

GREATER SAGE-GROUSE HABITAT ECOLOGY AND CONSERVATION

Mine Design, Operation & Closure Conference 2011
R. Northrup



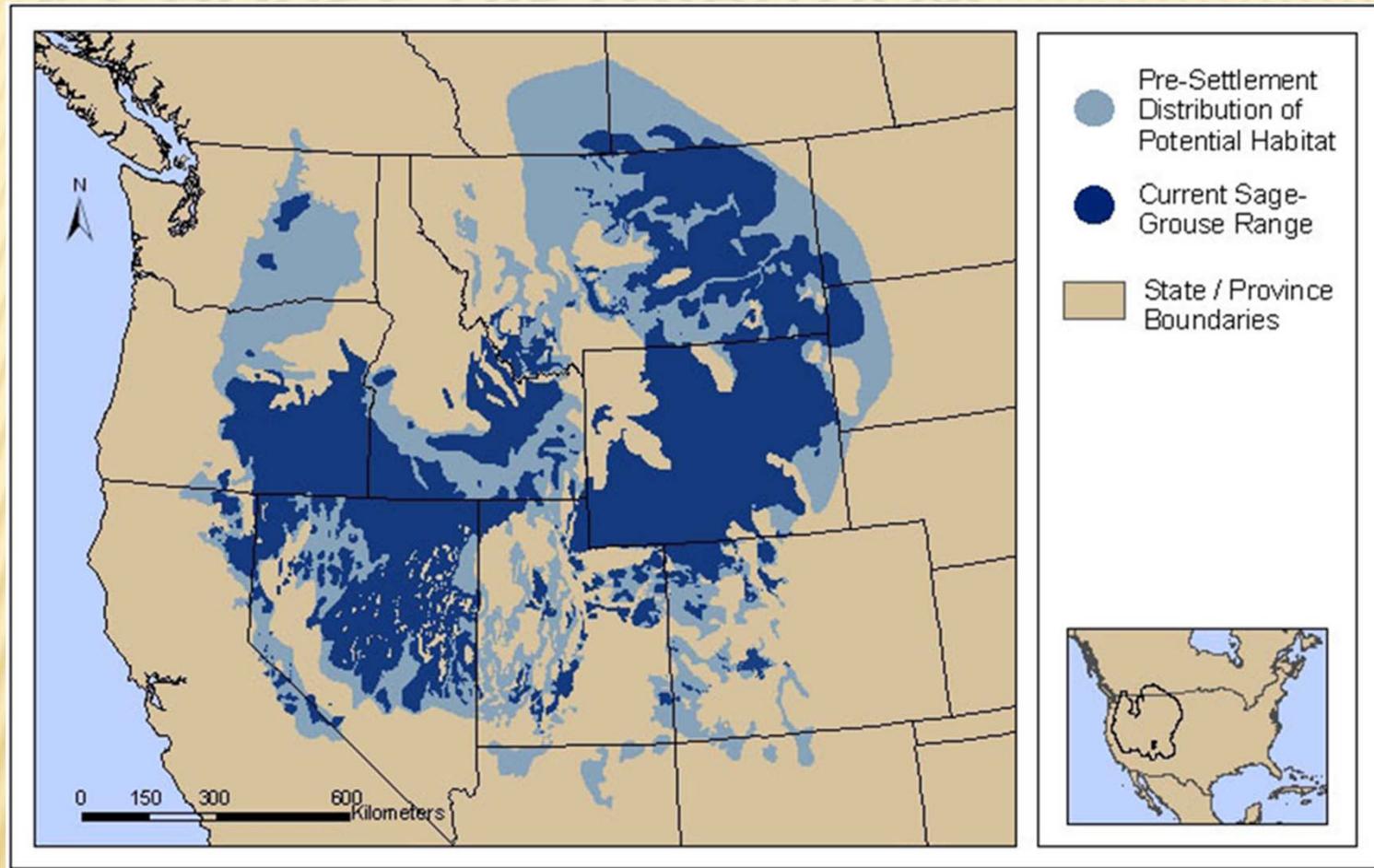
OUTLINE

- × Sage-Grouse Status
- × Basic Habitat Ecology
- × Primary Habitat Issues
- × Basic Conservation Needs/Opportunities
- × Summary



GREATER SAGE-GROUSE STATUS – IN BRIEF

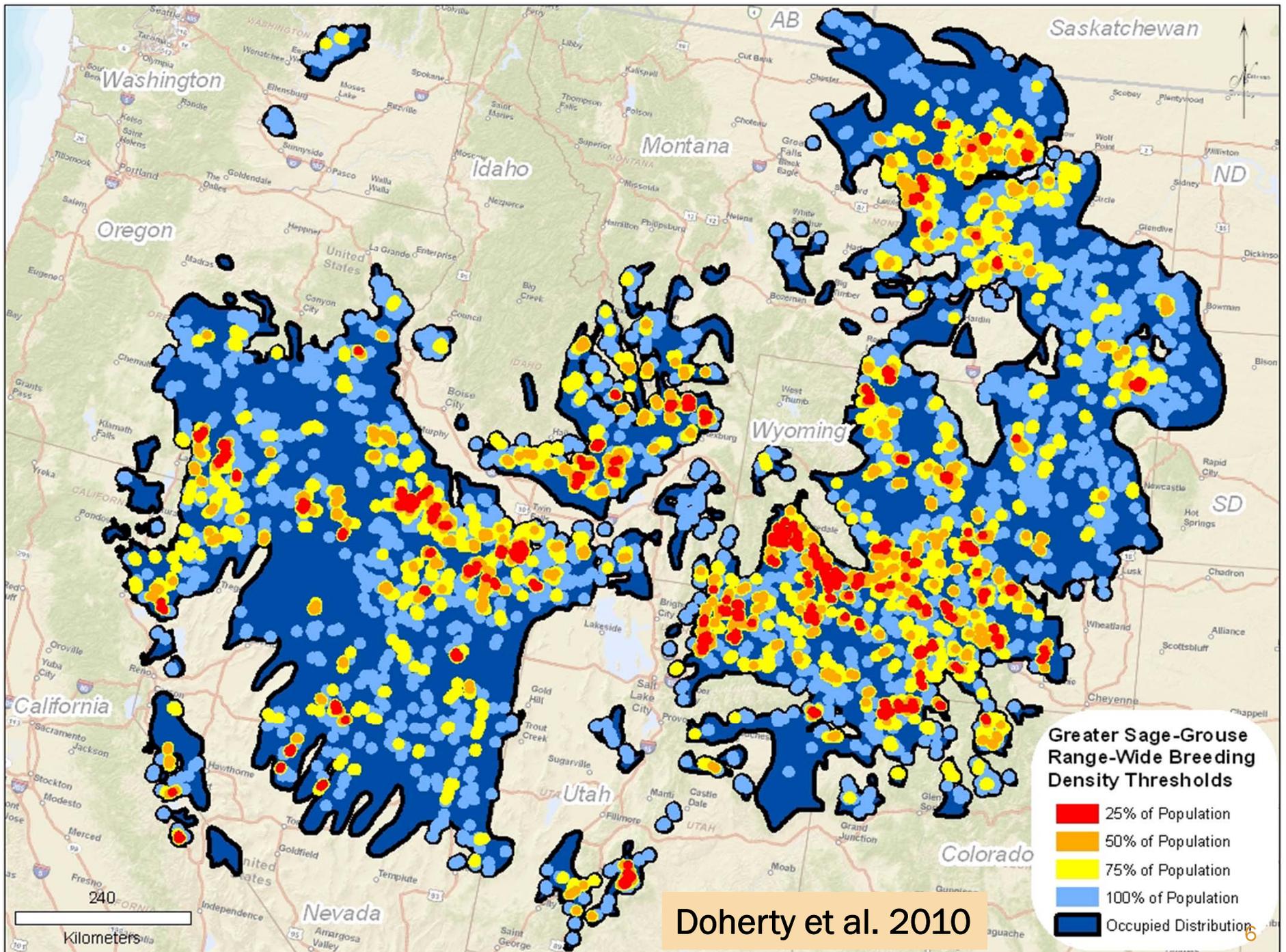
SAGE-GROUSE DISTRIBUTION



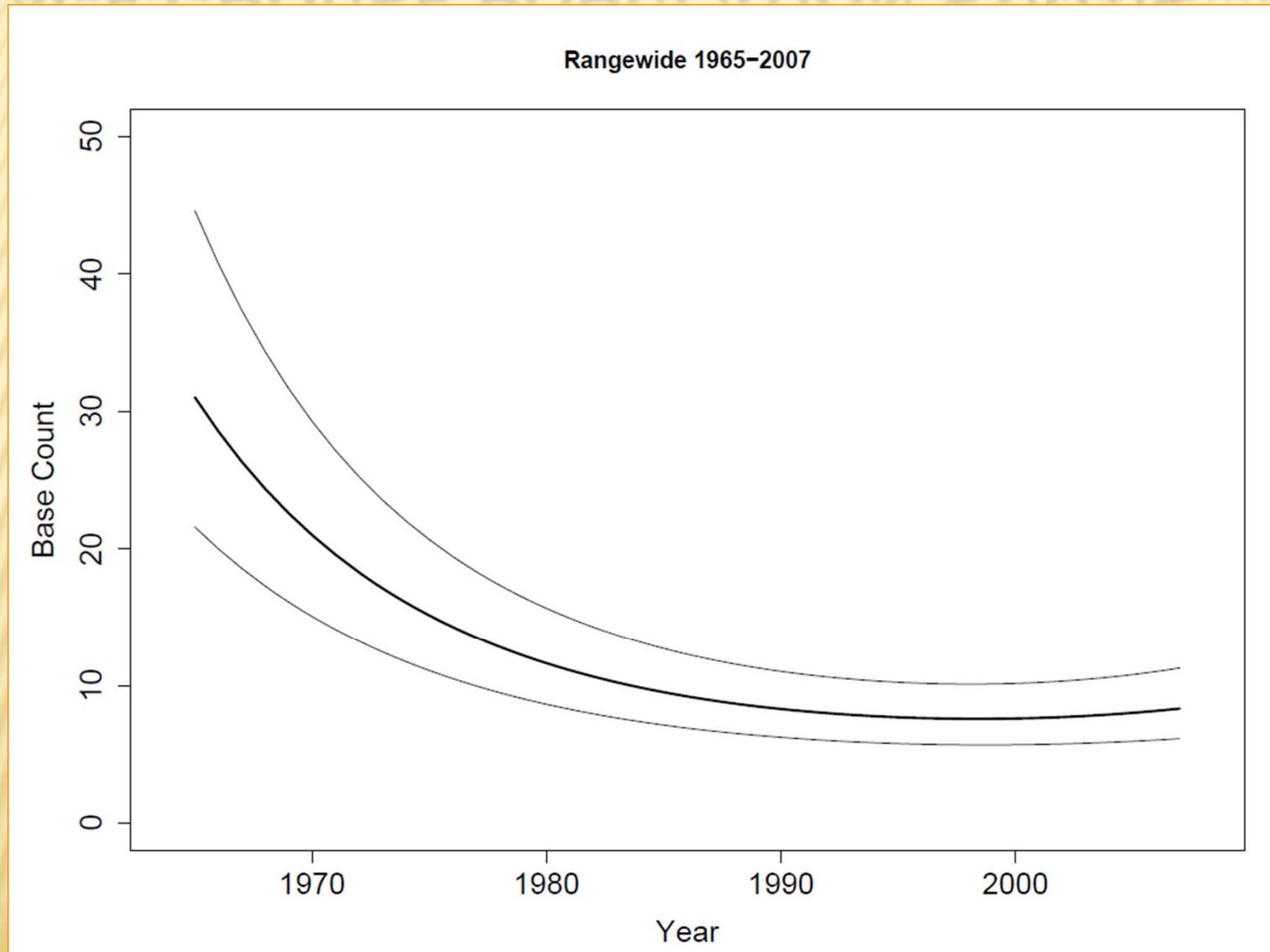
(USGS image, based on Schroeder et al. 2004)

SAGE-GROUSE—A BIRD OF MANY LABELS

- × Game Bird in 10 of 11 states
- × Federal Candidate (Warranted but precluded)
- × Ecologically and Socially?
 - + Sagebrush obligate
 - + Sagebrush “landscape” obligate
 - + Umbrella Species
 - + Indicator Species
 - + Flagship Species
 - + Potential for economic “disruption” if federally-listed



SAGE-GROUSE POPULATION STATUS



Rangewide Analysis of sage-grouse lek counts (WAFWA 2008)

BASIC HABITAT ECOLOGY

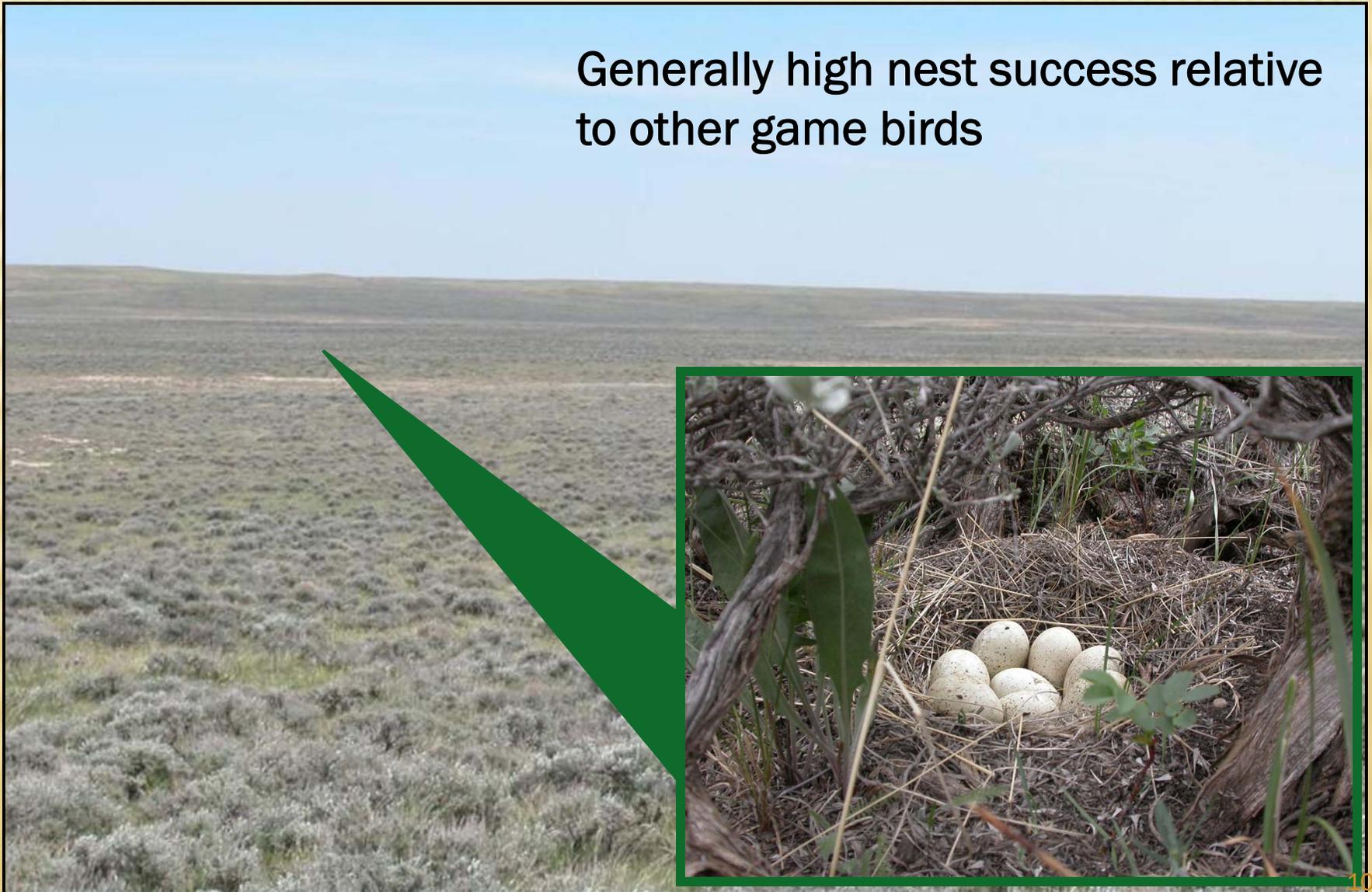
SPRING/SUMMER BREEDING/BROODING – SAGE-GROUSE

Mate on strutting grounds
(leks)

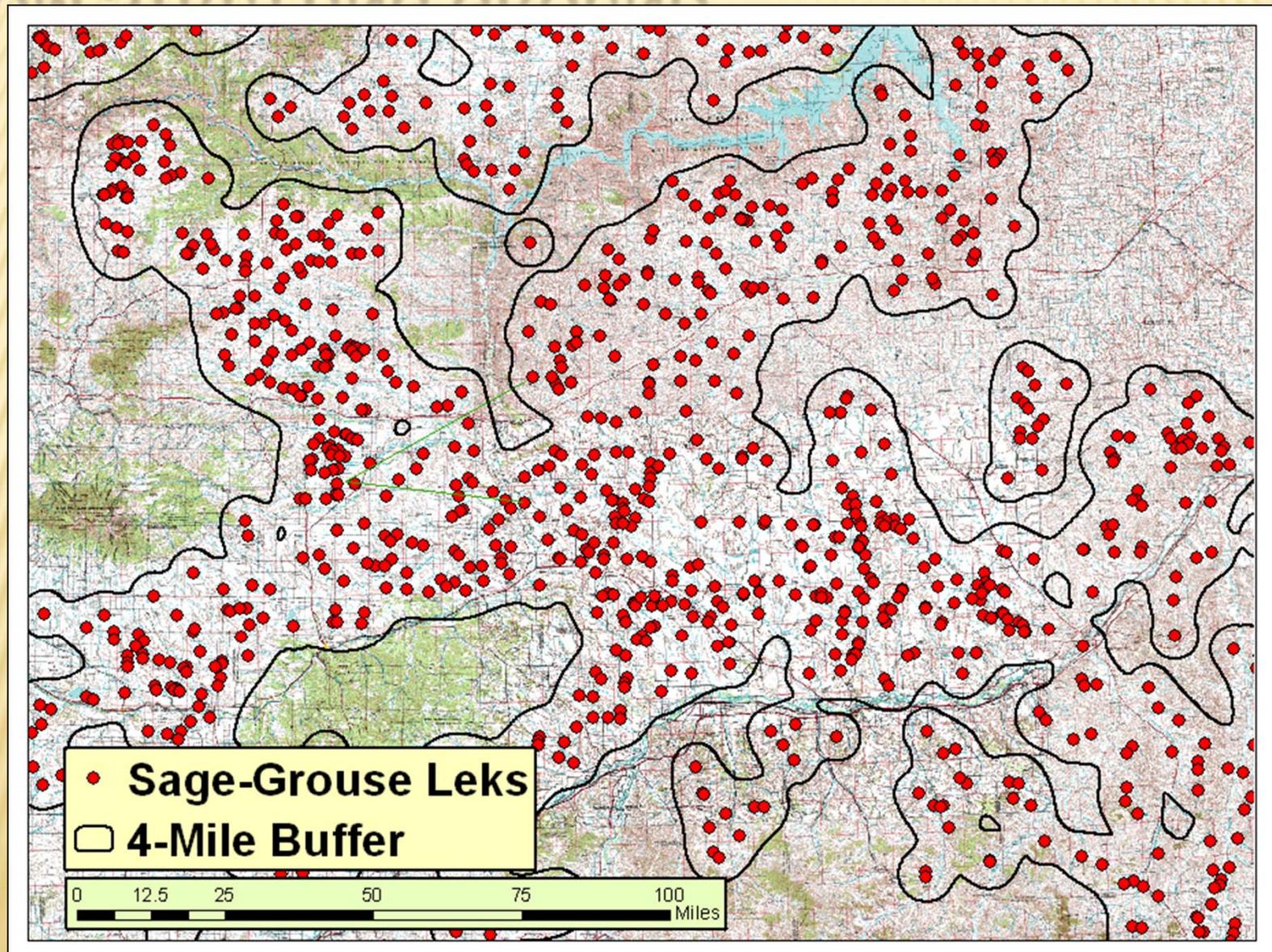


SAGE-GROUSE NESTING

Generally high nest success relative to other game birds



SAGE-GROUSE NESTS - UP TO 4 MILES OR MORE FROM STRUTTING GROUND



SAGE-GROUSE BROOD REARING

EARLY BROOD
(UPLANDS)

LATER SUMMER
(MORE MOIST AREAS)



SAGE-GROUSE WINTER HABITAT



DOMINANT HABITAT ISSUES

PRIMARY SAGE-GROUSE HABITAT THREATS

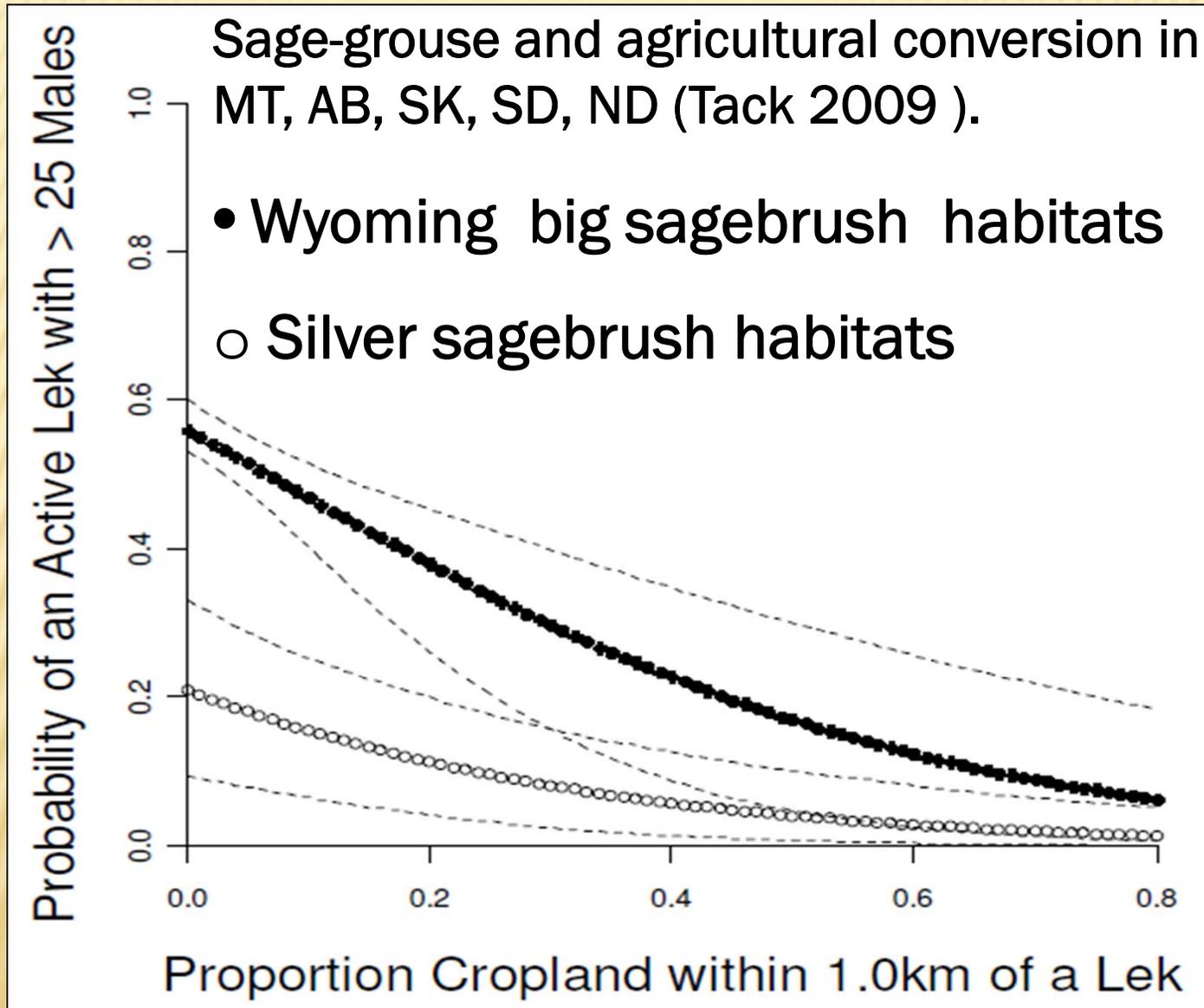
Habitat Conversion



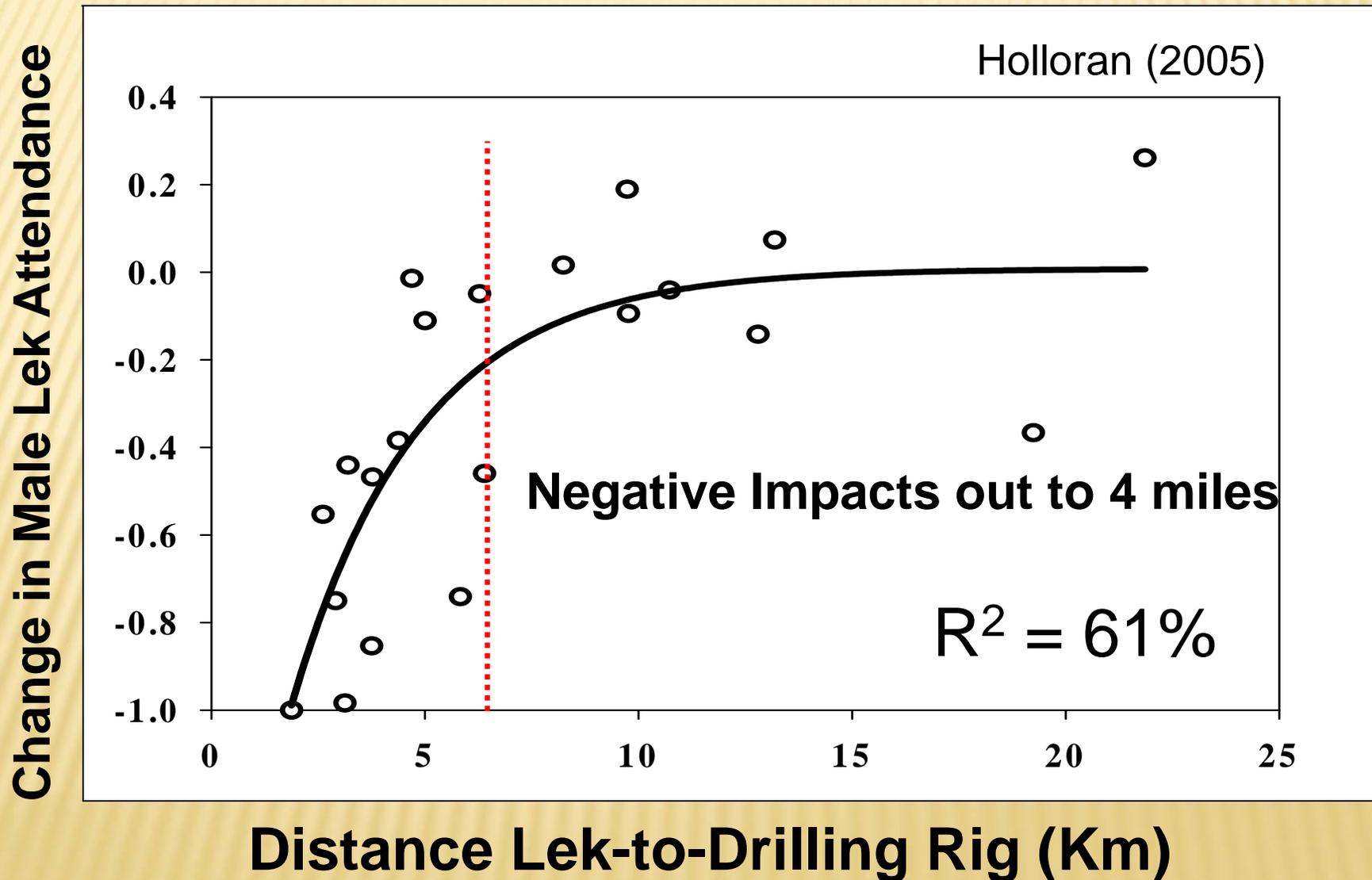
Habitat Fragmentation



EFFECT OF CONVERSION



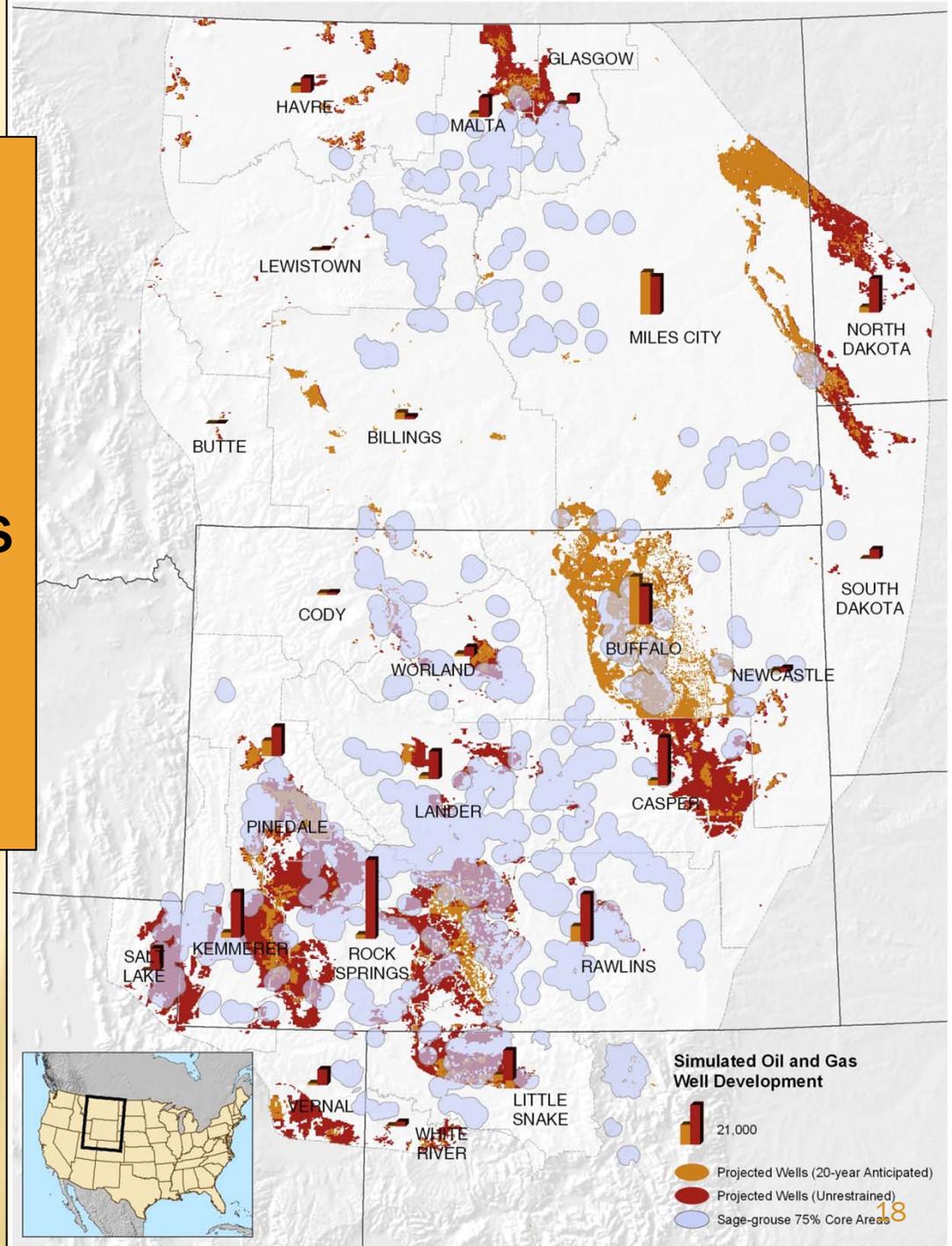
EXAMPLE OF **FRAGMENTATION**: DISTANCE TO CLOSEST DRILLING RIG BY LEK

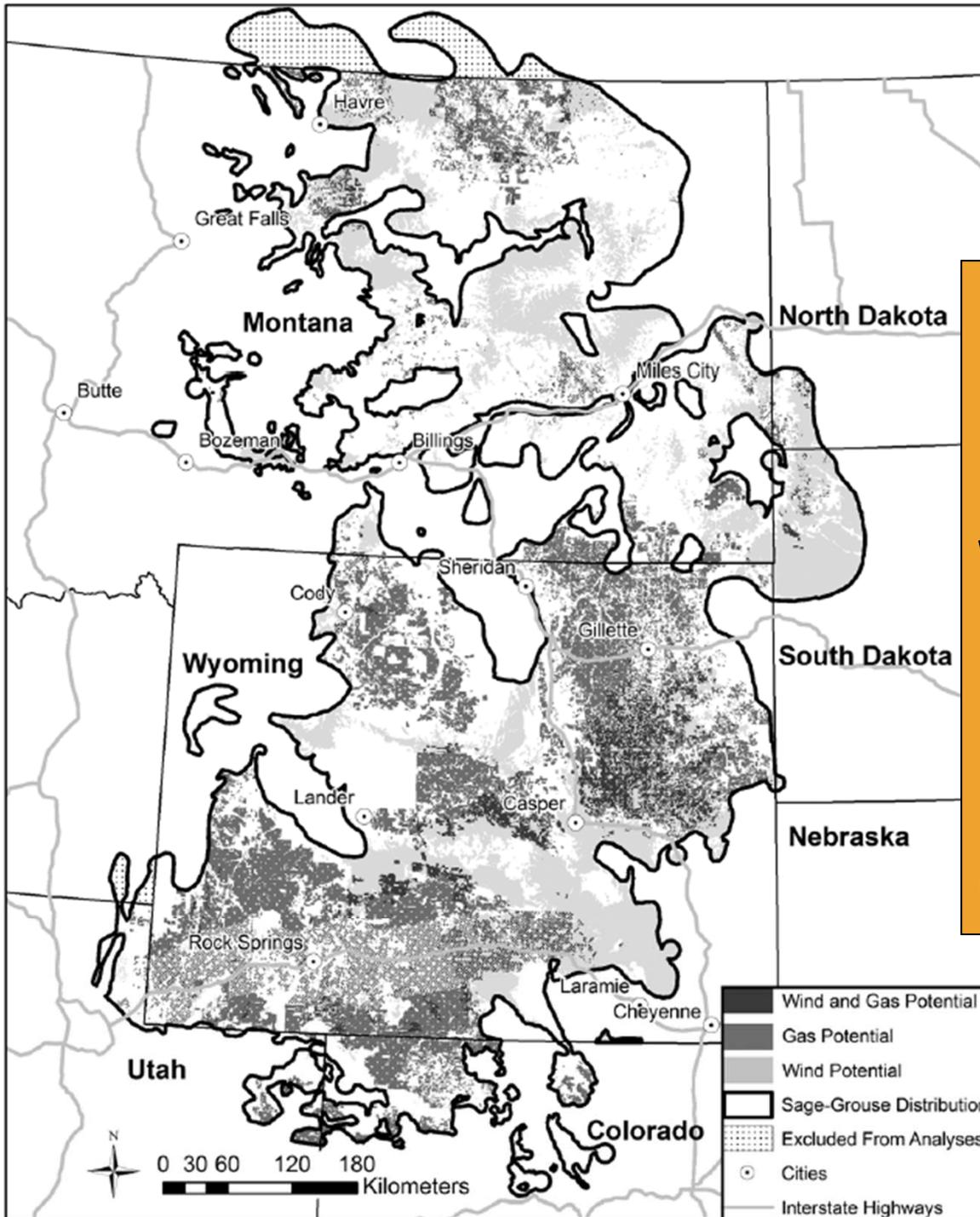


OIL AND GAS

Highest density sage-grouse areas overlaid on predicted oil and gas developments

(Copeland et al. 2009)





Wind, Oil, and Gas Potential

Within Sage-grouse Distribution— eastern portion of range.

(Doherty et. al. 2011)

PRIMARY SAGE-GROUSE HABITAT THREATS

Habitat Deterioration

Loss of understory



Invasion of exotic annuals



PRIMARY SAGE-GROUSE HABITAT THREATS

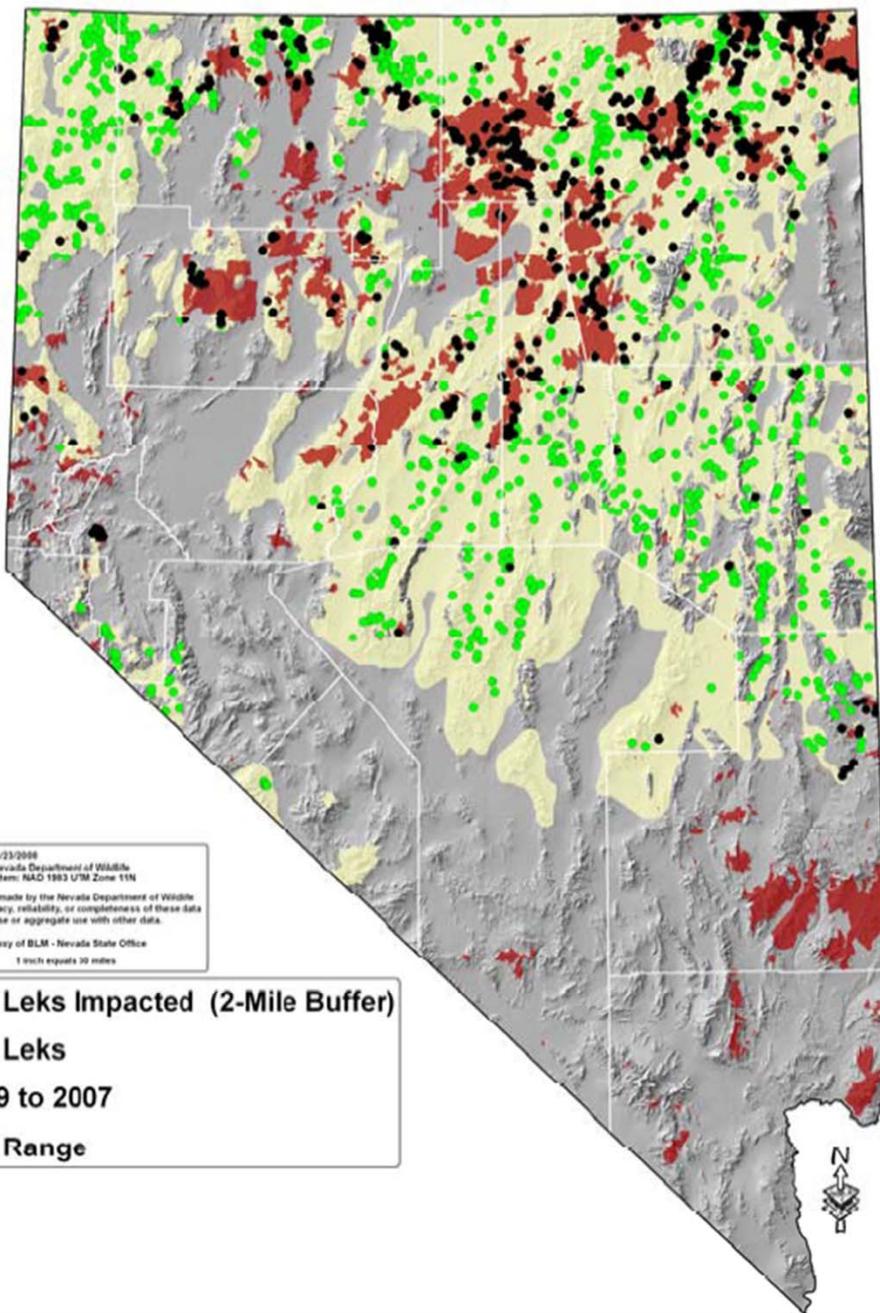
Conifer Expansion



Wildfire



Effects of Wildfires (1999 to 2007) on Greater Sage-grouse



WILDFIRES

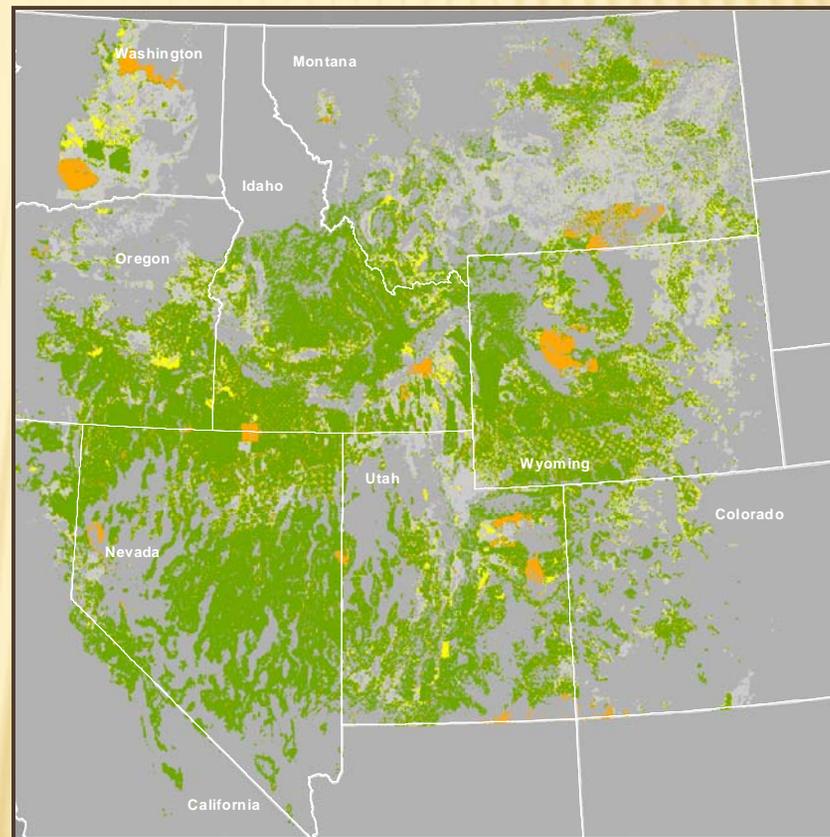
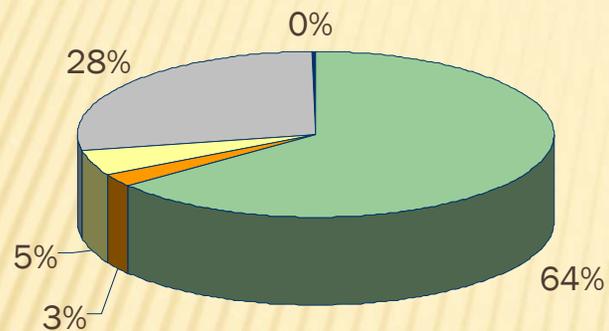
--An Example--

11.6% or
2.5 million ac.
of sage-grouse
habitats
burned in NV,
1999-2007.

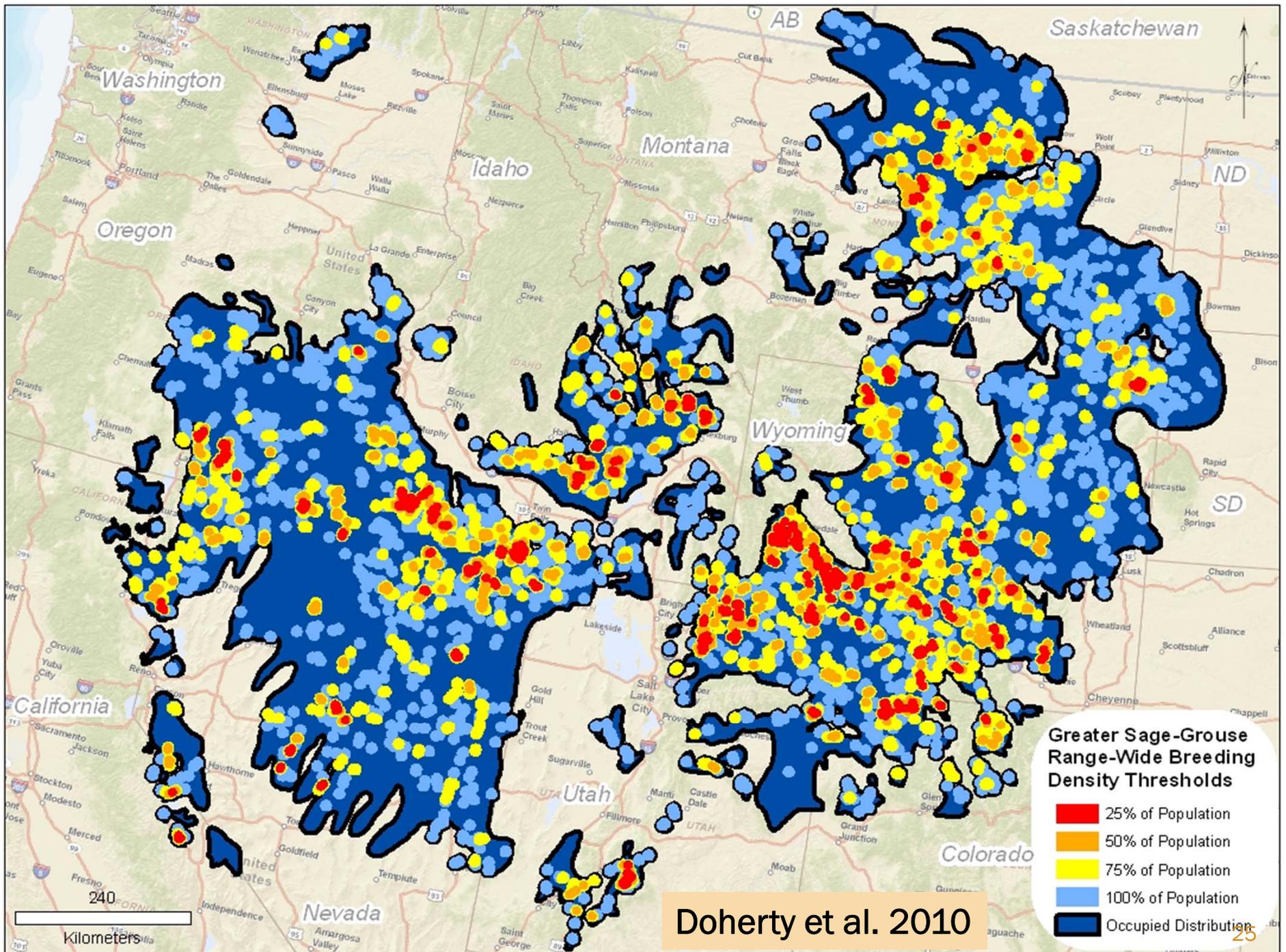
(Espinosa and
Phenix 2008)

BASIC CONSERVATION NEEDS/OPPORTUNITIES

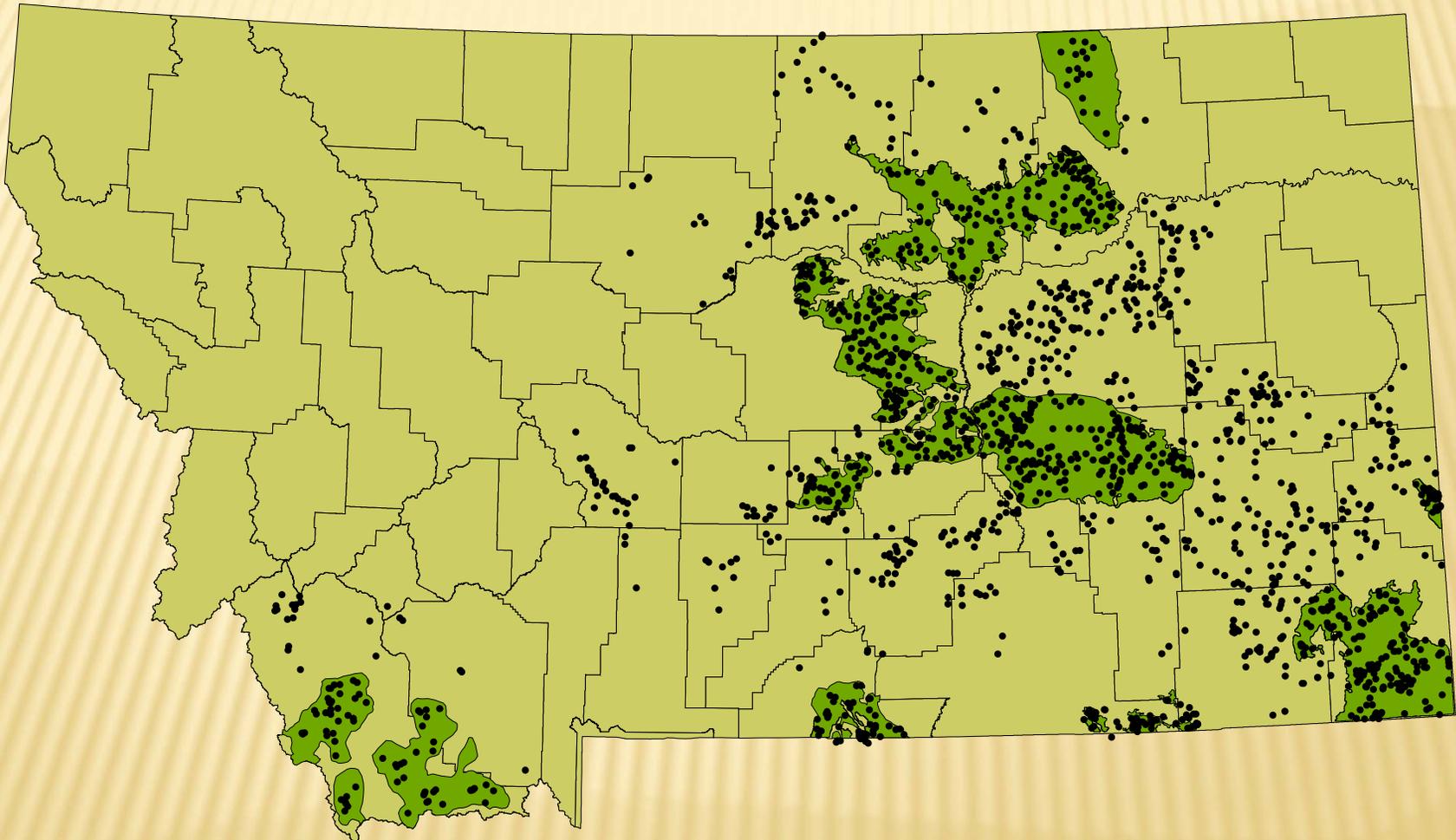
STRATEGIC CONSERVATION: *WHO OWNS THE SAGEBRUSH?*



(Broad Scale Vegetation Map)



STRATEGIC CONSERVATION: *WHERE ARE THE PRIORITY CONSERVATION AREAS?*



Montana's Sage-grouse Core Areas, vers. 1.1 encompass:
56% of leks and approx. 79% of sage-grouse

STRATEGIC CONSERVATION:

WHAT ARE THE PRIORITY HABITAT NEEDS?

- × Priority 1 = maintain large expanses of functional sagebrush grassland habitat
- × Priority 2 = maintain native range integrity (native veg. composition and abundance)
- × Priority 3 = provide standing herbaceous cover (important for nesting and brood rearing)
- × Priority 4 = restore converted habitats
 - + Greater risk of failure
 - + Costly
 - + More resource inputs
 - + Smaller scale

STRATEGIC CONSERVATION:

WHAT OPPORTUNITIES ARE THERE?

- ✘ *Sustainable* grazing management that incorporates deferment and yearlong rest grazing treatments (BLM, NRCS, FWP)
- ✘ Energy Development
 - + Landscape planning/implementation
 - + Phased development
 - + Collaborative development
 - + On and Off site mitigation – corresponding to habitat values

STRATEGIC CONSERVATION:

WHAT OPPORTUNITIES ARE THERE?

- ✘ Farm Bill Policy – incentives/disincentives
 - + Example: NRCS Sage-Grouse Initiative
 - + Example: “Sodsaver” component
- ✘ Other conservation tools:
 - + Habitat enhancements/restoration
 - + Conservation easements
 - + Long-term leases/management agreements
- ✘ Needs/opportunities vary somewhat by region—not an exhaustive list

SUMMARY

TAKE HOME MESSAGES

- ✘ Sage-grouse and their habitats embrace considerable biological, social, and economic values
- ✘ Intact sagebrush landscapes are essential to conserving sage-grouse
- ✘ Sage-grouse are sensitive to habitat fragmentation and a variety of anthropogenic disturbances

TAKE HOME MESSAGES

- ✘ Opportunities exist for effective conservation:
 - + Careful planning and avoidance of key habitats is most effective.
 - + Strategically-placed habitat protection, enhancement, and restoration.

TAKE HOME MESSAGES

State wildlife agencies:

- ✘ Have a mandate to conserve/restore sage-grouse populations—avoiding federal listing
- ✘ Are not anti-development
- ✘ Are a source of information for planning; sage-grouse lek and seasonal habitat information
- ✘ Provide general and site-specific recommendations for effective mitigation
- ✘ Can assist with collaborative planning

Thank You!

