

2007
Baseline Bird Behaviour Monitoring Report
Skyway 8 Wind Energy Project

Prepared for:
Skyway 8 Wind Energy Inc.
c/o Environmental Business Consultants
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TABLE OF CONTENTS

1.0	Introduction.....	1
2.0	Study Area.....	2
3.0	Project Level of Concern	4
4.0	Study Methodology.....	5
4.1	Daytime Bird Behaviour Monitoring.....	5
4.2	Breeding Bird Monitoring.....	6
4.2.1	Breeding Bird Point Counts	6
4.2.2	Area Searches.....	6
5.0	Results	8
5.1	Daytime Bird Behaviour.....	8
5.2	Breeding Birds.....	11
5.3	Area Searches.....	16
6.0	Significant Bird Areas and Species	17
6.1	Significant Bird Areas.....	17
6.2	Significant Species	18
6.3	Aerial Flight Displays.....	20
6.4	Partners in Flight Priority Species	21
7.0	Summary	22
8.0	References.....	23

List of Tables

Table 1. Habitat Type and Area Within the Leased Lands.....	2
Table 2. Level of Concern for Site Sensitivity	4
Table 3. Breeding Bird Observations by Bird Group.....	13
Table 4. Breeding Bird Counts per Station.....	15
Table 5. Rare Species Known From the Study Area and Vicinity	18
Table 6. Ontario Partners in Flight Species of Concern Known From the Study Area and Vicinity.....	21

List of Figures

Figure 1: Study Area and Avian Monitoring Station Locations.....	3
Figure 2. Most Common Species Recorded From Station HWK-001	9
Figure 3. Most Common Species Recorded From Station HWK-002	9
Figure 4. Bird Groups From Station HWK-001.....	10
Figure 5. Bird Groups From Station HWK-002.....	10
Figure 6. Most Common Species Recorded During Breeding Bird Monitoring	12
Figure 7. Breeding Evidence Recorded During Breeding Bird Monitoring	13
Figure 8. Utilization Rate by Station.....	15

Appendix

- Appendix I – Environment Canada and OMNR Comments on Work Plan
- Appendix II – Field Datasheets
- Appendix III – Birds Known From the Study Area and Vicinity

1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained in September 2006 by Skyway 8 Wind Energy Inc. to conduct an assessment of birds and the potential issues that might influence the location, potential impacts, and mitigation of a proposed wind power generating facility in the township of Southgate, Ontario. The analysis of biological factors affecting the proposed site is just one issue being considered. Other factors such as wind dynamics, land ownership, and social impacts are being assessed by other team members.

To assist with the review of the studies pertaining to the Skyway 8 Wind Energy Project, a bird monitoring work program was developed through consultation with appropriate agencies and review of applicable guidance documents. NRSI provided a summary of the proposed biological work plan to Environment Canada and the Ontario Ministry of Natural Resources (Midhurst District) on March 8, 2007.

Formal comments and recommendations on the work program were received from the Ontario Ministry of Natural Resources (OMNR) on May 10, 2007 and from Environment Canada on June 12, 2007. These comments and recommendations are appended to this report (Appendix I) and were incorporated and followed in the field work that NRSI carried out.

This report summarizes the findings of the bird field studies and background review relating to birds conducted for this project in 2007. Extensive work on bats, vegetation and wildlife was also conducted by NRSI in 2007. Results of these field investigations are summarized in the report, *2007 Baseline Bat Monitoring Report for the Skyway 8 Wind Energy Project* (NRSI, January 2009) and the *Skyway 8 Wind Farm Project Environmental Screening Report* (Skyway 8 Wind Energy Inc., not yet finalized).

2.0 Study Area

The Skyway 8 Wind Energy Project is located in Grey County and is part of Southgate Township. The study area is located south of Dundalk and west of Shelburne, Ontario, between Concession Road 4 (Southgate Road 8) on the south, Concession Road 8 (Southgate Road 12) to the north, Grey Road 8 (Country Road 8) to the west and Melancthon-Proton Townline to the east.

For the purposes of this biological assessment, additional work was completed on lands within 1km of the leased lands. A regional study area was used to identify any designated natural areas or significant bird areas. The subject properties are composed primarily of agricultural fields in association with meadows, wetlands and small upland woodlots. The leased lands and proposed turbine locations are shown on Figure 1.

The leased lands occupy an area 196.8ha large. With a 1km buffer around the leased lands, the study area encompasses 1,586.7ha. The study area includes three major habitat types: agricultural lands (cropped fields and pasture), wetland (swamp), and small upland forests. The area of each habitat type within the leased lands was calculated, as well as the percentage of the whole. The results are given in Table 1. Agricultural lands make up the bulk of the leased lands covering almost 65% of the land. Wetlands make up another large portion of the area with almost 31%. Upland forest only makes up slightly more than 4% of the leased land area.

Table 1. Habitat Type and Area within the Leased Lands

Habitat Type	Area (ha)	%
Agriculture	127.8	64.9
Forest (upland)	8.7	4.4
Wetland (swamp)	60.5	30.7

Figure 1: Study Area and Avian Monitoring Station Locations
(Insert PDF File: NRSI_0703_Skyway8_AVI_25K_15Dec08_LAD)

3.0 Project Level of Concern

Site Sensitivity

Environment Canada and the Canadian Wildlife Service (2007b) provide information and recommendations in their *Guidance Document for Environmental Assessment* on how to select and evaluate site suitability for wind power facilities, based on reducing risk to birds. Site sensitivity is ranked as low, medium, high, or very high. It is based on determining factors such as the presence of rare bird species and significant bird habitat.

There are many wetlands found in the study area and vicinity, including provincially significant wetlands. However, none are deemed as significant bird habitat. Six rare species are known from the study area and vicinity (as discussed in Section 6.2), but none other than great egret (*Casmerodius albus*) were sighted in the study area, and habitat for them is limited. The great egret was seen flying overhead and it would not be a resident of the study area, based on the habitat found there. Therefore, due to the lack of determining factors, the Skyway 8 Wind Project is considered to have low site sensitivity.

Size of Facility

The size of the facility is based on the number of turbines. Up to 5 turbines are planned for the Skyway 8 Wind Energy project. This puts the project into the “small” category, which is defined as wind power facilities that contain 1-10 turbines (EC/CWS 2007a).

Level of Concern

Level of concern for the wind farm facility is inferred from the matrix in Table 1. Because the facility size is “small” and site sensitivity is “low,” the level of concern is “low” (Category 1).

Table 2. Level of Concern for Site Sensitivity

Facility Size	Sensitivity				
		Very High	High	Medium	Low
Very Large		Category 4	Category 4	Category 3	Category 2
Large		Category 4	Category 3	Category 2	Category 2
Medium		Category 4	Category 3	Category 2	Category 1
Small		Category 4	Category 2	Category 1	Category 1

4.0 Study Methodology

Several types of monitoring were undertaken to get a good understanding of what birds are found in the area and how they use the study area. Daytime bird behaviour, breeding birds, and area searches were performed. As well, records were made of birds observed while on other field visits. Migration surveys and winter surveys were not done as there is no record of the area being used as a raptor migration corridor or a significant raptor wintering area. The methodology followed was done to the standards set out in the *Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds* (EC/CWS 2007a), as well as with the guidance provided by Environment Canada and the OMNR in their responses to NRSI's work plan (Read pers. comm. 2007, Woeller pers. comm. 2007). There is no Christmas Bird Count done within the vicinity of the study area (Birds Canada 2008).

4.1 Daytime Bird Behaviour Monitoring

Two stations (HWK-001 and HWK-002) were selected to provide an accurate representation of the bird movement found within the project area and surrounding lands. Station HWK-001 was located in the southeast corner of the study area, on Concession Road 4 just west of Melancton-Proton Townline. Station HWK-002 was located in the northwest corner of the study area, on Concession Road 6 just east of Grey Road 8 (see Figure 1 for station locations). Initially the sites were selected on the outskirts of the study area while issues of land access were established. Once access was granted, the two sites were kept as they provided excellent vantage points of the study area and provided good locations for observing diurnal raptors.

The daytime behaviour monitoring focused on raptors. Monitoring was conducted on June 12, 13 and July 3, 2007 between 0900hrs -1400hrs. At each of the monitoring stations all bird observations were recorded. Each station was monitored for species, numbers, behaviour, flight height and flight direction. A copy of the field monitoring form is appended to this report (Appendix II).

The data was recorded and analyzed according to three height categories (<40m, 40-120m and >120m). These height categories were used to provide an accurate

representation of the flight altitude of birds with respect to the proposed wind turbine blade sphere (42.5m – 119.5m).

4.2 Breeding Bird Monitoring

4.2.1 Breeding Bird Point Counts

A total of 20 point count stations were monitored during the breeding bird monitoring period. The point counts were conducted throughout the study area to give a fairly even representation of the study area and to include all types of breeding habitat (10 wetland stations, 9 agricultural stations, and 2 forested stations) (see Figure 1).

The surveys occurred on June 12, 13, 19, 20, 27 and July 3, 2007. These dates are within the peak period for assessing breeding birds in this portion of Ontario. Point counts were performed based on Environment Canada Guidelines (2007a) and the Ontario Breeding Bird Atlas (OBBA) protocol (OBBA 2001). Bird species, number of individuals, highest breeding evidence, and distance observed were recorded. A copy of the field monitoring form is appended to this report (Appendix II). Stations were monitored during early morning hours, from half an hour before sunrise to 1000hrs. Each station was monitored for 10 minutes. The data was analyzed to determine the relative abundance of species within the project area and surrounding lands. Although all bird activity was recorded, only those observed within 100m were used in the data analysis; individuals that were observed more than 100m away were recorded as incidentals.

Background data on breeding birds in the area was extracted from the Ontario Breeding Bird Atlas (OBBA 2008). Since this atlas provides data based on 10x10km survey squares, information on breeding birds from the square that covers the study area was compiled (square 17NJ48).

4.2.2 Area Searches

NRSI biologists conducted area searches throughout the study area, as recommended by Environment Canada (Read pers. comm. 2007). This involved intensive searches for

as many bird species as possible and evidence of breeding. Area searches were conducted in conjunction with the breeding bird surveys, starting half an hour before sunrise and ending at 1000hrs. In addition, all birds seen or heard during other field visits to the study area were recorded as well.

5.0 Results

5.1 Daytime Bird Behaviour

The three monitoring days in 2007 were conducted in fair weather. Temperatures were found to be seasonal and ranged from 21-28⁰C. All days had generally low wind speeds, with some gusty periods. Partially overcast skies were experienced on the monitoring day in July, but no precipitation was encountered during any of the monitoring periods. High visibility was recorded during all monitoring times.

In total, 132 individual birds, consisting of 26 different species (in addition to an unidentified gull species) were recorded at the 2 daytime bird behaviour stations in 2007. Three of these species were raptors, including 21 turkey vultures (*Cathartes aura*), 3 American kestrels (*Falco sparverius*), and one northern harrier (*Circus cyaneus*). Raptors were seen on all 3 monitoring days.

The most common species by station are shown in Figures 2 and 3. The most common species was bobolink at station HWK-001, and turkey vulture at station HWK-002. Both were followed by American crow in abundance. Bird species by group were much more similar between stations. The vast majority of birds recorded were landbirds, followed by raptors and waterbirds. Waterfowl (one Canada goose) and a shorebird (one upland sandpiper, *Bartramia longicauda*) were recorded from station HWK-001, but none from station HWK-002. No owls were recorded from either station. Bird groups are shown graphically on Figures 4 and 5.

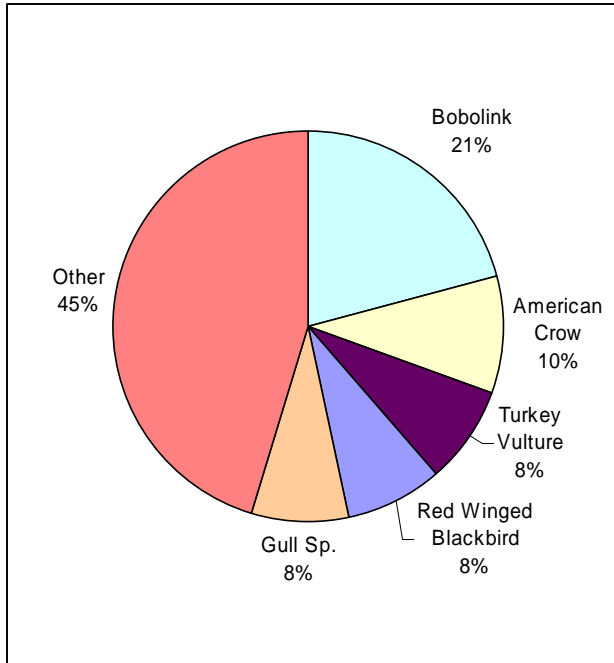


Figure 2. Most Common Species Recorded From Station HWK-001

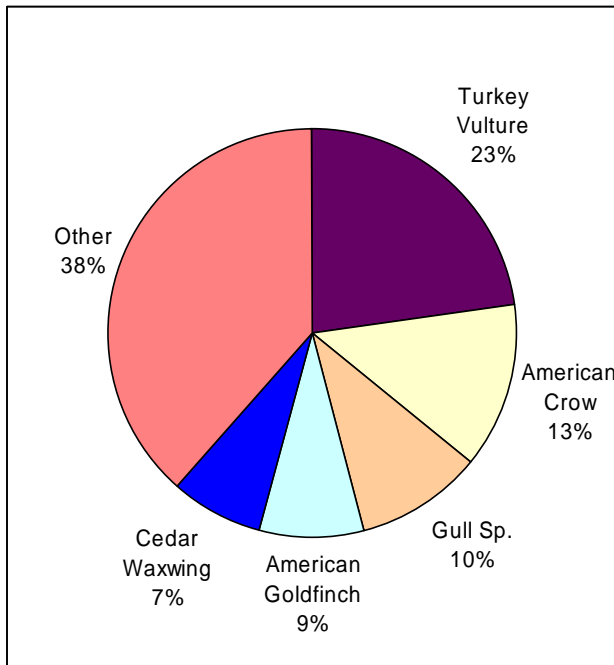


Figure 3. Most Common Species Recorded From Station HWK-002

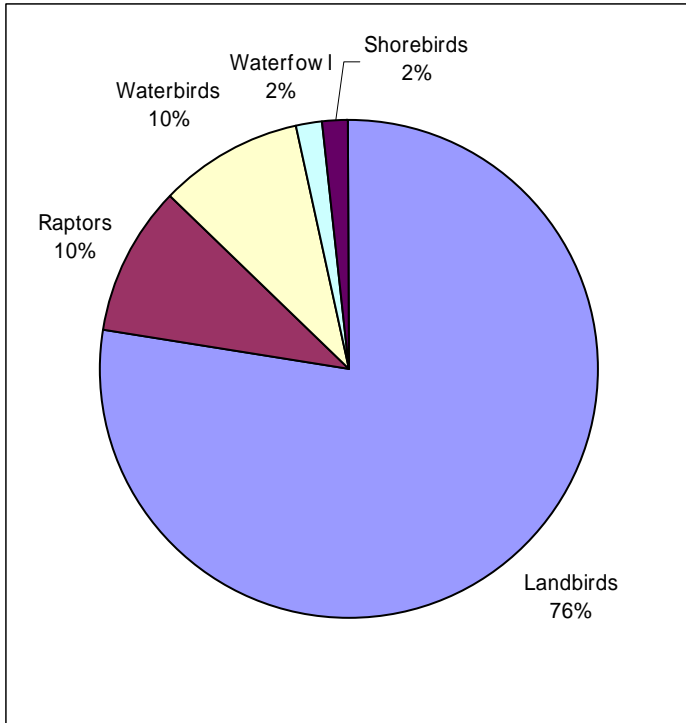


Figure 4. Bird Groups From Station HWK-001

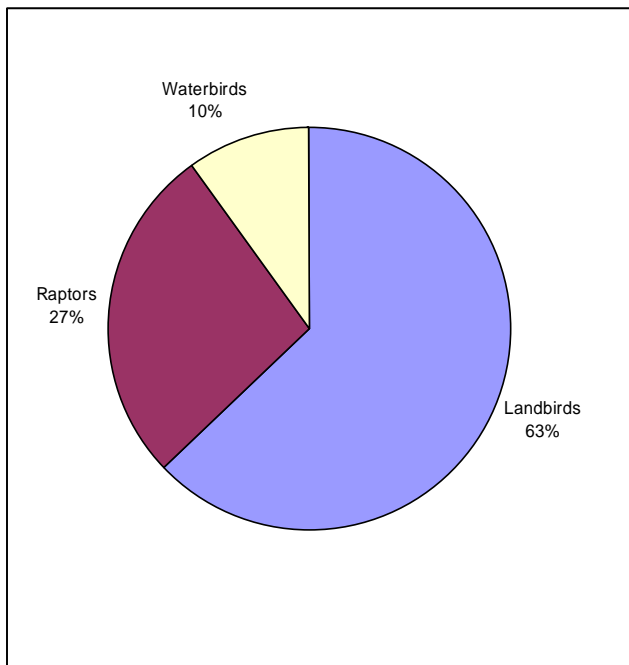


Figure 5. Bird Groups From Station HWK-002

The height at which birds were flying was estimated based on the relationship to a wind turbine. The vast majority of birds (88%) were observed flying or foraging below the

blade sphere; that is below 40m. Fourteen birds (11%) were recorded as flying within the impact zone of the turbine blades, which is between 40 and 120m. All of these birds were turkey vultures and gulls. Only one bird was seen flying above this height: a turkey vulture was recorded flying at an estimated 130m.

With regards to raptors only, approximately half were observed flying or soaring within the risk zone of the blade sphere (40-120m). Most of the remaining were seen below this height, and one (turkey vulture) was seen flying above the blade sphere. All raptors flying within the blade sphere were turkey vultures. The American kestrels were seen foraging within the study area, whereas the other raptors were flying or soaring overhead.

The number of raptors observed is considered low. No large concentrations of raptors or raptor movements were noted, making this a low sensitivity site for birds of prey. The results to the daytime bird behaviour monitoring survey are appended (Appendix III).

5.2 Breeding Birds

The second OBBA (2008) listed 101 species from the study area and vicinity (within square 17NJ48). Of these, 33 (33%) were confirmed as breeding, 43 (43%) were probably breeding, 24 (24%) were possibly breeding, and 1 (1%) was observed showing no signs of breeding evidence. The first OBBA had recorded 86 species from the area. During the breeding bird surveys completed by NRSI, a total of 646 individuals, representing 55 different species, were observed. The three most abundant species observed were red-winged blackbird (*Agelaius phoeniceus*) accounting for 17.3% of all observations, followed by bobolink (*Dolichonyx oryzivorus*) representing 14.6%, and American robin (*Turdus migratorius*) which represented 6.7% of all observations (Figure 6). All observations were of individual birds or small groups of birds with less than 10 individuals. Three larger groups were seen, comprised of 13 bobolinks, 15 American robins, and 25 red-winged blackbirds.

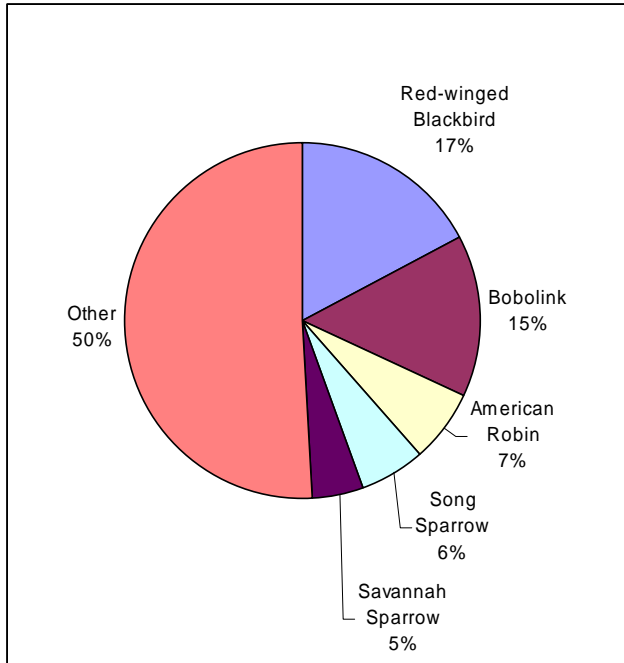


Figure 6. Most Common Species Recorded During Breeding Bird Monitoring

Most of the birds observed by NRSI showed signs of breeding (Figure 7). Of these, 5 species (9%) were confirmed as breeding in the study area. These were blue jay (*Cyanocitta cristata*), bobolink, hairy woodpecker (*Picoides villosus*), red-eyed vireo (*Vireo olivaceus*), and red-winged blackbird. Sixteen species (29%) were observed showing probable signs of breeding, and 33 species (60%) showed possible signs of breeding. One species was seen showing no evidence of breeding; a great egret was seen flying overhead and was not found in suitable breeding habitat. The results from the breeding bird point counts and the species recorded by the OBBA are shown in Appendix III.

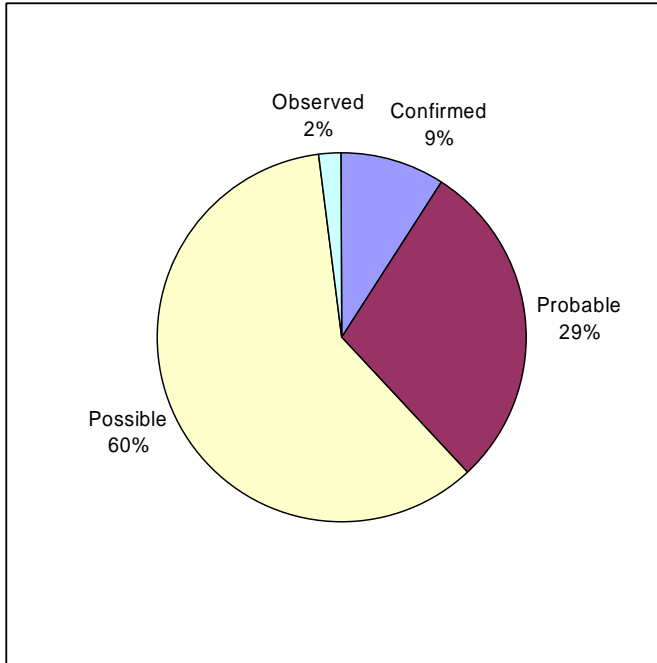


Figure 7. Breeding Evidence Recorded During Breeding Bird Monitoring

Observations were classified according to bird group (Table 3). Landbirds represented 98.4% of all individuals observed. These observations were expected given that the majority of habitat in the study area is active agricultural land, meadow, and swamp, and is very attractive to landbirds. The remaining groups were represented by very small numbers of individuals. Raptors (American kestrel and red-tailed hawk, *Buteo jamaicensis*) made up 0.5%; shorebirds (killdeer, *Charadrius vociferous*) represented 0.6%; waterbirds (ring-billed gull, *Larus delawarensis*) represented 0.2%; and waterfowl (mallard, *Anas platyrhynchos*, and an unidentified duck species) represented 0.3% of all observations.

Table 3. Breeding Bird Observations by Bird Group

Bird Group	# of Individuals	# of Species	% of Total Observation
Landbird	636	49	98.4
Raptor	3	2	0.5
Shorebird	4	1	0.6
Waterbird	1	1	0.2
Waterfowl	2	2	0.3
TOTAL	646	55	100

Monitoring stations were classified by habitat type as wetland (W), agriculture (A), or forest (F). Ten stations were located in or adjacent to wetland (swamp) habitat, 9 within agricultural fields, and 2 adjacent to upland forest. The total number of birds per habitat type was calculated. In total, 302 birds were recorded from the agricultural stations, 273 birds were recorded from the wetland stations, and 71 from the upland forest stations. This works out to 33.6 birds per station from agricultural sites, 27.3 birds per station from wetland (swamp) sites, and 35.5 birds per station from forest (upland) sites.

Table 4 lists the number of birds and species by station, as well as the utilization rate. The greatest number of birds (59) was recorded from Station BMB-019, which is forested. Station BMB-010 (agricultural station) had the second greatest number of birds with 56, and Station BMB-017 followed with 51 birds (also an agricultural station). Interestingly, the station with the fewest birds was the other forested station, BMB-008, with only 12 birds recorded during breeding bird point counts. The greatest diversity in species was recorded at station BMB-022, which is a swamp.

The utilization rate (birds/ha/min) can also be seen graphically on Figure 8. The highest utilization rate was recorded at station BMB-019 with 0.94 birds/ha/min. The lowest utilization rate was found at station BMB-008 with 0.21 birds/ha/min.

Table 4. Breeding Bird Counts per Station

BMB Station #	Habitat Type	Total # of Birds	Total # of Species	Utilization Rate
001	A	49	14	0.78
002	W	48	15	0.76
003	A	35	7	0.56
004	W	24	15	0.38
005	A	36	10	0.57
006	W	23	11	0.37
007	A	13	7	0.21
008	F	12	9	0.19
009	W	16	8	0.25
010	A	56	11	0.89
011	W	21	14	0.33
013	W	25	12	0.40
016	W	27	14 (16)*	0.43
017	A	51	16	0.81
018	W	33	11	0.53
019	F	59	14	0.94
020	W	22	13	0.35
021	A	36	8	0.57
022	W	34	17	0.54
023	A	26	11	0.41

* 14 species recorded, plus a woodpecker species and wren species. However, a woodpecker and wren were also identified to species, so these may have been the same.

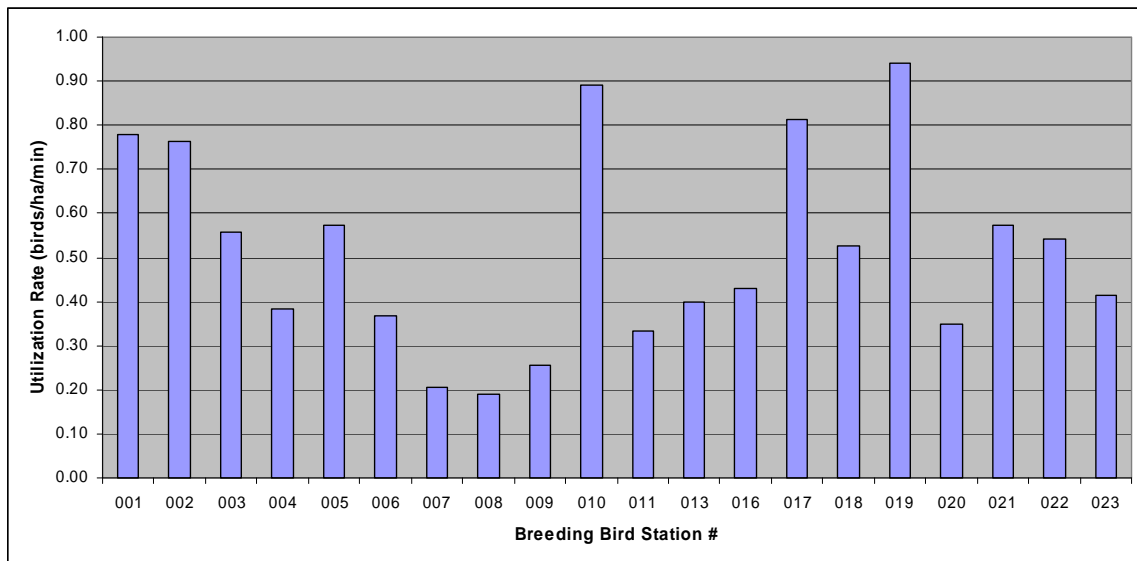


Figure 8. Utilization Rate by Station

5.3 Area Searches

A total of 57 bird species were seen during the area searches and other field work efforts. All these are listed in Appendix III. Most species were also recorded during the breeding point counts or the daytime bird behaviour surveys, but several were not.

These additional species are:

- American Woodcock (*Scolopax minor*)
- Cuckoo species (*Coccyzus* spp.)
- Eastern Phoebe (*Sayornis phoebe*)
- Great Egret (*Casmerodius albus*)
- Pileated Woodpecker (*Dryocopus pileatus*)
- Ruffed Grouse (*Bonasa umbellus*)
- White-breasted Nuthatch (*Sitta carolinensis*)
- Willow Flycatcher (*Empidonax traillii*)
- Yellow-rumped Warbler (*Dendroica coronata*)

All of these are known from the area through the second OBBA, except American woodcock and the cuckoo species. American woodcock was heard and seen making flight displays on several occasions in the spring of 2007 during herpetofaunal point count surveys (April 30 and May 29). Woodcock is a probable breeder in the study area, as it generally breeds in April (Keppie and Whiting 1994). The cuckoo species was heard on June 13, 2007. Black-billed cuckoo (*Coccyzus erythrophthalmus*) was known from the first OBBA, but was not recorded in the second Atlas (OBBA 2008). The cuckoo species was recorded as a possible breeder.

The great egret is a rare species and is discussed in more detail in Section 6.2, Significant Bird Species.

All birds recorded from area searches during the breeding season showed breeding evidence consistent with that recorded during breeding bird point counts. The only exception is northern harrier, which was observed carrying food on June 13, 2007, making it a confirmed breeder. In the last OBBA it was recorded only as a probable breeder (OBBA 2008).

Wetlands can be used significantly by waterfowl, but evidence of this was not found within the study area. In fact, throughout the study, only Canada goose, mallard, and an unidentified duck species were observed. All observations were of single individuals, totally 6 birds.

6.0 Significant Bird Areas and Species

6.1 Significant Bird Areas

There are no Important Bird Areas found within the study area. Located approximately 15km south of the study area is Luther Marsh which is the closest Important Bird Area to the study site. Luther Marsh is nationally significant for its waterfowl concentrations and providing habitat for threatened species (IBA Canada 2004).

There are no designated natural areas located directly within the leased lands. However, the Keldon Swamp Wetland Complex, a provincially significant wetland, is found immediately west of the leased lands area across Grey Road 8. This complex is comprised of 4 individual wetlands, totaling 87% swamp and 13% marsh (NHIC 2008a). Melanchton Wetland Complex #1 is made up of 50 individual wetlands located to the east and northeast of the study area. At its closest point the complex is found 1km from within the northern study area boundary. This wetland complex is also considered provincially significant. It too is predominantly composed of swamp and its individual wetlands range in size from 1.5 to 718ha (Findlay pers comm. 2009). Neither the Keldon Swamp Wetland Complex nor the Melanchton Wetland Complex #1 contain significant bird habitat (McKee pers comm. 2009, Findlay pers comm. 2009), though because of the size of some of the swamps, they provide forest interior habitat. Beaver ponds in the Melanchton Wetland Complex support local waterfowl production (Findlay pers comm. 2009). Many other wetlands, predominantly swamp, are found within the study area and around it. These, however, are not provincially significant or have not yet been formally evaluated.

The Keldon Esker Earth Science ANSI is provincially significant and is located 3.5km southwest of the study area. This ANSI is 70ha and was formed by the last major glacial ice retreat in Ontario (NHIC 2008a). It is not known to provide significant bird habitat (McKee pers comm. 2009).

6.2 Significant Species

The significant species known from the study area and vicinity are listed in Table 5 and are discussed in more detail below.

Table 5. Rare Species Known From the Study Area and Vicinity

Common Name	SRANK	COSEWIC	OMNR	Known From
Chimney Swift	S5B,SZN	THR		OBBA 2
Common Nighthawk	S4B,SZN	THR		OBBA 1
Great Egret	S2B,SZN			NRSI, OBBA 2
Red-headed Woodpecker	S3B,SZN	THR	SC	OBBA 1
Ruddy Duck	S2B,SZN			OBBA 2
Wilson's Phalarope	S3B,SZN			OBBA 1&2

Legend:

OBBA 1 – first Ontario Breeding Bird Atlas (1981-1985)

OBBA 2 – second Ontario Breeding Bird Atlas (2001-2005)

Provincial Rank (SRANK)	COSEWIC	OMNR
S1 Critically imperiled	END Endangered	END-R Endangered-Regulated
S2 Imperiled	THR Threatened	END Endangered
S3 Vulnerable	SC Special Concern	THR Threatened
S4 Apparently secure	NAR Not at Risk	VUL Vulnerable
S5 Secure		SC Special Concern
SZN Non-breeding migrants/vagrants		NAR Not at Risk
B Breeding		

Chimney Swift

The chimney swift (*Chaetura pelagica*) was recorded from the second OBBA as a possible breeder. Its natural nest sights are located in hollow trees, tree cavities, or trees, but more often it now nests and roosts in chimneys. It is therefore generally more common in urbanized areas. Chimney swifts usually forage over open areas where insects concentrate (Cink and Collins 2002). NRSI did not observe this species. Nest and roosting habitat for this species is very limited in the study area, but it may use the area for foraging. Chimney swift is considered threatened in Canada (EC 2008), but secure in Ontario (NHIC 2008b), though its population is declining in all of southern Ontario according to Ontario Partners In Flight (2006).

Common Nighthawk

Common nighthawks (*Chordeiles minor*) nest in forest clearings, in grassland, and farm fields (Poulin et al. 1996), so habitat for this species is available within the study area. This nationally threatened species (EC 2008), however, was only recorded from the first OBBA as a possible breeder. It was not recorded in the second OBBA (2008) or by NRSI biologists, meaning it is not likely to be found in the study area.

Great Egret

One great egret was recorded by NRSI biologists as flying over the study area on July 3, 2007. It was seen outside the 100m radius of Station BMB-017. The second OBBA (2008) also recorded great egret without evidence of breeding in the area. The closest area it may breed in is Luther Marsh (OBBA 2008). Great egret is considered imperiled in Ontario (NHIC 2008b). It may forage in the wetlands found within the study area.

Red-headed Woodpecker

This species is found in a large variety of wooded and open habitats. It is found in pasture areas with dispersed large deciduous trees or groves of trees, as well as in isolated woodlots (Smith et al. 2000). Habitat for red-headed woodpecker (*Melanerpes erythrocephalus*) is found within the study area, though it was only recorded from the first OBBA (2008) (as a confirmed breeder). In Ontario this species is considered vulnerable (NHIC 2008b) and a species of special concern (OMNR 2008), and it is listed as threatened in Canada (EC 2008).

Ruddy Duck

Ruddy duck (*Oxyura jamaicensis*) is considered imperiled in Ontario (NHIC 2008b). It was recorded from the area in the second OBBA (2008) as a probable breeder. However, because it requires marshes with enough open water for landing and taking flight (Brua 2002), it will not be found within the study area, as such habitat is not found there.

Wilson's Phalarope

Wilson's phalarope (*Phalaropus tricolor*) was recorded by the first and second OBBA (2008) as a probable breeder in the square coving the study area. This species is considered vulnerable in Ontario (NHIC 2008b). It breeds in marshes (Colwell and Jehl

1994), so habitat for this species is very limited within the study area. It was not seen by NRSI.

Environment Canada's Species at Risk website (EC 2008) lists 5 additional rare species that have habitat ranges which overlap with the study area. These species are cerulean warbler (*Dendroica cerulea*), Henslow's sparrow (*Ammodramus henslowii*), least bittern (*Ixobrychus exilis*), northern bobwhite (*Colinus virginianus*), and yellow-breasted chat (*Icteria virens*). None of these species were recorded from the OBBA (2008), nor are any of their sightings from the OBBA near the study area. It is therefore highly unlikely that any of these species would be found in the study area or vicinity.

6.3 Aerial Flight Displays

Several species are known to perform aerial flight displays, which may put them at risk of collision with turbine blades. These species are American woodcock, bobolink, horned lark (*Eremophila alpestris*), vesper sparrow (*Pooecetes gramineus*), and Wilson's snipe (*Gallinago delicata*). All of these species perform aerial displays in courtship and are known from the study area vicinity from the OBBA (2008). American woodcock and bobolink are the only species known to be in the study area from surveys done by NRSI. Several woodcocks were heard and seen displaying on April 30 and May 29, 2007 during evening herpetofaunal surveys; they are probable breeders in the study area. American woodcock males spiral up high and then circle back sharply to the ground. The woodcock will perform these displays in a woodland opening or over old agricultural fields. The apex of flight for the woodcock's display can be as high as 100m (Keppie and Whiting 1994).

Bobolinks are the second most common species in the study area according to the breeding bird point count surveys, and they were recorded as confirmed breeders. The majority of bobolinks were observed at the agricultural stations, including one group of 13 individuals. Bobolinks were also observed performing their flight display. Bobolink males perform song flights which reach 2-40m in height (Martin and Gavin 1995). Generally bobolinks are below the height of the turbine blades. Their flight-song displays are given frequently during the breeding season, with song flights lasting up to one minute in length (Martin and Gavin 1995).

All displaying species, except bobolink, perform aerial displays within the sphere of turbine blades. Bobolinks perform their flight songs up to 40m in height, which is just below the blade sphere. No studies have been undertaken to determine the impact of turbines on these flight displays. No known significant negative impacts have been recorded on these species from wind power facilities, other than to horned larks. Kingsley and Whittam (2003) reported that horned larks made up 47% of all collision victims recovered at the Nine Canyon Wind Farm in Washington, U.S.A. This is largely because of the height at which horned larks perform their songs (80-250m) (Beason 1995), which put them in danger of colliding with turbine blades. However, Kingsley and Whittam (2003) also state that the risk to horned larks is generally not a concern, even where larks are known to be common.

6.4 Partners in Flight Priority Species

Ontario Partners in Flight (2006) have used a variety of behavioural characteristics and population tendencies in Ontario species to establish conservation objectives for the species most at risk of declining populations. Ten of the 42 birds identified as being priority landbird species within the region have been observed and documented within the Skyway 8 study area (Table 6). All birds were recorded by NRSI biologists during field surveys and are also known from the second OBBA (2008).

Table 6. Ontario Partners in Flight Species of Concern Known From the Study Area and Vicinity

Species	Habitat Guild	Overall Objective
American Kestrel	Grassland/Agriculture	Halt Decline
Baltimore Oriole	Other	Reverse Decline
Bank Swallow	Shoreline/riparian	Reverse Decline
Brown Thrasher	Shrub	Halt Decline
Bobolink	Grassland/Agriculture	Halt Decline
Eastern Wood-Pewee	Forest	Reverse Decline
Northern Flicker	Forest edge	Reverse Decline
Rose-breasted Grosbeak	Mixed forest	Maintain current
Savannah Sparrow	Grassland	Halt Decline
Wood Thrush	Mixed Forest	Maintain Current

7.0 Summary

During the daytime bird behaviour monitoring period, a total of 25 raptors representing 3 species were observed. Turkey vulture was the most abundant, with 21 individuals observed. Three American kestrel and one northern harrier were also observed during the monitoring period. Approximately half the raptors observed were seen flying or soaring within the risk zone of the blade sphere (Height Category 40-120m). Most of the remaining were seen below this height. All raptors flying within the blade sphere were turkey vultures. The number of raptors observed is considered low. No large concentrations of raptors or raptor movements were noted, making this a low sensitivity site for birds of prey.

A total of 646 individual birds were observed during the breeding bird monitoring period. Of the 55 species that were documented in 2007, 53 showed some evidence of breeding. The most common breeding species overall was red-winged blackbird, making up 17.3% of the sightings, followed by bobolink at 14.6%, and American robin at 6.7%. All observations were of individual birds or small groups of birds (up to 25 individuals).

Landbirds represented 98.4% of all individuals observed. These observations are expected given the type of habitat found within the study area and that most birds are classified as landbirds. The remaining bird groups each made up less than 1% of the breeding bird observations.

Six significant bird species are known from background resources to have been recorded in the vicinity of the Skyway 8 study area. Of these, the only one recorded by NRSI biologists is great egret, and there is no suitable breeding habitat for this species in the study area. There are no significant bird habitats within the study area, and no major bird movements or migration corridors were observed.

8.0 References

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Appendix I
Environment Canada and OMNR Comments on Work Plan

Appendix II
Field Datasheets

Appendix III
Birds Known From the Study Area and Vicinity