



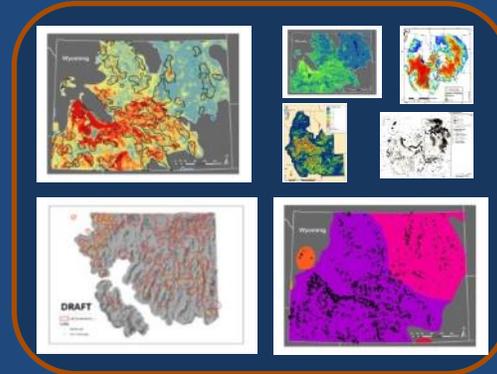
Modeling & Greater Sage- Grouse Status Assessment

April 24, 2015

Modeling:

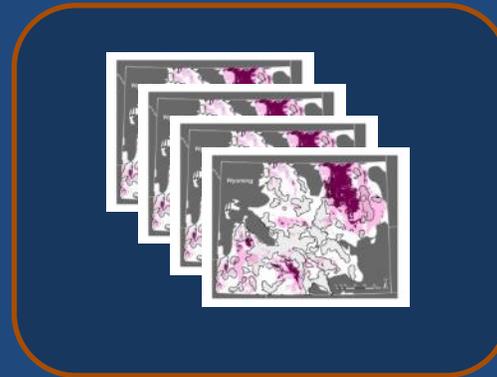
- **7 population models**

- abundance
- distribution
- trends



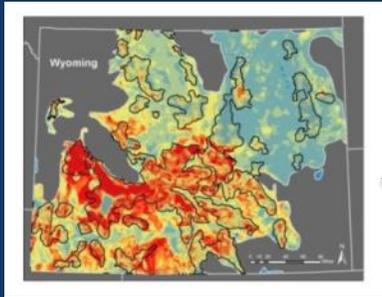
- **4 threat models**

- oil & gas
- fire & invasives
- cropland risk
- conifer



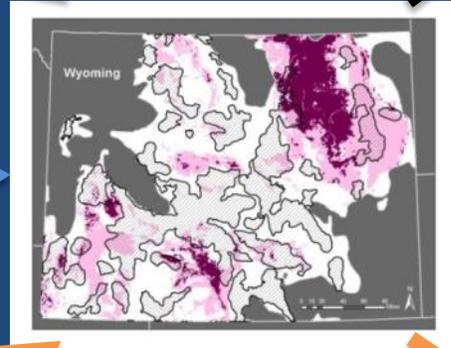
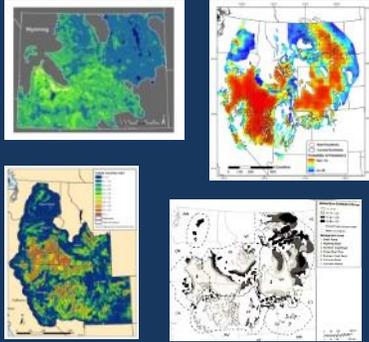
- **Projects and analyses remain independent**



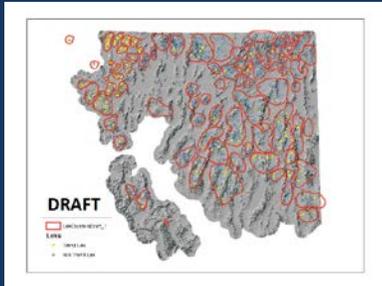


Integrate through spatial overlap with 4 Risk Models

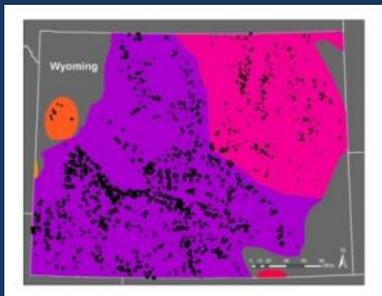
Projected Relative Abundance



Projected Distribution



Projected Population Trends



Current Population Trend recent period

Talk Outline:

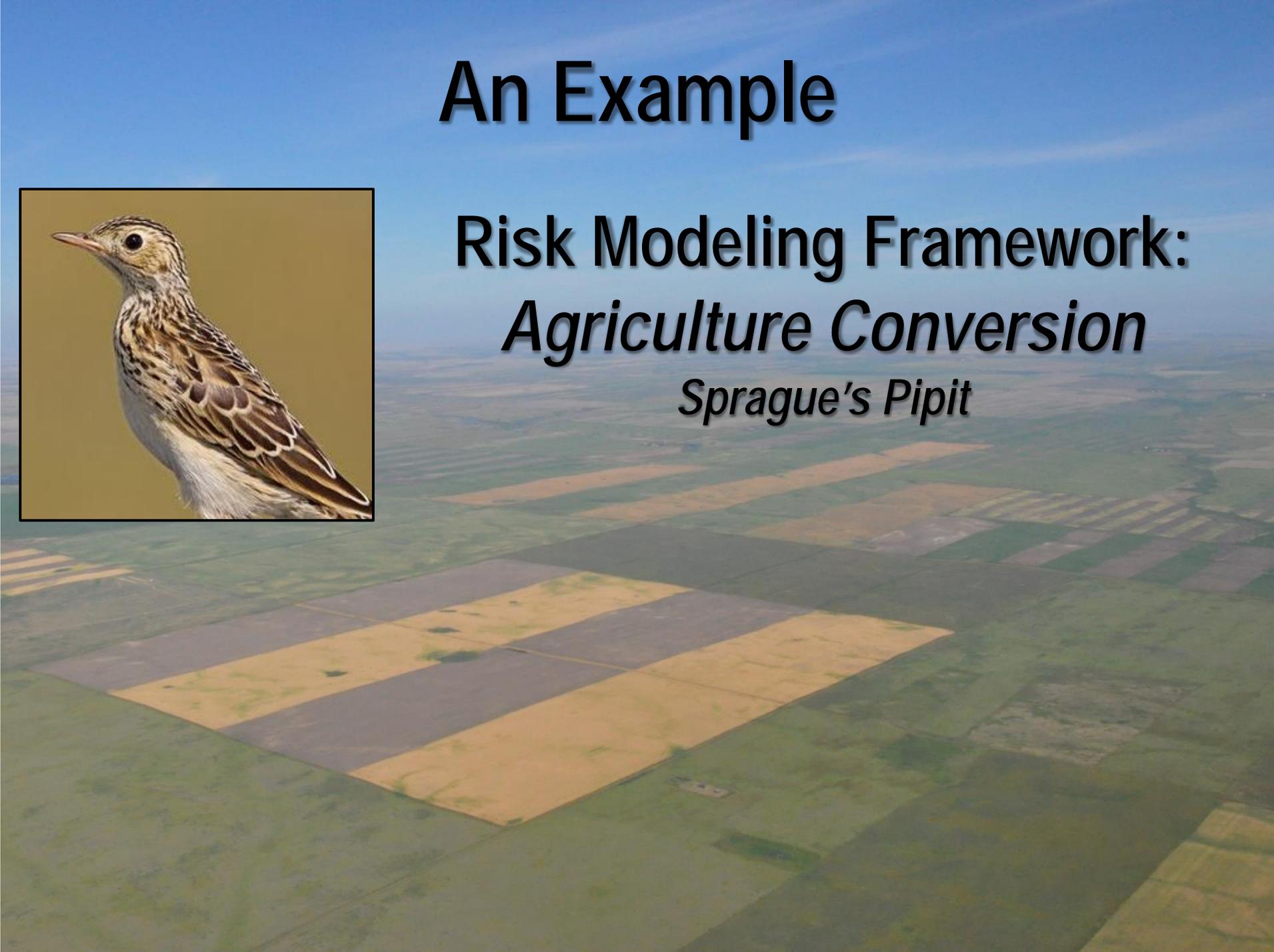
- Example of quantifying population exposure to risk (*Sprague's Pipit example*)
- Sage-grouse population and distribution models
- Sage-grouse Risk exposure example
- Sage-grouse Conservation Examples



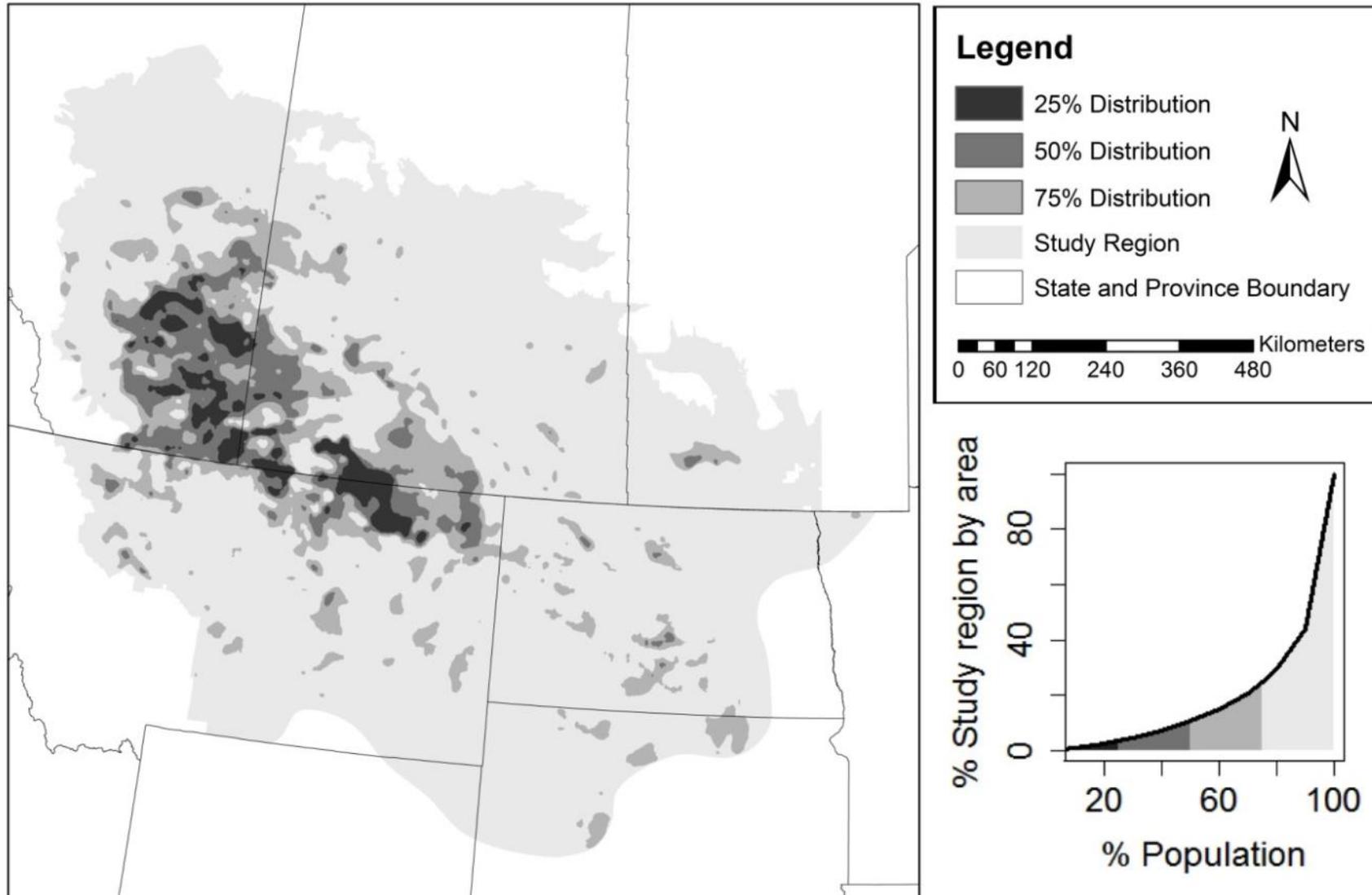
An Example



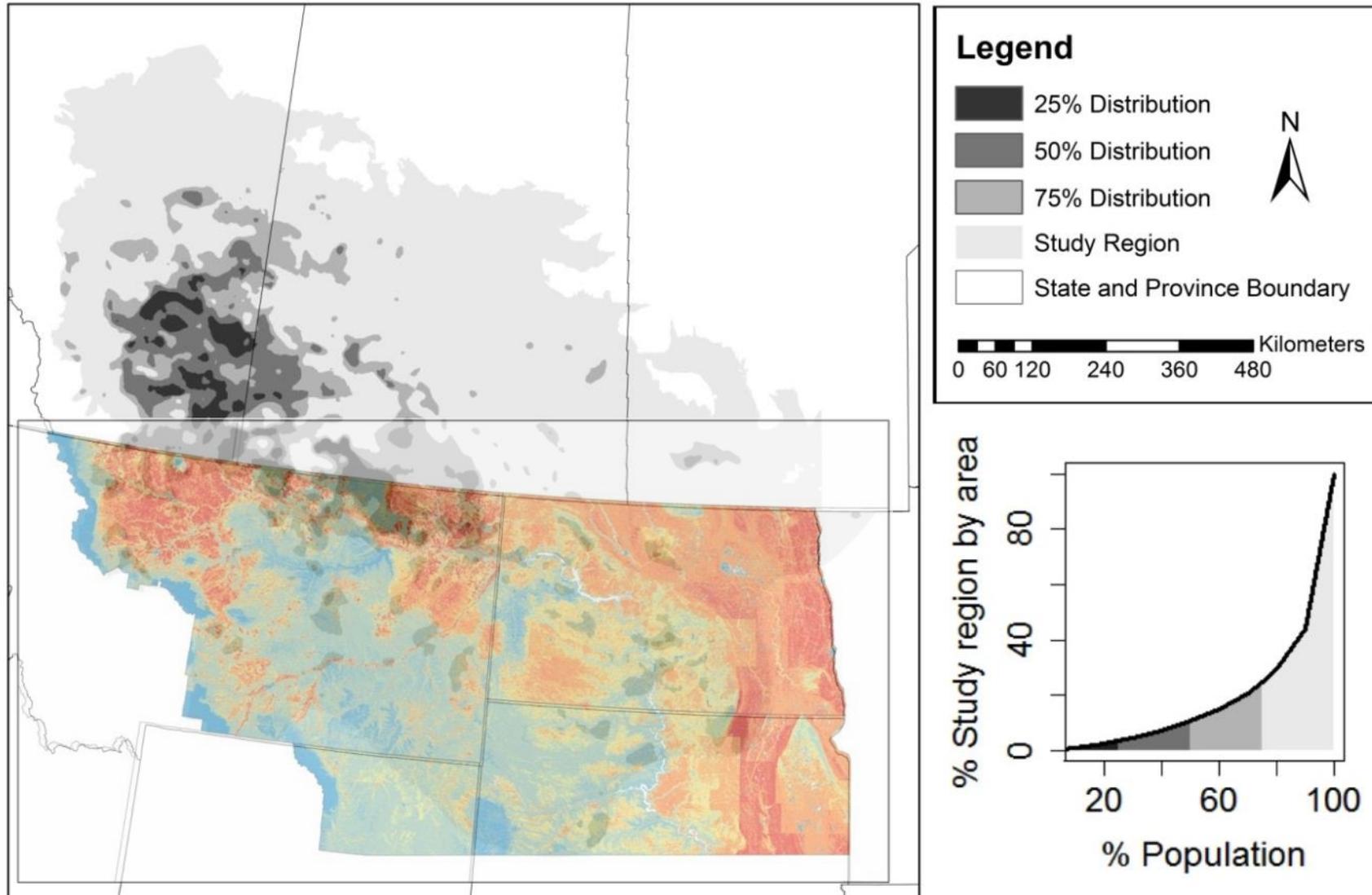
Risk Modeling Framework: *Agriculture Conversion* *Sprague's Pipit*



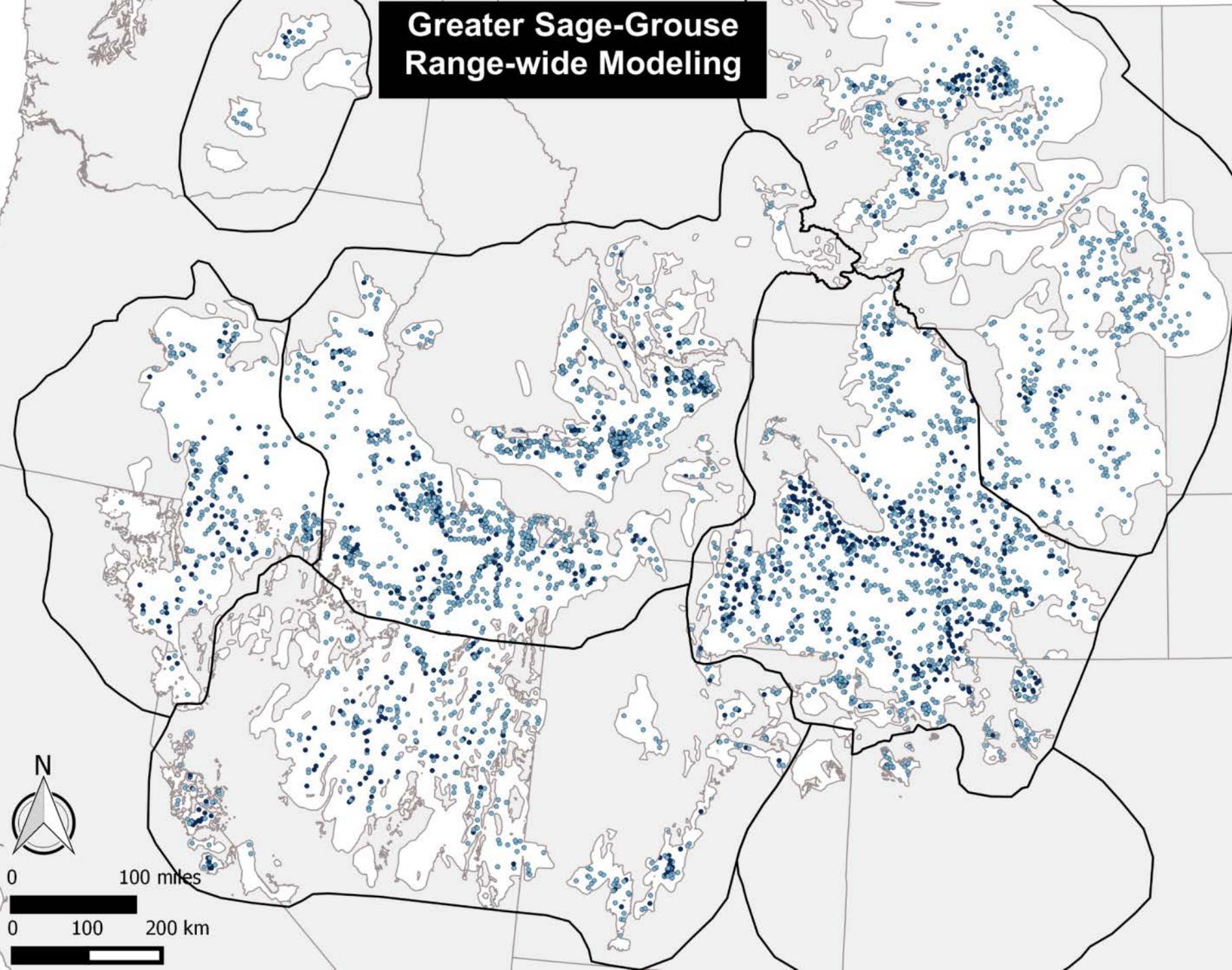
Combining population models with threat models to quantify exposure to risk



Combining population models with threat models to quantify exposure to risk



Greater Sage-Grouse Range-wide Modeling



- ❖ Worked with WAFWA & States on Greater Sage-grouse Lek Data:

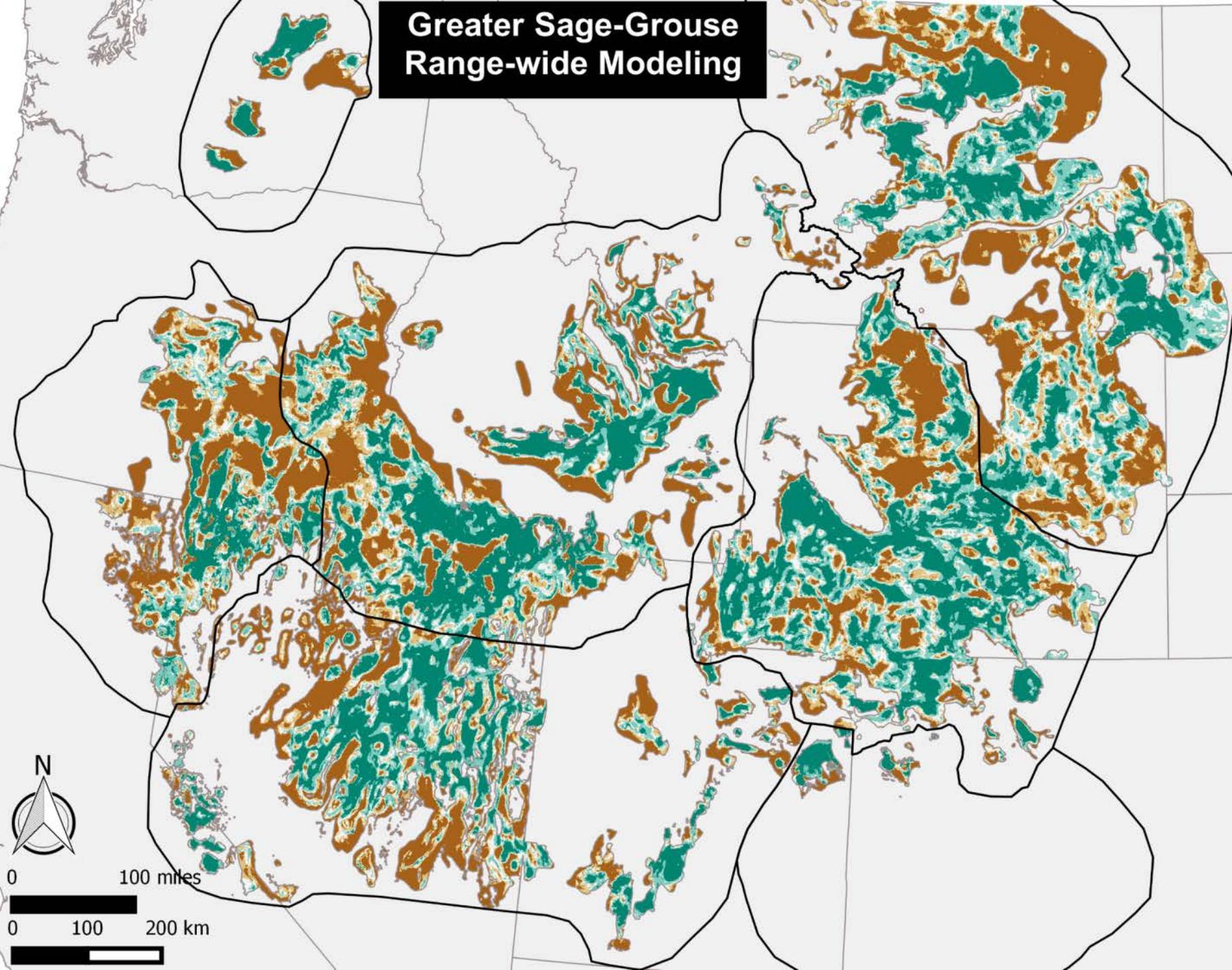
- ❖ Analyses Structured by Management Zone

- ❖ Produce 2 Metrics:

- ❖ Modeled Probability of Occupied Breeding Habitat

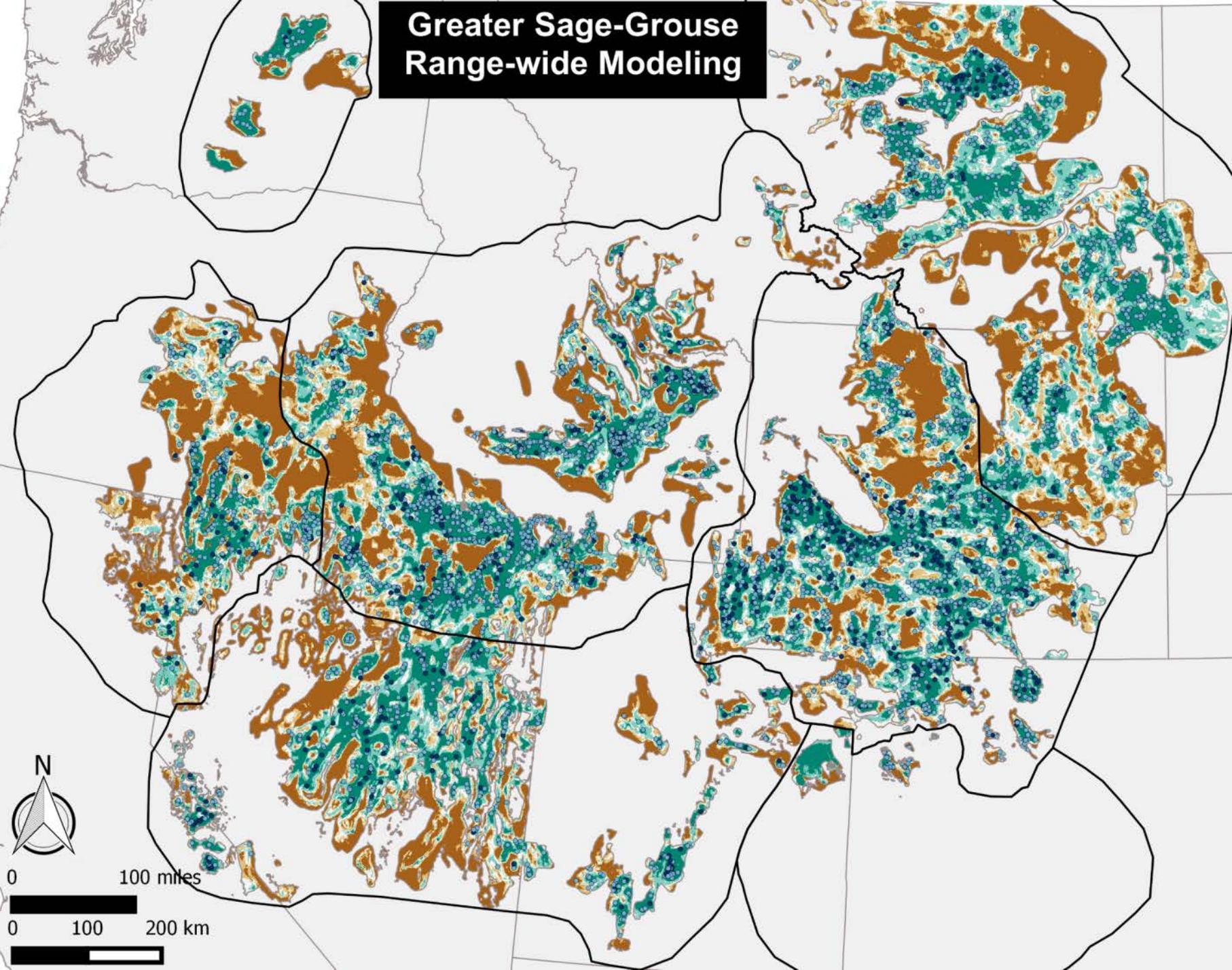
- ❖ Relative Population Index

Greater Sage-Grouse Range-wide Modeling



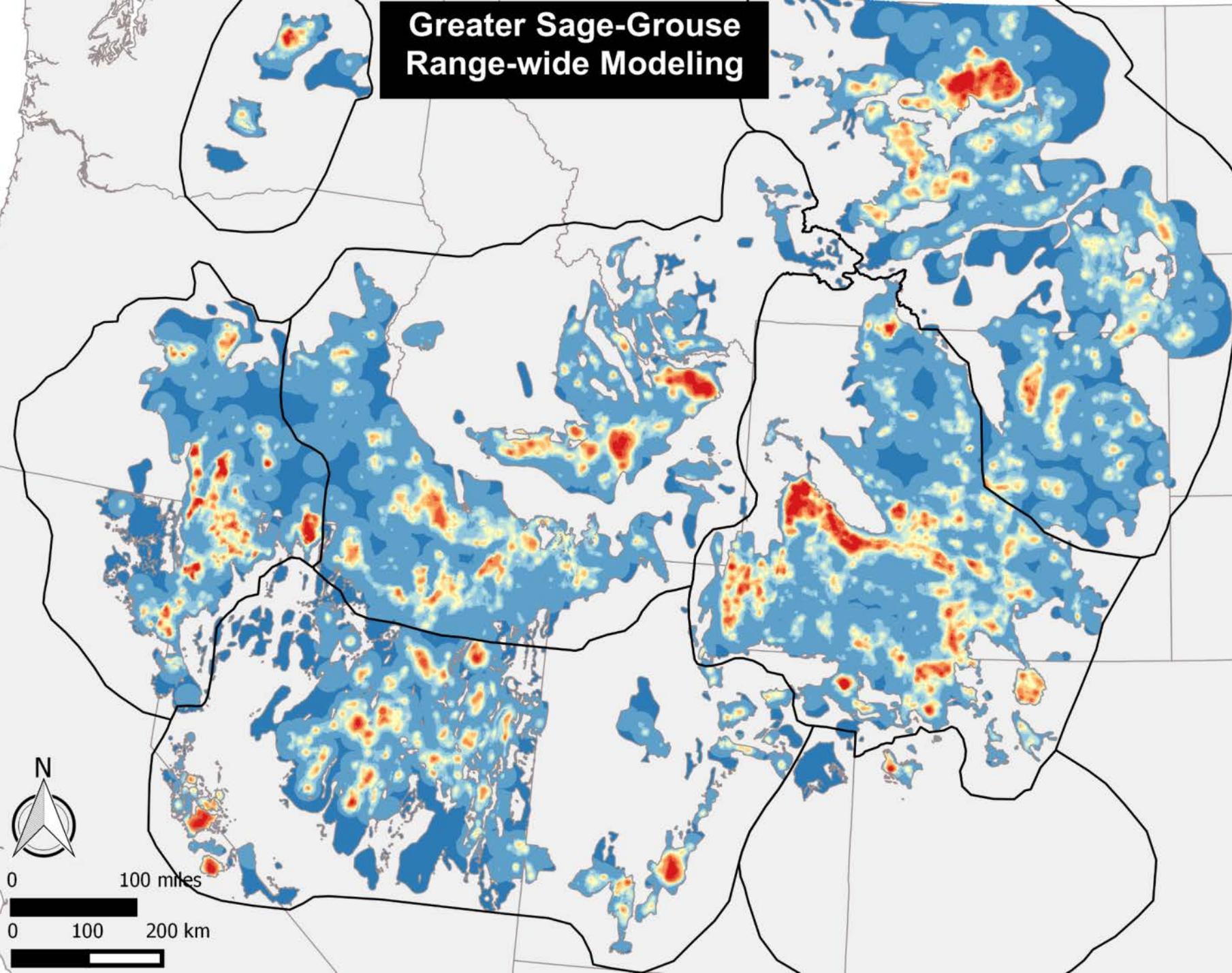
- ❖ Breeding Distribution Model
- ❖ Predictive Model Linked to Habitat Metrics
- ❖ Good Model Fit and Cross-fold Validations Statistics

Greater Sage-Grouse Range-wide Modeling

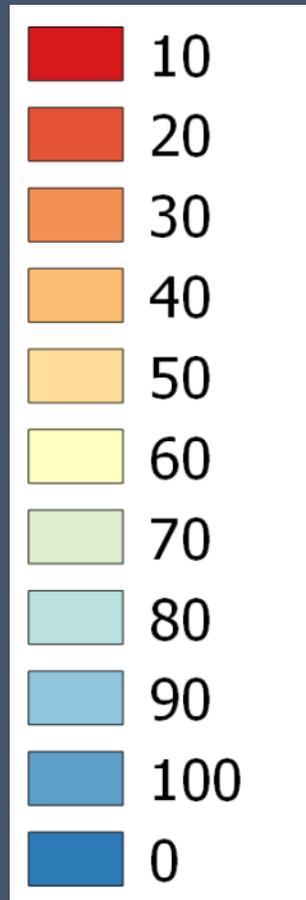


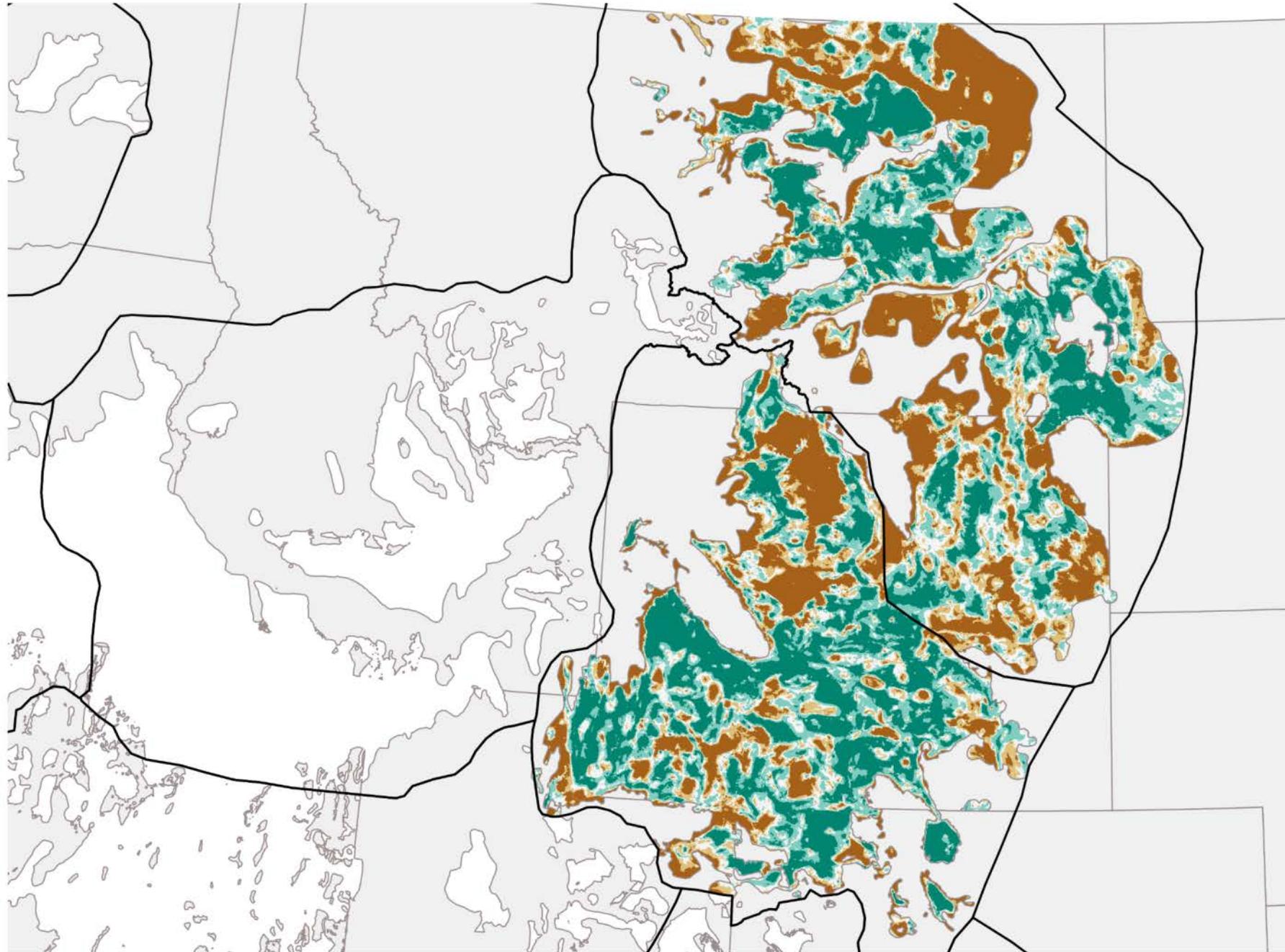
- ❖ Breeding Distribution Model
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Greater Sage-Grouse Range-wide Modeling



- ❖ Relative Population Index by Sage-grouse Management Zone
- ❖ Colors Represent Relative % Populations



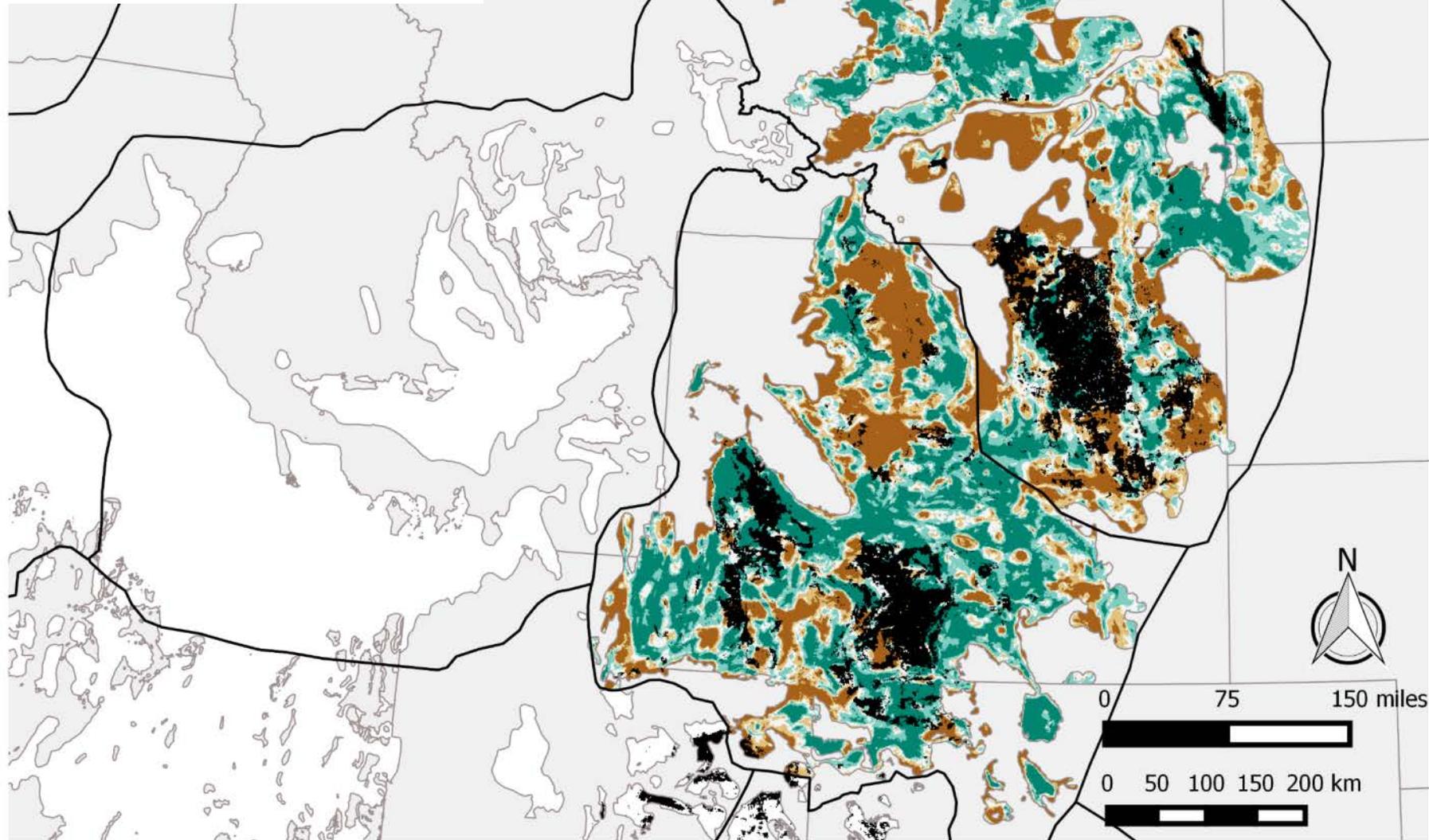


❖ Oil & Gas
Example MZ I &
MZ II

❖ We Used USGS Oil &
Gas Assessments to
Create 3 Scenarios of
Future Development:

❖ Min, Mean, Max

Mean Development From USGS Assessments

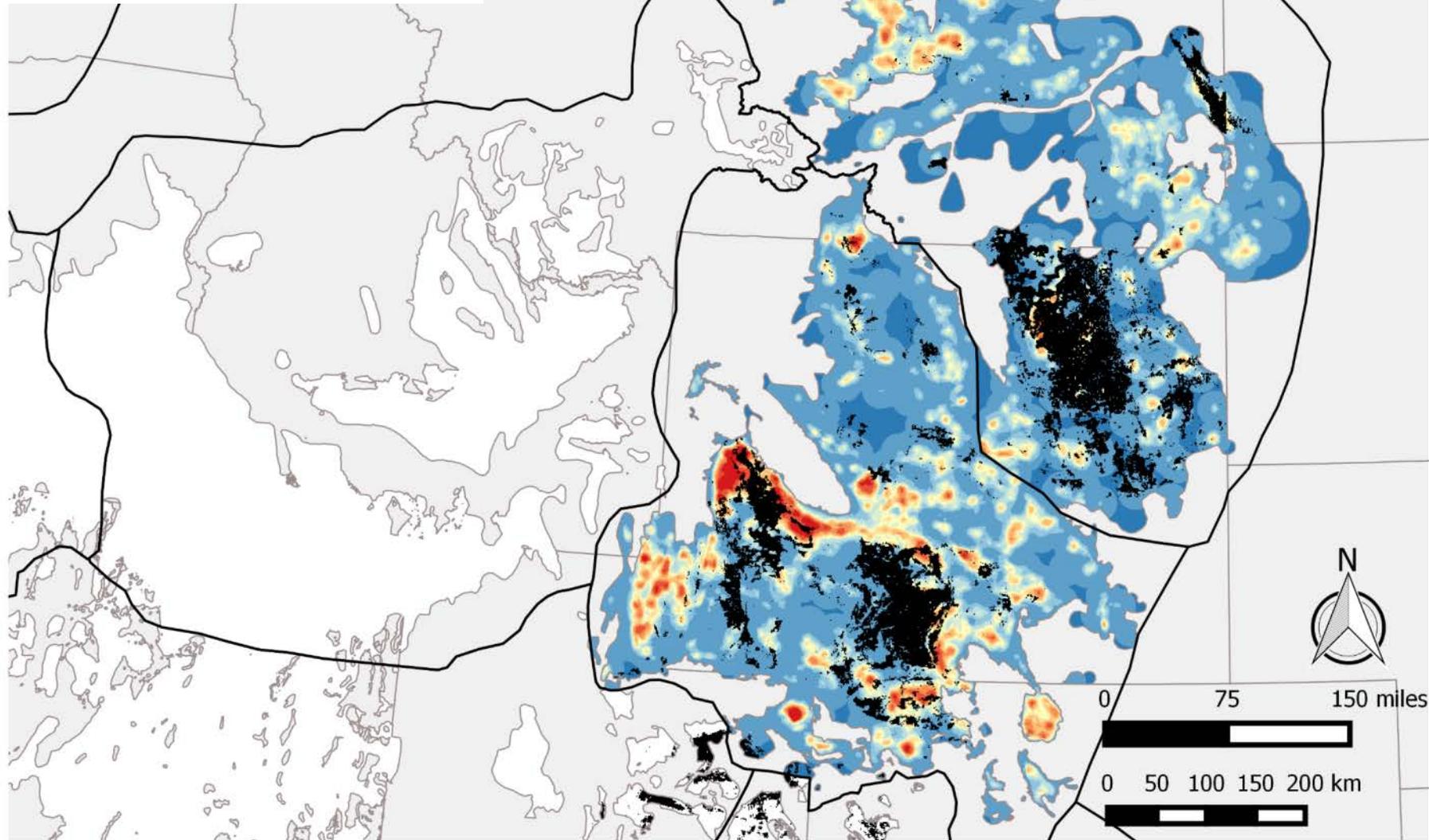


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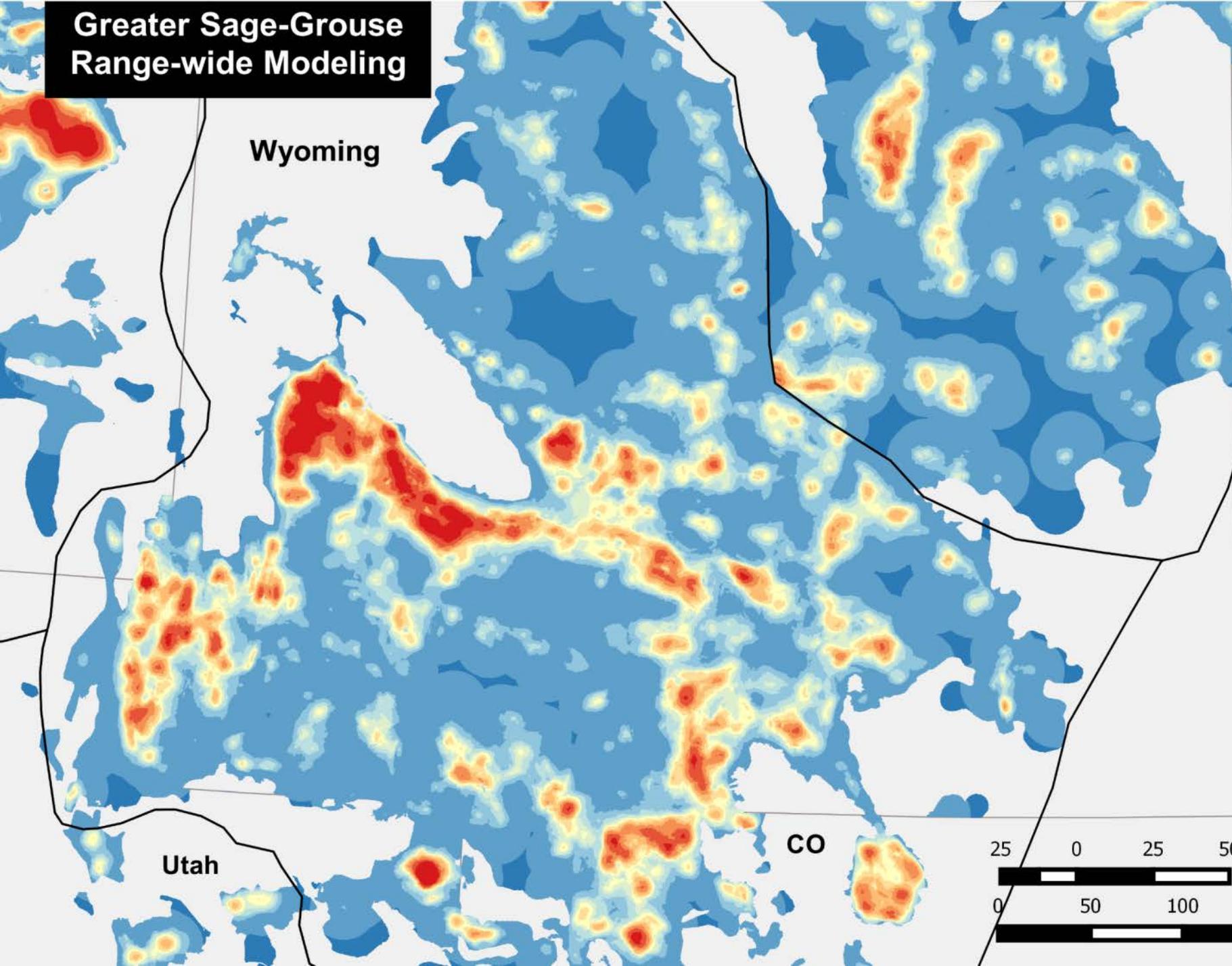


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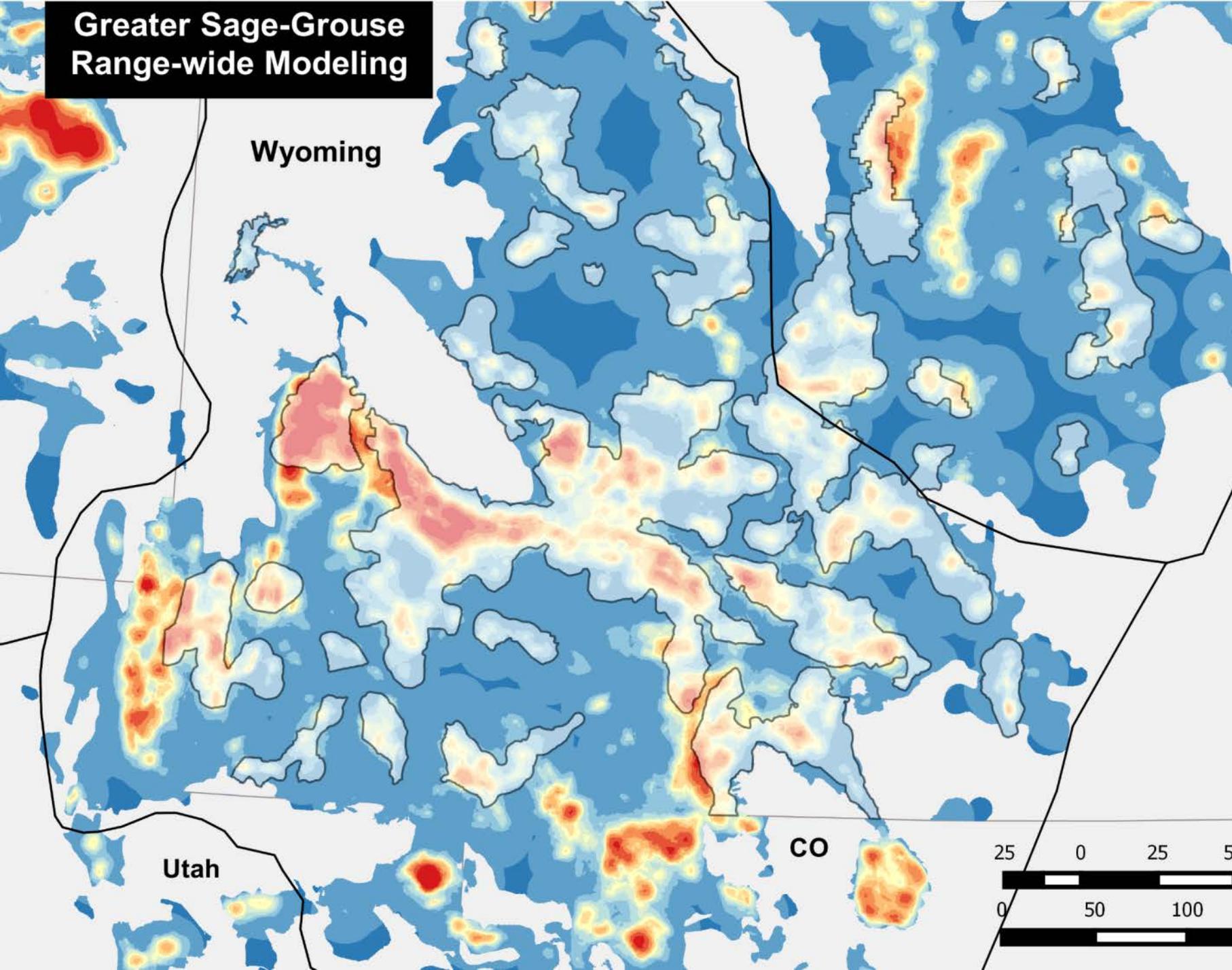
❖ Min, Mean, Max

**Greater Sage-Grouse
Range-wide Modeling**



❖ **Conservation:
Wyoming Core
Area Example**

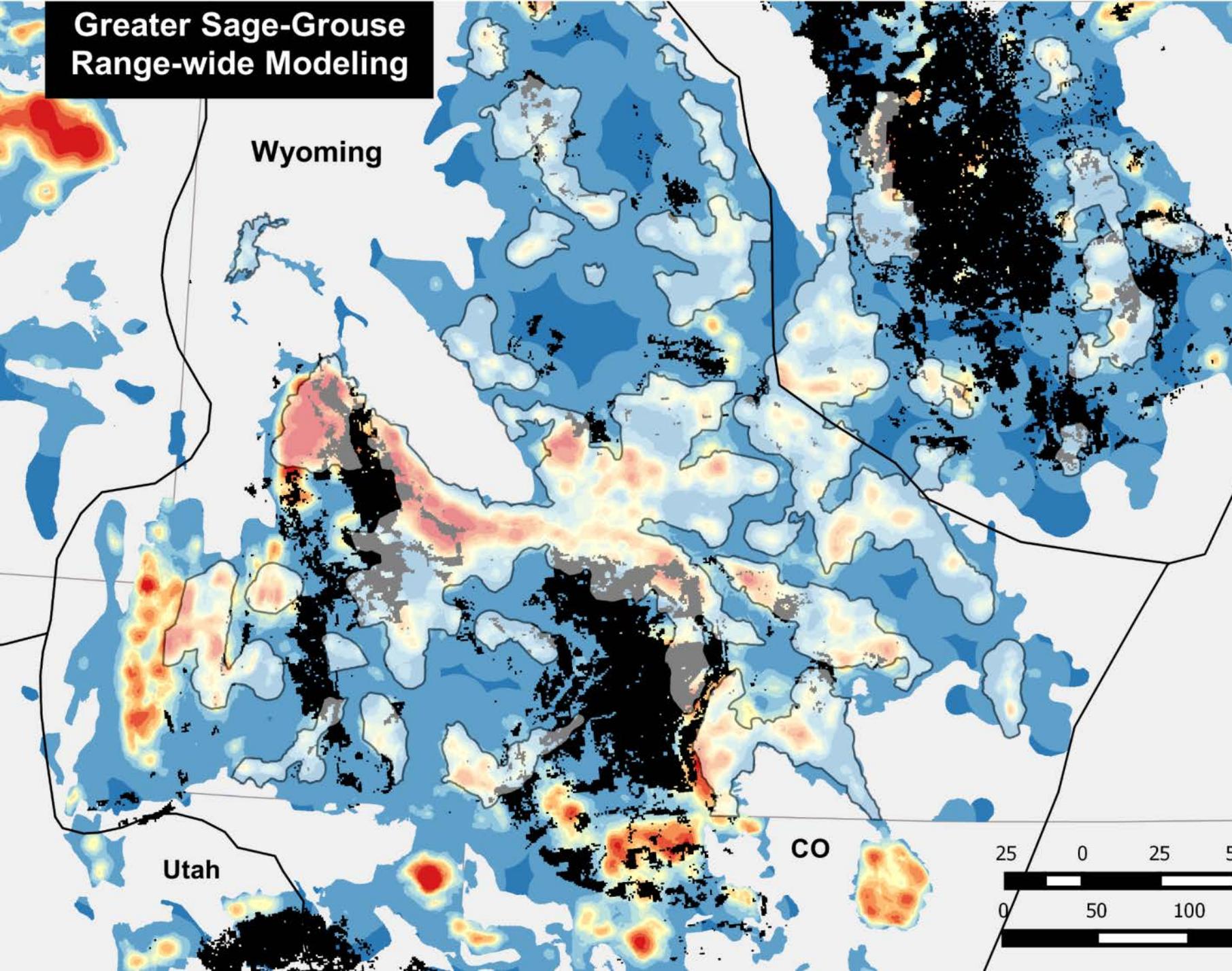
Greater Sage-Grouse Range-wide Modeling



❖ Conservation:
Wyoming Core
Area Example

❖ White Areas =
Wyoming Core Areas
version 3. Last updated
2010.

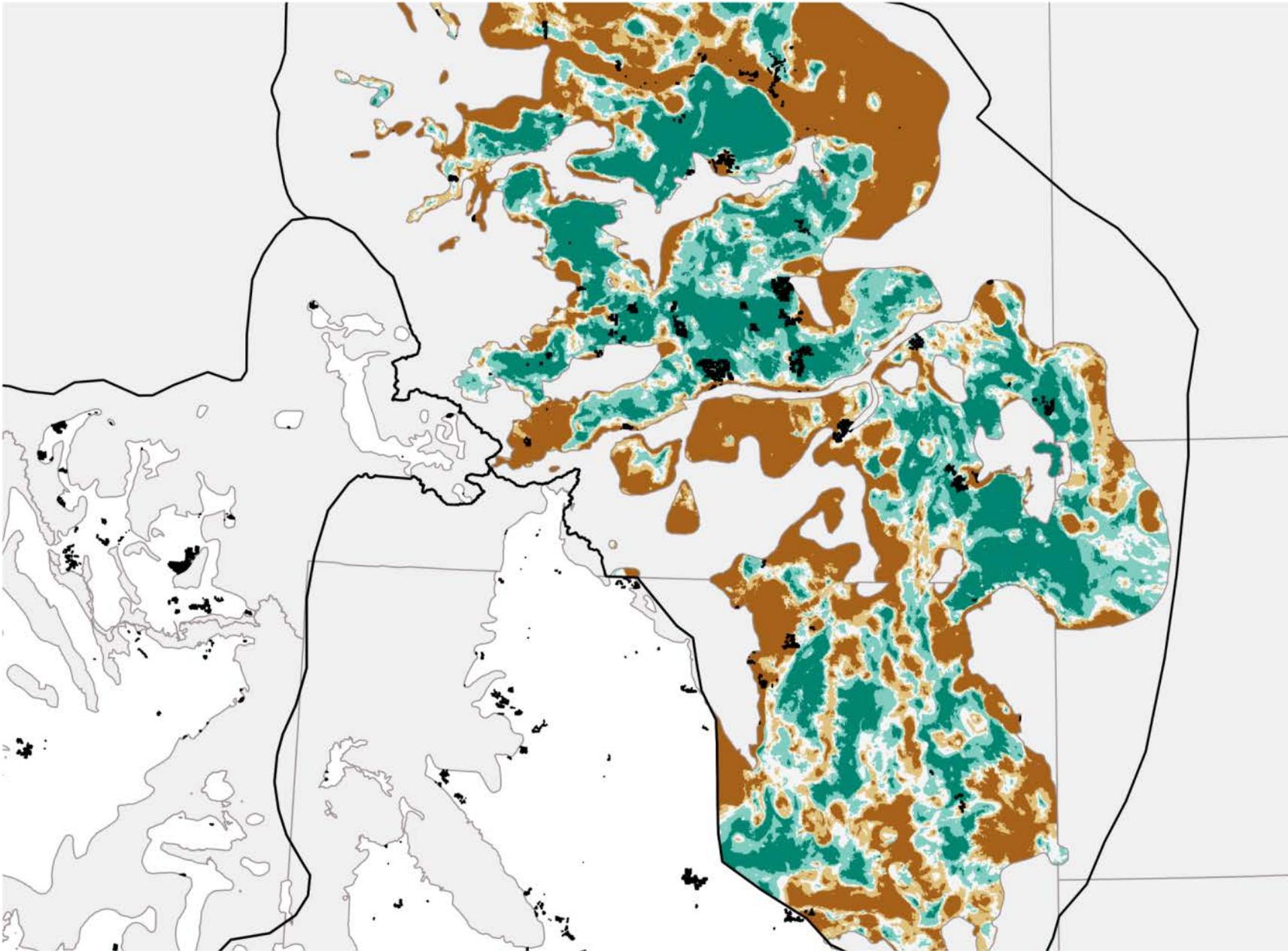
Greater Sage-Grouse Range-wide Modeling

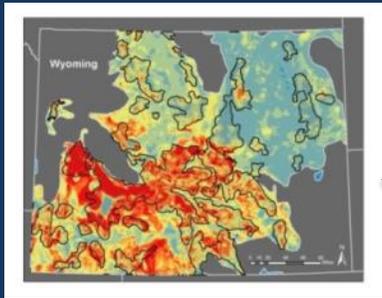


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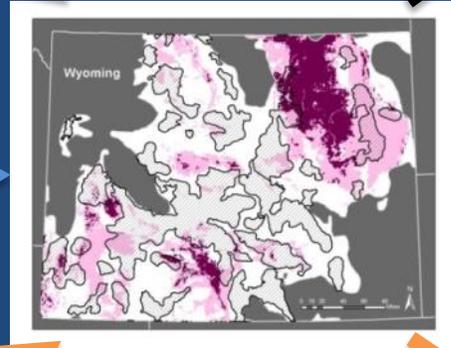
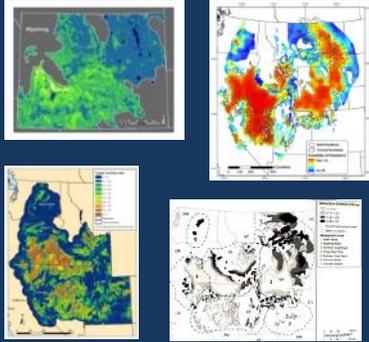
❖ Conservation Example:
Easements



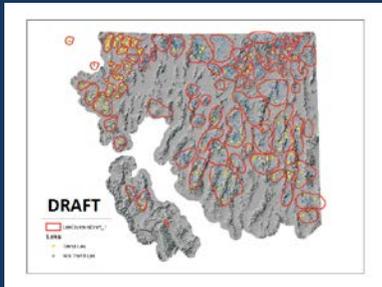


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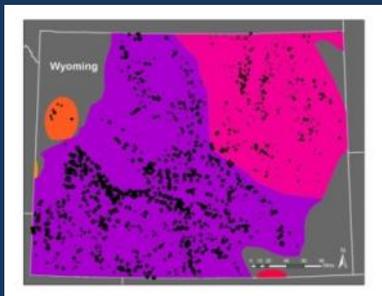
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Questions

