



# Modeling & Greater Sage-Grouse Status Assessment

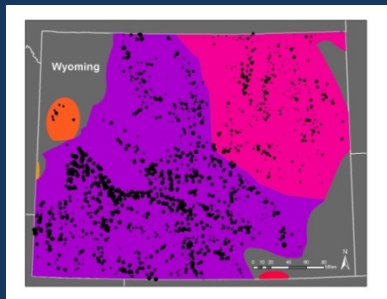
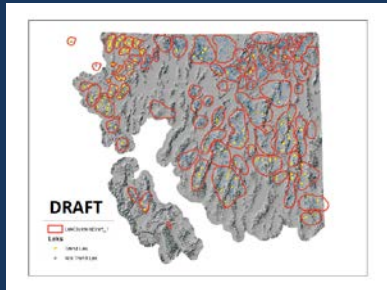
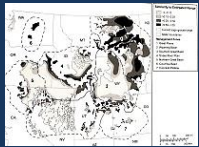
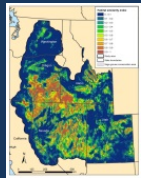
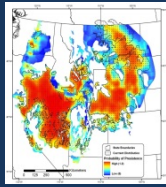
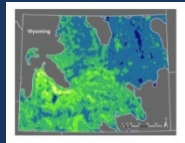
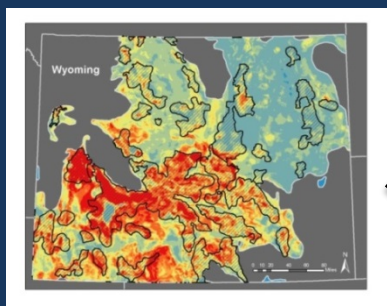
December 2, 2014

# Modeling Workshop Outcomes

## Working group model:

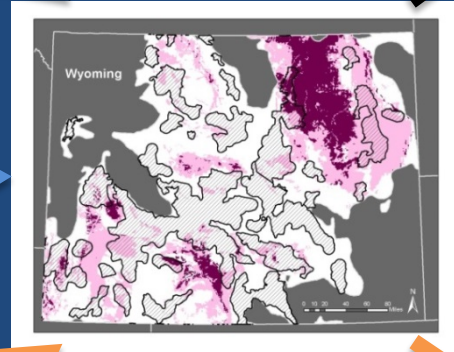
- **6 population models**
  - (Abundance, Distribution, Trends)
- **4 threat models**
  - (oil & gas, cropland risk, conifer, fire & invasives)
- **Share data and GIS processing (collaboration)**
- **Projects and analyses remain independent**





Integrate through  
spatial overlap  
with 4 Risk Models

Projected Relative  
Abundance



Projected Distribution

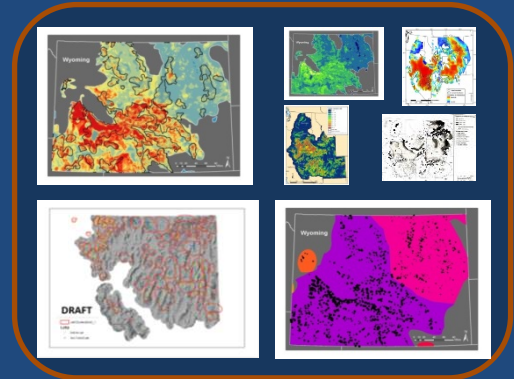
Projected Population  
Trends

Current Population  
Trend recent period

# Modeling:

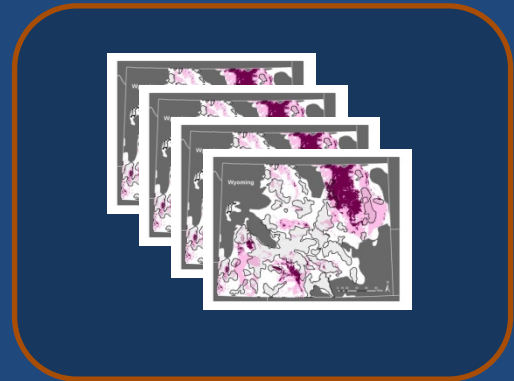
- **7 population models**

- abundance
- distribution
- trends



- **4 threat models**

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



- **Projects and analyses remain independent**



# 7 Population Models

## Occurrence/Distribution Models:

- Repeat of Aldridge et al (2008 Diversity & Dist.) updated to 2014 by USGS
- Repeat of Wisdom et al. (2010 SAB) updated to 2014 by USFWS
- Expand Knick et al. (2013 Ecol. & Evo.) updated to entire range by USGS

## Trends:

- WAFWA- update 2007 analyses to include 2014.
- Coates et al. (2014), First module of bi-state model – predicts counts at lek clusters to produce trend estimates

## Abundance:

- USFWS



# 7 Population Models

## Occurrence/Distribution Models:

- TNC – Dynamic Occupancy Models
- Repeat of Aldridge et al (2008 Diversity & Dist.), updated to 2014
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## Trends:

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## Relative Abundance:

- USFWS



# 4 Risk (Threat) Models

- **Cropland Risk:**
  - TNC (MZ 1- MT-WY)
  - Washington Department Fish & Wildlife (MZ Washington)
- **Oil & Gas potential**
  - (MZ 1 & 2- CO, WY, MT, UT)
- **Fire & Invasive:**
  - Resiliency and Resistance (All Great Basin)
- **Conifer ( All Great Basin)**

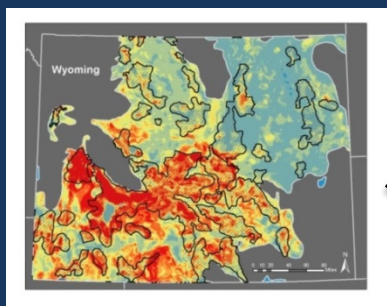




# Assessments of Threats and Conservation

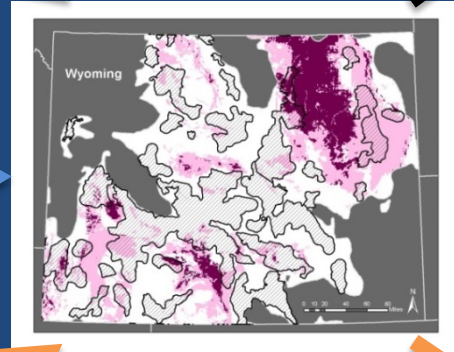
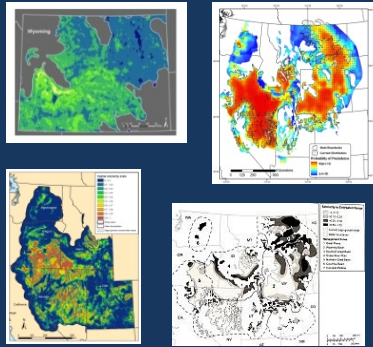
- Threats & Conservation actions are linked to the population models through the risk models
- Each risk model will have a series of scenarios to understand and bound uncertainty (Min. 2)
- Scenario development will include:
  - Researchers, WAFWA biologist, and USFWS biologist





Integrate through  
spatial overlap  
with 4 Risk Models

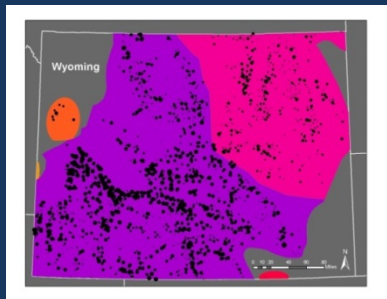
Projected Relative  
Abundance



Projected Distribution



Projected Population  
Trends



Current Population  
Trend recent period

# Questions



This presentation and the other presentations from today will be posted under the Endangered Species Act section of this site.

*<https://www.fws.gov/greatersagegrouse/documents.php>*



**ADDITIONAL  
SLIDE**  
(as needed)



# Model Status

Model	Status
Abundance (Doherty)	<b>On Track</b> (done by January, scenarios by April 1, 2014)
Distribution (Aldridge)	<b>Not Started</b> (dependent upon funding)
Distribution (Knick)	<b>On Track</b> (done by January, scenarios by April 1, 2014)
Distribution (Doherty)	<b>On Track</b> (done by January, scenarios by April 1, 2014)
Distribution (TNC)	<b>Off Track</b> (NOT AVAILABLE UNTIL SUMMER 2015)
Trend (Coates)	<b>On Track</b> (done by January, scenarios by April 1, 2014)
Trend (WAFWA)	<b>On Track</b> (should be done before other models)