

# Managing Sandhills Rangeland for Prairie Chicken Habitat

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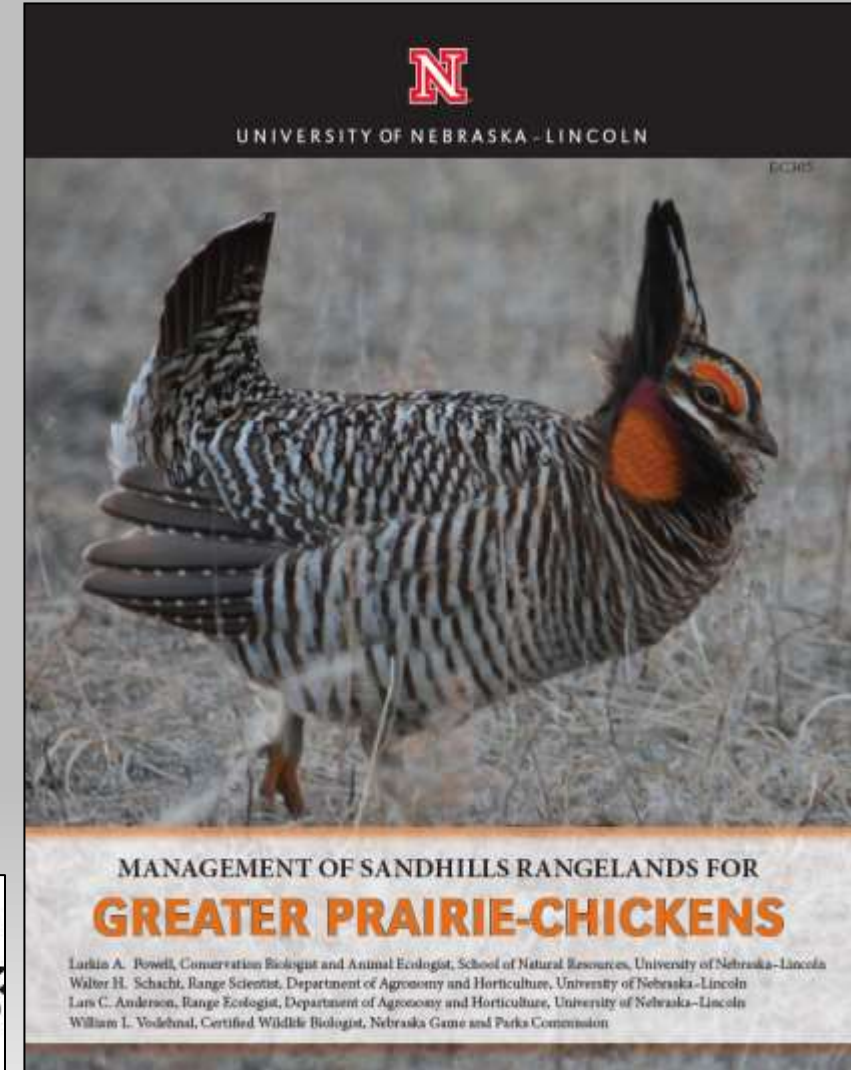
# Managing Sandhills Rangeland for Prairie Chicken Habitat

- Area of rangelands/grasslands declining
- Habitat quality of remaining rangelands/grasslands
- Managing Sandhills rangelands for agricultural production and wildlife habitat



# Managing Sandhills Rangelands for Greater Prairie-Chickens

- Habitat guidelines for greater prairie-chicken in the Nebraska Sandhills
- **Larkin Powell**, Professor, UNL
- **Walter Schacht**, Professor, UNL
- **Lars Anderson**, range ecologist, American Prairie Reserve, Montana
- **Bill Vodenahl**, certified wildlife biologist, NGPC, Bassett
- Funding: Nebraska Game and Parks Commission



**Sharp-tailed  
grouse**

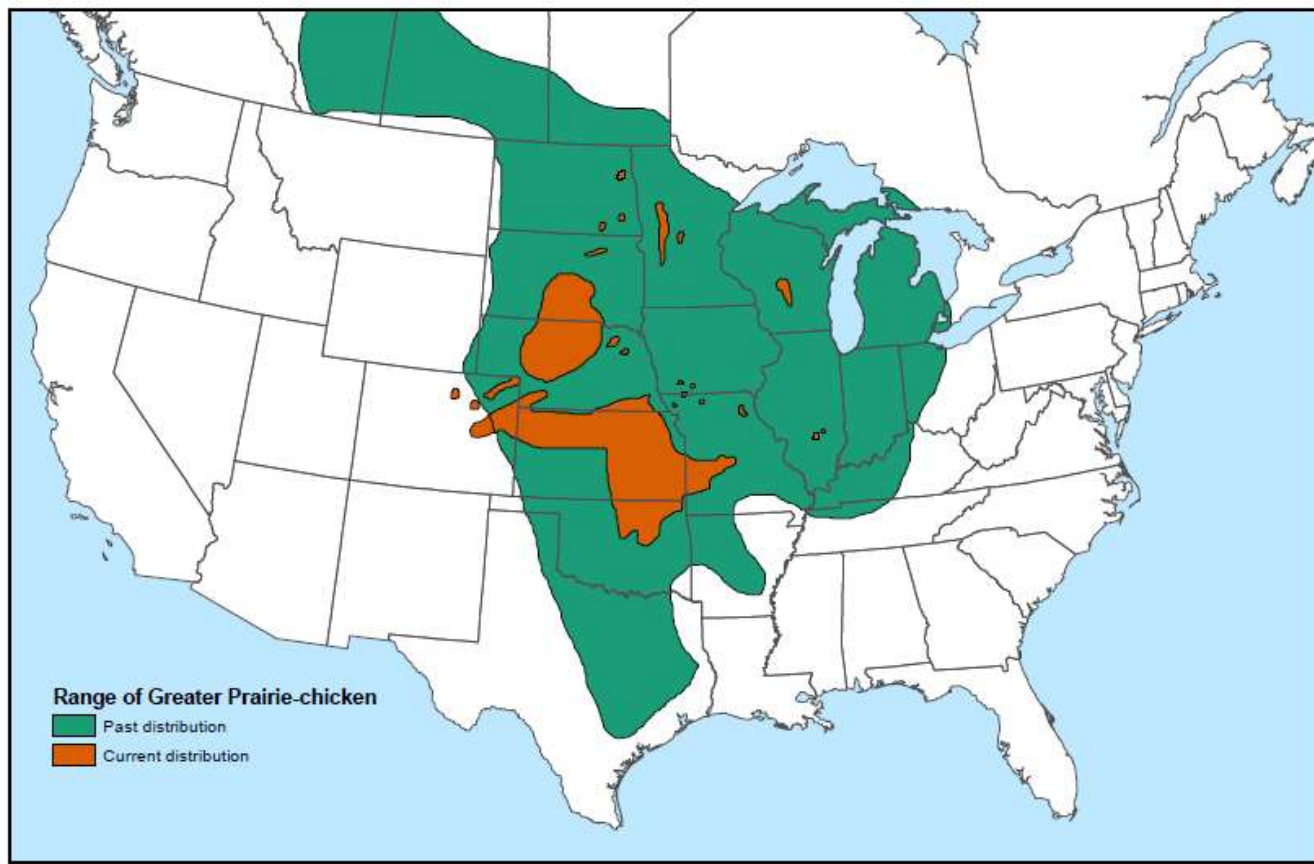


**Greater prairie-chicken**



**Lesser prairie-  
chicken**

# Greater prairie chicken distribution

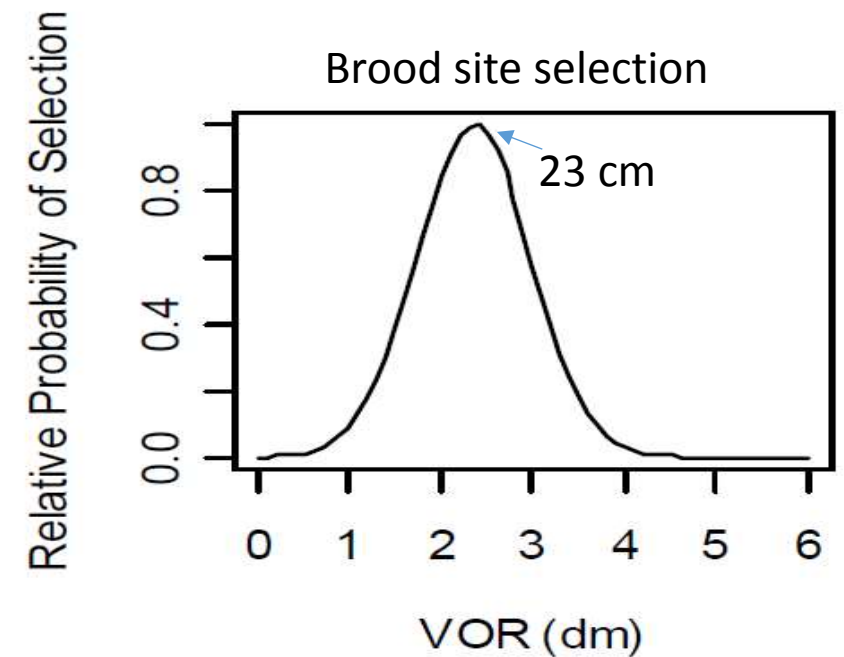


- South Dakota, Nebraska, Kansas, and Oklahoma
- Stable population in Nebraska Sandhills
- Most common in eastern Sandhills



# Nest and brood site selection in southeastern Nebraska

- The visual obstruction (cover density) at nest sites was 11 inches; average visual obstruction at random locations was 7.5 inches (Matthews et al. 2013).
- Broods were most likely to select sites with visual obstruction of 9 inches (Matthews et al. 2013).
- These results similar to reports from Tallgrass Prairie in Kansas.



# What about the Sandhills?

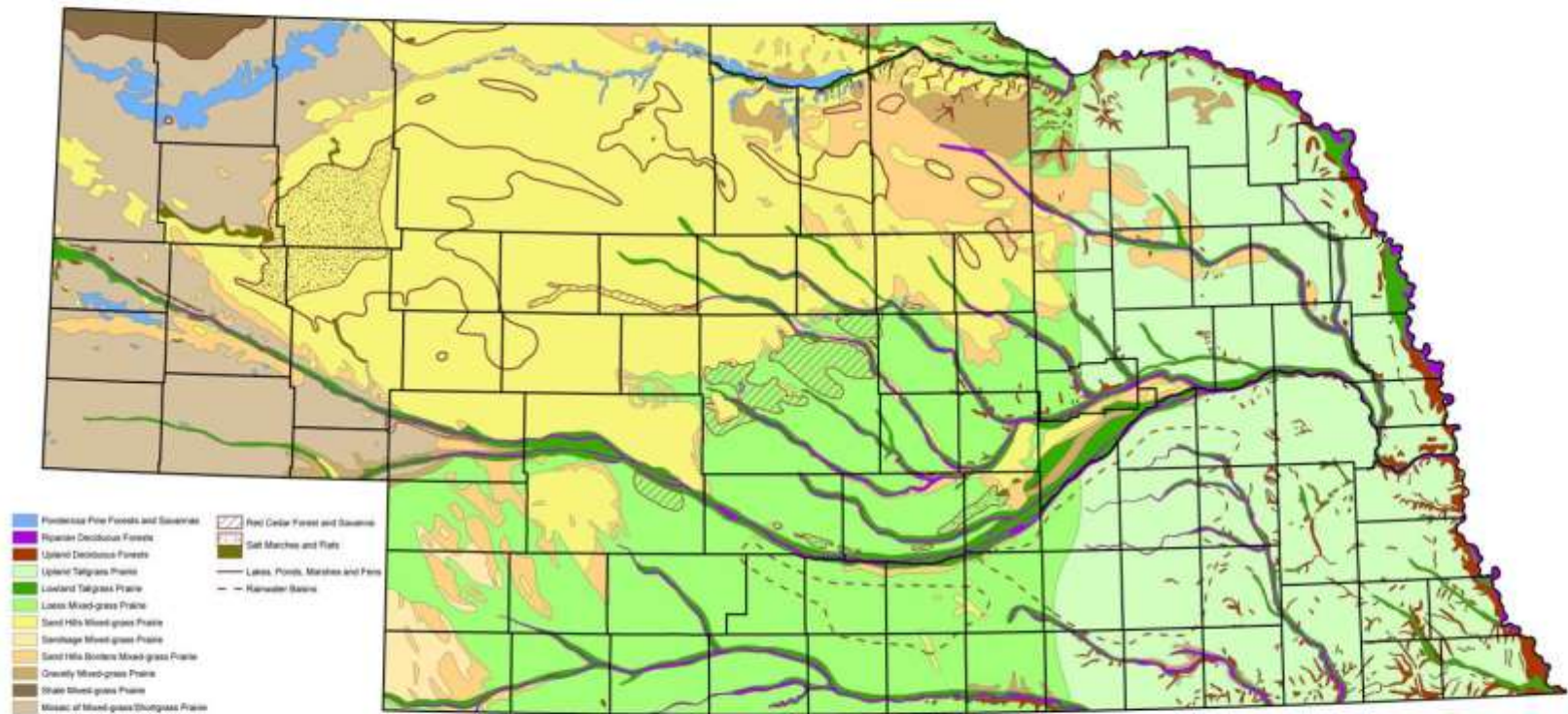
- Do chickens in the Sandhills need such dense vegetation?
- What are preferred ecological sites in the Sandhills?
- Do they need big patches or little patches of dense vegetation?



# Nebraska Sandhills

- 20,000 sq. miles; largest contiguous grassland in North America
- Approximately  $\frac{1}{4}$  of Nebraska's land area
- 95% native prairie
- 95% is privately owned
- 80%+ is grazed by beef cattle

## Native Vegetation





# Sandhills

Prairie chicken are found on grazed grassland in the Sandhills.

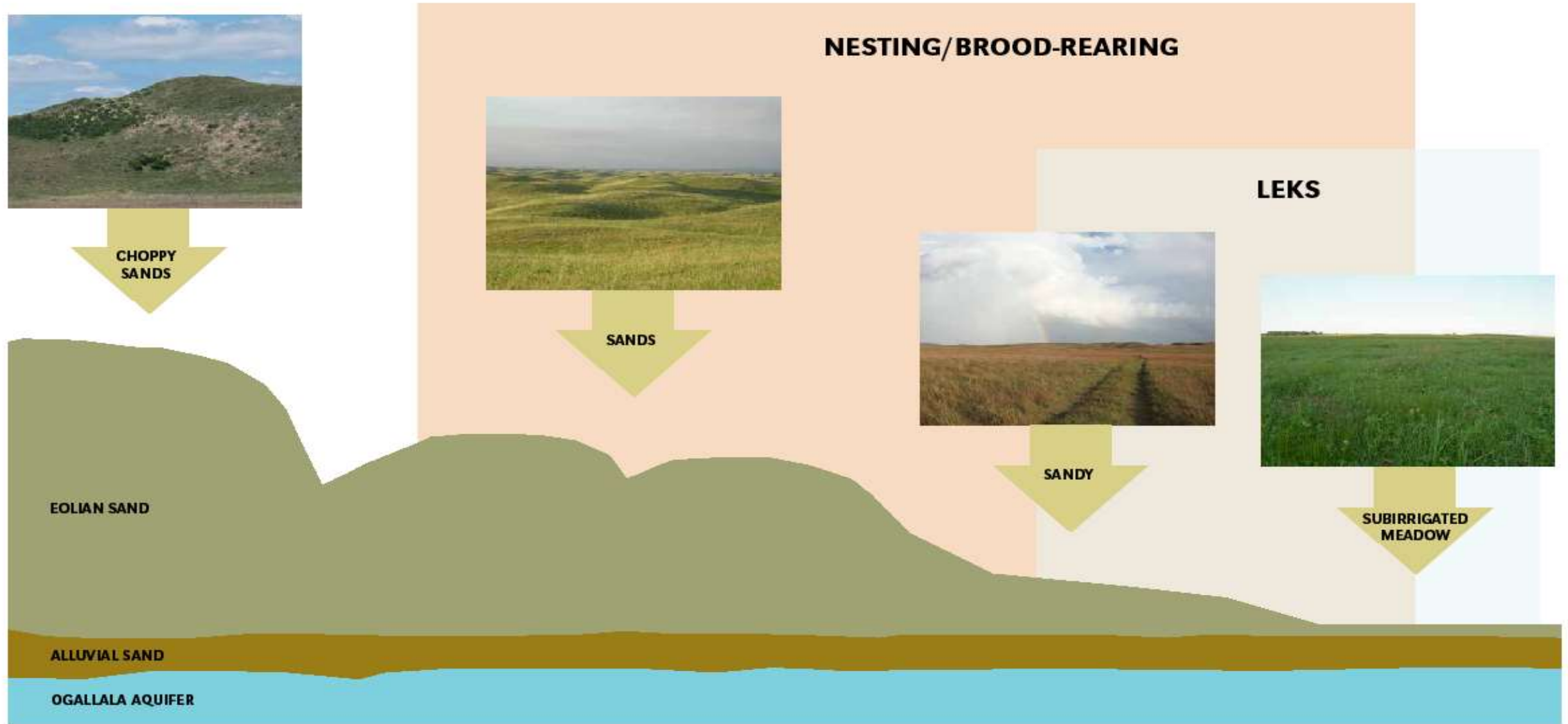
The average visual obstruction reading in the central Sandhills (Thedford to Valentine) is 1.6 inches during the growing season (Kempema 2007).

Habitat in the Sandhills is adequate for a “stable” population of greater prairie chickens.

Develop guidelines for public and private land managers for mating and brood rearing success.



# ECOLOGICAL SITES AND GREATER PRAIRIE CHICKEN MANAGEMENT ZONES



**FIGURE 5.** Position of ecological sites in the Sandhills of Nebraska in relation to one another and to topographic features.



# Variable Habitat Types through the Year

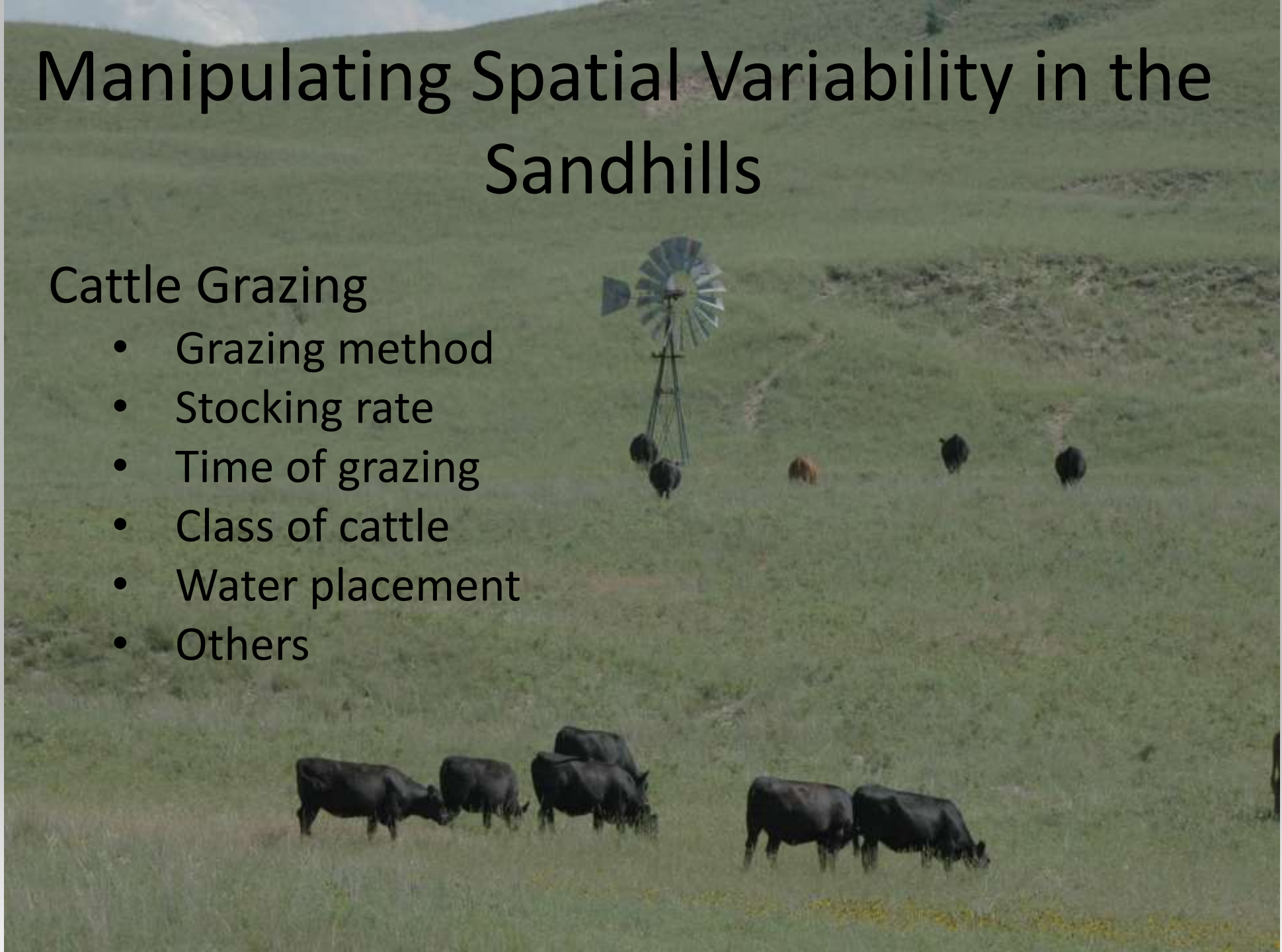




# Manipulating Spatial Variability in the Sandhills

## Cattle Grazing

- Grazing method
- Stocking rate
- Time of grazing
- Class of cattle
- Water placement
- Others





**Low Stocking Density**

**Ultra-High Stocking  
Density (Mob Grazing)**







Low stocking density (patch development)



High stocking density (even use)

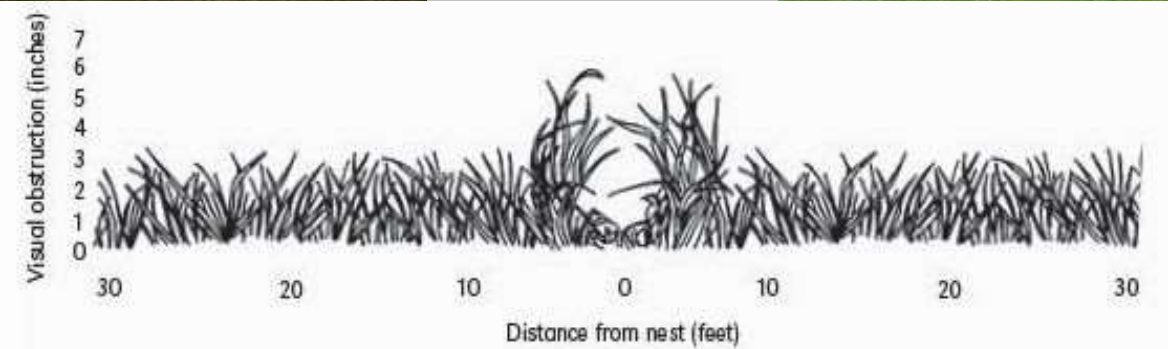




Lightly-grazed  
CRP pasture.



Moderately  
grazed "native"  
pasture.



# Spatial variability of pastures

<u>Spatial Variability</u>	<u>Homogeneous</u>	<u>Heterogeneous</u>	<u>Shifting Mosaic</u>
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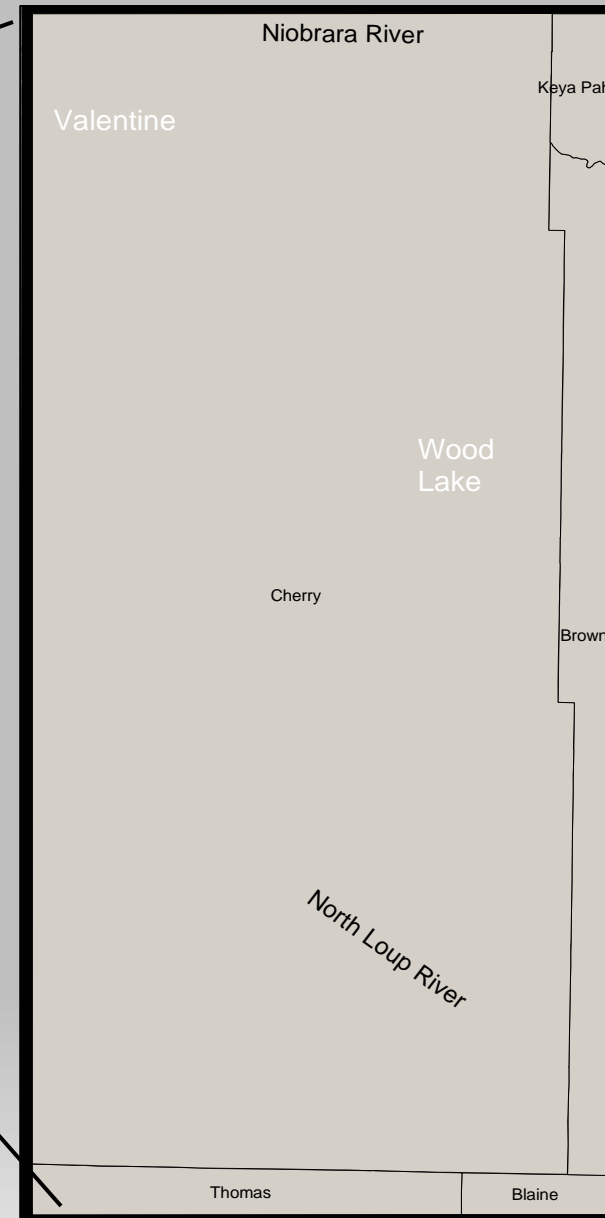
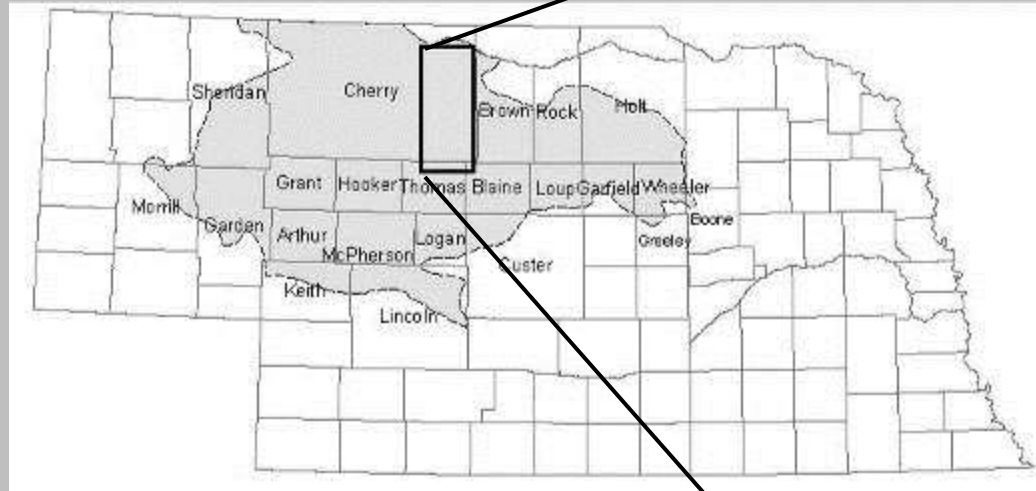
***Rangeland Practices***

Continuous stocking		x	
Intensive rotational grazing	x		
Herbicide application	x		
Multispecies grazing	x		
Area burns	x		
Improved water distribution	x		

***Alternative practices***

Patch burning			x
Patch herbicide application			x
Patch fertilization			x
Focused grazing disturbances			x
Shifting attractants			x

# Study area



## Grazing Systems

- - Continuous
- - Medium duration (8 - 12 pastures)
- - Short duration grazing



# Heterogeneity on ranches in the central Sandhills (Kempema 2005)



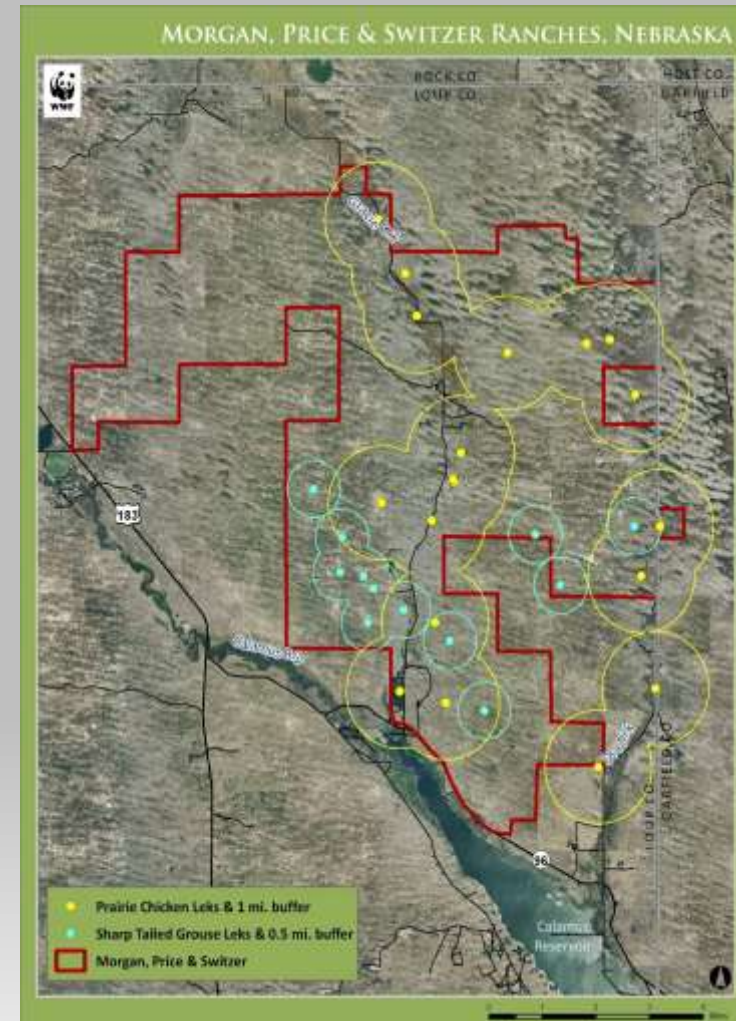
<b><u>Statistic (SE)</u></b>	<b><u>Continuous</u></b>	<b><u>Medium</u></b>	<b><u>SDG</u></b>
<b>VOR (cm)</b>	4.1(0.08)	3.8(0.08)	04.3 (0.40)
<b>Heterogeneity Index (CV)</b>	74.9	67.7	69.4
<b>Litter depth(cm)</b>	0.29(0.07)	0.31(0.07)	0.24(0.07)

# Land Management Tips: Leks

- On leks (usually subirrigated sites) used annually by birds, keep vegetation short-cropped by haying and/or heavy grazing.
- Maintain quality nesting habitats, especially near leks.

# Land Management Tips: Nesting

- Stock 30 to 50% of upland Sandhills pastures (sands and sandy sites) within 1 mile of leks at low to moderate rates to create different levels of VOR.
- Avoid leaving excessive litter on the ground since litter provides shelter to rodents.
- Leave standing dead vegetation through the winter to help hens choose their upcoming nesting sites.
- Clumps of plants like bluestem, rose, and leadplant are important nesting habitat (4 to 6 inch VOR).
- Using continuous stocking or simple rotational systems (4-pasture deferred rotation) at low to moderate stocking rates will commonly provide this patchy habitat.





# Land Management Tips: Brooding Sites

- Graze upland sites (sands and sandy sites) so that they have a VOR of about 4 inches with a diversity of plant species and structure.
- Using continuous stocking or simple rotational systems (4-pasture deferred rotation) at low to moderate stocking rates will commonly provide for this patchy habitat.
- Remove smooth brome grass from brooding sites because this type of vegetation can cause chicks to get wet and die from exposure. Bunchy grass growth and tall forbs with low amount of litter are good habitat for broods.

# Grazing Management Recommendations

- Stocking rate:
  - Use low to moderate stocking rates on 30 to 50% of sands and sandy sites within 1 mile of leks.
  - Use heavy stocking rates on annual lek sites.
- Distribution of grazing:
  - When possible, fence sandy sites separately from sands sites to avoid overuse of sandy sites resulting in poor habitat for nesting and brooding on sandy sites.
  - Improving grazing distribution and grazing efficiency can negatively impact prairie chicken habitat on sands and sandy sites.
- Timing of grazing:
  - Avoid grazing a pasture with an active lek site.
  - Avoid grazing pastures when development of patches is minimized.
- Grazing system
  - Continuous and simple rotational grazing systems that are lightly to moderately stocked tend to produce the patchiness of plant density and cover needed for excellent nesting and brooding habitat.
  - Avoid using grazing strategies/systems that result in even use of pastures.