Effects of Site Management on the Avian Fauna of the Babe Woodyard State Natural Area, Vermilion County, Illinois

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Introduction

The Illinois Department of Natural Resources (IDNR) has recently acquired and begun development of the Babe Woodyard State Natural Area (BWSNA) in Vermilion Co., Illinois (Figure 1). In 1995 and 1996, at the request of IDNR, I conducted an inventory of the existing bird community in the BWSNA, with an emphasis on interior woodland species and a report was submitted to IDNR on 13 January 1997 (Amundsen 1997). IDNR used the information provided by this report to assist in the formulation of the management plan for this property. The management plan includes the development of recreational trails and a primitive campground, the removal of multiflora rose (*Rosa multiflora*) and fescue grass (*Festuca pratensis*) in old pastures, and the planting of trees in former row-crop fields within the site.

Anthropogentic changes have greatly altered the original landscape of the BWSNA. Areas strip-mined during the early part of the 20th century have largely reverted back to mature forest. However, agricultural inholdings and access roads still fragment the site. The predominance of edge associated with fragmentation has been shown to have adverse impacts on the breeding productivity of birds nesting near these edges through an increased potential of parasitism by Brown-headed Cowbirds and higher predation rates (Askins 1994, Rich et al. 1994, Ortega and Capen 1999). Studies indicate that some forest interior birds avoid breeding near edges or nest at lower densities in the vicinity of narrow hiking trails (Hickmann 1990, Fletcher et al. 1999, Fernandaz-Juric 2000).

Tree planting in peripheral and interior old fields is being carried out with the intent of increasing the amount of forest core area. As the habitat structure progresses from oldfield through shrubland to closed woodland, a transition in the avian community composition is expected to occur. Grassland bird species would gradually be replaced by shrubland species which in turn would be replaced by forest interior species (Karr 1968). It would also be predicted that forest interior bird already present in the existing forest, especially area sensitive species (i.e. species that avoid forests that are less than a specific size), will increase in number in the larger woodland tracts created by the reforestation of the oldfields (Askins and Philbrick 1987, Blake and Karr 1984, Wenny et al. 1993).

This study was designed primarily to produce a baseline data set that could be used to gauge the impact on the avian community produced by the development of this site.

Study Area and Methods

The Babe Woodyard State Natural Area is located in southeast Vermilion County, 4.8 km southeast of Georgetown, 19.3 km south of Danville and 3.2 km west of the Illinois-Indiana state line. This 423 ha site was once the property of the Peabody Coal Company, and a number of segments were strip-mined during the first half of the 20th century. Agricultural row-crop fields were also located on this site. Upland and floodplain forests are mainly confined to heavily ravined areas and to areas that border the Little Vermilion River which flows through the property.

Thirty five census points were established, including some that were selected from points visited during the 1995/96 survey and newly established points within the former row-cropped fields and areas not previously surveyed that will contain hiking trails and other developement (Figures 2 & 3). Census points were categorized into four habitat types: forest, edge (between forest and oldfield), oldfield and wetland (Table 1). All oldfields censused were recently planted or will be soon be planted with hardwood tree saplings in accordance with the management plan to increase forest core area. Forested census points were further differentiated by proposed management treatments: forest with existing trail (5 points), forest with no planned development (7 points), forest with proposed trail development (4 points) and a proposed campground (1 point). Census points at edges were also further differentiated into two categories: edge with no trail proposed and edge with proposed trail. Legal descriptions of these points are given in Table 2. A brief description of the habitat surrounding each census point is provided in Table 3. All points were visited twelve times over a twelve month period.

I divide the year into four census seasons corresponding to major periods of the avian life cycle in the Midwest (Table 4). Because of the migratory habits of birds, each of these seasons is expected to have a different and distinctive complement of resident species. Four censuses were made during the fall season, two during the winter season, two during the spring season and four during the breeding season. During these visits I used modified point-counts (Ralph et al. 1995) to determine community composition. I recorded all individuals seen or heard within a range of 75 m (including birds seen flying over) during the ten-minute count periods. Censuses were conducted between one half hour before sunrise and 11:00 am on days without appreciable wind or rain. These timed counts provide measures of the structure of the bird communities (number of individuals and

number of species) within the various habitat types. In order to facilitate comparisons between samples of uneven size, the mean number of birds per point in each treatment type was calculated by dividing the total number of birds recorded in each treatment type by the number of points located in each treatment and by the number of visits per season. The complete results of the timed censuses are provided in Appendix A.

Results

One hundred twenty eight species representing 38 families were recorded at the BWSNA during the twelve months of this study (Table 5). This total included two Illinois endangered species, the Northern Harrier and the Henslow's Sparrow; two Illinois threatened species, the Bald Eagle, which is also Federally threatened, and the Brown Creeper; and three Illinois watch-list species, the Common Snipe, the Golden-winged Warbler and the Cerulean Warbler.

Breeding Season

Forest Census Points: Sixty one species were recorded during the breeding season survey period at census points located in forested habitats (Table 6). Fifty three of these species were observed at census points that are located in areas that will be left undisturbed or in areas that are scheduled for management treatments (i.e. trail or campground development) but are presently relatively undisturbed. The mean number of birds recorded per visit to these points was 10.23. Forty five species were recorded at points located on existing roads or trails in forested sections of the BWSNA. The mean number of birds at these points was 10.30 birds per visit. Two Illinois Watch-list species, the Golden-winged Warbler, recorded at Census Point 11, and the Cerulean Warbler, recorded at Census Points 19 and 34, were observed during the breeding season survey.

Edge Census Points: Fifty five species were recorded during the breeding season census period at census points situated on edges (Table 7). The mean number of birds recorded per visit at all points was 10.31. The mean number of birds recorded at points located at sites with no planned development and sites scheduled for trail development was 10.00 and 10.63 birds per visit respectively. One Illinois endangered species, the Henslow's Sparrow, was recorded at Census Point 25 during the breeding season survey period.

Oldfield Census Points: Fourteen species were recorded during the breeding season survey at census points located in oldfields (Table 8). The mean number of birds recorded per visit at these points was 7.25. One Illinois endangered species, the Henslow's Sparrow, was recorded at Census Point 26 during the breeding season survey period.

Wetland Census Point: Eight species were recorded in the wetland during the breeding season survey period (Table 9) . The mean number of birds recorded per visit was 7.75.

Fall Season

Forest Census Points: Forty seven species were recorded during the fall season survey period at census points located in forested habitats (Table 10). Thirty six of these species were observed at census points located in areas that will be left undisturbed or in areas that are scheduled for management treatments (i.e. trails or campground development) but are presently relatively undisturbed. The mean number of birds recorded per visit to these points was 6.49. Thirty one species were recorded at points located on existing roads or trails in forested sections of the BWSNA. The mean number of birds at these points was 5.95 birds per visit. One Illinois Watch-list species, the Golden-winged Warbler, was recorded during the fall season survey at census point 11.

Edge Census Points: Forty one species were recorded during the fall season census period at census points situated on edges (Table 11). The mean number of birds recorded per visit at all points was 4.99. The mean number of birds recorded at points located at sites scheduled for no development and sites scheduled for trail development was 4.13 and 5.86 birds per visit, respectively. No Illinois or federally listed species were recorded during the fall season survey period at edge points.

Oldfield Census Points: Twenty species were recorded during the fall season survey at census points located in oldfields (Table 12). The mean number of birds recorded per visit at these points was 1.96. No listed species were recorded during the timed censuses at oldfield census points.

Wetland Census Point: Eight species were recorded during the timed censuses conducted in the wetland during the fall season survey period (Table 13) . The mean number of birds recorded per visit was 3.00. One Illinois endangered species, the

Northern Harrier, was recorded during the timed censuses conducted during the fall census period at the wetland.

Winter Season

Forest Census Points: Sixteen species were recorded during the winter season survey period at census points located in forested habitats (Table 14). Fourteen of these species were observed at census points that are located in areas that will be left undisturbed or in areas that are scheduled for management but are presently relatively undisturbed treatments (i.e. trails or campground development). The mean number of birds recorded per visit to these points was 4.52. Ten species were recorded at points located on existing roads or trails in forested sections of the BWSNA. The mean number of birds at these points was 4.50 birds per visit. No listed species were recorded at forest census points during the winter season survey.

Edge Census Points: Thirteen species were recorded during the winter season census period at census points situated on edges (Table 14). The mean number of birds recorded per visit at all points was 5.11. The mean number of birds recorded at points located at sites scheduled for no development and sites scheduled for trail development was 5.00 and 5.21 birds per visit, respectively. No Illinois or federally listed species were recorded during the winter season survey period at edge points.

Oldfield Census Points: Five species were recorded during the winter season survey at census points located in oldfields (Table 16). The mean number of birds recorded per visit at these points was 0.71. No listed species were recorded within 75 m of an oldfield census point during the winter season timed censuses; however, one Northern Harrier (Illinois endangered) was observed foraging over the oldfield surrounding Census Point 20.

Wetland Census Point: Nine species were recorded in the wetland during the winter season survey period (Table 17) . The mean number of birds recorded per visit was 9.50. No listed species were recorded during the timed censuses conducted during the winter census period at the wetland.

Spring Season

Forest Census Points: Thirty species were recorded during the spring season survey period at census points located in forested habitats (Table 18). Twenty eight of these species were observed at census points that are located in areas that will be left undisturbed or in areas scheduled for management treatments (i.e. trails or campground development but presently relatively undisturbed. The mean number of birds recorded per visit to these points was 6.29. Nineteen species were recorded at points located on existing roads or trails in forested sections of the BWSNA. The mean number of birds at these points was 6.10 birds per visit. One Illinois threatened species, the Brown Creeper, was recorded at forest Census Point 19 during the spring season survey.

Edge Census Points: Thirty one species were recorded during the spring season census period at census points situated on edges (Table 19). The mean number of birds recorded per visit at all points was 6.38. The mean number of birds recorded at points located at sites scheduled for no development and sites scheduled for trail development was 6.75 and 6.00 birds per visit, respectively. No Illinois or federally listed species were recorded at edge points during the spring season survey period.

Oldfield Census Points: Eight species were recorded during the spring season survey at census points located in oldfields (Table 20). The mean number of birds recorded per visit at these points was 2.64. No listed species were recorded during the spring season timed censuses at oldfield census points.

Wetland Census Point: Four species were recorded in the wetland during the spring season timed censuses (Table 21) . The mean number of birds recorded per visit was 7.00. One Illinois Watch-list species, the Common Snipe, was recorded during the timed censuses conducted during the spring census period at the wetland.

Discussion

This study was designed basically to provided a baseline data set that can be used in future studies to gauge the impact of management practices on the avian community found within the BWSNA. However, the results of the present study can be used to describe the existing community and to predict changes induced by the management plan.

Forest census points: There was little difference between the mean number of birds detected at undisturbed sites and sites with an existing trail during any season (Tables 5, 9, 13 and 17). However, there was a slight, though most likely not significant, trend for forest interior species (i.e. Ovenbird, Red-eyed Vireo and Great Crested Flycatcher) to exhibit higher densities at undisturbed sites. Because the forests at the BWSNA are presently highly fragmented with little forest core area, it is not surprising that there is no easily discernible differences in community structure at sites with and without trails. Reduced winter season numbers were as expected with overall reduced densities and species richness at all treatments.

Three Brown Creepers were detected near Census Point 19 during the spring census period. These birds were most likely migrants and did not remain to breed at the BWSNA. This species was also detected at Census Points 10 and 12 during the fall survey period. These birds were also most likely migrants.

The Golden-winged Warbler, which does not breed in forested habitats, was detected during the early breeding season and was most likely a late migrant. One Cerulean Warbler was detected at Census Point 34 on 18 May 2000 and a second bird was recorded at Census Point 19 on 26 May. Because this species was not detected near these points during later surveys, it is most likely they were late migrants and did not breed at the BWSNA.

Edge census points: The composition of the avian community near proposed trails along the interface between the forest and reforested oldfields is expected to change as the planted trees mature. The composition is presently a mix of forest interior, edge and grassland species. As the oldfield passes through different seral stages there will be a corresponding progressive change in species composition culminating in a forest interior assemblage.

One Brown Creeper was observed foraging near Census Point 21 during the spring census period. This individual was a most likely a migrant which did not remain to breed at the BWSNA.

Oldfield census points: As the trees in the reforested oldfields approach maturity, it would be predicted that the densities and numbers of forest interior species will increase as the total core area of the forest grows.

A small population of Henslow's Sparrows resided in one oldfield, planted with sapling hardwood trees in 1999, during the breeding season (Figure). Oldfield Census Point 26 and edge Census Points 25 and 27 are located at this site. Because this field is being managed as a reforestation site and not a grassland, the vegetation structure will gradually become less conducive to attracting breeding Henslow's Sparrows.

One Northern Harrier was observed foraging over the oldfield containing Census Point 20. This individual was most likely a fall migrant and did not breed within the BWSNA.

Wetland census point: Few species used the existing wetland now located where the lake and reconstructed wetland are to be developed. One vagrant Northern Harrier, Illinois endangered, was flushed from the marsh during the winter survey. The one Illinois Watch-list species, the Common Snipe, detected during the spring census period was not recorded during the breeding season survey and most likely did not breed at this site.

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Table 1. Treatment classification of census points used during the 1999/2000 avian survey conducted at the Babe Woodyard State Natural Area, Vermilion County, Illinois.

Treatment Subtreatment	Census points
Forested Habitat	
No Development Proposed (NDP)	3, 10, 12, 17, 22, 28, 31, 33
Proposed Trail (PT)	5, 6, 29, 30
Proposed Campground (PC)	2
Existing Trail	1, 11, 16, 19, 34
Edge Habitat	
No Development Proposed (NDP)	13, 25
Proposed Trail (PT)	4, 7, 9, 15, 21, 23, 27
Oldfield Habitat Plantings (OHP)	8, 14, 18, 20, 24, 26, 35
Wetland (WC)	32

Table 2. Legal location of census points used during the 1999/2000 avian survey conducted at the Babe Woodyard State Natural Area, Vermilion County, Illinois.

Census Point	Legal Location
1	UTM Zone 16 4,424,600mN 450,175mE Vermilion Co., IL; T 18 N, R 11 E; Section 34, NW/4, SE/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
2	UTM Zone 16 4,424,750mN 450,300mE Vermilion Co., IL; T 18 N, R 11 E; Section 34, NE/4, SE/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
3	UTM Zone 16 4,424,650mN 450,400mE Vermilion Co., IL; T 18 N, R 11 E; Section 34, NE/4, SE/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
4	UTM Zone 16 4,424,200mN 450,350mE Vermilion Co., IL; T 17 N, R 11 E; Section 3, NE/4, NE/4, NE/4; Humrick, IL 7.5' series USGS topographic map.
5	UTM Zone 16 4,424,300mN 450,950mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NW/4, NE/4, NW/4; Humrick, IL 7.5' series USGS topographic map.
6	UTM Zone 16 4,424,350mN 451,200mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NE/4, NE/4, NW/4; Humrick, IL 7.5' series USGS topographic map.

Table 2 continued on following page

Table 2. Legal location of census points (continued).

Census Point	Legal Location
7	UTM Zone 16 4,424,525mN 451,375mE
	Vermilion Co., IL; T 18 N, R 11 E; Section 35, SW/4, SW/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
8	UTM Zone 16 4,424,600mN 451,600mE
	Vermilion Co., IL; T 18 N, R 11 E; Section 35, SE/4, SW/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
9	UTM Zone 16 4,424,500mN 451,675mE
	Vermilion Co., IL; T 18 N, R 11 E; Section 35, SE/4, SW/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
10	UTM Zone 16 4,424,075mN 451,600mE
	Vermilion Co., IL; T 17 N, R 11 E; Section 2, SE/4, NW/4, NE/4; Humrick, IL 7.5' series USGS topographic map.
11	UTM Zone 16 4,423,750mN 451,775mE
	Vermilion Co., IL; T 17 N, R 11 E; Section 2, SW/4, SE/4, NE/4; Humrick, IL 7.5' series USGS topographic map.
12	UTM Zone 16 4,423,350mN 452,100mE
	Vermilion Co., IL; T 17 N, R 11 E; Section 2, SE/4, NE/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
13	UTM Zone 16 4,423,300mN 451,950mE
	Vermilion Co., IL; T 17 N, R 11 E; Section 2, SE/4, NE/4, SE/4; Humrick, IL 7.5' series USGS topographic map.

Table 2 continued on following page

Table 2. Legal location of census points (continued).

Census Point	Legal Location
14	UTM Zone 16 4,423,300mN 451,800mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, SW/4, NE/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
15	UTM Zone 16 4,423,500mN 451,750mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NW/4, NE/4, SW/4; Humrick, IL 7.5' series USGS topographic map.
16	UTM Zone 16 4,423,300mN 451,575mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, SE/4, NW/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
17	UTM Zone 16 4,423,375mN 451,500mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NW/4, NW/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
18	UTM Zone 16 4,423,550mN 451,200mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, SE/4, NE/4, NW/4; Humrick, IL 7.5' series USGS topographic map.
19	UTM Zone 16 4,424,050mN 451,150mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NE/4, SE/4, SE/4; Humrick, IL 7.5' series USGS topographic map.
20	UTM Zone 16 4,423,925mN 450,250mE Vermilion Co., IL; T 17 N, R 11 E; Section 3, NW/4, SE/4, NE/4; Humrick, IL 7.5' series USGS topographic map.

Table 2 continued on following page

Table 2. Legal location of census points (continued).

Census Point	Legal Location
21	UTM Zone 16 4,423,925mN 450,475mE Vermilion Co., IL; T 17 N, R 11 E; Section 3, NE/4, SE/4, NE/4; Humrick, IL 7.5' series USGS topographic map.
22	UTM Zone 16 4,423,925mN 450,600mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NW/4, SW/4, NW/4; Humrick, IL 7.5' series USGS topographic map.
23	UTM Zone 16 4,423,875mN 450,600mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NW/4, SW/4, NW/4; Humrick, IL 7.5' series USGS topographic map.
24	UTM Zone 16 4,423,775mN 450,700mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NW/4, SW/4, NW/4; Humrick, IL 7.5' series USGS topographic map.
25	UTM Zone 16 4,423,550mN 450,900mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NE/4, NW/4, SW/4; Humrick, IL 7.5' series USGS topographic map.
26	UTM Zone 16 4,423,400mN 450,800mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NE/4, NW/4, SW/4; Humrick, IL 7.5' series USGS topographic map.
27	UTM Zone 16 4,423,425mN 450,900mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NW/4, NE/4, SW/4; Humrick, IL 7.5' series USGS topographic map.

Table 2 continued on following page

Table 2. Legal location of census points (continued).

Census Point	Legal Location
28	UTM Zone 16 4,423,400mN 451,075mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NW/4, NE/4, SW/4; Humrick, IL 7.5' series USGS topographic map.
29	UTM Zone 16 4,423,225mN 451,125mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, SE/4, NE/4, SW/4; Humrick, IL 7.5' series USGS topographic map.
30	UTM Zone 16 4,423,025mN 451,025mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, NW/4, SE/4, SW/4; Humrick, IL 7.5' series USGS topographic map.
31	UTM Zone 16 4,422,850mN 451,200mE Vermilion Co., IL; T 17 N, R 11 E; Section 2, SE/4, SE/4, SW/4; Humrick, IL 7.5' series USGS topographic map.
32	UTM Zone 16 4,423,450mN 450,250mE Vermilion Co., IL; T 17 N, R 11 E; Section 3, NW/4, NE/4, SW/4; Humrick, IL 7.5' series USGS topographic map.
33	UTM Zone 16 4,422,675mN 451,825mE Vermilion Co., IL; T 17 N, R 11 E; Section 11, NW/4, NE/4, NE/4; Humrick, IL 7.5' series USGS topographic map.
34	UTM Zone 16 4,422,600mN 452,000mE Vermilion Co., IL; T 17 N, R 11 E; Section 11, NE/4, NE/4, NE/4; Humrick, IL 7.5' series USGS topographic map.

Table 2 concluded on following page

Table 2. Legal location of census points (concluded).

Census Point	Legal Location
35	UTM Zone 16 4,422,650mN 452,325mE Vermilion Co., IL; T 17 N, R 11 E; Section 12, NW/4, NW/4, NW/4; Humrick, IL 7.5' series USGS topographic map.

Table 3. Description of habitat surrounding census points used during the 1999/2000 avian census conducted at the Babe Woodyard State Natural Area, Vermilion County, Illinois.

Census Point	Habitat Description
1	Abandoned railway right-of-way surrounded by upland forest. Proposed hard surface trail.
2	Open upland forest. Site of proposed primitive campground.
3	Open upland forest. No development planned.
4	Edge between abandoned bottomland field containing cedars and shrubs and narrow riparian woodland. Proposed hiking trail.
5	Upland forest. Proposed hiking trail.
6	Abandoned field shrubland. Proposed hiking trail.
7	Edge between upland forest and old field with grass, herbaceous cover and trees planted in 1997. No other development proposed.
8	Old field with grass and forb cover. Trees planted for reforestation in 1997.
9	Edge between upland forest and old field with grass, herbaceous cover and trees planted in 1997. Proposed hiking trail.
10	Upland forest. No proposed development.
11	Dirt access road surrounded by upland forest. Will be maintained as access road and hiking trail.
12	Upland forest. No development proposed.
13	Edge between upland forest and old field with grass, herbaceous cover and trees planted in 1997. No other development proposed.
14	Old field with grass and herbaceous and cover. Trees planted for reforestation in 1997.

Table 3 continued on following page

Table 3. Description of habitat Continued.

Census Point	Habitat Description
15	Edge between upland forest and oldfield with grass, herbaceous cover and trees planted in 1997. Proposed hiking trail.
16	Dirt access road surrounded by upland forest. Will be maintained as hiking trail.
17	Upland forest. No development proposed.
18	Bottomland oldfield with grass, herbaceous cover and trees planted in 1998. No other development proposed.
19	Dirt access road surrounded by bottomland forest. Will be maintained as hiking trail.
20	Oldfield with grass and herbaceous and cover. Trees planted for reforestation in 1999.
21	Edge between upland forest and oldfield with grass, herbaceous cover and trees planted in 1999. Proposed hiking trail.
22	Ravine forest below proposed dam and fishing lake.
23	Edge between upland forest and old field with grass, herbaceous cover and trees planted in 1999. No other development proposed.
24	Oldfield with grass and forb cover. Trees planted for reforestation in 1999.
25	Edge between upland forest and old field with grass, herbaceous cover and trees planted in 1999. No other development proposed.
26	Oldfield with grass and forb cover. Trees planted for reforestation in 1999.
27	Edge between upland forest and oldfield with grass, herbaceous cover and trees planted in 1999. Proposed hiking trail.

Table 3 concluded on following page

Table 3. Description of habitat concluded.

Census Point	Habitat Description
28	Upland forest. No development proposed.
29	Upland forest. No development proposed.
30	Upland forest. Proposed hiking trail.
31	Upland forest. No development proposed.
32	Existing grassland / wetland. Expanded wetland above proposed fishing lake.
33	Upland forest. No development proposed.
34	Access road surrounded by upland forest. Will be maintained as hiking trail.
35	Old pasture with grass and herbaceous cover. multiflora rose eradication area, burned in 1999. Proposed savanna creation.

Table 4. Inclusive dates defining the winter, spring, breeding and fall census seasons used during the avian survey at the Babe Woodyard State Natural Area, Vermilion County, Illinois.

Season	Inclusive dates
Winter	1 December to 28 February
Spring	1 March to 30 April
Breeding	1 May to 31 August
Fall	1 September to 30 November

Table 5. List of bird species observed during the 1995/1996 (Amundsen 1997) and 1999/2000 surveys conducted at Babe Woodyard State Natural Area, Vermilion County, Illinois. Nomenclature and taxonomic order from A.O.U. Check-list of North American Birds 1998.

Family / Subfamily	Common Name	*Scientific name*	Observed 95/96	Observed 99/00
Ardeidae				
	Great Blue Heron	*Ardea herodias*	X	X
	Green Heron	*Butorides virescens*		X
Cathartidae				
	Turkey Vulture	*Cathartes aura*	X	X
Anatidae				
Anserinae				
	Canada Goose	*Branta canadensis*	X	X
Anatinae				
	Wood Duck	*Aix sponsa*	X	X
	Mallard	*Anas platyrhynchos*	X	X
Accipteridae				
Acciptrinae				
	Bald Eagle FT IT	*Haliaeetus leucocephalus*		X
	Northern Harrier IE	*Circus cyaneus*		X
	Sharp-shinned Hawk	*Accipiter striatus*	X	X
	Cooper's hawk	*Accipiter cooperii*		X
	Broad-winged Hawk	*Buteo platypterus*		X
	Red-tailed Hawk	*Buteo jamaicensis*	X	X
	Rough-legged Hawk	*Buteo lagopus*	X	X
Falconidae				
Falconinae				
	American Kestrel	*Falco sparvius*	X	X

Table 5 continued on following page.

Table 5. List of bird species (continued).

Family / Subfamily	Common Name	*Scientific name*	Observed 95/96	Observed 99/00
Phasianidae				
Phasianinae				
	Ring-necked Pheasant IN	*Phasianus colchicus*	X	X
Meleagrindinae				
	Wild Turkey	*Meleagris gallopavo*	X	X
Odontophoridae				
	Northern Bobwhite	*Colinus virginianus*	X	X
Charadriidae				
	Killdeer	*Charadrius vociferus*	X	X
Scolopacidae				
	Common Snipe WL	*Gallinago gallinago*		X
	American Woodcock	*Scolopax minor*		X
Columbidae				
	Rock Dove IN	*Columbia livia*	X	
	Mourning Dove	*Zenaida macroura*	X	X
Cucuidae				
	Black-billed Cuckoo	*Coccyzus erthropthalmus*	X	
	Yellow-billed Cuckoo	*Coccyzus americanus*	X	X
Strigidae				
	Great Horned Owl	*Bubo virginianus*	X	X
	Barred Owl	*Strix varia*	X	X
Caprimulgidae				
	Common Nighthawk	*Chordeiles minor*	X	

Table 5 continued on following page.

Table 5. List of bird species (continued).

Family / Subfamily	Common Name	*Scientific name*	Observed 95/96	Observed 99/00
Trochilidae				
Trochilinae				
	Ruby-throated Hummingbird	*Archilochus colubris*	X	X
Alcedinidae				
Cerylinae				
	Belted Kingfisher	*Ceryle alcyon*	X	X
Picidae				
Picinae				
	Red-headed Woodpecker	*Melanerpes erythocephalus*	X	X
	Red-bellied Woodpecker	*Melanerpes carolinus*	X	X
	Yellow-bellied Sapsucker	*Sphyrapicus varius*	X	X
	Downy Woodpecker	*Picoides pubescens*	X	X
	Hairy Woodpecker	*Picoides villosus*	X	X
	Northern Flicker	*Colaptes auratus*	X	X
	Pileated Woodpecker	*Dryocopus pileatus*	X	X
Tyranidae				
Fluvicolinae				
	Eastern Wood-pewee	*Contopus virens*	X	X
	Acadian Flycatcher	*Empidonax virescens*	X	X
	Alder Flycatcher	*Empidonax alnorum*		X
	Least Flycatcher	*Empidonax mininus*	X	X
	Eastern Pheobe	*Sayornis pheobe*	X	X
Tyranninae				
	Great Crested Flycatcher	*Myiarchus crinitus*	X	X
	Eastern Kingbird	*Tyranus tyranus*	X	X

Table 5 continued on following page.

Table 5. List of bird species (continued).

Family / Subfamily	Common Name	*Scientific name*	Observed 95/96	Observed 99/00
Vireonidae				
	White-eyed Vireo	*Vireo griseus*	X	X
	Blue-headed (Solitary) Vireo	*Vireo solitarius*	X	
	Yellow-throated Vireo	*Vireo flavifrons*	X	X
	Warbling Vireo	*Vireo gilvus*	X	X
	Red-eyed Vireo	*Vireo olivaceus*	X	X
Corvidae				
	Blue Jay	*Cyanocitta cristata*	X	X
	American Crow	*Corvus brachyrhynchos*	X	X
Alaudidae				
	Horned Lark	*Eremophila alpestris*	X	X
Hirundinidae				
	Tree Swallow	*Tachycinete bicolor*		X
	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	X	X
	Barn Swallow	*Hirunda rustica*	X	X
Paridae				
	Carolina Chickadee	*Poecile carolinensis*	X	X
	Tufted Titmouse	*Baeolophus bicolor*	X	X
Sittidae				
	White-breasted Nuthatch	*Sitta carolinensis*	X	X
Certhidae				
	Brown Creeper IT	*Certhia americana*	X	X
Troglodytidae				
	Carolina Wren	*Thryothorus ludovicianus*	X	X
	House Wren	*Troglodytes aedon*	X	X
	Winter Wren	*Troglodytes troglodytes*	X	X
	Sedge Wren	*Cistothorus platenesis*		X

Table 5 continued on following page.

Table 5. List of bird species (continued).

Family / Subfamily	Common Name	*Scientific name*	Observed 95/96	Observed 99/00
Regulidae				
	Golden-crowned Kinglet	*Regulus satrapa*	X	X
	Ruby-crowned Kinglet	*Regulus calendula*	X	X
Sylviidae				
Polioptilinae				
	Blue-gray Gnatcatcher	*Polioptila caerulea*	X	X
Turdidae				
	Eastern Bluebird	*Sialis sialis*	X	X
	Veery	*Catharus fuscescens*	X	X
	Gray-cheeked Thrush	*Catharus minimus*	X	X
	Swainson's Thrush	*Catharus ustulatus*	X	X
	Hermit Thrush	*Catharus guttatus*	X	X
	Wood Thrush	*Hylocixhla mustelina*	X	X
	American Robin	*Turdus migratorius*	X	X
Mimidae				
	Gray Catbird	*Dumetella carolinensis*	X	X
	Northern Mockingbird	*Mimus polyglottos*		X
	Brown Thrasher	*Toxostoma rufum*	X	X
Sturnidae				
	European Starling IN	*Sturnus vulgaris*	X	X
Motacillidae				
	American Pipit	*Anthus rubescens*		X
Bombycillidae				
	Cedar Waxwing	*Bombycilla cedrorum*	X	X

Table 5 continued on following page.

Table 5. List of bird species (continued).

Family / Subfamily	Common Name	*Scientific name*	Observed 95/96	Observed 99/00
Parulidae				
	Blue-winged Warbler	*Vermivora pinus*	X	X
	Golden-winged Warbler WL	*Vermivora chrysoptera*	X	X
	Tennessee Warbler	*Vermivora peregrina*	X	X
	Orange-crowned Warbler	*Vermivora celata*	X	X
	Nashville Warbler	*Vermivora ruficapilla*	X	X
	Northern Parula	*Parula americana*	X	X
	Yellow Warbler	*Dendroica petechia*	X	X
	Chestnut-sided Warbler	*Dendroica pensyvanica*	X	X
	Magnolia Warbler	*Dendroica magnolia*	X	X
	Cape May Warbler	*Dendroica tigrina*	X	
	Yellow-rumped Warbler	*Dendroica coronata*	X	X
	Black-throated Green Warbler	*Dendroica virens*	X	X
	Blackburnian Warbler	*Dendroica fusca*	X	X
	Yellow-throated Warbler	*Dendroica dominica*	X	X
	Palm Warbler	*Dendroica palmarum*	X	X
	Bay-breasted Warbler	*Dendroica castania*	X	X
	Blackpoll Warbler	*Dendroica striata*	X	X
	Cerulian Warbler WL	*Dendroica cerulea*	X	X
	Black-and-white Warbler	*Mniotilta varia*	X	X
	American Redstart	*Setophaga ruticilla*	X	X
	Worm-eating Warbler	*Helmitheros vermivorus*	X	X
	Ovenbird	*Seiurus aurocapillus*	X	X
	Northern Waterthrush	*Seiurus noveboracensis*	X	X
	Louisiana Waterthrush	*Seiurus motacilla*	X	X
	Kentucky Warbler	*Oporornis formosus*	X	X
	Common Yellowthroat	*Geothlypis trichas*	X	X
	Wilson's Warbler	*Wilsonia pusilla*		X
	Canada Warbler	*Wilsonia canadensis*	X	
	Yellow-breasted Chat	*Icteria virens*	X	X
Thraupidae				
	Summer Tanager	*Piranga rubra*	X	X
	Scarlet Tanager	*Piranga olivacea*	X	X

Table 5 concluded on following page.

Table 5. List of bird species (concluded).

Family / Subfamily	Common Name	*Scientific name*	Observed 95/96	Observed 99/00
Emberizidae				
	Eastern Towhee	*Pipilo erythrophthalmus*	X	X
	American Tree Sparrow	*Spizella arborea*		X
	Chipping Sparrow	*Spizella passerina*	X	X
	Field Sparrow	*Spizella pusilla*	X	X
	Grasshopper Sparrow	*Ammodramus savannarum*		X
	Henslow's Sparrow IE	*Ammodramus henslowii*		X
	Fox Sparrow	*Passerella iliaca*	X	X
	Song Sparrow	*Melospiza melodia*	X	X
	Swamp Sparrow	*Meolspiza georgiana*	X	X
	White-throated Sparrow	*Zonotrichia albicollis*	X	X
	White-crowned Sparrow	*Zonotrichia leucophrys*		X
	Dark-eyed Junco	*Junco hyemalis*	X	X
Cardinalidae				
	Northern Cardinal	*Cardinalis cardinalis*	X	X
	Rose-breasted Grosbeak	*Pheucticus ludovicianus*	X	X
	Indigo Bunting	*Passerina cyanea*	X	X
	Dickcissel	*Spiza americana*		X
Icteridae				
	Red-winged Blackbird	*Agelaius phoeniceus*	X	X
	Eastern Meadowlark	*Sturnella magna*	X	X
	Common Grackle	*Quscalus quiscalus*	X	X
	Brown-headed Cowbird	*Molothrus ater*	X	X
	Baltimore Oriole	*Icterus galbula*	X	X
Fringillidae				
	Purple Finch	*Carpodacus purpureus*	X	X
	House Finch IN	*Carpodacus mexicanus*	X	X
	American Goldfinch	*Carduelis tristis*	X	X
Passeridae				
	House Sparrow IN	*Passer domesticus*	X	X

FT=Federally threatened
IE=Illinois endangered
IT=Illinois threatened
WL=Illinois watch-list
IN=Non-native Species

Table 6. List of bird species recorded at forested census points during the breeding season survey with mean number of birds recorded per visit at presently undisturbed sites and sites with an existing trail. A combined mean for all undisturbed sites is also given. NDP=No Development Planned; PT=Proposed Trail; PC=Proposed Campground; CM=Combined Means for presently undisturbed census points.

Species	Presently Undisturbed				Existing Trail
	NDP	PT	PC	CM	
Acadian Flycatcher	0.91	0.56	1.75	1.07	0.60
Eastern Wood-pewee	0.78	0.69	0.75	0.74	0.95
White-breasted Nuthatch	0.69	0.44	1.00	0.71	0.50
Brown-headed Cowbird	0.56	0.56	0.75	0.63	0.35
Northern Cardinal	0.75	0.69	0.25	0.56	0.60
Eastern Towhee	0.13	0.94	0.50	0.52	0.20
Ovenbird	0.34	0.13	1.00	0.49	0.25
Red-eyed Vireo	0.41	0.50	0.50	0.47	0.35
Great Crested Flycatcher	0.34	0.50	0.50	0.45	0.30
Tufted Titmouse	0.53	0.56	0.25	0.45	0.60
Indigo Bunting	0.41	0.44	0.50	0.45	0.40
Carolina Chickadee	0.28	0.94	0.00	0.41	0.40
House Wren	0.34	0.56	0.00	0.30	0.25
Wood Thrush	0.38	0.25	0.25	0.29	0.10
Blue-gray Gnatcatcher	0.16	0.13	0.50	0.26	0.40
Red-bellied Woodpecker	0.34	0.13	0.25	0.24	0.05
Yellow-billed Cuckoo	0.16	0.19	0.25	0.20	0.15
Downy Woodpecker	0.34	0.19	0.00	0.18	0.70
Blue Jay	0.06	0.13	0.25	0.15	0.25
Scarlet Tanager	0.25	0.19	0.00	0.15	0.25
Field Sparrow	0.00	0.38	0.00	0.13	0.05
Ruby-throated Hummingbird	0.13	0.19	0.00	0.10	0.15
Pileated Woodpecker	0.03	0.00	0.25	0.09	0.05
Common Yellowthroat	0.09	0.19	0.00	0.09	0.05
Red-headed Woodpecker	0.06	0.19	0.00	0.08	0.10
White-eyed Vireo	0.00	0.25	0.00	0.08	0.05
Swainson's Thrush	0.00	0.00	0.25	0.08	0.00
Common Grackle	0.00	0.00	0.25	0.08	0.00
Tennessee Warbler	0.09	0.13	0.00	0.07	0.00
Kentucky Warbler	0.09	0.13	0.00	0.07	0.10
Brown Thrasher	0.06	0.13	0.00	0.06	0.00
Northern Parula	0.06	0.13	0.00	0.06	0.40
Yellow-rumped Warbler	0.16	0.00	0.00	0.05	0.15
Black and White Warbler	0.03	0.13	0.00	0.05	0.00
Gray Catbird	0.06	0.06	0.00	0.04	0.15
European Starling	0.00	0.13	0.00	0.04	0.00

Table 6 concluded on following page.

Table 6. List of bird species (concluded).

Species	Presently Undisturbed				Existing Trail
	NDP	PT	PC	CM	
Yellow-throated Warbler	0.00	0.13	0.00	0.04	0.10
American Goldfinch	0.06	0.06	0.00	0.04	0.15
American Robin	0.09	0.00	0.00	0.03	0.05
Nashville Warbler	0.03	0.06	0.00	0.03	0.05
Wild Turkey	0.06	0.00	0.00	0.02	0.05
Eastern Pheobe	0.00	0.06	0.00	0.02	0.00
Louisiana Waterthrush	0.00	0.06	0.00	0.02	0.10
Broad-winged Hawk	0.03	0.00	0.00	0.01	0.00
Hairy Woodpecker	0.03	0.00	0.00	0.01	0.00
Northern Flicker	0.03	0.00	0.00	0.01	0.00
Yellow-throated Vireo	0.03	0.00	0.00	0.01	0.00
Gray-cheeked Thrush	0.03	0.00	0.00	0.01	0.00
Blackburnian Warbler	0.03	0.00	0.00	0.01	0.00
Blackpoll Warbler	0.03	0.00	0.00	0.01	0.00
Worm-eating Warbler	0.03	0.00	0.00	0.01	0.00
Rose-breasted Grosbeak	0.03	0.00	0.00	0.01	0.10
Baltimore Oriole	0.03	0.00	0.00	0.01	0.10
Cooper's Hawk	0.00	0.00	0.00	0.00	0.05
Least Flycatcher	0.00	0.00	0.00	0.00	0.05
Warbling Vireo	0.00	0.00	0.00	0.00	0.10
Carolina Wren	0.00	0.00	0.00	0.00	0.05
Blue-winged Warbler	0.00	0.00	0.00	0.00	0.05
Golden-winged Warbler	0.00	0.00	0.00	0.00	0.05
Cerulean Warbler	0.00	0.00	0.00	0.00	0.10
White-throated Sparrow	0.00	0.00	0.00	0.00	0.25
OVERALL MEAN	9.63	11.06	11.00	10.23	10.30
TOTAL SPECIES	45	36	19	53	45

Table 7. List of bird species recorded at edge census points during the breeding season survey with mean number of birds recorded per visit. A mean for all undisturbed sites is also given. NDP=No Development Proposed; PT=Proposed Trail; CM=Combined Mean.

Species	PT	NDP	CM
Field Sparrow	1.32	2.00	1.66
Indigo Bunting	1.14	1.38	1.26
Red-winged Blackbird	0.86	1.38	1.12
Common Yellowthroat	0.82	0.88	0.85
Henslow's Sparrow	0.18	1.00	0.59
House Wren	0.18	0.75	0.46
Northern Cardinal	0.46	0.13	0.29
Gray Catbird	0.07	0.50	0.29
Brown-headed Cowbird	0.25	0.25	0.25
American Robin	0.11	0.38	0.24
Eastern Wood-pewee	0.32	0.13	0.22
Eastern Towhee	0.32	0.13	0.22
American Goldfinch	0.29	0.13	0.21
Great Crested Flycatcher	0.25	0.13	0.19
Blue-gray Gnatcatcher	0.36	0.00	0.18
Blue Jay	0.21	0.13	0.17
Eastern Bluebird	0.07	0.25	0.16
Red-bellied Woodpecker	0.18	0.13	0.15
Carolina Chickadee	0.18	0.13	0.15
Hairy Woodpecker	0.00	0.25	0.13
Downy Woodpecker	0.21	0.00	0.11
Yellow-rumped Warbler	0.21	0.00	0.11
Yellow-breasted Chat	0.04	0.13	0.08
Rose-breasted Grosbeak	0.04	0.13	0.08
White-eyed Vireo	0.14	0.00	0.07
Warbling Vireo	0.14	0.00	0.07
Acadian Flycatcher	0.00	0.13	0.06
Kentucky Warbler	0.00	0.13	0.06
Eastern Meadowlark	0.00	0.13	0.06
Yellow-billed Cuckoo	0.11	0.00	0.05
Ruby-throated Hummingbird	0.11	0.00	0.05
Northern Flicker	0.11	0.00	0.05
White-breasted Nuthatch	0.11	0.00	0.05
Northern Parula	0.11	0.00	0.05
Scarlet Tanager	0.11	0.00	0.05
Red-headed Woodpecker	0.07	0.00	0.04
Eastern Kingbird	0.07	0.00	0.04

Table 7 concluded on following page.

Table 7. List of bird species recorded at edge census points during the breeding season (Concluded).

Species	NDP	NT	CM
Red-eyed Vireo	0.07	0.00	0.04
Tufted Titmouse	0.07	0.00	0.04
Palm Warbler	0.07	0.00	0.04
Black and White Warbler	0.07	0.00	0.04
Song Sparrow	0.07	0.00	0.04
Baltimore Oriole	0.07	0.00	0.04
Belted Kingfisher	0.04	0.00	0.02
Pileated Woodpecker	0.04	0.00	0.02
Alder Flycatcher	0.04	0.00	0.02
Least Flycatcher	0.04	0.00	0.02
Yellow-throated Vireo	0.04	0.00	0.02
Orange-crowned Warbler	0.04	0.00	0.02
Nashville Warbler	0.04	0.00	0.02
Chestnut-sided Warbler	0.04	0.00	0.02
Yellow-throated Warbler	0.04	0.00	0.02
Blackpoll Warbler	0.04	0.00	0.02
Ovenbird	0.04	0.00	0.02
Louisiana Waterthrush	0.04	0.00	0.02
OVERALL MEAN	**10.00**	**10.63**	**10.31**
TOTAL SPECIES	**51**	**24**	**55**

Table 8. List of bird species recorded at oldfield census points during the breeding season survey with mean number of birds recorded per visit. OHP=Oldfield Habitat Planted to trees.

Species	OHP
Northern Bobwhite	0.04
American Robin	0.11
Field Sparrow	1.86
Red-winged Blackbird	1.89
Common Yellowthroat	1.21
Indigo Bunting	1.11
Dickcissel	0.32
Henslow's Sparrow	0.21
Eastern Meadowlark	0.14
Song Sparrow	0.14
Northern Cardinal	0.04
Yellow-breasted Chat	0.11
Brown-headed Cowbird	0.04
American Goldfinch	0.04
OVERALL MEAN	**7.25**
TOTAL SPECIES	**14**

Table 9. List of bird species recorded at the wetland census point during the breeding season survey with mean number of birds recorded per visit. WC=Wetland Creation

Species	WC
Red-winged Blackbird	3.75
Dickcissel	1.25
Common Yellowthroat	1.00
Grasshopper Sparrow	0.50
Song Sparrow	0.50
Yellow-billed Cuckoo	0.25
Brown Thrasher	0.25
Indigo Bunting	0.25
OVERALL MEAN	7.75
TOTAL SPECIES	8

Table 10. List of bird species recorded at forested census points during the fall season survey with mean number of birds recorded per visit at presently undisturbed sites and sites with an existing trail. A combined mean for all undisturbed sites is also given. NDP=No Development Planned; PT=Proposed Trail; PC=Proposed Campground; CM=Combined Means for presently undisturbed census points.

Species	Presently Undisturbed				Existing Trail
	NDP	PT	PC	CM	
Red-bellied Woodpecker	1.06	0.88	1.50	1.15	0.45
Blue Jay	0.84	0.88	1.00	0.91	0.90
Carolina Chickadee	0.78	0.88	0.75	0.80	0.85
White-breasted Nuthatch	0.78	0.50	0.75	0.68	0.70
Eastern Wood-pewee	0.31	0.38	0.50	0.40	0.25
American Robin	0.28	0.38	0.50	0.39	0.35
Downy Woodpecker	0.34	0.25	0.50	0.36	0.30
Red-headed Woodpecker	0.31	0.56	0.00	0.29	0.70
Northern Cardinal	0.09	0.19	0.50	0.26	0.15
Acadian Flycatcher	0.16	0.06	0.50	0.24	0.05
Tufted Titmouse	0.28	0.06	0.25	0.20	0.05
Gray Catbird	0.00	0.13	0.25	0.13	0.05
American Crow	0.13	0.13	0.00	0.08	0.05
Carolina Wren	0.06	0.13	0.00	0.06	0.15
Eastern Towhee	0.00	0.19	0.00	0.06	0.00
Dark-eyed Junco	0.13	0.06	0.00	0.06	0.00
American Redstart	0.03	0.13	0.00	0.05	0.05
White-eyed Vireo	0.00	0.13	0.00	0.04	0.00
Chestnut-sided Warbler	0.06	0.06	0.00	0.04	0.05
Yellow-throated Vireo	0.03	0.06	0.00	0.03	0.00
Black and White Warbler	0.03	0.06	0.00	0.03	0.00
Cooper's Hawk	0.00	0.06	0.00	0.02	0.00
Yellow-bellied Sapsucker	0.00	0.06	0.00	0.02	0.05
Hairy Woodpecker	0.06	0.00	0.00	0.02	0.05
Brown Creeper	0.06	0.00	0.00	0.02	0.00
Brown Thrasher	0.00	0.06	0.00	0.02	0.00
Magnolia Warbler	0.00	0.06	0.00	0.02	0.05
Brown-headed Cowbird	0.00	0.06	0.00	0.02	0.00
Red-tailed Hawk	0.03	0.00	0.00	0.01	0.00
Pileated Woodpecker	0.03	0.00	0.00	0.01	0.05
Great Crested Flycatcher	0.03	0.00	0.00	0.01	0.00
Red-eyed Vireo	0.03	0.00	0.00	0.01	0.00
House Wren	0.03	0.00	0.00	0.01	0.00
Gray-cheeked Thrush	0.03	0.00	0.00	0.01	0.00
Scarlet Tanager	0.03	0.00	0.00	0.01	0.00
Rose-breasted Grosbeak	0.03	0.00	0.00	0.01	0.00
Wild Turkey	0.00	0.00	0.00	0.00	0.05

Table 10 concluded on following page.

Table 10. List of bird species recorded at forested census points during the fall season survey (concluded).

Species	Presently Undisturbed				Existing Trail
	NDP	PT	PC	CM	
Golden-crowned Kinglet	0.00	0.00	0.00	0.00	0.10
Swainson's Thrush	0.00	0.00	0.00	0.00	0.05
Wood Thrush	0.00	0.00	0.00	0.00	0.05
Golden-winged Warbler	0.00	0.00	0.00	0.00	0.05
Tennessee Warbler	0.00	0.00	0.00	0.00	0.05
Nashville Warbler	0.00	0.00	0.00	0.00	0.05
Northern Parula	0.00	0.00	0.00	0.00	0.05
Black-throated Green Warbler	0.00	0.00	0.00	0.00	0.10
Common Yellowthroat	0.00	0.00	0.00	0.00	0.05
White-throated Sparrow	0.00	0.00	0.00	0.00	0.05
OVERALL MEAN	6.09	6.38	7.00	6.49	5.95
TOTAL SPECIES	28	26	12	36	31

Table 11. List of bird species recorded at edge census points during the fall season survey with mean number of birds recorded per visit. A combined mean for all sites is also given. NDP=No Development Proposed; PT=Proposed Trail; CM=Combined Mean.

Species	PT	NDP	CM
Dark-eyed Junco	0.00	1.25	0.63
Blue Jay	0.46	0.38	0.42
Northern Cardinal	0.43	0.38	0.40
American Redstart	0.04	0.63	0.33
Carolina Chickadee	0.36	0.25	0.30
Red-bellied Woodpecker	0.61	0.00	0.30
Downy Woodpecker	0.25	0.25	0.25
White-breasted Nuthatch	0.36	0.13	0.24
Gray Catbird	0.29	0.13	0.21
Eastern Wood-pewee	0.39	0.00	0.20
Cedar Waxwing	0.39	0.00	0.20
Red-winged Blackbird	0.07	0.25	0.16
Common Yellowthroat	0.32	0.00	0.16
Field Sparrow	0.14	0.13	0.13
Red-headed Woodpecker	0.25	0.00	0.13
Tufted Titmouse	0.18	0.00	0.09
Great Crested Flycatcher	0.04	0.13	0.08
White-throated Sparrow	0.04	0.13	0.08
American Robin	0.14	0.00	0.07
Blackpoll Warbler	0.00	0.13	0.06
Indigo Bunting	0.11	0.00	0.05
Wild Turkey	0.07	0.00	0.04
Carolina Wren	0.07	0.00	0.04
House Wren	0.07	0.00	0.04
Black and White Warbler	0.07	0.00	0.04
Eastern Towhee	0.07	0.00	0.04
American Tree Sparrow	0.07	0.00	0.04
Dickcissel	0.07	0.00	0.04
American Goldfinch	0.07	0.00	0.04
Least Flycatcher	0.04	0.00	0.02
White-eyed Vireo	0.04	0.00	0.02
Warbling Vireo	0.04	0.00	0.02
Red-eyed Vireo	0.04	0.00	0.02
Nashville Warbler	0.04	0.00	0.02
Chestnut-sided Warbler	0.04	0.00	0.02
Magnolia Warbler	0.04	0.00	0.02

Table 11 concluded on following page.

Table 11. List of bird species recorded at edge census points during the fall season survey (concluded).

Species	PT	NDP	CM
Yellow-rumped Warbler	0.04	0.00	0.02
Black-throated Green Warbler	0.04	0.00	0.02
Wilson's Warbler	0.04	0.00	0.02
Scarlet Tanager	0.04	0.00	0.02
Song Sparrow	0.04	0.00	0.02
OVERALL MEAN	**5.86**	**4.13**	**4.99**
TOTAL SPECIES	**39**	**13**	**41**

Table 12. List of bird species recorded at oldfield census points during the fall season survey with mean number of birds recorded per visit. OHP=Oldfield Habitat Planted to trees.

Species	OHP
Song Sparrow	0.32
American Goldfinch	0.29
Carolina Chickadee	0.18
Field Sparrow	0.18
Indigo Bunting	0.14
Common Yellowthroat	0.11
White-throated Sparrow	0.11
White-crowned Sparrow	0.11
American Tree Sparrow	0.07
Swamp Sparrow	0.07
Red-winged Blackbird	0.07
Ruby-throated Hummingbird	0.04
Red-headed Woodpecker	0.04
Downy Woodpecker	0.04
Blue Jay	0.04
Tufted Titmouse	0.04
Sedge Wren	0.04
Orange-crowned Warbler	0.04
Northern Cardinal	0.04
Eastern Meadowlark	0.04
OVERALL MEAN	**1.96**
TOTAL SPECIES	**20**

Table 13. List of bird species recorded at the wetland census point during the fall season survey with mean number of birds recorded per visit. WC=Wetland Creation

Species	WC
Song Sparrow	0.75
Swamp Sparrow	0.75
Northern Harrier	0.25
House Wren	0.25
Common Yellowthroat	0.25
Field Sparrow	0.25
Indigo Bunting	0.25
American Goldfinch	0.25
OVERALL MEAN	**3.00**
TOTAL SPECIES	**8**

Table 14. List of bird species recorded at forested census points during the winter season survey with mean number of birds recorded per visit at presently undisturbed sites and sites with an existing trail. A combined mean for all undisturbed sites is also given. NDP=No Development Planned; PT=Proposed Trail; PC=Proposed Campground; CM=Combined Means for presently undisturbed census points

Species	Presently Undisturbed				Existing Trail
	NDP	PT	PC	CM	
Red-bellied Woodpecker	0.88	0.63	1.50	1.00	0.40
Carolina Chickadee	0.50	0.63	1.00	0.71	1.30
Blue Jay	0.63	0.88	0.50	0.67	0.60
White-breasted Nuthatch	0.50	1.00	0.50	0.67	0.50
Red-headed Woodpecker	0.31	1.50	0.00	0.60	0.50
Tufted Titmouse	0.38	0.63	0.00	0.33	0.40
Downy Woodpecker	0.50	0.25	0.00	0.25	0.50
Northern Cardinal	0.19	0.13	0.00	0.10	0.10
Yellow-bellied Sapsucker	0.25	0.00	0.00	0.08	0.00
Sharp-shinned Hawk	0.06	0.00	0.00	0.02	0.00
Hairy Woodpecker	0.06	0.00	0.00	0.02	0.00
American Crow	0.06	0.00	0.00	0.02	0.00
Carolina Wren	0.06	0.00	0.00	0.02	0.00
American Goldfinch	0.06	0.00	0.00	0.02	0.00
Bared Owl	0.00	0.00	0.00	0.00	0.10
Pileated Woodpecker	0.00	0.00	0.00	0.00	0.10
OVERALL MEAN	4.44	5.63	3.50	4.52	4.50
TOTAL SPECIES	14	8	4	14	10

Table 15. List of bird species recorded at edge census points during the winter season survey with mean number of birds recorded per visit. A mean for all sites is also given. NDP=No Development Proposed; PT=Proposed Trail; CM=Combined Mean.

Species	PT	NDP	CM
American Tree Sparrow	1.43	0.25	0.84
Blue Jay	0.57	1.00	0.79
Carolina Chickadee	0.64	0.75	0.70
Northern Cardinal	0.43	0.75	0.59
White-breasted Nuthatch	0.64	0.50	0.57
Downy Woodpecker	0.57	0.25	0.41
European Starling	0.00	0.75	0.38
Red-bellied Woodpecker	0.57	0.00	0.29
Tufted Titmouse	0.07	0.50	0.29
Northern Flicker	0.00	0.25	0.13
Red-headed Woodpecker	0.14	0.00	0.07
Pileated Woodpecker	0.07	0.00	0.04
Dark-eyed Junco	0.07	0.00	0.04
TOTAL	**5.21**	**5.00**	**5.11**
TOTAL SPECIES	**11**	**9**	**13**

Table 16. List of bird species recorded at oldfield census points during the winter season survey with mean number of birds recorded per visit. OHP=Oldfield Habitat Planted to trees.

Species	OHP
Northern Cardinal	0.29
Song Sparrow	0.21
Sharp-shinned Hawk	0.07
Red-headed Woodpecker	0.07
Red-bellied Woodpecker	0.07
OVERALL MEAN	**0.71**
TOTAL SPECIES	**5**

Table 17. List of bird species recorded at the wetland census point during the winter season survey with mean number of birds recorded per visit. WC=Wetland Creation

Species	WC
Red-headed Woodpecker	3.00
White-breasted Nuthatch	1.50
Downy Woodpecker	1.00
Blue Jay	1.00
Carolina Chickadee	1.00
Red-bellied Woodpecker	0.50
Tufted Titmouse	0.50
Song Sparrow	0.50
Northern Cardinal	0.50
OVERALL MEAN	**9.50**
TOTAL SPECIES	**9**

Table 18. List of bird species recorded at forested census points during the spring season survey with mean number of birds recorded per visit at presently undisturbed sites and sites with an existing trail. A combined mean for all undisturbed sites is also given. NDP=No Development Planned; PT=Proposed Trail; PC=Proposed Campground; CM=Combined Means for presently undisturbed census points

Species	Presently Undisturbed				Existing Trail
	NDP	PT	PC	CM	
Tufted Titmouse	0.44	0.88	1.50	0.94	0.40
Brown-headed Cowbird	0.50	1.00	1.00	0.83	0.10
American Robin	0.38	0.38	1.00	0.58	0.20
Red-headed Woodpecker	0.31	0.88	0.00	0.40	0.40
White-breasted Nuthatch	0.31	0.38	0.50	0.40	0.40
Red-bellied Woodpecker	0.75	0.38	0.00	0.38	0.20
European Starling	0.19	0.88	0.00	0.35	0.20
Downy Woodpecker	0.75	0.25	0.00	0.33	0.50
Eastern Towhee	0.00	0.50	0.50	0.33	0.00
Yellow-bellied Sapsucker	0.06	0.25	0.50	0.27	0.20
Blue Jay	0.25	0.38	0.00	0.21	0.30
Yellow-rumped Warbler	0.13	0.50	0.00	0.21	0.20
Carolina Chickadee	0.25	0.25	0.00	0.17	0.50
Northern Cardinal	0.19	0.25	0.00	0.15	0.70
Golden-crowned Kinglet	0.19	0.13	0.00	0.10	0.80
Eastern Pheobe	0.13	0.13	0.00	0.08	0.00
Ruby-crowned Kinglet	0.00	0.25	0.00	0.08	0.20
Song Sparrow	0.00	0.25	0.00	0.08	0.00
Red-tailed Hawk	0.06	0.13	0.00	0.06	0.00
Northern Flicker	0.00	0.13	0.00	0.04	0.00
Winter Wren	0.00	0.13	0.00	0.04	0.10
Hermit Thrush	0.00	0.13	0.00	0.04	0.10
Brown Thrasher	0.00	0.13	0.00	0.04	0.00
Louisiana Waterthrush	0.13	0.00	0.00	0.04	0.00
Field Sparrow	0.00	0.13	0.00	0.04	0.00
Red-winged Blackbird	0.00	0.13	0.00	0.04	0.00
Pileated Woodpecker	0.06	0.00	0.00	0.02	0.00
Black and White Warbler	0.06	0.00	0.00	0.02	0.00
American Crow	0.00	0.00	0.00	0.00	0.30
Brown Creeper	0.00	0.00	0.00	0.00	0.30
OVERALL MEAN	5.13	8.75	5.00	6.29	6.10
TOTAL SPECIES	19	25	6	28	19

Table 19. List of bird species recorded at edge census points during the spring season survey with mean number of birds recorded per visit. A mean for all undisturbed sites is also given. NDP=No Development Proposed; PT=Proposed Trail; CM=Combined Mean.

Species	PT	NDP	CM
Field Sparrow	0.57	0.75	0.66
Northern Cardinal	0.57	0.75	0.66
Red-winged Blackbird	0.64	0.50	0.57
Eastern Bluebird	0.07	0.75	0.41
Tufted Titmouse	0.43	0.25	0.34
Red-bellied Woodpecker	0.36	0.25	0.30
Blue Jay	0.36	0.25	0.30
Brown-headed Cowbird	0.36	0.25	0.30
White-breasted Nuthatch	0.07	0.50	0.29
Golden-crowned Kinglet	0.07	0.50	0.29
Downy Woodpecker	0.29	0.25	0.27
White-throated Sparrow	0.00	0.50	0.25
Ruby-crowned Kinglet	0.21	0.25	0.23
Mourning Dove	0.14	0.25	0.20
Brown Thrasher	0.14	0.25	0.20
European Starling	0.07	0.25	0.16
American Robin	0.29	0.00	0.14
Eastern Pheobe	0.00	0.25	0.13
Fox Sparrow	0.21	0.00	0.11
Red-headed Woodpecker	0.14	0.00	0.07
Carolina Chickadee	0.14	0.00	0.07
Eastern Towhee	0.14	0.00	0.07
Song Sparrow	0.14	0.00	0.07
American Woodcock	0.07	0.00	0.04
Yellow-bellied Sapsucker	0.07	0.00	0.04
Hairy Woodpecker	0.07	0.00	0.04
Northern Flicker	0.07	0.00	0.04
Brown Creeper	0.07	0.00	0.04
Carolina Wren	0.07	0.00	0.04
Louisiana Waterthrush	0.07	0.00	0.04
American Tree Sparrow	0.07	0.00	0.04
OVERALL MEAN	**6.00**	**6.75**	**6.38**
TOTAL SPECIES	**29**	**17**	**31**

Table 20. List of bird species recorded at oldfield census points during the spring season survey with mean number of birds recorded per visit. OHP=Oldfield Habitat Planted to trees.

Species	OHP
Red-winged Blackbird	1.14
Field Sparrow	0.64
Song Sparrow	0.29
Northern Cardinal	0.21
Blue Jay	0.14
Eastern Bluebird	0.07
Brown Thrasher	0.07
Brown-headed Cowbird	0.07
OVERALL MEAN	**2.64**
TOTAL SPECIES	**8**

Table 21. List of bird species recorded at the wetland census point during the spring season survey with mean number of birds recorded per visit. WC=Wetland Creation

Species	WC
Red-winged Blackbird	4.00
Common Snipe	1.50
Song Sparrow	1.00
Swamp Sparrow	0.50
OVERALL MEAN	**7.00**
TOTAL SPECIES	**4**

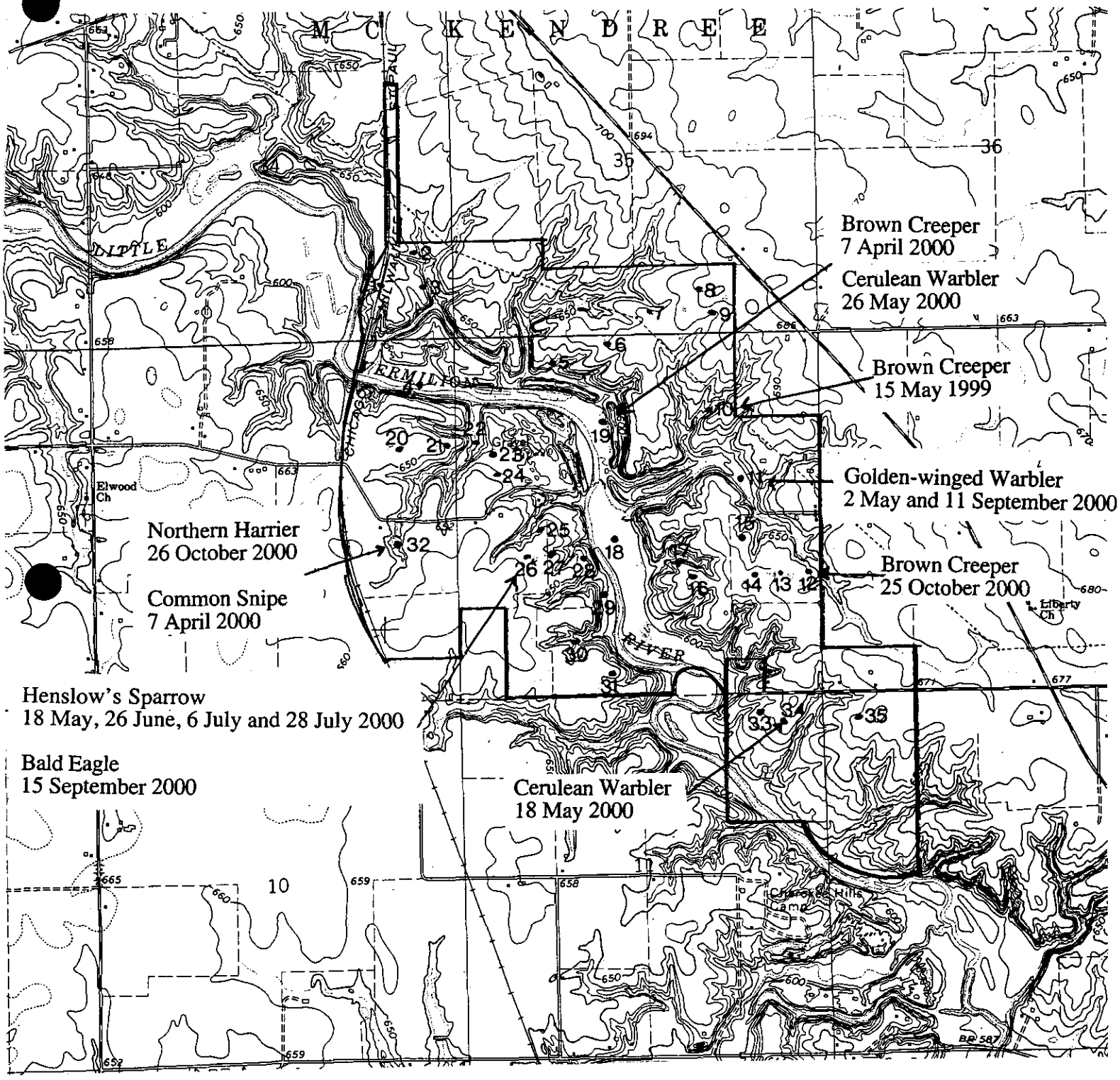

Figure 1. Map of the Babe Woodyard State Natural Area, Vermilion County, Illinois showing location of census points used during the 1999/2000 avian survey and of sighting points of listed bird species.

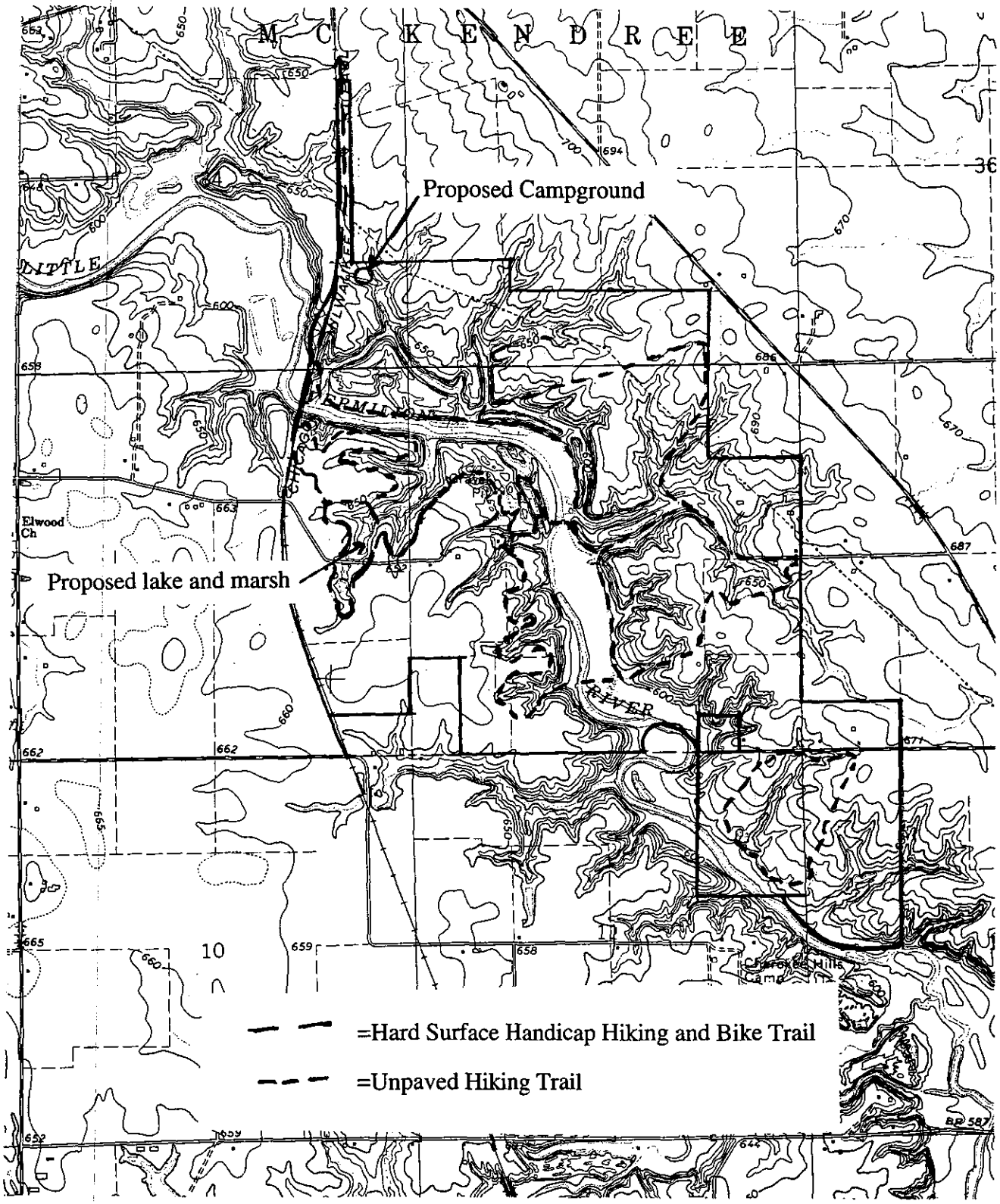

Figure 2. Map of the Babe Woodyard State Natural Area, Vermilion County, Illinois showing locations of proposed trail system, campground, lake and marsh.

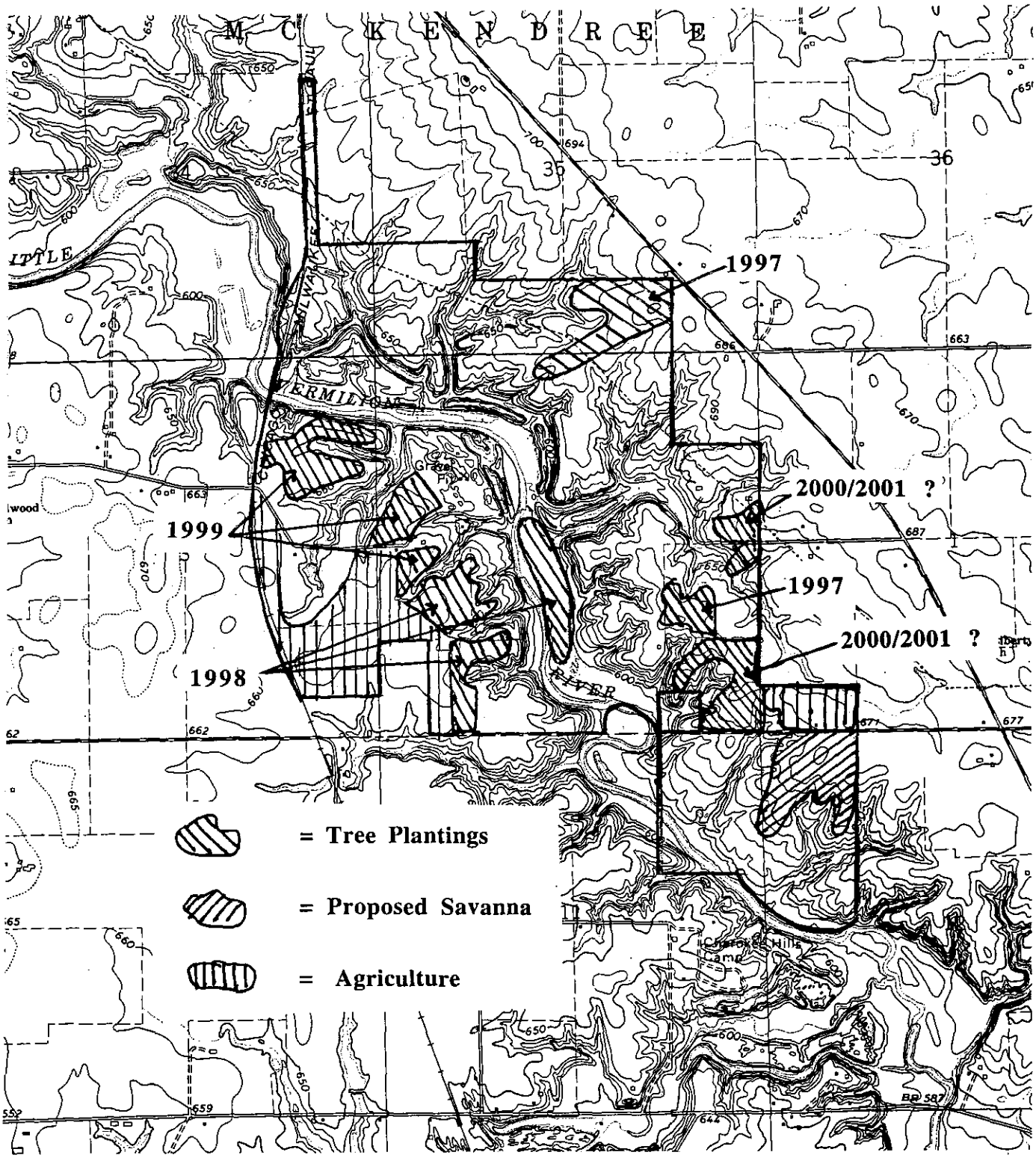

Figure 3. Map of the Babe Woodyard State Natural Area, Vermilion County, Illinois showing location of agricultural row crop fields that will be continued in production and of fields designated for reforestation. Dates are year in which trees were planted.

Appendix A. Results of the timed seasonal censuses conducted at the Babe Woodyard State Natural Area, Vermilion County, Illinois.

	BREEDING CENSUS 1																																		
	CENSUS POINT																																		
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Northern Bobwhite																								1												1
Ruby-throated Hummingbird																													1							1
Red-headed Woodpecker																1																				1
Red-bellied Woodpecker		1	1							1			1		1																1					6
Downy Woodpecker	1				1		1									1	1		1												1		1			8
Hairy Woodpecker												1	2																							3
Pileated Woodpecker		1															1																			2
Eastern Wood-pewee																												1	1		1		1	1		5
Acadian Flycatcher																						1								1			1			3
Least Flycatcher															1	1																				2
Great Crested Flycatcher		1			1												1												1	1				1		6
White-eyed Vireo				1		1									1																					3
Yellow-throated Vireo							1																													1
Red-eyed Vireo		1	1									1																1		1	1		1	1		8
Blue Jay		1											1						1														1			4
Carolina Chickadee	1		1		2		1																													5
Tufted Titmouse	1				1					1					1	1						1						1		1			1			9
White-breasted Nuthatch		1				1						2							1									1			1					7
House Wren				1	1		1												1						1		1	2			1					9
Ruby-crowned Kinglet												1																								1
Blue-gray Gnatcatcher	1				1										2	1	1																			5
Wood Thrush						1				1																			1							3
American Robin				1																																1
Gray Catbird											1		1																							2
Brown Thrasher										1		1																								2
European Starling					1																															1
Blue-winged Warbler											1																									1
Golden-winged Warbler											1																									1
Tennessee Warbler																												2		2	1					5
Orange-crowned Warbler							1																													1
Nashville Warbler				1		1					1	1																								4
Northern Parula	1			2			1				1								1																	6
Chestnut-sided Warbler							1																													1
Yellow-rumped Warbler	1		1	4			1		1	2		2				1			1																	14
Blackburnian Warbler												1																								1
Palm Warbler							2																													2
Blackpoll Warbler																															1					1
Cerulean Warbler																																		1		1
Black and White Warbler						1	1					1																		1						4
Worm-eating Warbler			1																																	1
Ovenbird	3	2	2			1				2	1																1									12
Louisiana Waterthrush				1																																1
Kentucky Warbler																1																				1
Common Yellowthroat				1		1		1										1	1		1		1	2	2	2	2								1	16
Scarlet Tanager											1					1	2											1								5
Eastern Towhee				1		5						1	1		2													1								11
Field Sparrow						3		1	1				1	4				1			2		3		2										2	20
Grasshopper Sparrow																																2				2
Henslow's Sparrow																									3	4	2									9
White-throated Sparrow											5																									5
Northern Cardinal	1					2	1			1									1			1					1				1			1		10
Rose-breasted Grosbeak				1									1						2																	4
Indigo Bunting							1													1	1	2		2	1		2	1	1	1					1	14
Dickcissel																																2				2
Red-winged Blackbird																				4	2		3	6		3	3					4				25
Eastern Meadowlark								1																1												2
Brown-headed Cowbird	1	2	2	1	1	1	1			1		1					1		1										1		1		1	1		17
Baltimore Oriole											1										1															2
American Goldfinch			1		1		2		1				1		2																					8
TOTAL INDIVIDUALS	11	10	10	15	10	18	16	3	3	10	13	13	9	4	10	8	7	2	11	5	7	5	7	12	9	9	12	11	6	8	10	8	7	6	4	309
NUMBER OF SPECIES	9	7	8	11	9	11	14	3	3	8	9	11	8	1	6	7	8	2	9	2	5	4	3	4	5	3	7	9	6	7	10	3	7	6	3	59

Appendix A continued on following page.

Appendix A (continued).

	BREEDING CENSUS 2																																	
	CENSUS POINT																																	
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Yellow-billed Cuckoo																			1																	1
Ruby-throated Hummingbird			1								1						1																	1		4
Red-headed Woodpecker										2						1														1						4
Red-bellied Woodpecker			2	1	1					1											1	1														7
Downy Woodpecker	1									1	1					1			1			1					1							1		8
Northern Flicker																					1															1
Pileated Woodpecker															1	1																				2
Eastern Wood-pewee	1	2	3		1	2			1		2	1			1	2	2		3		1	1	1		1			2	1				1			29
Acadian Flycatcher		3	2							2	1	2				1	1					1						1	2	1	2		2	2		23
Alder Flycatcher				1																																1
Great Crested Flycatcher				1	2				1	2	1				1	1			1			1						2		2	1		1			17
White-eyed Vireo					1						1																									2
Yellow-throated Vireo																																	1			1
Warbling Vireo				1															1															1		3
Red-eyed Vireo	1	1							1							1													1	1	1					7
Blue Jay				1						1	1								1		1									2						7
Carolina Chickadee					2								1			1						1							1				1	1		8
Tufted Titmouse	2		1							1	1					1			1										1	1	1					10
White-breasted Nuthatch	1	2			1					2	2				1				1			2						2					1	1		16
House Wren																			2						1			2	1	1						7
Blue-gray Gnatcatcher	2	1		1	1		2				1				1						1							1					1			12
Gray-cheeked Thrush												1																								1
Wood Thrush		1									1																				2		1			5
American Robin												1								1				1	1											4
Gray Catbird				1															1						1											3
Brown Thrasher						1																										1				2
European Starling					1																															1
Northern Parula	1										1								1									1	1							5
Yellow-throated Warbler				1															1										1							3
Blackpoll Warbler				1																																1
Cerulean Warbler																			1																	1
Black and White Warbler															1																					1
Ovenbird		1	2													1															1					5
Louisiana Waterthrush					1						1																									2
Kentucky Warbler					1					1		1	1																1							5
Common Yellowthroat								1				1	1	1				2		2		1	2	2	1	2	1								1	18
Yellow-breasted Chat							1						1							1															1	4
Scarlet Tanager	1			1								1										1	1													5
Eastern Towhee		2		2		2	1				1								1										1							10
Field Sparrow				1		1	3	2	1				1	3	1			3		1				1	1	2		1							4	26
Henslow's Sparrow																										2	2	1								5
Song Sparrow																				1																1
Northern Cardinal	2		3		1		1		1			2			2		1		1		1	2	1				1		1	1	1		2			24
Rose-breasted Grosbeak			1																																	1
Indigo Bunting	3		1	2		1	1	1	3		2	1	1	1	2			3	2	1	2			1	2	1	2								2	35
Dickcissel																				3						1						1				5
Red-winged Blackbird																				5			10	12	11	5						3				46
Eastern Meadowlark								1																	1											2
Brown-headed Cowbird			1	1		1			1	2	2	1	1				1		1		1						1	1		1	1					17
Baltimore Oriole																			1																	1
American Goldfinch											1												1													2
TOTAL INDIVIDUALS	15	13	17	16	13	8	9	5	9	15	21	12	7	5	11	11	6	8	22	15	9	12	17	17	23	11	5	12	12	11	10	5	11	7	8	411
NUMBER OF SPECIES	10	8	10	14	11	5	6	4	7	10	17	10	7	3	9	10	5	3	16	8	8	10	7	5	10	5	7	8	11	9	8	3	9	5	4	51

Appendix A continued on following page.

Appendix A (continued).

	BREEDING CENSUS 3																																				
	CENSUS POINT																																				
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Wild Turkey	1																																			1
Yellow-billed Cuckoo																					1								1	1						3
Ruby-throated Hummingbird			1	1	1														1										1							5
Belted Kingfisher				1																																1
Red-headed Woodpecker															1															1						2
Downy Woodpecker			1	2												1			1		1	1									1		1	1		10
Northern Flicker				1																		1	1													3
Eastern Wood-pewee	3	1	2	1	1		1			1	1	1			1	1	1		1											1	1		1	1		20
Acadian Flycatcher		3	2							1	1	1				2	1		2						1				1	2	1		2	1		21
Great Crested Flycatcher		1		2						1		1	1						2																	8
White-eyed Vireo				1																																1
Warbling Vireo																					2															2
Red-eyed Vireo			1									1																	1	2				1		6
Blue Jay									1		1					1																				3
Carolina Chickadee				1	3	1			1	1	2											1							2	1			2			15
Tufted Titmouse	2	1			1	1																						1	1				1	1		9
White-breasted Nuthatch		1			1					2						1			2			2	1						1				1			12
House Wren																	2		1						1		2	2	1	1						10
Blue-gray Gnatcatcher	1	1		1															2									1					1			7
Eastern Bluebird																									1											1
Swainson's Thrush		1																																		1
Wood Thrush	1		1																											2	4					8
American Robin																												1								1
Gray Catbird										1	1											1			2											5
Northern Parula	1				1														1																	3
Yellow-throated Warbler					1														1																	2
Ovenbird		1	2		1												1														1					6
Louisiana Waterthrush											1																									1
Kentucky Warbler																			1												1					2
Common Yellowthroat				1			1						1	2	1			1		1	2	1	3	3	1		2					1			2	23
Yellow-breasted Chat																																			1	1
Scarlet Tanager			1	1	1																							1	2		1					7
Eastern Towhee					1	2																1							1							5
Field Sparrow						1	4	4	3				4	3	3			2			1			1	2										5	33
Henslow's Sparrow																											1									1
Song Sparrow																		1			2											1			1	5
Northern Cardinal			1		1	1				1	1				1							1	1					1	1				1			11
Indigo Bunting	1	1	1	2	1	2	1		1	1		1	1		1			1			2			1	2	1	2	2					2			27
Dickcissel																				4												1				5
Red-winged Blackbird																				5	1		4	6		1						4			1	22
Eastern Meadowlark								1																												1
Common Grackle		1																																		1
Brown-headed Cowbird		1	1	1	1	1				1	1		1									1							2		1				1	13
Baltimore Oriole																					1	1														2
American Goldfinch																											1	1						1		3
TOTAL INDIVIDUALS	10	13	14	16	15	9	7	5	6	10	9	5	8	5	6	6	5	5	15	10	13	11	10	11	10	2	8	10	15	11	11	7	12	6	11	329
NUMBER OF SPECIES	7	11	11	13	13	7	4	2	4	9	8	5	5	2	6	5	5	5	11	3	9	10	5	4	7	2	5	8	12	8	8	4	9	6	6	45

Appendix A continued on following page.

Appendix A (continued).

	BREEDING CENSUS 4																																		
	CENSUS POINT																																		
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Cooper's Hawk																																		1		1
Broad-winged Hawk																															1					1
Wild Turkey										1																		1								2
Yellow-billed Cuckoo		1	2						2		1								1			1						1	1		1	1				12
Ruby-throated Hummingbird			1	1					1																											3
Red-headed Woodpecker															1															1						2
Red-bellied Woodpecker				1		1			1	1	1											2									1					8
Downy Woodpecker	1			1		1											1		1										1		1			1		8
Eastern Wood-pewee	1		1			1	1				1												1					2	2	1	1		1	1		14
Acadian Flycatcher		1	3							1		1							2										1	1			1			11
Eastern Pheobe						1																														1
Great Crested Flycatcher				1						1													1						1							4
Eastern Kingbird							1		1																											2
White-eyed Vireo				1		2																														3
Warbling Vireo				1																																1
Red-eyed Vireo	1		1							1					1	1	1												1	1	1		1	1		11
Blue Jay				3																																3
Carolina Chickadee					1						1					1	1		1				2					1	2							10
Tufted Titmouse						1					1	1				1	2					3	1					2	1							13
White-breasted Nuthatch			1		1	1										1	2					1	1					1		1	1					11
Carolina Wren																			1																	1
House Wren						1											1		1						3			1	2	1						10
Blue-gray Gnatcatcher				1																			1													2
Eastern Bluebird																									1		2									3
Wood Thrush			1																												2					3
American Robin																			1		1	1	1	1	2											7
Gray Catbird				1		1																														2
Brown Thrasher						1																														1
Northern Parula																												1								1
Common Yellowthroat				1		2												2		1			1	1	1	1	3					3			2	18
Scarlet Tanager	1										1																									2
Eastern Towhee				1		2					2				1												1	1	1							9
Field Sparrow						1	2	3	2		1		1	2	2			2		2	2		1	2	3	1	3								3	33
Henslow's Sparrow																									3		1									4
Song Sparrow																																1			1	2
Northern Cardinal	2	1	1	1	1	2				1	2	1	1				1	1									1	1						1		18
Indigo Bunting		1		1			1	3					3	2				2		2	2		1	2	1	2	2	1		1		1			1	29
Dickcissel																																	1		1	2
Red-winged Blackbird																							1	5								4				10
American Goldfinch	1			1																1																3
TOTAL INDIVIDUALS	7	4	11	16	3	18	5	6	7	6	11	3	5	4	5	4	9	7	8	6	5	8	12	11	14	4	13	13	13	7	9	11	3	5	8	281
NUMBER OF SPECIES	6	4	8	14	3	14	4	2	5	6	9	3	3	2	4	4	7	4	7	4	3	5	11	5	7	3	7	11	10	7	8	6	3	5	5	40

Appendix A continued on following page.

Appendix A (continued).

	FALL CENSUS 1																																		
	CENSUS POINT																																		
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	TOTAL
Wild Turkey				2																																2
Red-headed Woodpecker										1	3				3	2			1			1								2	1				1	15
Red-bellied Woodpecker		2	2	2	2	2				1					1		1					2	1					1		1	1					19
Downy Woodpecker		1		1	1					1						1	2						1	1							1					10
Hairy Woodpecker			1																																	1
Blue Jay				2	1	1				1						1	2		1																1	10
American Crow			1																												1					2
Carolina Chickadee				1	1					2							1		1			1													4	11
Tufted Titmouse																																			1	1
White-breasted Nuthatch		1	3	3	1	1				1	1				1	1	2		2									1	1	1	1					21
Brown Creeper										1																										1
American Tree Sparrow																							2	2												4
Song Sparrow																		1			1			2		2										6
Swamp Sparrow																																			1	1
White-throated Sparrow																								2												2
White-crowned Sparrow																								3												3
Dark-eyed Junco						1																									2					3
Northern Cardinal		2				1	1																													4
American Goldfinch																							1													1
TOTAL INDIVIDUALS	0	6	7	11	6	6	1	0	0	8	4	0	0	0	5	5	8	1	5	0	1	4	5	10	0	2	0	2	1	4	7	0	0	0	8	117
NUMBER OF SPECIES	0	4	4	6	5	5	1	0	0	7	2	0	0	0	3	4	5	1	4	0	1	3	3	5	0	1	0	2	1	3	6	0	0	0	5	19

	FALL CENSUS 2																																		
	CENSUS POINT																																		
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Wild Turkey	1																																			1
Ruby-throated Hummingbird								1																												1
Red-headed Woodpecker					2																															2
Red-bellied Woodpecker		1	1		1		1		1	1					1		2					1	1						1				2			14
Yellow-bellied Sapsucker	1																													1						2
Downy Woodpecker	1	1	1	1		1	1		1			1	1									1								1						11
Hairy Woodpecker																			1																	1
Pileated Woodpecker																																	1	1		2
Eastern Wood-pewee	1	2	1		2		3		2		1	2					1		1		1	1	1					1	2	1	1					24
Acadian Flycatcher	1	1	1														1													1			1			6
Great Crested Flycatcher				1									1									1														3
White-eyed Vireo				1		2																														3
Yellow-throated Vireo			1																										1							2
Red-eyed Vireo			1	1																																2
Blue Jay	1	2		1	2	1			1	1			1		2				1									1	1				2	2		19
American Crow	1																														2					3
Carolina Chickadee	3	1	1	1		1				1	1		2		1		1		2		1	1		1				1	2	1	1		2			25
Tufted Titmouse				2																		1						1		1			1			6
White-breasted Nuthatch	1	1	2	1			2			1		2	1			2	1		2			1						1	1	1			1			21
Carolina Wren	1			1																			1					1	1							5
House Wren																						1	1				1					1				4
Sedge Wren																				1																1
Swainson's Thrush																																		1		1
Wood Thrush																																		1		1
American Robin				1			1																								1			1		4
Gray Catbird		1		3		1					1				1																					7
Brown Thrasher						1																														1
Cedar Waxwing																					10															10
Golden-winged Warbler											1																									1
Orange-crowned Warbler																				1																1
Northern Parula																			1																	1
Chestnut-sided Warbler			1		1		1										1																			4
Magnolia Warbler					1						1												1													3
Yellow-rumped Warbler							1																													1
Black-throated Green Warbler															1				1																	2
Blackpoll Warbler													1																							1
Black and White Warbler				1		1						1																								3
American Redstart					2							1	2										1		3											9
Common Yellowthroat				1			1				1							1		1			1				1									7
Wilson's Warbler				1																																1
Scarlet Tanager															1																		1			2
Eastern Towhee				1		2																														3
Field Sparrow																								1		1										2
Song Sparrow																				1												1				2
Northern Cardinal					1		1				1				1						1				1			1								7
Indigo Bunting																		3		1			1									1				6
Dickcissel																											2									2
American Goldfinch							1													3				2								1				7
TOTAL INDIVIDUALS	12	10	10	18	12	10	13	1	5	4	7	7	9	0	8	2	7	4	9	8	13	8	8	4	4	1	4	7	9	7	5	4	11	6	0	247
NUMBER OF SPECIES	10	8	9	15	8	8	10	1	4	4	7	5	7	0	7	1	5	2	7	6	4	8	6	3	2	1	3	7	7	7	4	4	8	5	0	48

Appendix A continued on following page.

Appendix A (continued).

	FALL CENSUS 3																																					
	CENSUS POINT																																					
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Red-tailed Hawk																	1																			1
Red-headed Woodpecker											1				1	2	2													1	1					8
Red-bellied Woodpecker	1	1	1		1		2			1	1								1		1	1	1					4		1	2			2		21
Downy Woodpecker	1				1						1	1													1											5
Eastern Wood-pewee	1		1		1		1		1		1				1												1	1			1					10
Acadian Flycatcher		1	2																																	3
Least Flycatcher																							1													1
Warbling Vireo							1																													1
Blue Jay	1	1	1		1					3	5	2					2		2		1	1			1			1	2							24
American Crow					2																															2
Carolina Chickadee	1	1				3				1	2	1					2		1			1					3			2			1			19
Tufted Titmouse				2												1	3				1										2					9
White-breasted Nuthatch		1		1						1	1	1							1										1							7
Carolina Wren			1		1														1																	3
Gray-cheeked Thrush																												1								1
American Robin	1	2	1	1	3	1					1											1						1								12
Gray Catbird				1		1	1						1		1								1													6
Tennessee Warbler																																		1		1
Nashville Warbler							1																											1		2
Chestnut-sided Warbler																1																				1
Black-throated Green Warbler																1																				1
Black and White Warbler																							1													1
American Redstart																1																				1
Common Yellowthroat				1			1													1			3									1				7
Eastern Towhee				1		1																														2
Field Sparrow							1	1	2														1		1											6
Song Sparrow																		1						1								2				4
Northern Cardinal						1	2						1		1						2		1					1						1	1	11
Rose-breasted Grosbeak										1																										1
Indigo Bunting																							2													2
Eastern Meadowlark																										1										1
American Goldfinch																				1															2	3
TOTAL INDIVIDUALS	6	7	7	7	10	7	10	1	3	7	13	5	2	0	4	6	10	1	6	2	5	4	11	1	3	1	4	9	3	4	6	3	1	5	3	177
NUMBER OF SPECIES	6	6	6	6	7	5	8	1	2	5	8	4	2	0	4	5	5	1	5	2	4	4	6	1	3	1	2	5	2	3	4	2	1	4	2	32

	FALL CENSUS 4																																			
	CENSUS POINT																																			
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Northern Harrier																																1				1
Cooper's Hawk						1																														1
Red-headed Woodpecker					1				1	1	1				2	4	2													3	1					16
Red-bellied Woodpecker	1	2	1	2	2	1				1	1	1			1		1		1		1	2	1					2	1	1	1		1	1		26
Downy Woodpecker			1	1							1	1			1				1												1					7
Hairy Woodpecker																	1																			1
Blue Jay	2	1		1	1	1			2		1	3	1		1		2					2	1				1	1	1	2	2			1		27
Carolina Chickadee		1	1	2		1				2	2	1				1			1		1								1	2			3	2		21
Tufted Titmouse		1															1																			2
White-breasted Nuthatch			1	1						1	2											2					1		1		2			1		12
Brown Creeper												1																								1
Carolina Wren											1																									1
Golden-crowned Kinglet											1								1																	2
American Robin	1		2		2		1					1				1						1						1						2		12
Cedar Waxwing							1																													1
Field Sparrow														1												1						1				3
Song Sparrow																																			1	1
Swamp Sparrow																																3			1	4
White-throated Sparrow	1												1										1												1	4
Dark-eyed Junco													10															2								12
Northern Cardinal				1						1	1		1								1															5
Red-winged Blackbird																							2	2	2											6
Brown-headed Cowbird					1																															1
TOTAL INDIVIDUALS	5	5	6	8	7	4	2	0	3	6	11	8	13	1	5	6	7	0	4	0	3	7	5	2	2	1	2	6	4	8	7	5	4	7	3	167
NUMBER OF SPECIES	4	4	5	6	5	4	2	0	2	5	9	6	4	1	4	3	5	0	4	0	3	4	4	1	1	1	2	4	4	4	5	3	2	5	3	23

Appendix A continued on following page.

Appendix A (continued).

	WINTER CENSUS 1																																			
	CENSUS POINT																																			
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Sharp-shinned Hawk																																			1	1
Red-headed Woodpecker					2						2				2	1		1												4	1					13
Red-bellied Woodpecker	1	2					1			2					1		1	1			1	2						2	1		1			1		17
Yellow-bellied Sapsucker			2									2																								4
Downy Woodpecker				1							1								1			1	2		1			1								8
Hairy Woodpecker										1																										1
Pileated Woodpecker																					1													1		2
Blue Jay	1		2		2		1		1		1	3	1			1									2											15
American Crow																												1								1
Carolina Chickadee			2							1	1		1			1			7		2	1	2		1					2			1			22
Tufted Titmouse																			2									1		1						4
White-breasted Nuthatch			1																2		2	2	2		1			2	1	2	1					15
Carolina Wren																												1								1
European Starling																									2											2
American Tree Sparrow													1																							1
Song Sparrow																		3																		3
Northern Cardinal				1		1	2		1			2	1																						1	9
TOTAL INDIVIDUALS	2	2	7	2	4	1	4	0	2	4	5	7	4	0	3	3	1	5	12	0	6	6	6	0	7	0	0	8	2	9	3	0	1	2	2	120
NUMBER OF SPECIES	2	1	4	2	2	1	3	0	2	3	4	3	4	0	2	3	1	3	4	0	4	4	3	0	5	0	0	6	2	4	3	0	1	2	2	17

	WINTER CENSUS 2																																			
	CENSUS POINT																																			
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Sharp-shinned Hawk			1																																	1
Bared Owl																			1																	1
Red-headed Woodpecker					3						2						3													3	1					12
Red-bellied Woodpecker	1	1	2	1	1	1	1		1	1	1											1	1				1		2		1		1			16
Downy Woodpecker	1			2	1	1	1		1			1									1	2						1				2	2	2		18
Northern Flicker																									1											1
Blue Jay		1	2	2	1	1	1				1					1					1		1		1		1	2	2	1	1			1		21
Carolina Chickadee	1	2		2	1	1			1		2				2	1	1								1			1		1	1					18
Tufted Titmouse	1		2	1	2						1														2			1	2		1		1			14
White-breasted Nuthatch	2	1		1	2				1			1											2		1		1		2	1	1			1		17
European Starling																									1											1
American Tree Sparrow							20																													20
Song Sparrow																																1				1
Dark-eyed Junco																					1															1
Northern Cardinal				1			1									1		1							2						1				2	9
American Goldfinch																						1														1
TOTAL INDIVIDUALS	6	5	7	10	11	4	24	0	4	1	7	2	0	0	2	3	4	1	1	0	3	4	4	0	9	0	3	5	8	6	7	3	4	4	2	154
NUMBER OF SPECIES	5	4	4	7	7	4	5	0	4	1	5	2	0	0	1	3	2	1	1	0	3	3	3	0	7	0	3	4	4	4	7	2	3	3	1	16

Appendix A concluded on following page.

Appendix A (concluded).

	SPRING CENSUS 1																																			
	CENSUS POINT																																			
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Red-tailed Hawk			1																																	1
American Woodcock																											1									1
Mourning Dove																									1											1
Red-headed Woodpecker	1																					1								3						5
Red-bellied Woodpecker									1	1	1										1				1		1	2		1	2					11
Yellow-bellied Sapsucker							1																													1
Downy Woodpecker				1		1				1	1		1		1						2							2			2					12
Hairy Woodpecker				1																																1
Pileated Woodpecker			1																																	1
Eastern Pheobe																									1			1								2
Blue Jay				2		1				1	3													1	1			1								10
American Crow																3																				3
Carolina Chickadee				2		1																2							1							6
Tufted Titmouse	1	2		2							2	1					2				1	1							1							13
White-breasted Nuthatch	3	1											2						1		1	2							1		2					13
Carolina Wren				1																																1
Eastern Bluebird																					1				3	1										5
American Robin	1	1													1		1		1			3	1				1			1						11
European Starling																						1			1			1	1							4
American Tree Sparrow									1																											1
Fox Sparrow				3																																3
Song Sparrow																										2						2				4
Swamp Sparrow																																1				1
Northern Cardinal				1	1						2		1						1		1		1	2	1											11
Red-winged Blackbird				1																3			3	2		1	1					5				15
Brown-headed Cowbird									1																			1	1							3
TOTAL INDIVIDUALS	6	4	2	14	1	3	1	0	3	3	9	1	4	0	2	3	3	0	3	3	7	10	5	5	9	4	4	9	5	5	6	6	0	0	0	141
NUMBER OF SPECIES	4	3	2	9	1	3	1	0	3	3	5	1	3	0	2	1	2	0	3	1	6	6	3	3	7	3	4	6	5	3	3	3	0	0	0	26

	SPRING CENSUS 2																																			
	CENSUS POINT																																			
Species Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Red-tailed Hawk						1																														1
Common Snipe																																3				3
Mourning Dove				1																			1													2
Red-headed Woodpecker	1				1											2	1				2	1								3	2					13
Red-bellied Woodpecker			1	1	1				1													2						2	1		1		1	1		12
Yellow-bellied Sapsucker		1			2					1						1			1																	6
Downy Woodpecker	1		1		1					1	1								1			2						1					2	1		12
Northern Flicker				1	1																															2
Eastern Pheobe			1		1																															2
Carolina Chickadee			1								3					2																	1			7
Tufted Titmouse		1	1			2			1												1	1			1		1		1	3			1	1		15
White-breasted Nuthatch																													1	1	1					3
Brown Creeper																			3		1															4
Winter Wren					1														1																	2
Golden-crowned Kinglet	2		3	1									1			3			3						1					1						15
Ruby-crowned Kinglet					1								1						2		2		1						1							8
Hermit Thrush					1														1																	2
American Robin		1			1	1																1	1					1								6
Brown Thrasher						1								1	1										1		1									5
European Starling	1			1	5																							1		1				1		10
Yellow-rumped Warbler					1					2	1					1													2	1						8
Black and White Warbler			1																																	1
Louisiana Waterthrush																					1	1						1								3
Eastern Towhee		1		1		2																					1		1	1						7
Field Sparrow					1		1	1	1				1	1	1			1		1	1		2		2	1	2								1	18
Song Sparrow					1		1													1							1		1							5
White-throated Sparrow																									2											2
Northern Cardinal			1	1		1	1				2	1				1			1		2	1			1		1									14
Red-winged Blackbird					1															1	3		1	6	2	3						3			1	21
Brown-headed Cowbird	1	2	2	1	1	4				1		1	1		1					1	1						1	1	1	1	2					23
TOTAL INDIVIDUALS	6	6	12	8	21	12	3	1	3	5	7	2	4	2	3	10	1	1	13	4	14	9	6	6	10	4	8	7	9	12	6	6	5	4	2	232
NUMBER OF SPECIES	5	4	9	8	16	7	3	1	3	4	4	2	4	2	3	5	1	1	8	4	9	7	5	1	7	2	7	6	8	6	4	2	4	4	2	30