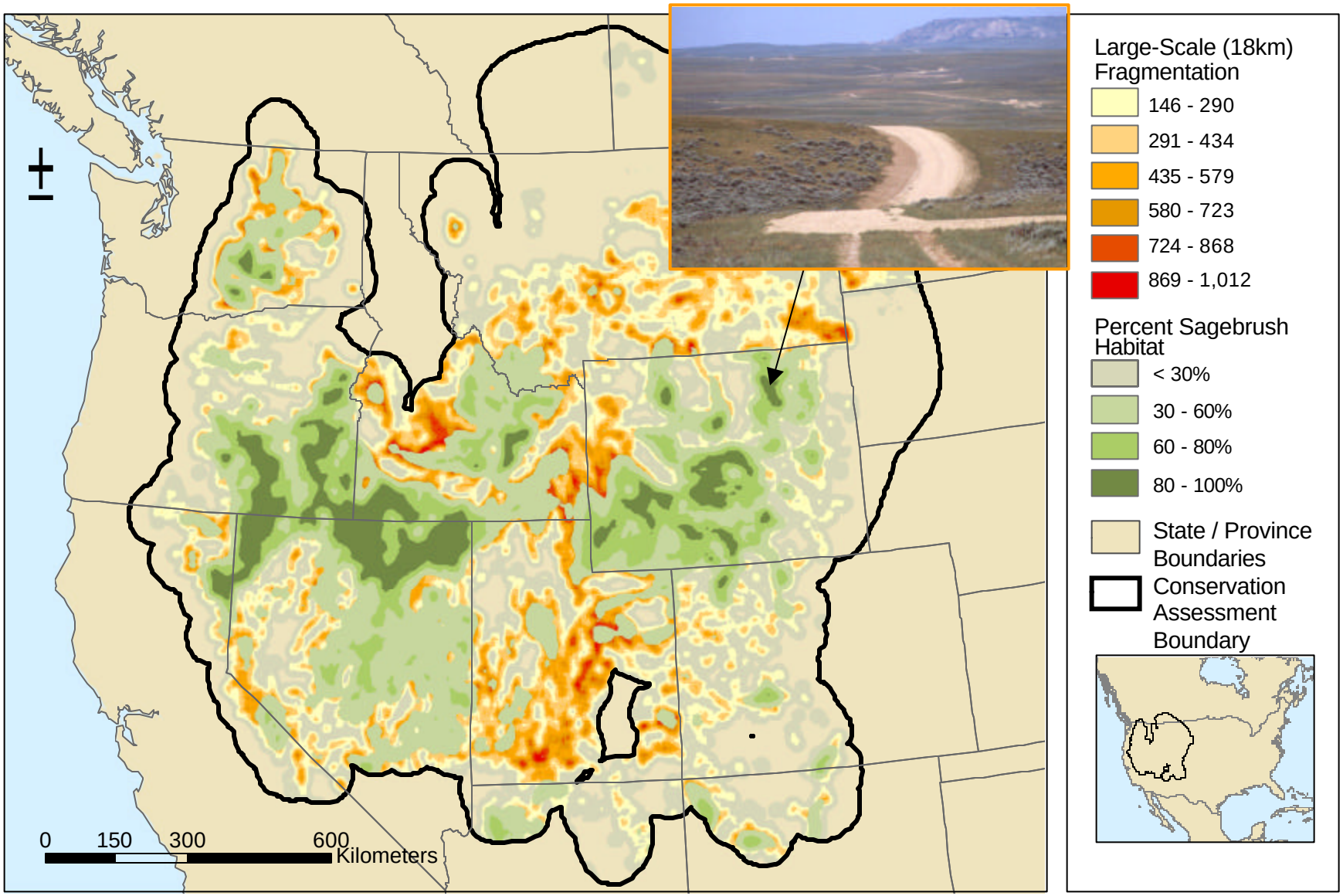
Greater Sage-grouse
Centrocercus urophasianus

Northeastern Nevada

Coalbed Natural Gas (Methane) Development, Wyoming


Large-Scale (18km) Fragmentation
146 - 290
291 - 434
435 - 579
580 - 723
724 - 868
869 - 1,012
Percent Sagebrush Habitat
< 30%
30 - 60%
60 - 80%
80 - 100%
State / Province Boundaries
Conservation Assessment Boundary
0
150
300
600
Kilometers

Presentation Objectives

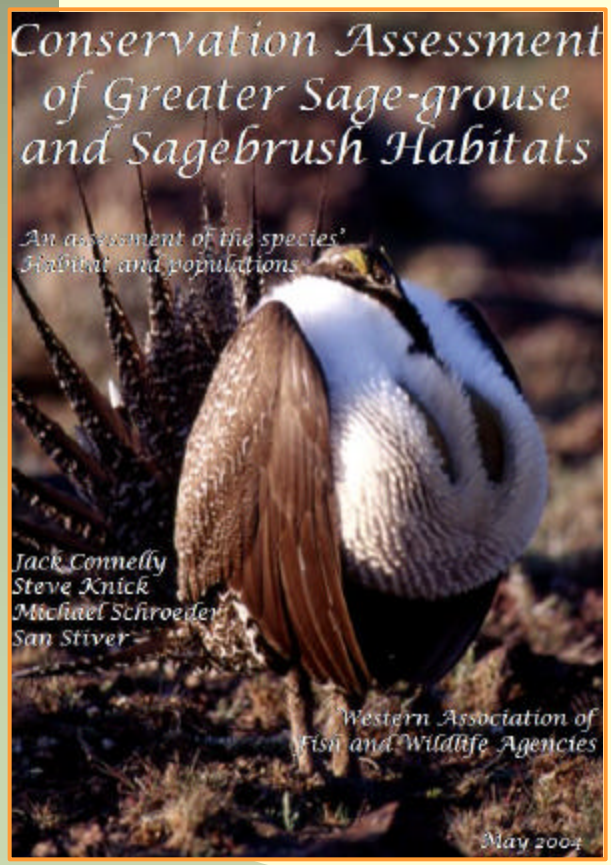
- Foundation for the Assessment
- Sage-grouse Populations
- Sagebrush Habitats
- Conclusions

Greater Sage-grouse

Eastern Nevada

Range-wide Conservation Assessment:
Greater Sage-grouse and Sagebrush Habitats

Western Association of Fish and Wildlife Agencies
National Sage-grouse Conservation Planning Framework Team



- **Populations: Jack Connelly**
  Mike Schroeder
- **Habitats: Steve Knick**
- **Writer/Editor: San Stiver**
- **24 additional contributing authors**

Range-wide Conservation Assessment:
Greater Sage-grouse and Sagebrush Habitats

- Large-scale ecological perspective
- Intended as an objective report
- Not a listing recommendation
- Not a strategy document
- Not a critique of agency or management practice

Southwestern Utah

Range-wide Conservation Assessment:
Greater Sage-grouse and Sagebrush Habitats

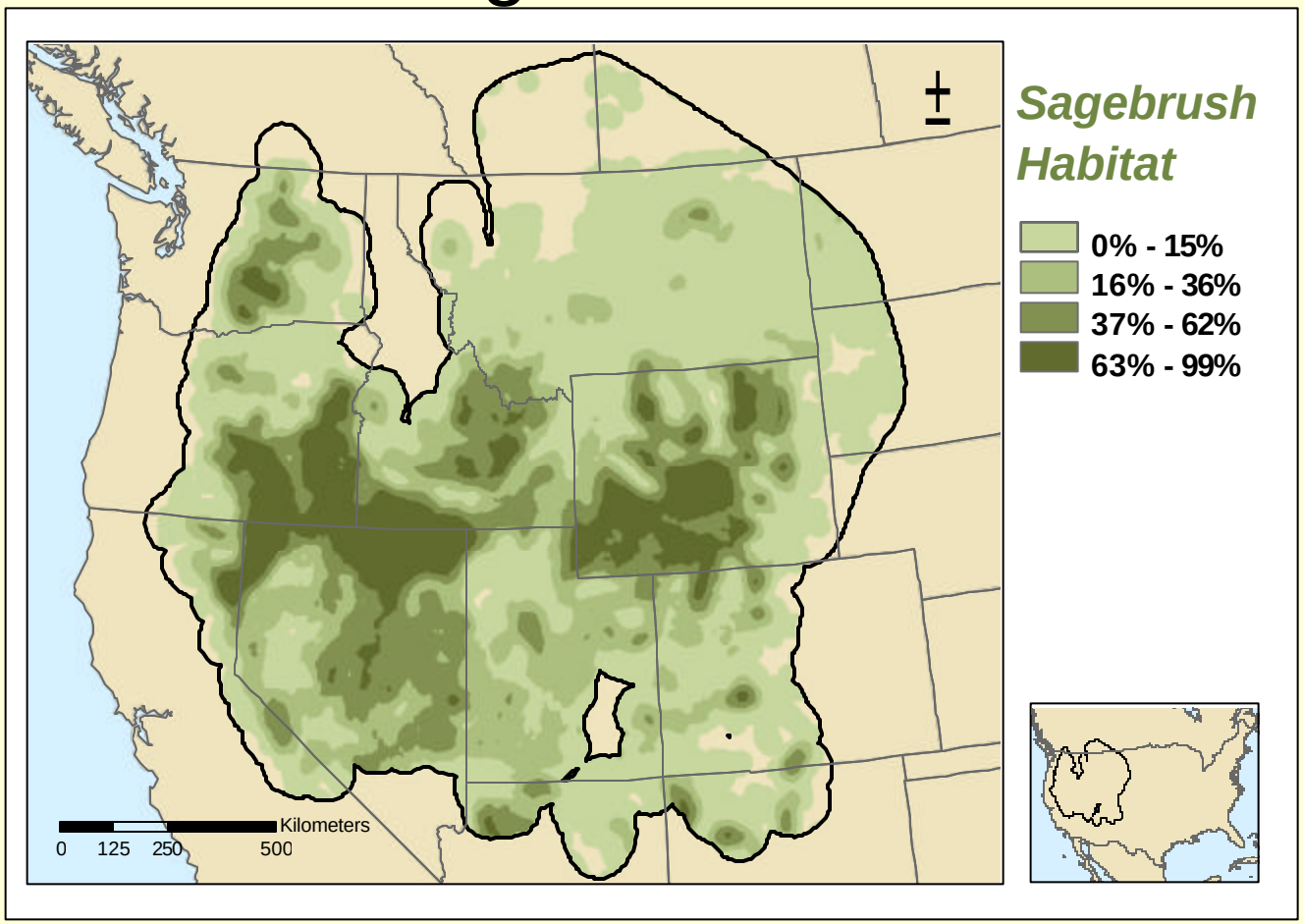
- Review of the Assessment
  - Ecological Society of America
  - National Sage-grouse Conservation Planning Team
  - States and Provinces within the Sage-grouse range
- Criteria for success

INEEL Site, Idaho

Criteria for Success

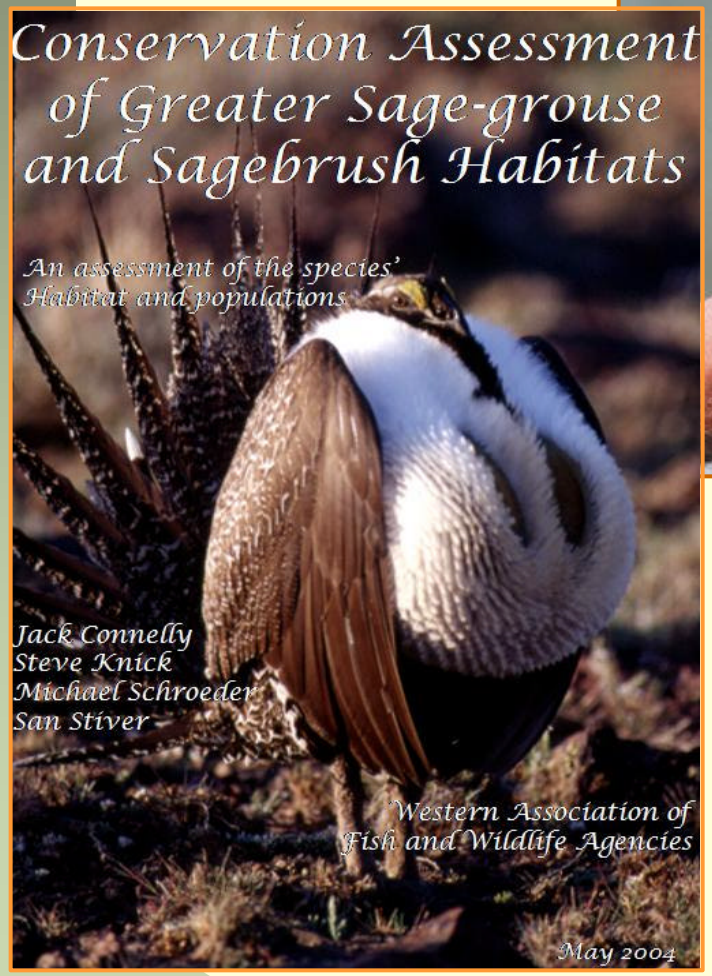
"An assessment of this scope is a complex and difficult undertaking, and the authors did it justice through a thorough, balanced review of the available information."

Data Challenges and Documentation



http://sagemap.wr.usgs.gov

Greater Sage-grouse



Biology

&

Population Trends

Contributors

- **13 Biologists and Managers**
  - **Representing:**
    - **5 states**
    - **4 federal agencies**
    - **4 universities**

Population Biology

- Long-lived
- Low reproductive rate
- Large annual ranges
  - A different kind of game bird

Habitat Needs

- Specialists
  - Spring/breeding
    - Food
    - Cover
    - Nesting
      - Early brood-rearing

Habitat Needs

- **Specialists**
  - **Winter**
    - **100% of diet-**
      - **Sagebrush leaves and buds**
      - **Gain weight over winter**

Population Trends

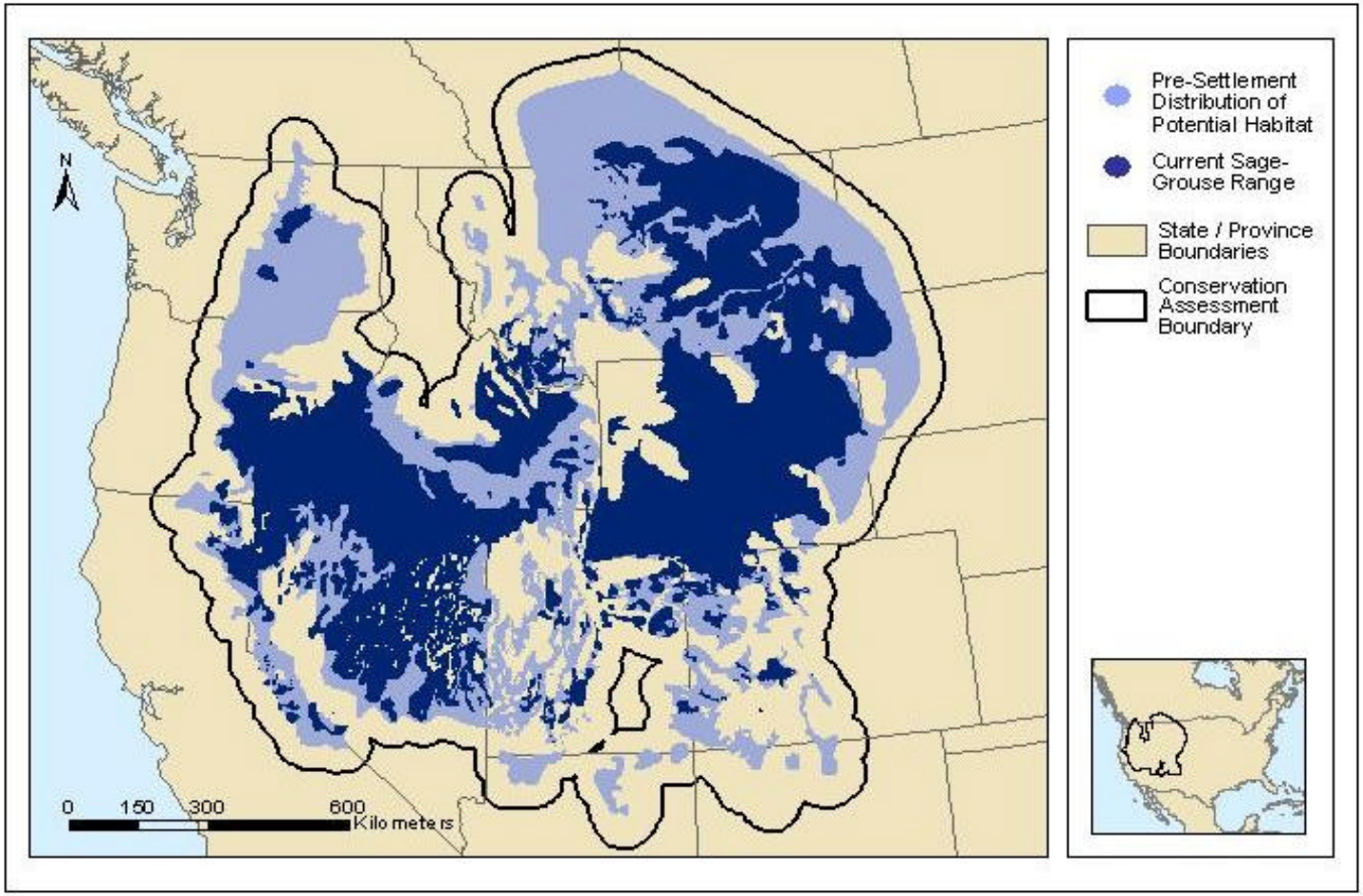
- **Databases**
- **Distribution**
- **Trends**

Greater Sage-grouse Lek

Databases

- **Questionnaire to 11 western states and 2 Canadian provinces**
  - techniques vary among areas and years
- **Lek data only range-wide information**

Distribution



Trends

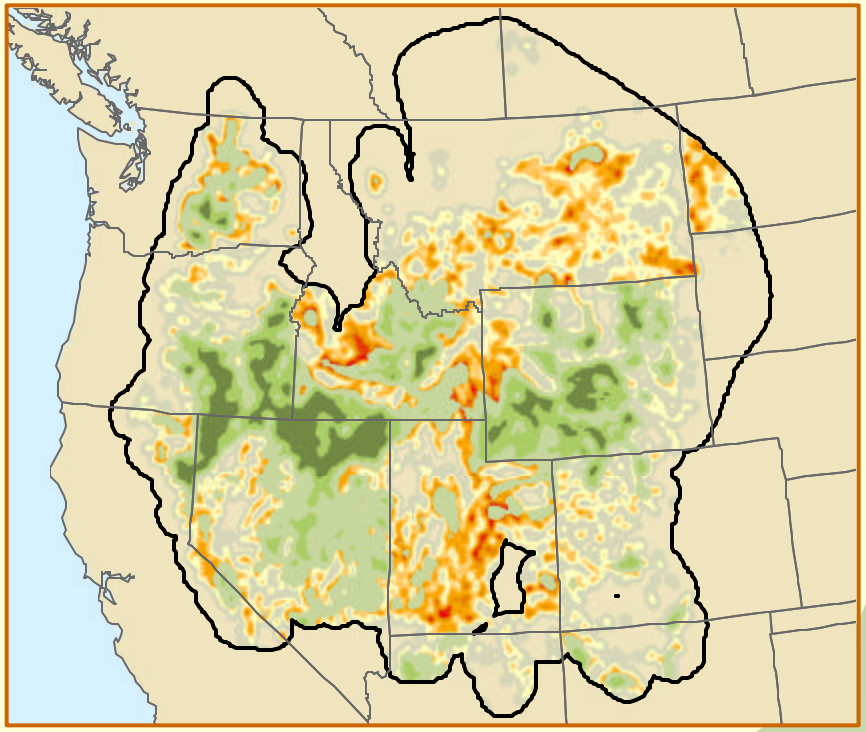
- Approach
  - Average lek size
  - Lek size categories
  - Population index trend
  - Extirpation

Analytical Approach

- **Review of data sets**
  - Eliminated errors, questionable data
  - Used simulation modeling to assess approach
- **Analyses**
  - All analyses reviewed by statistician
  - Population trends analyzed by statistician

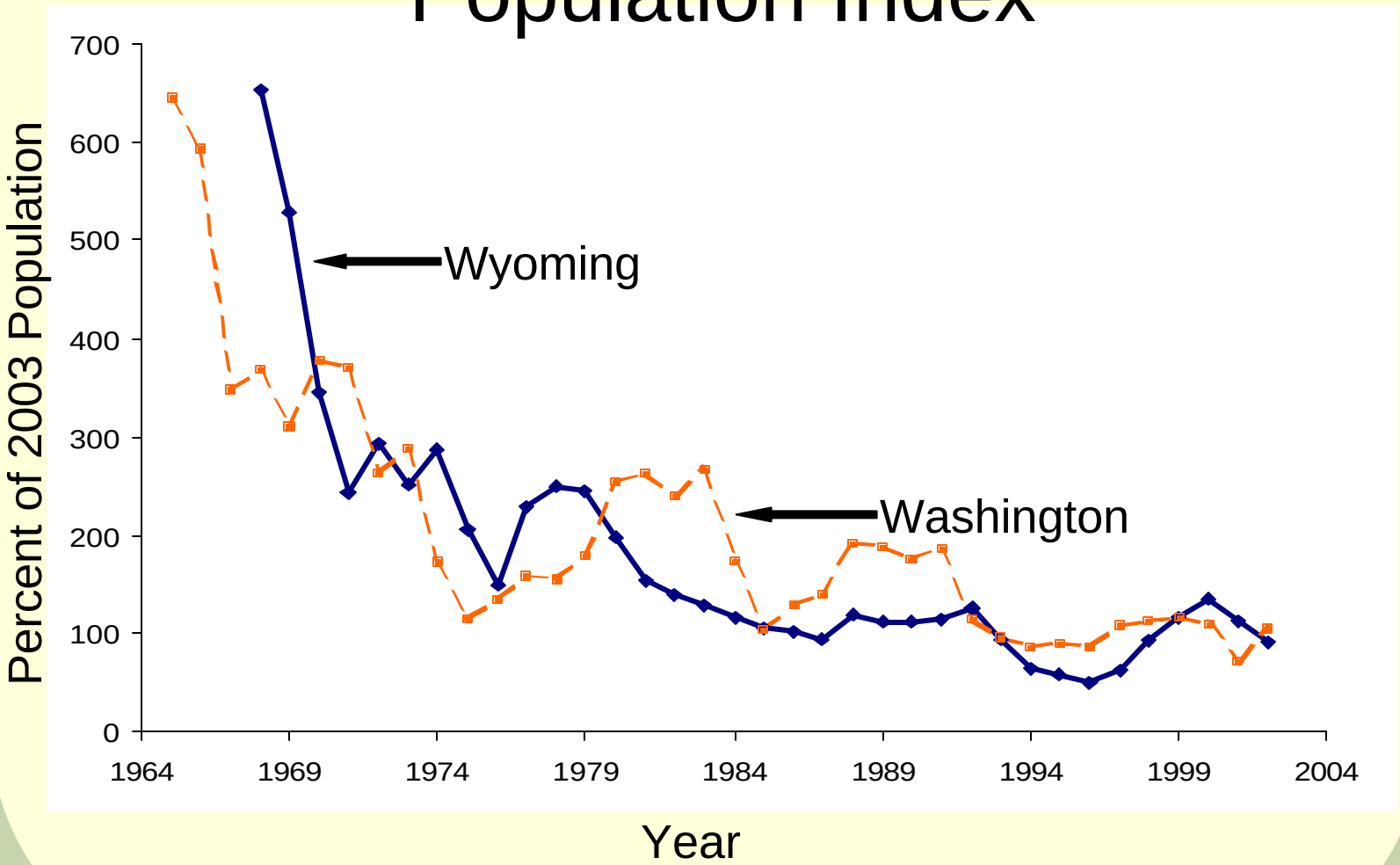
Examples

- **Washington**
  - Fragmented habitats
  - Grouse on state list
  - Recognized problems
  - Long-term data
- **Wyoming**
  - Intact habitats
  - “Large” populations
  - Concern, but…
  - Long-term data



Washington and Wyoming

Population Index

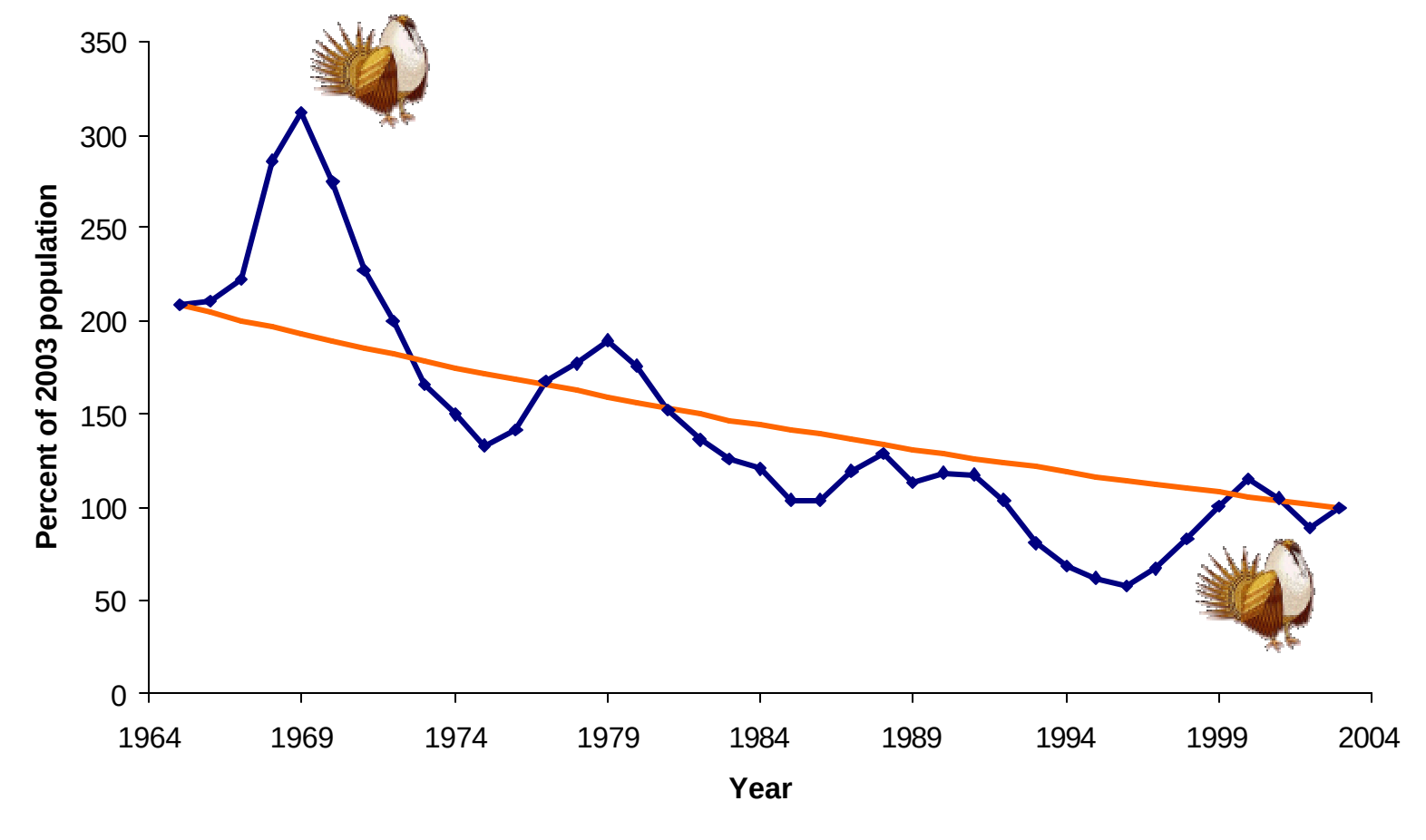


Washington vs. Wyoming

- Washington
  - Lek size -45%
    - Significant decrease
  - Large leks -15%
  - Population index -4.8%/year
  - Late 60s-early 70s
    - 4-6 times higher than present
- Wyoming
  - Lek size -49%
    - Significant decrease
  - Large leks –10%
    - With recovery
  - Population index -5.2%/year
  - Late 60s-early 70s
    - 3-6 times higher than present

Summary

Range-Wide Trends



Major Findings

- **Monitoring**
  - >700% increase in effort
  - An average of 2,637 leks now censused annually

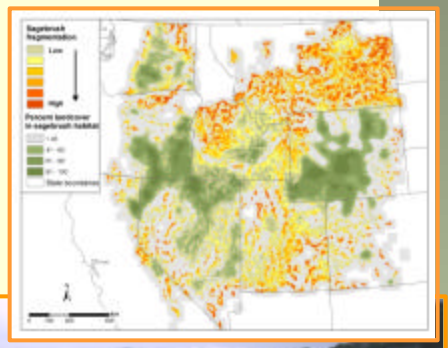
- **Distribution**
  - A new, more accurate map developed
  - About 56% of historic range currently occupied

Major Findings

- **Population trends**
  - Lek Size
    - 11/13 states & provinces with long-term declines
  - Population index
    - An overall decline of 2.0%/year
      - **1965-85- average decline of 3.5%/year**
      - **1986-2003-average decline of 0.4%**
      - Late 1960s-early 1970s, populations 2-3 times higher than present

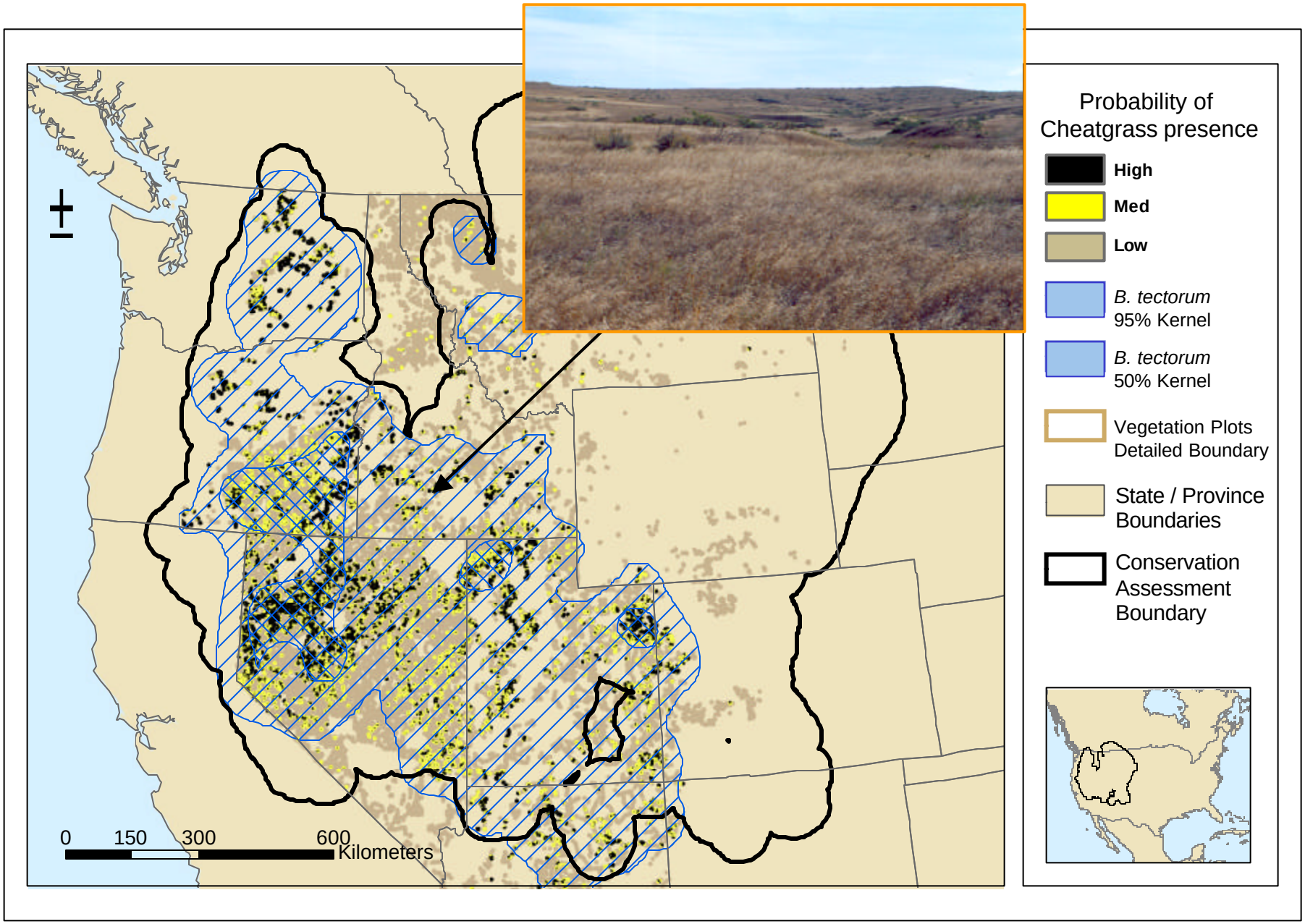
Sagebrush Habitats

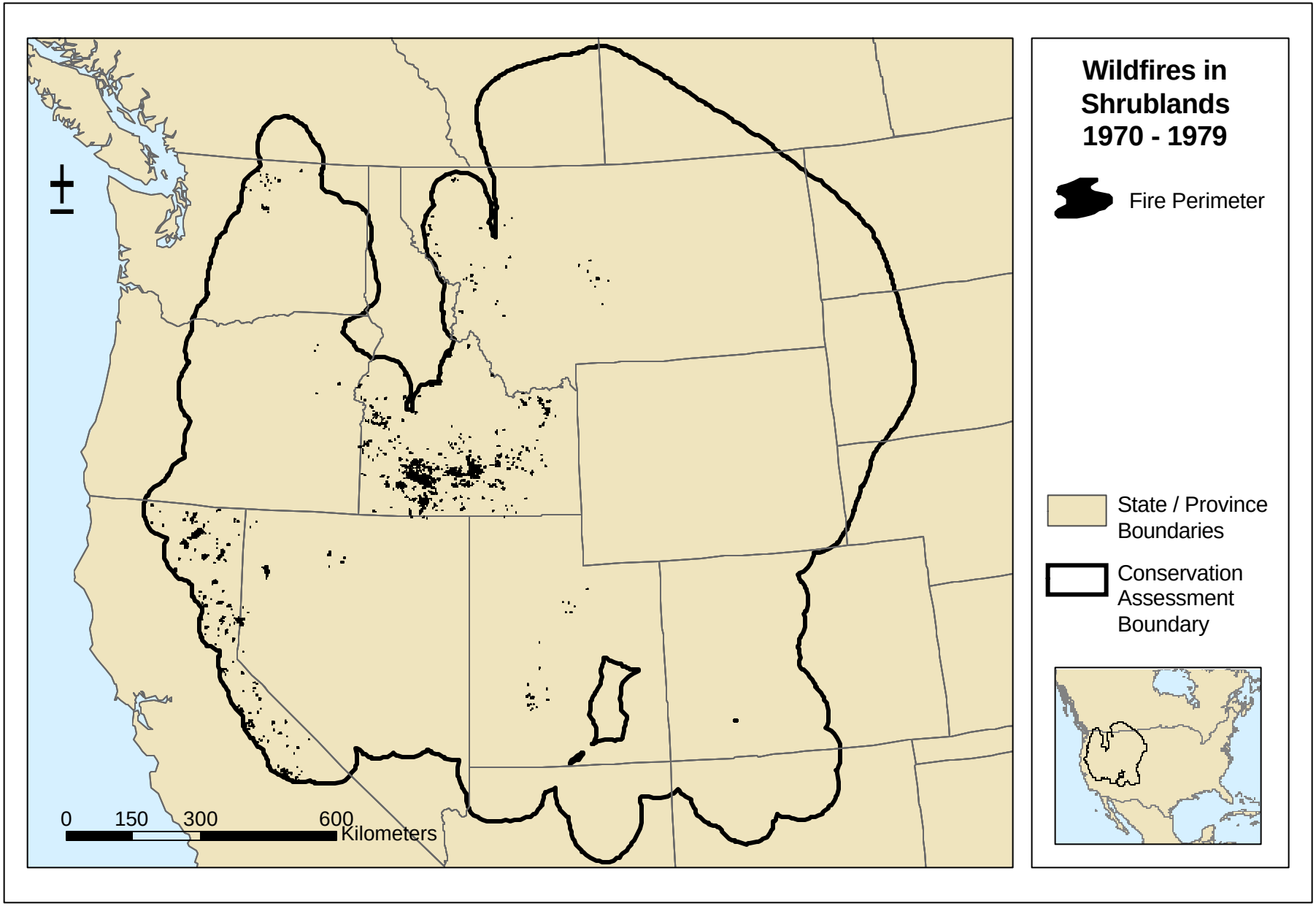
- Invasive Species and Fire
- Agriculture and Urbanization
- Livestock Grazing
- Oil and Gas Development

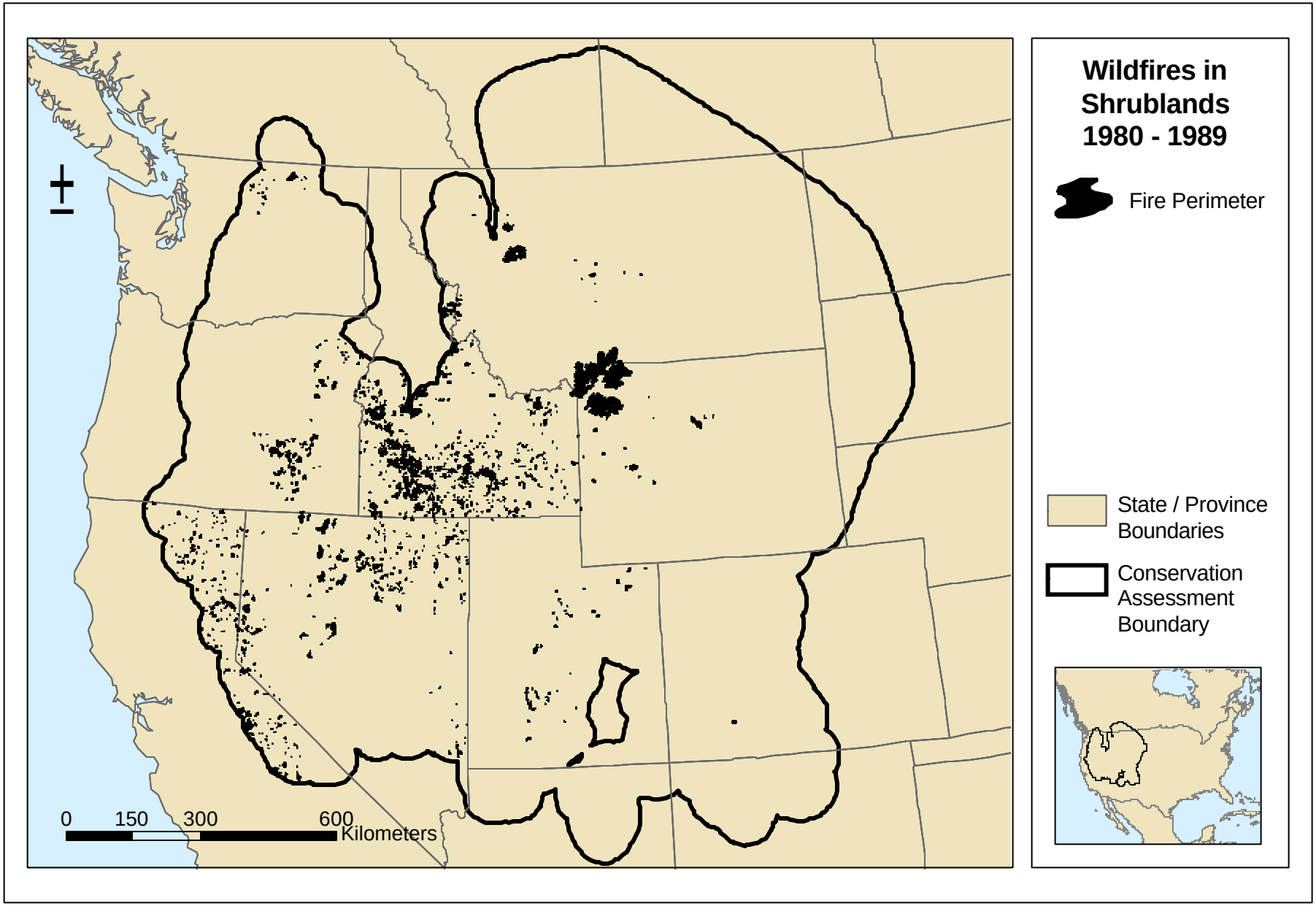


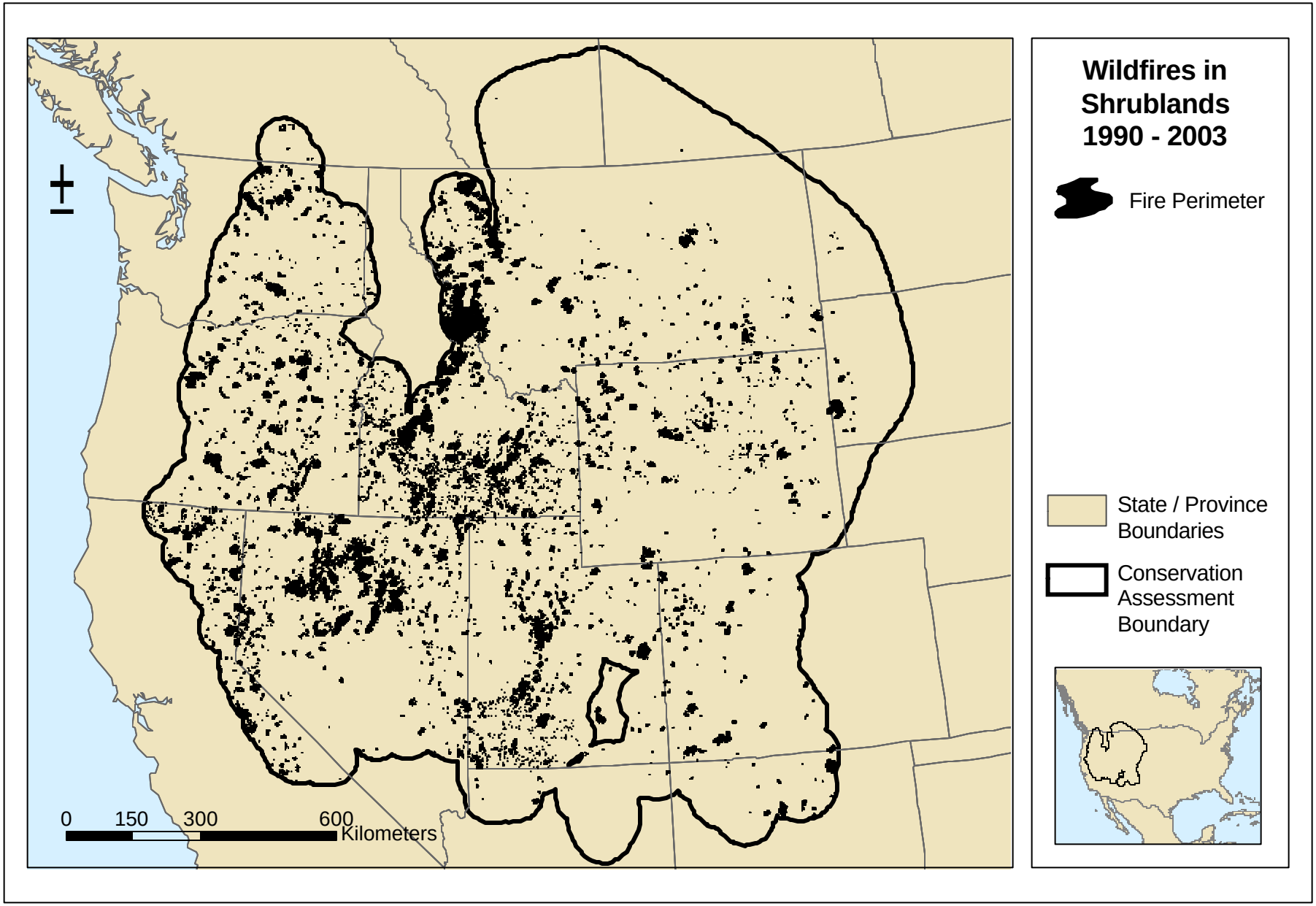
Northcentral Nevada

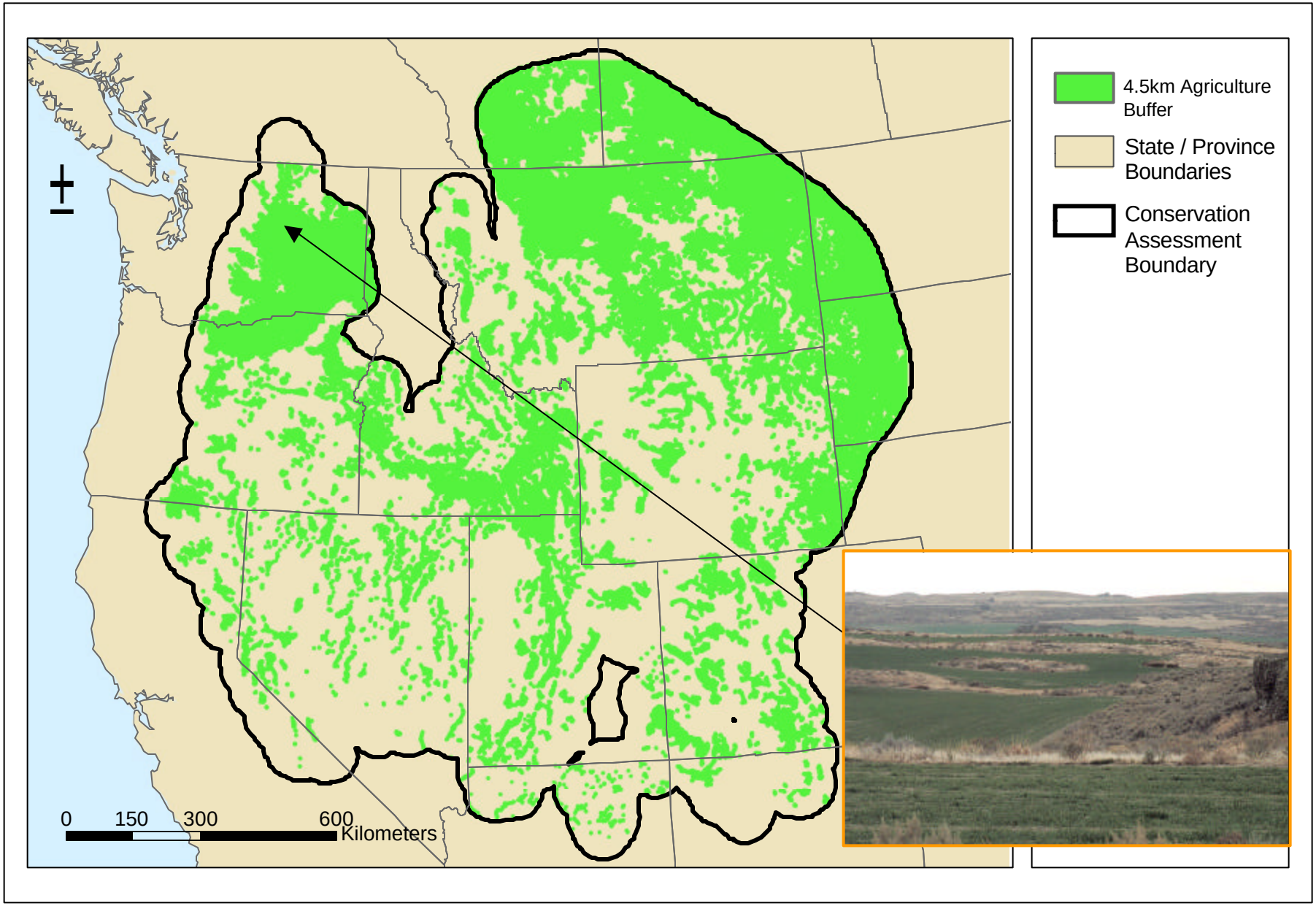
Southwestern Idaho

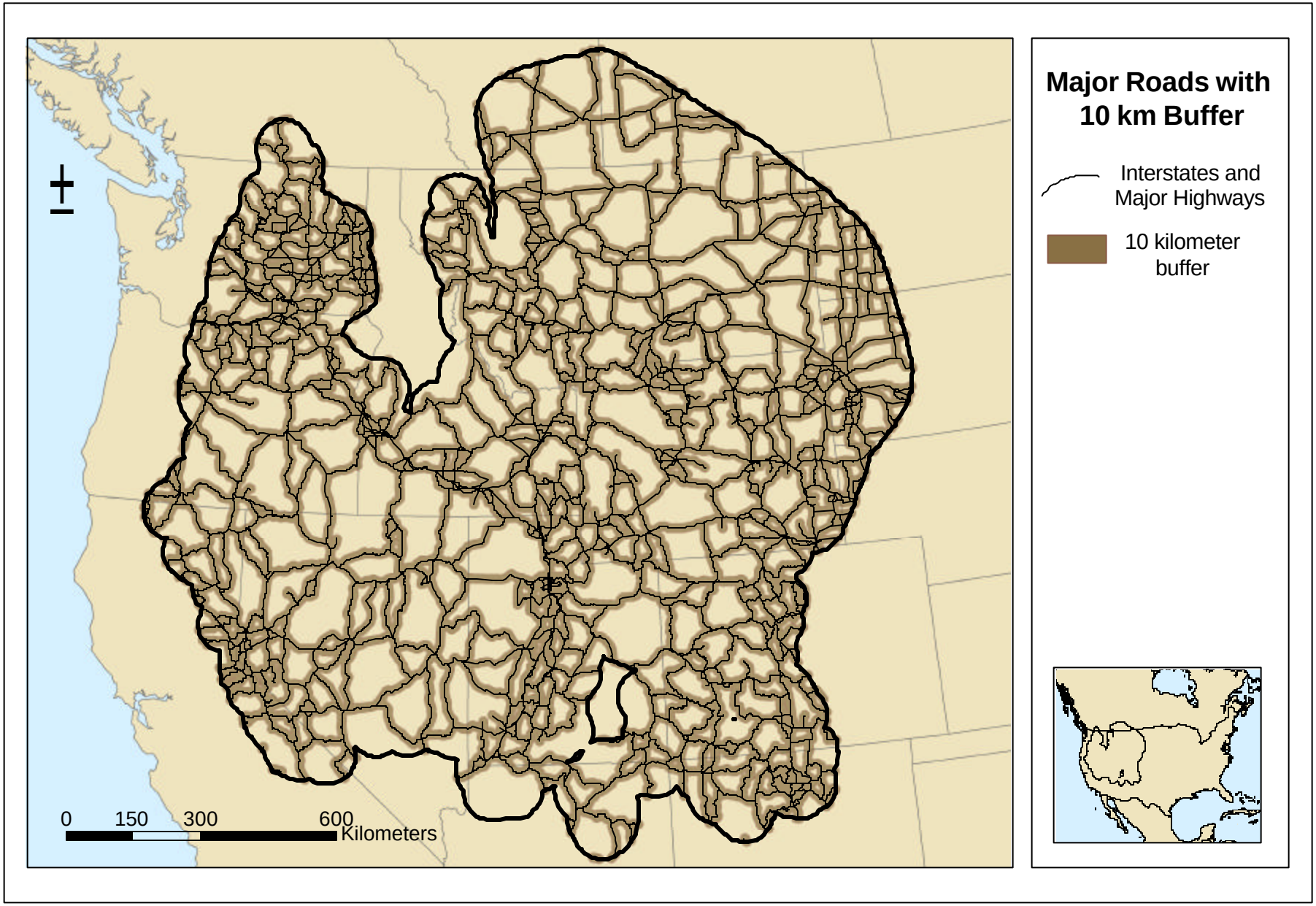

Probability of Cheatgrass presence
High
Med
Low
B. tectorum 95% Kernel
B. tectorum 50% Kernel
Vegetation Plots Detailed Boundary
State / Province Boundaries
Conservation Assessment Boundary
0 150 300 600 Kilometers

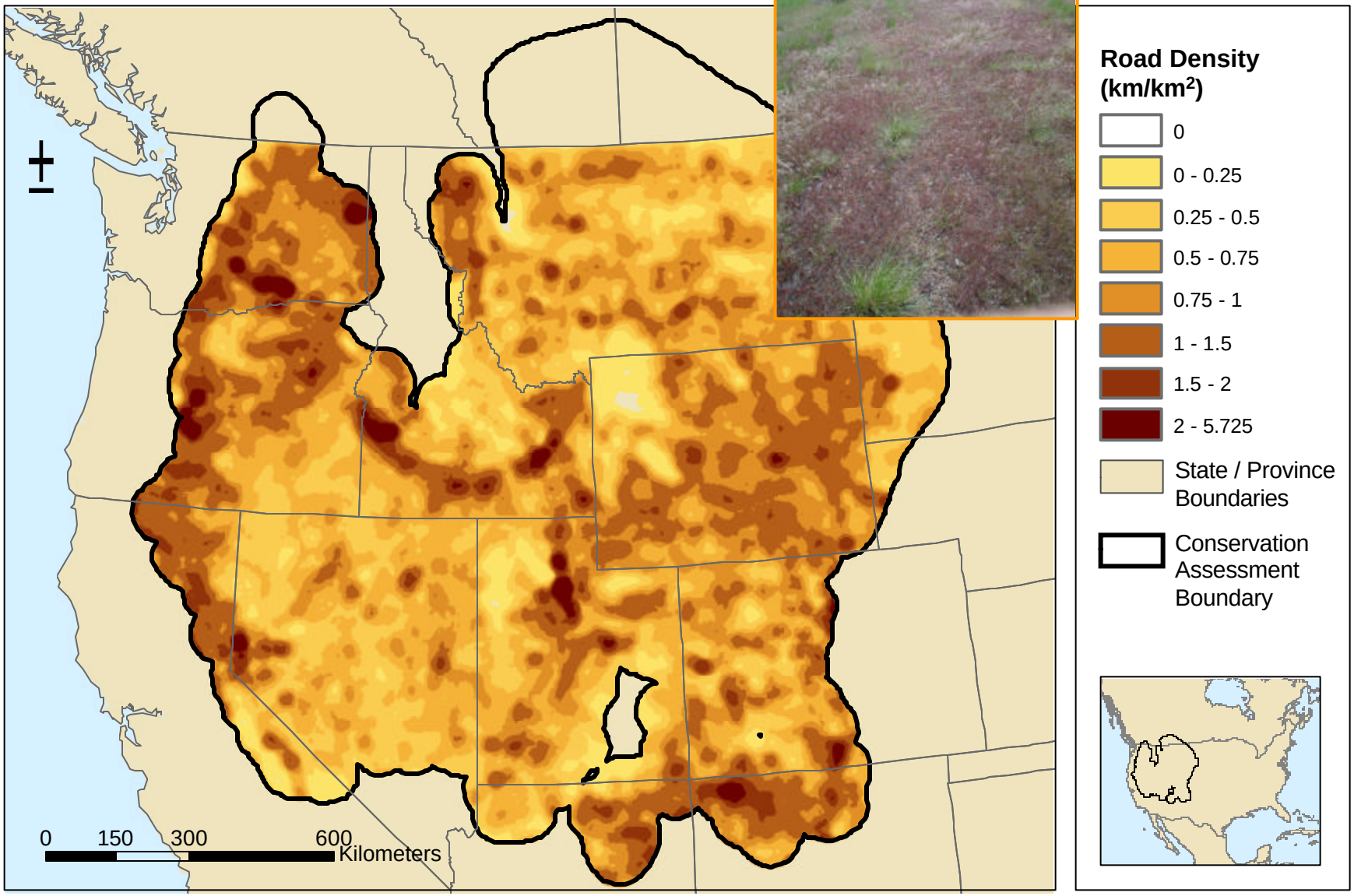

Wildfires in Shrublands 1970 - 1979
Fire Perimeter
State / Province Boundaries
Conservation Assessment Boundary
0 150 300 600 Kilometers

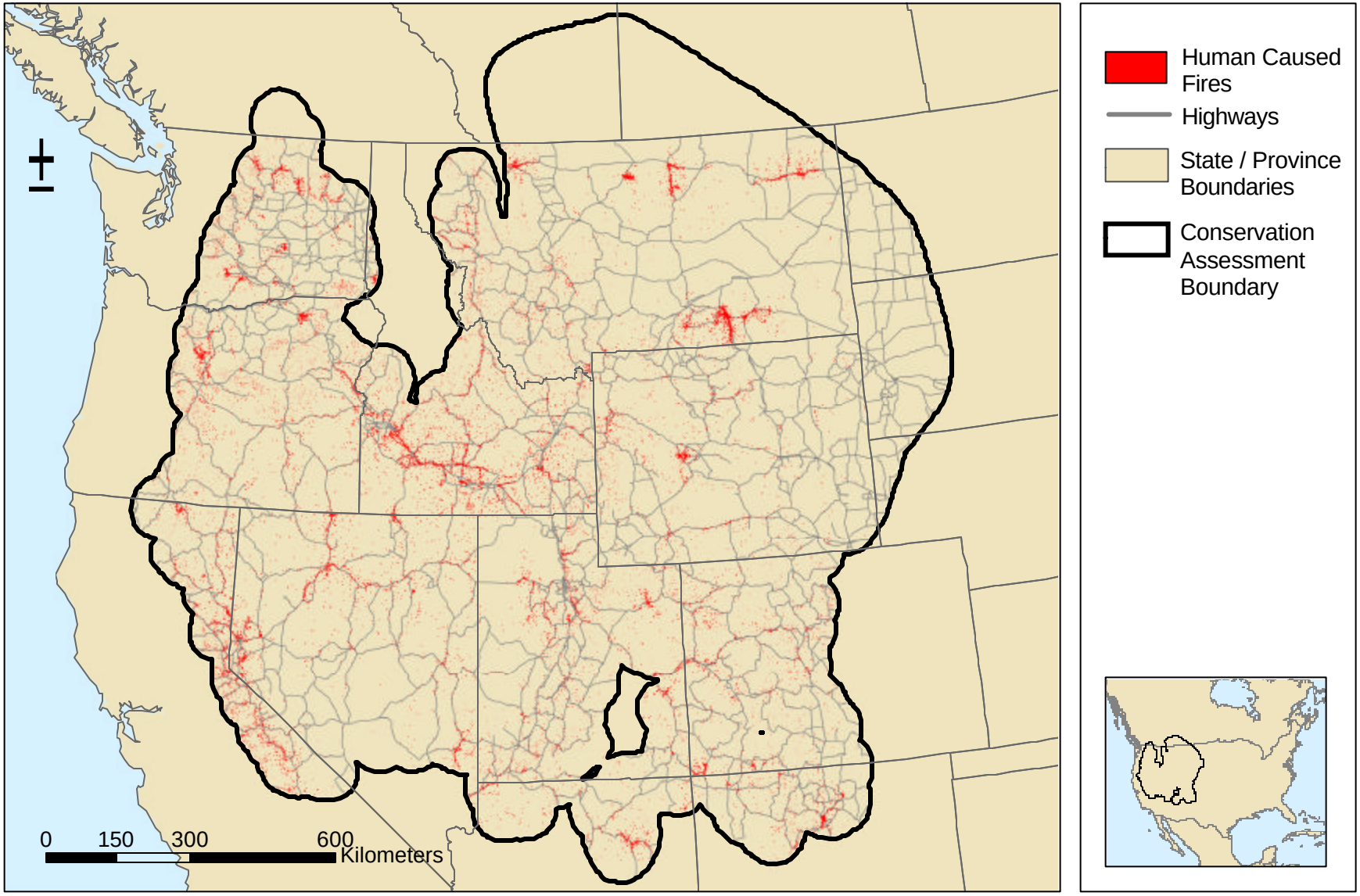

Wildfires in Shrublands 1980 - 1989
Fire Perimeter
State / Province Boundaries
Conservation Assessment Boundary
0 150 300 600 Kilometers


Wildfires in Shrublands 1990 - 2003
Fire Perimeter
State / Province Boundaries
Conservation Assessment Boundary
0 150 300 600 Kilometers


4.5km Agriculture Buffer
State / Province Boundaries
Conservation Assessment Boundary
0
150
300
600
Kilometers

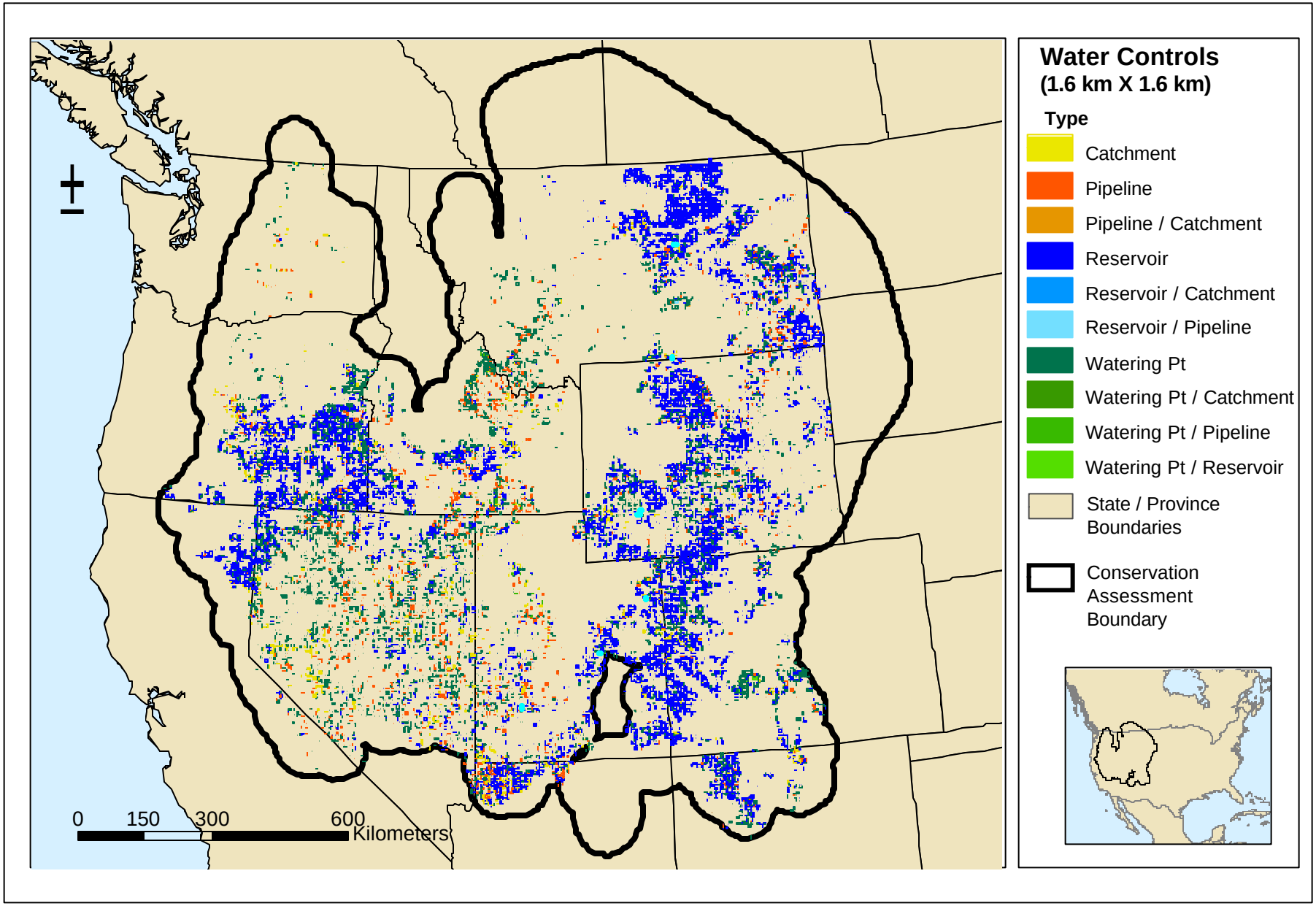

Major Roads with
10 km Buffer
Interstates and
Major Highways
10 kilometer
buffer
0
150
300
600
Kilometers

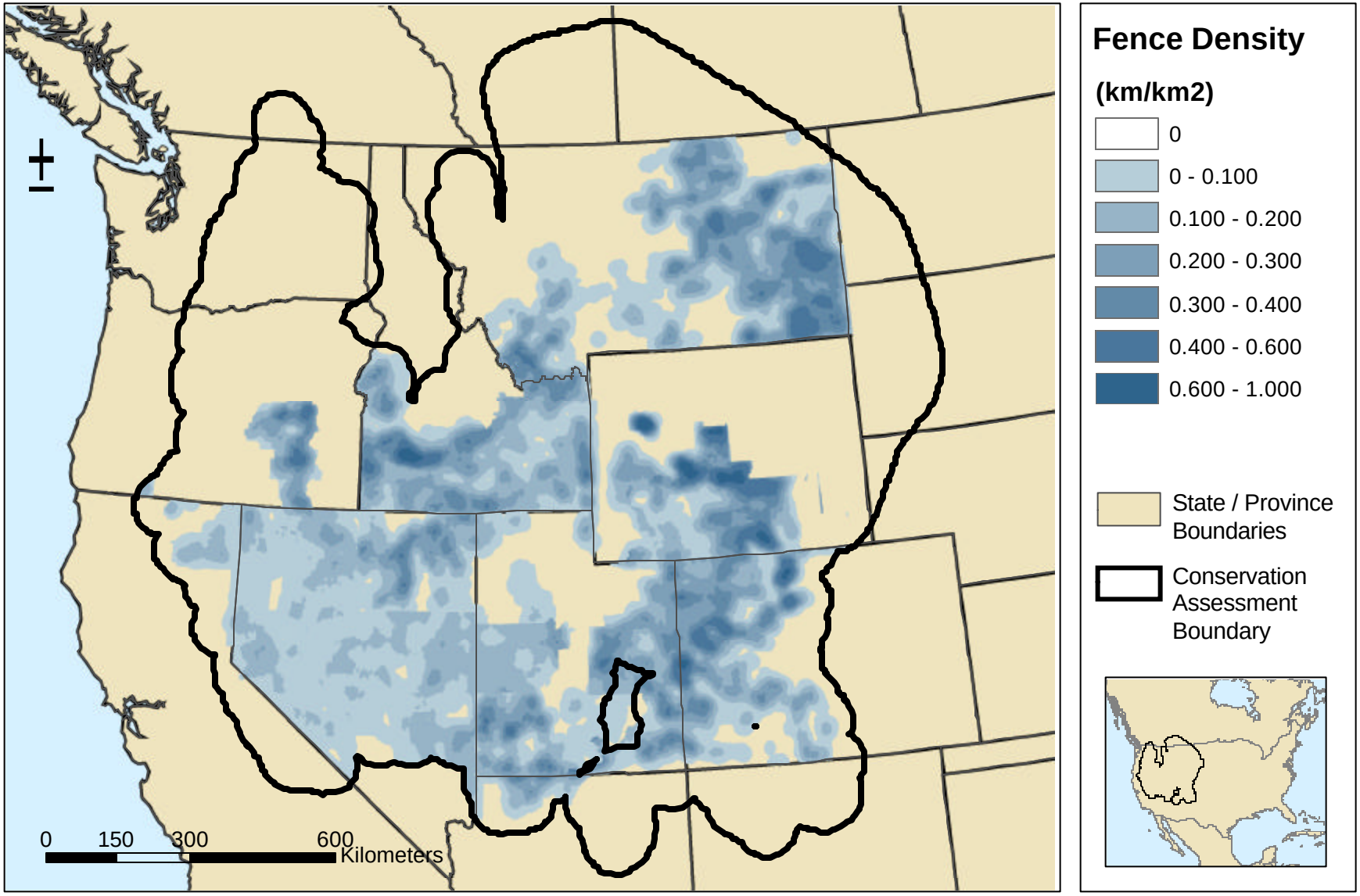

Road Density
(km/km²)
0
0 - 0.25
0.25 - 0.5
0.5 - 0.75
0.75 - 1
1 - 1.5
1.5 - 2
2 - 5.725
State / Province Boundaries
Conservation Assessment Boundary
0
150
300
600
Kilometers


Human Caused Fires
Highways
State / Province Boundaries
Conservation Assessment Boundary
0
150
300
600
Kilometers

Livestock Grazing: Direct Effects

- Not able to determine range-wide effects
- Best information on lands managed by the US BLM
- Less than half of lands surveyed

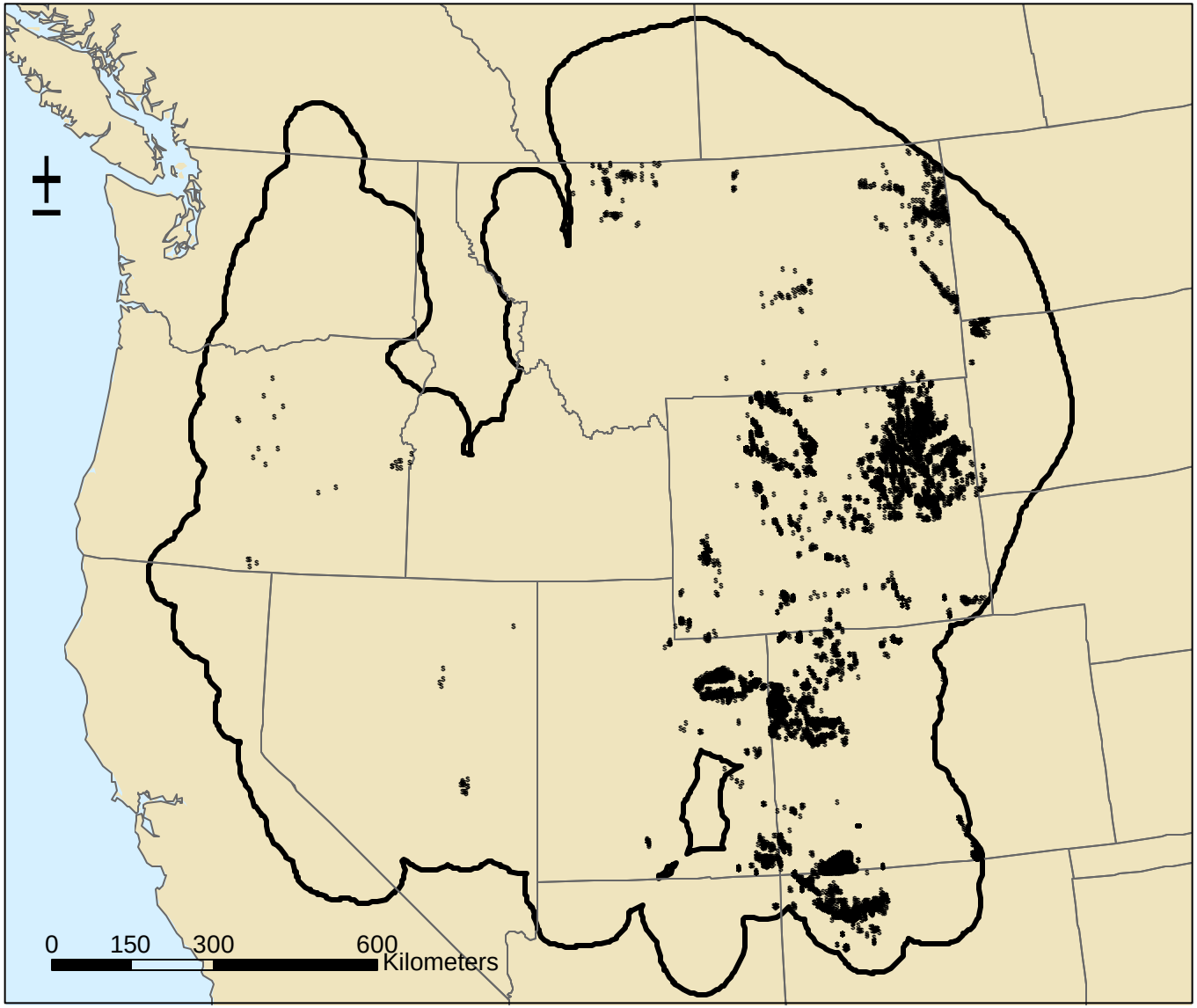

Water Controls
(1.6 km X 1.6 km)
Type
Catchment
Pipeline
Pipeline / Catchment
Reservoir
Reservoir / Catchment
Reservoir / Pipeline
Watering Pt
Watering Pt / Catchment
Watering Pt / Pipeline
Watering Pt / Reservoir
State / Province Boundaries
Conservation Assessment Boundary
0
150
300
600
Kilometers


Fence Density
(km/km2)
0
0 - 0.100
0.100 - 0.200
0.200 - 0.300
0.300 - 0.400
0.400 - 0.600
0.600 - 1.000
State / Province Boundaries
Conservation Assessment Boundary
0
150
300
600
Kilometers

Jonah Oilfield, Pinedale, Wyoming

Oil/Gas Development

Northeastern Wyoming



Oil Wells

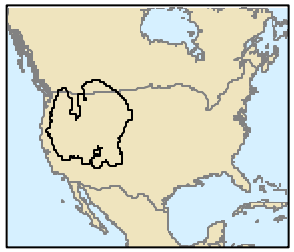
Currently Producing*

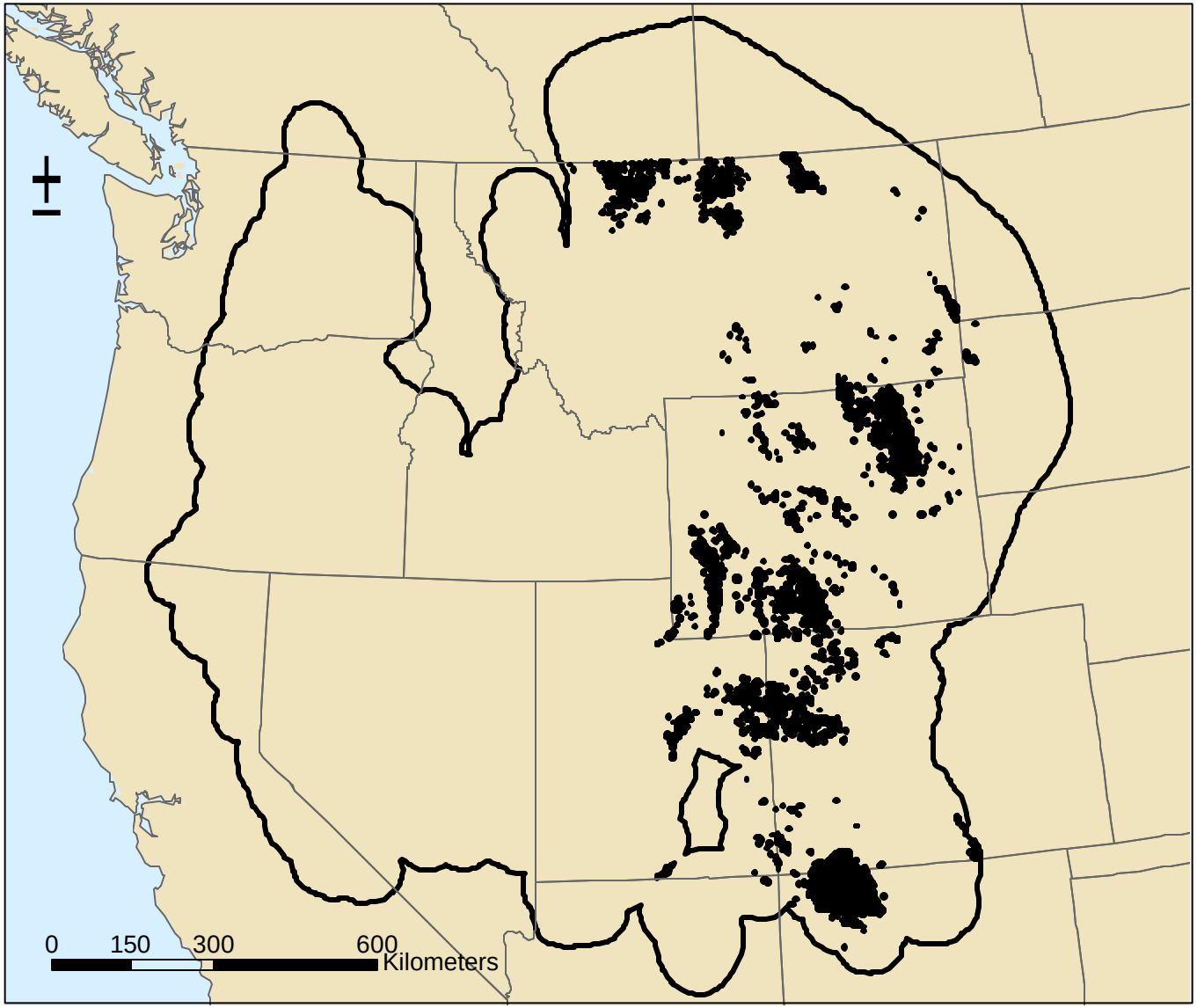
Well location

State / Province Boundaries

Conservation Assessment Boundary

* All currently producing wells shown for Colorado; CO Oil and Gas Conservation data does not currently distinguish by well type.





Natural Gas Wells

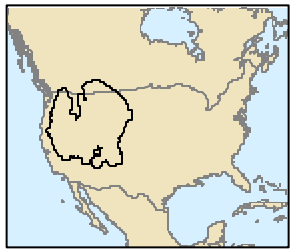
Currently Producing*

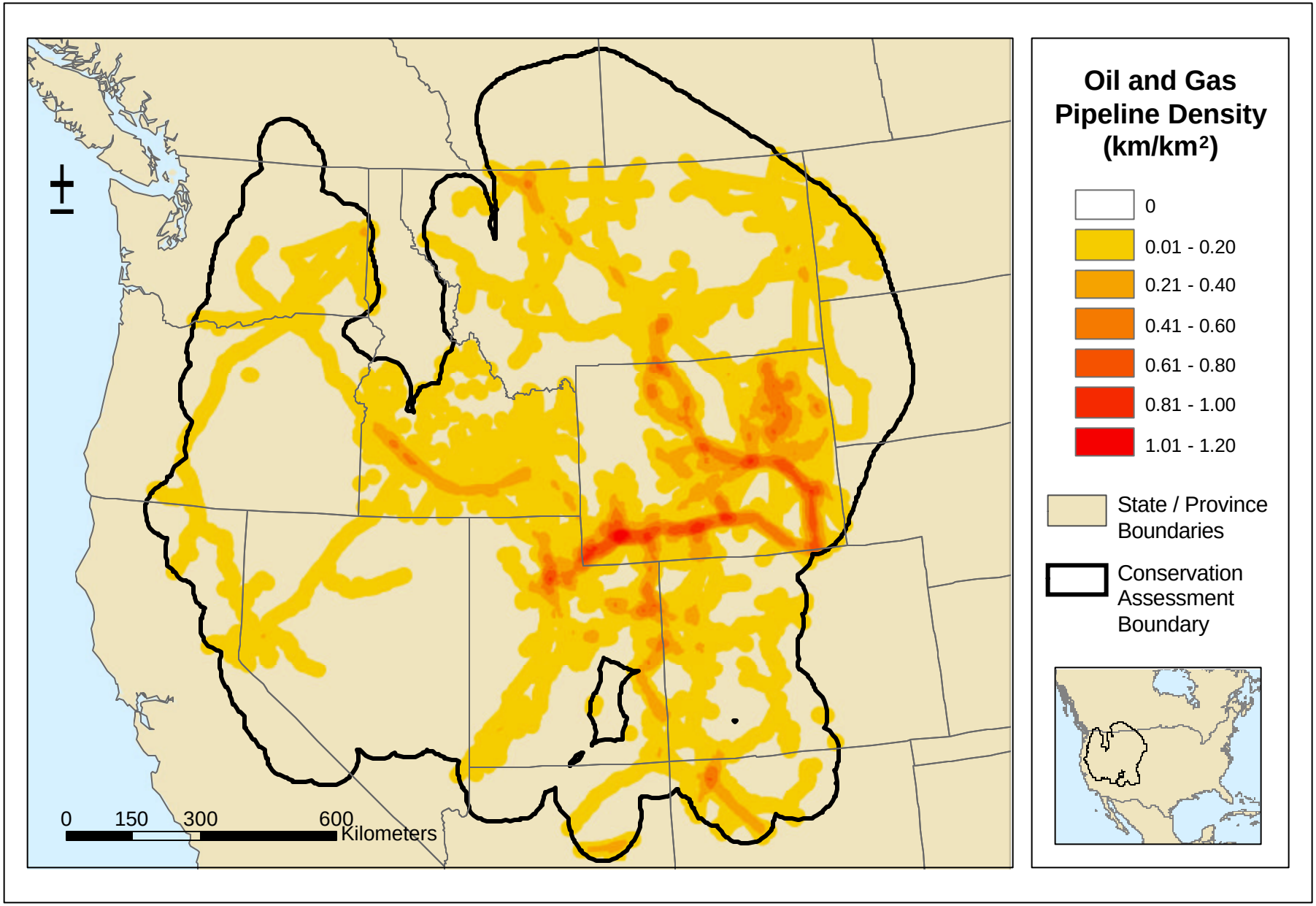
Well location

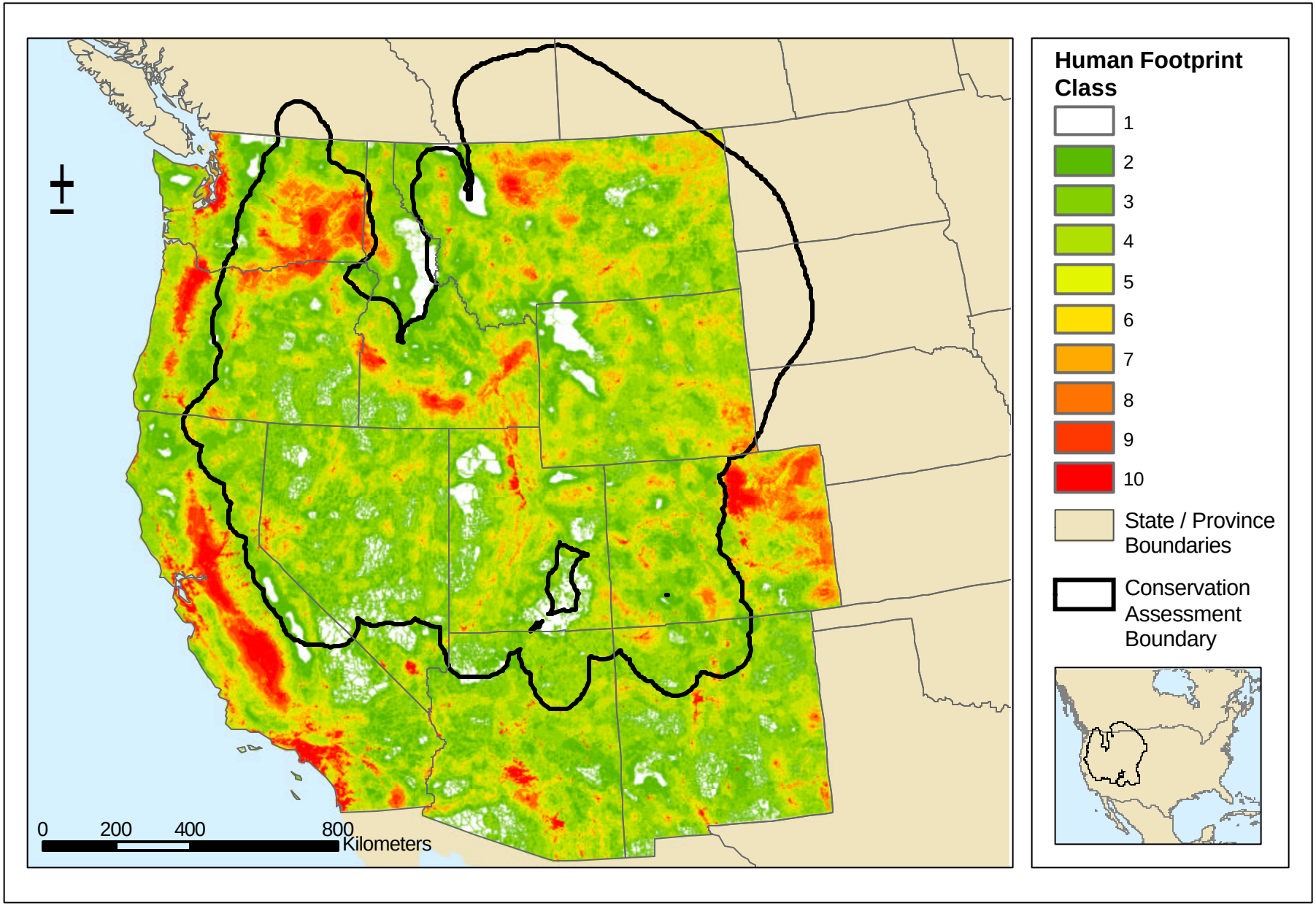
State / Province Boundaries

Conservation Assessment Boundary

* All currently producing wells shown for Colorado; CO Oil and Gas Conservation data does not currently distinguish by well type.




Oil and Gas Pipeline Density (km/km²)
0
0.01 - 0.20
0.21 - 0.40
0.41 - 0.60
0.61 - 0.80
0.81 - 1.00
1.01 - 1.20
State / Province Boundaries
Conservation Assessment Boundary
0 150 300 600 Kilometers


Human Footprint Class
1
2
3
4
5
6
7
8
9
10
State / Province Boundaries
Conservation Assessment Boundary
0
200
400
800
Kilometers

Conclusions:
Range-wide Conservation Assessment

- Comprehensive documentation of issues submitted to USFWS
- Extensive peer review
- Access the document on SAGEMAP site

Conclusions:
Sage-grouse Populations

- Significant long-term population declines
- >50,000 Sage-grouse counted in 2003
- Some strongholds and other areas of declines

Conclusions:
Sagebrush Habitats

- Considered wide array of influences
- Regional complexity of issues
- Rapidity and totality of changes due to land use

Northern Arizona

Final Thought

"…we hope that the information that we have presented now can be the foundation for increasing our understanding of the ecology of sagebrush-dominated landscapes and species that depend upon them."

Executive Summary

Acknowledgments

- National Sage-grouse Conservation Planning Framework Team
- U.S. Bureau of Land Management
- U.S. Fish and Wildlife Service
- U.S. Geological Survey
- Western Association of Fish and Wildlife Agencies

Northeastern Nevada

Thank You