

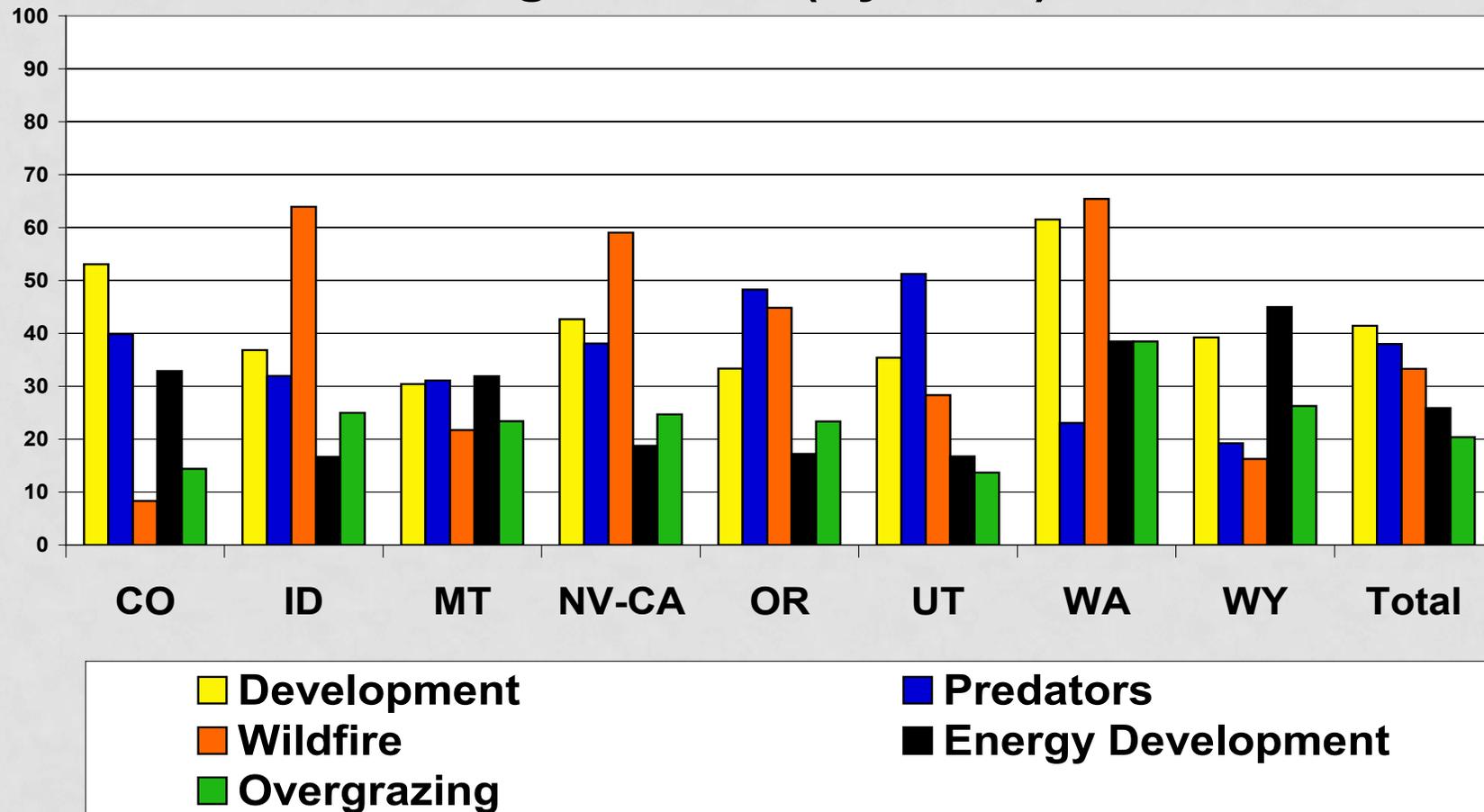
MANAGING LANDSCAPES FOR SAGE GROUSE

GREEN STRIPPING AND GROUSE

SAGE-GROUSE REQUIRE SAGEBRUSH



Percent Citing Factor as "Serious Threat" to Sage-Grouse (By State)



WILD FIRE

- Change in fire regime
- Increase in conifers, decreases native avian and vegetation species, spread of invasive plant species





Photo: Forestry Images



Photo: Oregon State University



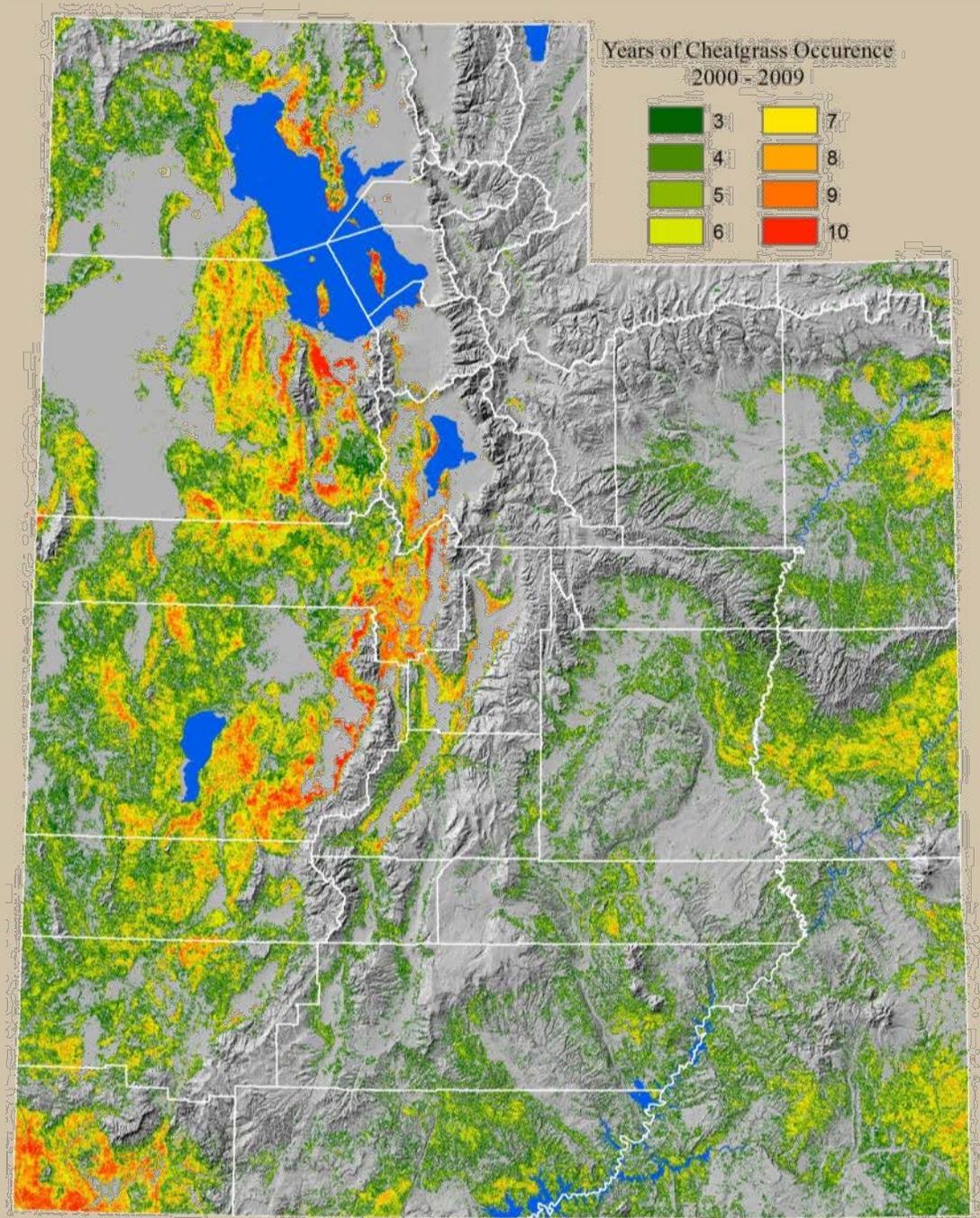
Photo: Intermountain Herbarium



Photo: Stevens County, WA

Frequency of presumed Cheatgrass occurrence between 2000-2009

Differences between the 1990-99 imagery and the 2000-10 imagery is due in part to variation between sensor platforms (AVHRR vs MODIS) which requires additional calibration.



Black Mountain Fire

- 3 miles southeast of Minersville
- 2002 Maple Springs fire re-seeded with diverse flame resistant seed mix
- Millions of fire suppression dollars saved
- Thousands of acres saved from burning

Watershed Restoration Initiative

- Post fire seeding
- Saves dollars and habitat
- Helps fight future fires by
 - reducing their size
 - providing fuel breaks
 - giving firefighters a safe place to work

2002
Fire
Seeding


Fire
Direction



SITE PREPARATION



MASTICATION



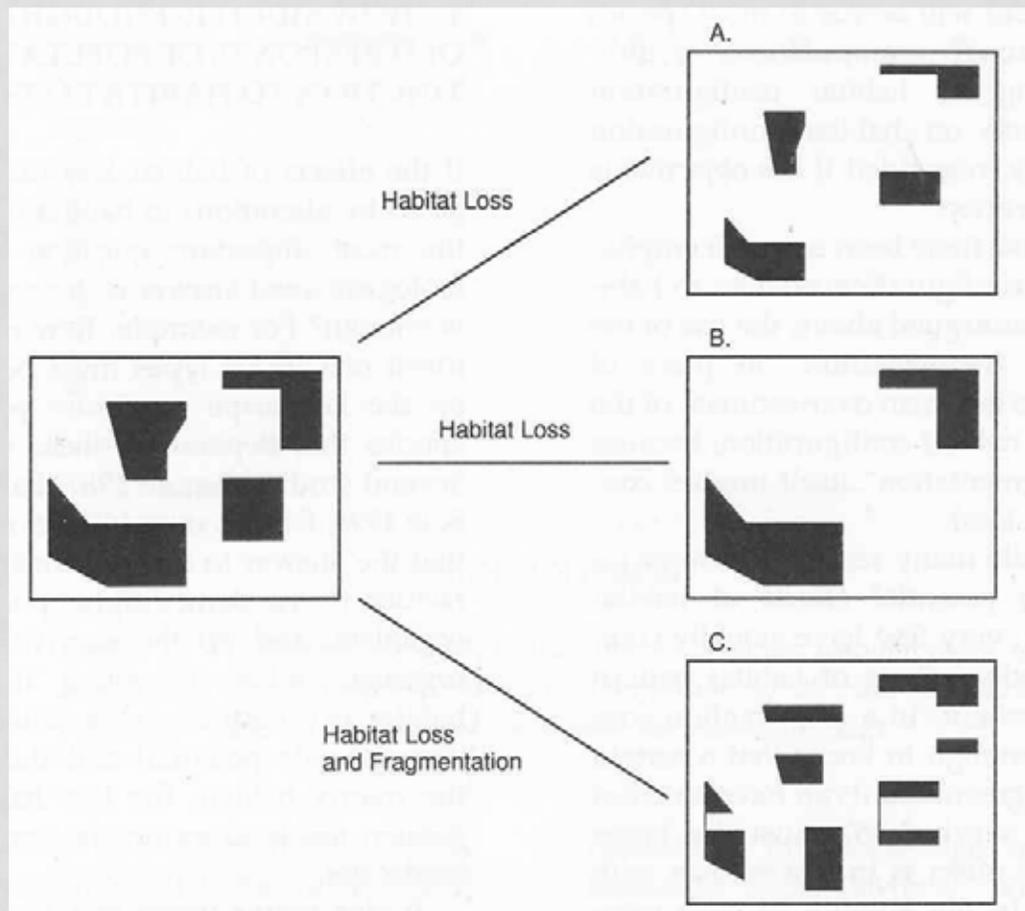
SEEDING





HABITAT LOSS AND FRAGMENTATION

- Habitat loss may or may not fragment
- Focus on landscapes not patches
- Few studies compare loss and fragmentation
 - All find loss most important
- Emphasizing fragmentation rather than loss maybe misleading



(Fahrig 1999)

WHAT WE DON'T KNOW

What effect will the landscape level firebreak treatments and corresponding changes in vegetation have on sage-grouse

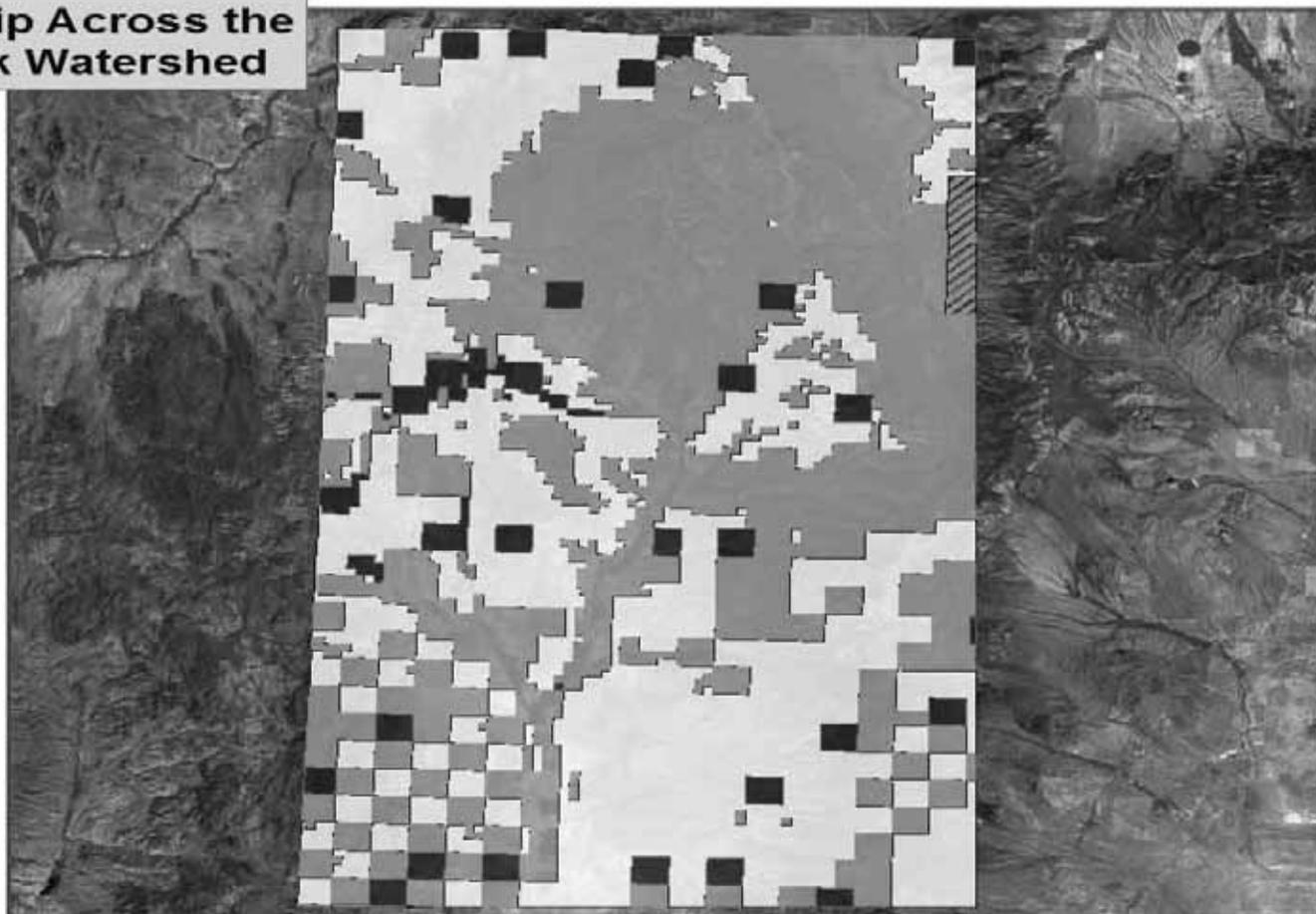
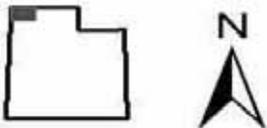
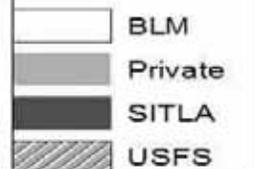
- habitat use patterns
- vital rates, and
- foraging.

STUDY AREA – BADGER FLAT

Land Ownership Across the Grouse Creek Watershed

Author: Stephanie Graham
Data Source: Utah GIS Portal
Date: April 5, 2013
UTM NAD 1983 Zone 12N
Projection: Transverse Mercator

Land Ownership AGENCY



0 5 10 20 Kilometers

TREATMENTS

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



TREATMENTS

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



TREATMENTS

- ✧ Sept 2-Sept 12, 2010 - Spray Plateau herbicide
 - ✧ 5 oz Plateau/acre
 - 1 qt MSO/acre
 - Applied in 10 gal water/acre



TREATMENTS

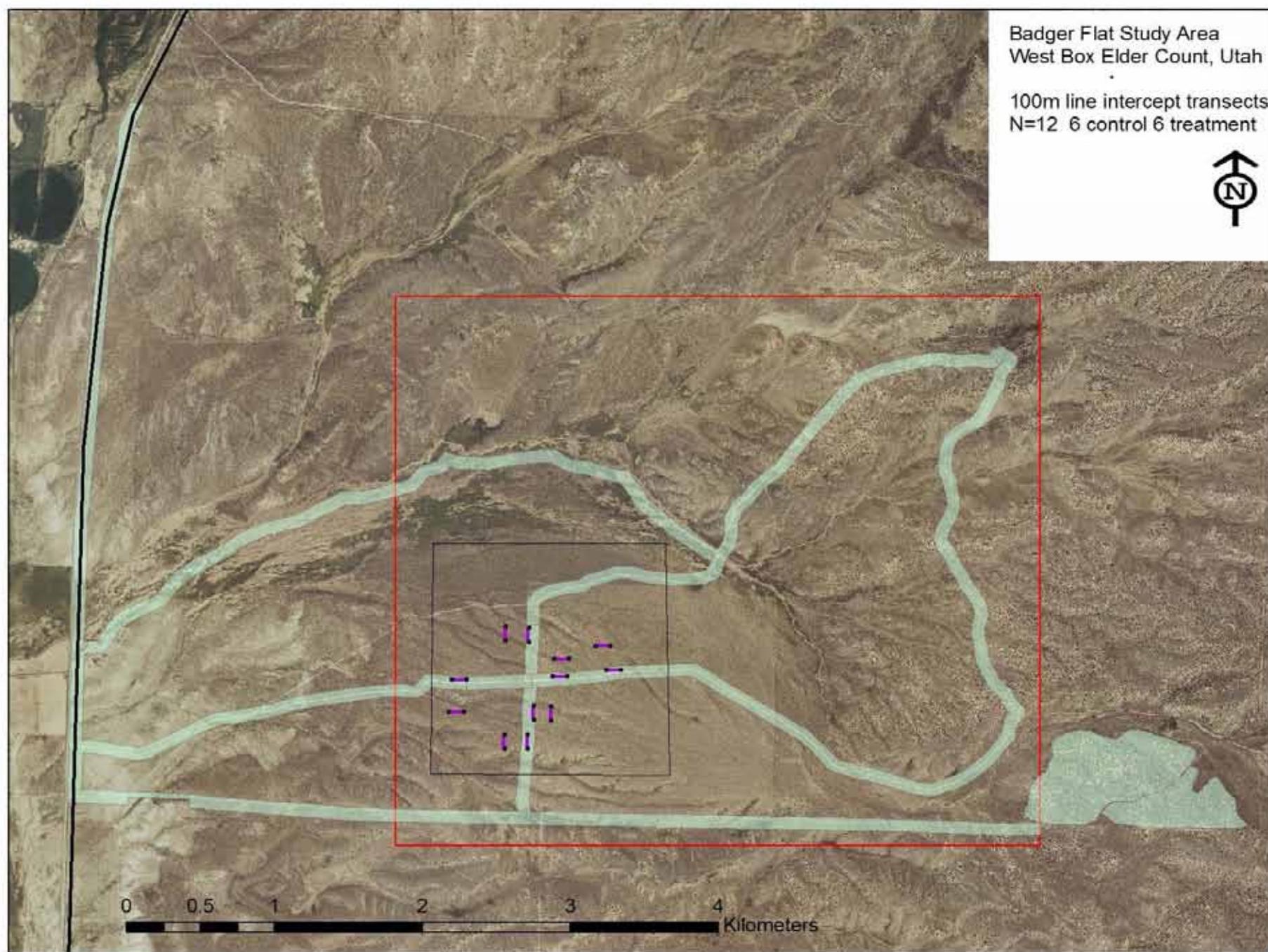
- ❖ December 13, 2010 - Aerially apply forage kochia seed at a rate of 4.5 bulk/lbs/acre.



Photo: Roger Banner

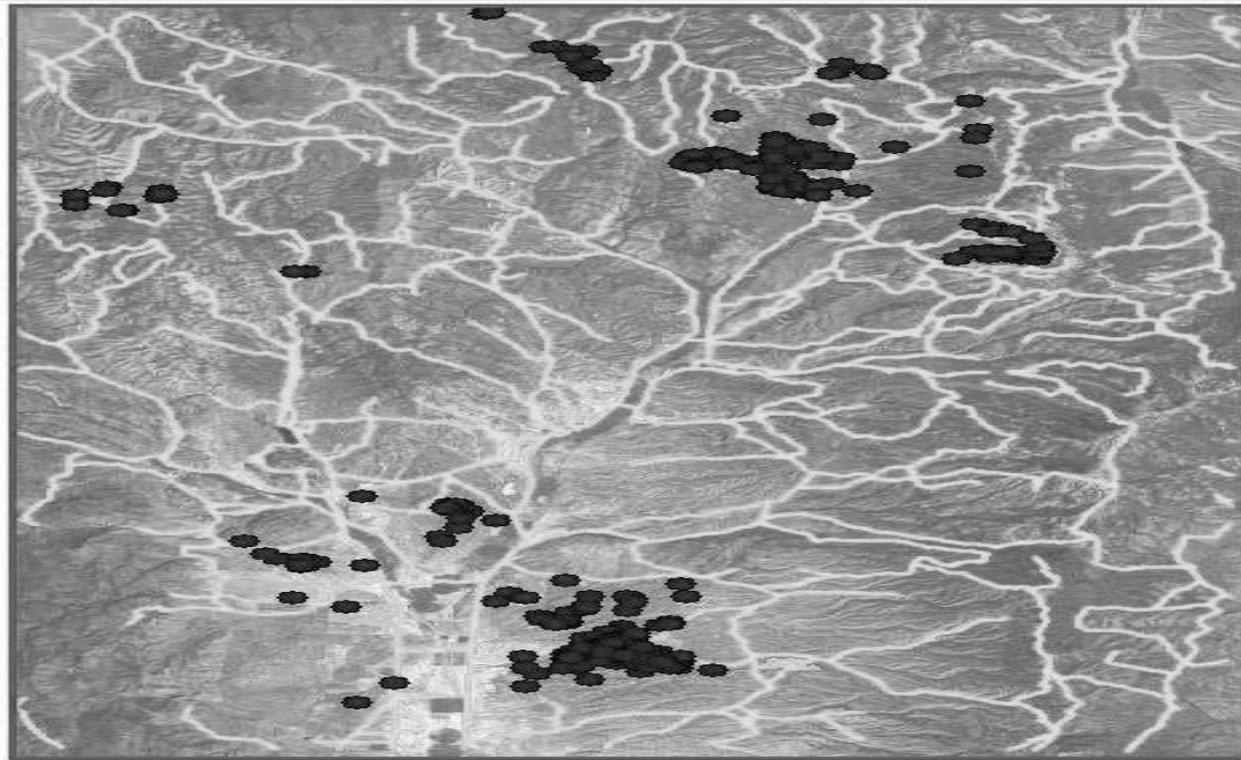
Badger Flat Study Area
West Box Elder Count, Utah

100m line intercept transects
N=12 6 control 6 treatment

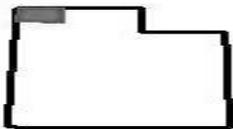




ROADS AND RADIO-MARKED SAGE-GROUSE



0 2.5 5 10 15 20 Kilometers

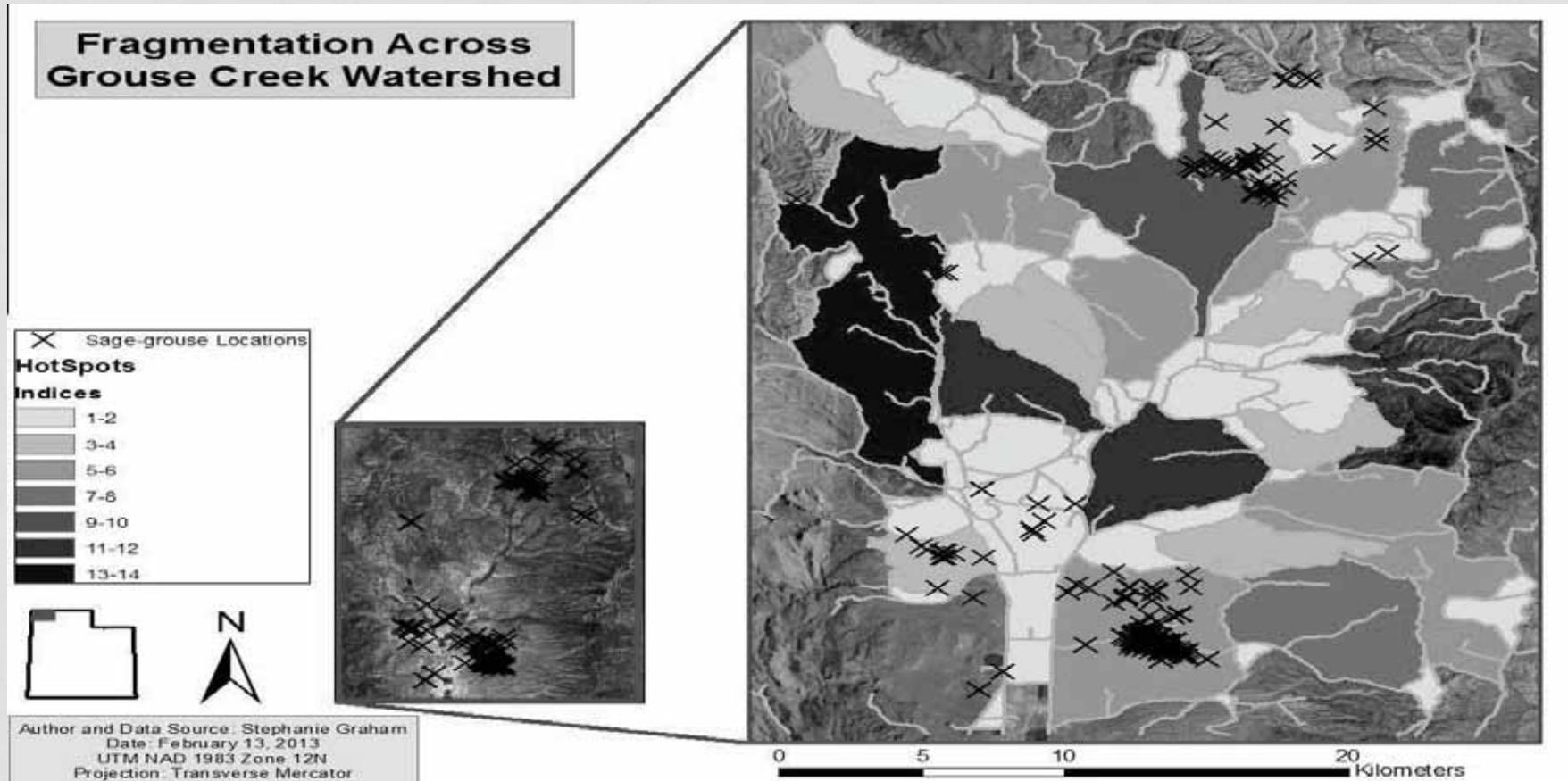


● 2010-2012 Locations
— Roads

Author: Stephanie Graham
Date: November 1, 2012
Data Source: Utah GIS Portal
UTM NAD 1983 Zone 12 North
Projection: Transverse Mercator



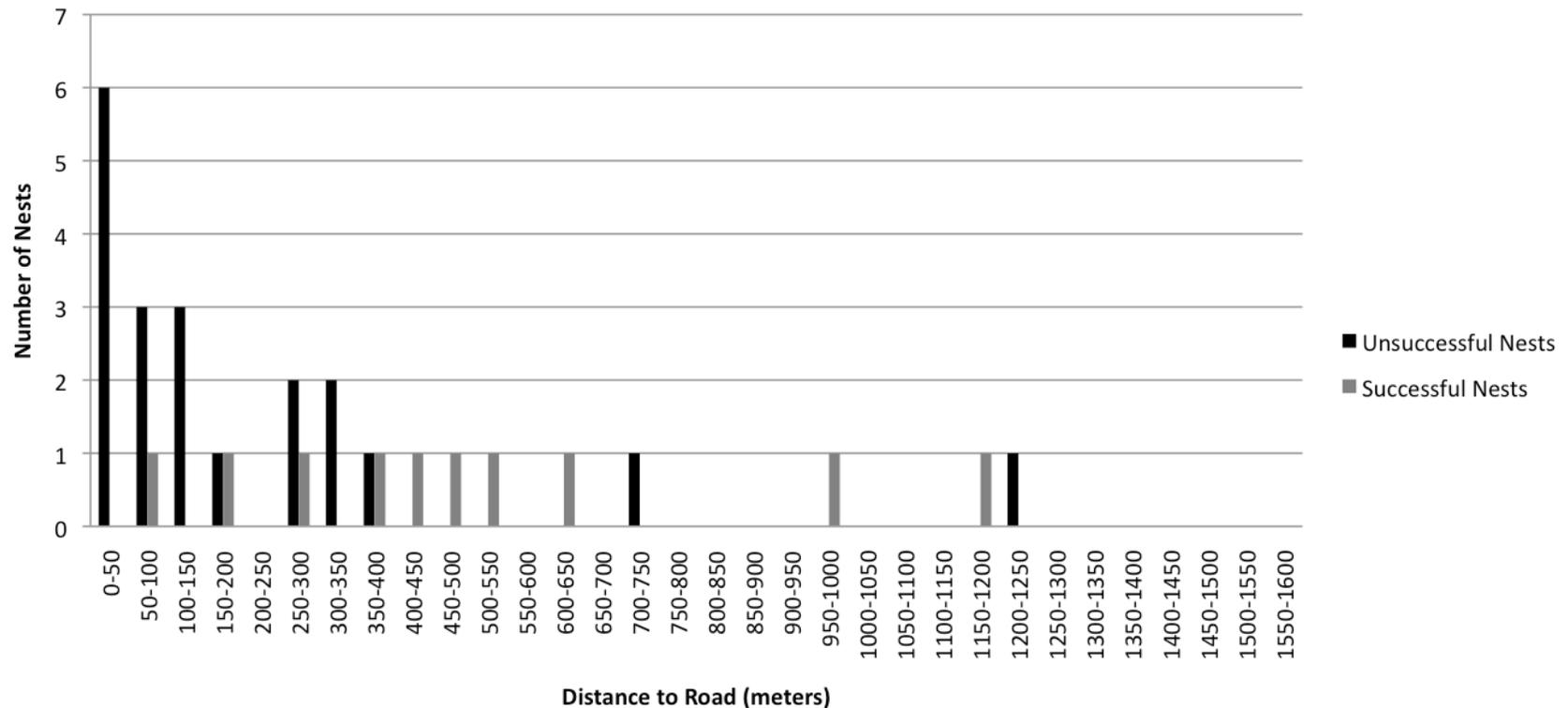
FRAGMENTATION



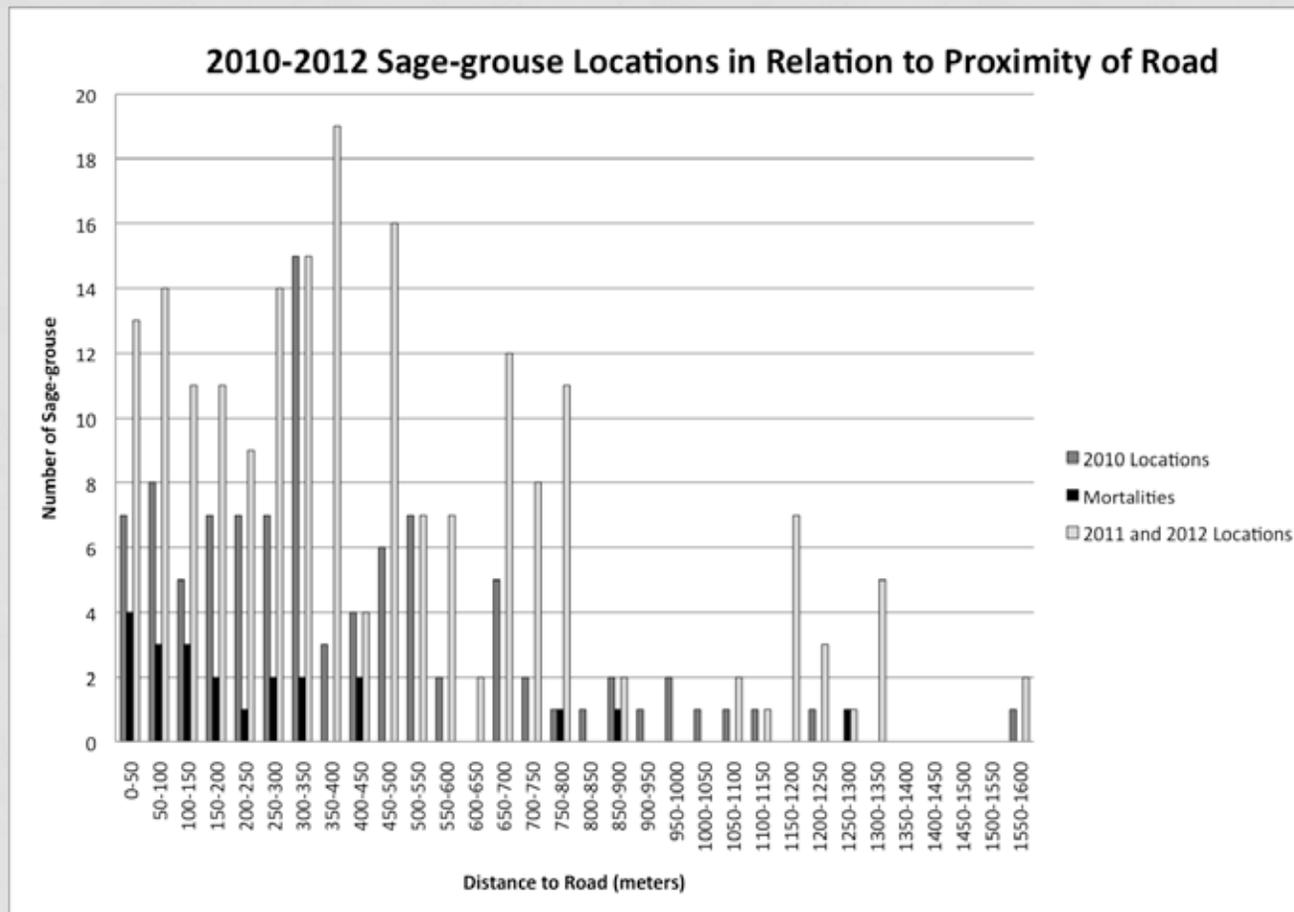
Lower index numbers/lighter color = increased fragmentation.

VITAL RATES AND FRAGMENTATION

Nest Success in Relation to Proximity of Road



EFFECTS OF FRAGMENTATION



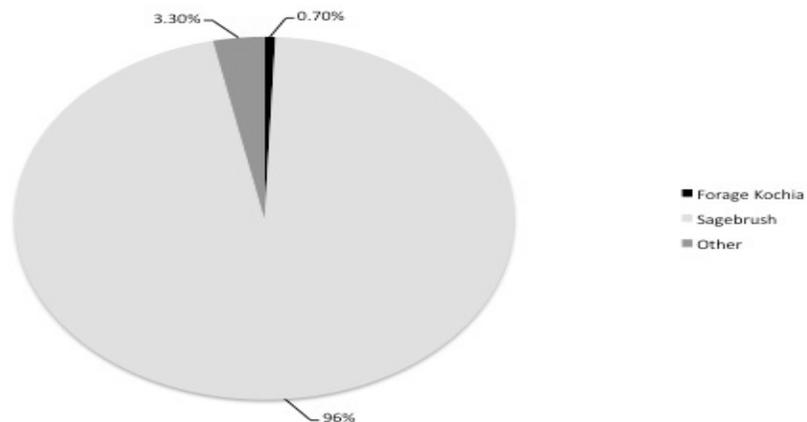
Habitat-use



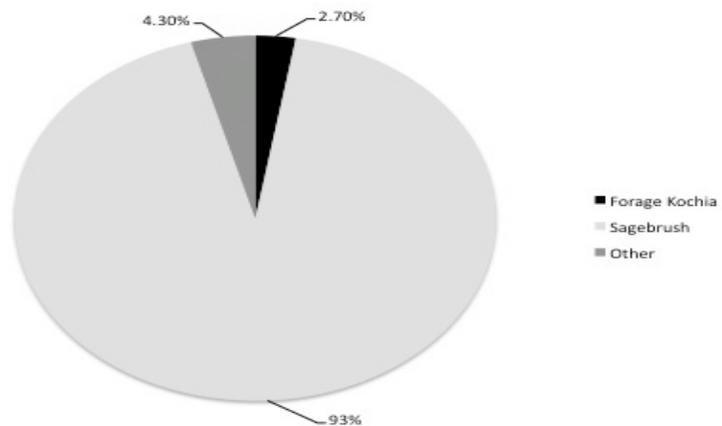
SAGE-GROUSE USE



Badger Flat Sage-grouse Diet Composition



Tabby WMA Sage-grouse Diet Composition



CONSIDERATIONS

- Know the landscape and how sage-grouse use it
- Shrub densities in the treatment area were reduced; sage-grouse preferred untreated areas
- Microhistological techniques were successful in identifying small quantities of forage kochia in sage-grouse pellets.
- Forage kochia greenstrips may be a beneficial technique for protecting rangelands from wildfire and provide a dietary source for wildlife, but treatments should be minimal in scope.
- Long-term monitoring should be completed to determine extended effects of greenstripping treatments on sagebrush habitat and sage-grouse behavior patterns.