

Stantec

**OSTRANDER POINT WIND ENERGY PARK
NATURAL HERITAGE ASSESSMENT**

Appendix D2

Whip-Poor-Will Habitat Assessment



**WHIP-POOR-WILL HABITAT
ASSESSMENT
OSTRANDER POINT WIND
ENERGY PARK**

DRAFT FOR DISCUSSION

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1.0 Introduction

1.1 OVERVIEW

Gilead Power Corporation is proposing a 20 MW wind power facility in southeastern Prince Edward County. The Ostrander Point Wind Energy Park will consist of twelve 2 MW turbines located on 324 ha of provincial Crown land along the Lake Ontario shoreline. Whip-poor-will was observed in the Study Area during field studies conducted in April and May 2008 in support of the wind energy facility environmental assessment. The Study Area is shown in **Figure 1, Appendix A**.

The Whip-poor-will is ranked S4 (apparently secure) in Ontario and is globally considered G5 (very common, demonstrably secure). In April 2009, the species was assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as threatened. It is not currently listed on Schedule 1 of the federal Species At Risk Act (SARA). Provincially, the species was assessed as threatened in May 2009 by the Committee on the Status of Species at Risk in Ontario (COSSARO). Prior to these assessments Whip-poor-will was not designated provincially or federally.

The Whip-poor-will is protected under Ontario's *Endangered Species Act* (2007) (ESA). The ESA prohibits the killing, harming, harassing or capturing of Whip-poor-will. A species-specific habitat regulation for Whip-poor-will is not yet in effect under the ESA. However, because the species was added to the SARA list after June 30, 2008 as a threatened species, general habitat protection automatically applies under the Act. A recovery strategy and a species specific habitat regulation are in the process of being developed for Whip-poor-will (MNR factsheet, 2009).

This report is intended to present field study results for Whip-poor-will at the Ostrander Study Area, evaluate the presence of Whip-poor-will and its habitat within the Study Area and to inform the identification of potential impacts and mitigation measures.

1.2 PROJECT DESCRIPTION

The basic components of the Project include 12 Enercon E82 2 MW wind turbine generators with a total installed capacity of up to 24 MW, transformers located within each turbine, an on-site transformer, and electrical collector lines. The Project also includes construction access roads to the turbines as well as interconnection equipment and installations specified by Hydro One. The proposed layout is shown on **Figure 1, Appendix A**.

All Project components are proposed to be located within the Ostrander Point Crown Land Block. The land base required for each turbine is approximately 0.25 – 0.5 hectares (0.625 – 1.25 acres). No designated turbine laydown/storage area will be required for all of the turbines

prior to their erection on-site. Instead, each turbine and its associated components will be placed in close proximity to the turbine base, in an area approximately 50 metres by 50 metres in size, prior to turbine erection. A detailed Construction Report is being completed for the site and will be submitted as part of the Renewable Energy Application.

1.3 WHIP-POOR-WILL SPECIES INFORMATION

The Whip-poor-will is a crepuscular species (active during twilight; the species is also active at night in periods of bright moonlight) and as a result, it has not been well-studied. Much of what is known about the species' nesting habitat requirements and breeding biology is based on just a handful of studies with very small sample sizes.

1.3.1 Distribution

The Whip-poor-will is considered to occupy two disjunct breeding ranges; an eastern part (*vociferus* group) and western part (*arizonae* group). The Canadian population of Whip-poor-will is included within the eastern group, whose range extends from Saskatchewan east and south to South Carolina and Oklahoma. The western group breeds from southern California to southwestern Honduras.

In Ontario, the main breeding range extends from the Rideau Lakes along the Canadian Shield edge south of Algonquin, up the Georgian Bay shoreline to Sudbury. Outside of populations located at Long Point, Pinery and Rondeau, there are only scattered occurrences of the species in south western Ontario. North of Lake Superior, occurrences are scattered and isolated (Cadman et al., 2007). Significant populations are considered to occur along the Bruce Peninsula, on the Oak Ridges Moraine and through the Carden Plain (Cadman et al. 2007).

Whip-poor-will has been considered an uncommon summer resident in Prince Edward County, but fairly common during spring migration (Sprague, 1969). Recent Ontario Breeding Bird Atlas results indicate the species was found with breeding evidence in 15% of squares (3 of 26) within the Prince Edward County Region (Cadman et al., 2007). Actual occurrences may be more frequent than this as special survey effort is required for Whip-poor-will and the species was likely missed in some squares. It was not reported as breeding in the square containing the majority of the Ostrander Study Area.

Whip-poor-will is a migrant, wintering from the US Gulf States to Honduras.

1.3.2 Habitat Requirements

Migration Habitat

Almost nothing is known of the Whip-poor-will's migration habitat or habits (Sandilands, unpublished). It is considered a rarely observed migrant. At the Prince Edward County Bird Observatory only one Whip-poor-will was recorded in each of fall 2008 and fall 2009, with none

recorded in spring in 2008 or 2009. There are records of Whip-poor-will during migration from suburban areas with large trees as well as its breeding habitat (COSEWIC, 2009).

Breeding Habitat

In Ontario, the Whip-poor-will breeds in dry open woodland and is typically associated with forest edges and openings. It prefers rock or sand barrens with scattered trees, savannahs, old burns in a state of early forest succession, and open conifer plantations for breeding (Cadman et al., 2007). The species shows a preference for even-aged stands and it avoids both wide-open spaces and deep forest.

Forests where Whip-poor-will is found tend to be open with well-spaced trees and a low canopy, or have small to medium sized openings. In fact, the degree of openness in the forest understory appears to be more important than forest composition (Cink, 2002). Along the southern edge of the Canadian Shield the species is most common in mixed pine-oak forests with considerable juniper in the understory (Sandilands, unpublished). Pastures, shrubby meadows, pipeline and hydro rights-of-way adjacent to, or in, extensive forests may provide good nesting habitat. Sandilands (unpublished) identifies key habitat features: shade, proximity to open areas for foraging and fairly sparse ground cover.

Whip-poor-will is considered an area-sensitive species that requires extensive forest. In Ontario, it is thought to require at least 100 hectares, with 500-1000 hectares thought to be necessary to support more than a few pairs (Sandilands, unpublished).

Territory sizes are not well documented and are thought to vary depending on habitat quality (Sandilands, unpublished). The limited data available indicate that territory sizes may range from 2.8 to 11.1 ha. One study reported an average territory size of 5.1 ha (Cink, 2002). Territories are thought to be maintained by active calling from regular stations located on the territory's periphery (Cink, 2002). The species is not considered to be strongly territorial (Sandilands, unpublished). There is some evidence for site fidelity (COSEWIC, 2009; Cink, 2002).

Foraging Habitat

The Whip-poor-will is a nocturnal species, and is active primarily at twilight and at night during periods of bright moonlight. Individuals often feed in shrubby pastures, wetlands with perches, and power-line and roadway corridors (COSEWIC, 2009). During the breeding season the Whip-poor-will regularly sits on gravel roads and sallies to catch insects. Individuals commonly use the same perch to forage from on the edge of open spaces night after night (Cink, 2002). Birds rarely forage further than 500m from the nest site (Sandilands, unpublished).

Roosting Habitat

Roosts are considered to be an important component of the nesting habitat for Whip-poor-will (Sandilands, unpublished). During the day, males remain motionless at roost sites. Roost sites are typically located in dense woods with thick leaf litter and a shrubby understory. The Whip-poor-will typically roosts on a limb close to ground but can roost on tree branches at any height or directly on the ground, including on or beside gravel roads (Cink, 2002). The same roosts are used repeatedly, unless the bird is disturbed (Sandilands, unpublished). Whip-poor-will also commonly use gravel roads for dust-bathing.

At night males tend to follow the same route, calling from the same sites along the route. Nocturnal roosting locations are typically located in edge situations and include the open ground and horizontal branches of dead trees (Sandilands, unpublished).

Nest site requirements

No nest is built. Whip-poor-will lays eggs in a slight depression directly on leaf litter. Nests are typically placed on well-drained, dry soils, usually near the edge of a woodlot or in a forest clearing, and are often on hillsides or hilltops (Sandilands, unpublished). Nests are generally placed in areas where the forest understory is sparse, but occasionally are placed among dense shrubbery in open sites, or beside logs (Sandilands, unpublished). Most nests are partially shaded by a short herbaceous plant, shrub, or seedling tree (Cink, 2002).

Rearing Habitat

Approximately one week after hatching, the young are moved to denser cover. The young may move as far as 30m within their first week of life (Sandilands, unpublished).

1.3.3 Breeding Biology

The Whip-poor-will generally arrives in Ontario from mid to end of April (Sandilands, unpublished). Peak migration is considered to be third week of May. In Prince Edward County, the late migration date for Whip-poor-will is May 31 and the dates between which it is considered safe to regard the species as breeding are from May 15 to August 1 (Ontario Breeding Bird Atlas, 2005).

Known nest dates in Ontario range from May 21 to July 8, with the majority of nesting occurring from June 9 to 30 (Peck and James, 1983). Territorial defense calling decreases after the eggs are laid. The incubation period is generally 19-21 days (Sandilands unpublished). Nesting is correlated with lunar activity, and hatching coincides with periods of bright moonlight. Within 7 days of hatching the young are moved to denser cover. In Ontario, young complete their first flight in the third week and their first sallying efforts at about 18-19 days old (Cink, 2002). It is not known when the young become fully independent (Cink, 2002).

The normal clutch is two eggs (Peck and James, 1983). Some instances of double brooding have been documented in Ontario but the extent is not well known or documented (Sandilands,

unpublished). Second nests are placed within close proximity to the first nest. Most Whip-poor-will leave Ontario between early September and early October (Sandilands, unpublished).

1.3.4 Diet

Whip-poor-will is an insectivorous bird and is considered part of the aerial foragers guild. The species typically forages at dusk and dawn, and during moonlight periods of the night (Cink, 2002). Whip-poor-will generally forage by sallying after insects from a perch or from the ground (COSEWIC, 2009). The Whip-poor-will is known to regularly sit on gravel roads and sally to catch insects (Sandilands, unpublished). Most food is caught aerially and sallies tend to be upward, to a height of 5 metres (Cink, 2002).

1.3.5 Population Status

The species is not well monitored, and is in fact considered one of the least-studied members of North American avifauna (Cink, 2002). It is not currently considered adequately surveyed by any organized program within Ontario (Sandilands, unpublished). The Ontario Partners in Flight program identified it as a priority species for Bird Conservation Region 13 (Ontario PIF, 2006). Though the Breeding Bird Survey is considered ineffective for monitoring Whip-poor-will and there were identified gaps in coverage for the species in recent Ontario Breeding Bird Atlas efforts, results of both surveys suggest a substantial decline in the species population and a contraction of its range, prompting its listing as a threatened species both provincially and federally. These results are consistent with those of other breeding bird atlases conducted throughout the species' range.

1.3.6 Threats

The causes for the suggested decline of Whip-poor-will are not fully known (COSEWIC 2009; COSSARO 2009). Part of its classification as threatened may reflect the generally poor knowledge about the species. Suspected threats to the species include habitat loss and degradation, vehicle collisions, nest predators and changes in food supply (COSEWIC, 2009; Cink, 2002).

Habitat

Sandilands (unpublished) lists forest fragmentation and habitat degradation as the greatest limiting factors for the species, though there has been no demonstration of a direct link between Whip-poor-will population decline and reductions in suitable habitat (COSEWIC, 2009). Suitable habitat can be lost to both intensification of agricultural and forest maturation. Whip-poor-will may fail to return to its breeding location if its nesting cover is destroyed (Cink, 2002).

Food Supply

Aerial insectivores as a group appear to be experiencing population declines. Ontario Breeding Bird Atlas results indicate that all 10 bird species of aerial foragers that breed within the province have experienced declines (Cadman et al, 2007). Within the past year, two other aerial foraging species were added to the provincial list of species at risk (Chimney Swift as threatened and Common Nighthawk as special concern). The Ontario Breeding Bird Atlas indicates the declines could be linked to loss of habitat, but that the birds' prey base could also have been affected by other factors, such as climate or changes in air and water quality (Cadman et al., 2007).

Vehicle Collisions

Whip-poor-will is frequently killed by vehicles. Its habit of foraging across highways and gravel roads and roosting on or beside roads make it particularly susceptible to collisions.

Predators

Nest predators include skunks, raccoons, coyotes, red foxes and snakes as well as domestic cats and dogs (Cink, 2002). Nest disturbance due to human-generated increases in potential predators may be a factor in the species' decline (COSEWIC, 2009).

Lack of Knowledge

While not a direct threat to Whip-poor-will, the lack of knowledge about the species is considered detrimental as limiting factors and threats remain speculative. The lack of knowledge about the species is also cited as a potential contributing factor to its classification as threatened and is cited as a requirement for the conservation of the species (Cink, 2002; PIF, 2006).

2.0 Methods

2.1 BACKGROUND DATA REVIEW

The following data sources were reviewed to obtain information regarding Whip-poor-will in the Study Area:

- Ontario Breeding Bird Atlas database (accessed November, 2009)
- Prince Edward Point Bird Observatory Records
- Birds of Prince Edward County (1969 and 1984)

2.2 FIELD SURVEYS

Field surveys were conducted in April and May 2008, to record American Woodcock and Wilson's Snipe occurrences in the Ostrander Study Area. The evening timing of these surveys also permitted the detection of Whip-poor-will, although the surveys did not cover the peak breeding season for this species (late May, June).

Four weekly singing-ground surveys for crepuscular species were conducted between mid-April to mid-May, and were consistent with the North American Woodcock Singing Ground Survey guidelines (Kelley et al, 2007). Survey dates, times and weather conditions are summarized in **Table 2.1, Appendix B**. Surveys were comprised of two minute point counts at 16 monitoring stations. Monitoring stations were spaced at intervals of approximately 400 m. Birds were recorded as either within 100 m or farther than 100 m from the observer. Surveys began at or just after sunset to ensure the peak activity period for calling was captured. Attempts were made to schedule surveys around full moons as much as possible. The locations of survey stations are shown on **Figure 1, Appendix A**.

At each survey station, a record was made of the start time and a hand held GPS unit was used to georeference its location. A brief description of the habitat was made for each point count.

Although specific site visits were assigned to target crepuscular species, all site visits were conducted by qualified ecologists and were used as a means of recording all wildlife observed on site. Though not specifically planned to target Whip-poor-will, a number of other surveys were undertaken during the dates and times that Whip-poor-will might be expected to be recorded. A list of these surveys is provided in **Table 2.2, Appendix B**.

As such, all observations made over the duration of the field program are compiled within this report for the Subject Property and are considered in the assessment of Whip-poor-will use of the site.

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3.0 Results

3.1 HABITAT OVERVIEW

The Ostrander Point Wind Energy Park Study Area is situated along the southern shore of Prince Edward County, an area characterized by limestone bedrock which is covered by a shallow layer of unconsolidated loam soil. Due to the shallow soils, the area generally experiences flooded conditions in spring with dry, drought-like conditions during the heat of the summer. These conditions create limited agricultural potential in the area. As a result, the area predominately consists of fallow thicket and meadow habitat with some low density pasture interspersed with areas of open woodland.

From on site field investigation results the Study Area was characterized as having shallow soils (10 to 30 cm), supporting grassy vegetation with shrubby thickets and scattered stunted trees. **Figure 1, Appendix A and Table 3.1, Appendix B** summarize the vegetation communities found on site.

The 324 hectare site was comprised of a mosaic of shrub alvar, meadow alvar and treed alvar/swamp habitats. Common juniper shrub alvar covered most of the northern half of the site. Tree species found within this community included bur oak and shagbark hickory, however trees were scattered and stunted throughout the community. Small patches of open alvar meadow occurred within the shrub alvar.

Woodland communities were found within the Study Area in the form of deciduous swamp, thicket swamp and woodland alvar. These communities contained areas of trees that were sparse and open interspersed with areas of dense shrub thicket. The Study Area contained approximately 79 hectares of contiguous treed alvar and deciduous swamp. This wooded feature was connected with similar habitat to the east of Ostrander Point Road and to the north of the study site.

One additional habitat feature present was the numerous roadways. Past land use of the Study Area included military training, during which time a network of roads was constructed by scraping away the soil down to the bedrock. Many of these roadways are no longer in regular use and have experienced naturalization, but still contain areas of exposed bedrock. As the areas of exposed bedrock are below grade, they experience flooding after snow melt or major rain events. In some locations, pools of water in the roadways are maintained through spring into early summer. These roads are now occasionally used by All Terrain Vehicle drivers, hunters and other recreationalists.

Two permanent wetlands occurred on site, in the southeast corner of the Study Area. One of these wetlands occurs along the lakeshore, separated from the lake by a pebble and stone bar along the shoreline. This wetland consisted of sedge marsh with channels of open aquatic and bordered by thicket swamp. It was relatively shallow, averaging approximately 1 m in depth.

The other permanent wetland was located east of and drained into the sedge marsh (**Figure 1, Appendix A**). It consisted of swamp habitat of red ash, black ash and swamp maple. More open portions of this swamp had thickets of dogwood and willow. Average water depth in the swamp was approximately 30 cm, with pools up to 1 m deep that persisted through the summer.

The South Bay Coastal Provincially Significant Wetland is to the north and west of the site, with small portions extending into the extreme northern end of the Study Area. In the vicinity of the Study Area the wetland is comprised of swamp habitat, dominated by red and black ash. Along the shoreline, west of the Study Area, the South Bay Coastal wetland opens up into graminoid marsh and thicket swamp.

3.2 WHIP-POOR-WILL OBSERVATIONS

The locations of all observations are provided in **Figure 2, Appendix A**. A summary of the observations by date is provided below. Whip-poor-will calls can be heard from a distance of approximately 1 kilometre (Hunt, 2007). Given this distance and the proximity of the monitoring stations (approximately 400m), it is likely that every Whip-poor-will calling on site would have been detected during the singing-ground surveys, and that some detections were of the same individual.

Whip-poor-will was detected during three of the four crepuscular surveys.

- April 16, 2008- None recorded.
- April 22, 2008 – One Whip-poor-will was recorded calling at survey station 5. The bird was over 100m away, located to the west of the survey station.
- April 29, 2008 - One Whip-poor-will was recorded calling at survey station 4 from 50-100m west of the survey station.
- April 29, 2008 - A Whip-poor-will was recorded calling at survey stations 1, 6 and 7. Only a single bird was heard calling at each station. Given the distances and direction each observation was heard from, it was determined to be the same individual.
- May 6, 2008 - A Whip-poor-will was recorded calling at survey stations 5 and 7. Given the distance and direction each observation was heard from, it was determined to be the same individual. It was recorded from the lands east of the Study Area.
- May 6, 2008 - Two Whip-poor-will were recorded calling back and forth at survey station 11. One Whip-poor-will was recorded calling at survey station 1. Given the direction and distance of the observations, one of the individuals recorded at station 11 was considered to be the same one heard from station 1.

It was concluded that one male was present on April 22, two on April 29 and three on May 6. Activity was concentrated in the eastern portion of the site, particularly within the north eastern corner. It is important to note that all occurrences were during the migration period. The species was not detected during other surveys, including two evening surveys conducted during the peak breeding season (June 10 and June 24).

3.3 ASSESSMENT OF HABITAT COMPONENTS

A description of the Whip-poor-will habitat identified within the Ostrander Point Study Area and the greater landscape is provided below.

3.3.1 Regional Landscape

The south shore of Prince Edward County is typically considered poor agricultural land due to shallow soils and seasonal flooding. This, in addition to the particular growing conditions present has resulted in a fairly homogenous landscape consisting of scrubby fields and open woodland habitat. A landscape level analysis using aerial photography to identify this habitat type indicates that the south shore of Prince Edward County provides roughly 5,600 ha of potentially suitable breeding habitat for Whip-poor-will. Field investigations conducted by Stantec at other sites within southern Prince Edward County indicate that Whip-poor-will is present in April and May. Given 500-1000 hectares of woodland are thought necessary to support more than a few breeding pairs, the south shore of Prince Edward County may be capable of supporting a local population of Whip-poor-will.

3.3.2 Ostrander Study Area

3.3.2.1 Migration Habitat

Because so little is known about Whip-poor-will during migration, it is difficult to assess the ability of the Study Area to support this function. As Whip-poor-will has been recorded during its migration in locations that contain suitable breeding habitat, the presence of Whip-poor-will in the Study Area in April and early May could indicate that site provides migration stopover habitat for the species.

3.3.2.2 Breeding Habitat

The Ostrander Study Area provides suitable breeding habitat for Whip-poor-will. The vegetation communities found on, and adjacent to, the Study Area each support one or more life cycle components for the species.

The Study Area provides the type of habitat in which Whip-poor-will tend to be found: open woodland with scattered and stunted trees interspersed with open areas of shrubs and meadow. There are patches of denser woodland within the Study Area (in the ALT/SWD complex) and mixed and coniferous woodland communities adjacent to the Study Area, that

provide the amount and type of forest necessary to support the species (100 ha for a breeding pair).

Foraging habitat is provided within the juniper shrub alvar, with ample foraging perches available on the scattered trees and shrubs present within this community and along the edges of the treed alvar/deciduous swamp complex (ALT/SWD). Whip-poor-will on the site may also use the current road network as a foraging base.

Day roosting opportunities are provided within the denser patches of trees present in the treed/alvar swamp complex located on and to the east of the Study Area and also within the mixed and coniferous forest located north of the Study Area (on the north side of Babylon Road). These patches also provide areas to support rearing the young (who are moved to denser patches at about one week of age).

Nesting habitat is provided within the juniper shrub alvar and might be located along the edge of the denser patches of trees that are contained within the treed alvar/swamp complex.

The presence of water is a limiting factor for nesting, so it is unlikely the red ash mineral deciduous swamp (SWD2-2a) is used for this purpose. Surface water persists year round within this feature. There are also isolated pools of water that persist into June in the treed alvar/swamp complex. These select areas would be avoided for nesting, but may provide foraging opportunities.

4.0 Discussion

It was concluded that one male was present in the Study Area on April 22, two on April 29 and three on May 6. It is likely that these individuals were migrating, as the peak migration period in Ontario is the third week of May (Sandilands unpublished). The earliest known nest date for Whip-poor-will in Ontario is May 21, with the majority of nesting occurring from mid to end of June (Peck and James, 1983). Little is known about the migration routes and habits of the species, but it is known to use its breeding habitat for migration stopovers. No other observations of Whip-poor-will were recorded during the remainder of Stantec's field investigations in the Study Area. When Whip-poor-will is on its breeding territory, the same calling route, using the same set of perches, is typically followed each night. The location of Whip-poor-will observations in the Study Area changed on each of the three survey dates on which the species was recorded. These factors suggest that the Whip-poor-will records from the Study Area were of migrating individuals.

Although the species was not recorded at the study site during the breeding season, suitable breeding habitat is present and for the purposes of this report a conservative approach is taken; the possibility that the species was breeding (or would breed) within the Study Area is considered and addressed.

4.1 EXTENT OF LOCAL POPULATION

When discussing Whip-poor-will habitat in the context of the Ostrander Point Study Area, it is important to acknowledge that the Study Area is not an isolated patch of habitat, but is part of a much larger landscape of similar habitat. When assessing habitat and potential impact, consideration was made to the population of Whip-poor-will within the greater landscape, including the Study Area.

Ontario's population of Whip-poor-will is estimated at 30,000 (COSEWIC, 2009) with key areas for the species occurring along the Bruce Peninsula, on the Oak Ridges Moraine and through the Carden Plain (Cadman et al., 2007).

The southern portion of Prince Edward County provides much potentially suitable breeding habitat for Whip-poor-will. Results of field surveys conducted by Stantec in the Ostrander Study Area and at other sites within south Prince Edward County during April and May indicate it is a relatively commonly-encountered species during this period, albeit in limited numbers.

The Alvar Barrens and Grasslands of Jefferson County, located approximately 50 km southeast on the American side of the St Lawrence River, has been identified as a hotspot for breeding Whip-poor-will from the results of a targeted monitoring program (New York State Ornithological Society, 2009).

Overall, it can be concluded from the results of the field surveys that the Ostrander Point Study Area and surrounding landscape has the capability to support a viable population of Whip-poor-will but the population size is unknown.

4.2 IDENTIFICATION OF HABITAT

An exercise was undertaken to identify “habitat” for the Whip-poor-will within the Ostrander Point Study Area. For the purposes of this assessment, the definition of “habitat” follows that provided within the ESA 2007, which identifies habitat as the area on which the species depends, directly or indirectly, to carry on its life processes. For the Whip-poor-will this includes foraging, nesting, rearing young and migration. When considering which habitat features should be included within the identification of Whip-poor-will habitat in the Study Area, the following factors were considered:

- Is the habitat essential to the maintenance of the local population?
- Does the habitat provide a specific characteristic on which the Whip-poor-will depends for any component of its life history?
- Does repeated use indicate dependency on the features (as opposed to casual or incidental use)?

4.2.1 Summary of Identified Habitat

All habitat within the Ostrander Point Study Area could be considered habitat for Whip-poor-will (see **Figure 1, Appendix A**). The habitat is comprised of the community types that support Whip-poor-will during breeding (foraging, nesting, roosting and rearing of young) and migration. Essentially, each of the habitat communities present within the Study Area could support one or more parts of the Whip-poor-will’s life cycle. The functions of each community are described in **Section 3.3.2.2**.

However, the habitat in the Study Area is not considered to be essential to the maintenance of the local population. Although migrating individuals were detected in April and May, there was no conclusive evidence of breeding on site. The results of the field surveys and a desktop analysis of habitat within the greater Prince Edward County south shore found similar Whip-poor-will habitat to be abundant within this area. The results of field studies to date indicate incidental use of the Study Area during migration.

4.3 POTENTIAL IMPACTS

4.3.1 Construction

Avoidance of Whip-poor-will habitat is not possible as the entire site could provide habitat for Whip-poor-will. However, the area where Whip-poor-will activity was concentrated (the north eastern and eastern portion of the site) will largely be avoided, with the majority of the facility to be sited in the western portion of the Study Area.

The site layout has minimized disturbance to sensitive natural features (i.e. wetlands) and has minimized the length of new access roads, which typically are responsible for the largest amount of disturbed footprint during construction.

Clearing activities will result in the removal of plants and portions of plant communities. This is likely to reduce the number of potential roosting and foraging perches available to Whip-poor-will. Approximately 5 ha of 324 ha of habitat (1.5%) will be removed as part of the construction of turbines and access roads as each turbine pad, access road and power line typically occupy 0.25- 0.5 ha. Habitat to be removed includes portions of open alvar, shrub alvar, and treed alvar/swamp. Current land use will continue under the turbines. Given the substantial amount of habitat contained within the site, the removal of approximately 5 ha (1.5%) is not expected to negatively impact Whip-poor-will.

Degree of openness is considered an important factor in Whip-poor-will habitat requirements. In New York, nightjar monitoring surveys indicate the species is most abundant in disturbed habitats (Hunt, 2007). Human created openings such as pipeline and hydro rights-of-way are utilized by Whip-poor-will as breeding habitat. Additionally, the species will use power-line and roadway corridors for foraging and it uses gravel roads as a base to hunt from and for roosting. Whip-poor-will is dependent on large amounts of forest within the greater landscape for breeding. The amount of forested cover within the regional landscape will not be significantly reduced as a result of the Project. The effects from the limited habitat removal required by the project are not expected to significantly negatively impact the local Whip-poor-will population.

Clearing or filling of flooded areas by construction of access roads would result in the creation of additional habitat for Whip-poor-will as the species uses dry gravel roads for roosting, dust bathing and foraging.

Whip-poor-will using gravel access roads as roost sites or as a base from which to forage may be at increased risk from collisions with vehicles. Loss of adult Whip-poor-wills, due to accidental mortality, could have a negative impact on the local populations.

4.3.2 Operation

Direct Impacts

Information on the direct effects of wind turbine operation to nighthawks and nightjars is very limited. In the majority of studies, no mortalities from these groups are identified (James, 2008; Mabey and Paul, 2007; Kingsley and Whittam, 2007; Arnett et al., 2007). Whip-poor-will populations are not expected to be significantly impacted by mortality from the project as their behaviour on the breeding grounds does not include known activity within the blade sweep height. Foraging occurs at heights of up to 5 metres (Cink, 2002), well below the blade sweep height.

Turbine towers will be tubular and will not provide perching opportunities for Whip-poor-will.

Potential direct impacts include increased risk of mortality from new access roads, which may experience an increase in traffic over current conditions. There is also an increased risk of nest predation if predators within the Study Area (i.e. coyotes, red foxes) use access roads to traverse through the habitat. The species is currently at risk from the use of the site by all terrain vehicles.

Indirect Impacts

There is no information available on the indirect effects of wind turbine operation on nightjars (Kingsley and Whittam, 2007; Arnett et al., 2007). Little is known about the response of Whip-poor-will generally to human influenced disturbance (Cink, 2002; Sandilands, unpublished). The Whip-poor-will is known to change its calling route and its roost location if it is disturbed (Sandilands, unpublished).

Disturbance may occur as a result of increased on-site human activities (i.e. turbine maintenance activities) as well as ongoing operation of the turbines. The Study Area is considered to be of sufficient size (324 ha) that if localized avoidance occurs underneath the turbines adequate habitat will still be available to support Whip-poor-will territories (from 1-11ha, average 5ha).

4.3.3 Decommissioning

Impacts from the decommissioning activities are expected to be similar to that of construction: noise, dust, risk from heavy equipment and crews being present.

Post construction areas where turbines were located are likely to regenerate naturally to suitable Whip-poor-will habitat. The gravel roads will likely remain.

4.4 RECOMMENDED MITIGATION

4.4.1 Construction

Efforts have been made to site the Project infrastructure along existing roadways to limit clearing of natural areas. However, limited clearing of natural vegetation will be required. As appropriate and prior to construction the limits of vegetation clearing will be staked in the field. The Construction Contractor will ensure that no construction disturbance occurs beyond the staked limits.

Overall, the total vegetation cleared represents a very small proportion (1.5%) of the identified habitat available within the Study Area, leaving adequate habitat for the Whip-poor-will on site and within the region. Abundant similar habitat is available in southern Prince Edward County.

Although breeding was not confirmed on the site, construction activities should occur outside of the spring migration and peak breeding period for Whip-poor-will (from mid-April to end of July). It is unlikely, but remotely possible, that Whip-poor-will would still be on nests or rearing young in August. If construction is anticipated in August, targeted surveys are recommended in the immediately preceding months of June and July to determine if the species is breeding on the site in that year. If Whip-poor-will is confirmed breeding on the site, nest searches (likely at night, with headlamps to detect eye-shine) are recommended prior to vegetation removal.

In addition the following general best practice mitigation measures will be employed:

- The proper handling of material spills and associated procedures will be undertaken in the event of a spill,
- To protect from potential dust concerns, the Construction Contractor will implement good site practices during construction; and
- A site-specific waste collection and disposal management plan will be implemented.

4.4.2 Operation

Injury to Whip-poor-will on access roadways while roosting or dust-bathing may occur during all phases of the Project. However, the potential for road kills will be minimized by instituting reduced speed limits for maintenance vehicles, education of onsite staff, and limiting scheduled maintenance activity to a quarterly basis (i.e. four times per year).

Appropriate precautions and treatment of waste and hazardous material is recommended to avoid accidental contamination of habitat.

Given the lack of knowledge about the species, indirect impacts to Whip-poor-will during the operations phase of the Project, including avoidance impacts, are not known.

Monitoring has been identified as a critical component for the conservation of Whip-poor-will. An additional season of detailed pre-construction monitoring surveys should be implemented to further assess and define the presence of Whip-poor-will on the study site during the breeding season (late May- July). A post-construction monitoring program including mortality monitoring and disturbance monitoring should be implemented.

4.4.3 Decommissioning

Decommissioning activities should occur outside of the spring migration and breeding period for Whip-poor-will (from mid-April to end of August).

In addition the same general best practice mitigation measures should be employed as recommended during construction, including:

- The proper handling of material spills and associated procedures will be undertaken in the event of a spill,
- To protect from potential dust concerns, the Construction Contractor will implement good site practices during construction; and
- A site-specific waste collection and disposal management plan will be implemented.

4.5 NET EFFECTS

There is some potential for disturbance of natural features and habitats during construction of the Project as a result of the limited removal of vegetation and increased human activity. However, these effects are expected to be short-term in duration and spatially limited to the work areas. If construction activity avoids the period for which the Whip-poor-will is known to be present in Ontario, negative effects are not anticipated from this stage of the project on the species.

The potential for direct mortality from operation of the turbines is considered limited. Loss of adult Whip-poor-will, due to accidental mortality caused by vehicles or increased nest predators, could have a greater negative impact on the local populations. However, current site activities (e.g. recreational vehicle use) have a similar potential effect, and through implementation of appropriate construction and post-development mitigation measures, the risk of accidental injury or mortality to Whip-poor-will can be significantly reduced.

Additional information provided to the scientific community from the proposed monitoring program will aid in the determination of abundance, distribution and status of the Whip-poor-will in Prince Edward County and provide significant benefit to the conservation of the species. It is our opinion that development and appropriate monitoring of the Ostrander Point Wind Energy Park has the potential to provide important information regarding Whip-poor-will that will be relevant to the numerous proposed future wind energy facilities in Prince Edward County.

4.6 SIGNIFICANCE OF NET EFFECTS

Whip-poor-will, a provincially and federally threatened species, and the habitat it depends on to carry out its life processes, are present in the Study Area. The results of field studies to date indicate incidental use of the Study Area during migration. The proposed project has the potential to affect the species and its habitat. However, the habitat in the Study Area is not considered to be essential to the maintenance of the local population. Furthermore, the results of field surveys and a desktop analysis of habitat within the greater Prince Edward County south shore found similar Whip-poor-will habitat to be abundant within this area.

Installing the various Project components is anticipated to have limited effect on Whip-poor-will habitat. The final Project layout will result in minimal loss of habitat and will create habitat features that are important to Whip-poor-will.

The mitigation measures included within this document ensure the Project will minimize adverse effects on individual members of the species. The contribution to the knowledge about the species that the mitigation plan proposes will help address an identified limiting factor for Whip-poor-will (Cink, 2002; COSEWIC 2009, Sandilands, unpublished etc) and could provide information to aid in the survival or recovery of the species in Ontario.

Given the limited amount of habitat that will be removed by the project, the creation of additional habitat features for the species, and the opportunity to provide additional knowledge about the species to the scientific community, the project is considered to provide a net benefit for the species in Ontario and the local population is not expected to be negatively impacted.

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Appendix A

Figures

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Legend

- Study Area
- Turbine
- Crepuscular Species Survey Location
- ELC Boundary
- Proposed Access Road
- Anemometer Location
- Transformer Station
- Waterbody



- ### Notes
1. Coordinate System: UTM NAD 83 - Zone 18 (N).
 2. Data Sources: Ontario Ministry of Natural Resources © Queens Printer Ontario, 2009.
 3. Image Sources: © Google Earth Pro, 2009 (© DigitalGlobe, 2009; © Tele Atlas, 2009 - Imagery Date: May 1, 2005).



Stantec

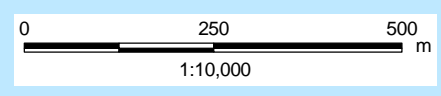
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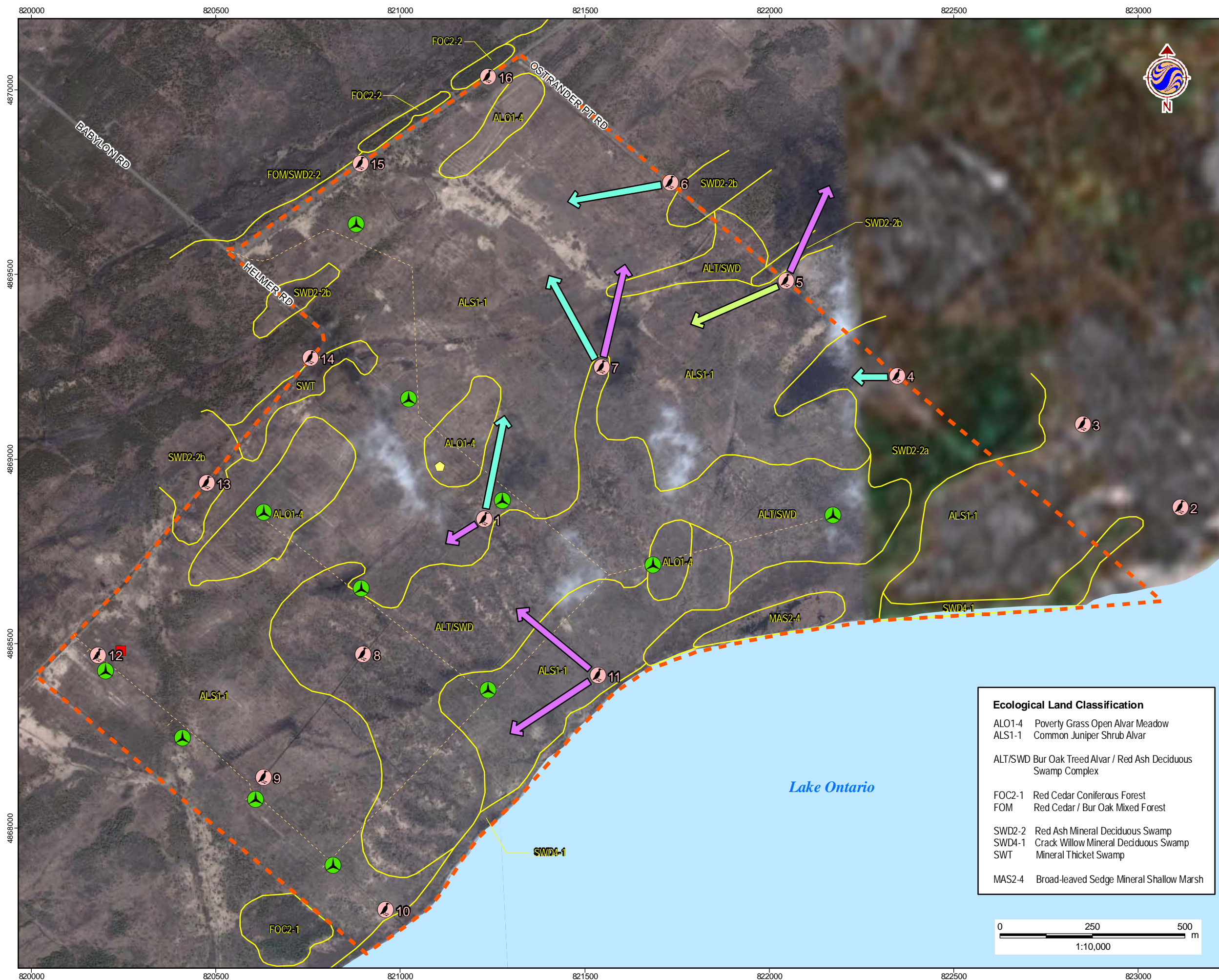
Client/Project
GILEAD POWER
OSTRANDER POINT WIND PROJECT
PRINCE EDWARD COUNTY, ONTARIO

Figure No.
1.0

Title

VEGETATION COMMUNITIES AND CREPUSCULAR SURVEY STATIONS





Legend

- Study Area
- Distance from Station**
 - >100m
 - 50-100m
- Observation Date**
 - April 22
 - April 29
 - May 6
- Turbine
- Proposed Access Road
- Anemometer Location
- Transformer Station
- Crepuscular Species Survey Location
- ELC Boundary
- Waterbody



Ecological Land Classification	
ALO1-4	Poverty Grass Open Alvar Meadow
ALS1-1	Common Juniper Shrub Alvar
ALT/SWD	Bur Oak Treed Alvar / Red Ash Deciduous Swamp Complex
FOC2-1	Red Cedar Coniferous Forest
FOM	Red Cedar / Bur Oak Mixed Forest
SWD2-2	Red Ash Mineral Deciduous Swamp
SWD4-1	Crack Willow Mineral Deciduous Swamp
SWT	Mineral Thicket Swamp
MAS2-4	Broad-leaved Sedge Mineral Shallow Marsh

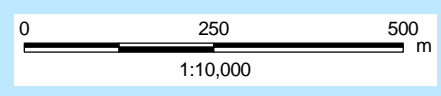
- ### Notes
- Coordinate System: UTM NAD 83 - Zone 18 (N).
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Client/Project
GILEAD POWER
OSTRANDER POINT WIND PROJECT
PRINCE EDWARD COUNTY, ONTARIO

Figure No.
2.0

Title
**WHIP-POOR-WILL
OCCURRENCES
April - May 2008**



Appendix B

Tables

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Table 2.1 Crepuscular Species Survey Dates and Conditions

Survey Date	Survey Type	Completed By	Time	Weather Conditions
April 16, 2008	Crepuscular Species Survey	Stantec	20:32 - 22:18	10-5°C with a wind** of 0-1. 5% cloud cover with no precipitation. Moon*= almost full
April 22, 2008	Crepuscular Species Survey	Stantec	20:21 - 21:51	18°C with a wind of 0-1. 10% cloud cover with no precipitation. Moon= none.
April 29, 2008	Crepuscular Species Survey	Stantec	20:25 - 22:00	7-5°C with a wind of 2-4. 5% cloud cover with no precipitation. Moon= not recorded
May 6, 2008	Crepuscular Species Survey	Stantec	20:20 - 21:44	8°C with a wind of 1-2. 60% cloud cover with no precipitation. Moon= sliver

*Full moon dates during survey period: April 20 and May 20 (US Naval Observatory Astronomical Applications Dept).

**Wind conditions expressed using Beaufort Scale:

0 – calm, <2km/hr	2 – light, 7-12 km/hr	4 – moderate, 20-30 km/hr	6 – strong, 41-51 km/hr
1 – light, 2-6 km/hr	3 – moderate, 13-19 km/hr	5 – fresh, 31-40 km/hr	

Table 2.2 Additional Survey Conditions

Survey Date	Survey Type	Completed By	Time	Weather Conditions*
April 9, 2008	Spring Waterfowl Dusk	Stantec	19:00 - 20:15	5°C with a wind of 4. 10% cloud cover with no precipitation.
April 10, 2008	Spring Waterfowl Dawn	Stantec	06:30 - 07:35	2°C with a wind of 3. 0% cloud cover with no precipitation.
April 17, 2008	Spring Waterfowl Dawn	Stantec	06:30 - 07:30	1°C with a wind of 1. 5% cloud cover with no precipitation.
April 23, 2008	Spring Waterfowl Dawn	Stantec	06:30 - 07:40	9°C with a wind of 0-1. 5% cloud cover with no precipitation.
April 30, 2008	Spring Waterfowl Dawn	Stantec	06:00 - 07:00	1°C with a wind of 1-2. 5% cloud cover with no precipitation.
May 7, 2008	Spring Waterfowl Dawn	Stantec	05:55 - 06:45	8°C with a wind of 1. 20% cloud cover with no precipitation.
Daily; May 2 to June 2, 2008	Spring Migration	Acadia University	0.5 - 2.5 hours after sunrise	N/A
June 10, 2008	Breeding Henslow's Sparrow	Stantec	20:45 - 21:40	22°C, with a wind of 1. Cloud cover of 10% and no precipitation.
June 11, 2008	Breeding Birds Point Counts	Stantec	04:45 - 10:00	15-23°C, with a wind of 1 increasing to 3. Cloud cover of 5 increasing to 20% and no precipitation
June 12, 2008	Breeding Birds Point Counts	Stantec	04:45 - 10:00	14-17°C, with a wind of 1 increasing to 3. Cloud cover of 50% and no precipitation
June 24, 2008	Breeding Henslow's Sparrow	Stantec	21:45 - 23:00	16°C, with a wind of 2. Cloud cover of 10% and no precipitation.
June 25, 2008	Breeding Birds Point Counts	Stantec	05:00 - 10:00	12-17°C, with a wind of 1-2. Cloud cover of 5% and no precipitation.
June 26, 2008	Breeding Birds Point Counts	Stantec	05:00 - 10:00	14-17°C, with a wind of 2. 100% Cloud cover. Short periods of light rain.

* Full moons on April 20, May 20, June 18, July 18, 2008.

*Wind conditions expressed using Beaufort Scale:

0 – calm, <2km/hr	2 – light, 7-12 km/hr	4 – moderate, 20-30 km/hr	6 – strong, 41-51 km/hr
1 – light, 2-6 km/hr	3 – moderate, 13-19 km/hr	5 – fresh, 31-40 km/hr	

Table 3.1 Ecological Land Classification Vegetation Types- Ostrander

ELC Type	Description
OPEN ALVAR (ALO)	
ALO1-4 Poverty Grass Open Alvar Meadow	This community occurred in patches where very little shrub cover occurred. The community was dominated by grasses such as Canada blue grass with patches of poverty oat grass and tufted hairgrass. The shallow soils resulted in relatively dry conditions during summer months.
SHRUB ALVAR (ALS)	
ALS1-1 Common Juniper Shrub Alvar	Most of the northern half of the site was comprised of shrub alvar. The community was comprised of grasses with scattered common juniper shrubs. Occasional occurrences of ninebark, bur oak, shagbark hickory and red ash were observed in this community.
TREED ALVAR (ALT)	
ALT/SWD Bur Oak Treed Alvar / Red Ash Deciduous Swamp Complex	The treed alvars were comprised of scattered bur oak with shagbark hickory. Tree cover was sparse (approx 30%) with relatively stunted trees which is characteristic of the shallow soils. Within the treed alvars were swales containing denser stands (approx 50%) of red ash. These two communities were complexed through the southern portion of the site, sometimes occurring in a wave pattern. In the red ash swamp areas and in portions of the bur oak treed alvar were dense thickets of shrubs including silky dogwood, prickly-ash, red-panicked dogwood, ninebark and occasionally meadowsweet. Common juniper were also scattered throughout the bur oak treed alvar portions of the complex.
CONIFEROUS FOREST (FOC)	
FOC2-1 Red Cedar Coniferous Forest	This community occurred on the outskirts of the site. It was comprised of dense stands of red cedar.
MIXED FOREST (FOM)	
FOM Red Cedar / Bur Oak Mixed Forest	This community occurred in two different locations immediately adjacent to the site. It was comprised of a variety of tree species with red cedar and bur oak being the most predominant. Other species included red ash, American Elm and sugar maple. Immediately north of the site this community is complexed with a red ash deciduous swamp where it runs along a watercourse.
DECIDUOUS SWAMP (SWD)	
SWD2-2a Red Ash Mineral Deciduous Swamp	This swamp community was found in the southeastern portion of the site. Surface water appeared to persist year round. The canopy was relatively open and dominated by red ash, swamp maple and a few American elm. The understorey was patchy with open areas interspersed with dense thickets of willow, silky dogwood and meadowsweet. Ground cover was comprised of sedges and grasses with forbs such as water smartweed and <i>Bidens</i> sp.
SWD2-2b Red Ash Mineral Deciduous Swamp	This community was similar to that described above, but without persistent surface water. The canopy was dominated by red ash with a dense understorey of silky dogwood, ninebark and meadowsweet. This community was often complexed with the treed alvar.