Summer 2005 Breeding Birds Surveys at the Proposed Top Notch Wind Project in Fairfield and Norway, New York

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1.0 Introduction

Woodlot Alternatives, Inc. (Woodlot) conducted systematic point-counts to characterize the species diversity and abundance of birds breeding in the vicinity of the proposed Top Notch Wind Project in Fairfield and Norway, New York. These efforts were intended to provide a baseline record of the area's breeding avifauna. Information on species presence, abundance, nest building, courtship displays, and any other notable behaviors were recorded.

The project area is located on largely hilltop farms and forests in the towns of Fairfield and Norway in Herkimer County, New York. The project area lies within the Mohawk Valley, Eastern Adirondack Transition, and Western Adirondack Foothills ecozones. The area is rural, dominated by a mosaic of agricultural fields, fragmented woodlands, and low density housing. The site is located on the southwestern edge of Adirondack Park. In some areas, the transition between cultivated fields and woodlands is buffered by early-successional or scrub habitat. Avian species tolerant of disturbed areas, croplands, pastures, sharp transitional edges, and fragmented woodlands would be expected to occur in this environment.

Due to the predominance of open agricultural lands in the project area and it proximity to Adirondack Park, species known to prefer or require extensive tracts of intact forest or grassland habitat may breed within the project area. Species listed as endangered, threatened, or of special concern by the New York Department of Environmental Conservation that might be expected in the proposed project area include the northern harrier (*Circus cyaneus*), upland sandpiper (*Bartramia longicauda*), horned lark (*Eremophila alpestris*), Henslow's sparrow (*Ammodramus henslowii*), grasshopper sparrow (*Ammodramus savannarum*), and vesper sparrow (*Pooecetes gramineus*).

2.0 Methods

2.1 Field Surveys

Breeding bird surveys were conducted in forested edges, farm fields, and in woodlands in the project area during four days in June 2005 (Figure 2-1). The point count method, modeled on U.S. Fish and Wildlife Service Breeding Bird Survey (BBS) methodology (Sauer *et al.* 1997), was used to count individuals of each species located at a series of survey points. Thirty survey points were sampled, including 17 points in fields, 11 in forests, and 2 in forest edge habitats. Fifteen points were surveyed daily on June 6 and 7, and the entire survey of all 30 points was repeated again on June 16 and 17. Surveys were designed to document breeding birds during peak nesting season, when male birds are calling. Point counts help determine the abundance and species richness of the local bird community. Survey locations were chosen to provide coverage of the proposed locations of the wind turbines and transmission lines as well as proportional coverage of the project area habitat types. The survey points were spaced to ensure that double-counting of individuals did not occur. Point locations were recorded using GPS.

Breeding bird surveys were conducted during the peak of nesting season. All points were surveyed on days with suitable weather conditions, which included generally mild conditions with, at worst, light rain showers and light to moderate winds. Surveys were not conducted during periods of moderate to heavy rain or high winds. Surveys were timed to coincide with the hours of peak bird singing activity, approximately 4:30 to 10:00 am. Each point was surveyed for five minutes during which all visual or audible observations of birds were recorded onto a data sheet for that point. Each bird was identified as to species, distance from survey site (0 – 50 m, 50 – 100 m, or >100 m), and time interval when it was first

observed (first three minutes or last two minutes). This method is similar to the methodology of the BBS and provides the opportunity for comparison with BBS data in the future. The approximate location of each bird was also plotted on a point count data sheet to ensure that individual birds were not double-counted.

When possible, species identification of individual birds and observations of birds flying overhead (flyovers) were documented as were observations of specific activities (i.e., singing, courtship flights, territorial displays, nest flushes, food exchanges, or foraging). In addition, bird observations made while traveling between survey points were noted.

2.2 Data Analysis

Data collected from the field surveys were used to calculate the species richness, relative abundance, and frequency of breeding avian species over the entire survey area and by habitat type. Although all birds observed were recorded on the data sheets, only birds recorded within 100 meters (m) of the survey site were used in the data analysis to avoid double-counting birds that occurred at adjacent points. Birds observed beyond 100 m, flyovers, and incidental observations were not included in the numerical analyses.

3.0 Results

Surveys were conducted on good weather days, generally with low winds and sunny skies. Temperatures ranged from 50 to 65 degrees during June survey periods.

During the two survey periods, a total of 336 birds representing 55 species were observed along the 30-point survey route. Of these, 294 birds and 51 species were included in the numerical analyses (Table 1). Forty-two birds and 4 species were removed from the analyses because these occurrences were greater than 100 m from the survey points or were flyovers.

When the two survey results are combined for each point, the total number of birds observed at each survey point ranged from 8 to 15, with an overall relative abundance of 4.9. Species richness (number of observed species at survey points) ranged from 4 to 15 species per survey point (mean = 7.7).

The most frequently observed species along the entire survey route were the song sparrow (*Melospiza melodia*), American robin (*Turdus migratorius*), and common yellowthroat (*Geothlypis trichas*). Bobolinks (*Dolichonyx oryzivorus*), savannah sparrows (*Passerculus sandwichensis*), and song sparrows had the highest relative abundance.

The northern harrier was the only New York state threatened species observed. New York species of Special Concern observed included the horned lark and the grasshopper sparrow.

Species that were observed exclusively as flyover species included American goldfinch (*Carduelis tristis*), barn swallows (*Hirundo rustica*), and tree swallows (*Tachycineta bicolor*). These species were excluded from the numerical analyses; their breeding status in the project area could not be determined.

3.1 Field Habitats

Fifty-seven percent of the survey points were in field habitats. Fifty-five percent of the individual birds (161 birds) and 57 percent of the species (29 species) observed occurred at these points. Twenty-five

percent of all species observed (13 species) were unique to field habitats (Table 2). Song sparrows, bobolinks, and savannah sparrows were the most frequently observed species. The most abundant species were bobolinks, savannah sparrows, and red-winged blackbirds (*Agelaius phoeniceus*). The relative abundance of all bird species in field habitats was 4.74.

3.2 Forest Habitats

Thirty-seven percent of the survey points were within forested habitats. Thirty-seven percent of the individual birds (109 birds) and 66 percent of the species (34 species) observed occurred at these points. Twenty-nine percent of all species observed (15 species) were unique to points in forest habitats (Table 2). Yellow warblers (*Dendroica petechia*), American robins, and American redstarts (*Setophaga ruticilla*) were the most frequently observed species. These three species, and the black-capped chickadee (*Poecile atricapillus*), were the most abundant species. The relative abundance of all bird species in forest habitats was 4.95.

3.3 Forest Edge Habitats

Seven percent of the survey points were identified as being in forest edge habitats. Eight percent of the individual birds (24 birds) and 37 percent of the species (19 species) observed occurred at these points. Three species (6%) observed were unique to forest edge habitats (Table 2). Yellow warblers, American robins, and common yellowthroats were the most frequently observed species. The most abundant species were yellow warbler, least flycatcher (*Empidonax minimus*), common yellowthroat, and American robin. The relative abundance of all bird species in forest edge habitat was 6.00.

4.0 Discussion

The species encountered during the breeding bird surveys at the proposed Top Notch Wind Project are consistent with those expected in the habitats present. The most abundant birds across all habitat types are well-documented as breeding species in the Fairfield project area and throughout New York: bobolinks, savannah sparrows, and song sparrows (Andrle and Carroll 1988).

The most abundant birds within each habitat type were also consistent with historical records for the project area. The most abundant species at field points, bobolinks, savannah sparrows, and red-winged blackbirds, are common in open habitats (Andrle and Carroll 1988). These three species accounted for 48 percent of the total observations in field habitat.

Yellow warblers, American robins, American redstarts, and black-capped chickadees were the most abundant species at the forest points. Of these species, the redstart and chickadee are most strongly associated with forest habitat types. Yellow warblers and American robins will commonly use more open habitats and were also among the most abundant species observed at the forest edge points. Their presence at the forest points indicates that the forests in the project area are generally small and lack most species indicative of forest interiors. The forest habitat survey points had the greatest species richness (Table 1) and the highest number of unique species (Table 2)

The yellow warbler, least flycatcher, common yellowthroat, and American robin were the most abundant birds at forest edge points, characteristic habitat for these species (Andrle and Carroll 1988).

Point counts produce an index of relative abundance rather than a complete count of breeding bird populations (Sauer *et al.* 1997). The relative abundance for field and forest habitats were similar: 4.74

and 4.95, respectively. Forest edge habitat had the highest relative abundance of 6.00 but the lowest total number of observations and species richness (Table 1).

The northern harrier was the only New York state threatened species observed. New York species of special concern observed included the horned lark and the grasshopper sparrow. All observations of New York state-listed species occurred at survey points in field habitat. A northern harrier (threatened), grasshopper sparrow (special concern), and horned lark (special concern) were each observed at different survey points in field habitat.

5.0 Conclusions

Yellow warblers, American robins, American redstarts, and black-capped chickadees were the most abundant species at the forest points. The yellow warbler, least flycatcher, common yellowthroat, and American robin were the most abundant birds at forest edge points. Species dependent upon or tolerant of open habitats (cropland and fields) were preponderant in the breeding bird surveys (bobolink, red-winged blackbird, and savannah sparrow).

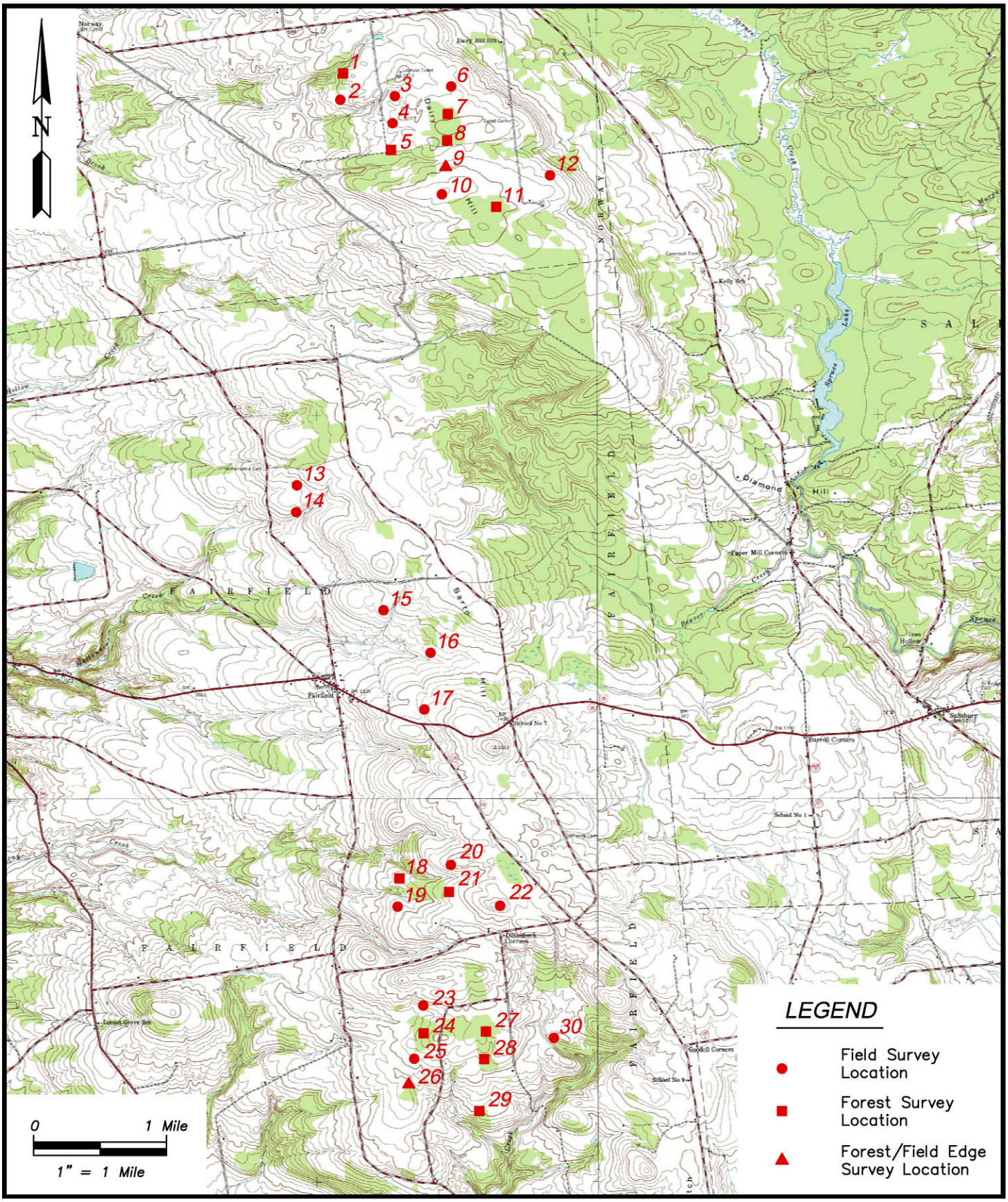
The project area consists of upland grasslands, croplands, forests, and forest edge. The forested habitat had the greatest species richness and highest number of unique species. Forested parcels and grasslands within the study area contained good bird diversity. These results may indicate that breeding birds in forested patches in the project area may be from populations from Adirondack Park.

6.0 Literature Cited

Andrle, R. F. and J. R. Carroll. 1988. The Atlas of Breeding Birds in New York State. Cornell University Press, Ithaca, NY and London.

Sauer, J. R., J. E. Hines, G. Gough, I. Thomas, and B. G. Peterjohn. 1997. The North American Breeding Bird Survey Results and Analysis. Version 96.4. Patuxent Wildlife Research Center, Laurel, MD

Figures



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DATE:	November 2005
SCALE:	1" = 1 Mile
JOB NO.	105029
FILE:	105029-00-BreedBird.dwg

Figure 2-1
2005 Breeding Bird Survey Points
Top Notch Wind Project
Fairfield, New York

REV.

Tables

Table 1. 2005 Breeding Bird Survey Results - Top Notch Wind Project

Species	Field (17 Points)			Forest (11 Points)			Forest Edge (2 Points)			All Habitats (30 Points)		
	Total #[a]	Relative Abundance[b]	Frequency[c]	Total #[a]	Relative Abundance[b]	Frequency[c]	Total #[a]	Relative Abundance[b]	Frequency[c]	Total #[a]	Relative Abundance[b]	Frequency[c]
American crow		0.00	0.0%		0.00	0.0%	1	0.25	50.0%	1	0.02	3.3%
American redstart	2	0.06	11.8%	8	0.36	72.7%	1	0.25	50.0%	11	0.18	36.7%
American robin	7	0.21	35.3%	10	0.45	81.8%	2	0.50	100.0%	19	0.32	56.7%
American woodcock	2	0.06	11.8%		0.00	0.0%		0.00	0.0%	2	0.03	6.7%
Baltimore oriole		0.00	0.0%	1	0.05	9.1%		0.00	0.0%	1	0.02	3.3%
Black-and-white warbler		0.00	0.0%	4	0.18	27.3%		0.00	0.0%	4	0.07	10.0%
Black-capped chickadee	1	0.03	5.9%	8	0.36	63.6%	1	0.25	50.0%	10	0.17	30.0%
Blue-gray gnatcatcher		0.00	0.0%	1	0.05	9.1%		0.00	0.0%	1	0.02	3.3%
Blackburnian warbler	2	0.06	11.8%	4	0.18	36.4%		0.00	0.0%	6	0.10	20.0%
Blue jay		0.00	0.0%	4	0.18	36.4%		0.00	0.0%	4	0.07	13.3%
Bobolink	35	1.03	88.2%		0.00	0.0%		0.00	0.0%	35	0.58	50.0%
Brown thrasher	1	0.03	5.9%	1	0.05	9.1%	1	0.25	50.0%	3	0.05	10.0%
Black-throated blue warbler		0.00	0.0%	1	0.05	9.1%		0.00	0.0%	1	0.02	3.3%
Black-throated green warbler		0.00	0.0%	5	0.23	27.3%	1	0.25	50.0%	6	0.10	13.3%
Blue-winged warbler		0.00	0.0%		0.00	0.0%	1	0.25	50.0%	1	0.02	3.3%
Cedar waxwing	1	0.03	5.9%		0.00	0.0%		0.00	0.0%	1	0.02	3.3%
Common grackle	1	0.03	5.9%		0.00	0.0%		0.00	0.0%	1	0.02	3.3%
Common yellowthroat	9	0.26	52.9%	6	0.27	45.5%	2	0.50	100.0%	17	0.28	53.3%
Chestnut-sided warbler	1	0.03	5.9%	4	0.18	27.3%		0.00	0.0%	5	0.08	13.3%
Dark-eyed junco		0.00	0.0%	2	0.09	18.2%		0.00	0.0%	2	0.03	6.7%
Downy Woodpecker		0.00	0.0%	2	0.09	18.2%		0.00	0.0%	2	0.03	6.7%
Eastern Meadowlark	8	0.24	41.2%		0.00	0.0%		0.00	0.0%	8	0.13	23.3%
Eastern phoebe		0.00	0.0%	1	0.05	9.1%		0.00	0.0%	1	0.02	3.3%
Eastern towhee	1	0.03	5.9%	2	0.09	9.1%	1	0.25	50.0%	4	0.07	10.0%
Eastern wood-pewee		0.00	0.0%	1	0.05	9.1%		0.00	0.0%	1	0.02	3.3%
European starling	3	0.09	17.6%		0.00	0.0%		0.00	0.0%	3	0.05	10.0%
Gray catbird	1	0.03	5.9%	1	0.05	9.1%	1	0.25	50.0%	3	0.05	10.0%
Grasshopper sparrow	1	0.03	5.9%		0.00	0.0%		0.00	0.0%	1	0.02	3.3%
Hairy woodpecker		0.00	0.0%	3	0.14	18.2%		0.00	0.0%	3	0.05	6.7%
Horned lark	2	0.06	5.9%		0.00	0.0%		0.00	0.0%	2	0.03	3.3%
House wren	1	0.03	5.9%		0.00	0.0%		0.00	0.0%	1	0.02	3.3%
Indigo bunting	1	0.03	5.9%	2	0.09	18.2%	1	0.25	50.0%	4	0.07	13.3%
Least flycatcher		0.00	0.0%	5	0.23	45.5%	2	0.50	50.0%	7	0.12	20.0%
Mourning dove		0.00	0.0%	1	0.05	9.1%		0.00	0.0%	1	0.02	3.3%
Mourning warbler		0.00	0.0%	1	0.05	9.1%		0.00	0.0%	1	0.02	3.3%
Northern harrier	1	0.03	5.9%		0.00	0.0%		0.00	0.0%	1	0.02	3.3%
Ovenbird	6	0.18	23.5%	2	0.09	18.2%		0.00	0.0%	8	0.13	20.0%
Prairie warbler		0.00	0.0%	1	0.05	9.1%		0.00	0.0%	1	0.02	3.3%
Rose-breasted grosbeak		0.00	0.0%	1	0.05	9.1%	1	0.25	50.0%	2	0.03	6.7%
Red-eyed vireo	2	0.06	11.8%	4	0.18	27.3%		0.00	0.0%	6	0.10	16.7%
Red-winged blackbird	18	0.53	58.8%		0.00	0.0%	1	0.25	50.0%	19	0.32	36.7%
Savannah sparrow	25	0.74	88.2%		0.00	0.0%		0.00	0.0%	25	0.42	50.0%
Scarlet tanager	2	0.06	11.8%		0.00	0.0%		0.00	0.0%	2	0.03	6.7%
Song sparrow	21	0.62	88.2%	2	0.09	18.2%	1	0.25	50.0%	24	0.40	60.0%
Veery		0.00	0.0%	8	0.36	63.6%	1	0.25	50.0%	9	0.15	26.7%
White-breasted nuthatch		0.00	0.0%	1	0.05	9.1%		0.00	0.0%	1	0.02	3.3%

(continued)

Table 1. 2005 Breeding Bird Survey Results - Top Notch Wind Project (continued)

Species	Field (17 Points)			Forest (11 Points)			Forest Edge (2 Points)			All Habitats (30 Points)		
	Total #[a]	Relative Abundance[b]	Frequency[c]	Total #[a]	Relative Abundance[b]	Frequency[c]	Total #[a]	Relative Abundance[b]	Frequency[c]	Total #[a]	Relative Abundance[b]	Frequency[c]
Wood thrush	1	0.03	5.9%		0.00	0.0%		0.00	0.0%	1	0.02	3.3%
White-throated sparrow	1	0.03	5.9%	1	0.05	9.1%	1	0.25	50.0%	3	0.05	10.0%
Yellow-billed cuckoo		0.00	0.0%		0.00	0.0%	1	0.25	50.0%	1	0.02	3.3%
Yellow-rumped warbler		0.00	0.0%	1	0.05	9.1%		0.00	0.0%	1	0.02	3.3%
Yellow warbler	4	0.12	23.5%	10	0.45	81.8%	3	0.75	100.0%	17	0.28	50.0%
Total	161	4.74		109	4.95		24	6.00		294	4.90	
# Species	29			34			19			51		

a Total number of observations.
b Mean number of birds observed.
c Percent of survey points where species occurred.

Table 2. Breeding Bird Species Unique to Individual Habitat Types		
Field	**Forest**	**Forest Edge**
American woodcock	Baltimore oriole	American crow
Bobolink	Black and white warbler	Blue-winged warbler
Cedar waxwing	Blue-gray gnatcatcher	Yellow-billed cuckoo
Common grackle	Blue jay	
Eastern meadowlark	Black-throated blue warbler	
European starling	Dark-eyed junco	
Grasshopper sparrow	Downy woodpecker	
Horned lark	Eastern phoebe	
House Wren	Eastern wood-pewee	
Northern harrier	Hairy woodpecker	
Savannah sparrow	Mourning dove	
Scarlet tanager	Mourning warbler	
Wood thrush	Prairie warbler	
	White-breasted nuthatch	
	Yellow-rumped warbler	