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Idaho Department of Fish and Game

Greater Sage-Grouse

A Landscape Species and Its Habitat

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Greater Sage-Grouse
Why is conservation so challenging?

- Broad range-wide distribution
- Diversity of sagebrush environments
  - Complex dynamics
- Wide variety of system stressors
- Multiple land ownerships
  - Public lands managed for multiple use
  - Not all lands are equal

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Presentation Outline

- Greater Sage-Grouse populations
- Sagebrush dynamics
- Conservation implications and conclusions

Greater Sage-Grouse
Population biology

- Long-lived
- Low reproductive rate
- Large annual ranges
  - A landscape species
- Monitored by

lek surveys

Sage-Grouse Lek

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Habitat Needs
Specialists on sagebrush

- Spring and breeding
  - Food
  - Cover
  - Nesting
    - Early brood-rearing
- Winter
  - 100% of the diet
    - Sagebrush leaves and buds
    - Gain weight over winter

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High Interest Chapters

- **Hunting** – Harvest strategy
- **Predation** – Little information to suggest broad concern
- **Genetics** – Most populations genetically similar

  WA and Mono Lake are exceptions
- **Disease** – West Nile virus managed by reducing mosquitoes

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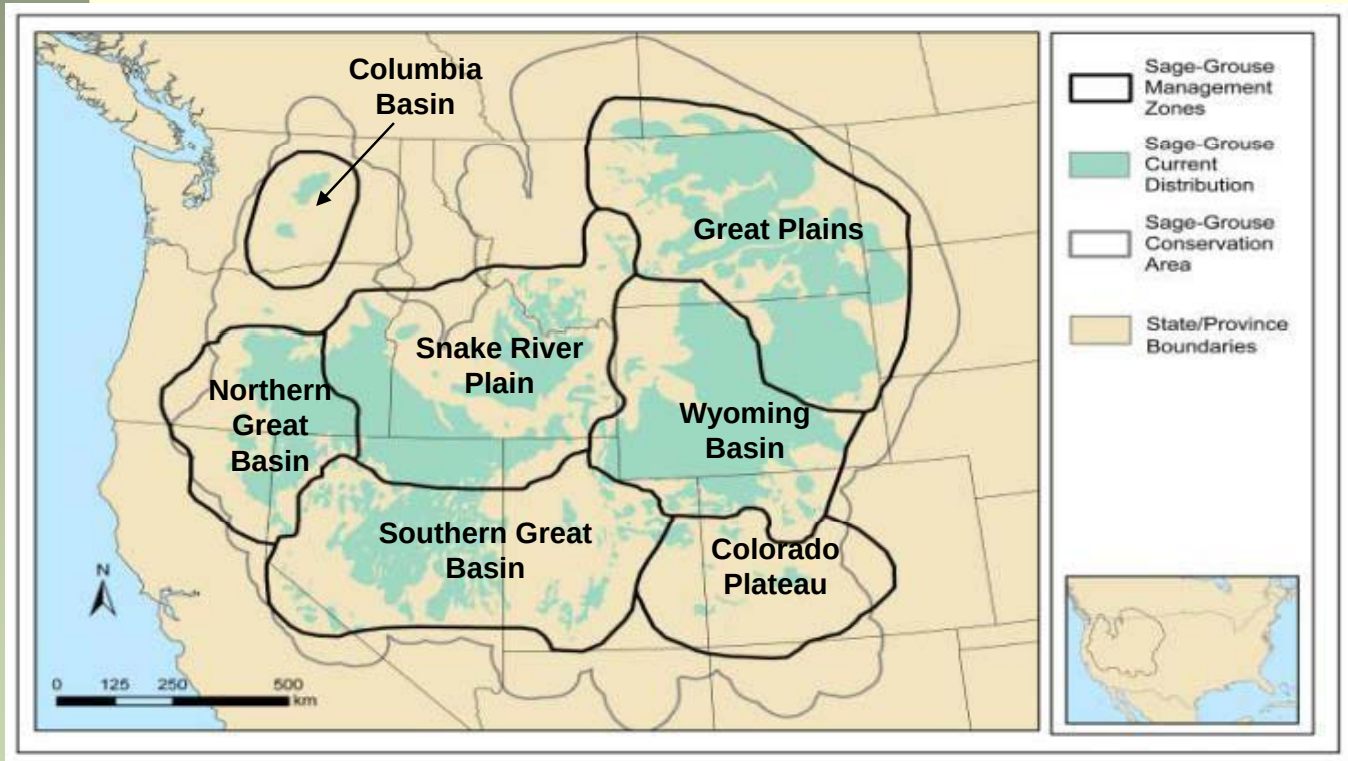
Population Analysis
Sage-Grouse Management Zones



Analysis

All Management Zones
30 of 41 Populations
Data sets
reviewed and edited
Standard procedures

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Population Analysis
Results

- Average lek size
- Rate of change
- Dynamics
  - Populations
  - Management Zones

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Major Findings
Populations

- In 2007 - 88,816 male grouse counted on 5,042 leks
- Lek size declined for 71% of populations
- Growth rate declined for 77% of populations

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Major Findings
Population analysis

- Carrying capacity
  - 44% of cases included a declining carrying capacity – 1.8% to –11.6% per year
- Populations
  - Number of males likely reduced to 45,000 (50% of current levels) within 30 years
  - High (>90%) probability that sage-grouse will remain >30,000 males range wide for the next 30 years

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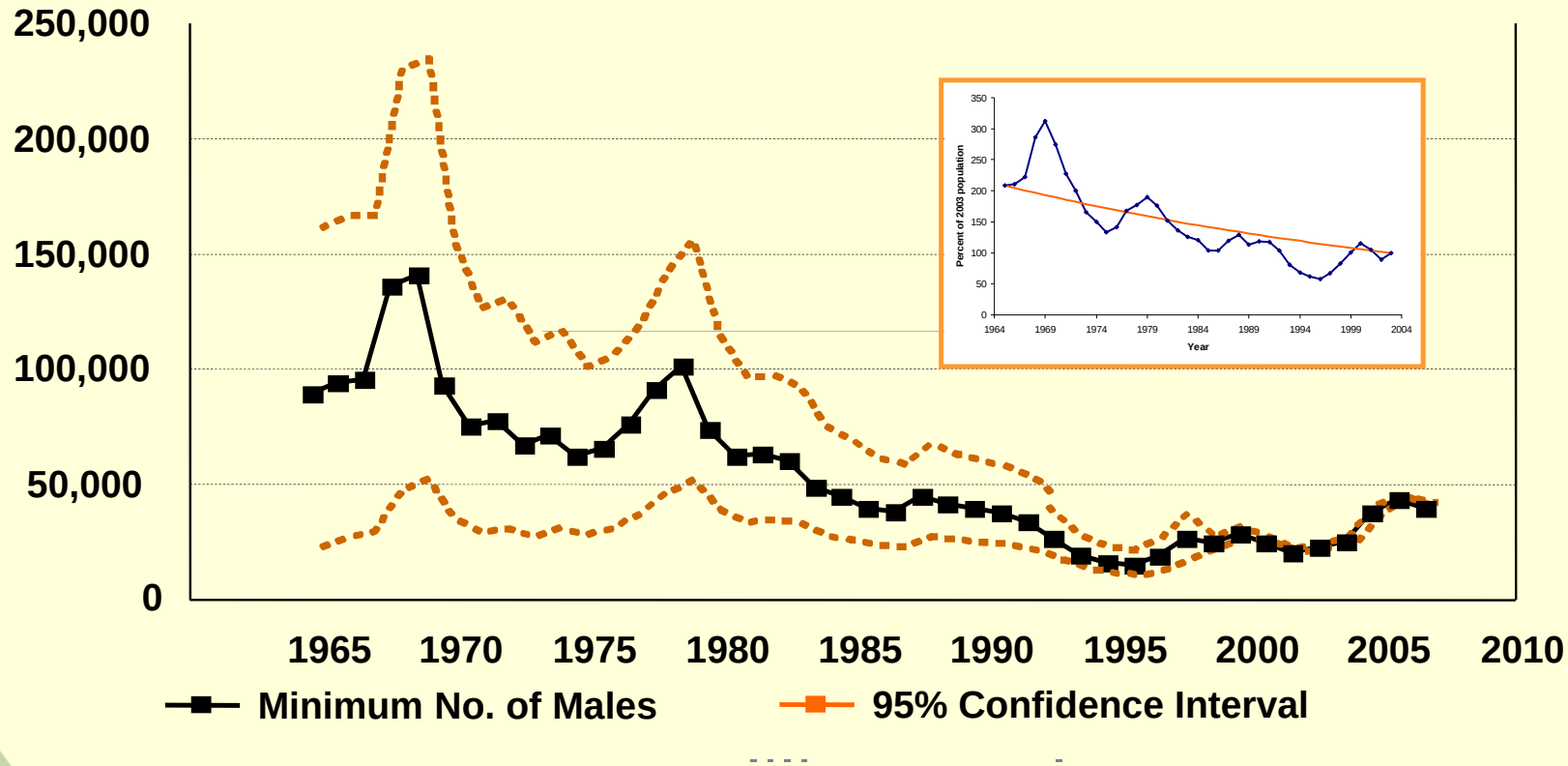
Wyoming Basin
Management Zone



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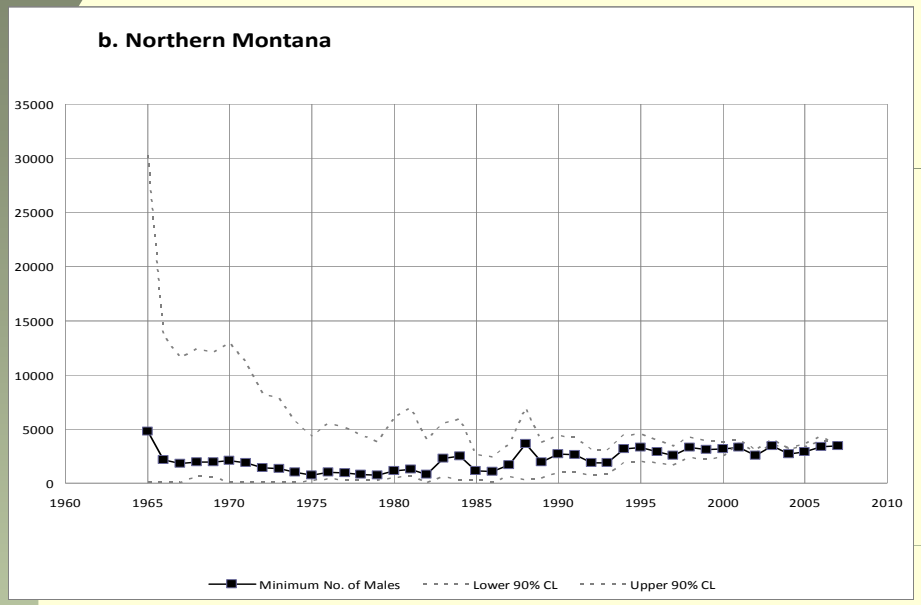
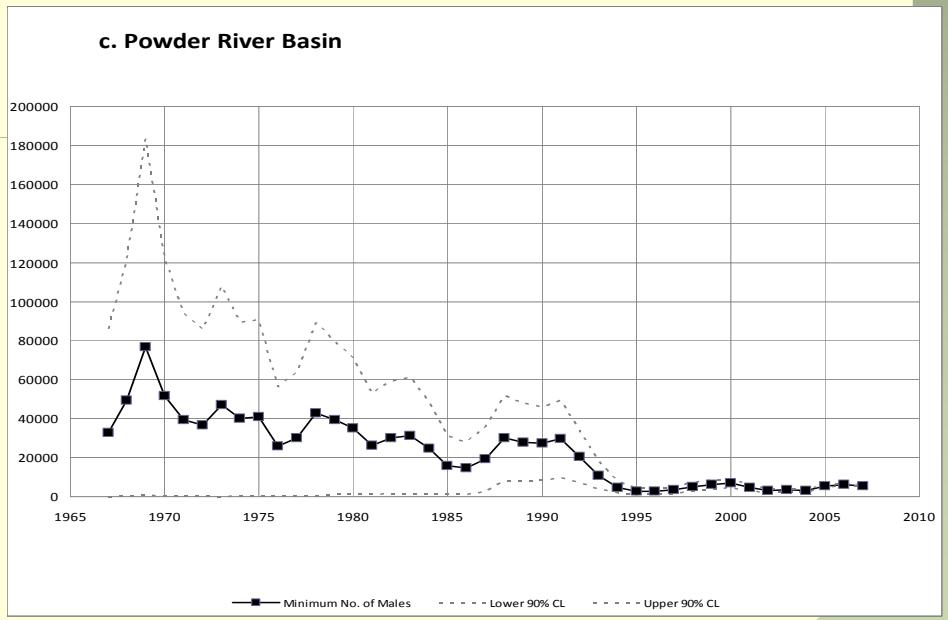
Population Reconstruction





Stable to increasing

Decreasing

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Population Loss

Top variables discriminating between occupied and extirpated ranges

Variable	Rank
Cumulative effects	1
Sagebrush area	2
Land ownership/development	3
Distance to vertical towers/transmission lines	4

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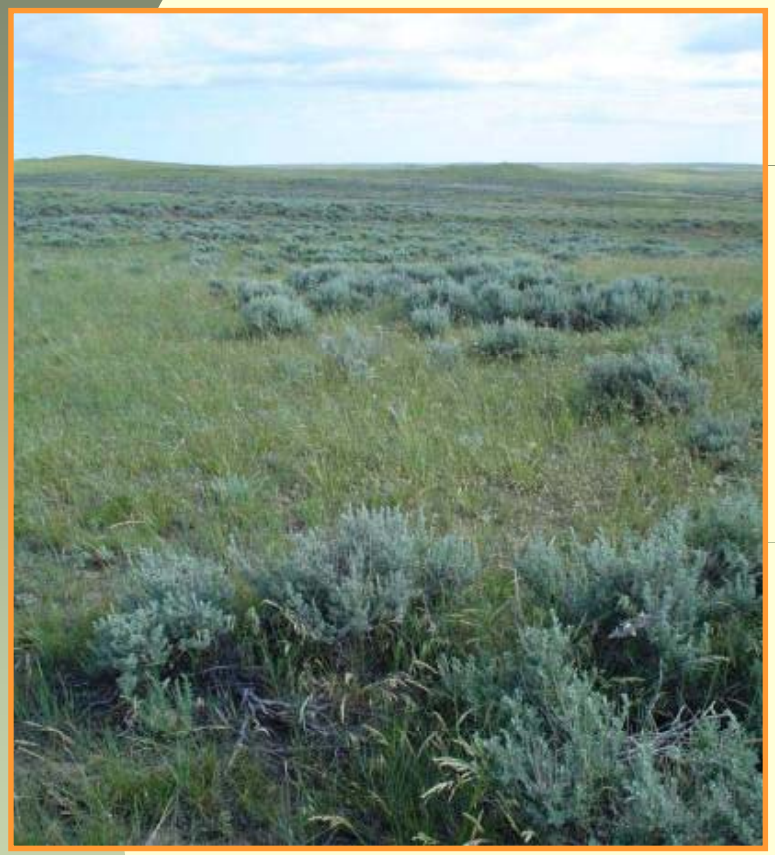

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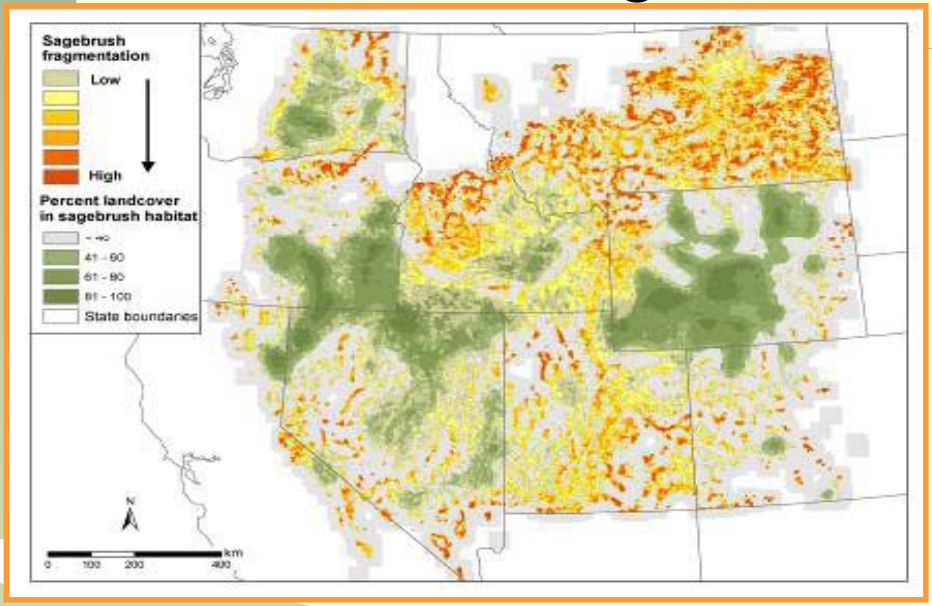
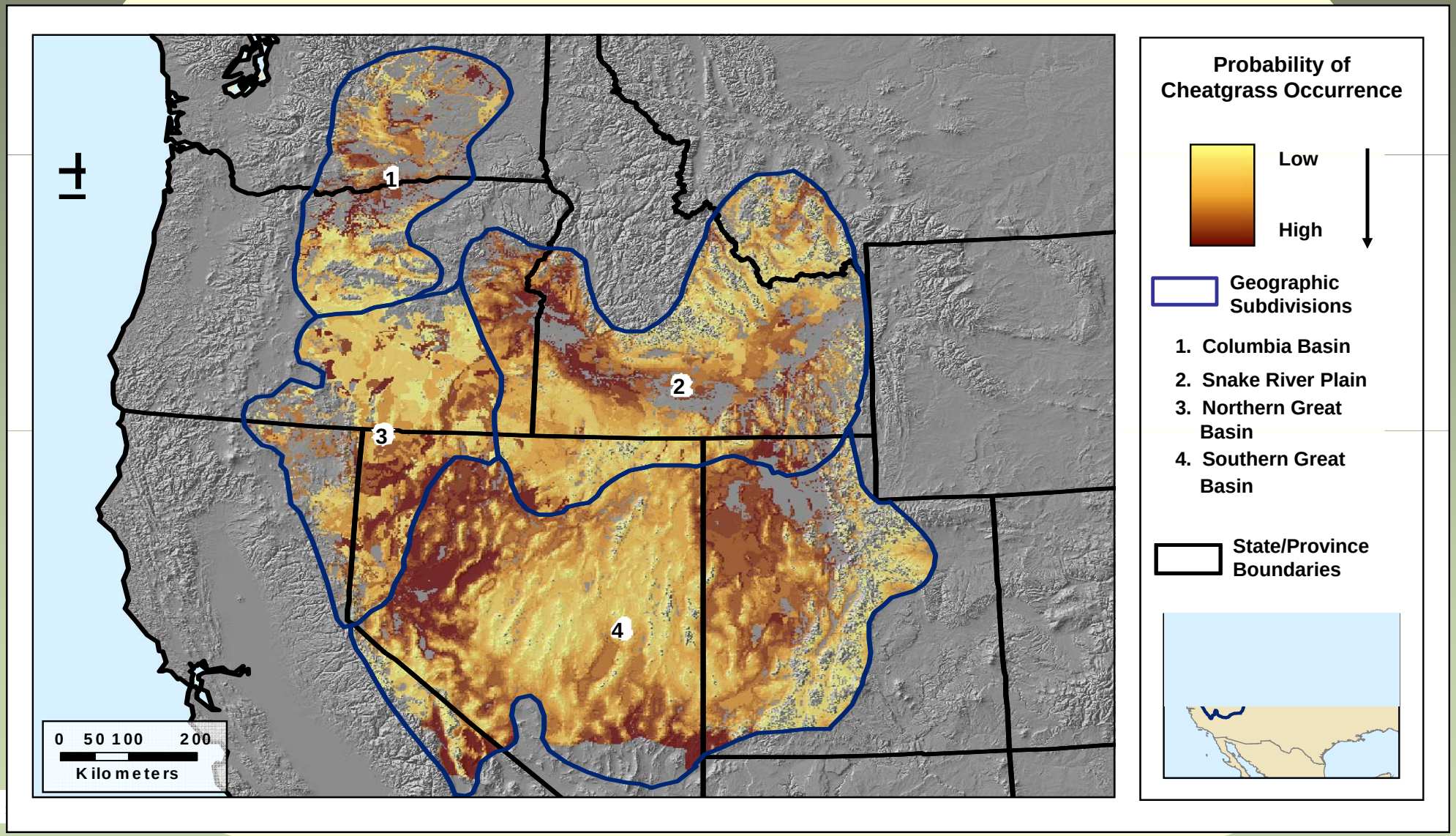
Sagebrush

Primary limitations to conservation

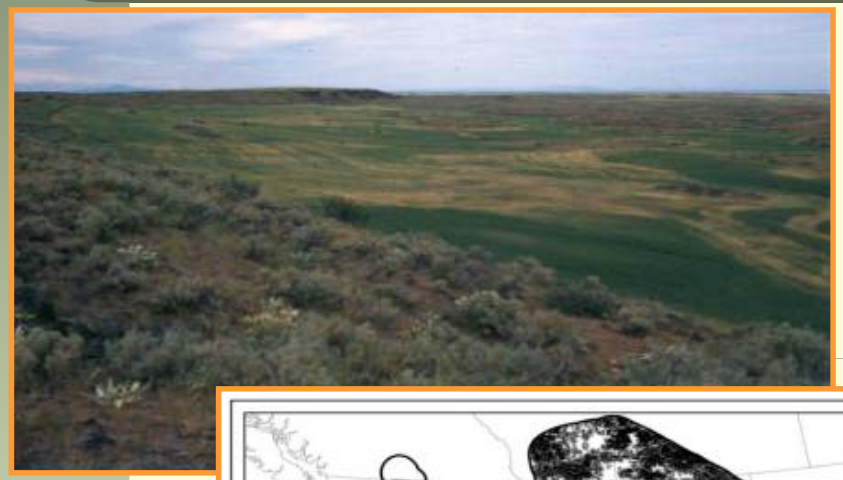
- Invasive plant species and altered fire
- Land use and the “human footprint”
- Climate change

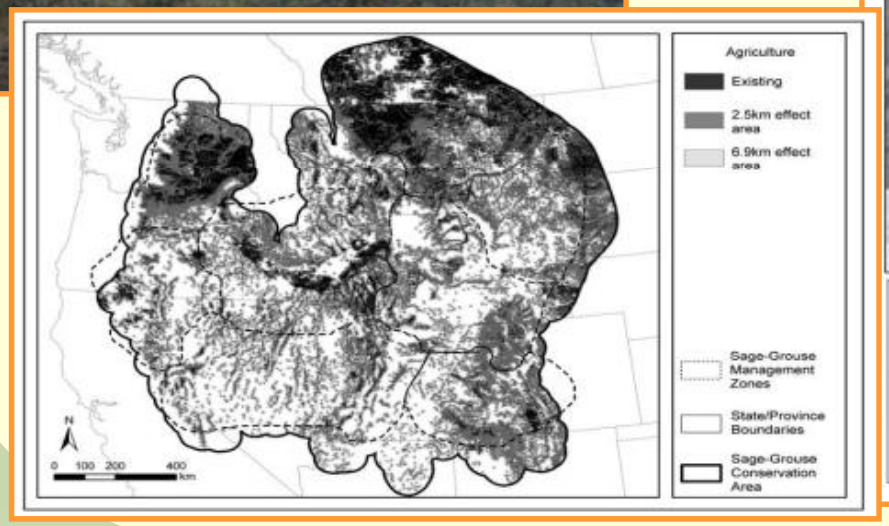


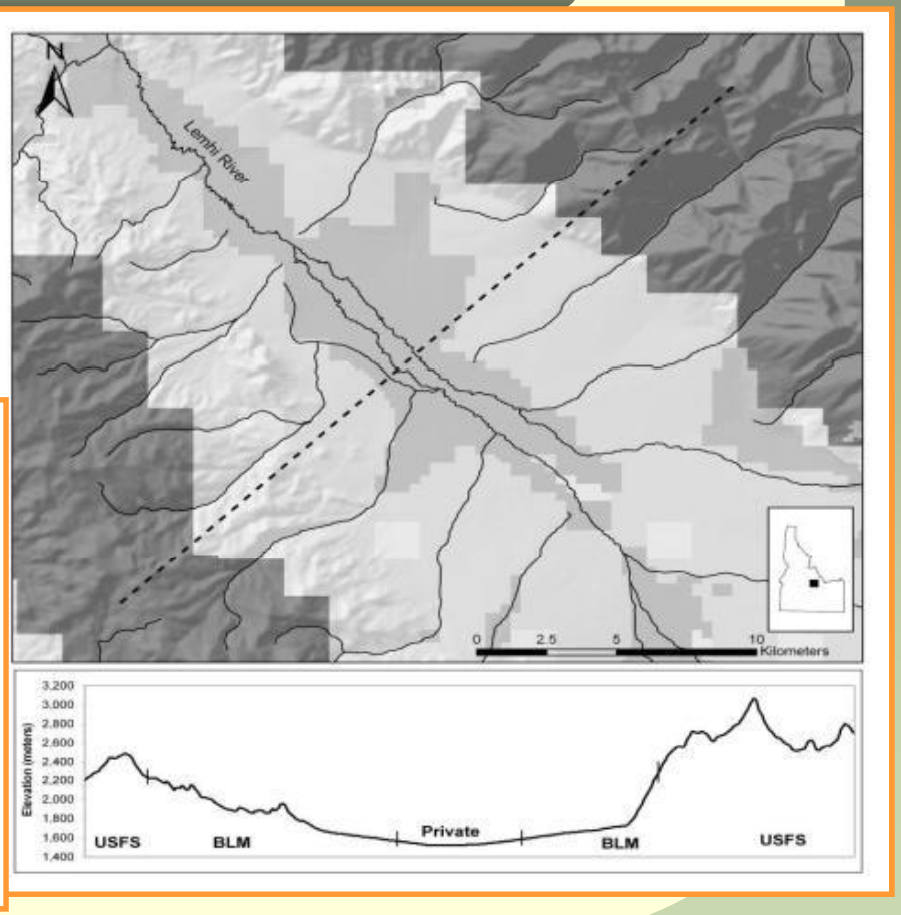

Probability of Cheatgrass Occurrence
Low
High
Geographic Subdivisions
1. Columbia Basin
2. Snake River Plain
3. Northern Great Basin
4. Southern Great Basin
State/Province Boundaries
1
2
3
4
0 50 100 200
Kilometers

Sagebrush

Land use - agriculture







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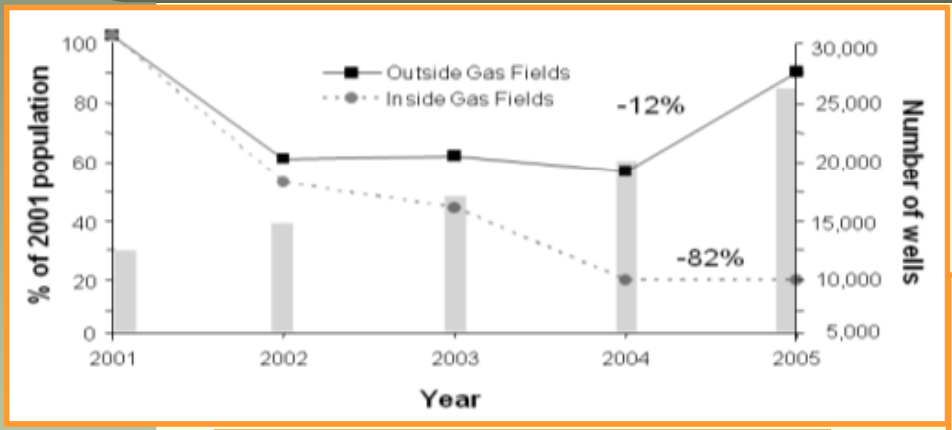
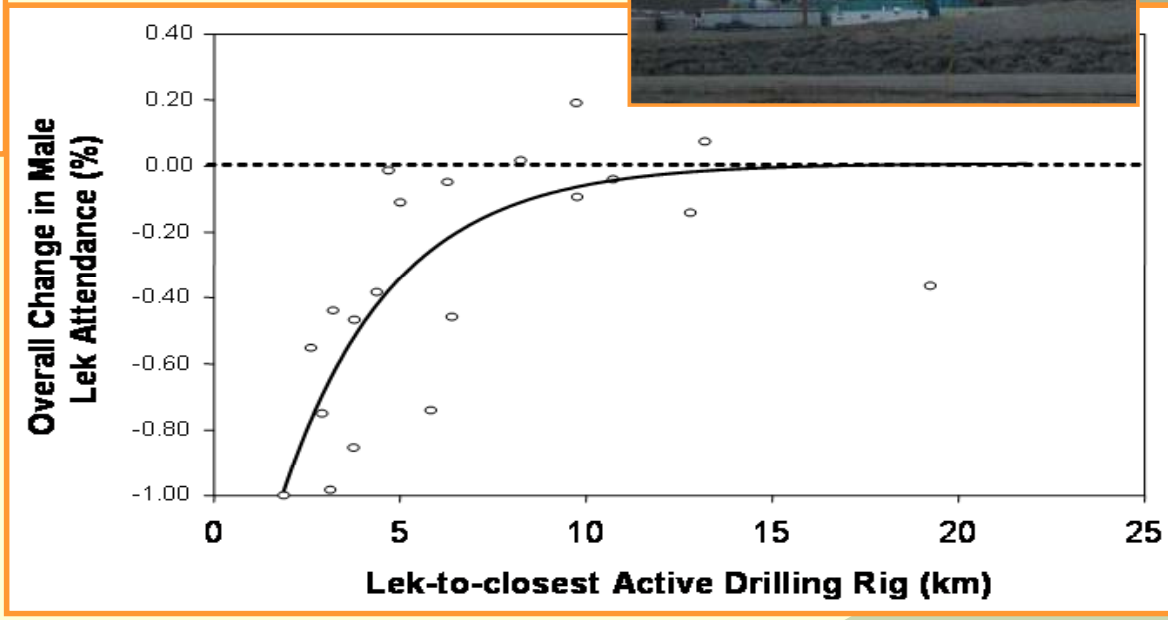
Sagebrush

Land use - energy development





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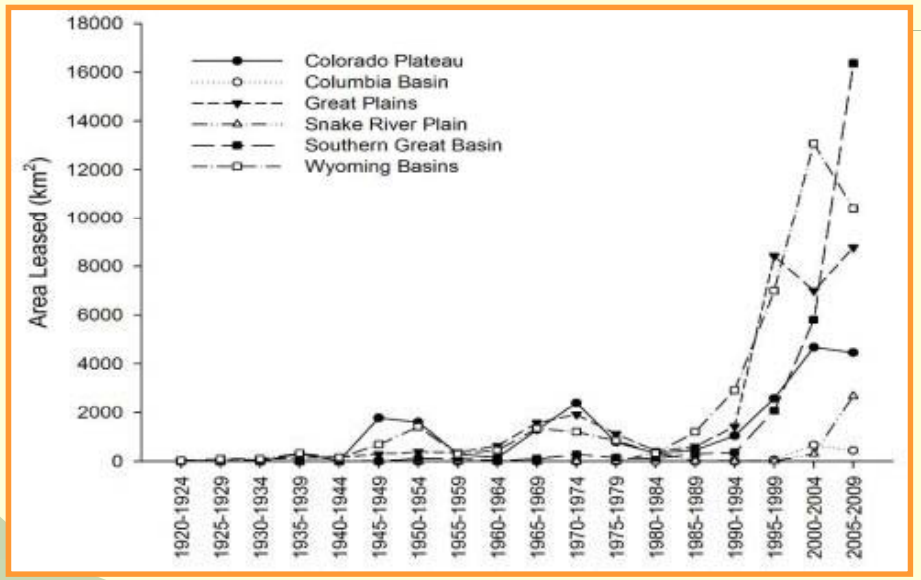
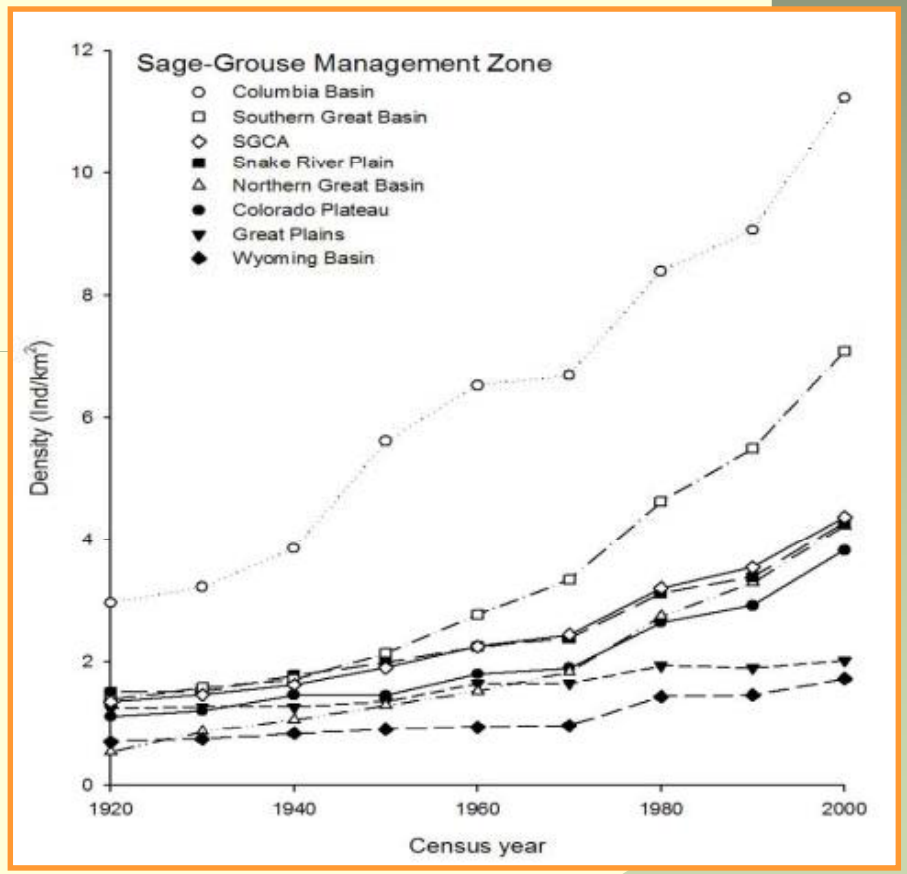
Sagebrush
Land use

Agriculture
Conservation Reserve Program
Human population growth
Urbanization
Infrastructure (roads, powerlines, towers)
Recreation and OHV use
Livestock grazing and management
Energy development (Oil and gas; wind; geothermal)
Military training

Conservation Implications

- Connectivity analysis
- Core areas
- Climate change





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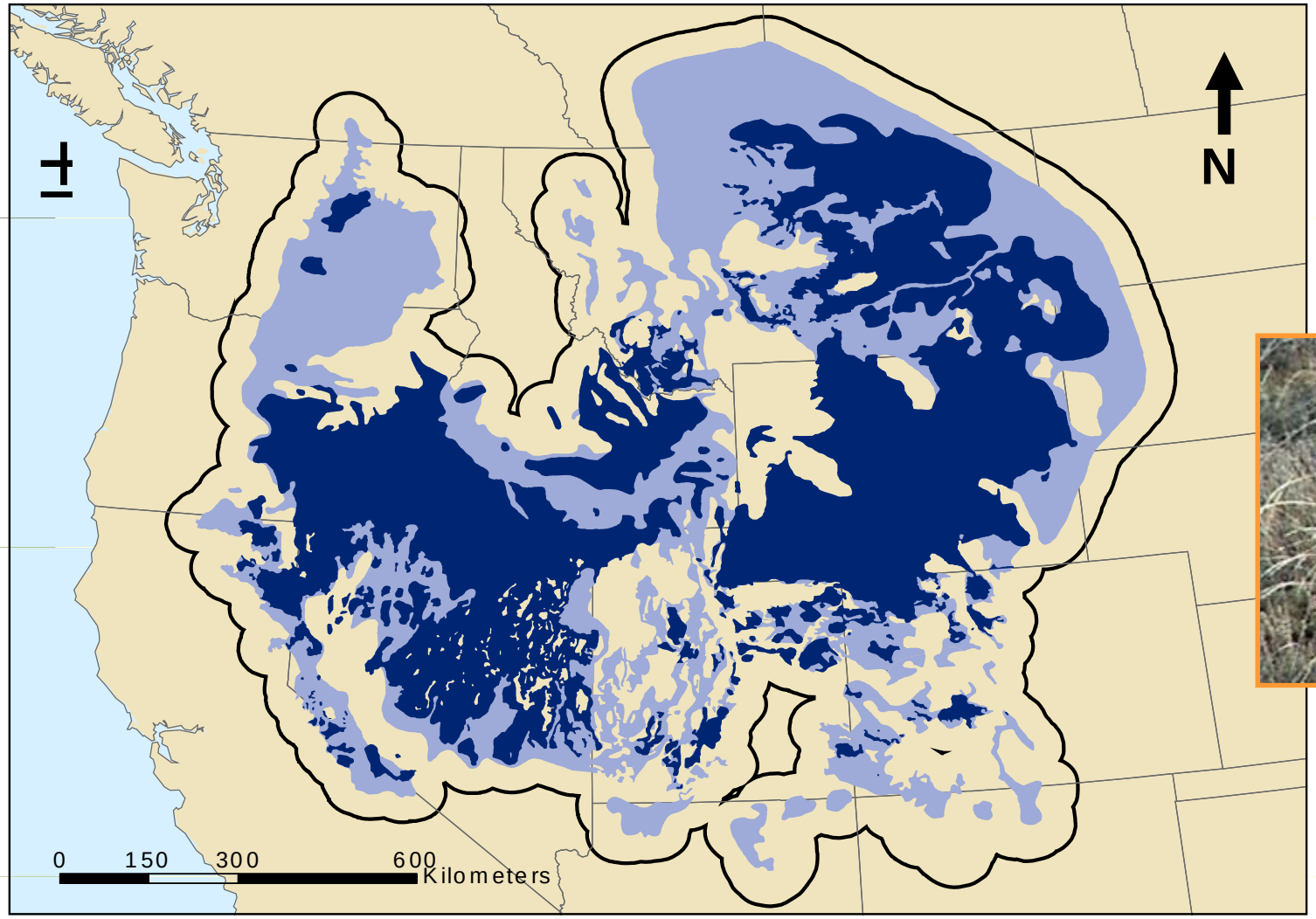

Greater Sage-Grouse

- Current Range
- Historical Range

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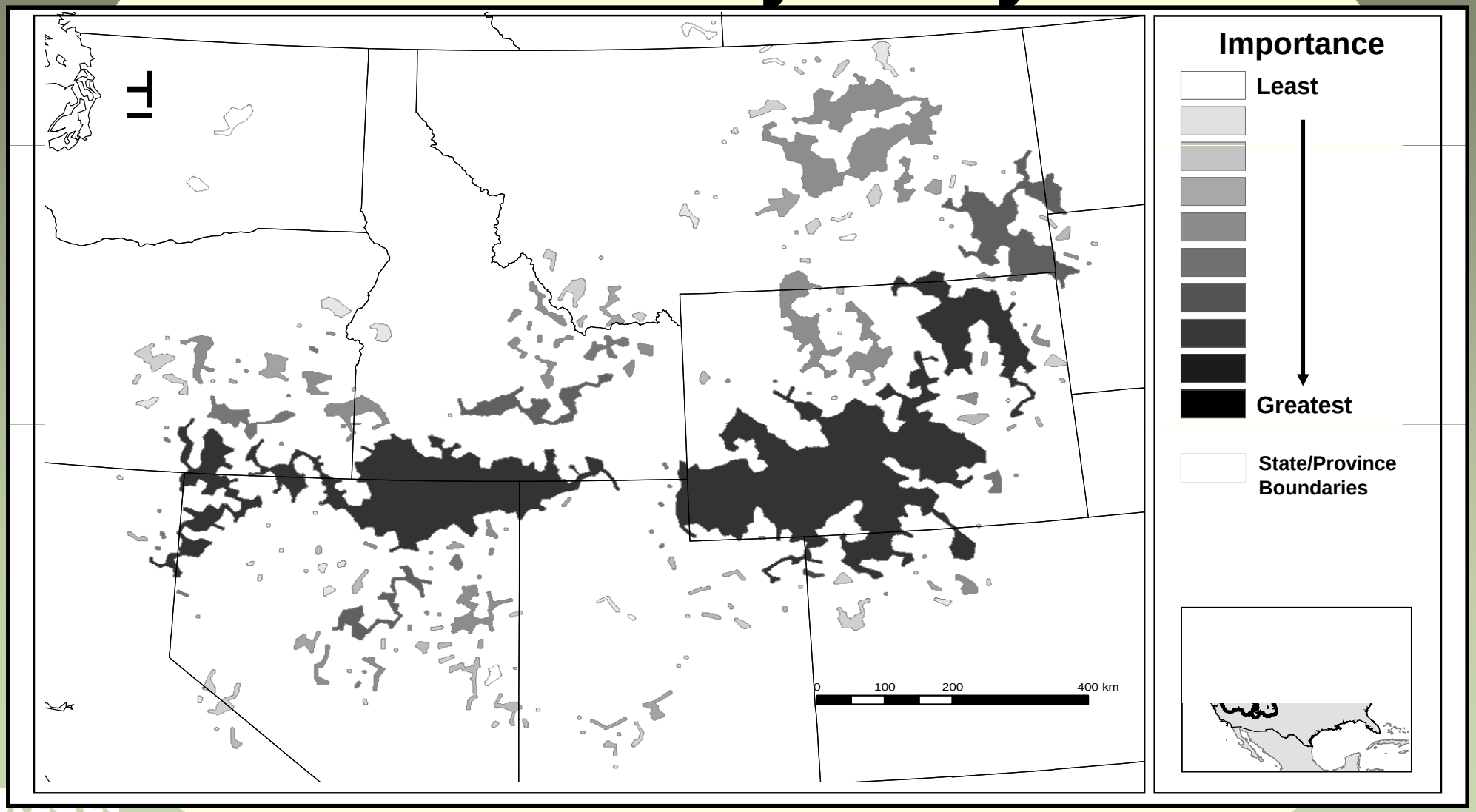
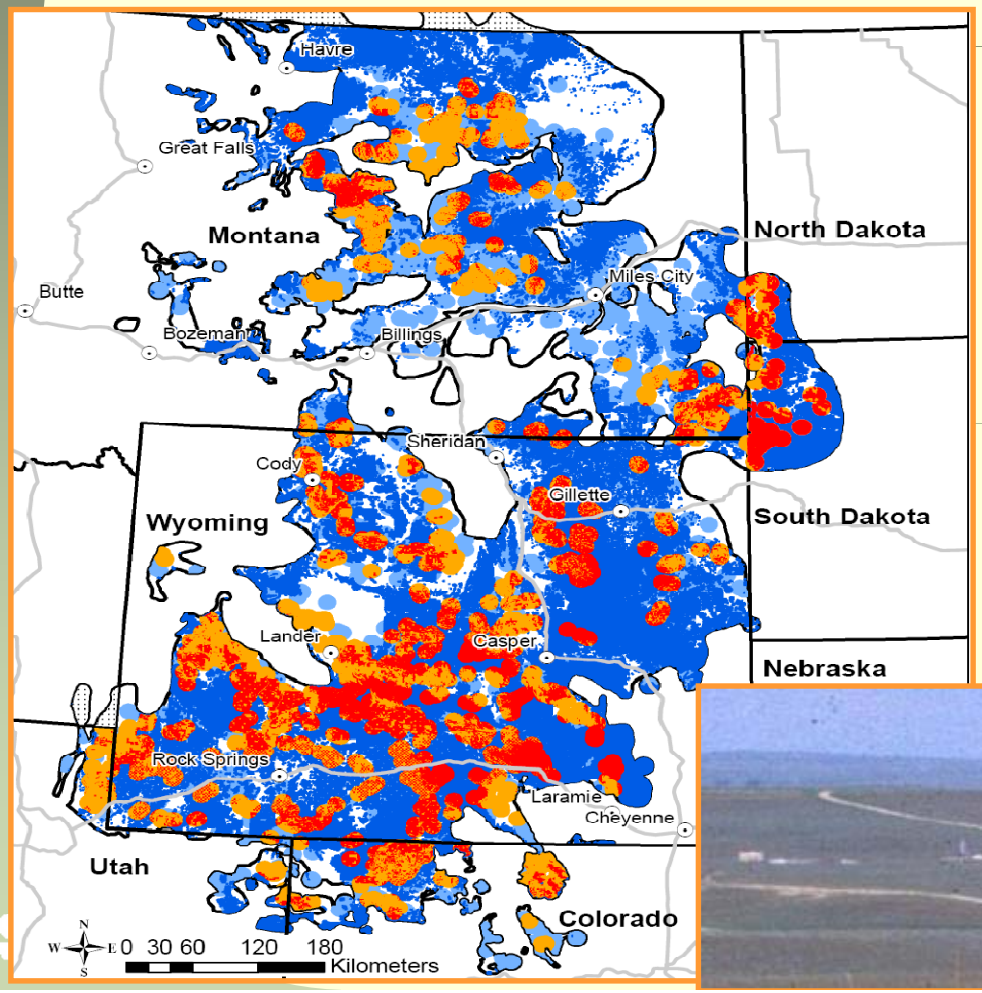
Connectivity Analysis

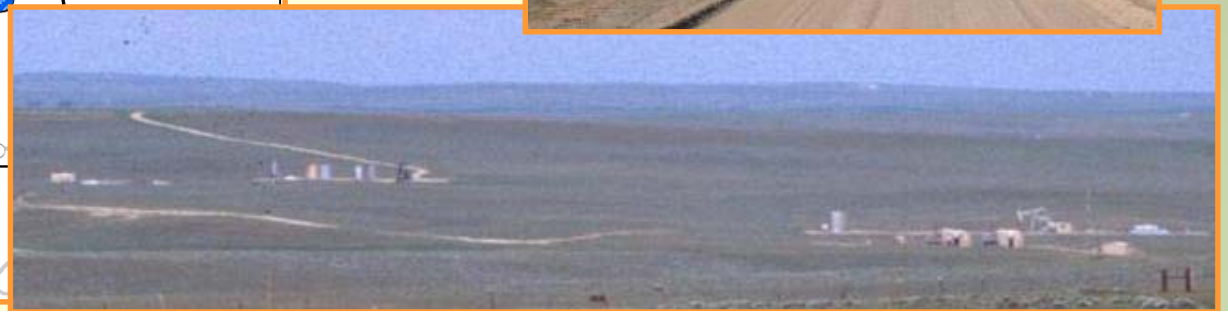


Sage-Grouse and Energy

Core areas

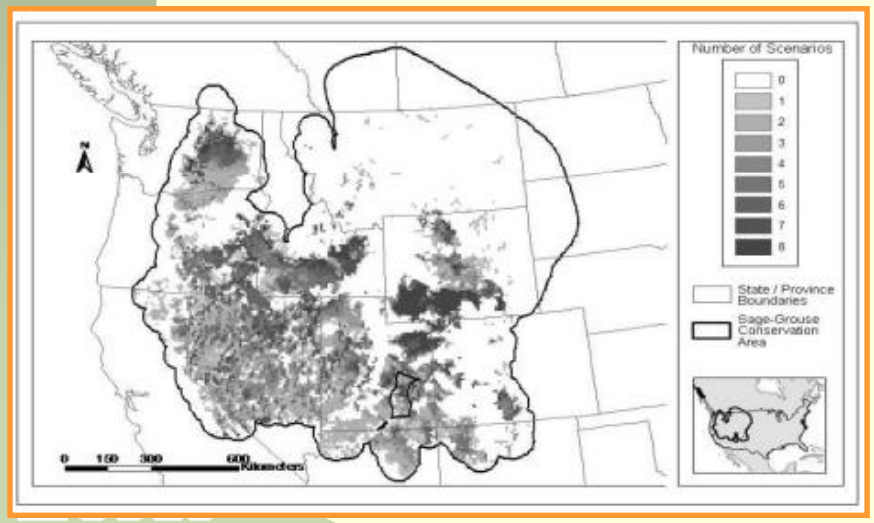


Sage-Grouse	Potential Energy Development
High	High
High	Low
Low	Low
Low	High



Sagebrush
Climate change

Increased CO_2
Increased temperature
Increased extreme weather events
Warmer winters
Earlier onset of spring
Decreased summer precipitation



Conclusions

- Sage-grouse populations reduced
- Immediate stressors on sagebrush are invasive plant species, fire, human footprint
- Connectivity and core areas concepts delineating high priority areas for conservation and restoration
- Climate change

History and our current use of the vast landscapes dominated by sagebrush can tell us much about land use, priorities, values, and resource management. The future will tell others about the effectiveness of conservation actions we implement today.

(Knick and Connelly, Introduction)

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Acknowledgments

- U.S. Geological Survey
- Idaho Department of Fish and Game
- Western Association Fish and Wildlife Agencies
  - Western Sharp-Tailed and Sage-Grouse Technical Committee
- Cooper Ornithological Society, *Studies in Avian Biology*

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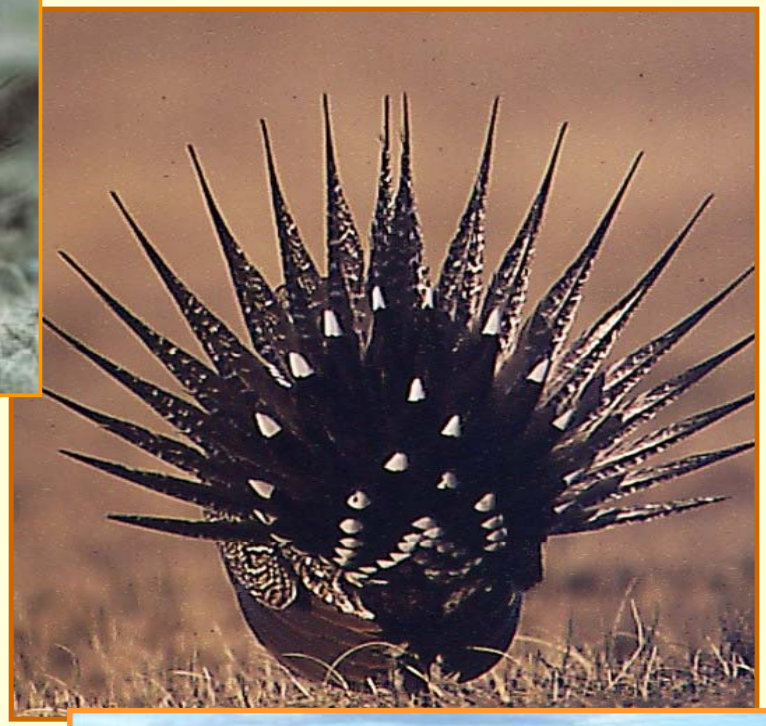

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