

**Breeding Bird Survey of Big Sioux Recreation Area and Palisades State Park  
Spring and Summer 2011**



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

**by  
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## **Introduction**

This report documents the results of a 2011 Breeding Bird Survey of two South Dakota GF&P parks in southeastern South Dakota, Big Sioux Recreation Area and Palisades State Park. 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 and update information about the breeding status of birds at the two parks. Both Big Sioux Recreational Area and Palisades State Park are located on the Prairie Coteau and at the western extreme of the eastern deciduous forest, making these important habitats in our state and the region (Bryce, Omernick, Pater and Ulmer, 2006).

A summary of breeding results at Palisades State Park (Palisades) includes these species' numbers: 19 with Confirmed Breeding status, 23 with Probable Breeding status, and 5 with Possible Breeding status. Another 43 species were assigned Observed status only. A total of 90 species was observed at Palisades. At Big Sioux Recreation Area (BSR), breeding status was determined as follows: 23 Confirmed status, 12 Probable status, and 12 Possible . Another 40 were assigned Observed status. Observed status includes migrants and species for which we were unable to determine any breeding behavior. A total of 87 species was observed at BSR. A listing of all species observed during the survey, categorized by breeding status, is found in Appendix A.

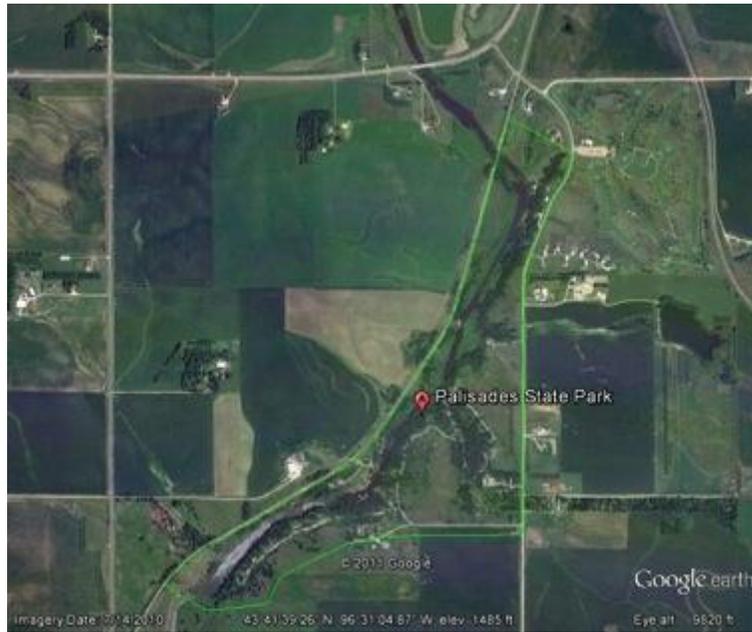
For purposes of this report, data has been compiled and reported in two sections: Palisades State Park first and Big Sioux Recreation Area, second. We surveyed both parks for a total of 11 days each.

### **Palisades State Park**

Palisades State Park consists of 157 acres along Split Rock Creek in southeastern South Dakota, near the town of Garretson (See Figure 1). The park is known for its Sioux quartzite cliffs and rock outcroppings. The predominant habitat along Split Rock Creek, which meanders through the park, consists of oak, cottonwood, juniper, elm, ash, and various deciduous shrubs. Railroad tracks run the length of the western border of the park at the grassy top of the quartzite outcroppings, and 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.

The steep quartzite cliffs and outcroppings are habitat similar to that at nearby Pipestone National Monument and Split Rock Creek State Park, both in Minnesota where Blue Grosbeak, Indigo Bunting, Eastern Bluebirds, both Yellow-billed and Black-billed Cuckoo, Eastern Screech Owl, Orchard Oriole, and Dickcissel nest (Eckert, 1994).

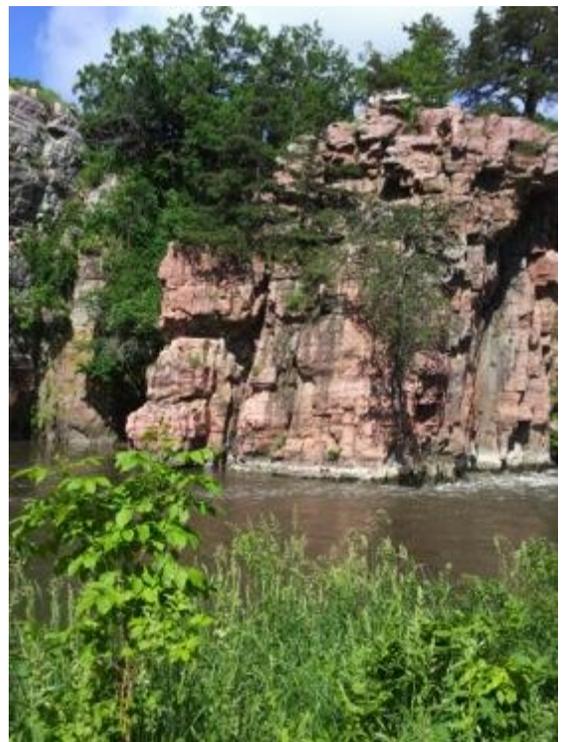
The park is about ten miles north of Brandon and three miles south of Garretson, making it easily accessible and heavily used for recreation, including camping, hiking, and rock climbing. The park has a number of campsites and a few cabins, which are used frequently.



**Figure 1. Google Earth image of Palisades State Park on July 14 2010.**



**Figure 2. Bridge over Split Rock Creek**



**Figure 3. Rock outcroppings of Sioux Quartzite**



**Figure 4: North wooded section and stream**

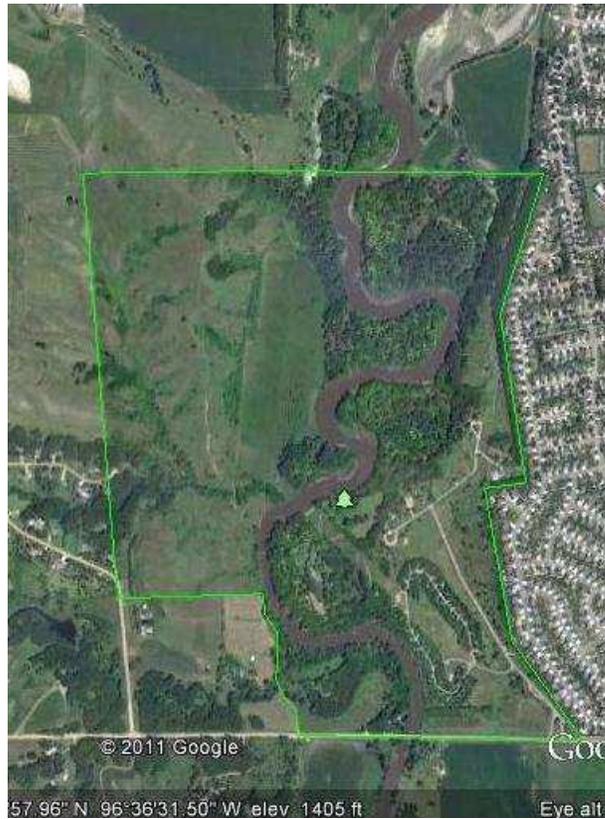


**Figure 5: Railroad tracks**

## **Big Sioux Recreation Area**

Big Sioux Recreation Area's 430 acres features these main habitats: prairie on the higher elevations of the park to the west and river bottom and mixed deciduous woodland along the banks of the Big Sioux River flowing through the park. The woodland clings mainly to the steep hillsides, to draws running down to the river from the prairie area on the west side, and from the more disturbed grassy and cedar grove areas on the east side. Big Sioux Recreation Area is bordered by urban housing on east and west sides. Cropland runs north from the park and westward, upstream along the Big Sioux River for about four miles before butting up against the eastern edge of Sioux Falls. The south end of the park is buffered by river plain and cropland right now, but urban housing is gradually encroaching (Google Earth).

Habitat at BSR has similarities with other parks in eastern South Dakota such as Adams Preserve on the Missouri, and Newton Hills and Union Grove parks, which both have creeks running through them. Eastern deciduous species are known to breed in these parks and might be expected at BSR (Wood Thrush, Scarlet Tanager, American Woodcock, and Blue-gray Gnatcatcher). Furthermore, Whip-poor-will and Long-eared Owl have been reported at BSR.



**Figure 6: Google Earth image of Big Sioux Recreational Area 7/14 2010.**



**Figure 7: Prairie grasses and mixed wooded area on west hill overlooking river.**



**Figure 8: Figure 10: Big Sioux River edge from the west.**



**Figure 9. Big Sioux River**



**Figure 10: East section of park with cedars.**



**Figure 11: Trail along the Big Sioux River, east side of the park.**



**Figure 12: Trail of Giants.**

## **Project Need**

In addition to conducting a survey for breeding species in both parks, we were also alert for species monitored by the Natural Heritage Program of SD GF&P. We identified 12 as species potentially occurring in the habitats of the two parks. According to the Natural Heritage Program, these species are all designated as G5 “demonstrably secure but may be quite rare in parts of the range, especially on the periphery.” For example, Blue-gray Gnatcatcher is rated G5 globally, but S1 as a breeding species in South Dakota. The 12 species potentially breeding in the parks include these:

American Woodcock  
Blue-gray Gnatcatcher  
Broad-winged Hawk\*  
Cooper's Hawk\*  
Great Blue Heron  
Green Heron

Long-eared Owl  
Ruby-throated Hummingbird  
Scarlet Tanager  
Whip-poor-will  
Wood Thrush\*  
Yellow-throated Vireo\*

\*species also tracked by Cornell Lab of Ornithology Birds of Forested Landscapes Project

Although a particular focus of our survey included species monitored by the Natural Heritage Program, we were also alert to species monitored by Cornell Lab of Ornithology. Cornell has a monitoring program for sensitive, rare, and endangered species in eastern and western forest habitats, called Birds in Forested Landscapes. Although Cornell tracks nine of the same species as the Natural Heritage Program, only the four species noted above by asterisks were potentially breeding in either park.

We were also alert for other species of high conservation concern tracked by Cornell Lab's Birds of Forested Landscapes project, including Eastern Wood-Pewee, Yellow-billed Cuckoo, and Red-headed Woodpecker.

There was also a remote yet enticing possibility for finding either a Black-and-White Warbler or Cerulean Warbler nesting, most likely at Big Sioux Recreation Area.

## Objectives

The project objectives were as follows:

1. To conduct a comprehensive field survey of breeding birds at Palisades and Big Sioux Recreation Area from mid-April through September 2011, to provide baseline data for monitoring changes in numbers and abundance of breeding species.
2. To verify presence at these two parks of species tracked by SD Game, Fish & Parks' Natural Heritage database.
3. To compile a comprehensive list of breeding birds at both parks.
4. To provide SD Game, Fish and Parks Department information that would be helpful in planning future recreational uses of the property with sensitive bird species population locations and needs in mind.
5. To formally share results of the survey with interested groups of birders.

## Field Survey Methods

Aerial photos, trail maps, and visits to the park sites were used to mark survey routes which provided access to different types of habitat. As background research for the survey, information was sought through birding field guides, topographic maps and aerial photos of the site, *Birds of South Dakota 3<sup>rd</sup> Edition*, *South Dakota Breeding Bird Atlas*, South Dakota Natural Heritage Database list of species tracked, *Birds of Forested Landscapes*, and Cornell Lab's Birds of North America online.

Summer resident birds were surveyed to determine presence and relative abundance of breeding pairs. Since Palisades consists of a very narrow strip of woodland along Split Rock Creek, we recorded data for that one major habitat. We surveyed along the campground roads and trails, north along the creek and on the western extreme along the railroad tracks, where small patches of big bluestem and other native grasses occur. At BSR, two routes were surveyed: 1) the eastern sections of the park, including the Trail of Giants, the campground, riverside/riparian trail, and the trail adjacent to housing, and 2) the western section featuring the highest

elevation in the park, rising approximately 200 feet from woodland along the river to prairie at the highest section of the park.

Each park was surveyed on 11 days, beginning in April and continuing through mid-September 2011. 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.

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 owls. The total number of individuals of each species was also counted.

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, Long-eared Owl, Scarlet Tanager, Whip-poor-will, 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.

Breeding behavior was recorded for each sighting, following standardized breeding bird survey codes (See Appendix A for the complete code). Estimates of breeding pairs were also recorded, following abundance estimate codes used by the *South Dakota Breeding Bird Atlas* Project 1988-1993 (See Appendix B). These standardized codes are used throughout the report. The four primary categories for breeding status we used 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 by the South Dakota Breeding Bird Atlas Project. If the species is observed within "safe dates," one may assume that it is 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.

## Results of Field Survey April through September 2011

The primary result of the project is a current and comprehensive listing of species and their breeding status at both parks.

### Palisades State Park

As Figure 13 shows, of species observed during the survey, the behavior of 19 indicated Confirmed Breeding, 23 were marked as Probable Breeding, 5 were marked as Possible Breeding, and 43 species were marked as Observed, with no evidence of breeding behavior. We assigned breeding status to 47 species.

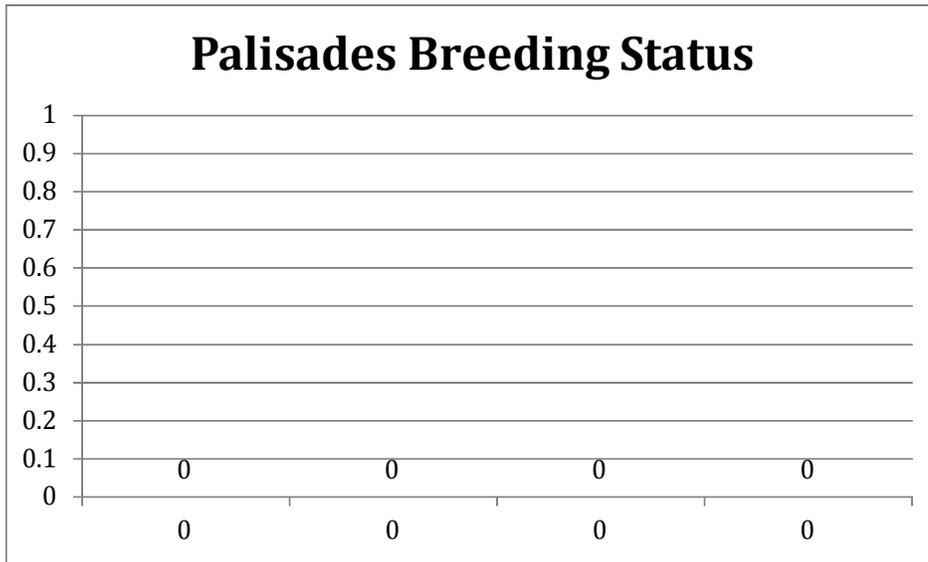


Figure 13: Breeding Status of Species

As Figure 14 shows, of the 47 species assigned a breeding status, 16 were estimated at 11-100 nesting pairs; 25 were estimated at 2-10 nesting pairs, and only 6 were assigned one nesting pair. As we surveyed, we counted the number of birds for each species. This number helped us estimate the relative number of breeding pairs.

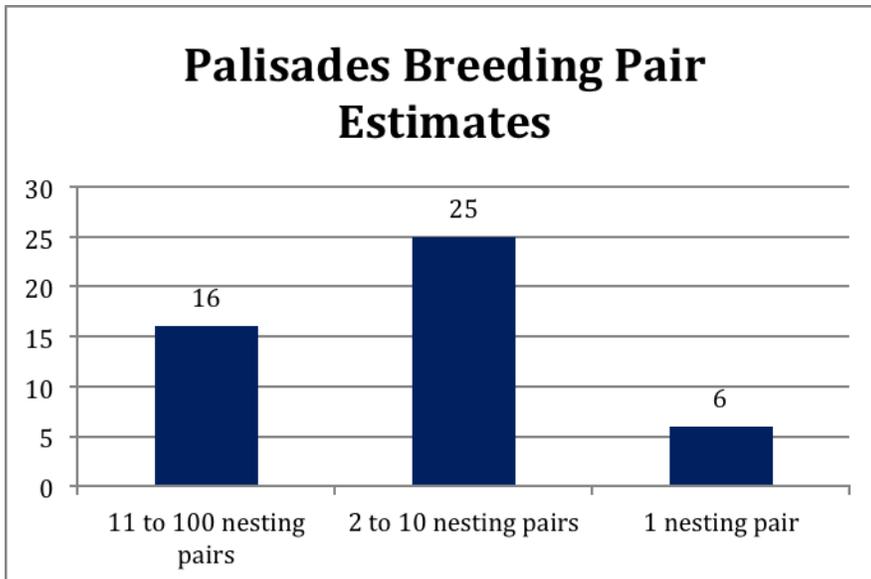


Figure 14: Breeding Pair Estimates

Table 1 lists species by breeding status and relative abundance of breeding pairs. As the table shows, of the 16 species with the highest estimate of breeding pairs, 11 are Confirmed Breeding; of the 25 species estimated to have 2 to 10 breeding pairs, 6 are Confirmed Breeding, and of the 6 with 1 nesting pair, none are Confirmed Breeding.

**Table 1: Palisades 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	Canada Goose	None
Barn Swallow	Eastern Bluebird	
Black-capped Chickadee	European Starling	
Blue Jay	House Sparrow	
Chipping Sparrow	Indigo Bunting	
Cliff Swallow	Killdeer	
Common Grackle	Song Sparrow	
Eastern Phoebe	Tree Swallow	
Field Sparrow		
Gray Catbird		
Northern Cardinal		
<b>Probable Breeding (PR) Species</b>		
American Goldfinch	Baltimore Oriole	Clay-colored Sparrow
Common Yellowthroat	Brown-headed Cowbird	Dickcissel
*Eastern Wood-Pewee	Cedar Waxwing	Orchard Oriole
House Wren	Downy Woodpecker	*Yellow-throated Vireo
Mourning Dove	Eastern Kingbird	
	Great Crested Flycatcher	
	Mallard	
	Northern Flicker	
	Ring-necked Pheasant	
	Rose-breasted Grosbeak	
	Warbling Vireo	
	White-breasted Nuthatch	
	Yellow Warbler	
	Yellow-bellied Sapsucker	
<b>Possible Breeding (PO) Species</b>		
None	Hairy Woodpecker	Brown Thrasher
	Northern Rough-winged Swallow	Lark Sparrow
	Red-winged Blackbird	

\*Species monitored by Cornell Lab Birds of Forested Landscapes Project.

As Table 1 shows, the species recorded were as expected—common birds. Of note were Indigo Bunting and Eastern Bluebird, both found along the railroad tracks skirting the west side of the park (an area with low traffic). Birds for which we were unable to confirm breeding but are likely breeding include American Goldfinch, Common Yellowthroat, Eastern Wood Pewee, Mourning Dove, House Wren, and Yellow-throated Vireo. For instance, Yellow-throated Vireo was observed five times on the King and Queen Rock Trail singing during breeding season (5/19, 5/26, 6/11, 6/27, 9/9). According to SDBBA project, three of these days are within the safe dates between 5/25 and 7/3. The habitat was also especially favorable to large numbers of Barn Swallow, Cliff Swallow, and Eastern Phoebe.



**Figure 15: Killdeer nest along railroad tracks.**



**Figure16: Indigo Bunting (Doug Backlund)**



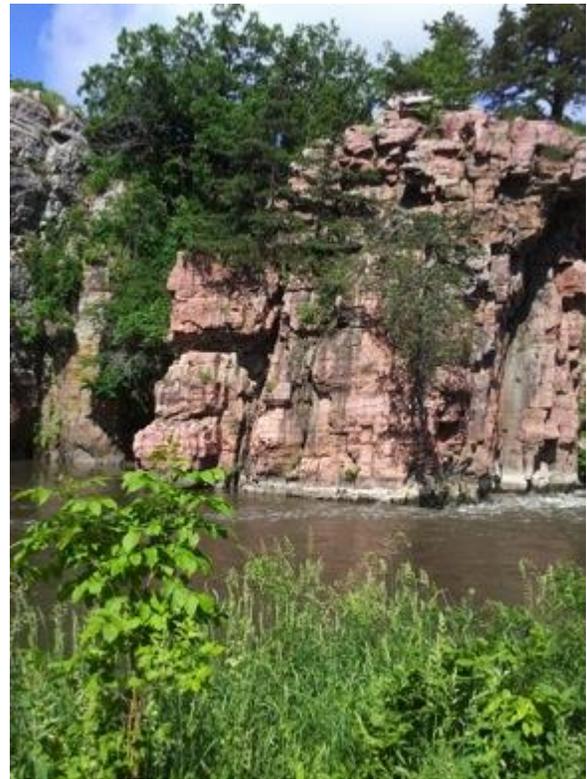
**Figure 17: Robin nest on King and Queen Rocks Trail**



**Figure 18: East edge of park Indigo Bunting habitat**



**Figure 19: Cliff Swallow (Doug Backlund)**



**Figure 20: Cliff, Barn Swallow and Eastern Phoebe nesting area.**



**Figure 21: Yellow-throated Vireo location along King and Queen Rocks Trail**



**Figure 22: Yellow-bellied Sapsucker**  
Photos courtesy of Doug Backlund



**Figure 23: Yellow Warbler**

The following Table 2 shows species' breeding status relative to abundance and survey day sightings. It includes our notes on breeding behavior observed on specific dates.

**Table 2: Palisades Breeding Status Relative to Abundance and Sightings**

CO Species	Survey Days	Breeding Status	Abundance	Notes
American Robin	9	CO	3	5/19-ON; 5/26-ON, FY; 6/11-CF, ON; 6/27-FY; 7/18-CF
Barn Swallow	9	CO	3	6/11-ON; 6/27-FY; 7/18-ON; 8/9-FY
Black-capped Chickadee	8	CO	3	6/27-CN; 7/18-CF
Blue Jay	10	CO	3	6/11-CN, 8/16-FY, FL
Canada Goose	3	CO	2	4/21 ON.
Chipping Sparrow	9	CO	3	6/11-CF nest); 7/25-FY(head sticking out of nest)
Common Grackle	7	CO	3	4/21-C; 5/19-CN; 6/11-CF; 6/27-CF,CN; 7/18-CF
Eastern Bluebird	3	CO	2	7/25-ON, 8/9-CF, FL, ON
Eastern Phoebe	7	CO	3	6/11-ON
European Starling	2	CO	2	5/19-CN
Field Sparrow	9	CO	3	6/11-CF;
Gray Catbird	8	CO	3	8/9-FY, FL
House Sparrow	2	CO	2	6/27-CN
Indigo Bunting	5	CO	2	9/9-CF, FL
Killdeer	6	CO	2	6/11-ON; 6/27-ON;
Northern Cardinal	8	CO	3	6/11-CF, 9/9-FL
Song Sparrow	4	CO	2	6/11-CF
Tree Swallow	1	CO	2	6/11-ON

<b>PR Species</b>	<b>Survey Days</b>	<b>Breeding Status</b>	<b>Abundance</b>	<b>Notes</b>
American Goldfinch	9	PR	3	PR-M, S Observed several times
Baltimore Oriole	8	PR	2	5/19-P
Brown-headed Cowbird	6	PR	2	PR-M, S Observed several times
Cedar Waxwing	6	PR	2	9/9-flock with fledglings
Clay-colored Sparrow	3	PR	1	PR-S Observed several times
Common Yellowthroat	6	PR	3	PR-M, S Observed several times
Dickcissel	4	PR	1	PR-S Observed several times
Downy Woodpecker	6	PR	2	PR-S Observed several times
Eastern Kingbird	7	PR	2	PR-M Observed several times.
Eastern Wood-Pewee	5	PR	3	PR-S Observed several times
Great Crested Flycatcher	4	PR	2	PR-S Observed several times.
House Wren	8	PR	3	PR-S Observed several times.
Mallard	2	PR	2	6/11-P
Mourning Dove	10	PR	3	PR-S Observed several times during survey.
Northern Flicker	5	PR	2	PR-M, S Observed several times during survey.
Orchard Oriole	1	PR	1	May 19-P
Ring-necked Pheasant	5	PR	2	PR-S Observed several times during survey.
Rose-breasted Grosbeak	4	PR	2	5/19-P
Warbling Vireo	6	PR	2	6/27-T
White-breasted Nuthatch	6	PR	2	PR-S Observed several times during survey.
Yellow Warbler	5	PR	2	PR-S Observed several times during survey.
Yellow-bellied Sapsucker	2	PR	2	May 19-T
Yellow-throated Vireo	5	PR	1	PR-S Observed several times during survey.

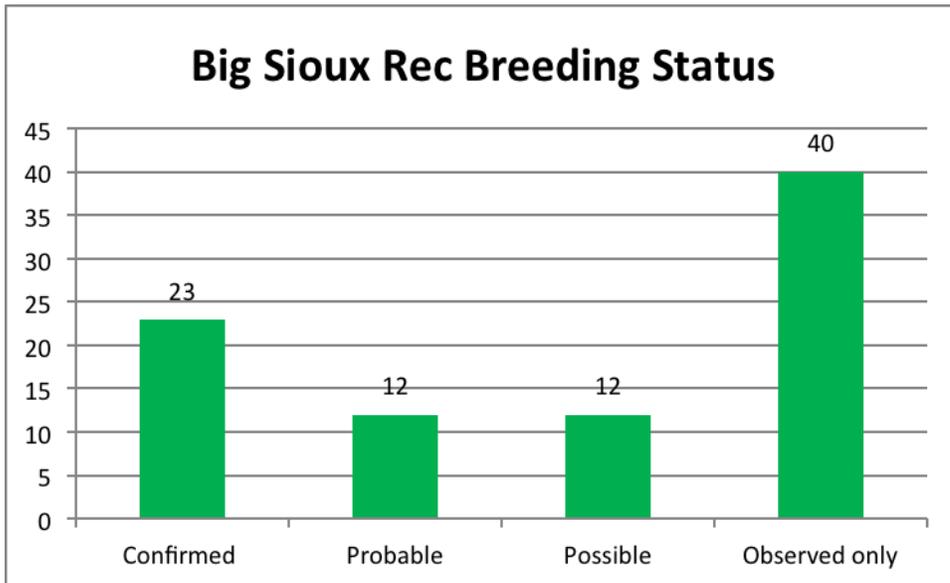
<b>PO Species</b>	<b>Survey Days</b>	<b>Breeding Status</b>	<b>Abundance</b>	<b>Notes</b>
Brown Thrasher	2	PO	1	PO?-5/19, 6/11
Hairy Woodpecker	2	PO	2	5/19 PO-?
Lark Sparrow	2	PO	1	PO-? 6/11, 7/18
N.R-winged Swallow	5	PO	2	PO-? Observed several times during survey.
Red-winged Blackbird	2	PO	2	PO-? 4/21, 5/19

The table provides detail regarding the number of days species were observed relative to the number of breeding pairs and status, plus notes. For instance, American Robin was sighted on 9 of the 11 days; breeding status was confirmed with high abundance estimate. Our notes describe the behavior which allowed us to assign breeding status. On the other hand, in the Probable breeding status (PR), Baltimore Oriole was observed 8 times but only once were we able to determine any behavior relative to breeding status: a pair was seen together on May 19. In the Possible (PO) category, Brown Thrasher was seen only twice during the breeding season.

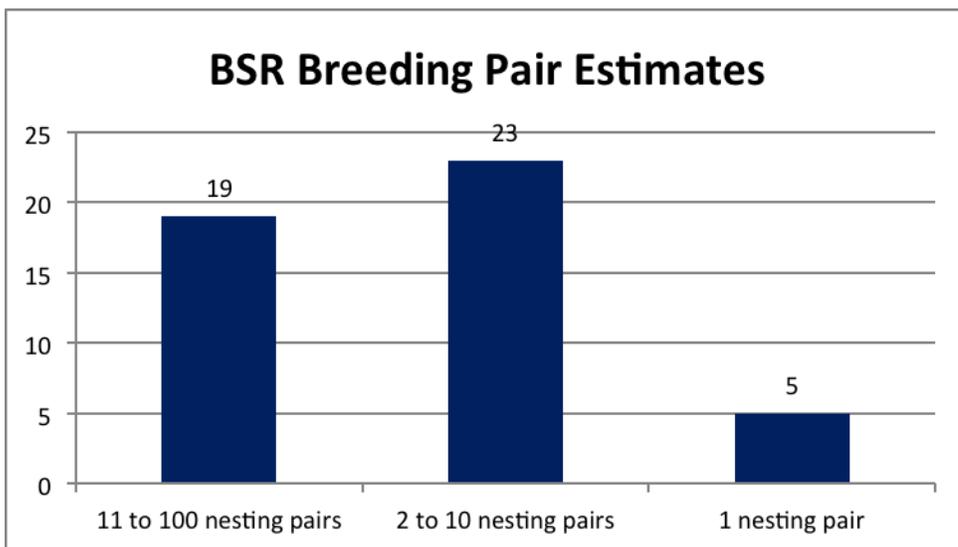
Species of note include the large numbers of cliff and barn swallows and phoebes nesting in the quartzite cliffs along Split Rock Creek. For instance, on 6/11 we counted 13 Phoebe. The nesting Indigo Bunting was confirmed breeding on September 9 in trees along the railroad tracks on the western edge of the park. While we heard and observed the buntings on a five different survey days, we did not confirm breeding until September 9. (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 nesting records indicate that nesting occurs in South Dakota between June 3 and August 4.

## Big Sioux Recreation Area

Of species observed during the survey, the behavior of 23 indicated Confirmed Breeding, 12 were marked as Probable Breeding, 12 were marked as Possible Breeding, and 40 species were marked as Observed, with no evidence of breeding behavior. See Figure 24.



**Figure 24: Big Sioux Recreation Breeding Status**



**Figure 25: Big Sioux Recreation breeding Pair Estimates**

Figure 25 shows that of the 47 species assigned breeding status, the behavior of 19 was estimated at 11 to 100 pairs, 23 were estimated at 2 to 10 pairs, and 5 were estimated at one breeding pair.

Table 3 lists species by breeding status and relative abundance of breeding pairs. As the table shows, of the 19 species with the highest estimate of breeding pairs, 13 are Confirmed Breeding; of the 23 species estimated to have 2 to 10 breeding pairs, 8 are Confirmed Breeding, and of the 5 with 1 nesting pair, none are Confirmed Breeding.

**Table 3: Big Sioux Recreation Species Breeding Status and Relative Abundance**

11-100 Breeding Pairs	2-10 Breeding Pairs	1 Breeding Pair
<b>Confirmed Breeding (CO) Species</b>		
American Goldfinch	Baltimore Oriole	None
American Robin	Bobolink	
Black-capped Chickadee	Canada Goose	
Brown-headed Cowbird	Cedar Waxwing	
Common Grackle	Eastern Kingbird	
Eastern Phoebe	Red-winged Blackbird	
Field Sparrow	Sedge Wren	
Gray Catbird	Yellow-bellied Sapsucker	
House Wren		
Mourning Dove		
Northern Cardinal		
Song Sparrow		
White-breasted Nuthatch		
<b>Probable Breeding (PR) Species</b>		
Blue Jay	**American Woodcock	None
Chipping Sparrow	Brown Thrasher	
Common Yellowthroat	Eastern Towhee	
Downy Woodpecker	Red-bellied Woodpecker	
*Eastern Wood-Pewee	Red-eyed Vireo	
Northern Flicker	Ring-necked Pheasant	
	Warbling Vireo	
<b>Possible Breeding (PO) Species</b>		
None	American Crow	***Cooper's Hawk
	Barn Swallow	Dickcissal
	Belted Kingfisher	Great Crested Flycatcher
	*Blue-gray Gnatcatcher	Orchard Oriole
	Northern Rough-winged Swallow	Western Meadowlark
	Rose-breasted Grosbeak	
	Wood Duck	
	Yellow Warbler	

\*Indicates species monitored by Cornell Birds of Forested Landscapes Project.

\*\* Indicates species monitored by Natural Heritage Program.

\*\*\*Indicates species monitored by both Cornell and NHP

As expected, several common birds of the area were confirmed to be breeding. Of note for us were Sedge Wren and Bobolink, both occurring in the west grassland areas of the park. The Sedge Wrens showed up in an unexpected spot in the park and the Bobolinks surprised us because of the relatively small grassland area they

were occupying. As at Palisades, most of the species coded Probable are likely nesting also, although we observed surprisingly few Red-eyed Vireos.



**Figure 26: Sedge Wren**  
(Photos courtesy of Doug Backlund)



**Figure 27: Bobolink**



**Figure 25: Blue-gray Gnatcatcher**  
Photo Courtesy of Doug Backlund



**Figure 26: Grassy area on west side.**

The following Table 4 shows species breeding status relative to abundance and survey day sightings. It includes our notes on breeding behavior observed on specific dates.

**Table 4: BSR Breeding Status Relative to Abundance and Survey Days**

Species	Survey Days	Breeding Status	Abundance	Notes
<b>Confirmed Breeding</b>				
American Goldfinch	8	CO	3	7/24-FY (feeding cowbird fledgling), 8/12-CN
American Robin	11	CO	3	5/6-CN; 6/2-CF, 6/15-FY, CF; 6/30-CF, 7/24-FL
Baltimore Oriole	6	CO	2	6/30-FY; 7/7-FY
Black-capped Chickadee	10	4	3	6/15-CF; 6/30-FY, 7/24-ON, 8/12-FL
Bobolink	3	CO	2	6/15-CF, DD
Brown-headed Cowbird	8	CO	3	6/30-FY (young cowbird being fed by Yellow Warbler); 7/7 and 7/24- FY (young B-h. Cowbird being fed by Common Yellowthroat), 8/12-FY- being fed by Song Sparrow
Canada Goose	3	CO	2	6/30-FL (3)
Cedar Waxwing	6	CO	2	8/12-CF, FY
Common Grackle	7	CO	3	6/2-CF
Common Yellowthroat	7	CO	3	CO-FY
Eastern Kingbird	6	CO	2	5/16-ON
Eastern Phoebe	4	CO	3	5/16-FL
Field Sparrow	11	CO	3	6/15-CF; 7/7-DD
Gray Catbird	8	CO	3	5/6-CN; 6/2-CF; 7/7-CF, 8/12-DD, CF
House Wren	8	CO	3	7/7-DD (two together at nest hole), 7/24-FY, CF, ON
Mourning Dove	11	CO	3	5/6-ON; 6/30-DD
Northern Cardinal	9	CO	3	8/12-CF
Red-winged Blackbird	4	CO	2	6/15-DD; 7/7-CF, FY
Sedge Wren	4	CO	2	8/12-CN, DD, 8/29-FL+AH6
Song Sparrow	10	CO	3	8/12-FY (feeding B-h Cowbird fledgling)
White-breasted Nuthatch	10	CO	3	6/2-CF
Yellow-bellied Sapsucker	7	CO	2	6/30-FL
Yellow Warbler	5	CO	2	CO-FY
<b>Probable Breeding</b>				
American Woodcock	4	PR	2	5/1 & 5/6-C
Blue Jay	10	PR	3	PR-S, observed several times
Brown Thrasher	6	PR	2	PR-S, observed several times
Chipping Sparrow	5	PR	3	PR-S, observed several times
Downy Woodpecker	8	PR	3	5/6-T
Eastern Towhee	5	PR	2	PR-S, observed several times
Eastern Wood-Pewee	6	PR	3	PR-S, observed several times
Northern Flicker	10	PR	3	PR-S, observed several times
Red-bellied Woodpecker	7	PR	2	PR-S, observed several times
Red-eyed Vireo	3	PR	2	7/24-S, 8/12-S
Ring-necked Pheasant	6	PR	2	PR-S, observed several times
Warbling Vireo	3	PR	2	7/24-S, C (fluttering wings).

### Possible Breeding

American Crow	10	PO	2	PO-? Multiple dates
Barn Swallow	4	PO	2	PO-? Multiple dates
Belted Kingfisher	2	PO	2	PO-? Multiple dates
Blue-gray Gnatcatcher	3	PO	2	PO- ? Observed 3 times
Cooper's Hawk	4	PO	1	PO-? Twice in breeding season
Dickcissel	2	PO	1	PO-S, Observed twice in breeding season.
Great Crested Flycatcher	3	PO	0	PO-X observed several times
N, Rough-winged Swallow	4	PO	2	PO-? Multiple dates
Orchard Oriole	2	PO	1	PO-?, 6/30, 7/7
Rose-breasted Grosbeak	3	PO	2	PO-? Multiple dates
Western Meadowlark	2	PO	1	PO?-4/23, 6/15
Wood Duck	4	PO	2	PO-? Multiple dates

Our notes shown in Table 4 describe the behavior which allowed us to assign breeding status. For instance, American Robin was sighted on 11 days, and breeding status was confirmed with a high abundance estimate. Baltimore Oriole was observed 6 times with confirmed breeding 6/30 FY and 7/7 FY. Bobolink (which was not observed at Palisades) was observed 3 times and confirmed breeding 6/15 DD and CF.

In the probable category, American Woodcock was observed 4 times and courtship display was confirmed on May 1 and May 6.

Among the Possibly breeding species, Rose-breasted Grosbeak stands out because of its small numbers. We had expected that both Red-eyed Vireo and Rose-breasted Grosbeak would be common throughout the park, but the numbers were few. We were also surprised at the small number of Orchard Orioles and the few sightings.

Species of note include Brown-headed Cowbird. Cornell Lab of Ornithology cites a conservation interest in Brown-headed Cowbirds because of their impact on other species. Cowbird observations at BSR seem to indicate the degree and scope of cowbird brood parasitism as three separate species were seen feeding cowbird fledglings. As the list shows, Yellow Warbler, Common Yellowthroat, and Song Sparrow were feeding cowbird fledglings. According to BNO, these three species are among the top 50 species which are most often hosts.

Cornell also has a research interest in Sedge Wrens, which occurred only in specific habitat at BSR—in the central low floodplain west of the river. Initially, this did not appear to be appropriate habitat; however, the flooding this 2011 season contributed to wet meadow conditions. It remains to be seen whether Sedge Wrens will be found in the same area in subsequent years. 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 June 15, July 7, August 11, and August 28. Birds of South Dakota cites nesting dates ranging from June 6 in Brown County to July 9 in Moody County with migration October to November). Interestingly, during our 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.

## Overall Results Regarding Species Tracked by Natural Heritage Database

Of the 12 species monitored by the Natural Heritage Database potentially breeding in the parks, we observed 11 over the course of the survey. Of those 11, four are also tracked by Cornell (indicated by \*).

Breeding status was assigned as follows:

Probable: **Yellow-throated Vireo\*** was observed May 19, May 26, June 11, June 27 and September 19 at Palisades. (Safe dates are 5/25-7/31). According to Cornell, 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...”(5.139).

Possible: **Cooper’s Hawk\*** observed at BSR April 23, May 1, Aug. 11, Aug. 28 was assigned PO possible status. Safe dates are 4/15 to 7/31. The species was also observed May 1 and Sept. 9 at Palisades. Cooper’s is coded by the NHD as S 3 --locally rare. The Birds of South Dakota shows breeding dates between April 22 and July 30.

Observed: **Wood Thrush\*** was observed at Palisades September 9. The species is described as “high conservation concern” by Cornell’s BNA online. Birds of South Dakota indicates that fall migration is mid-August to through September.

Observed: **Broad-winged Hawk\*** was observed flying overhead on May 6 at BSR.

The remaining seven Natural Heritage Program-tracked species that we observed during the survey were assigned breeding status as follows:

Probable: **American Woodcock** was observed 4 times: May 1, May 6, July 7, July 24. (safe dates 4/15-7/31). On three occasions, several were heard conducting their aerial breeding flight; on July 24, we flushed a woodcock in the leaves along the river bottomland. Because of the large number of males conducting courtship displays, American Woodcock was assigned Abundance Code 2 (2-10 breeding pairs).

Possible: We assigned possible breeding status to **Blue-gray Gnatcatcher** (BSR) based on observations May 6, August 11, and August 28. The gnatcatchers were observed in the same location on all three days. (Safe dates are 5/25- 7/31). According to Birds of South Dakota, 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 BNA. However, South Dakota has 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 deciduous trees and mixed juniper and deciduous shrubs in the central section west of the river in an area with no trail nearby. According to BNA online, they prefer habitat with low disturbance.

Other species monitored by the NHD which we observed but which did not show behavior related to breeding included these:

**Ruby-Throated Hummingbird** was observed at Palisades at the same location on two survey dates-- May 19 and September 9 and at BSR on June 2 and August 28. We were unable to find solid evidence of breeding. South Dakota Birds note that nesting dates range from early June to mid-August with the majority of nesting confirmed in the northeastern part of the state.

**Great Blue Heron** was observed at Palisades August 9, and at BSR June 30, July 7, and July 24.

**Green Heron** was observed at BSR on May 6.

**Scarlet Tanager:** An immature male was observed at BSR August 11 outside the safe breeding dates.

**Whip-poor-will** was heard at BSR May 6.

**Broad-Winged Hawk** was observed flying overhead at BSR on May 6.

The final species tracked by GF&P which we anticipated might be found were Long-Eared Owl and Cerulean Warbler (reported several years ago at Newton Hills). Long-eared Owls have been observed wintering at Big Sioux Recreation Area. We did not observe either of these two species.

Of the species of national conservation concern monitored by Cornell Lab, we assigned PR to **Eastern Wood-Pewee** (PR) at Palisades because we heard males singing June 11, July 18, July 25, Aug. 9 and August 16. (Safe dates are June 1-July 31). At BSR we had singing males 6/2, 6/15, 7/7, 7/23, 8/11, 8/28. We assigned an Abundance code of 11-100 breeding pairs. Cornell explains that while the species is common, it is “showing consistent declines in nearly every region...[which] combined with vulnerability to forest loss on its South American winter range, make it a species of high conservation concern.” (5.121).

**Yellow-billed Cuckoo** was observed only once at BSR (June 2). Cornell 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 indicates that it breeds in Minnehaha and Beadle Counties with breeding dates between June 1 and July 31.

Species known to breed in the region, at Newton Hills, Oak Ridge and Union Grove, in South Dakota, as well as Blue Mound State Park in Minnesota include American Kestrel, Blue Grosbeak, Eastern Screech Owl, Barred Owl, Ovenbird, Black-billed Cuckoo, Bell’s Vireo, and Red-headed Woodpecker. None were ever observed at either of the two parks.

## **Field Survey 2011 Summary Observations**

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

Common and abundant species included those expected and noted in the Results section. However, a few of our observations lead to puzzles. The common eastern deciduous species we expected but which were found in low numbers included Wood Thrush, Eastern Towhee, Red-eyed Vireo, Scarlet Tanager, American Redstart, and Rose-breasted Grosbeak. Completely absent were Ovenbird, Barred Owl, and Eastern Screech Owl. All of these species should be breeding in at least one of the two parks. It may be important to note that during the survey season, flooding along the river at BSR destroyed some potential habitat. We were also unable to survey in those areas, such as along the Trail of Giants (cottonwoods) at BSR.

Two species notably absent from BSR include Whip-poor-will reported by Skadsen to be very common several years ago, and Long-Eared Owls, which were seen as recently as three years ago (Draeger, Johnson and others, personal observation).

Some questions remain to be answered. Does the proximity of both parks to urban areas contribute to the presence of predation by cats and dogs in the area? What will be the impact of 2011 flooding on species occurrence in 2012 and following years? Will species such as Sedge Wren and Long-Eared Owl, which are known to occur in different parts of their range depending on conditions during the breeding season, be found at BSR again?

Long-term effects on the habitat of the parks include natural changes and the impact of increasing numbers of visitors. This report makes some observations about species of interest to us. We invite readers to refer to the database submitted with this report to make their own observations about species of interest to them.

## **Conclusions**

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 at both parks.
2. The suburban and urban areas within such close proximity of each park contribute to high disturbance. The disturbance may negatively affect some species of birds and discourage breeding.
3. These survey results which show low numbers for Scarlet Tanager, Orchard Oriole, and Eastern Towhee, as well as the absence of Ovenbird, Black-billed Cuckoo, Blue Grosbeak, Barred Owl, and Eastern Screech Owl underscores the importance of preserving scarce eastern deciduous forest fragments in South Dakota.

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**Appendix A**  
**Standardized Breeding Behavior Criteria Codes**

<b>Status</b>	<b>Codes</b>	<b>Breeding behavior</b>
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 excepts 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.

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