

# Avian Use of Natural versus Planted Woodlands

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Photo by Doug Backlund

| <b>+/-</b> | <b>W/in Patch</b> | <b>Perimeter</b> | <b>Distance</b> | <b>Landscape</b> |
|------------|-------------------|------------------|-----------------|------------------|
| GRSP       | 0/10<br>(14)      | 0/5 (7)          | 0/6 (6)         | 0/3 (7)          |



Photo by Doug Backlund

| <b>+/-</b> | <b>W/in Patch</b> | <b>Perimeter</b> | <b>Distance</b> | <b>Landscape</b> |
|------------|-------------------|------------------|-----------------|------------------|
| SASP       | 0/7 (9)           | 0/6 (7)          | 0/3 (7)         | 0/6 (7)          |



Photo by Doug Backlund

|      | <b>W/in Patch</b> | <b>Perimeter</b> | <b>Distance</b> | <b>Landscape</b> |
|------|-------------------|------------------|-----------------|------------------|
| STGR | 0                 | 0                | 0               | 0/2 (2)          |
| GPCH | 0/2 (2)           | 0                | 0/0 (1)         | 0/3 (3)          |
| LPCH | 0                 | 0                | 0               | 0/2 (2)          |



Photo by Doug Backlund



# Questions?

- Which avian species are using natural and planted woodlands?
- Is the increase in planted woodlands effectively replacing the loss of naturally occurring woodland habitat?
- Does the ecological benefit outweigh the cost to grassland birds?

# Methods

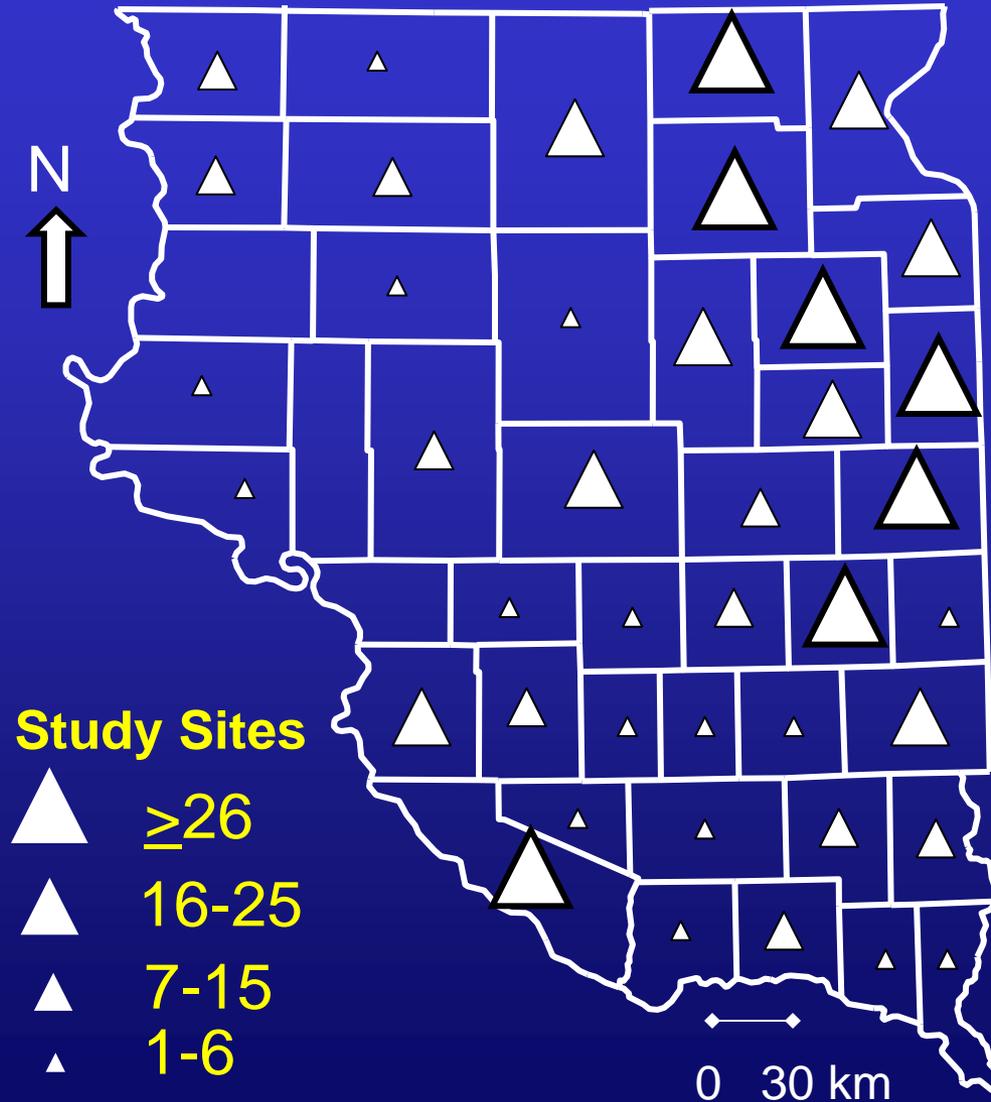
# Study Sites

- public areas

- naturally occurring (99) and planted (425)



# Woodland Survey Sites



# Vegetation/Patch Variables

- Area
- Width
- Mean Tree Height
- Mean Shrub Height
- Mean Understory Height
- Mean Shrubs per Transect



# Woodland Obligates

- Black-billed Cuckoo
  - Red-headed Woodpecker
  - Downy Woodpecker
  - Northern Flicker
  - Tree Swallow
  - Blue Jay
  - Black-capped Chickadee
  - White-breasted Nuthatch
  - House Wren
  - Warbling Vireo
  - Rose-breasted Grosbeak
  - Orchard Oriole
  - Baltimore Oriole
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# Woodland Edge

- Mourning Dove
  - Willow Flycatcher
  - Western Kingbird
  - Eastern Kingbird
  - American Robin
  - Gray Catbird
  - Brown Thrasher
  - Yellow Warbler
  - Rufous-sided Towhee
  - Chipping Sparrow
  - Field Sparrow
-

# Generalist Species

- Barn Swallow
  - American Crow
  - European Starling
  - Common Yellowthroat
  - Song Sparrow
  - Red-winged Blackbird
  - Common Grackle
  - Brown-headed Cowbird
  - American Goldfinch
  - House Sparrow
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# Statistics

\*Vegetation- ANOVA

\*Bird Richness-Analysis of Covariance (area)

\*Occurrence-Logistic Regression (woodland origin and size)



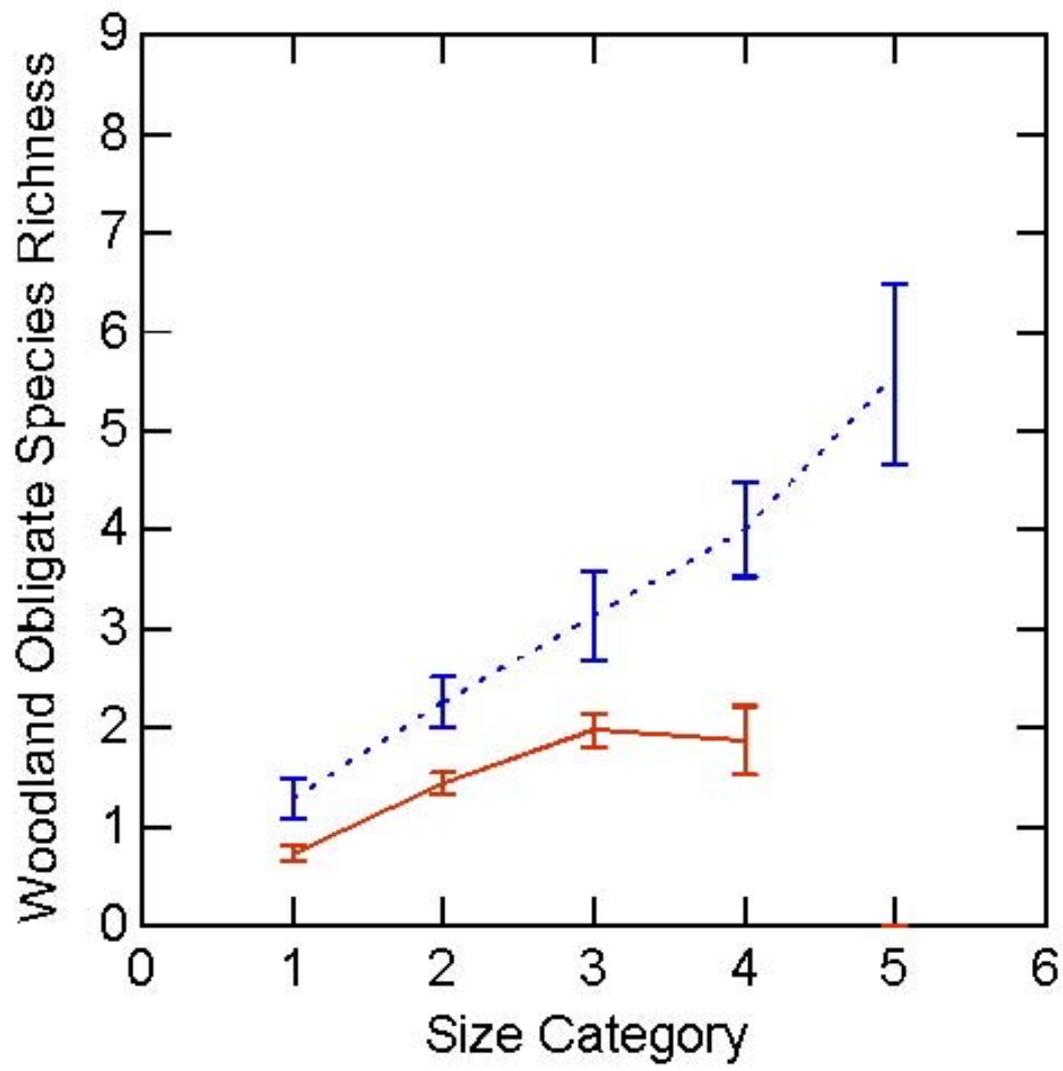
# Results

# Vegetation

- **Natural woodlands significantly:**
  - wider and larger
  - taller mean tree heights
  - shorter mean shrub heights
  - fewer shrubs per transect

# Woodland Size Categories

| Size                        | Natural | Planted |
|-----------------------------|---------|---------|
| 1 ( $\leq 1$ ha)            | 35      | 139     |
| 2 ( $> 1$ and $\leq 3$ ha)  | 35      | 180     |
| 3 ( $> 3$ and $\leq 7$ ha)  | 15      | 83      |
| 4 ( $> 7$ and $\leq 20$ ha) | 7       | 23      |
| 5 ( $> 20$ ha)              | 7       | 0       |

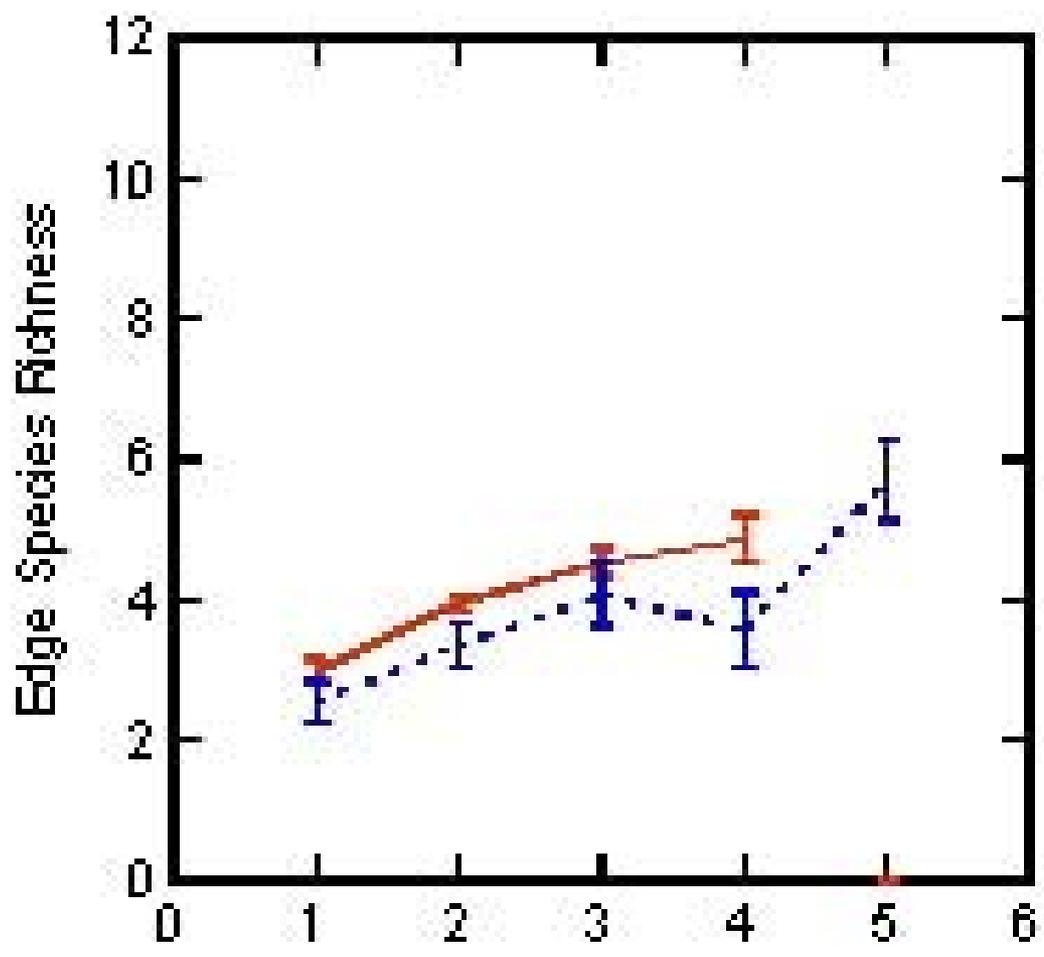


Woodland Origin

- Planted
- Natural

# Woodland Obligates

| Species                 | B <sub>1</sub> | SE   | P value |
|-------------------------|----------------|------|---------|
| Red-headed Woodpecker   | -1.16          | 0.45 | 0.01    |
| Downy Woodpecker        | -0.92          | 0.40 | 0.02    |
| Northern Flicker        | -0.63          | 0.27 | 0.02    |
| Tree Swallow            | -0.40          | 0.31 | 0.10    |
| Blue Jay                | -0.88          | 0.28 | <0.00   |
| Black-capped Chickadee  | -0.86          | 0.32 | 0.01    |
| White-breasted Nuthatch | -2.11          | 1.24 | 0.09    |
| House Wren              | -1.29          | 0.25 | <0.00   |
| Rose-breasted Grosbeak  | -1.55          | 0.81 | 0.06    |



Woodland Patch

- Native
- Planted

# Woodland Edge/Generalists

| Species              | B <sub>1</sub> | SE   | P value |
|----------------------|----------------|------|---------|
| Mourning Dove        | +0.75          | 0.25 | <0.00   |
| Willow Flycatcher    | +0.50          | 0.26 | 0.05    |
| Eastern Kingbird     | +0.62          | 0.23 | 0.01    |
| American Robin       | -0.63          | 0.23 | 0.01    |
| European Starling    | -1.17          | 0.41 | <0.00   |
| Song Sparrow         | -0.57          | 0.28 | 0.05    |
| Brown-headed Cowbird | +0.66          | 0.23 | <0.00   |
| American Goldfinch   | +1.01          | 0.24 | <0.00   |

# Summary

- Probability of occurrence for 8 of 13 woodland obligates was significantly higher for natural woodlands
- The largest planted woodlands contained  $<1$  more woodland obligate than the smallest natural woodland
- Planted woodlands dominated by edge and generalist species





# Questions

- Planted woodlands used primarily by edge and generalist species
- Planted woodlands do not effectively replace natural habitat for woodland birds of concern
- Managers need to seriously consider the tradeoffs when planting trees in prairie landscapes

\*Similar results west river South Dakota

# Management Implications

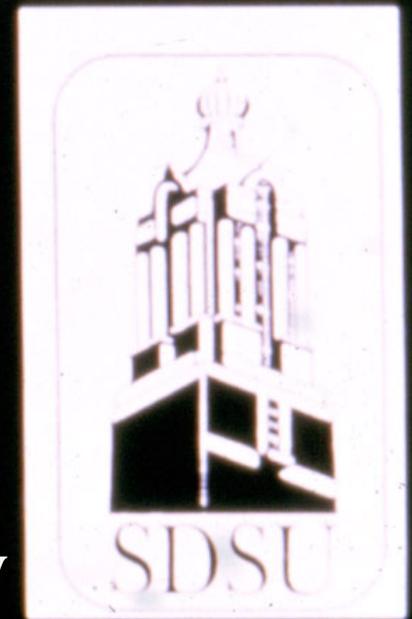
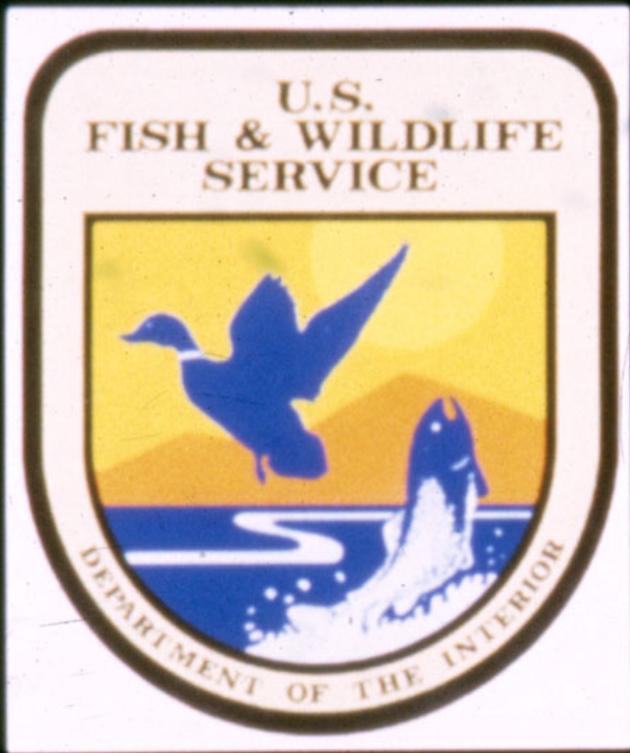
- Do not plant trees in or adjacent to grassland habitat
- Plantings should contain a heterogeneous mix of native trees and shrubs



# Management Implications

- Conservation of natural woodland patches is critical because they provide unique habitat for woodland obligate bird species not available in planted woodlands





Doug Backlund, bird photography

