

**Final Report of Bird Inventory:
Stones River National Battlefield, 2003-2005**

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STRI Superintendent Stuart Johnson deserves special thanks because of his enlightened approach to land management, especially his willingness to convert much cropland in the park to native grasslands. His support of managed burn control in the park will also benefit wildlife considerably. We hope the superintendents of other battlefields in the NPS system will follow his lead.

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Introduction

Stones River National Battlefield (STRI) is located in northwest Murfreesboro, Rutherford County, in Middle Tennessee. Established in 1927, the battlefield commemorates the Battle of Stones River and is actively managed by the National Park Service as a historic park. Although the Battle of Stones River occurred on nearly 1550 hectares (4000 acres), STRI comprises only about 262 hectares (647 acres) of mixed hardwood forests, cedar thickets, limestone cedar glades, old fields, mowed grass fields, and agricultural fields. Because a rapidly growing community surrounds the park, STRI potentially serves as a refuge for flora and fauna representative of dwindling middle Tennessee native ecosystems. The purpose of this study was 1) to inventory the bird species that occur at STRI; and 2) to indicate the status and relative seasonal abundance of documented species.

Description of Study Site

Stones River National Battlefield is located in Rutherford County, Tennessee, approximately 48 km southeast of Nashville. STRI lies within the Inner Central Basin (ICB) ecoregion of the Interior Low Plateau Physiographic Province (Fenneman 1938, Griffith et al. 1997). The ICB is characterized by low relief; elevation seldom exceeds 200 m. The soils and vegetative features of the

ICB and STRI have been described elsewhere (Kuchler 1964; Springer and Elder 1980; Hogan and Webber 1999). Permanent and intermittent streams of the ICB have a low to moderate gradient and often have a rock-rubble or limestone bedrock substrate (Etnier and Starnes 1993). The current authorized boundary of STRI encompasses 288 ha (712 acres) and consists of six disjunct units (National Park Service 1998), including the Main Battlefield Park (MB), the Artillery Monument (AM), Fortress Rosecrans (FR), Redoubt Brannan (RB), and the headquarters sites for Generals Bragg and Rosecrans.

The MB encompasses 191 ha, making it the largest of the units. With the exception of the Stones River National Cemetery and three agricultural fields that are actively planted and harvested, the MB is wooded and undeveloped. Upland hardwood forests dominate the wooded areas; except following rains, these forests are quite dry. The forest type is represented by dry to mesic oak and oak-hickory forests and oak-dominated forests with a strong Eastern Red Cedar (*Juniperus virginia*) component (Hogan and Weber 1999). Approximately 24 ha of cedar glades and barrens are also found at the MB (National Park Service 1998). The glades are openings in stands of Eastern Red Cedar where the soil over the Ridley Limestone is shallow, precluding permanent invasions by trees (National Park Service 1998). Old-field communities dominate some areas and are primarily composed of weedy herbaceous vegetation with scattered woody species (Hogan and Webber 1999). Several mowed grass fields up to 300 m wide also border the MB, providing habitat for several grassland species. An

assortment of rock outcroppings, sinkholes, and sinkhole caves also dot the landscape.

The AM lies east of U.S. HWY 41 and includes a short stretch (c. 0.5 km) of the West Fork of the Stones River. The AM, encompassing 48 ha of STRI (supplemented in 2004 by purchase of additional acreage composed of grassland and riparian woods), is composed largely of open field habitats, including a reintroduced native grass field (2002) and several large fields with weedy and woody herbaceous vegetation. Other habitats found at this unit include floodplain forests, such as those found along the Stones River and The Nature Conservancy tract, that are dominated by hackberry (*Celtis* spp.), green ash (*Fraxinus pennsylvanica*), box elder (*Acer negundo*), sycamore (*Platanus occidentalis*), and cottonwood (*Populus deltoides*) (Hogan and Webber 1999). This unit also hosts a permanent pond community known as King Pond. A large population of greater duckweed (*Spirodela polyrhiza*) dominates the open water of this small (c. 0.4 ha), shallow pond (Hogan and Webber 1999). The pond attracts an assortment of wildlife, such as the White-tailed Deer (*Odocoileus virginianicus*) and several species of birds, including Canada Geese (*Branta canadensis*) and Wood Ducks (*Aix sponsa*). An additional pond and wetland is located in an old quarry at the AM. Also, two agricultural fields and some large weedy fields are located at the AM. Some notably large trees are found in the fencerows of this site.

The FR unit lies on 10 ha and supports the remnants of the original earthworks of Lunette Palmer, Curtain Wall no. 2, and Lunette Thomas. These

earthworks are actively managed for native warm season grasses, such as broomsedge (*Andropogon* spp.) and Indian grass (*Sorghastrum nutans*). This site also contains a 0.965 km interpretive trail that encircles the earthworks; during 2004-2005 an extensive raised boardwalk was constructed to protect the earthworks. At FR, Lytle Creek flows into an impoundment that overflows into the West Fork of the Stones River. The wooded rock outcroppings host mixed hardwood species, such as oak (*Quercus* spp.), ash (*Fraxinus* spp.), hackberry (*Celtis* spp.), and elm (*Ulmus* spp.), as well as exotic shrub species, such as Chinese privet (*Ligustrum sinense*) and bush honeysuckle (*Lonicera maackii*). The area around the parking lot was landscaped about 2002 with native shrubs and herbaceous plants. Several large mowed grass areas are present in this unit also.

The 2.1-ha RB unit also contains earthworks and an interpretive trail. Boardwalks have been built over the earthworks to protect them; native vegetation has been added to many areas within this site. Below the earthworks, a floodplain forest is adjacent to the West Fork of the Stones River. Rock outcroppings and small rock bluffs are characteristic of the upland area. A small pond is located near the floodplain forest but is not on battlefield property.

General Bragg's and General Rosecran's headquarters units encompass 2.6 and 0.10 ha, respectively. These areas, each well groomed and maintained as lawn by the park staff, were included in this inventory.

Methods--Bird Inventory Techniques

Point counts were the most regimented method of collecting breeding bird data at this NPS unit. Fifteen point counts were conducted during late May in each of two years, 2003 and 2004. The protocol for these counts entailed standing at the center of a 50-meter diameter plot and counting all birds heard and seen for 10 minutes; birds were recorded as occurring at one of four distance intervals (< 25 m; 25-50 m; 50-100 m; and >100 m) or as flyovers; birds were also recorded as occurring within one of three temporal intervals (0-3 min; 3-5 min; 5-10 min) (Hamel 1992; Hamel et al. 1996). Any birds flushed during approach to the plot center were included among the birds recorded at the point. Birds counted at one point were not counted if detected at an adjacent point. All birds seen or heard were recorded on a special point count data form. All point count data are provided in a supplemental Excel file included with this report.

A second method used to gather data about the birds of this site was the migration walk. During spring and fall, these walks were conducted 3-4 times per season. The walks typically lasted 1-2 hours and covered a distance of about 1.5 km through habitat considered to have potential for harboring migrant birds. All species seen or heard were recorded on a standard field card.

A third method used to gather data about the birds of the site was the raptor survey. These surveys were undertaken during fall and early winter. Typically, the survey lasted 2-4 hours during late morning. A route was driven by automobile along all the roads of the unit, usually totaling about 15 km. All

raptors (and shrikes) detected were included in the resulting data. All species seen or heard were recorded on a standard field card.

A fourth method of gathering bird data at this site was the night survey, a somewhat informal method entailing the use of tape-recorded owl calls to elicit responses from owls at the site. Besides owls, nightjars were also detected by night surveys during summer; woodcocks at all seasons; and Grasshopper Sparrows during spring and summer. All species seen or heard were recorded on a standard field card, sometimes in conjunction with data obtained using the following method.

The fifth and last method of obtaining bird data at this site in all seasons was the general inventory, involving less regimented efforts to visit all types of habitat within this NPS unit during the course of a day and to keep track of all species sighted. In particular the many grasslands of the park were walked in all seasons to prompt birds to flush so they could be identified. During the breeding period for birds, which includes most of the spring and summer, the general inventory included efforts to detect breeding evidence for all species breeding in the unit. All species seen or heard and all breeding evidence observed were recorded on a standard field card.

Data obtained during migration walks, raptor surveys, night surveys, and general inventory surveys are provided in a supplemental Excel file submitted with this report.

Results

Expected Species List

The species expected to occur in this park include many listed in *Birds of the Nashville Area* (Parmer et al. 1985), which covers nine counties in and around Nashville, including all of Rutherford County, where STRI is located. About 310 species have been recorded in the Nashville area over the course of the past 90 years by hundreds of observers. Many of these are associated with two large lakes--Old Hickory Lake and Percy Priest Lake--or with wetland habitat found along the Cumberland River, especially in Cheatham County. Similar habitats are lacking at STRI, so one would expect few species associated with these habitats to occur there. If one deducts such species from the overall species list in Parmer's work, perhaps 210 species remain.

Total Species Inventoried

During the inventory period, Barbara Stedman made visits to the unit on a total of 34 days during all seasons of the year. In the course of these visits she observed 150 species (Table 1) by one or more of the methods described above. In addition, 2 species were registered by NPS personnel (Common Goldeneye) or by visitors (Bald Eagle) to the park during the inventory period. The total of 152 species detected during the two-year inventory represents 72% of the 210 species that might be expected to occur within the site. Several factors prevented this percentage from being higher. Among these factors should certainly be included the fact that the battlefield is surrounded on all sides by roads and railroad tracks carrying a high volume of motorized and rail traffic;

collectively, these transportation facilities encroach closely on the battlefield borders, perhaps discouraging use of the battlefield by some species of birds and certainly limiting how well bird vocalizations can be heard from within the battlefield boundaries. Urban development also closely approaches the battlefield boundaries in many areas around the battlefield and probably inhibits the presence of some bird species.

Breeding Species Inventoried

Evidence of breeding by species using the unit was divided into three categories: possible evidence; probable evidence; and confirmed evidence. In all, 80 species (Table 1) were placed in one of these categories, including 21 (26%) possible breeders, 25 (31%) probable breeders, and 34 (43%) confirmed breeders.

Point counts were conducted during the breeding period of many species. A total of 56 species was registered during point counts conducted during 2003, while 55 species were detected during point counts conducted in 2004. In all, point count effort led to data for 66 species of birds (Table 2), nearly all of which use STRI during most breeding seasons. Detailed data from the point counts are provided in a supplemental Excel file submitted in conjunction with this report.

Species Composition of the Isolated Units

Generally speaking, the larger and more diverse in habitat a site is, the larger the number of bird species that will be found in it. This rule of thumb was generally borne out by the data obtained during this survey; i.e., the largest subunits of STRI—the main battlefield and the artillery monument—tended to

support the greatest number of species, while Fortress Rosecrans supported a smaller number, and the Redoubt Brannan and the headquarters for Generals Bragg and Rosecrans the smallest numbers.

Discussion

Comparative Effectiveness of Survey Techniques

Each of the five survey techniques used for this inventory was effective for its purpose, but in terms of generating the largest number of species per unit of time expended, the general inventory was probably the most effective, followed by the migration walk and the point count (for breeding species only). Due to their restricted emphasis, night surveys and raptor surveys generated fewer species per unit of time expended.

Influence of Weather on Results

An effort was made to visit STRI during periods when the weather was conducive for registering the maximum number of species during general inventory work, migration walks, point counts, night surveys, and raptor surveys, so the influence of weather on the results of the overall inventory was generally positive. However, the spring and fall seasons occurring during the inventory period were characterized by a general lack of very strong frontal passages that oftentimes produce “fall-outs” of migrant species in large numbers and diversity; lack of such fronts probably reduced the overall species total achieved by the inventory somewhat.

In May and June of each year of the inventory, rainfall was much greater than average, resulting in high water or flooding in the Stones River. In years when such conditions are not present, species such as Wood Duck, Great Blue Heron, Belted Kingfisher, and Louisiana Waterthrush may be present along the river in greater abundance than during the years of the inventory period.

The two winter seasons of the inventory period were fairly mild, causing a few records of lingering migrants and breeders, but neither winter was notable as an irruption winter for boreal species such as Rough-legged Hawk, Red-breasted Nuthatch, American Tree Sparrow, and Evening Grosbeak. When such winters occur in the future, these and perhaps other boreal irruptives might be found within the battlefield.

Description of Bird Diversity in Terms of Estimated and Observed Species Richness

As a result of a number of factors--including agricultural use of much of the battlefield's property, the relatively small size of the battlefield, the battlefield's being subdivided into many even smaller parcels, and the encroachment of a growing town around the edges of the battlefield--species richness in the park was initially not estimated to be high. Given these factors, species richness as determined by the results of the inventory is moderately good, and it might be improved if some changes in the maintenance of the battlefield are instituted.

Species that use grassland and shrub-scrub habitats were well represented in the battlefield. Their populations may be further increased by shifting of all leased fields from soybean to native grasslands, some of which

could be allowed to grow up into early shrub-scrub habitat before being burned or mowed. [Note: This shift in field use began during spring 2005 following the inventory period.]

Unexpected Results

The relatively dense population of Grasshopper Sparrows in the grasslands of the parks was a somewhat unexpected and desirable result of the inventory. The detection of Bewick's Wren and Lark Sparrow was also somewhat unexpected, given the limited appropriate habitat for each remaining in the unit. Also somewhat unexpected was the presence of Chuck-will's-widows within the battlefield, as was the presence of two nesting pairs of Red-tailed Hawks and a likely pair of Cooper's Hawks. The field and shrub-scrub habitat within the battlefield units harbored unexpectedly dense breeding populations of some species of songbirds with declining populations in Tennessee and the Southeast, including Prairie Warbler, Yellow-breasted Chat, Eastern Towhee, and Field Sparrow. During winter this habitat was also used in greater than expected numbers by flocks of robins, pipits, sparrows, and blackbirds.

Birds Not Found

Few regularly occurring species were entirely absent from the battlefield, but two species—Barred Owl and Pileated Woodpecker—were detected in much lesser density than initially expected. After inventorying the site, we see that suitable habitat for them is marginal in the battlefield and their scarcity understandable; most likely the park is too small and too close to urban elements

to support Barred Owls, which require large tracts of older trees for breeding; as the area of the park along the river near the AM matures (and possibly increases in extent), Pileated Woodpeckers may become more abundant there than they now are.

Warblers were generally present in smaller numbers as breeders than was initially expected to be the case, but habitat for most of them is also limited or absent.

Recommendations for Management and Protection of Significant Habitats

The grassland and cedar glade habitats of the park deserve attention; the continued expansion of the former habitat by conversion of cropland to native grassland and the maintenance of the latter are recommended management strategies in the future. During spring of 2005 the Resource Management Office began the process of transferring lands previously leased to native grass fields; we urge the Resource Management Office to continue this process. The native grassfields should be maintained by annual burning or use of a bushhog during late winter and early spring. Maximum benefit to birds would be obtained if this work were to be accomplished February 1-March 15 or August 15-September 1; it is crucial not to perform this work during the Grasshopper Sparrow's breeding period, which typically begins about mid-April and extends into mid-August.

Special emphasis should be placed on maintaining as much acreage as possible in shrub-scrub habitat, as this habitat is vital to many declining songbird species that breed in it, and it is also vital to the post-fledging success of many songbird species that breed in nearby forested areas. Shrub-scrub habitat

should ideally be maintained in the range of 1-3 meters; such maintenance can often be performed at the same time that maintenance of grassfields is performed.

Controlled burns might be employed to open the very dense undergrowth in the deciduous forests of the main installation and the AM; opening of the understory would encourage woodpeckers, Wood Thrushes, and some species of warblers.

As many standing dead snags as possible should be left in the park, as these encourage the presence of Pileated Woodpeckers and many other cavity-building and cavity-using species. Plantings of American holly might also encourage Pileated Woodpeckers, as well as migrant thrushes. Pokeberry is a good plant to encourage, as it provides berries to numerous species of birds and other wildlife.

Development of a wetland at the AM within the old quarry area would broaden species diversity at all seasons. Ducks, herons, rails, Sedge Wrens, and Henslow's and Le Conte's sparrows are species that might occur. Breeding warblers that might benefit from such a wetland include Yellow Warbler, Common Yellowthroat, Yellow-breasted Chat, and possibly others, such as American Redstart and Kentucky and Hooded Warblers.

If any woodlands are cleared in the battlefield in the future, consideration should be given to leaving large slash-piles to decompose naturally; these slash-piles may attract breeding Bewick's Wrens, a much diminished species that still retains a small population in Rutherford County. Wood debris piles placed near

cannons and grassy area may be even more encouraging to Bewick's Wrens, which used such areas at Shiloh National Military Park and Chickamauga National Battlefield.

Suitability of Habitat for Persistence of Sensitive Species

The fairly extensive grasslands within the battlefield will probably allow a breeding population of Grasshopper Sparrows to persist. Areas of wet grassy fields might also encourage the presence of Henslow's and Le Conte's sparrows during migration.

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Appendix A: Tables

Table 1. Species, status, and seasonal abundance of birds observed at Stones River National Battlefield, Rutherford County, Tennessee, from 17 April 2003 through 28 April 2005. * = possible breeding evidence noted; ** = probable breeding evidence noted; *** = confirmed breeding evidence noted. Key to abbreviations: PR = permanent resident; SR = summer resident; TR = transient; VR = visitor; WR = winter resident; C = common; FC = fairly common; U = uncommon; R = rare.

Common Name	Scientific Name	Status	Spr	Sum	Fall	Wint
Canada Goose ***	<i>Branta canadensis</i>	PR	U	U	VU	U
Wood Duck ***	<i>Aix sponsa</i>	PR	U	U	VU	U
Gadwall	<i>Anas strepera</i>	WR	R			
Mallard ***	<i>Anas platyrhynchos</i>	PR	U	U	U	U
Common Goldeneye	<i>Bucephalus clangula</i>	TR				R
Wild Turkey ***	<i>Meleagris gallopavo</i>	PR	U	U	U	U
Northern Bobwhite **	<i>Colinus virginianus</i>	PR	U	U	VU	U
Pied-billed Grebe	<i>Podilymbus podiceps</i>	VR	VU			
Great Blue Heron *	<i>Ardea herodias</i>	PR	U	U	U	U
Green Heron *	<i>Butorides virescens</i>	SR	U	U	VU	
Black Vulture *	<i>Coragyps atratus</i>	PR	U	U	U	U
Turkey Vulture *	<i>Cathartes aura</i>	PR	FC	FC	FC	U
Osprey	<i>Pandion haliaetus</i>	TR	R			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	VR				R
Northern Harrier	<i>Circus cyaneus</i>	TR				VU
Sharp-shinned Hawk	<i>Accipiter striatus</i>	TR	U		VU	R
Cooper's Hawk **	<i>Accipiter cooperii</i>	PR	U	U	VU	VU
Red-shouldered Hawk **	<i>Buteo lineatus</i>	PR	U	U	U	U
Broad-winged Hawk *	<i>Buteo platypterus</i>	SR	U	U	U	
Red-tailed Hawk ***	<i>Buteo jamaicensis</i>	PR	U	U	U	U
American Kestrel **	<i>Falco sparverius</i>	PR	VU	U	VU	VU
Killdeer ***	<i>Charadrius vociferus</i>	PR	U	U	U	U
Spotted Sandpiper	<i>Actitis macularius</i>	TR	U			

Wilson's Snipe	<i>Gallinago delicata</i>	WR	R		R	R
American Woodcock **	<i>Scolopax minor</i>	PR	U	U	VU	U
Ring-billed Gull	<i>Larus delawarensis</i>	TR	U			FC
Rock Pigeon ***	<i>Columba livia</i>	PR	U	U	U	U
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	VR		R	R	
Mourning Dove **	<i>Zenaida macroura</i>	PR	FC	FC	FC	U
Yellow-billed Cuckoo **	<i>Coccyzus americanus</i>	SR	U	U	U	
Eastern Screech-Owl **	<i>Otus asio</i>	PR	U	U	U	U
Great Horned Owl **	<i>Bubo virginianus</i>	PR	U	U	U	U
Barred Owl	<i>Strix varia</i>	UN		R		
Common Nighthawk ***	<i>Chordeiles minor</i>	VR	U	U	U	
Chuck-will's-widow **	<i>Caprimulgus carolinensis</i>	SR	U	U	VU	
Chimney Swift **	<i>Chaetura pelagica</i>	SR	U	U	U	
Ruby-throated Hummingbird *	<i>Archilochus colubris</i>	SR	VU	VU	VU	
Belted Kingfisher ***	<i>Ceryle alcyon</i>	PR	U	U	VU	VU
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	VR	R		VU	VU
Red-bellied Woodpecker ***	<i>Melanerpes carolinus</i>	PR	U	U	U	U
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	WR	R		U	U
Downy Woodpecker ***	<i>Picoides pubescens</i>	PR	U	U	FC	FC
Hairy Woodpecker	<i>Picoides villosus</i>	VR	VU	VU	VU	VU
Northern Flicker *	<i>Colaptes auratus</i>	PR	VU	VU	FC	FC
Pileated Woodpecker	<i>Dryocopus pileatus</i>	PR				VU
Eastern Wood-Pewee **	<i>Contopus virens</i>	SR	U	U	U	
Acadian Flycatcher *	<i>Empidonax vireescens</i>	SR	R	VU		
Eastern Phoebe ***	<i>Sayornis phoebe</i>	PR	U	U	U	VU
Great Crested Flycatcher **	<i>Myiarchus crinitus</i>	SR	U	U	VU	
Eastern Kingbird ***	<i>Tyrannus tyrannus</i>	SR	U	U		
Loggerhead Shrike	<i>Lanius ludovicianus</i>	VR				R
White-eyed Vireo **	<i>Vireo griseus</i>	SR	U	FC	U	
Yellow-throated Vireo *	<i>Vireo flavifrons</i>	SR	U	U	U	

Blue-headed Vireo	<i>Vireo solitarius</i>	TR	VU				
Warbling Vireo	<i>Vireo gilvus</i>	TR	R				
Philadelphia Vireo	<i>Vireo philadelphicus</i>	TR				R	
Red-eyed Vireo **	<i>Vireo olivaceus</i>	SR	U	U	U		
Blue Jay ***	<i>Cyanocitta cristata</i>	PR	FC	FC	FC	FC	FC
American Crow *	<i>Corvus brachyrhynchos</i>	PR	FC	C	C	C	
Horned Lark	<i>Eremophila alpestris</i>	VR					R
Purple Martin **	<i>Progne subis</i>	VR	U	U			
Tree Swallow *	<i>Tachycineta bicolor</i>	SR	VU	VU			
N. Rough-winged Swallow **	<i>Stelgidopteryx serripennis</i>	SR	U	U			
Cliff Swallow	<i>Hirundo pyrrhonota</i>	TR	VU				
Barn Swallow ***	<i>Hirundo rustica</i>	SR	U	FC	U		
Carolina Chickadee ***	<i>Poecile carolinensis</i>	PR	FC	FC	FC	FC	FC
Tufted Titmouse ***	<i>Baeolophus bicolor</i>	PR	FC	FC	FC	FC	FC
White-breasted Nuthatch **	<i>Sitta carolinensis</i>	PR	U	U	U	U	
Carolina Wren ***	<i>Thryothorus ludovicianus</i>	PR	FC	C	FC	FC	
Bewick's Wren *	<i>Thryomanes bewickii</i>	UN		R			
House Wren *	<i>Troglodytes aedon</i>	VR	VU	VU	R	R	
Winter Wren	<i>Troglodytes troglodytes</i>	WR	R				R
Sedge Wren	<i>Cistothorus platensis</i>	TR	R				R
Golden-crowned Kinglet	<i>Regulus satrapa</i>	WR	VU				U
Ruby-crowned Kinglet	<i>Regulus calendula</i>	VR	U		U	R	
Blue-gray Gnatcatcher ***	<i>Polioptila caerulea</i>	SR	FC	FC	U		
Eastern Bluebird ***	<i>Sialis sialis</i>	PR	C	C	C	U	
Veery	<i>Catharus fuscescens</i>	TR	U		VU		
Gray-cheeked Thrush	<i>Catharus minimus</i>	TR				R	
Swainson's Thrush	<i>Catharus ustulatus</i>	TR	U		U		
Hermit Thrush	<i>Catharus guttatus</i>	WR	VU		VU	U	
Wood Thrush **	<i>Hylocichla mustelina</i>	SR	FC	VU	U		

American Robin ***	<i>Turdus migratorius</i>	PR	U	FC	C	A
Gray Catbird	<i>Dumetella carolinensis</i>	TR	U		U	R
Northern Mockingbird ***	<i>Mimus polyglottus</i>	PR	U	U	U	U
Brown Thrasher ***	<i>Toxostoma rufum</i>	PR	U	U	U	U
European Starling ***	<i>Sturnus vulgaris</i>	PR	C	A	A	A
American Pipit	<i>Anthus rubescens</i>	WR			VU	VU
Cedar Waxwing *	<i>Bombycilla cedrorum</i>	TR	U	VU	U	FC
Blue-winged Warbler	<i>Vermivora pinus</i>	TR			VU	
Tennessee Warbler	<i>Vermivora peregrina</i>	TR	U		U	
Orange-crowned Warbler	<i>Vermivora celata</i>	TR			R	
Northern Parula *	<i>Parula americana</i>	SR	U	VU	VU	
Yellow Warbler	<i>Dendroica petechia</i>	TR	U			
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	TR	U		U	
Magnolia Warbler	<i>Dendroica magnolia</i>	TR	VU		U	
Cape May Warbler	<i>Dendroica tigrina</i>	TR	U			
Yellow-rumped Warbler	<i>Dendroica coronata</i>	WR	FC		FC	FC
Black-throated Green Warb.	<i>Dendroica virens</i>	TR	VU		VU	
Blackburnian Warbler	<i>Dendroica fusca</i>	TR	U			
Yellow-throated Warbler	<i>Dendroica dominica</i>	SR	U	VU	VU	
Pine Warbler	<i>Dendroica pinus</i>	TR	U		VU	
Prairie Warbler **	<i>Dendroica discolor</i>	SR	FC	U	U	
Palm Warbler	<i>Dendroica palmarum</i>	TR	U		U	
Bay-breasted Warbler	<i>Dendroica castanea</i>	TR			U	
Blackpoll Warbler	<i>Dendroica striata</i>	TR	U			
Cerulean Warbler	<i>Dendroica cerulea</i>	TR	VU			
Black-and-white Warbler	<i>Mniotilta varia</i>	TR	U		U	
American Redstart	<i>Setophaga ruticilla</i>	TR	U		U	
Prothonotary Warbler *	<i>Protonotaria citria</i>	SR	VU	VU	VU	

Worm-eating Warbler	<i>Helminthos vermivorum</i>	TR	VU		VU	
Ovenbird	<i>Seiurus aurocapillus</i>	TR	U		U	
Northern Waterthrush	<i>Seiurus noveboracensis</i>	TR	VU			
Louisiana Waterthrush	<i>Seiurus motacilla</i>	TR	R			
Kentucky Warbler *	<i>Oporornis formosus</i>	SR	U	VU	VU	
Common Yellowthroat **	<i>Geothlypis trichas</i>	SR	FC	FC	U	
Hooded Warbler *	<i>Wilsonia citrina</i>	SR	U	U	U	
Wilson's Warbler	<i>Wilsonia pusilla</i>	TR			VU	
Canada Warbler	<i>Wilsonia canadensis</i>	TR			VU	
Yellow-breasted Chat **	<i>Icteria virens</i>	SR	FC	FC		
Summer Tanager **	<i>Piranga rubra</i>	SR	U	U	U	
Scarlet Tanager	<i>Piranga olivacea</i>	TR	U		U	
Eastern Towhee ***	<i>Pipilo erythrophthalmus</i>	PR	FC	FC	U	U
Chipping Sparrow ***	<i>Spizella passerina</i>	PR	U	U	U	VU
Field Sparrow ***	<i>Spizella pusilla</i>	PR	C	FC	U	FC
Lark Sparrow *	<i>Chondestes grammacus</i>	UN	R	R		
Savannah Sparrow	<i>Passerculus sandwichensis</i>	WR	U		VU	U
Grasshopper Sparrow ***	<i>Ammodramus savannarum</i>	SR	U	FC	R	
Fox Sparrow	<i>Passerella iliaca</i>	WR	VU			VU
Song Sparrow *	<i>Melospiza melodia</i>	PR	U	U	U	FC
Lincoln's Sparrow	<i>Melospiza lincolni</i>	TR	R		VU	R
Swamp Sparrow	<i>Melospiza georgiana</i>	WR	U		U	U
White-throated Sparrow	<i>Zonotrichia albicollis</i>	WR	U	R	U	A
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	TR	R		R	
Dark-eyed Junco	<i>Junco hyemalis</i>	WR	VU		VU	FC
Northern Cardinal ***	<i>Cardinalis cardinalis</i>	PR	A	A	A	A
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	TR	U		U	
Blue Grosbeak **	<i>Passerina caerulea</i>	SR	FC	FC	U	

Indigo Bunting ***	<i>Passerina cyanea</i>	SR	A	A	U	
Dickcissel	<i>Spiza americana</i>	SR	R			
Red-winged Blackbird ***	<i>Agelaius phoeniceus</i>	PR	U	U	U	A
Eastern Meadowlark *	<i>Sturnella magna</i>	PR	U	U	U	U
Rusty Blackbird	<i>Euphagus carolinus</i>	VR	U			VU
Common Grackle ***	<i>Quiscalus quiscula</i>	PR	FC	C	A	A
Brown-headed Cowbird ***	<i>Molothrus ater</i>	PR	FC	FC	U	A
Orchard Oriole ***	<i>Icterus spurius</i>	SR	U	U		
Baltimore Oriole	<i>Icterus galbula</i>	TR	U			
Purple Finch	<i>Carpodacus purpureus</i>	WR	R			U
House Finch **	<i>Carpodacus mexicanus</i>	PR	U	U	U	A
Pine Siskin	<i>Carduelis pinus</i>	VR				U
American Goldfinch **	<i>Carduelis tristis</i>	PR	FC	C	FC	FC
House Sparrow	<i>Passer domesticus</i>	UN	U			U

Table 2. Species registered during point counts conducted at 15 stops (10 minutes each) during 2003 and 2004. Greater detail about the results of these point counts is provided in the Excel file that supplements this report.

Species	2003		2004	
	Stops	Inds	Stops	Inds
Canada Goose	1	4	--	--
Wood Duck	1	1	--	--
Wild Turkey	2	2	2	3
Northern Bobwhite	1	1	5	6
Great Blue Heron	1	2	--	--
Green Heron	1	1	1	1
Cooper's Hawk	1	1	1	1
Red-shouldered Hawk	1	1	--	--
Broad-winged Hawk	1	1	--	--
Red-tailed Hawk	--	--	1	1
American Kestrel	1	1	--	--

Killdeer	1	1	1	1
Rock Pigeon	1	6	--	--
Mourning Dove	3	4	7	9
Yellow-billed Cuckoo	--	--	4	4
Common Nighthawk	1	1	2	2
Chuck-will's-widow	--	--	1	1
Chimney Swift	3	5	2	13
Belted Kingfisher	1	1	--	--
Red-bellied Woodpecker	6	7	5	7
Downy Woodpecker	5	8	3	3
Northern Flicker	--	--	3	3
Eastern Wood-Pewee	3	3	4	4
Eastern Phoebe	3	3	1	2
Great Crested Flycatcher	2	2	4	6
Eastern Kingbird	3	4	1	2
White-eyed Vireo	2	2	1	1
Yellow-throated Vireo	1	1	2	2
Red-eyed Vireo	3	3	2	2
Blue Jay	11	25	8	20
American Crow	10	32	7	24
Purple Martin	1	2	4	10
N. Rough-winged Swallow	2	4	2	3
Barn Swallow	1	1	--	--
Carolina Chickadee	7	14	12	23
Tufted Titmouse	13	26	11	21
White-breasted Nuthatch	--	--	1	1
Carolina Wren	10	24	15	58
House Wren	--	--	1	1
Blue-Gray Gnatcatcher	2	4	9	16
Eastern Bluebird	4	5	5	7
Wood Thrush	--	--	1	1
American Robin	3	3	7	10
Northern Mockingbird	4	4	4	4
Brown Thrasher	4	4	5	7
European Starling	5	46	4	28
Northern Parula	1	1	1	1
Prairie Warbler	1	1	4	4
Kentucky Warbler	--	--	1	1
Common Yellowthroat	4	8	4	4
Hooded Warbler	1	1	--	--
Yellow-breasted Chat	2	4	3	3
Summer Tanager	2	2	1	1
Eastern Towhee	9	27	10	46
Chipping Sparrow	--	--	3	8
Field Sparrow	11	25	12	36

Grasshopper Sparrow	2	4	--	--
Northern Cardinal	13	58	14	78
Blue Grosbeak	2	2	7	11
Indigo Bunting	12	45	12	48
Red-winged Blackbird	3	7	2	4
Eastern Meadowlark	1	1	1	1
Common Grackle	11	41	7	23
Brown-headed Cowbird	7	19	8	17
Orchard Oriole	--	--	1	1
American Goldfinch	6	17	7	16