

**Breeding Bird Survey of  
Good Earth State Park at Blood Run  
Spring and Summer 2015**



**Conducted for SD Game, Fish and Parks Wildlife Diversity Program**

**by**

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**November 30, 2015**

## Introduction

This report documents the results of a 2015 Breeding Bird Survey of South Dakota GF&P's newest state park, Good Earth State Park at Blood Run (Good Earth) in southeastern South Dakota. The project was funded by a grant through SD GF&P's Wildlife Diversity Small Grants Program. The purpose of the project was to compile information about the breeding status of birds at Good Earth. The park is located on the Prairie Coteau and at the western extreme of eastern deciduous forest fragments, making it an important habitat in the state and the region (Bryce, Omernick, Pater and Ulmer, 2006).

Following is a summary of breeding status results at Good Earth. A total of 108 species was observed in the park. Good Earth; 71 species were assigned one of 3 breeding statuses: Confirmed Breeding status: 34; Probable Breeding status: 14; Possible Breeding status: 23. Another 37 species were assigned Observed status only. Observed status includes migrants and species for which we were unable to determine any breeding behavior. A listing of all species observed during the survey, categorized by breeding status, is found in the database provided separately.

### Good Earth State Park at Blood Run

Good Earth State Park consists of 529 acres along the Big Sioux River in southeastern South Dakota, approximately 10 miles east of Sioux Falls on the Iowa border. The predominant habitat consists of burr oak, cottonwood, juniper, ash, basswood, hackberries, boxelder, silver maple, willow and various deciduous shrubs. The area is surrounded by cropland outside the perimeter of the park (Google Earth). The tallgrass prairie which once covered the general area has been replaced by row crops. Good Earth is easily accessible and used for recreation such as hiking and birding. Currently, plans for building a Visitor Center and alternate entrance are in progress.



Figure 1. Google Earth image of Good Earth State Park.

Good Earth's 529 acres feature these main habitats: prairie on the higher elevations of the park to the north and between woodland draws, river bottom and riparian/mixed deciduous woodland along the banks of the Big Sioux River bordering the park on the east (creating the boundary with Iowa on opposite bank), deciduous woodland along the draws sloping down to the river. The park is bordered by agricultural land and housing developments on the north and southwest. (Google Earth).

As a fragment of eastern deciduous forest in South Dakota, the habitat at Good Earth has similarities with other parks in eastern South Dakota including Big Sioux Recreation Area near Brandon (with which it shares the Big Sioux River), Adams Preserve on the Missouri, and Newton Hills, Union Grove, and Palisades parks, which have creeks running through them. The following photographs illustrate the various habitats at Good Earth. All habitat photos are by Linda Johnson.



**Figure 2. Prairie habitat along Burr Oak Trail skirting the northern edge of the woodland and east toward the river.**



**Figure 3. Restored Prairie upper area of park.**



**Figure 4. Grassland with cedar, northern area of park**



**Figure 5. Woodland habitat**



**Figure 6. Woodland along the Big Sioux River on the undeveloped new trail.**

## Riparian Trail Habitats



**Figure 7. Prairie view from parking lot upper section of park near parking area.**



**Figure 8. Overlook Trail upper area of park with Iowa in the distance.**



**Figure 9. Riparian habitat along the Riparian Trail mid-summer.**



**Figure 10. Riparian Trail along eastern edge of park along the Big Sioux River.**



**Figure 11. Riparian habitat along the Big Sioux River (showing the Iowa border on the right).**



**Figure 12. River edge habitat showing sandbars.**

## Project Need

As described in our application, South Dakota's newest state park, Good Earth State Park at Blood Run, provides a fine new birding opportunity in the area. Only 10 miles from Sioux Falls, the park is easily accessible, and as it continues to be developed with trails and visitor center, is increasingly becoming a high use general recreation area.

No formal breeding bird survey of the site had yet been conducted. A formal survey could

- document information about the bird species and habitat variety in the park
- provide an official checklist of birds in the park
- contribute to the national record as well as the SDOU-maintained database on density, movement, and breeding status of species in this region of SD
- Provide species and habitat information to park managers
- Provide information potentially helpful to Cornell Lab of Ornithology citizen science projects and to any other state or national researchers who depend for their work on state species population information.

As a forest fragment of eastern deciduous woodland and oak savanna, one of few along the South Dakota/Iowa borders, Good Earth is an important habitat for declining species as well as common species. As Cornell Lab states in its now completed *Birds in Forested Landscapes* (BFL) project guidebook, "While studying and conserving populations of high-priority species is important, it is also imperative that we sustain and manage forest habitats to support all bird species. By identifying the habitat needs of high-priority species, many of which require large blocks of structurally diverse forest, BFL in turn benefits common species that have more general habitat requirements and ultimately will help keep common birds common" (Cornell, 2003).

In addition to conducting a survey for breeding species in the park, we were also alert for species monitored by the Natural Heritage Program of SD GF&P. We identified species potentially occurring in the park. The SD GF&P's Natural Heritage database documents sighting records during the breeding season. The species of greatest conservation concern monitored by the Wildlife Division (and which occur on the *Wildlife Action Plan* for 2014) which could be breeding at Good Earth included Bald Eagle, Piping Plover, and Osprey. There is an active Bald Eagle nest near Brandon, about six miles upstream. Participants in a Sioux Falls Bird Club field trip in September, 2013 observed Piping Plover on a sandbar in the Big Sioux River at the edge of the park. Osprey have been seen periodically in the immediate area. A few other birds monitored by the Natural Heritage Program listed on the Threatened and Endangered Species List potentially to be found nesting in Good Earth State Park included Cooper's Hawk, American Woodcock, Blue-gray Gnatcatcher, Ruby-throated Hummingbird, Scarlet Tanager, Eastern Whip-poor-will, Wood Thrush, and Yellow-throated Vireo. These bird species are known to breed in other eastern deciduous state parks in the area.

Although a particular focus of our survey included species monitored by South Dakota's Natural Heritage Program, we were also alert to species monitored by Cornell Lab of Ornithology. According to Cornell's *The State of Birds 2014 United States of America Watch List* those potentially breeding in eastern deciduous forest such as that at Good Earth include American Woodcock, Black-billed Cuckoo, Bobolink, Eastern Whip-poor-will, Piping Plover, Red-headed Woodpecker, and Wood Thrush.

## Objectives

The project objectives were as follows:

1. Conduct a comprehensive field survey of breeding birds between April 1 and Sept. 15, 2015
2. Compile a list of total species sightings for the season, including both migratory and summer resident birds, documenting breeding status to contribute to the database of the Natural Heritage Program
3. Compare breeding species abundance and distribution with previous surveys at Big Sioux Recreation Area, Oak Ridge GPA/Wilson Savanna, and Newton Hills State Park, all of which have some similarities in habitat
4. Make formal note of any species which may have expanded their breeding range into this region. Tufted Titmouse, Northern Bobwhite, Prothonotary Warbler, Acadian Flycatcher, Bell's Vireo, Blue-winged Warbler, and Blue Grosbeak may potentially occur in the park.



The park was surveyed on 19 days and two evenings, beginning April 11 and continuing through September 22, 2015. Routes and different sections of each park were walked at varying times of day, so that each was occasionally visited in early morning, late morning, afternoon, or evening.

Summer resident birds were surveyed to determine presence and relative abundance of breeding pairs. Data was collected as species were observed along the routes. All species were recorded as encountered, and evidence of breeding was recorded for the general summer population. Recorded bird calls were used at night to document the presence of Eastern Screech Owl (which never responded). We documented species using breeding status, habitat type, and breeding pair relative abundance codes published in the 1995 *South Dakota Breeding Bird Atlas*. See Appendices A and B.

These standardized codes are used throughout the report. The four primary categories for breeding status are Confirmed (CO), Probable (PR), Possible (PO), and Observed (O). The designation of PO was assigned when species were observed within “safe dates” as determined and published by the *South Dakota Breeding Bird Atlas 2*. If the species is observed within “safe dates,” one may assume that it may be a summer resident breeding species. The three breeding pair density estimate codes and categories used in this survey were 1= 1 pair, 2= 2 to 10 pairs, 3= 11-100 pairs.

Special efforts were made to search out a few anticipated species such as American Woodcock, Barred Owl, Blue-gray Gnatcatcher, Cooper’s Hawk, Eastern Screech Owl, Scarlet Tanager, Wood Thrush, and Yellow-throated Vireo in specific habitats and/or at specific times of day or evening thought to be conducive to encountering these species.

### Results of Field Survey April through September 2015

The primary result of the project is a current and comprehensive listing of species and their breeding status. The accompanying database was compiled from our field notes by Rosemary Draeger. The narrative summarizes results.

As Figure 14 shows, of species observed during the survey, the behavior of 34 indicated Confirmed Breeding (CO), 14 were marked as Probable Breeding, 23 were marked as Possible Breeding, and 37 species were marked as Observed, with no evidence of breeding behavior. We assigned breeding status to 71 species. Of the other 26 species which we anticipated observing, none were ever seen. Among these species were Cooper’s Hawk, American Woodcock, Tufted Titmouse, Northern Bobwhite, Blue-winged Warbler, Prothonotary Warbler, Acadian Flycatcher, Bell’s Vireo, Wood Thrush, and Blue-winged Warbler. We observed 108 species from April to September.

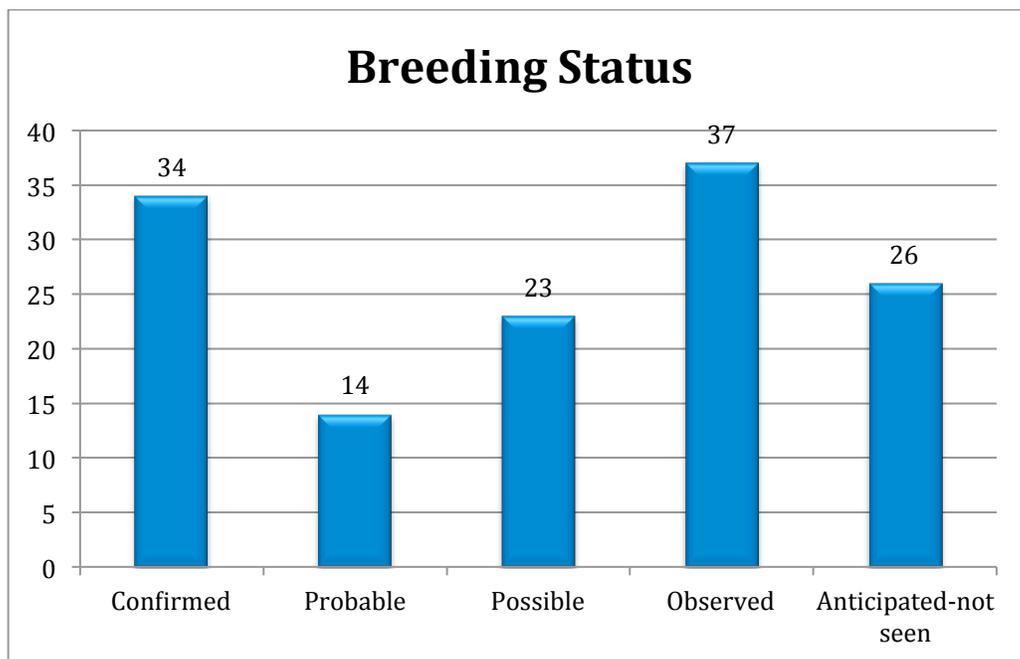


Figure 14. Breeding Status of Species.

Most of the species documented during the survey were as expected –birds common to eastern deciduous forest and oak savanna. Of note, however, were those tracked by the Natural Heritage Database (NHD) which we were able to confirm as breeding: Blue-gray Gnatcatcher and Scarlet Tanager (Birds tracked by the NHD are noted with an asterisk and bold).

### Confirmed Breeding (CO)

We identified the following 34 species as confirmed (CO) breeding status. Dates and breeding codes are also shown.

American Robin	5/12	ON	7/20	CF		
Baltimore Oriole	5/19	CN				
Bank Swallow	6/9	ON	6/29	FY		
Barn Swallow	6/9	ON/CF	7/16	CN		
Black-capped Chickadee	5/19	CF	7/16	FL		
Blue Jay	7/16	CF				
<b>Blue-gray Gnatcatcher*</b>	7/22	FY				
Bobolink	6/24	CF, DD				
Brown Thrasher	7/22	CF				
Canada Goose	5/20	FY, PY				
Chipping Sparrow	6/3	CN	6/7	CF		
Dickcissel	7/22	CF				
Downy Woodpecker	6/3	CF				
Eastern Kingbird	7/29	CF				
Eastern Phoebe	4/11	CN				
Eastern Towhee	7/16	DD				
European Starling	8/10	CF				
Field Sparrow	6/7	CF				
Gray Catbird	7/29	CF				
House Wren	5/19	CN	6/3 ON	6/24 CF	7/20 ON	
Indigo Bunting	7/29	FY				
Killdeer	5/20	DD				
Lark Sparrow	5/20	CN	7/16	FY		
Northern Cardinal	7/29	FY				
Red-bellied Woodpecker	5/20	ON,	7/20	FY		
Red-headed Woodpecker	7/16	CF				
Red-tail Hawk	4/11	ON, NY				
Red-winged Blackbird	6/9	CF, FY	7/22	DD		
Rose-breasted Grosbeak	6/29	CF				
<b>Scarlet Tanager*</b>	8/10	FL				
Swamp Sparrow	7/29	CF				
Tree Swallow	5/12	ON	6/7	CF, NY		
Yellow Warbler	5/19	FY				
Yellow-bellied Sapsucker	7/20	FL				

### Probable Breeding (PR)

We identified 14 species with probable breeding (PR) status. Those tracked by the NHD are noted with \*. Birds for which we were unable to confirm breeding but are likely breeding (Probable) include:

American Goldfinch	5/19	M	7/20	T	
Blue-winged Teal	5/5	P			
Brown-headed Cowbird	5/19	P			
Common Yellowthroat	7/16	S	7/22	S, P	
Eastern Bluebird	5/5	P			
Hairy Woodpecker	5/5	T			
Mallard	5/5	P			

Northern Flicker	5/12	M		
Orchard Oriole	7/16	P		
Sedge Wren	6/29	S,	7/16	M, S
Spotted Sandpiper	6/9	C		
<b>Eastern Whip-poor-will*</b>	5/20	M		
White-breasted Nuthatch	6/24	S		
<b>Yellow-throated Vireo*</b>	7/22	S		

### Possible Breeding (PO)

We had hoped to confirm the following species, but we were only able to categorize them as possible (PO) because we observed them in suitable habitat and/or singing during safe dates. They did not exhibit other breeding behavior which would have allowed us to categorize them at a higher breeding status. One again, those tracked by NHD are indicated with an asterisk.

American Crow	Great Crested Flycatcher
American Redstart	Great Horned Owl
<b>Bald Eagle*</b>	House Finch
Barred Owl	House Sparrow
Belted Kingfisher	Mourning Dove
Black-billed Cuckoo	Red-eyed Vireo
Blue Grosbeak	Ring-necked Pheasant
Cedar Waxwing	Rock Pigeon
Chimney Swift	<b>Ruby-throated Hummingbird*</b>
Clay-colored Sparrow	Song Sparrow
Common Grackle	Warbling Vireo
Eastern Wood Pee-wee	

Among those we anticipated but never observed were American Woodcock, Wood Thrush, Eastern Screech Owl, Blue-winged Warbler, and Ovenbird. Each is known to breed at some parks in southeast South Dakota, such as Newton Hills, Big Sioux Recreation Area, Oak Ridge GPA and Union Grove State Park. Other potential species we had hoped for but never observed included Tufted Titmouse, Northern Bobwhite, Prothonotary Warbler, Acadian Flycatcher, and Bell's Vireo.

## Overall Results Regarding Species Tracked by Natural Heritage Database

The following list summarizes the breeding status findings for species tracked by the NHD.

Blue-gray Gnatcatcher	(CO)	Great Blue Heron	(O)
Scarlet Tanager	(CO)	Green Heron	(O)
Yellow-throated Vireo	(PR)		
Bald Eagle	(PO)		
Eastern Whip-poor-will	(PO)		
Ruby-throated Hummingbird	(PO)		

Of those listed above, we confirmed breeding for two species:

We observed **Blue-gray Gnatcatcher** July 22 carrying food. Other dates of observations were May 12, June 29 with PR T—territorial display, July 29, and August 10. The gnatcatchers were observed in the same location on all days. (Safe dates are May 25- July 31). According to *Birds of South Dakota 3<sup>rd</sup> Ed.* nesting records in Lincoln and Minnehaha County occur from May 4 to July 4. Blue-gray Gnatcatcher populations are increasing and spreading northward, according to Cornell's *Birds of North America* online (BNA). However, South Dakota once designated the species as "critically imperiled because of extreme rarity" (5 or fewer occurrences). The breeding range maps show this species at the very

extreme edge of South Dakota. The gnatcatchers were observed in the cottonwoods on the Riparian Trail loop. According to Birds of North America online, they prefer habitat with low disturbance.



**Figure 15. Blue-gray Gnatcatcher**  
Photo by Doug Backlund

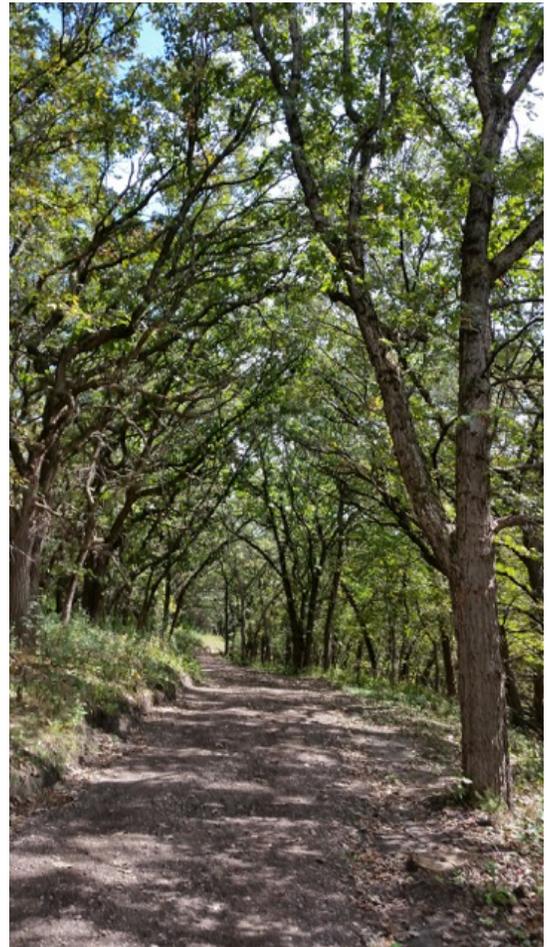


**Figure 16. Riparian Cottonwoods, Gnatcatcher Nesting**

**Scarlet Tanager** was observed May 12 and 19, June 9 and 29, July 20 and 22, August 10, September 28. Safe dates are June 1-July 31. On May 12 we observed a pair, PR-P. On July 20 we heard and observed a singing male agitated (PR-S, A), and on August 10 confirmed breeding with a fledgling on the path. Identification was verified from a photo on Cornell Lab's *All About Birds*. *Birds of SD* 3<sup>rd</sup> Ed. indicates nesting records are June 10 through July 14 with fall migration as late as September 29 in Brookings County north of Lincoln County.



**Figure 17. Male and Female Scarlet Tanager (Doug Backlund)**



**Figure 18. Woodland Trail**

Only one species was categorized as Probable Breeding.

**Yellow-throated Vireo\*** (PR- S, singing repeatedly), was observed nine times between May 12 and September 12, often at the edges of the woodland. (Safe dates are May 25-July 31). According to Cornell Lab, the species is of “moderate conservation importance because of its relatively small breeding distribution, its low density throughout its range, its dependence on mature deciduous forests...” (Cornell, *Birds of Forested Landscapes*).



**Figure 19. Yellow-throated Vireo**  
**Photo by Doug Backlund**

Three species were categorized as Possible Breeding.

We observed **Bald Eagle** on six occasions: April 11, June 7, July 29, Aug. 10, 25, and Sept. 22. On August 10 we observed an immature eagle flying from a perch near the river. Although we were unable to locate a nest, we assigned PO breeding status since observations were within the safe period and in suitable habitat. We are aware that Bald Eagles nest several miles away near Brandon. Safe dates are May 15 to July 31.

**Eastern Whip-poor-will** (PR-M, multiple males singing on a single visit) was heard in several of the wooded areas on May 20. We also observed one during the day May 12 sitting on a low branch in the shade approximately a foot off the ground.

**Ruby-Throated Hummingbird** was observed in the riparian area along the river in the woodland on July 22 and at the parking area feeders on July 29, August 10, 25, and September 22. We were unable to find more solid evidence of breeding. *Birds of South Dakota 3<sup>rd</sup> Ed.* notes that nesting dates range from early June to mid-August with the majority of nesting confirmed in the northeastern part of the state.

Other species monitored by the NHD which we observed with no behavior related to breeding included these:

**Cooper’s Hawk** was observed only once, flying overhead May 19.

**Great Blue Heron** was observed July 22 and 29 and September 28, at the river and in flight..

**Green Heron** was observed on May 12, at the river..

The final species tracked by GF&P which we anticipated might be found were **Osprey, Piping Plover, American Woodcock, and Wood Thrush** (the latter both occurring at Newton Hills). We did not observe any of these species.

## Cornell Lab of Ornithology Species of Concern

Cornell Lab published a *Watch List for 2014* based on the Partners in Flight Species Assessment Database ([www.rmbo.org/pifassessment/](http://www.rmbo.org/pifassessment/)), "...which ranks species according to their vulnerability due to population size, range size (breeding and non-breeding), population trend, and future threats (breeding and non-breeding)." Species are included on the Watch List if they exhibit a threshold of high combined vulnerability across all these factors.

Each regional list is divided into a *Red Watch List*—species with extremely high vulnerability due to small population, small range, high threats, and range-wide declines—and *Yellow Watch List*—species that are either range restricted (small range and population), or are more widespread but with troubling declines and high threats. None of the *Red Watch List* species occur in southeastern South Dakota. Species on the *Yellow Watch List* pertinent to this survey are American Woodcock, Black-billed Cuckoo, Eastern Whip-poor-will, Red-headed Woodpecker, Wood Thrush, Cerulean Warbler, and Bobolink. Of those species of national conservation concern monitored by Cornell Lab, we established breeding behavior for the following.

### **Red-headed Woodpecker.**

Red-headed Woodpeckers were frequently seen mid through late summer in the upper parking area and along the road boundary (June 24, July 16, 20, 22, 29, August 10, 25, and September 12 and 28). On July 16, we confirmed **Red-headed Woodpecker** carrying food (CF). Late summer sightings included an immature bird. According to *Birds of South Dakota* 3<sup>rd</sup>. Ed. 2002, populations are declining in the Dakotas.



**Figure 20. Immature Red-headed Woodpecker**  
Photo by Doug Backlund

We observed several **Bobolink** in the northern grassland of the park May 20, June 3, June 7, confirming breeding on June 24 (CF, Carrying Food and DD, Distraction Display). We saw no bobolinks after that date. We speculated that nests had been destroyed because the grassland where they had nested was mowed.



**Figure 21. Bobolink**  
Photo by Doug Backlund



**Figure 22. North grassland where Bobolink nested.**



**Figure 23. North grassland.**

**Black-billed Cuckoo** was observed only once (June 29) on the Riparian Trail woodland loop near the river. Cornell Lab *Birds of Forested Landscapes* calls the species of “moderate conservation concern, primarily because of low overall densities and significant long-term population declines” (5.179). *Birds of South Dakota 3<sup>rd</sup> Ed.* indicates that it breeds in Minnehaha and Beadle Counties with breeding dates between June 1 and July 31.

## Results for Other Species of Interest

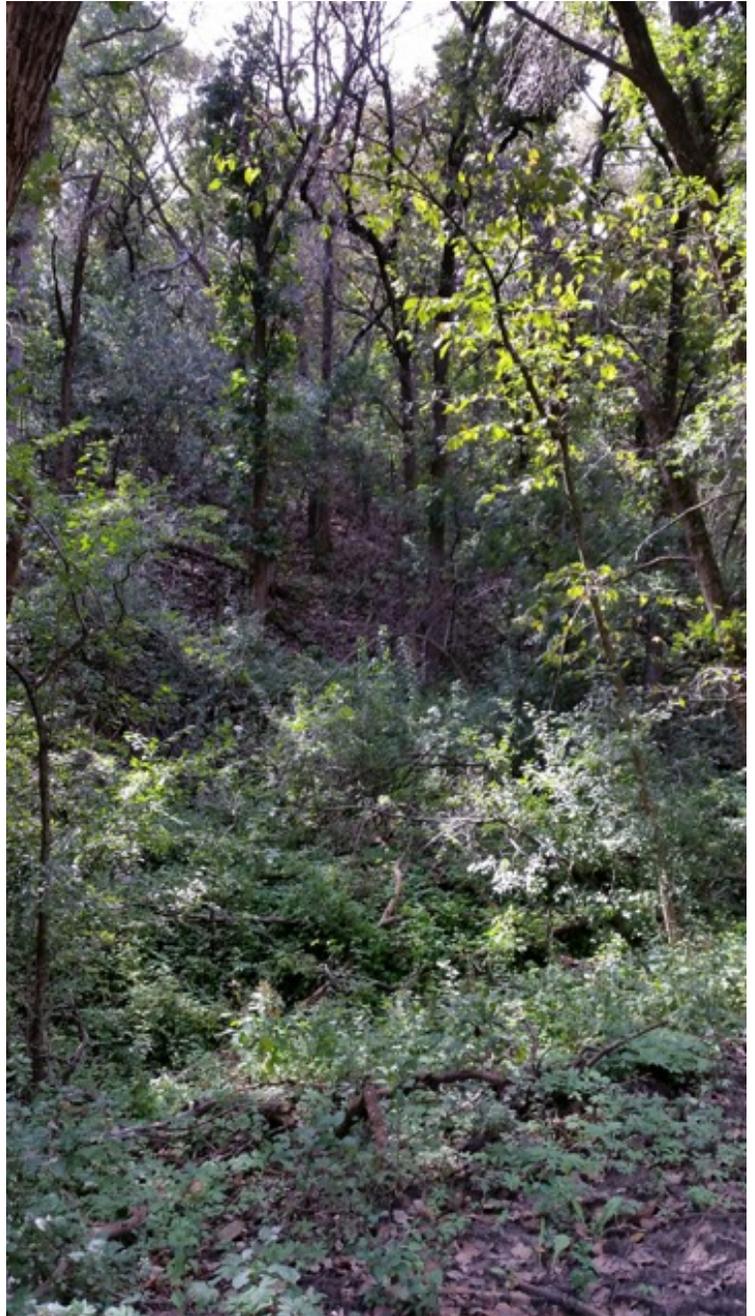
Some species of local interest deserve some mention.

### Species Categorized as Confirmed Breeding

Nesting **Indigo Bunting** was confirmed breeding on July 29 in trees along the newest trail on the south section of the park. We heard and observed the buntings in two separate locations on 10 survey days, including pairs near the barn area north of the parking area. *Cornell Birds of North America* indicates that Indigos are abundant where they occur and typically nest mid-May to the third week of September. *Birds of South Dakota 3<sup>rd</sup> Ed.* nesting records indicate that nesting occurs in South Dakota between June 3 and August 4.



**Figure 24. Indigo Bunting**  
Photo by Doug Backlund



**Figure 25. Woodland edge, Riparian Trail.**



**Figure 26. Dickcissel**  
**Photo by Doug Backlund**



**Figure 27. Grassland and Dickcissel nesting area.**

**Dickcissel** was relatively abundant, singing from the tops of grasses. **Dickcissel** were observed eight days from May 20 to July 29 with confirmation July 22, an adult carrying food (CF). They occurred in three locations—the northwest grassland of the park, the restored prairie east of the parking lot, and on the grassy area on the Riparian Trail.

We observed all species of woodpecker which could occur in southeastern South Dakota and confirmed breeding for **Red-headed Woodpecker, Red-bellied Woodpecker, Downy Woodpecker, and Yellow-bellied Sapsucker**. **Hairy Woodpecker and Northern Flicker** were designated as probably breeding.



**Figure 28. Yellow-bellied Sapsucker (Doug Backlund)**

The habitat was also especially favorable to **Barn Swallow, Tree Swallow, Eastern Phoebe, and Bank Swallow.** . Phoebes nested in an old shed; tree swallows nested in nest boxes throughout the upper edges of the park; Barn Swallows nested in the barn. The river bank was suitable for large numbers of Bank Swallow.



**Figure 29. Big Sioux River bank**



**Figure 30. Bank Swallow**  
**Photo by Doug Backlund**



**Figure 31. Tree Swallow (Photo by Doug Backlund)**

## Species Categorized as Probable Breeding

In the Probable breeding status (PR), **Eastern Bluebird** was observed eight times near suitable nesting areas or nest boxes. However, in spite of numerous sightings, the only behavior relative to breeding status was pairs of bluebirds. Bluebirds were in the upper area of the park near the entrance, along the Burr Oak Trail edge, and on the Riparian Trail near the river edge woodland loop. We did see a House Wren in a bluebird box on one occasion. Bluebirds were observed April 11, 22, May 5, 12, 20, June 3, 9, 24, 29, and August 10. Safe dates are May 1 through July 31.



Figure 32. Wren nest in bluebird box?



Figure 33. Possible Bluebird egg?

Other species of note include **Brown-headed Cowbird**, designated as probable breeding when we observed a pair May 19. We observed the cowbirds eight times but not in the large numbers which had been observed at other regional state parks where we have conducted surveys. Cornell Lab of Ornithology cites a conservation interest in Brown-headed Cowbird because of its impact on other species (BNA). Of the eight cowbird observations at Good Earth, none involved any brood parasitism.

Cornell Lab also has a research interest in **Sedge Wrens**, which occurred only in specific habitat at Good Earth—in the central low floodplain west of the river. According to Cornell's *Birds of North America* online, Sedge Wrens are opportunistic nesters, moving into suitable nesting areas as conditions change. Additionally, the wrens nest in northern parts of their range (North Dakota, Minnesota, Wisconsin) from late May to June and in southern parts of the range (Kansas) July to September. Our observations included May 12 and 20; June 7, 9, 24, and 29; July 16, 20, and 22 with multiple males singing each time we encountered them (PR-M, S). *Birds of South Dakota 3<sup>rd</sup> Ed.* cites nesting dates ranging from June 6 in Brown County to July 9 in Moody County with migration October to November. Safe dates are June 29 to July 16. Interestingly, during the Adams Preserve survey in 2008 we first observed Sedge Wren on July 22 and readily were able to confirm breeding during each visit to the preserve over the next three weeks, later than the designated safe dates in South Dakota.



Figure 34. Sedge Wren (Doug Backlund)



Figure 35. Sedge Wren nesting area, late summer.

**Orchard Oriole** was observed four times--June 29, July 16, 20 and 22. We located a nest we identified as that of Orchard Oriole. However, we were not able to confirm other than PR, P when we observed a pair on July 16. Safe dates are May 25 to July 31.



**Figure 36. Orchard Oriole nest, Riparian Trail**

### **Species Categorized as Possible Breeding**

A few species of note which we were able to categorize as possibly breeding due to their presence during safe dates occurred in low numbers.

#### **Red-eyed Vireo**

While we observed or heard good numbers of Yellow-throated Vireo, we heard very few Red-eyed Vireo, once in mid-May, once in early June and then not again until mid-September. Had they been breeding in the park, they should have been singing all summer.

**American Redstart** was observed on the Riparian Trail, eastern woodland areas of the river loop early in the breeding season May 12 and 19 and June 3. Numbers of redstart were low.

**Blue Grosbeak** was observed on only one occasion, July 20 at the beginning of the Burr Oak Trail woodland edge just beyond the barn area.

**Barred Owl** was observed April 11 in the area in the trees near river on the newest unnamed woodland trail on the south and east in the park. This area was not readily accessible early in the season. Furthermore, the grant period did not begin until April 15, primarily after the period when nesting might have been observed. Barred Owl had been reported by Rosemary Draeger during late fall 2014. Two owls were caterwauling.

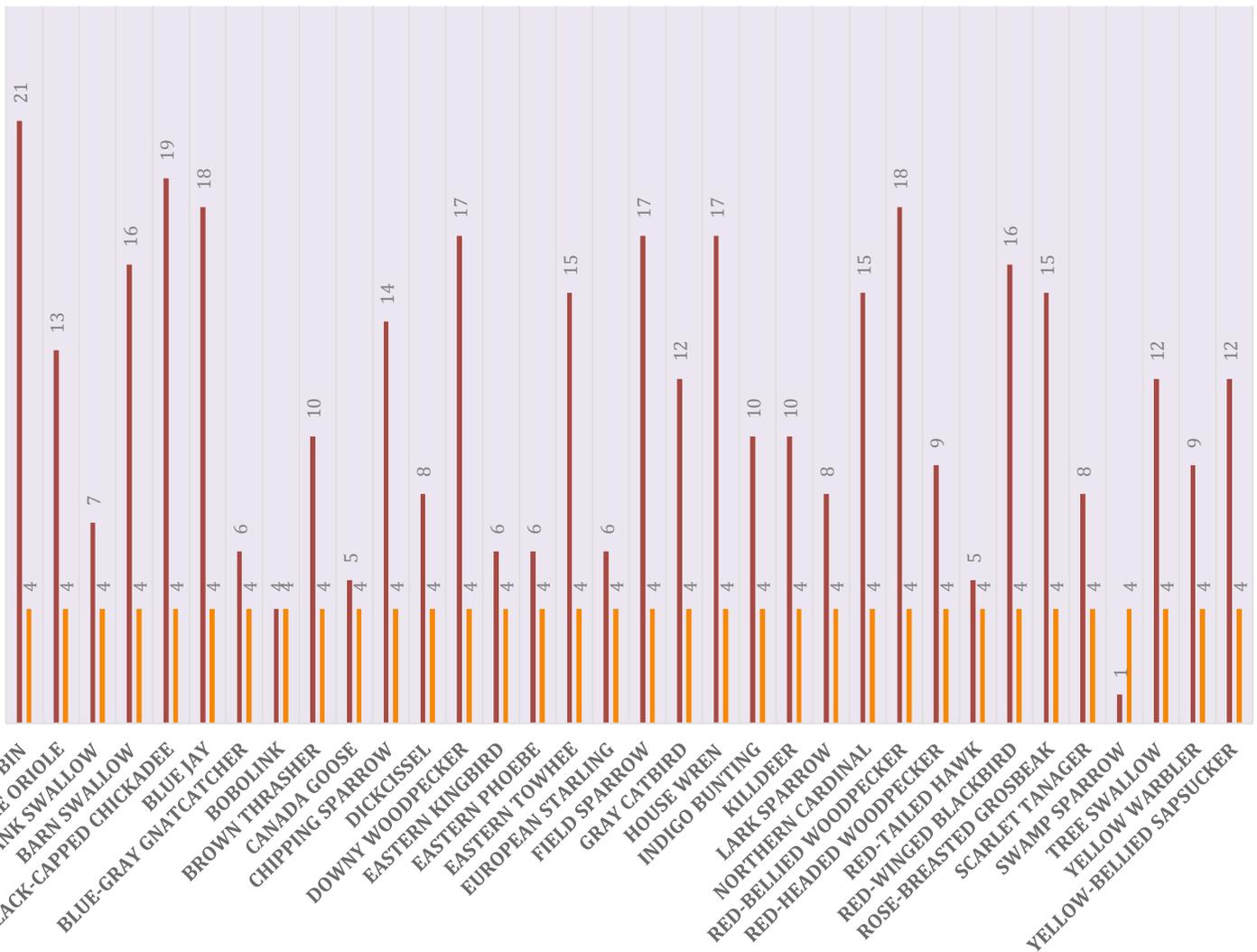
## Relationship of Number of Sightings and Breeding Status

There was no direct relationship between the number of days species were observed and establishing breeding status. All of the species in Figure 37 below are confirmed (orange bar). However, as the figure shows, confirmation is not necessarily dependent upon number of survey days a species was observed (red bar). For example, species observed on 17 or more days included the very common **American Robin, Black-capped Chickadee, Downy Woodpecker, Field Sparrow, House Wren, and Red-bellied Woodpecker**. Additionally, these species occurred in good numbers. At the opposite of the spectrum are species seen very few times: **Blue-gray Gnatcatcher** was observed six times; **Red-tailed Hawk** five, and **Swamp Sparrow** only once.

**Figure 37. Total survey days of species sightings relative to confirmed breeding status**

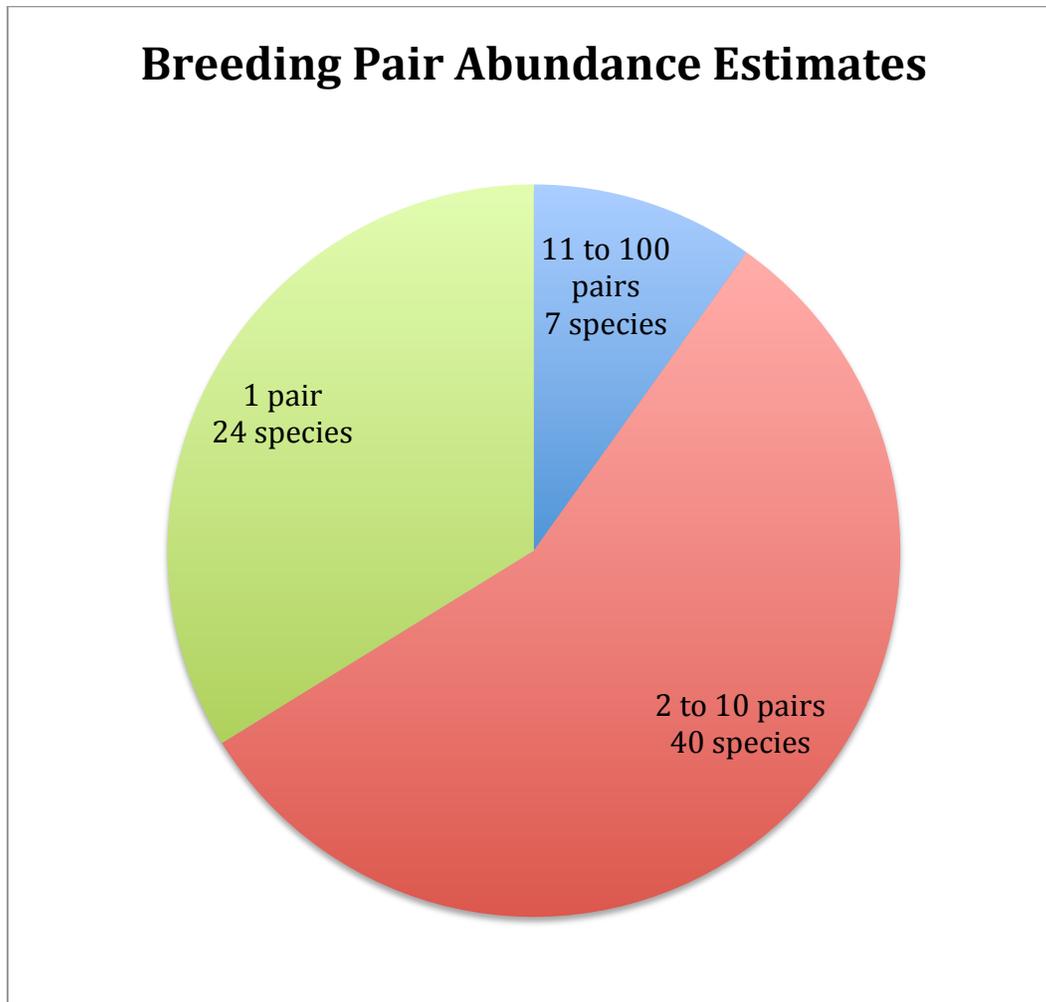
### SURVEY DAYS , BREEDING STATUS

■ Total survey day sightings    ■ Highest level of breeding status



## Abundance of Breeding Pairs in the Park

As we surveyed, we noted the number of birds for each species. This number helped us estimate the relative number of breeding pairs. The chart below summarizes the breakdown into one of three breeding pair abundance categories for the 71 species identified as possible, probable, or confirmed breeding in the park.



**Figure 38. Breeding pair abundance chart**

As Figure 38 shows, 24 species were assigned relative breeding pair abundance of 1 (one pair); seven were assigned breeding pair abundance code 2 (11-100 pairs); 40 species were assigned an abundance code of 3 (2-10 pairs).

A more detailed list of breeding status and relative abundance is shown on the following page. Table 1 lists the species by breeding status and estimated relative abundance of breeding pairs. As this table shows, of the 34 species assigned a CO breeding status, 5 were estimated at 11-100 nesting pairs; 23 were estimated at 2-10 nesting pairs; and 6 were assigned one nesting pair. Of the 14 Probable Breeding, 2 species were estimated at 11-100 pairs, 9 species assigned 2-10 pairs, and 3 were assigned one nesting pair. Of the 23 possible breeding, none were categorized as 11 or more pairs, 8 were categorized as 2-10 pairs, and 15 were categorized as only 1 pair.

\* Indicates species monitored only by Natural Heritage Program.

\*\* Indicates species monitored by Cornell Lab of Ornithology

\*\*\*Indicates species monitored by Cornell Lab of Ornithology and NHP

**Table 1: Good Earth State Park Species Breeding Status and Relative Abundance**

11-100 Breeding Pairs	2-10 Breeding Pairs	1 Breeding Pair
<b>Confirmed Breeding (CO) Species</b>		
American Robin	Baltimore Oriole	Canada Goose
Bank Swallow	Blue Jay	Eastern Kingbird
Barn Swallow	<b>Blue-gray Gnatcatcher***</b>	Killdeer
Black-capped Chickadee	<b>Bobolink**</b>	Red-tailed Hawk
Field Sparrow	Brown Thrasher	<b>Scarlet Tanager***</b>
	Chipping Sparrow	Swamp Sparrow
	Dickcissel	
	Downy Woodpecker	
	Eastern Phoebe	
	Eastern Towhee	
	European Starling	
	Gray Catbird	
	House Wren	
	Indigo Bunting	
	Lark Sparrow	
	Northern Cardinal	
	Red-bellied Woodpecker	
	<b>Red-headed Woodpecker**</b>	
	Red-winged Blackbird	
	Rose-breasted Grosbeak	
	Tree Swallow	
	Yellow Warbler	
	Yellow-bellied Sapsucker	
<b>Probable Breeding (PR) Species</b>		
American Goldfinch	Blue-winged Teal	Mallard
White-breasted Nuthatch	Brown-headed Cowbird	Orchard Oriole
	Common Yellowthroat	Spotted Sandpiper
	Eastern Bluebird	
	<b>Eastern Whip-poor-will***</b>	
	Hairy Woodpecker	
	Northern Flicker	
	Sedge Wren	
	<b>Yellow-throated Vireo***</b>	
<b>Possible Breeding (PO) Species</b>		
	American Crow	American Redstart
	Cedar Waxwing	<b>Bald Eagle*</b>
	Common Grackle	Barred Owl
	Eastern Wood-Pewee	Belted Kingfisher
	Great Crested Flycatcher	<b>Black-billed Cuckoo**</b>
	Mourning Dove	Blue Grosbeak
	Song Sparrow	Chimney Swift
		Clay-colored Sparrow
		Great Horned Owl
		House Finch
		House Sparrow
		Red-eyed Vireo
		Ring-necked Pheasant
		Rock Pigeon
		<b>Ruby-throated Hummingbird***</b>
		Warbling Vireo

## **Field Survey 2015 Summary Observations**

The data collected during the field survey lead to a few general observations.

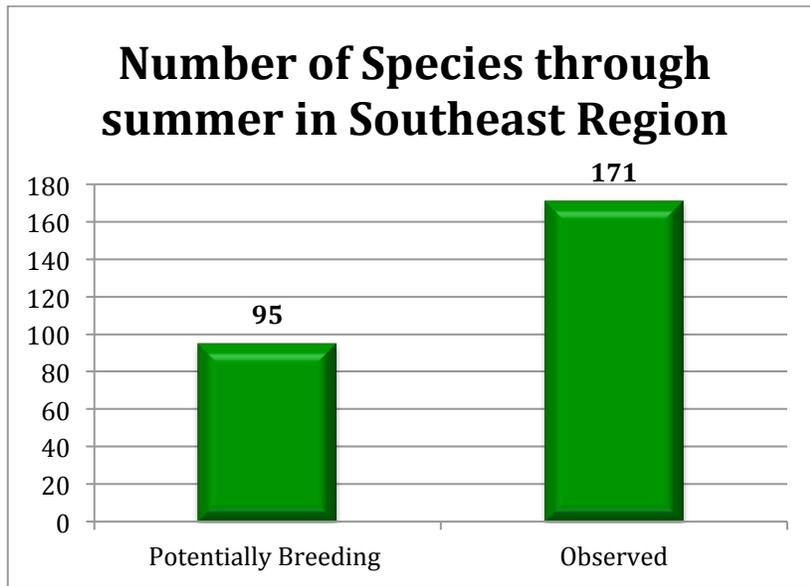
1. A number of species listed as probable breeders (PR) and possible breeders (PO) may breed in the park and could be confirmed as more birders report breeding behavior. Additionally, some of the species categorized as observed (O) may exhibit breeding behavior in the future.
2. Long-term effects on the habitat of the park include natural changes and the impact of increasing numbers of visitors. The housing developments (north and south) within such close proximity to the park may contribute to disturbance. This includes the potential for feral cats. The disturbance may negatively affect some species of birds and discourage breeding.
3. Additionally, given the serious declines in grassland habitat in the country as well as within the state, the grassland areas such as that where Bobolink nest, could be treated with special care. A review of the impact of planned development in that area and the mowing schedule for promoting healthy prairie may be important.
4. These survey results which show low numbers for Orchard Oriole, Red-eyed Vireo, and American Redstart, as well as the absence of Ovenbird, Wood Thrush, Yellow-billed Cuckoo, American Woodcock, Northern Bobwhite, and Eastern Screech Owl underscore the importance of preserving scarce eastern deciduous forest fragments in South Dakota.
5. Species we hoped might be expanding their range (but which were less likely to be found) were not observed: Northern Bobwhite, Acadian Flycatcher, Tufted Titmouse, Bell's Vireo, Blue-winged Warbler, and Prothonotary Warbler.

### **Communications with Area Birders on Park Sightings**

Several Sioux Falls area birders have been visiting Good Earth fairly routinely throughout the year since its opening. A substantial list of sightings and possible sightings has been reported, and we confirmed many spring and summer sightings with these fellow birders. Once a visitor center is completed, perhaps a running list of species sightings may be maintained as birders report in at the end of their visits. Of note are some observations from Dr. Gil Blankespoor (Augustana College) who is assisting SDGFP with habitat management and restoration at the park. In 2014, Dr. Blankespoor reported hearing American Bobwhite in the undeveloped section of the park on the south. In July this summer, 2015, he reported a pair of Blue Grosbeak in the same area where we had observed one, on the beginning of the Burr Oak Trail north of the barn. He described its behavior as agitated, possibly indicative of a young fledgling nearby.

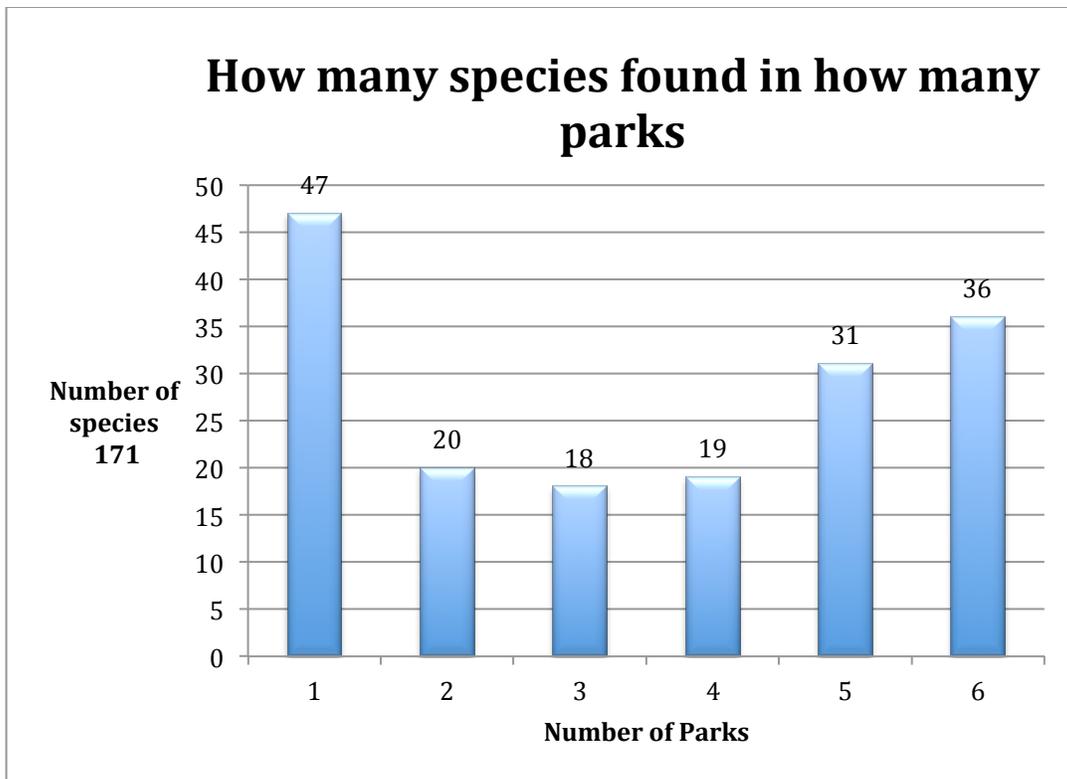
### **Comparisons with other Parks in the Region**

Since 2002 we have conducted breeding bird surveys of state parks and GPAs in the southeast region of South Dakota: Good Earth State Park, Oak Ridge GPA with Wilson Savanna, Newton Hills, Big Sioux Recreation Area, Palisades State Park and Adams Preserve. At these parks, we observed a total of 171 species and have categorized breeding status (CO, PR, PO) for 95 species. See Figure 39 page 26.



**Figure 39. Species status in six southeastern state parks and GPA.**

The figure below shows how many species sighted during our surveys have been sighted at all six, at five, four, three, two, and only one of the areas. For example, on the far left bar, 36 of the 171 species were seen at all six areas. The fact that 47 species were seen at only one park suggests that each park has some unique habitat.



**Figure 40. Number of species at six different parks**

Some comparisons among these six areas are interesting.

Three species were assigned Confirmed breeding status at all six parks, **American Robin, Black-capped Chickadee, and Gray Catbird.**

Assigned Probable status at all six parks were **Baltimore Oriole, Blue Jay, Field Sparrow, House Wren, Northern Cardinal, American Goldfinch, Brown-headed Cowbird, Common Yellowthroat, Northern Flicker, and White-breasted Nuthatch.**

Possible status was assigned at all six parks to **Barn Swallow, Brown Thrasher, Chipping Sparrow, Downy Woodpecker, Eastern Kingbird, Eastern Phoebe, Rose-breasted Grosbeak, Cedar Waxwing, Eastern Wood-Pewee, Great-crested Flycatcher, and Mourning Dove.**

Below are two tables listing all the species sighted during one or more of our six surveys.

**Table 2. Species observed at 6 and 5 parks**

<b>Species seen at all 6 parks during surveys</b>	<b>Species seen at 5 parks during surveys</b>
American Robin	<b>Blue-gray Gnatcatcher</b>
Baltimore Oriole	Canada Goose
Barn Swallow	Dickcissel
Black-capped Chickadee	Indigo Bunting
Blue Jay	Red-bellied Woodpecker
Brown Thrasher	<b>Red-headed Woodpecker</b>
Chipping Sparrow	Red-winged Blackbird
Downy Woodpecker	Yellow-bellied Sapsucker
Eastern Kingbird	Hairy Woodpecker
Eastern Phoebe	Mallard
Eastern Towhee	American Redstart
European Starling	Belted Kingfisher
Field Sparrow	Chimney Swift
Gray Catbird	Clay-colored Sparrow
House Wren	Common Grackle
Lark Sparrow	Great Horned Owl
Northern Cardinal	House Finch
Red-tailed Hawk	Ring-necked Pheasant
Rose-breasted Grosbeak	<b>Ruby-throated Hummingbird</b>
Yellow Warbler	<b>Cooper's Hawk</b>
American Goldfinch	<b>Great Blue Heron</b>
Brown-headed Cowbird	Orange-crowned Warbler
Common Yellowthroat	Ruby-crowned Kinglet
Eastern Bluebird	Swainson's Thrush
Northern Flicker	Traill's Flycatcher
Orchard Oriole	White-throated Sparrow
White-breasted Nuthatch	Wilson's Warbler
American Crow	Wood Duck
Cedar Waxwing	Yellow-rumped Warbler
Eastern Wood-Pewee	Northern Rough-winged Swallow
Great Crested Flycatcher	Wild Turkey
Mourning Dove	
Red-eyed Vireo	
Song Sparrow	
Warbling Vireo	
Turkey Vulture	

<b>Table 3. Species seen at 4, 3, 2, and only 1 park.</b>		
<b>Species observed at 4 parks</b>	<b>Species observed at 3 parks</b>	<b>Species observed at only 1 park</b>
Killdeer	Swamp Sparrow	Rock Pigeon
<b>Scarlet Tanager</b>	Blue-winged Teal	Least Sandpiper
Tree Swallow	Sedge Wren	Peregrine Falcon
Spotted Sandpiper	House Sparrow	Pine Warbler
<b>Eastern Whip-poor-will</b>	Bay-breasted Warbler	Western Sandpiper
<b>Yellow-throated Vireo</b>	Black-and-White Warbler	Gull species
Blackpoll Warbler	Blackburnian Warbler	Bell's Vireo
Blue-headed Vireo	Least Flycatcher	Black-crowned Night-Heron
Brown Creeper	Magnolia Warbler	<b>Cerulean Warbler</b>
Gray-cheeked Thrush	Northern Waterthrush	Golden-crowned Kinglet
Green Heron	Ovenbird	Marsh Wren
Harris's Sparrow	Palm Warbler	Northern Bobwhite
Lincoln's Sparrow	Western Meadowlark	Vesper Sparrow
Nashville Warbler	Chestnut-sided Warbler	Blue-winged Warbler
Tennessee Warbler	Cliff Swallow	Vesper Sparrow
<b>American Woodcock</b>	Hermit Thrush	Pine Siskin
Olive-sided Flycatcher	White-crowned Sparrow	Spotted Towhee
<b>Wood Thrush</b>	Double-crested Cormorant	Sora
Yellow-billed Cuckoo		American Tree Sparrow
		American Widgeon
	<b>Species at 2 parks</b>	Black Tern
	Bank Swallow	Brewers Blackbird
	<b>Bobolink</b>	Bufflehead
	Bald Eagle	Canvasback
	Barred Owl	Common Goldeneye
	Black-billed Cuckoo	Common Merganser
	Blue Grosbeak	Fox Sparrow
	Dark-eyed Junco	Franklin Gull
	Northern Parula	Gadwall
	Yellow-bellied Flycatcher	Great Egret
	American Coot	Green-winged Teal
	American Kestrel	Hooded Merganser
	Broad-winged Hawk	Lesser Scaup
	Eastern Screech-Owl	Mourning Warbler
	Northern Harrier	Pied-billed Grebe
	Osprey	Purple Martin
	Philadelphia Vireo	Redhead
	Willow Flycatcher	Ring-billed Gull
	Northern Shoveler	Ring-necked Duck
	Sharp-shinned Hawk	Ruddy Duck
	Empidonax	Savannah Sparrow
		Short-eared Owl
		Western Kingbird
		White Pelican
		Grasshopper Sparrow
		Common Nighthawk
		Willet

The comparisons above reflect many days of surveying in six different parks over a span of 13 years. It is hard to make generalizations about species from these comparisons, except to note that there are many species that have frequented southeast South Dakota for a number of years. Perhaps it is useful to note which species were seen in only one or two sites. Species found in only one or two parks may have implications for future monitoring and park conservation. In addition, this information underscores the importance of these eastern deciduous fragment zones to our state and regionally.

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## Appendix A

### Standardized Breeding Behavior Criteria Codes

Status	Codes	Breeding behavior
Observed (O)	O	Species (male or female) <b>observed</b> during its breeding season, but no evidence of breeding. Not in suitable nesting habitat. Such as: vultures, raptors, or colonial nesting species not at the nesting colony.
Possible (PO)	?	Species (male or female) observed in <b>suitable habitat</b> during its breeding season.
	X	<b>Singing male</b> present in suitable habitat during its breeding season.
Probable (PR)	M	<b>Multiple</b> males (e.g., seven) of a single species singing within a block in a single visit during their breeding season.
	P	<b>Pair</b> observed in suitable nesting habitat during its breeding season.
	S	Permanent territory presumed through <b>song</b> at same location on at least 2 occasions 7 or more days apart.
	T	Permanent <b>territory</b> presumed through defense of territory (chasing of individuals of same species).
	C	<b>Courtship</b> behavior, or copulation.
	N	Visiting probable <b>nest</b> site
	A	<b>Agitated</b> behavior or <b>anxiety</b> calls from adult.
	B	Nest <b>building</b> by wrens; hole excavation by woodpeckers.
Confirmed (CO)	CN	<b>Carrying nesting</b> materials--sticks, grass, hair, etc.
	NB	<b>Nest building</b> by all except wrens and woodpeckers.
	PE	<b>Physiological evidence</b> based on bird in the hand: highly vascularized, edematous incubation/brood patch, or egg in oviduct.
	DD	<b>Distraction Display</b> or injury feigning.
	UN	<b>Used nests</b> or eggshells found. Caution: these must be carefully identified to be accepted.
	PY	<b>Precocial young.</b> Flightless young of precocial species restricted to the natal area by limited mobility or dependence on adult.
	FL	Recently <b>fledged</b> young incapable of sustained flight, restricted to the natal area by limited mobility or dependence on adult.
	ON	<b>Occupied nest:</b> Adults entering or leaving a nest site in circumstances indicating an occupied nest. Used for nests too high or enclosed to view the contents.
	CF	<b>Carrying food:</b> adult carrying food for the young.
	FY	Adult <b>feeding</b> recently fledged young.
	FS	Adult carrying <b>fecal sac</b> .
	NE	<b>Nest with eggs.*</b>
	NY	<b>Nest with young.*</b>

\*Presence of cowbird eggs or young is confirmation of both cowbird and host species.

Source: *The South Dakota Breeding Bird Atlas, 1988-1993*

## Appendix B

### Breeding Pair Abundance Estimate Codes

The method chosen for determining abundance estimates for this survey was taken from the *South Dakota Breeding Bird Atlas, 1988-1993*. That project, in turn, took its method from the Ontario Breeding Bird Atlas Project. This method greatly simplifies the task of estimating numbers by ignoring total species population estimates and limiting the numerical abundance estimates to five broad categories (in powers of 10) of total breeding pairs, as shown below.

Estimate Code	Estimate of breeding pairs
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1	1 pair
2	2 to 10 pairs
3	11-100 pairs
4	101-1000 pairs
5	1000 pairs