

**2004 Breeding Bird Survey  
of  
Oak Ridge GPA and Wilson Savanna**



Photo by Doug Backlund

Conducted by Rosemary Draeger and Linda Johnson

for South Dakota Game, Fish and Parks  
Wildlife Diversity Division Natural Heritage Program

Submitted  
November 30, 2004



## **Introduction**

This report presents the findings of the 2004 breeding bird survey of Oak Ridge Game Production Area (GPA) and Wilson Savanna in southeastern South Dakota along the Big Sioux River. The purpose of the project was to compile and update breeding status record of birds at Oak Ridge GPA and Wilson Savanna. The project had three primary objectives:

1. To conduct a comprehensive field survey of breeding birds at Oak Ridge GPA and Wilson Savanna between March 12 and September 12, 2004.
2. To compile of list of total species sightings for the season, including both migratory and summer resident birds, documenting breeding status.
3. To contribute to the database of the Natural Heritage Program of the South Dakota Game, Fish and Park's Wildlife Division.

A secondary set of objectives included the following:

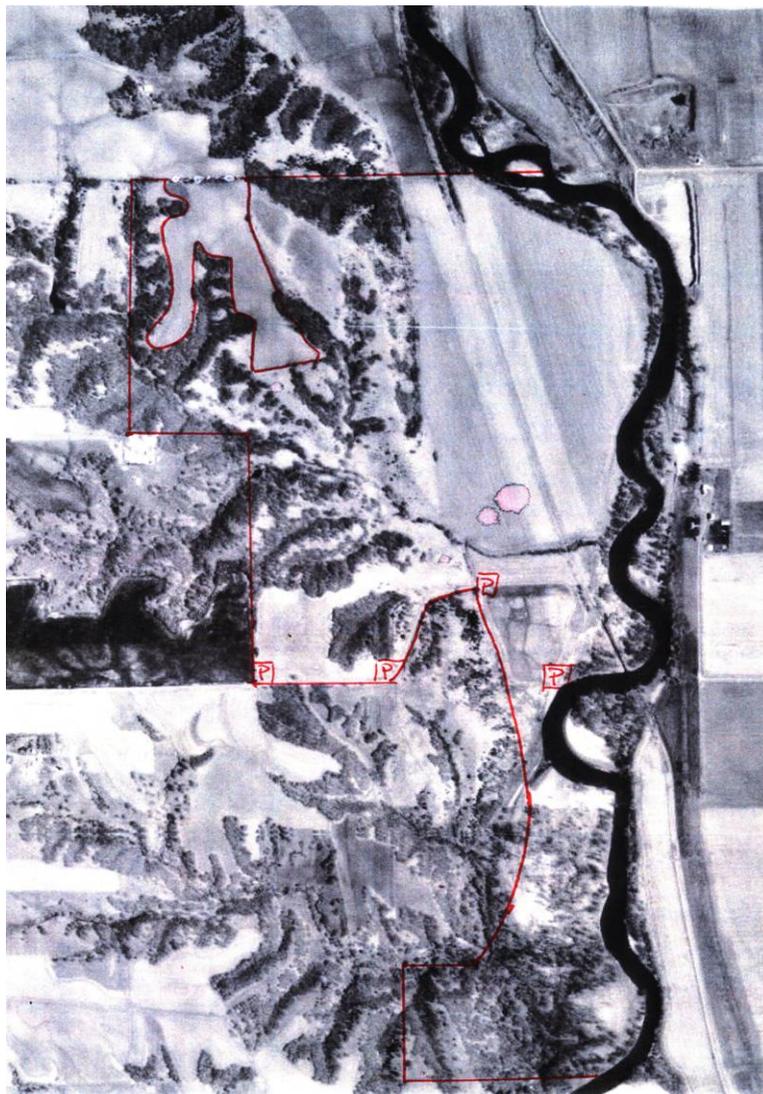
1. To compare survey results of breeding species abundance and distribution at Oak Ridge GPA and Wilson Savanna with previous surveys at Newton Hills State Park (2002) and Sica Hollow State Park (2003), two woodland areas also situated on the Prairie Coteau.
2. To determine if breeding species in the Loess Hills near Sioux City, 80 miles south, have been expanding their ranges to the north. Species of special interest for the survey were Tufted Titmouse, Northern Bobwhite, Prothonotary Warbler, and Cerulean Warbler.

The results provide a current record of the breeding status of species at Oak Ridge GPA and Wilson Savanna: 36 species confirmed (CO), 8 probable (PR), and 25 possible (PO). Details of breeding status and an overall listing of all species sighted during the survey are found in the data section of the report.

### **Description of Habitat**

Oak Ridge GPA and Wilson Savanna are situated at the southern end of the Prairie Coteau in southeastern South Dakota along the Big Sioux River. Figure 1 shows Oak Ridge GPA, with 650 acres, extending 1.5 miles along the river. Oak Ridge GPA is owned by SD Game, Fish and Parks.

The red lines on the photo below represent the boundaries of the tract. Parking areas are labeled P, with the two western parking areas located near the woodlands and the eastern parking areas located near the riparian area.

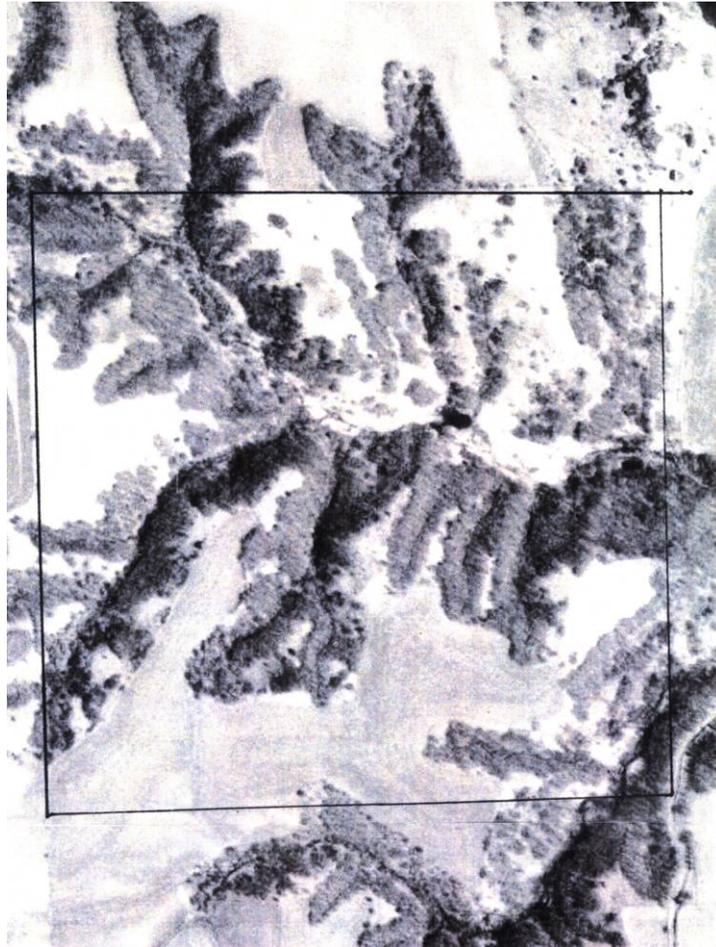


**Figure 1. Aerial Photo of Oak Ridge GPA**

Note the Big Sioux River (shown in black) running north/south on the right side of the photo, the adjacent riparian area, and the woods in the southern and northwestern sections of the GPA. Elevation ranges

from 1400 feet in the northcentral wooded section of the GPA to 1200 feet next to the river. The open grassy areas, which give the GPA its oak savanna designation are evident as lighter regions on the photo.

Wilson Savanna, shown in Figure 2, consists of 160 acres directly one-quarter mile south of Oak Ridge GPA. This tract is currently owned by the Nature Conservancy. Although the Big Sioux River runs close to the property, it is not adjacent. A creek runs through the savanna, providing riparian habitat.



**Figure 2. Aerial Photo of Wilson Savanna.**

Access to Wilson Savanna is limited because it is necessary to walk half a mile from the main road across private land, using an easement right of way to reach the property. Once on the tract, no maintained trails exist, though deer trails crisscross the entire property. “Fingers” of gullies and trees can be seen in the photo, following the creek toward the center riparian area. The open grassy areas which mark this area as savanna are also apparent on the photo. Elevations range from 1350 feet at the northern end of the tract. To 1200 feet near the river.

### **Vegetation of the Savanna**

Oak savanna is comprised of scattered patches of woods with prairie grassland surrounding and intruding into the woods, with approximately 30 percent canopy cover (Mississippi National River and Recreation Area, 2004). This type of habitat offers potential for breeding birds not found in the eastern deciduous

woodlands on the Prairie Coteau (Newton Hills or Sica Hollow State Parks), as well as potential for higher or lower abundance of those breeding species that are present in both woodland and savanna habitats.

As the photos in Figures 3 and 4 show, the savanna has healthy stretches of prairie with big bluestem, little bluestem, blue grama, and other prairie grasses and forbs. Efforts are being made at Oak Ridge GPA to replant prairie. Game Fish and Parks has recently seeded 15 acres of prairie along both sides of the railroad tracks. This prairie patch is surrounded by 60 acres of cropland.



**Figure 3. Open field at western edge of Oak Ridge GPA.**



**Figure 4. Savanna on north section at Oak Ridge GPA looking toward Big Sioux River.**

Figure 5 pictures the riparian habitat at Oak Ridge GPA. Along the Big Sioux River, oak, maple, elm and cottonwood occur. The habitat is dense, with relatively low canopy and rough deer trails.



**Figure 5. Cottonwoods along the Big Sioux River**

## **Project Need**

This breeding bird survey was needed for several reasons:

**1. Oak savanna is an important habitat and is rare in South Dakota.**

It was anticipated that a survey would expand our understanding of how well oak savanna habitat provides nesting success for species known to be declining in numbers statewide or nationally. A number of species known to be declining had been reported at Wilson Savanna, but it was not known if they nested at those sites. These included Scarlet Tanager, Red-headed Woodpecker, Eastern Wood-Pewee, Yellow-throated Vireo, and Yellow-billed Cuckoo. And, according to Johnsgard (2001), citing the annual population trend of grassland bird species from 1980 to 1996, three grassland species we anticipated could be found are in significant decline: Eastern Meadowlark, Bobolink, and Lark Sparrow. Observation of Grasshopper Sparrow, Swainson's Hawk and Chuck-will's-widow was also possible.

**2. Comparisons with other Prairie Coteau sites can be made.**

The survey would provide information that would allow a comparison of the number of breeding species and abundance of breeding pairs found in the savanna habitat with those found in the eastern deciduous woodland habitat of Newton Hills and Sica Hollow State Parks. These comparisons may offer GFP information for land management and planning decisions.

**3. No formal breeding bird survey of Oak Ridge GPA or Wilson Savanna had previously been conducted.**

The results of this survey will contribute to the body of knowledge on birds in southeastern South Dakota for the Natural Heritage Program Database, as well as regional and national records of birds in this area.

**4. The potential for Oak Ridge GPA for recreation including birdwatching exists.**

By conducting this survey, we hoped to learn whether Oak Ridge GPA supports a broad diversity of avian species, both breeding and migratory. And, if so, whether or not it would be a good birdwatching location.

The project has increased the Heritage Program's data for Oak Ridge GPA and Wilson Savanna and completes the surveys of Prairie Coteau woodland habitats. In addition to adding to state records, the survey will add to the body of data used by national organizations such as Cornell Lab of Ornithology, which tracks several threatened or declining species which also occur in South Dakota, including Yellow-bellied Sapsucker, Wood Thrush, Yellow-billed Cuckoo, and Eastern Wood Pee-wee.

## **Field Survey Methods**

### **Determining Sites and Setting Routes**

Aerial photos of Oak Ridge GPA and Wilson Savanna, provided by Game, Fish and Parks Outdoor Campus staff, were used to establish and mark survey routes or transects giving us access to different types of habitat in each site.

The original habitat types we expected to encounter were woods, prairie, riparian, and river bottom. However, once we began the survey, we determined that Wilson Savanna woodland and Oak Savanna woodland were similar habitats and could be counted as one habitat. We continued to keep separate records, however. Both were coded as woodland.

At Oak Ridge GPA, the riparian habitat runs the length of the tract beside the Big Sioux River and in the southern section includes a wider tract with an oxbow. That area was coded riparian.

### **Operating Procedures**

Surveys were conducted on 28 field days approximately once per week from mid-March through mid-September. Surveys were not conducted on days with heavy rain or strong winds. Early morning visits were alternated between the two sites and within each site, striving to cover each habitat type in early morning several times during the survey period. We also covered each habitat type several times in the late afternoon, and did evening owl-calling from strategic vantage points on three occasions at each site, in March and April.

Data was collected as species were encountered along transects. Data for each observation included species, breeding status, habitat type, and number of individuals of each species observed. We also played recordings at night to discover presence of owls and whip-poor-wills. Additionally, we used

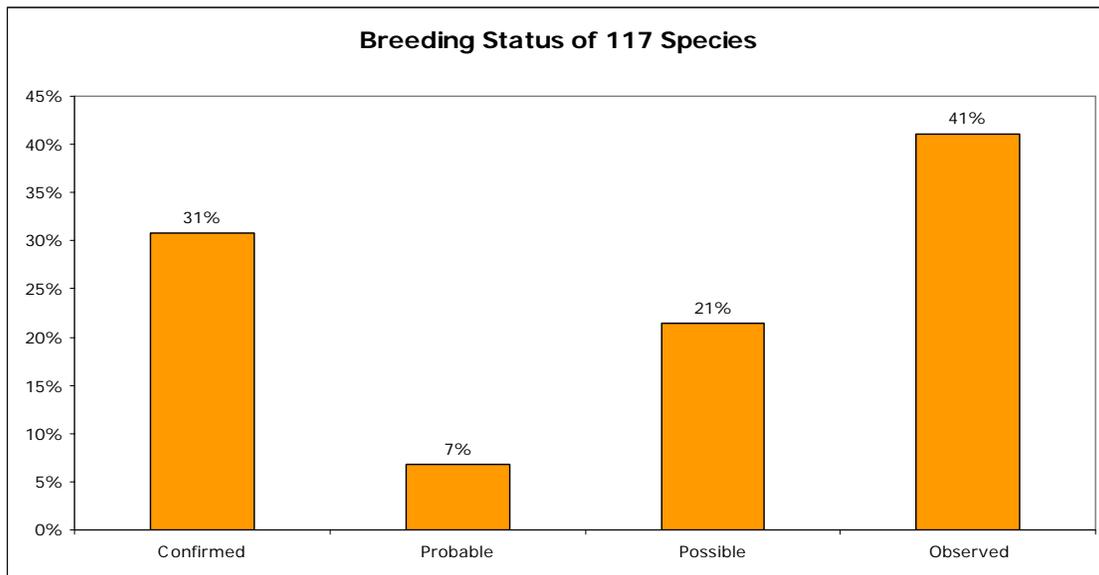
recordings from the Cornell Lab of Ornithology\* for target species in conjunction with the Lab-sponsored Birds in Forested Landscapes project.

### Background Research and Interviews

We reviewed species distribution maps, topographic maps, aerial photos of the sites, *South Dakota Bird Notes*, and geography/geology references in preparation for the survey. In addition, we interviewed area birders to learn what species have been previously recorded as breeding at the survey sites. Oak Ridge GPA and Wilson Savanna have been relatively undisturbed and “unbirded.”

### Results

The results of our research include a comprehensive listing of 117 species of birds observed at Oak Ridge GPA and Wilson Savanna, with breeding status assigned as confirmed (CO), probable (PR), possible (PO), or observed (O). Additionally, estimates have been provided of the number of breeding pairs of each species confirmed or probable breeding in the two tracts. Figure 6 graphs the results.



**Figure 6. Breeding Status of Species observed at Wilson Savanna and Oak Ridge GPA**

#### Confirmed Breeding

A total of 36 species were confirmed to be breeding (CO) at Oak Ridge GPA and Wilson Savanna. Behavior codes for confirmed breeding are the following:

- CN Carrying Nesting materials
- DD Distraction Display
- PY Precocial Young
- FL Fledged Young
- ON Occupied Nest
- CF Carrying Food
- FY Feeding Young
- NY Nest with Young

**Confirmed breeding was observed for the following species:**

<u>Species</u>	<u>Code</u>	<u>Species</u>	<u>Code</u>
American Crow	CF	Mourning Dove	NE, ON
Baltimore Oriole	CF, DD, FY	Northern Flicker	ON, NY
Bank Swallow	ON,	Orchard Oriole	CF
Black-capped Chickadee	CN	Red-bellied Woodpecker	ON
Blue Jay	ON, CF	Red-eyed Vireo	DD
Brown-headed Cowbird	NE	Red-headed Woodpecker	ON, CF
American Goldfinch	CN	Red-tailed Hawk	ON, CF
Chipping Sparrow	NE	Red-winged Blackbird	CF
Common Yellowthroat	FL, CF	Ring-necked Pheasant	NE
Eastern Bluebird	ON, CN, CF	Rose-breasted Grosbeak	DD, CF
Eastern Kingbird	FY, CF	Song Sparrow	CN
Eastern Phoebe	NY, ON	White-breasted Nuthatch	FL, CF
Eastern Towhee	CF, DD	Wild Turkey	PY
Eastern Wood-Pewee	FL, CF	Wood Duck	PY
Field Sparrow	CN, CF, NE	Wood Thrush	DD
Gray Catbird	ON, CN	Yellow Warbler	CN, CF
Great Horned Owl	FL	Yellow-bellied Sapsucker	ON, FY
House Wren	CF	American Robin	CF

**Probable Breeding**

We identified 8 species with probable breeding (PR) status. Breeding behavior codes for probable breeding are the following:

- M Multiple Males singing in a block during a single visit
- P Pair Observed in suitable habitat
- S Permanent territory presumed by singing in same place, 2 or more occasions
- T Permanent territory presumed through defense of territory
- C Courtship Behavior
- A Agitated Behavior

Probable breeding was observed for the following species:

<u>Species</u>	<u>Code</u>
American Redstart	P
Brown Thrasher	P
Canada Goose	P
Indigo Bunting	P
Northern Cardinal	C, P
Scarlet Tanager	S
Spotted Sandpiper	C
Whip-poor-will	M, S

## Possible Breeding

Possible breeding (PO) was confirmed for 25 species. The breeding behavior codes for possible breeding are:

- ? Male or female observed in suitable habitat and
- X Singing male in suitable habitat.

The following were coded possible breeding:

<u>Species</u>	<u>Code</u>	<u>Species</u>	<u>Code</u>
American Kestrel	?	Green Heron	?
American Woodcock	X	Hairy Woodpecker	?
Barn Swallow	?	Killdeer	?
Belted Kingfisher	?	Lark Sparrow	?
Black-billed Cuckoo	?	Mallard	?
Cedar Waxwing	?	Northern Harrier	?
Clay-colored Sparrow	?	Northern Rough-winged Swallow	?
Dickcissel	X	Ovenbird	? X
Downy Woodpecker	?	Ruby-throated Hummingbird	?
Eastern Screech Owl	?	Turkey Vulture	?
European Starling	?	Warbling Vireo	? X
Grasshopper Sparrow	? X	Yellow-billed Cuckoo	?
Great Crested Flycatcher	X ?		

## Breeding Status of Nationally-declining and State Watch-listed Species

The survey demonstrated that several state-watched and nationally declining species nest in the oak savanna along the Big Sioux River. Eastern Wood-Pewee, Yellow-bellied Sapsucker, Red-headed Woodpecker and Wood Thrush are all species named by Cornell Lab of Ornithology among woodland species declining nationwide, and all were confirmed as breeding (CO) in this survey's two sites. Scarlet Tanager, on Cornell Lab's list, was coded as probable breeding (PR). Recorded as possible breeding (PO) were Yellow-billed Cuckoo, Lark Sparrow and American Woodcock. Two grassland species in significant decline, Eastern Meadowlark and Bobolink, were not observed during the survey.

The following state watch-listed species were coded for breeding as follows:

Confirmed: Wood Thrush

Since Wood Thrush is both state watch-listed and Cornell Lab-listed because of its decline, confirmed breeding brings hope. Wood Thrush were recorded 11 times during the survey period. On May 31 a thrush was doing a distraction display, and on June 29, a thrush was observed again, doing a distraction display. A pair was reported singing back and forth on July 23 in an area where we had previously heard them. Thrush numbers we were able to count are the following: 8 at Oak Ridge GPA woodland, 6 in the riparian area, and 10 at Wilson Savannah woodland.

Probable: American Woodcock, Scarlet Tanager, and Whip-poor-will

American Woodcocks were sighted twice at Oak Ridge GPA in the early spring on March 28 and May 10 in courtship display. We were unable to locate nests or other evidence of the birds later in the season.

Scarlet Tanagers were scarce at Oak Ridge GPA and Wilson Savanna (only 5 sightings, 5 counted birds). On July 7, a pair was singing in the same area as it had on other occasions, and we were able to confirm probable breeding status.

The habitat of lower canopy with dense underbrush in the wooded areas and more open grassland surrounding the wooded areas than found at Newton Hills or Sica Hollow state parks may not be the most suitable for tanagers. Several whip-poor-wills were heard on 4 occasions, May through August, confirming probable breeding status.

Possible: Ruby-throated Hummingbird

A male hummingbird was seen on 2 occasions in July in suitable habitat on the same perch each visit. We were unable to confirm higher breeding status or to locate any nearby nest or female.

Observed Only

We observed the following state watch-listed species. The number in parentheses is the number of observations of each species: Bald Eagle (2), Cooper's Hawk (2), Great Blue Heron (5), Great Egret (1), Swainson's Hawk (2), Olive-sided Flycatcher (2), Brown Creeper (1), and Yellow-throated Vireo (1).

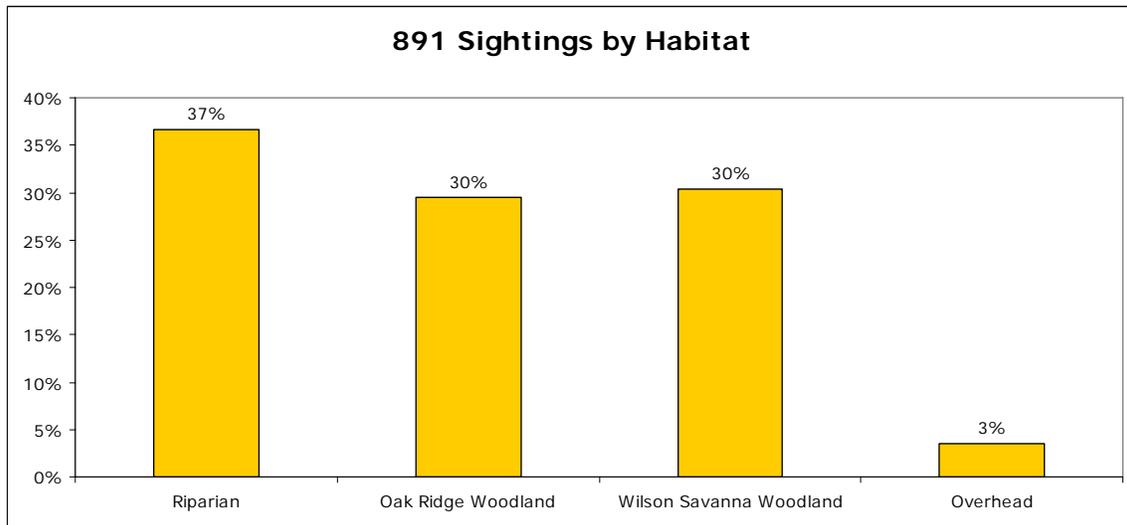
## **Survey Observations**

Data gathered during the survey allow several observations to be made about the relationships between the two survey habitats, riparian and woodland, and the 117 species of birds identified.

### **Greatest number of species sightings**

If we ask the question, "In which of the two habitats did we encounter species most frequently throughout the survey period?" the answer is the riparian habitat.

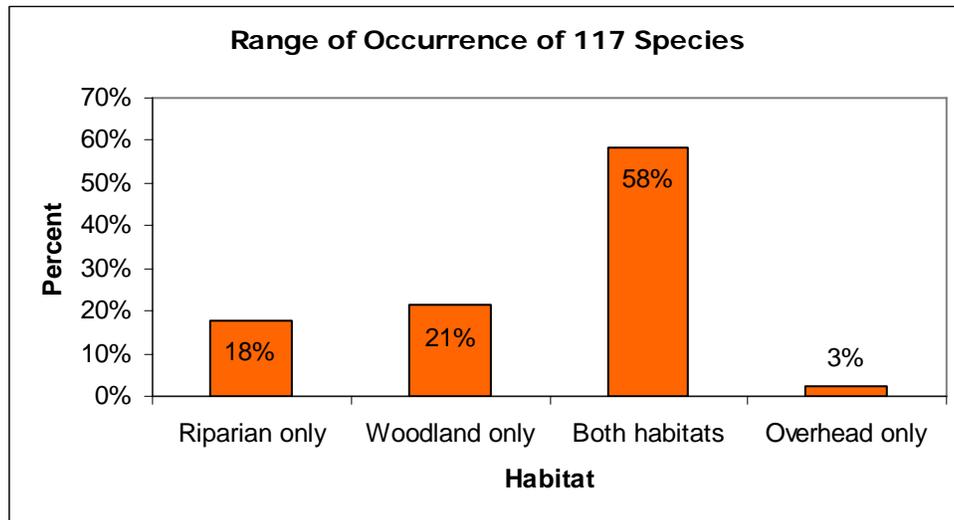
A total of 891 sightings was logged on data sheets during the survey. Species were recorded a maximum of once in each habitat each survey day. A maximum of three sightings per day was possible for each species, once in each habitat plus overhead. As Figure 7 shows, of the total number of species sightings, 37 percent occurred in the riparian habitat, which is along the Big Sioux River on the eastern edge of Oak Ridge GPA. The two woodland areas at Oak Ridge GPA and Wilson Savanna, both similar habitat, had the same percentage of sightings (30 %). Only 3 % of the sightings occurred overhead.



**Figure 7. Frequency of 891 total species sightings by habitat.**

**Range of species through habitats**

If we ask the question, “In which habitat did we observe each of the 117 species?” the answer is that 58% were found ranging across both habitats; 18% were found only in the riparian habitat; 21% were found only in the woodland habitat; and 3% were only observed flying overhead. Figure 8 shows this.



**Figure 8. Range across habitats by species**

The 21 species observed only in riparian habitat are the following:

- |                       |                   |
|-----------------------|-------------------|
| American Kestrel      | Green Heron       |
| American Tree Sparrow | Green-winged Teal |
| Bank Swallow          | Killdeer          |
| Black-billed Cuckoo   | Mallard           |
| Blue-winged Teal      | Northern Shoveler |
| Brewer’s Blackbird    | Savannah Sparrow  |
| Chimney Swift         | Sedge Wren        |

Common Goldeneye  
 Common Merganser  
 European Starling  
 Great Egret

Spotted Sandpiper  
 Tree Swallow  
 Western Meadowlark

A total of 25 species was observed only in the woodland:

Black-and-White Warbler  
 Blackburnian Warbler  
 Blue-headed Vireo  
 Brown Creeper  
 Chestnut-sided Warbler  
 Cliff Swallow  
 Cooper's Hawk  
 Dark-eyed Junco  
 Fox Sparrow  
 Eastern Screech-Owl  
 Hermit Thrush  
 Least Flycatcher  
 Nashville Warbler

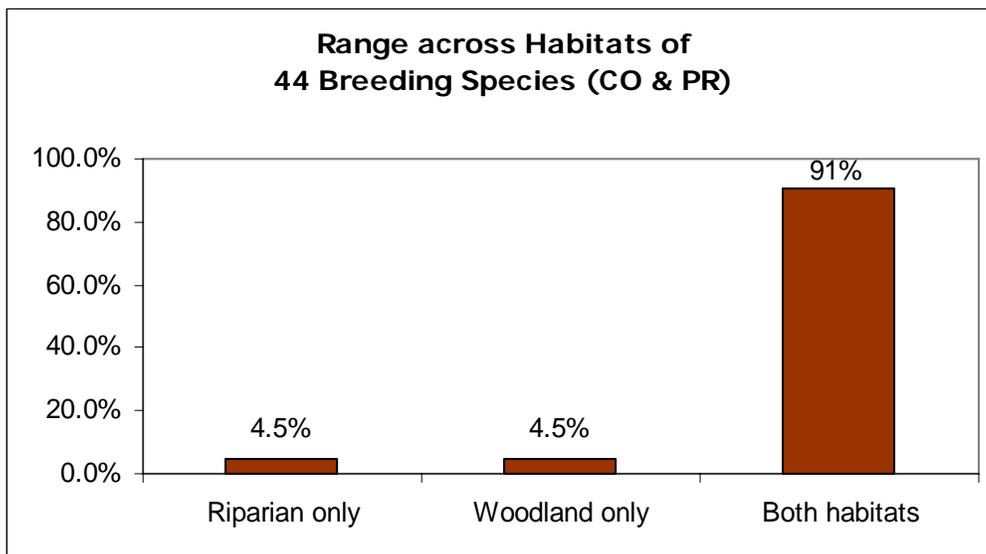
Palm Warbler  
 Philadelphia Vireo  
 Pine Warbler  
 Red-eyed Vireo  
 Ruby-crowned Kinglet  
 Ruby-throated Hummingbird  
 Scarlet Tanager  
 Swainson's Thrush  
 Traill's Flycatcher  
 Western Kingbird  
 Willow Flycatcher  
 Yellow-throated Vireo

For 3 species, the only observations made were flying overhead:

Snow Goose  
 Swainson's Hawk  
 Turkey Vulture

**Range of Occurrence for breeding species**

When the 44 breeding species (CO and PR) are considered alone, the distribution across all habitats offers a very different picture, demonstrated by Figure 9.



**Figure 9. Range across habitats by breeding species.**

Fully 91% of these species were observed at least once in each habitat. It is apparent from the lists of species found in only one habitat that many are migrants, passing through either in the spring or fall. It is fair to conclude that there is not an extreme difference between the woodland and the riparian areas of the oak savanna at Oak Ridge GPA and Wilson Savanna.

The two pairs coded as confirmed and probable breeding found only in the riparian habitat are Bank Swallow and Spotted Sandpiper. The two pairs coded confirmed breeding and probable breeding found only in the woodland habitat are Red-eyed Vireo and Scarlet Tanager.

### Species Abundance

In addition to coding the breeding status of species, the abundance of nesting pairs was estimated for species coded confirmed, probable, and possible breeding. A tally of the total number of individuals of each species encountered in each habitat was kept each survey day to guide the effort to estimate breeding pairs. This allowed us to track the density of numbers of individuals of each species as well as the frequency of sightings. For instance, while Northern Cardinals and White-breasted Nuthatches were each sighted (one sighting per species per habitat per day) 24 times during the survey, far more individual nuthatches were observed than Northern Cardinals. The density of White-breasted Nuthatches was greater than that of Cardinals.

### Breeding pairs

It was not difficult to assign an abundance code based on the combination of number of sightings and relative density of individuals of a species because the breeding pair abundance coding offers wide ranges at each level (incrementing up by the power of ten from one numerical range to another). All estimates of the number of breeding pairs on the two survey tracts fell into one of two categories, 2 to 10 breeding pairs or 11 to 100 breeding pairs. See the list of abundance estimates in the Appendix A.

### Density tallies

Counting the number of individuals of each species observed each survey day not only provided the basis for estimating breeding pair abundance but also made some interesting species comparisons possible. The species with the highest count of individuals observed are shown in Table 1.

**Table 1. Sightings for Species with Dense Populations at Oak Ridge GPA and Wilson Savanna**

<u>Species</u>	<u>Sightings</u>	<u>Actual count</u>
House Wren	20	167
Common Yellowthroat	20	93
Blue Jay	27	92
Black-capped Chickadee	24	90
Gray Catbird	20	77
Field Sparrow	25	68
Eastern Wood-Pewee	17	53
American Goldfinch	21	75
Rose-breasted Grosbeak	21	71
Eastern Kingbird	15	44
Eastern Towhee	23	74

It is of interest that the numbers of a nationally watched species, the eastern wood-pewee, appear to be relatively abundant in Oak Ridge GPA and Wilson Savanna. It is also encouraging that red-headed woodpecker numbers were higher than expected.

### **Species Expected But Not Observed**

Species for which habitat was suitable but which we did not observe included Barred Owl, Blue Grosbeak, Broad-winged Hawk, Northern Bobwhite, Vesper Sparrow, and possibly Yellow-breasted Chat. None of these was observed. Blue-gray Gnatcatcher, seen in the past, was neither heard nor seen this season.

## **Comparison of Oak Ridge GPA and Wilson Savanna with Sica Hollow and Newton Hills State Parks**

Oak Ridge GPA, Wilson Savanna, Newton Hills State Park and Sica Hollow State Park comprise woodlands at the eastern edge of the Prairie Coteau and the western extreme of the eastern deciduous forest. Some observations comparing the four sites may provide a better understanding of the habitat which affects species occurrence and abundance.



**Figure 10. Understory at Oak Ridge GPA**

The topography of both Oak Ridge GPA and Wilson Savanna features smaller rises in elevation than does that of Newton Hills and Sica Hollow.

- Oak Ridge GPA: 1200 to 1400 feet elevation
- Wilson Savanna: 1200 to 1350 feet elevation
- Newton Hills: 1250 to 1550 feet elevation
- Sica Hollow: 1600 to 1900 feet elevation

Secondly, although Oak Ridge GPA and Wilson Savanna are both eastern deciduous woodland habitats, both have several areas of open grassland. The canopy in the wooded areas is lower than that found at either Sica Hollow or Newton Hills State Parks, and Oak Ridge GPA and Wilson Savanna have more dense understory. Figure 10 illustrates the dense understory.

A number of species were confirmed as breeding at all four sites (Sica, Newton, Wilson and Oak Ridge GPA):

- Black-capped Chickadee
- Chipping Sparrow
- Common Yellowthroat
- Eastern Phoebe
- Eastern Wood-Pewee
- Red-eyed Vireo
- White-breasted Nuthatch
- Wild Turkey

Those species were abundant at all sites with the exception of the red-eyed vireo, for which we had only 12 recorded sightings (and 20 actual birds counted) at Oak Ridge GPA and Wilson Savanna in both habitats.

Table 2 shows a comparison of the seven most abundant species observed at each Prairie Coteau site, in order of density.

**Table 2. Comparison of Species Density at Prairie Coteau Survey Sites**

<u>Sica Hollow SP</u>	<u>Newton Hills SP</u>	<u>Oak Ridge GPA &amp; Wilson Savanna</u>
Common Yellowthroat	House Wren	House Wren
Red-eyed Vireo	Eastern Towhee	Common Yellowthroat
American Goldfinch	Black-capped Chickadee	Blue Jay
Eastern Wood-Pewee	Blue Jay	Black-capped Chickadee
Ovenbird	Eastern Wood Peewee	Gray Catbird
Black-capped Chickadee	Field Sparrow	American Goldfinch
Veery	Gray Catbird	Eastern Towhee

In making a north-south comparison, the differences in species and variations in abundance are more evident, as Sica Hollow is at the northern edge of the coteau, 175 miles north of the other three sites, all near the southern edge of the coteau. At Sica Hollow, Clay-colored Sparrows (16 sightings) were the most common sparrow and in greater abundance than at Oak Ridge GPA and Wilson Savanna, although Clay-colored Sparrows were observed at the southern sites (5 single birds early May). Field Sparrows were the most abundant sparrow at Oak Ridge GPA and Wilson Savanna with 25 total sightings (68 actual numbers counted, for example).

Veeries were abundant (25 sightings) as the northern thrush at Sica Hollow, with no Wood Thrush present. Wood Thrush, though declining, have now been confirmed as breeding at all the southern sites: Oak Ridge GPA, Wilson Savanna, and Newton Hills. American Robin was absent from Sica Hollow in the north; numbers of robins at Oak Ridge GPA and Wilson Savanna were not particularly high (18 sightings, 41 actual numbers). Eastern Towhee is another species common in the southern coteau sites and absent at Sica Hollow State Park.

Another interesting observation was the relatively large numbers and variety of woodpecker species at Oak Ridge GPA and Wilson Savanna. Red-bellied Woodpecker, Red-headed Woodpecker, and Northern Flicker all had relatively high numbers and were seen on most trips as Table 3 shows. Yellow-bellied Sapsucker, Downy Woodpecker, and Hairy Woodpecker, also had healthy populations. While the southern coteau survey sites have abundant woodpeckers, the northern site had Downy Woodpeckers, Hairy Woodpeckers, a single sighting of a Northern Flicker and the rare Pileated Woodpecker, which is only found at Sica Hollow.

**Table 3. Woodpecker Abundance Comparisons at Northern and Southern Coteau Sites**

<b>Species</b>	<b>Oak Ridge/Wilson Savanna</b>		<b>Sica Hollow</b>	
Northern Flicker	35 count	20 sightings	1 count	1 sightings
Red-bellied Woodpecker	39	19	0	0
Redheaded Woodpecker	39	14	0	0
Downy Woodpecker	26	17	26	13
Yellow-bellied Sapsucker	12	12	1	1
Hairy Woodpecker	7	7	3	3
Pileated Woodpecker	0	0	9	9

A photo of the southern section of Oak Ridge GPA riparian area shows the potential for woodpecker habitat.



**Figure 11. Cottonwoods and dead trees and brush at Oak Ridge GPA.**

## **Conclusion**

The evidence of breeding status for bird species at Oak Ridge GPA and Wilson Savanna for 2004 was collected and organized for the Natural Heritage Database Program. The opportunity to conduct this survey put us in a position to make some comparisons among this oak savanna area, Newton Hills State Park, surveyed in 2002, and Sica Hollow State Park, surveyed in 2003.

The following benefits of the project may be realized:

- Increased knowledge of breeding status of bird species in the oak savanna of the southern coteau.
- An update of South Dakota birding records for use by state, regional, and national birding.
- A comparison of breeding status and abundance of bird species along all sites on the eastern coteau.
- A current list for spring and summer of both resident and migratory birds.
- In addition, a Powerpoint presentation of the survey results was created to share with interested groups, including the October, 2004 meeting of the South Dakota Ornithologist's Union.

We acknowledge and thank Steve VanderBeek, GFP Regional Manager for his assistance with maps and knowledge of the area; South Dakota Game, Fish and Parks Wildlife Diversity Program for the grant opportunity; and the United States Geological Survey EROS Data Center for aerial photos of the survey sites.

## Citations

Cornell Lab of Ornithology. (2002). Bird population trends and priority species. Birds of Forested Landscapes [on-line], Jan. 23, 2003. Available:

< [http://birds.cornell.edu/bfl/gen\\_instructions/birdpop.html](http://birds.cornell.edu/bfl/gen_instructions/birdpop.html) >.

Dobkin, D. S. and Rich, A. C. (1998). Comparison of line transect, spot-map and point-count surveys for birds in riparian habitats of the Great Basin. Journal of Field Ornithology 69:430-433.

Geupel, Geoffrey R. (1993). Nest-monitoring plots: methods for locating nests and monitoring success. Journal of Field Ornithology 64:507-519.

Johnsgard, P.A. (2001). Prairie birds: fragile splendor in the great plains. Lawrence, KS: University Press of Kansas.

McGovern, M. (2004). Iowa's oak savannas: rekindling a relationship. Iowa Natural Heritage Foundation. <<http://www.inhf.org/oaksavannas.htm>>

Mississippi National River and Recreation Area. (2004). Restoration Page: What is an oak savanna? <<http://www.nps.gov/miss/restoration/oaksav.html>>

Brown, L. (1997). National Audubon Society Nature Guides: Grasslands. New York: Knopf.

National Geographic Society. (1987). Field guide of the birds of North America. 2<sup>nd</sup> ed. Washington, DC.

Peterson, R. A. (1995). The South Dakota breeding bird atlas. Aberdeen, SD: South Dakota Ornithologists' Union.

Peterson, R. T. (1980). A field guide to the birds of eastern North America. Boston: Houghton, Mifflin.

Sibley, D.A. (2000). National Audubon Society: the Sibley guide to birds. New York: Knopf.

South Dakota Ornithologists' Union. (1991). The birds of South Dakota, 3rd ed. Aberdeen, SD.

South Dakota Ornithologists' Union. (1949-2002). South Dakota bird notes. Aberdeen, SD.

Strangis, J. M. (1996). Birding Minnesota. Helena, MT: Falcon Press.

Sutton, A. & Sutton, M. (1993). Eastern Forests. New York: Knopf.

## Appendix A. Breeding Pairs

A total of 69 species were coded for breeding as Confirmed, Probable, or Possible. Abundance of nesting pairs was estimated for each of these. No species were determined to be the sole pair nesting and no species was determined to have more than 100 pairs nesting. A total of 48 species were determined to have 2 to 10 breeding pairs, and 21 species were determined to have 11 to 100 breeding pairs.

This appendix lists those 21 species with the highest range of breeding pairs, 11-100.

### Breeding Pairs: 11-100 pairs

- American Crow
- American Goldfinch
- American Robin
- Baltimore Oriole
- Bank Swallow
- Black-capped Chickadee
- Blue Jay
- Brown-headed Cowbird
- Chipping Sparrow
- Common Yellowthroat
- Eastern Kingbird
- Eastern Towhee
- Eastern Wood-Pewee
- Field Sparrow
- Gray Catbird
- House Wren
- Indigo Bunting
- Mourning Dove
- Northern Cardinal
- Northern Flicker
- White-breasted Nuthatch

## **Appendix B Statistical Analysis**

Statistical Analyses completed for another project provide some interesting observations for this project.

One of the analyses conducted ran calculations to determine the similarity of species found in the various habitats: Oak Ridge GPA riparian and woodland; Oak Ridge GPA and Wilson Savanna woodland, and Oak Ridge GPA and Sica Hollow. To ensure that the two sets of data were “equal,” the data were weighted since we made different numbers of trips to each site. Not surprisingly, the Chi square and Whitney-U tests showed that Wilson Savanna and Oak Ridge GPA are not significantly different in their species; nor are the riparian and woodland zones statistically different. Even Sica Hollow, which varies significantly in topography, and some of the breeding bird species from Oak Ridge GPA and Wilson Savanna, is not different in a statistically significant way in terms of species sighted. In the broader scheme of things, all are eastern deciduous woodlands, so the statistics suggest what we already know.\*

\*The researcher understands that the data we collected and analyzed were not statistically valid and reliable data, not on interval and ratio scale, and not carefully controlled for time, etc. Given those limitations, the data were used for a class project for some nonparametric tests and the observations used for discussion.