Breeding Bird Surveys for Proposed Copenhagen Wind Project

Jefferson and Lewis Counties, New York

Surveys Conducted April –July 2012

Report Last Revision Date: November 29, 2012

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1.0 Executive Summary

In the spring and summer of 2012, eighty point count sites and seven qualitative Meander search sites were sampled on the proposed location of the Copenhagen Wind Project. Additionally, seventeen of the point count sites were sampled specifically for Short-eared Owls. These three surveys were run in an effort to document avian site use.

At the eighty point count sites (Appendix A), eighty-two species were observed either visually or audibly. One rare bird, a Horned Lark, HOLA, was observed at point 70 during this sampling.

At the seven area search sites (Appendix A), fifty species were observed either visually or audibly. Overall, 49.02 birds per party hour were detected. Two rare birds, both Horned Larks, HOLA, were observed at Meander Survey Area 1 during this sampling.

No owls were observed at the Short-eared Owl survey points (Appendix A). A total of fifty-two species were observed either visually or audibly. One rare bird, a Horned Lark, HOLA, was observed at point 38 during this sampling.

One additional rare species, the Vesper Sparrow, VESP, was observed near the meteorological (MET) tower within the project area incidentally.

2.0 Background

The proposed location for the Copenhagen Wind Project is in Jefferson and Lewis counties, New York. The proposed wind farm will reside on a leased project area. The project will consist of fifty-eight turbines, a substation, and various roads, collection lines, and transmission lines. The site is mostly agricultural areas with some patches forest and residential areas. Many roads traverse the project area.

3.0 Methods

The methods described below are based on the New York Department of Environmental Conservation (DEC) Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects (Guidelines) specifically adapted for the proposed Copenhagen Wind Project. The clarifications in this report and work plan will hold precedence over the original monitoring guidelines, as some methods may have been adjusted exclusively for the Copenhagen site. These methods were agreed to by the developer and NY DEC in the form of a study plan prior to sampling.

Breeding bird surveys were intended to provide an estimate of the type and relative frequency of each species moving through the area in the spring and using habitat in the project area during nesting time. The overall objective was to determine the late spring/summer presence, absence, and site use by rare, threatened, or endangered (RTE) bird species such as Northern Harrier, Upland Sandpiper, Short-Eared Owl, Henslow's

Sparrow, Grasshopper Sparrow, Vesper Sparrow, and Sedge Wren. The Northern Harrier and Upland Sandpiper are known to be present at nearby locations.

Short-eared Owl Surveys

In early May points were surveyed targeting Short-eared Owls. The surveys were conducted from May 7 to May 11. The surveys consisted of morning and evening surveys conducted at seventeen of the breeding bird points. Three points were eliminated from the original work plan as the landowner was no longer participating in the project. Evening surveys were conducted one hour before sunset until two hours after sunset. Audio Playback of Short-eared Owl calls was used during owl surveys. Methods were completed as outlined below for Point Count surveys except each point was ten minutes in length instead of five.

Point Counts

Surveys were conducted during the breeding season from late May through July 20. Survey events were conducted as follows: One in late May, three in June, and one in July. Point counts were morning surveys conducted between one-half hour before sunrise until no later than 10:30am. Point counts were not conducted during periods of excessive wind, rain, or cold.

Based on overall project size and project configuration, eighty-nine points were selected to complete the survey; however, points one through nine were removed as the landowners were no longer participating in the project. Points were selected to include potential turbine sites and good grassland habitat near them. Habitat for these points focused on a variety of grassland habitats such as agricultural fields, fallow fields, pastures, and early successional areas. Several points also encompassed wetland areas and forested patches.

Each point count covered a circular plot survey centered on the observation point. Point counts were conducted for five minutes and all birds observed (identified by sight or sound) within approximately 100m were recorded. Observation points were marked with GPS coordinates for future reference. Data recorded for each survey included start and end time of the observation period and weather information such as temperature, wind speed, wind direction, and cloud cover. Species identification, number of individuals of each species, method of observation (visual or auditory), and behavior (nesting, flying, perching, singing, etc.) were recorded for each observation during the five minute point count. Care was taken to avoid duplicate counting of individuals at the same point or at multiple points. Locations of visibly observed RTE species were recorded, without disturbing the bird(s), by taking a GPS point (NAD83 format) at the initial observation point, then an azimuth with a compass and, lastly, a distance with a laser range finder. Aural observations of RTE species were noted by taking an “Observed From” GPS point and approximate azimuth with a compass.

Qualitative Meander Surveys

Breeding bird qualitative meander surveys were conducted on the proposed Copenhagen Wind Project site to supplement breeding bird point counts. Meander surveys are used to target unique habitats and/or species with cryptic behavior that may not be detected during traditional point counts. Here, meander surveys targeted the most suitable habitat for RTE grassland birds.

Seven meander survey locations were selected to observe for breeding birds (Appendix A). These areas were surveyed monthly (May, June, and July). Meander survey locations were selected based on 2009 and 2006 aerial photos with attempts to select the most ideal grassland habitat available in the project area. The locations were selected to target areas containing early successional characteristics, fallow agriculture areas, and active agriculture mixed with edge and wetland habitat. The observer surveyed each location and recorded all birds encountered.

Sampling occurred between one half hour before sunrise and 10:30 AM. Excessively windy, rainy, or cold time periods were not surveyed. Each location was approached quietly in order to avoid disturbance of birds. Each individual bird was noted in the first location it is observed during the survey. Care was taken to avoid duplicate counting of individuals at the same location or at multiple locations. Data recorded for each survey included start and end time of the observation period and weather information such as temperature, wind speed, wind direction, and cloud cover. Species identification, number of individuals of each species, method of observation (visual or auditory), and behavior (nesting, flying, perching, singing, etc.) was recorded for each observation.

The observer slowly walked around each area search location for a minimum of thirty minutes and no more than sixty minutes. Time spent surveying was used as a measure of effort made by the observer and the bird data was interpreted as birds per party hour.

Locations of visibly observed RTE species were recorded without disturbing the bird(s) by taking a GPS point (NAD83 format) at the initial observation point, then an azimuth with a compass and, lastly, a distance with a laser range finder. Aural observations of RTE species were noted by taking an “Observed From” GPS point and approximate azimuth.

Incidental Sightings

Any incidental sightings of rare, threatened, or endangered species were also recorded. Behavior and location data was recorded. These sightings would include any observance within the project boundary yet outside of the point count or meander areas/samplings times.

4.0 Results

Overall

A total of eighty-seven species were detected during 2012 Breeding Bird Surveys. This includes species detected during Owl Surveys, Point Count Surveys, and Meandering Surveys. A location and brief description for each point and Meander survey area can be found in Appendix A. A complete list of these species and their respective alpha codes can be found in Appendix B. No endangered or threatened species were encountered during surveys or as incidentals. Two rare species, the Vesper Sparrow (VESP) and Horned Lark (HOLA), were encountered on the project area. Northern Harriers (NOHA) and Upland Sandpipers (UPSA) were seen in the vicinity of the project area but were never encountered within project boundaries and, therefore, were not recorded on surveys or as incidentals.

Owl Surveys

No owls of any species were detected during owl surveys. A total of 49 species were observed during the morning and evening surveys for owls (Table 4-1). A total of 419 individuals were observed during the survey. The majority of the birds, 72%, were observed during the morning survey. The most frequently observed birds during the Short-eared Owl surveys were the Red-winged Blackbird (RWBL) at 17.9% relative frequency, American Robin (AMRO) at 10.0% relative frequency, Song Sparrow (SOSP) at 9.1% relative frequency, Yellow Warbler (YWAR) at 6.4% relative frequency, and Bob-o-link (BOBO) at 6.0% relative frequency.

Flyovers and birds observed at greater than 100 meters from the point are not included in the table. Common Grackle (COGR), European Starling (EUST), Belted Kingfisher (BEKI), and an Unknown Duck (UNDU) were all observed as flyovers only and are not included in the species table.

Table 4-1: 2012 Owl Survey Results - Copenhagen Wind Farm					
Owls - Morning			Owls - Evening		
Species	Number of Individuals	Relative Percent	Species	Number of Individuals	Relative Percent
AMCR	3	0.9%	AMGO	1	0.8%
AMGO	4	1.3%	AMRO	16	12.9%
AMRE	5	1.6%	AMWO	5	4.0%
AMRO	26	8.2%	BCCH	3	2.4%
AMWO	1	0.3%	BLJA	1	0.8%
BAOR	1	0.3%	BOBO	12	9.7%
BAWW	4	1.3%	COYE	2	1.6%
BCCH	9	2.8%	EAKI	1	0.8%
BHCO	1	0.3%	EATO	5	4.0%
BLJA	8	2.5%	GRCA	5	4.0%
BOBO	13	4.1%	HETH	3	2.4%
BRTH	3	0.9%	KILL	3	2.4%
BTBW	1	0.3%	OVEN	1	0.8%
BTNW	2	0.6%	RBGR	2	1.6%
BWWA	1	0.3%	RUGR	1	0.8%
CANG	2	0.6%	RWBL	26	21.0%
CHSP	1	0.3%	SOSP	16	12.9%
COYE	10	3.2%	UNBI	1	0.8%
DOWO	1	0.3%	UNWA	1	0.8%
EAKI	3	0.9%	WAVI	2	1.6%
EAPH	2	0.6%	WITU	1	0.8%
EATO	7	2.2%	WTSP	3	2.4%
FISP	6	1.9%	YWAR	5	4.0%
GCFL	2	0.6%	**Total:**	**116**	
GRCA	15	4.7%			
HETH	5	1.6%			
HOLA	1	0.3%			
KILL	6	1.9%			
MODO	2	0.6%			
NOCA	1	0.3%			
NOFL	3	0.9%			
OVEN	11	3.5%			
PUFI	1	0.3%			
RBGR	1	0.3%			
RBGU	1	0.3%			
ROPI	2	0.6%			
RUGR	2	0.6%			
RWBL	49	15.5%			
SAVS	9	2.8%			
SOSP	22	6.9%			
SWSP	2	0.6%			
TRES	9	2.8%			
TUVU	8	2.5%			
UEFL	1	0.3%			
UNBI	2	0.6%			
UNWO	4	1.3%			
VEER	1	0.3%			
WAVI	2	0.6%			
WITU	1	0.3%			
WOTH	1	0.3%			
WTSP	3	0.9%			
YWAR	22	6.9%			
Total:	**303**				

Point Count Surveys

A series of unfortunate events while conducting breeding bird surveys in May resulted in a loss of the majority of the datasheets for the first round of breeding bird point count surveys. A species list was recovered (Table 4-2), but not data for individual points. Meander points 5, 6, and 7 were also lost as well as some early surveys from the month of June, which were resurveyed; however, some surveys were less than seven days apart as resurvey of points did not permit full seven day spacing. For this reason, no May data is included in the Point Count analysis. This data loss in no way compromised detection of RTE species or the site species list — only May common species frequency data was compromised.

A total of 55 species were observed during the late May point count survey. No RTE species were observed during these surveys.

Table 4-2: 2012 May Point Count Species - Copenhagen Wind Farm

Common Name	Alpha Code	Common Name	Alpha Code
American Crow	AMCR	House Wren	HOWR
American Goldfinch	AMGO	Killdeer	KILL
American Kestrel	AMKE	Least Flycatcher	LEFL
American Redstart	AMRE	Mallard	MALL
American Robin	AMRO	Mourning Dove	MODO
American Woodcock	AMWO	Northern Cardinal	NOCA
Baltimore Oriole	BAOR	Northern Flicker	NOFL
Belted Kingfisher	BEKI	Ovenbird	OVEN
Black and White Warbler	BAWW	Purple Finch	PUFI
Black-capped Chickadee	BCCH	Red-eyed Vireo	REVI
Blue Jay	BLJA	Red-tailed Hawk	RTHA
Bob-o-link	BOBO	Red-winged Blackbird	RWBL
Brown Thrasher	BRTH	Ring-billed Gull	RBGU
Brown-headed Cowbird	BHCO	Rock Pigeon	ROPI
Canada Goose	CANG	Rose-breasted Grosbeak	RGBR
Chipping Sparrow	CHSP	Ruby-throated Hummingbird	RTHU
Common Grackle	COGR	Ruffed Grouse	RUGR
Common Yellowthroat	COYE	Savannah Sparrow	SAVS
Downy Woodpecker	DOWO	Snow Goose	SNGO
Eastern Kingbird	EAKI	Song Sparrow	SOSP
Eastern Towee	EATO	Tree Swallow	TRES
Eastern Wood-Pewee	EAWP	Turkey Vulture	TUVU
European Starling	EUST	Veery	VEER
Field Sparrow	FISP	Warbling Vireo	WAVI
Gray Catbird	GRCA	White-throated Sparrow	WTSP
Great Blue Heron	GBHE	Wild Turkey	WITU
Great-crested Flycatcher	GCFL	Yellow Warbler	YWAR
Hermit Thrush	HETH		

A total of eighty-one species were observed at the 80 points during four complete survey periods conducted in the months of June and July. One additional species, the Snow Goose (SNGO), was observed only in the May survey. Some individual birds were not identified because of background noise, volume of birds in the sample, distance of the bird from the point, and incomplete calls/songs. Due to similarities between species, "unidentified" was used if the observer could not make a 100% positive identification. When possible, unidentified species were placed into subcategories such as Unidentified Woodpecker (UNWO), Unidentified Sparrow (UNSP), and so on.

Over the four complete survey periods 2,529 individual birds were observed either visually or through audible cues. This number does not include flyover individuals or individuals detected at greater than 100 meters from the point as they are not contained to the sample area.

The highest numbers of individuals were observed during the first survey in June while the lowest numbers of individuals were observed during the last survey in June. The greatest species diversity was observed in the first and second round of June surveys. The lowest species diversity was observed in early July. An overview of the point count results can be found in Table 4-3. Flyover only species and unknown groups are not included as species.

Table 4-3: 2012 Point Count Results

Survey	Number of Species	Number of Individuals
Late May	55	na
June 1st	60	884
June 2nd	60	582
June 3rd	44	525
Early July	41	538

A breakdown of each point count survey can be found in Table 4-4. Birds observed in highest relative frequency were the Red-winged Blackbird, RWBL (21.7%), Song Sparrow, SOSP (10.5%), Savannah Sparrow, SAVS (6.9%), American Robin, AMRO (6.7%), and the Common Yellowthroat, COYE (5.6%). One rare species, the Horned Lark (HOLA) was observed during the early June survey.

Table 4-4: 2012 Breeding Bird Point Count Surveys - Copenhagen Wind Farm

June First Survey			June Second Survey			June Third Survey			Early July Survey		
Species	Number of Individuals	Relative Percent	Species	Number of Individuals	Relative Percent	Species	Number of Individuals	Relative Percent	Species	Number of Individuals	Relative Percent
AMCR	16	1.8%	AMKE	1	0.2%	AMKE	3	0.6%	AMCR	4	0.7%
AMGO	9	1.0%	AMCR	9	1.5%	AMCR	4	0.8%	AMRE	5	0.9%
AMRE	11	1.2%	AMRE	8	1.4%	AMRE	7	1.3%	AMRO	47	8.7%
AMRO	67	7.6%	AMRO	22	3.8%	AMRO	34	6.5%	BAOR	1	0.2%
AMWO	3	0.3%	AMWO	5	0.9%	BAOR	1	0.2%	BARS	3	0.6%
BAOR	10	1.1%	BAOR	4	0.7%	BBCU	1	0.2%	BCCH	16	3.0%
BAWW	11	1.2%	BARS	1	0.2%	BCCH	13	2.5%	BHCO	1	0.2%
BBCU	1	0.1%	BAWW	2	0.3%	BHCO	2	0.4%	BLJA	5	0.9%
BCCH	14	1.6%	BCCH	17	2.9%	BLJA	8	1.5%	BOBO	14	2.6%
BEKI	1	0.1%	BGGN	1	0.2%	BOBO	29	5.5%	BRCR	1	0.2%
BGGN	1	0.1%	BHCO	3	0.5%	BRCR	5	1.0%	CHSP	1	0.2%
BHCO	1	0.1%	BLJA	4	0.7%	CEDW	1	0.2%	COYE	30	5.6%
BLJA	12	1.4%	BOBO	23	4.0%	COGR	1	0.2%	CSWA	3	0.6%
BOBO	33	3.7%	BRCR	4	0.7%	COYE	30	5.7%	DOWO	1	0.2%
BRCR	1	0.1%	BRTH	1	0.2%	CSWA	3	0.6%	EABL	8	1.5%
BRTH	1	0.1%	BTNW	4	0.7%	DOWO	1	0.2%	EAKI	2	0.4%
BTNW	7	0.8%	CEDW	1	0.2%	EABL	7	1.3%	EAPH	4	0.7%
CHSP	4	0.5%	COYE	36	6.2%	EAKI	4	0.8%	EATO	15	2.8%
COGR	10	1.1%	CSWA	3	0.5%	EAME	1	0.2%	EAWP	2	0.4%
COYE	46	5.2%	DOWO	4	0.7%	EAPH	2	0.4%	EUST	24	4.5%
CSWA	5	0.6%	EABL	5	0.9%	EATO	16	3.0%	GRCA	28	5.2%
DOWO	3	0.3%	EAKI	2	0.3%	EAWP	2	0.4%	HAWO	2	0.4%
EAKI	5	0.6%	EAME	1	0.2%	EUST	17	3.2%	HETH	1	0.2%
EAME	1	0.1%	EAPH	7	1.2%	GRCA	21	4.0%	HOSP	22	4.1%
EAPH	4	0.5%	EATO	6	1.0%	HAWO	5	1.0%	MODO	11	2.0%
EATO	15	1.7%	EAWP	5	0.9%	HETH	2	0.4%	NOCA	8	1.5%
EAWP	10	1.1%	EUST	22	3.8%	HOSP	23	4.4%	NOFL	2	0.4%
EUST	16	1.8%	GCFL	4	0.7%	MODO	7	1.3%	NOMO	6	1.1%
FISP	4	0.5%	GRCA	16	2.7%	NOCA	9	1.7%	OVEN	18	3.3%
GCFL	9	1.0%	HAWO	2	0.3%	NOFL	2	0.4%	PIWO	1	0.2%
GRCA	16	1.8%	HETH	5	0.9%	NOMO	3	0.6%	ROPI	6	1.1%
HETH	15	1.7%	HOSP	10	1.7%	OVEN	30	5.7%	RWBL	99	18.4%
HOLA	1	0.1%	HOWR	1	0.2%	PIWO	1	0.2%	SAVS	59	11.0%
HOSP	3	0.3%	INBU	2	0.3%	RBNU	1	0.2%	SCTA	2	0.4%
HOWR	7	0.8%	LEFL	2	0.3%	ROPI	4	0.8%	SOSP	55	10.2%
INBU	7	0.8%	MODO	1	0.2%	RWBL	84	16.0%	SWSP	1	0.2%
KILL	9	1.0%	NOCA	9	1.5%	SAVS	50	9.5%	TUTI	7	1.3%
LEFL	1	0.1%	NOFL	5	0.9%	SOSP	58	11.0%	WBNU	3	0.6%
MODO	6	0.7%	NOMO	5	0.9%	SWSP	1	0.2%	WIFL	1	0.2%
NOCA	4	0.5%	OVEN	24	4.1%	TUTI	8	1.5%	WOTH	6	1.1%
NOFL	3	0.3%	RBGR	2	0.3%	WBNU	3	0.6%	YWAR	13	2.4%
OVEN	21	2.4%	RBNU	3	0.5%	WOTH	7	1.3%	**Total:**	**538**	
PIWO	1	0.1%	RBWO	1	0.2%	YBCU	1	0.2%			
RBGR	4	0.5%	REVI	7	1.2%	YWAR	13	2.5%			
RBNU	1	0.1%	ROPI	1	0.2%	**Total:**	**525**				
REVI	25	2.8%	RTHU	1	0.2%						
ROPI	5	0.6%	RWBL	124	21.3%						
RWBL	243	27.5%	SAVS	43	7.4%						
SAVS	23	2.6%	SCTA	1	0.2%						
SOSP	89	10.1%	SOSP	64	11.0%						
TRES	2	0.2%	SWSP	1	0.2%						
TUTI	1	0.1%	TUTI	10	1.7%						
UNBI	3	0.3%	UNSP	2	0.3%						
UNWA	1	0.1%	UNWO	2	0.3%						
UNWO	2	0.2%	VEER	1	0.2%						
VEER	1	0.1%	WAVI	1	0.2%						
WAVI	3	0.3%	WBNU	5	0.9%						
WIFL	14	1.6%	WIFL	1	0.2%						
WITU	2	0.2%	WOTH	3	0.5%						
WOTH	5	0.6%	WTSP	2	0.3%						
WTSP	3	0.3%	YBSA	1	0.2%						
YBFL	2	0.2%	YWAR	19	3.3%						
YWAR	30	3.4%	**Total:**	**582**							
Total:	**884**										

Qualitative Meander Searches

A total of fifty species were observed at the seven Meander Search locations during the months of April, May, and June (Table 4-5). Data for Meander searches 5, 6, and 7 is not available for the month of May. Some individual birds were not identified because of background noise, volume of birds in the sample, distance of the bird from the area, and incomplete calls/songs. Due to similarities between species, “unidentified” was used if the observer could not make a 100% positive identification. When possible, unidentified species were placed into subcategories such as Unidentified Woodpecker (UNWO), Unidentified Sparrow (UNSP), and so on. Several species were only observed as a flyover or greater than 100 meters from the search area. These species are American Crow (AMCR), American Goldfinch (AMGO), American Redstart (AMRE), Black-throated Green Warbler (BTNW), Hermit Thrush (HETH), Mallard (MALL), Mourning Dove (MODO), Northern Rough-winged Swallow (NRSW), Ring-billed Gull (RBGU), Rock Pigeon (ROPI), and Red-tailed Hawk (RTHA). They are not included in the individual birds for the party hour estimate. The site type and habitat varied.

Table 4-5: 2012 Breeding Birds Meander Surveys - Copenhagen Wind Farm								
May			June			July		
Species	Number of Individuals	Relative Percent	Species	Number of Individuals	Relative Percent	Species	Number of Individuals	Relative Percent
AMRO	6	13.3%	AMRO	15	13.4%	AMKE	1	0.3%
BHCO	2	4.4%	BAOR	3	2.7%	AMRO	39	11.4%
COGR	2	4.4%	BCCH	5	4.5%	BARS	18	5.2%
COYE	3	6.7%	BLJA	3	2.7%	BCCH	4	1.2%
EAKI	1	2.2%	BOBO	4	3.6%	BHCO	1	0.3%
EAWP	2	4.4%	BWWA	3	2.7%	BLJA	4	1.2%
GRCA	1	2.2%	CANG	2	1.8%	BOBO	10	2.9%
HOLA	2	4.4%	COYE	6	5.4%	COYE	18	5.2%
KILL	3	6.7%	EABL	2	1.8%	EABL	6	1.7%
NOFL	1	2.2%	EAKI	1	0.9%	EATO	6	1.7%
RBGR	1	2.2%	EAPH	2	1.8%	EUST	37	10.8%
RWBL	4	8.9%	EATO	5	4.5%	GRCA	23	6.7%
SAVS	4	8.9%	EAWP	2	1.8%	HOSP	13	3.8%
SOSP	8	17.8%	EUST	1	0.9%	NOFL	1	0.3%
UNSP	2	4.4%	GCFL	2	1.8%	NOMO	7	2.0%
YWAR	3	6.7%	GRCA	2	1.8%	OVEN	6	1.7%
Total:	**45**		INBU	2	1.8%	RWBL	68	19.8%
			KILL	1	0.9%	SAVS	26	7.6%
			NOCA	3	2.7%	SOSP	19	5.5%
			NOFL	2	1.8%	TRES	15	4.4%
			NOMO	1	0.9%	TUTI	4	1.2%
			OVEN	3	2.7%	YWAR	17	5.0%
			REVI	1	0.9%	**Total:**	343	
			RWBL	11	9.8%			
			SAVS	7	6.3%			
			SOSP	10	8.9%			
			TUTI	2	1.8%			
			WIFL	1	0.9%			
			WITU	1	0.9%			
			WOTH	2	1.8%			
			YWAR	7	6.3%			
			Total:	**112**				

Over the three sampling periods (Table 4-6), 500 individual birds were observed either visually or through audible cues. The greatest numbers of individuals were observed during the July sample.

The most frequently observed species were Red-winged Blackbird, RWBL (83 individuals), American Robin, AMRO (60 individuals), European Starling, EUST (38 individuals), Savannah Sparrow, SAVS (37 individuals), and the Song Sparrow, SOSP (37 individuals).

The most birds observed per party hour were in the July survey. Overall, 49.02 birds were observed per party hour.

Table 4-6: Birds per Party Hour by Month	
May*	
Total Party Hours:	3:10
Total Individual Birds:	45
Birds per Party Hour:	14.21
June	
Total Party Hours:	3:32
Total Individual Birds:	112
Birds per Party Hour:	31.73
July	
Total Party Hours:	3:30
Total Individual Birds:	343
Birds per Party Hour:	98
Overall	
Total Party Hours:	10:12
Total Individual Birds:	500
Birds per Party Hour:	49.02

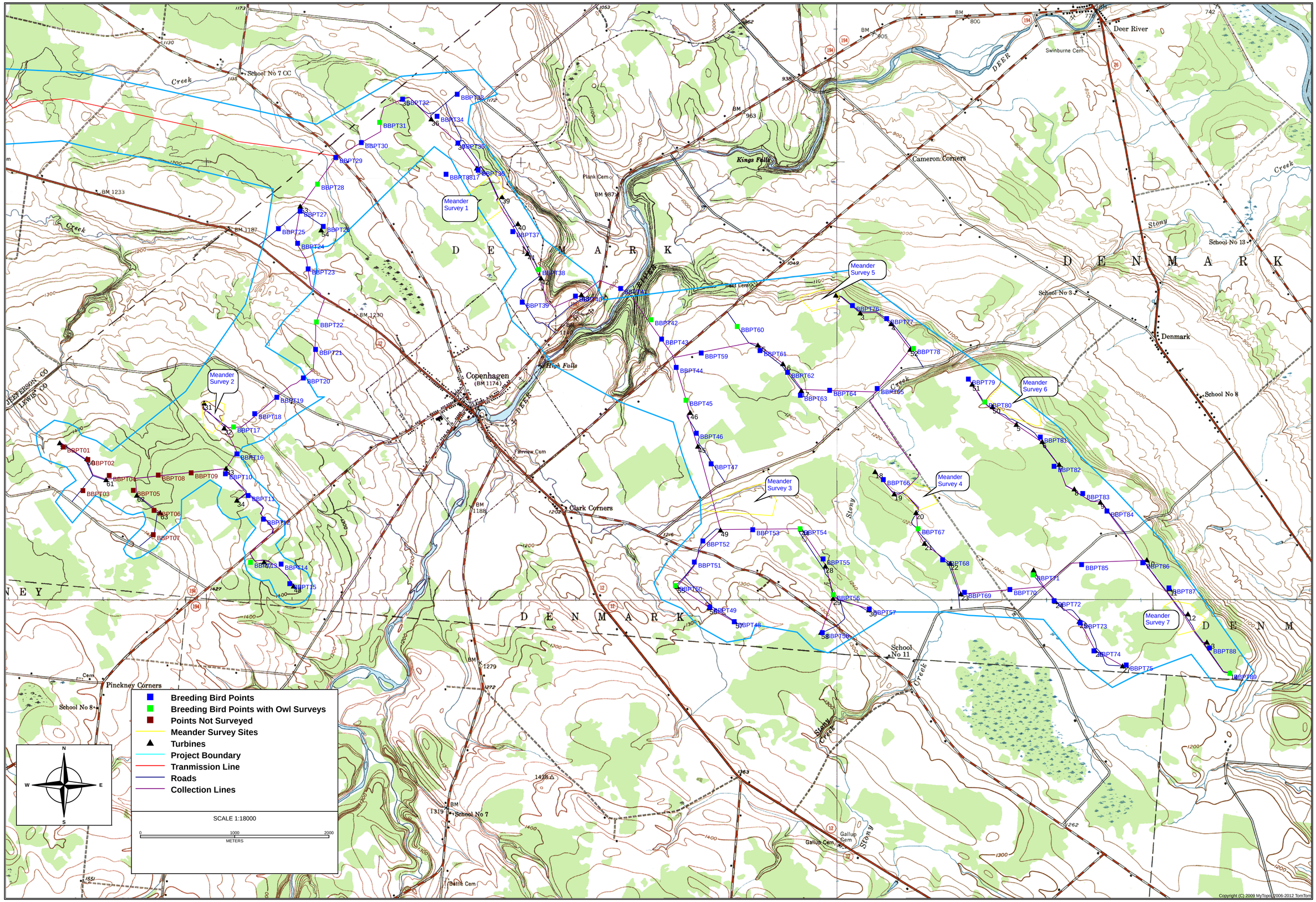
*No data for sites 5, 6, and 7

Rare, Threatened, and Endangered Species

No threatened or endangered species were observed during any surveys or as incidentals. One rare species, the Horned Lark (HOLA), was observed during Shorted-eared Owl, Point Count, and Qualitative Meander Surveys (Table 4-7). Two rare species, the Horned Lark (HOLA) and Vesper Sparrow (VESP), were observed incidentally on the project area (Table 4-7). Two New York Threatened species, the Northern Harrier (NOHA) and Upland Sandpiper (UPSA), were observed in the vicinity of the project area but were never encountered within the project boundaries and, therefore, were not counted as incidentals.

Table 4-7: 2012 Rare, Threatened, and Endangered Species Information - Copenhagen Wind Farm								
Date	**Survey**	**Species**	**Code**	**Detection Type**	**Location**	**Azimuth**	**Distance**	**Comment**
April	Raptor (Incidentals)	Horned Lark	HOLA	Visual	43°54'56.17"N 75°40'34.61"W	-	-	Multiple Individuals seen on a daily basis feeding in field before it was turned/planted.
5/11/2012	Owl	Horned Lark	HOLA	Audio	43°54'23.48"N 75°39'50.62"W	176°		Singing
5/18/2012	Meander Survey	Horned Lark	HOLA	Audio/visual	43°54'50.36"N 75°40'19.07"W	160°	30m	Male countersinging
5/18/2012	Meander Survey	Horned Lark	HOLA	Audio	43°54'50.36"N 75°40'19.07"W	170°		Male countersinging
5/24/2012	Incidental	Vesper Sparrow	VESP	Audio	43°52'44.82"N 75°35'20.86"W	146°	>200m	Singing
6/4/2012	Point Count	Horned Lark	HOLA	Audio	43°52'31.70"N 75°36'09.50"W	200°	~100m	Singing

Appendix A: Site Map and Survey Locations


Meander Survey 1
Meander Survey 2
Meander Survey 3
Meander Survey 4
Meander Survey 5
Meander Survey 6
Meander Survey 7
Breeding Bird Points
Breeding Bird Points with Owl Surveys
Points Not Surveyed
Meander Survey Sites
Turbines
Project Boundary
Tranmission Line
Roads
Collection Lines
SCALE 1:18000
0
1000
2000
METERS
N
S
E
W
Copenhagen
(BM 1174)
Deer River
Cameron Corners
Clark Corners
Pinckney Corners
Kings Falls
High Falls
Swinburne Cem
Plank Cem
Fairview Cem
Gallup Cem
Denmark
School No 7 CC
School No 18
School No 3
School No 8
School No 11
School No 7
DEER
Stony
Creek
JEFFERSON CO
LEWIS CO
DENMARK
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Point Count Locations (NAD83)

Point Number	Location								Habitat	Description
BBPT 10	43°	53’	13.49”	N	75°	42’	19.46”	W	Agriculture	Pasture
BBPT 11	43°	53’	06.01”	N	75°	42’	08.67”	W	Agriculture	Pasture
BBPT 12	43°	52’	57.94”	N	75°	42’	01.39”	W	Agriculture	Pasture
BBPT 13*	43°	52’	43.14”	N	75°	42’	07.49”	W	Successional	Shrub/thicket
BBPT 14	43°	52’	42.51”	N	75°	41’	52.98”	W	Successional	Shrub/thicket
BBPT 15	43°	52’	35.85”	N	75°	41’	48.89”	W	Successional	Shrub/thicket
BBPT 16	43°	53’	19.99”	N	75°	42’	15.34”	W	Agriculture	Field
BBPT 17*	43°	53’	29.52”	N	75°	42’	15.63”	W	Successional	Shrub/thicket
BBPT 18	43°	53’	34.12”	N	75°	42’	05.56”	W	Agriculture	Field
BBPT 19	43°	53’	39.67”	N	75°	41’	55.08”	W	Agriculture	Field
BBPT 20	43°	53’	46.32”	N	75°	41’	42.43”	W	Agriculture	Pasture
BBPT 21	43°	53’	56.15”	N	75°	41’	36.63”	W	Agriculture	Field
BBPT 22*	43°	54’	05.55”	N	75°	41’	36.20”	W	Agriculture	Field
BBPT 23	43°	54’	23.68”	N	75°	41’	40.18”	W	Agriculture	Field
BBPT 24	43°	54’	32.46”	N	75°	41’	45.21”	W	Agriculture	Field
BBPT 25	43°	54’	37.46”	N	75°	41’	54.32”	W	Agriculture	Field
BBPT 26	43°	54’	38.24”	N	75°	41’	32.99”	W	Agriculture	Field
BBPT 27	43°	54’	43.49”	N	75°	41’	43.99”	W	Agriculture	Field
BBPT 28*	43°	54’	52.74”	N	75°	41’	35.76”	W	Agriculture	Pasture
BBPT 29	43°	55’	01.87”	N	75°	41’	27.08”	W	Agriculture	Pasture
BBPT 30	43°	55’	06.94”	N	75°	41’	14.94”	W	Agriculture	Field
BBPT 31*	43°	55’	13.86”	N	75°	41’	06.23”	W	Agriculture	Field
BBPT 32	43°	55’	21.79”	N	75°	40’	55.33”	W	Forest	Mature Deciduous
BBPT 33	43°	55’	23.54”	N	75°	40’	29.31”	W	Agriculture	Field
BBPT 34	43°	55’	15.96”	N	75°	40’	38.91”	W	Agriculture	Field
BBPT 35	43°	55’	06.82”	N	75°	40’	28.94”	W	Agriculture	Field
BBPT 36	43°	54’	57.54”	N	75°	40’	19.33”	W	Agriculture	Field
BBPT 37	43°	54’	36.48”	N	75°	40’	02.87”	W	Agriculture	Field
BBPT 38*	43°	54’	23.48”	N	75°	39’	50.62”	W	Agriculture	Field
BBPT 39	43°	54’	12.30”	N	75°	39’	58.35”	W	Agriculture	Field
BBPT 40	43°	54’	14.41”	N	75°	39’	33.07”	W	Agriculture	Field
BBPT 41	43°	54’	17.03”	N	75°	39’	11.53”	W	Agriculture	Field
BBPT 42*	43°	54’	06.30”	N	75°	38’	57.04”	W	Successional	Shrub/thicket
BBPT 43	43°	53’	59.66”	N	75°	38’	52.01”	W	Successional	Shrub/thicket
BBPT 44	43°	53’	50.02”	N	75°	38’	45.06”	W	Successional	Shrub/thicket
BBPT 45*	43°	53’	38.77”	N	75°	38’	40.45”	W	Successional	Shrub/thicket
BBPT 46	43°	53’	27.43”	N	75°	38’	35.52”	W	Agriculture	Field
BBPT 47	43°	53’	16.92”	N	75°	38’	28.49”	W	Agriculture	Field
BBPT 48	43°	52’	22.86”	N	75°	38’	17.50”	W	Successional	Shrub/thicket

BBPT 49	43°	52’	27.91”	N	75°	38’	29.11”	W	Agriculture	Field
BBPT 50*	43°	52’	35.21”	N	75°	38’	45.41”	W	Agriculture	Field
BBPT 51	43°	52’	43.30”	N	75°	38’	36.45”	W	Agriculture	Field
BBPT 52	43°	52’	50.52”	N	75°	38’	32.40”	W	Agriculture	Field
BBPT 53	43°	52’	54.35”	N	75°	38’	08.69”	W	Agriculture	Field
BBPT 54*	43°	52’	54.64”	N	75°	37’	46.17”	W	Agriculture	Field
BBPT 55	43°	52’	44.33”	N	75°	37’	35.24”	W	Forest	Pole Stage Deciduous
BBPT 56*	43°	52’	32.13”	N	75°	37’	30.46”	W	Successional	Shrub/thicket
BBPT 57	43°	52’	27.16”	N	75°	37’	13.29”	W	Agriculture	Field
BBPT 58	43°	52’	19.13”	N	75°	37’	35.61”	W	Agriculture	Field
BBPT 59	43°	53’	54.88”	N	75°	38’	33.19”	W	Agriculture	Field
BBPT 60*	43°	54’	04.01”	N	75°	38’	16.03”	W	Successional	Shrub/thicket
BBPT 61	43°	53’	55.75”	N	75°	38’	05.22”	W	Successional	Shrub/thicket
BBPT 62	43°	53’	48.32”	N	75°	37’	52.15”	W	Forest	Pole Stage Deciduous
BBPT 63	43°	53’	40.45”	N	75°	37’	46.02”	W	Agriculture	Field
BBPT 64	43°	53’	42.13”	N	75°	37’	32.09”	W	Agriculture	Field
BBPT 65	43°	53’	42.77”	N	75°	37’	09.50”	W	Agriculture	Field
BBPT 66	43°	53’	11.54”	N	75°	37’	06.58”	W	Agriculture	Field
BBPT 67*	43°	52’	54.65”	N	75°	36’	50.09”	W	Agriculture	Field
BBPT 68	43°	52’	44.01”	N	75°	36’	38.42”	W	Successional	Shrub/thicket
BBPT 69	43°	52’	32.85”	N	75°	36’	28.00”	W	Agriculture	Field
BBPT 70	43°	52’	33.87”	N	75°	36’	06.42”	W	Agriculture	Field
BBPT 71*	43°	52’	38.86”	N	75°	35’	55.49”	W	Agriculture	Field
BBPT 72	43°	52’	29.96”	N	75°	35’	45.41”	W	Agriculture	Field
BBPT 73	43°	52’	22.38”	N	75°	35’	32.96”	W	Agriculture	Field
BBPT 74	43°	52’	12.82”	N	75°	35’	26.51”	W	Agriculture	Field
BBPT 75	43°	52’	07.96”	N	75°	35’	11.15”	W	Agriculture	Field
BBPT 76	43°	54’	11.17”	N	75°	37’	21.28”	W	Forest	Mature Deciduous
BBPT 77	43°	54’	06.72”	N	75°	37’	05.00”	W	Agriculture	Field
BBPT 78*	43°	53’	56.43”	N	75°	36’	52.21”	W	Agriculture	Field
BBPT 79	43°	53’	45.99”	N	75°	36’	26.15”	W	Successional	Shrub/thicket
BBPT 80*	43°	53’	38.10”	N	75°	36’	18.32”	W	Forest	Mature Deciduous
BBPT 81	43°	53’	26.01”	N	75°	35’	51.89”	W	Agriculture	Field
BBPT 82	43°	53’	16.01”	N	75°	35’	45.42”	W	Forest	Mature Deciduous
BBPT 83	43°	53’	06.69”	N	75°	35’	31.76”	W	Agriculture	Field
BBPT 84	43°	53’	00.69”	N	75°	35’	20.27”	W	Agriculture	Field
BBPT 85	43°	52’	42.41”	N	75°	35’	32.32”	W	Agriculture	Field
BBPT 86	43°	52’	42.96”	N	75°	35’	03.24”	W	Agriculture	Field
BBPT 87	43°	52’	34.33”	N	75°	34’	50.78”	W	Forest	Mature Deciduous
BBPT 88	43°	52’	13.81”	N	75°	34’	31.59”	W	Forest	Mature Deciduous
BBPT 89*	43°	52’	05.05”	N	75°	34’	21.83”	W	Agriculture	Field

***Owl Survey Locations**

Meander Survey Locations (NAD83)

Point Number	Location (center point)								Habitat	Description
MS 1	43°	54'	48.04"	N	75°	40'	15.70"	W	Successional	Shrub/thicket on forest edge
MS 2	43°	53'	33.87"	N	75°	42'	25.48"	W	Successional	Shrub/thicket with some unmowed field
MS 3	43°	53'	03.79"	N	75°	38'	12.31"	W	Successional	shrub/thicket with some agricultural field
MS 4	43°	53'	05.78"	N	75°	36'	49.26"	W	Agriculture	Field
MS 5	43°	54'	13.04"	N	75°	37'	36.42"	W	Successional	Shrub/thicket and mature forest edge
MS 6	43°	53'	36.16"	N	75°	36'	03.44"	W	Agriculture	Islands of mature forest surrounded by plowed field
MS 7	43°	52'	24.89"	N	75°	34'	43.89"	W	Agriculture	Field

Appendix B: Species List

Species	Alpha Code
American Crow	AMCR
American Goldfinch	AMGO
American Kestrel	AMKE
American Redstart	AMRE
American Robin	AMRO
American Woodcock	AMWO
Baltimore Oriole	BAOR
Barn Swallow	BARS
Belted Kingfisher	BEKI
Black and White Warbler	BAWW
Black-billed Cuckoo	BBCU
Black-capped Chickadee	BCCH
Black-throated Blue Warbler	BTBW
Black-throated Green Warbler	BTNW
Blue Jay	BLJA
Blue-gray Gnatcatcher	BGGN
Blue-winged Warbler	BWWA
Bob-o-link	BOBO
Brown Creeper	BRCR
Brown Thrasher	BRTH
Brown-headed Cowbird	BHCO
Canada Goose	CANG
Cedar Waxwing	CEDW
Chestnut-sided Warbler	CSWA
Chimney Swift*	CHSW
Chipping Sparrow	CHSP
Common Grackle	COGR
Common Yellowthroat	COYE
Downy Woodpecker	DOWO
Eastern Bluebird	EABL
Eastern Kingbird	EAKI
Eastern Meadowlark	EAME
Eastern Phoebe	EAPH
Eastern Towhee	EATO
Eastern Wood-Pewee	EAWP
European Starling	EUST
Field Sparrow	FISP
Gray Catbird	GRCA
Great Blue Heron*	GBHE
Great-crested Flycatcher	GCFL
Hairy Woodpecker	HAWO
Hermit Thrush	HETH
Herring Gull*	HEGU
Horned Lark	HOLA
House Sparrow	HOSP

House Wren	HOWR
Indigo Bunting	INBU
Killdeer	KILL
Least Flycatcher	LEFL
Mallard*	MALL
Mourning Dove	MODO
Northern Cardinal	NOCA
Northern Flicker	NOFL
Northern Mockingbird	NOMO
Northern Rough-winged Swallow*	NRWS
Ovenbird	OVEN
Pilated Woodpecker	PIWO
Purple Finch	PUFI
Red-bellied Woodpecker	RBWO
Red-eyed Vireo	REVI
Red-tailed Hawk*	RTHA
Red-winged Blackbird	RWBL
Ring-billed Gull	RBGU
Rock Pigeon	ROPI
Rose-breasted Grosbeak	RBGR
Ruby-throated Hummingbird	RTHU
Ruffed Grouse	RUGR
Savannah Sparrow	SAVS
Scarlet Tanager	SCTA
Snow Goose **	SNGO
Song Sparrow	SOSP
Swamp Sparrow	SWSP
Tree Swallow	TRES
Tufted Titmouse	TUTI
Turkey Vulture	TUVU
Unknown Bird	UNBI
Unknown Duck*	UNDU
Unknown Empidonax Flycatcher	UEFL
Unknown Sparrow	UNSP
Unknown Warbler	UNWA
Unknown Woodpecker	UNWO
Veery	VEER
Vesper Sparrow***	VESP
Warbling Vireo	WAVI
White-breasted Nuthatch	WBNU
White-throated Sparrow	WTSP
Wild Turkey	WITU
Willow Flycatcher	WIFL
Wood Thrush	WOTH
Yellow Warbler	YWAR
Yellow-bellied Cuckoo	YBCU

Yellow-bellied Flycatcher	YBFL
Yellow-bellied Sapsucker	YBSA

*Observed as Flyovers only
**Observed only during May survey
***Observed as an Incidental only