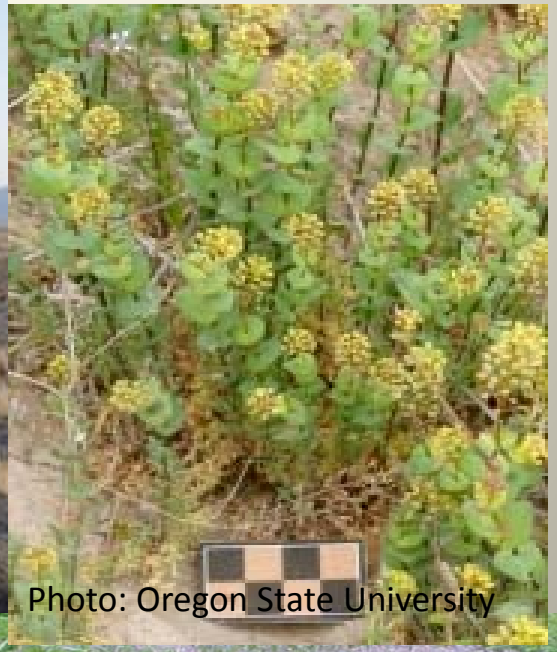


Photo: Oregon State University

Photo: Intermountain Herbarium

Photo: Stevens County, WA

Research Questions

#1. What effect will the treatments and any observed changes in vegetation have on sage-grouse habitat use patterns?

#2. Do sage-grouse select for certain vegetation characteristics at nest sites and brood sites?

#3. What effect will the treatment have on vegetation composition of sagebrush steppe?

Treatments

- Aug 1 – 15, 2010: mastication of trees within greenstrip area

Treatments

- Aug 16 – September, 2010: chain harrow greenstrip (seedbed prep/removal of shrubs)

Treatments

- Sept 2-Sept 12 Spray Plateau herbicide
  - 5 oz Plateau/acre
    1 qt MSO/acre
    Applied in 10 gal water/acre

Treatments

- December 13-Aerially apply forage kochia seed at a rate of 4.5 bulk/lbs/acre.

Photo: Roger Banner

Identified West Box Elder county as critical habitat for sage-grouse

Methods

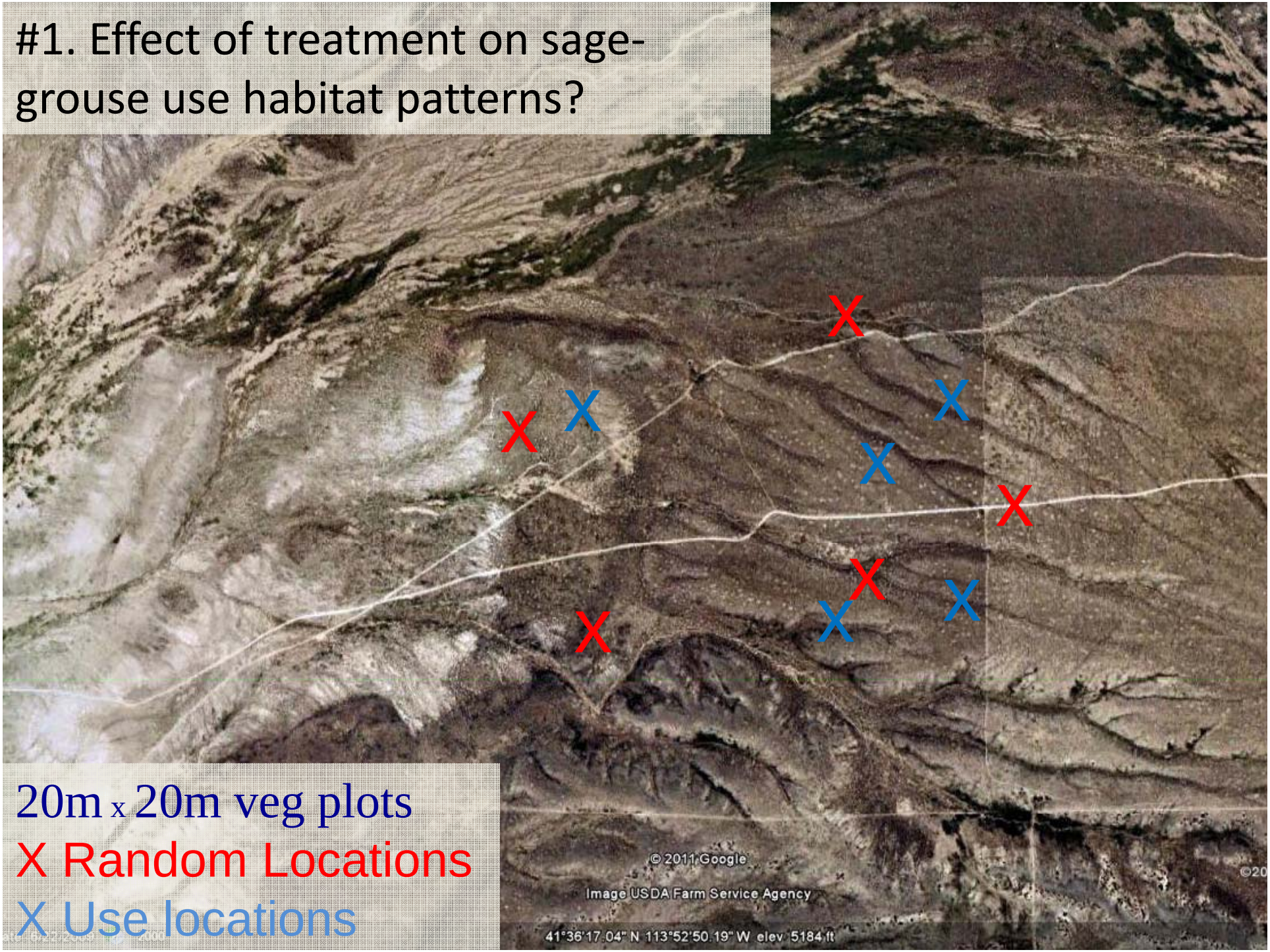
- Pretreatment data collected Feb-August 2010.
- Post treatment data collected 2011-2012
- Catch sage-grouse using long handled hoop net
- ATS Collars
- Telemetry, get two locations per week

Methods

Vegetation plots:

- 20m$_x$20m transects for 30 use locations and 30 random locations per month
- 500 meter distance sampling pellet counts
- 30mx30m veg plots for nest locations using line intercept, daubenmire frame and robel pole
- 20mx20m veg plots for brood locations using line intercept, daubenmire frame, and robel pole
- 100 meter line and point intercept transects

#1. Effect of treatment on sage-grouse use habitat patterns?



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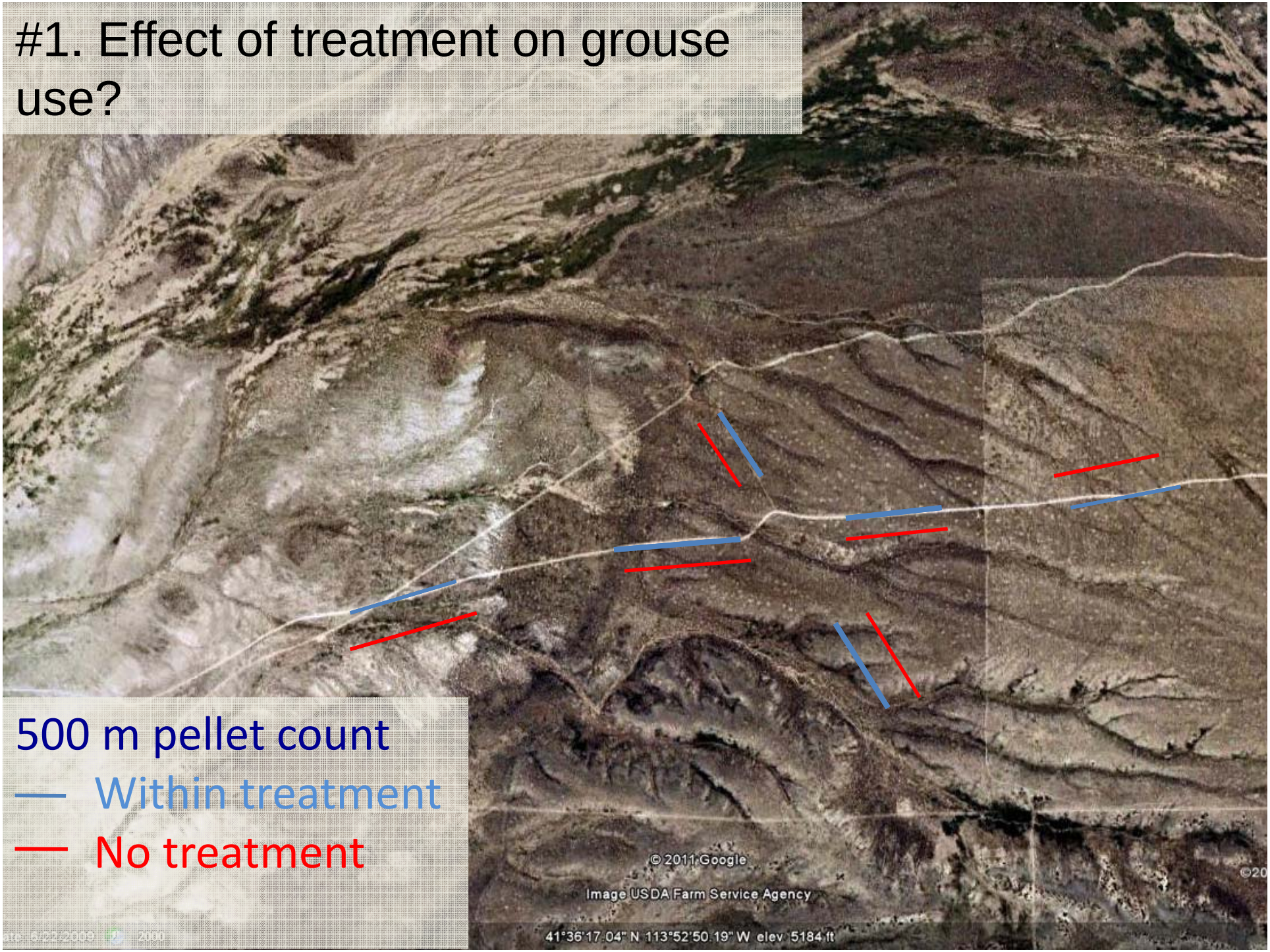

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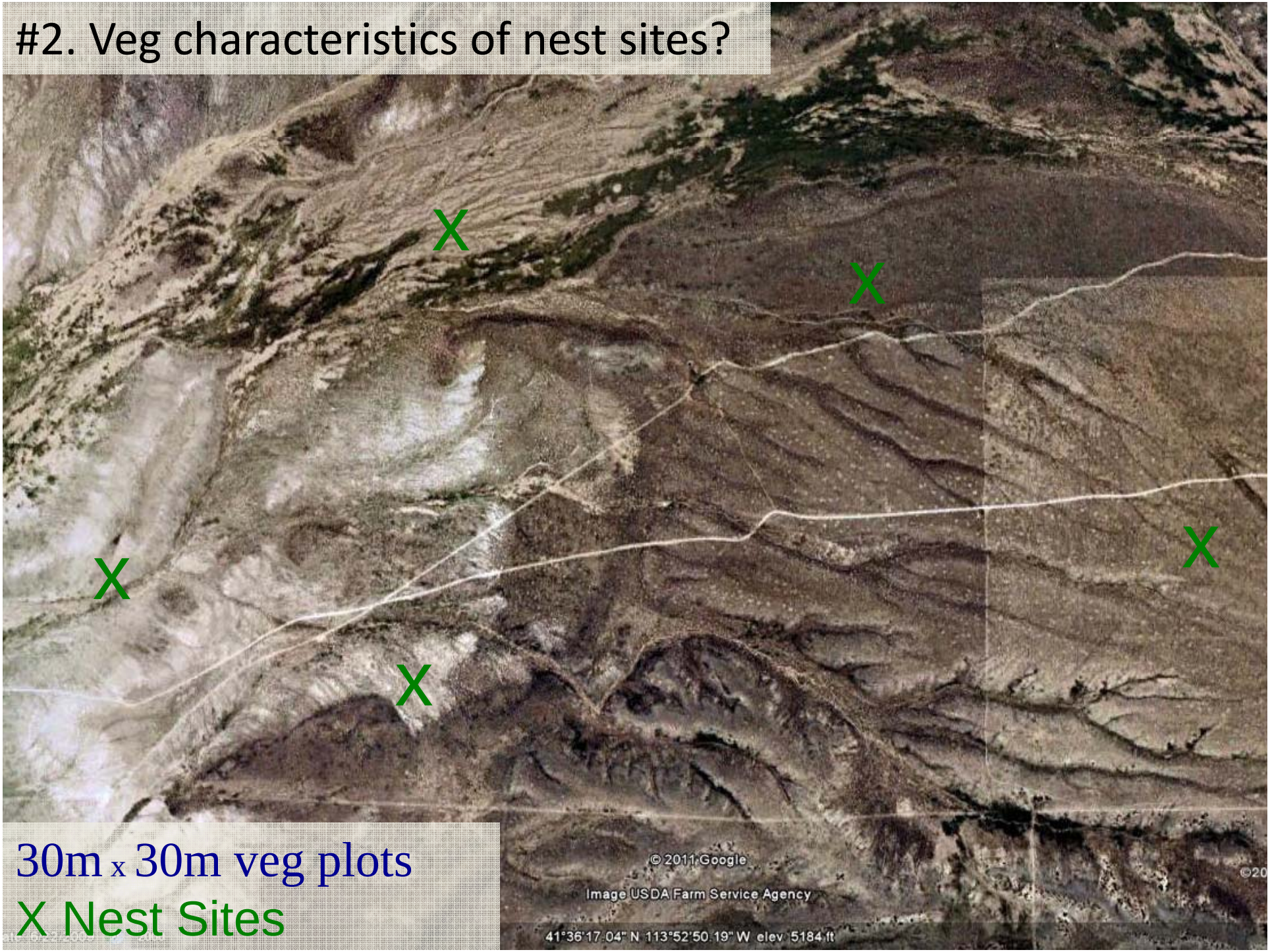
#2. Veg characteristics of nest sites?



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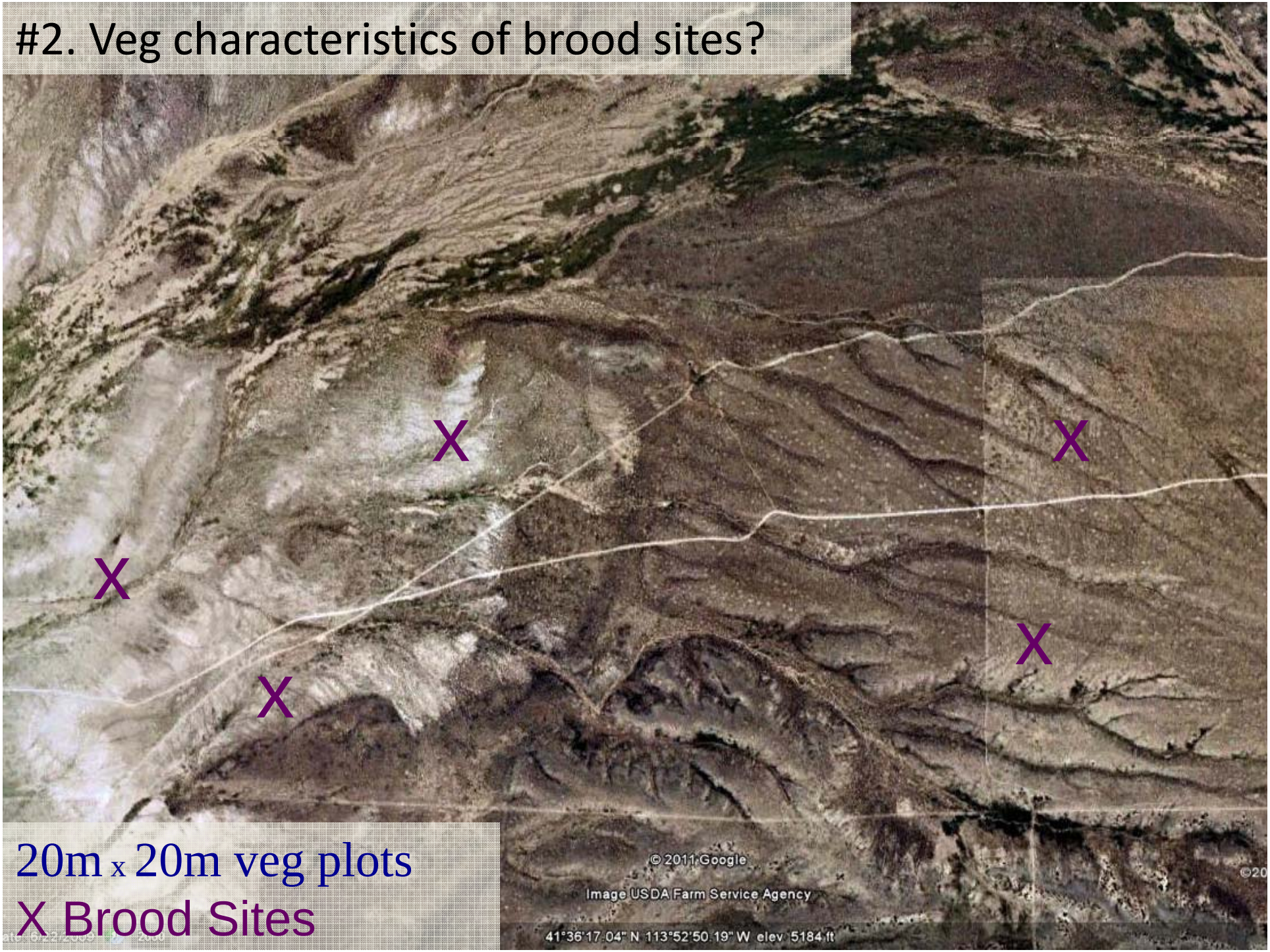

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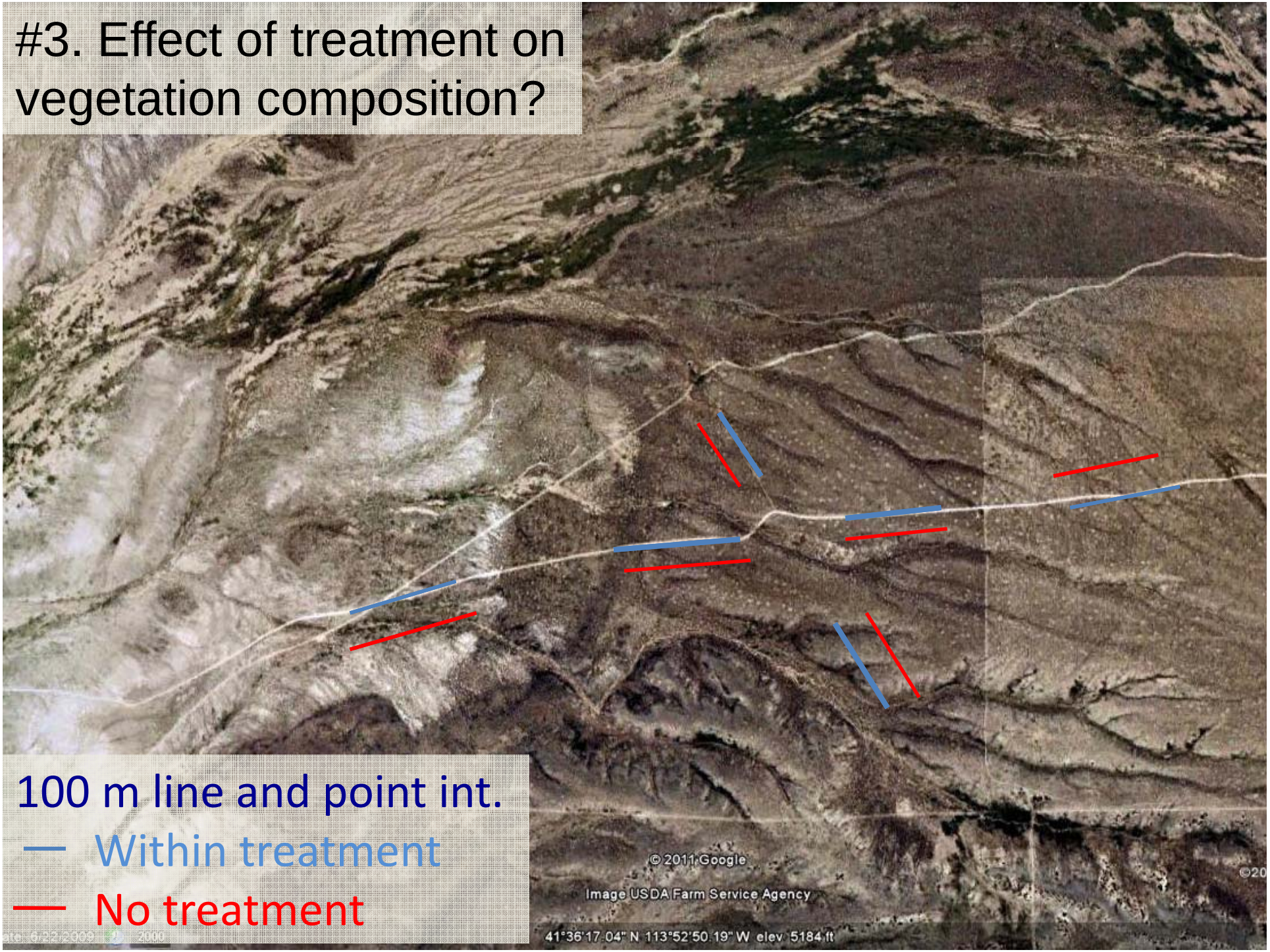
#3. Effect of treatment on vegetation composition?



100 m line and point int.

— Within treatment

— No treatment

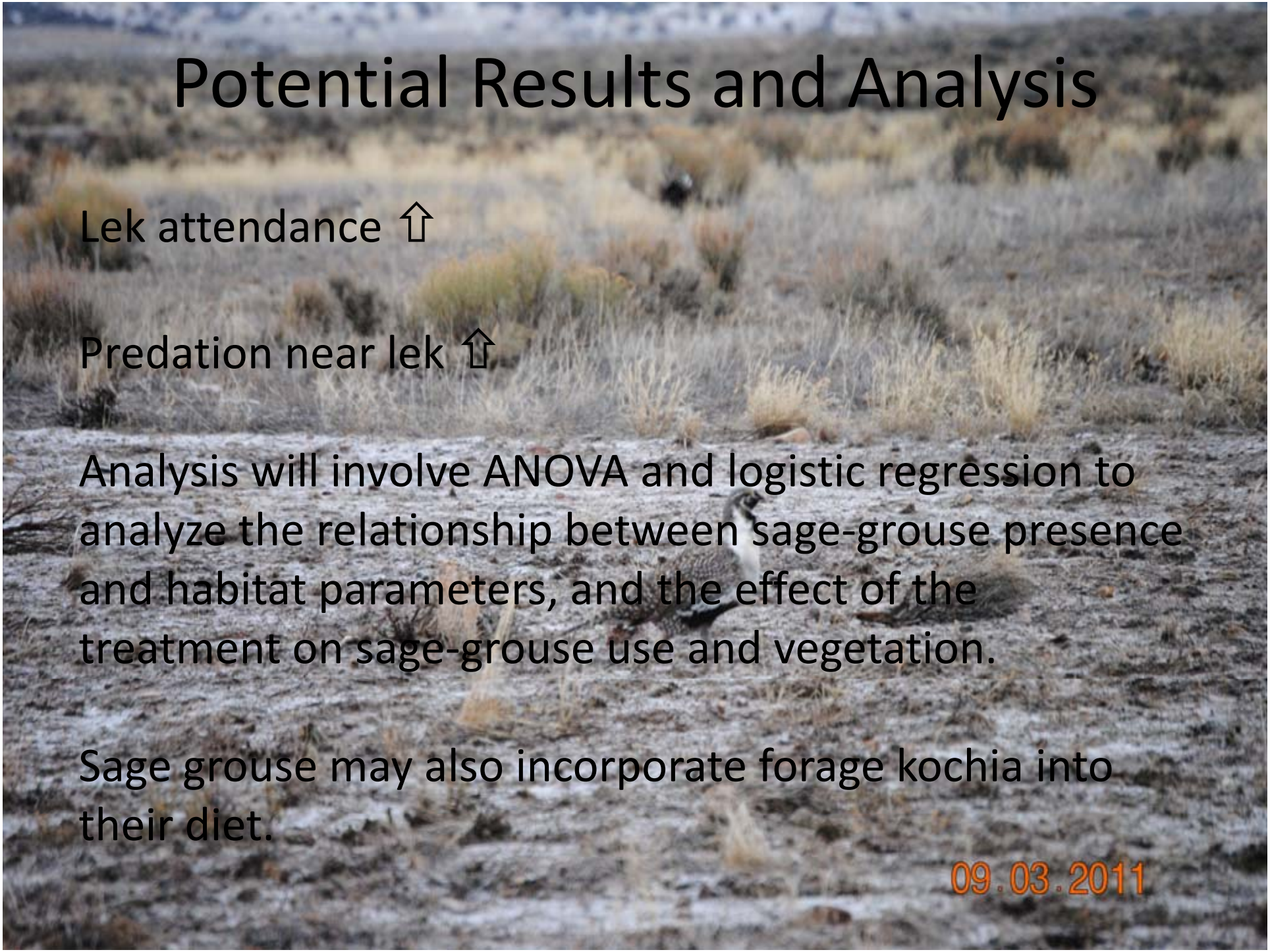
Potential Results and Analysis

Lek attendance ⇧

Predation near lek ⇧

Analysis will involve ANOVA and logistic regression to analyze the relationship between sage-grouse presence and habitat parameters, and the effect of the treatment on sage-grouse use and vegetation.

Sage grouse may also incorporate forage kochia into their diet.



Acknowledgements

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- Quinney Professorship for Wildlife Conflict Management

BLM

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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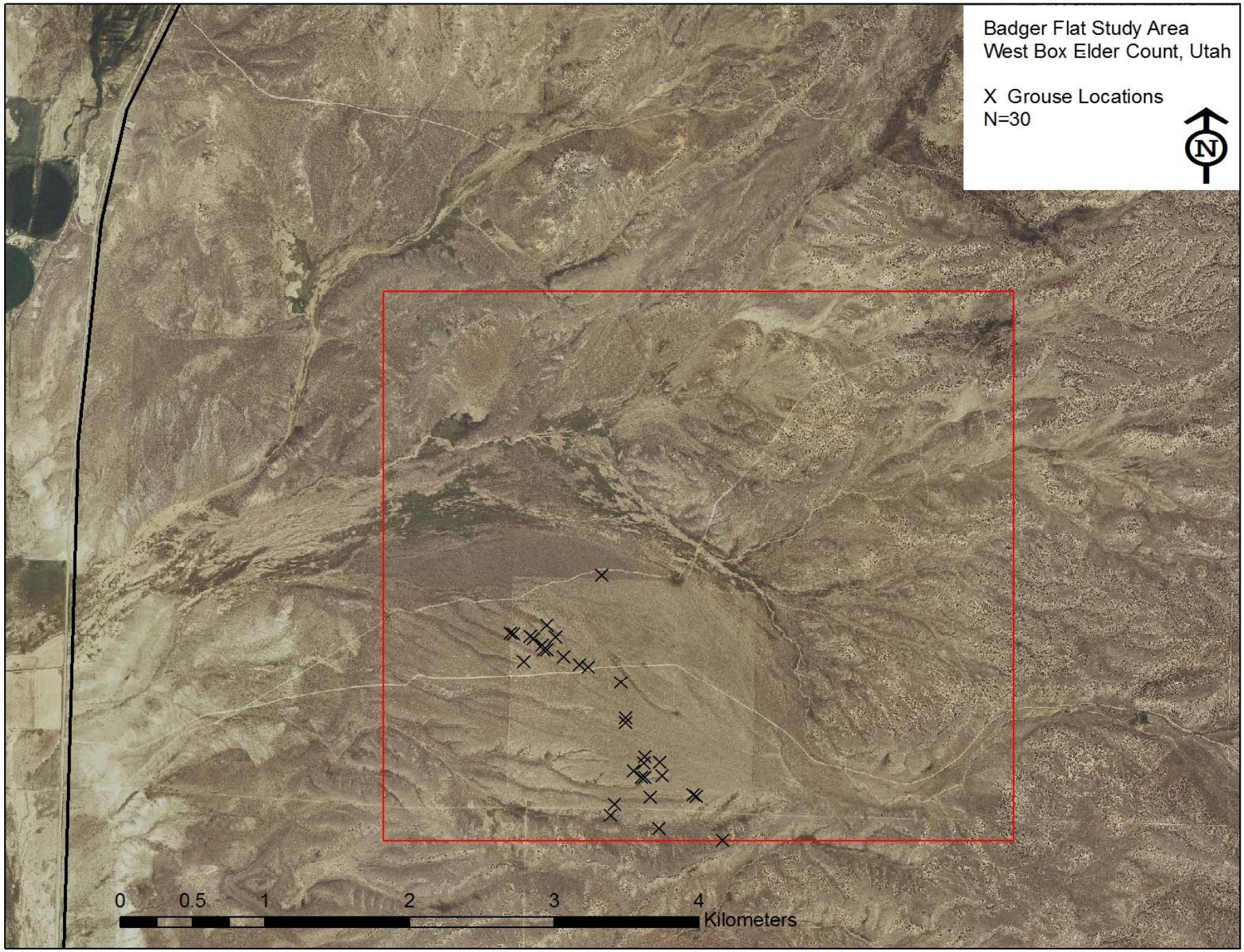
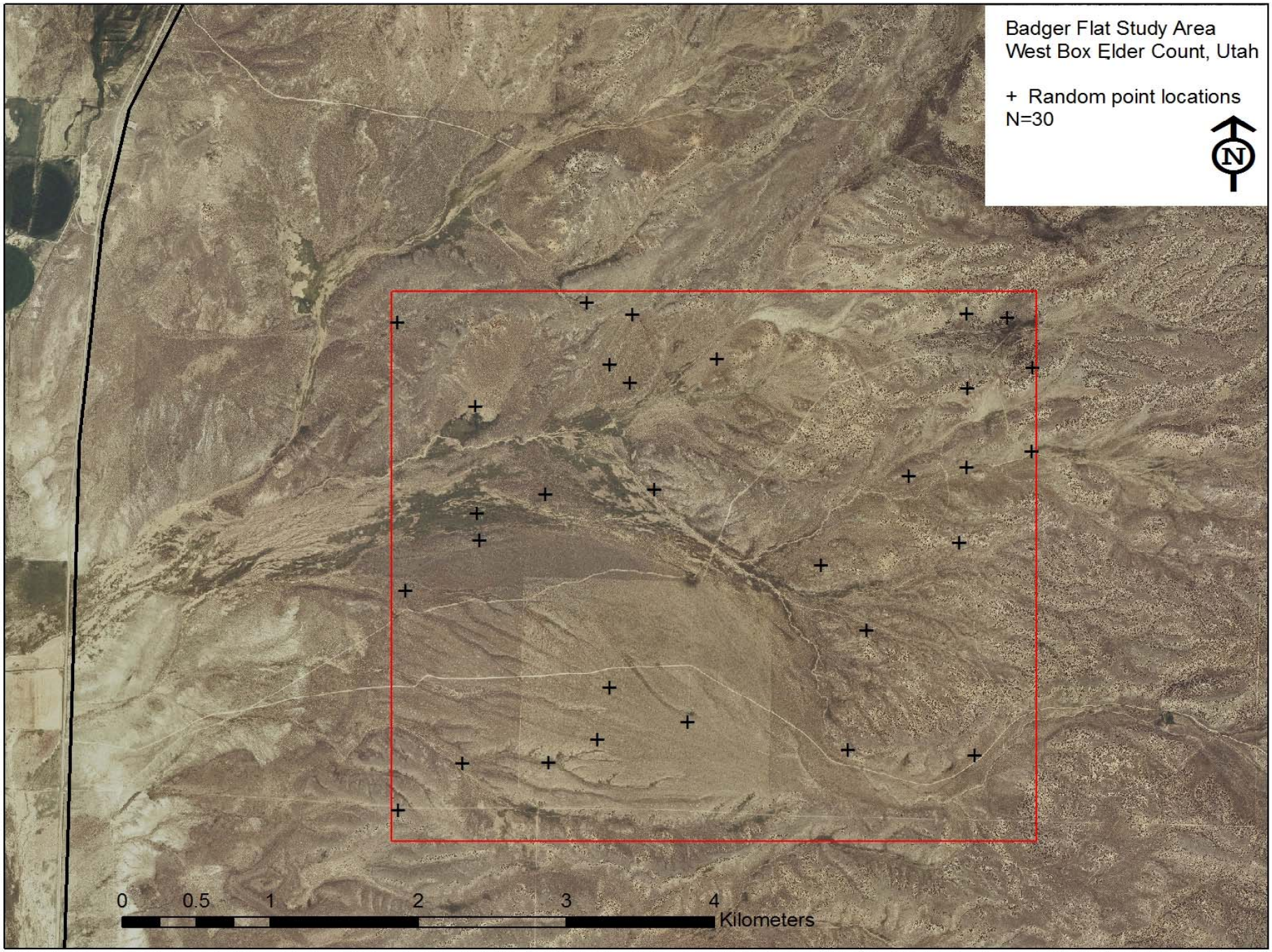
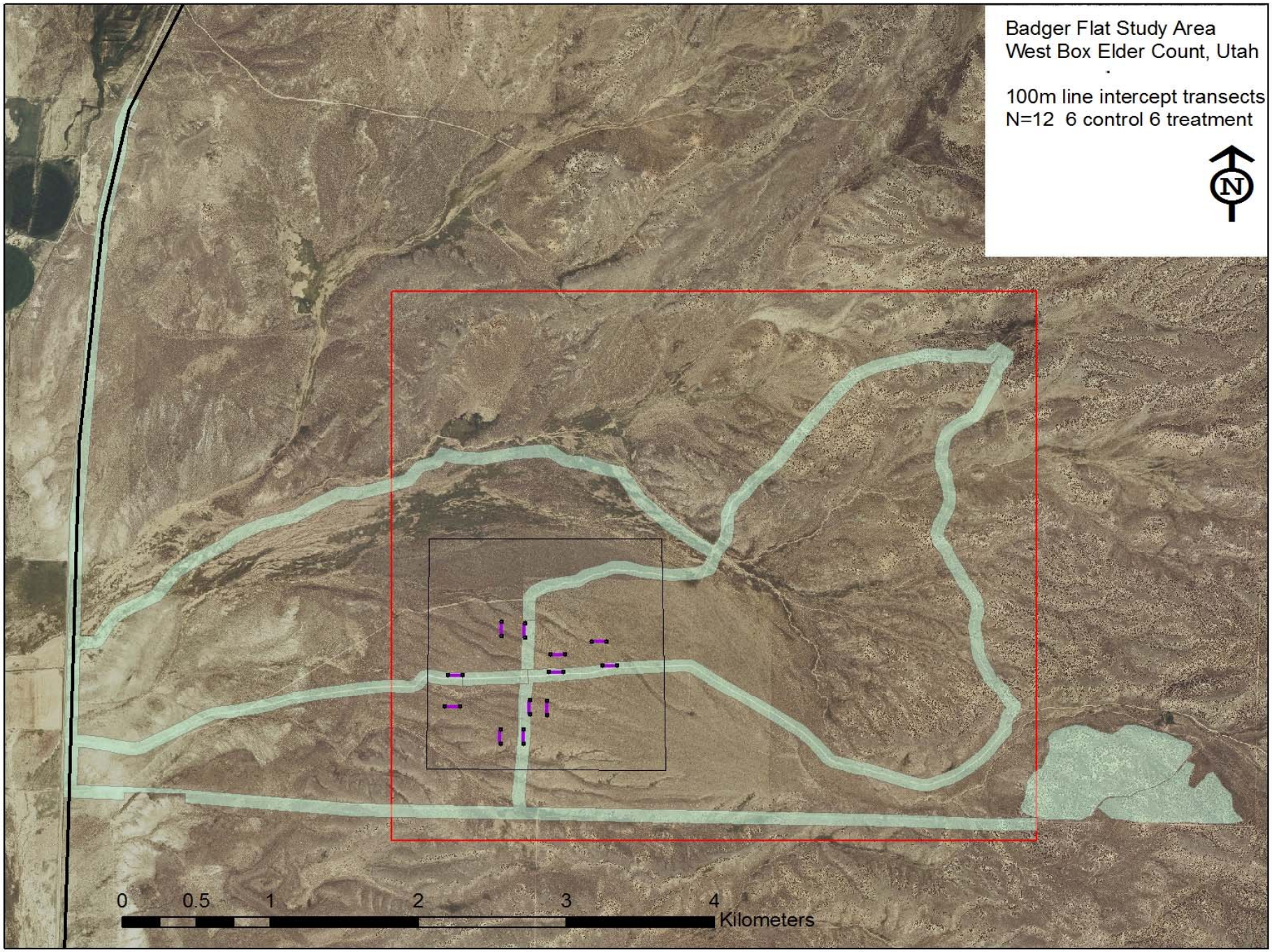
Questions?


Badger Flat Study Area
West Box Elder Count, Utah
X Grouse Locations
N=30
N
0
0.5
1
2
3
4
Kilometers


Badger Flat Study Area
West Box Elder Count, Utah
+ Random point locations
N=30
N
0
0.5
1
2
3
4
Kilometers


Badger Flat Study Area
West Box Elder Count, Utah
100m line intercept transects
N=12 6 control 6 treatment
N
0
0.5
1
2
3
4
Kilometers