



Bornish Wind Energy Centre 2015 Bird & Bat Mortality Monitoring

Natural Resource Solutions Inc. (NRSI) conducted post-construction monitoring at the operational Bornish Wind Energy Centre near the Town of Parkhill, in Middlesex County, Ontario. This wind energy project has a generating capacity of 72.9MW and consists of 45 turbines. The purpose of this fact sheet is to provide an executive summary of the methods, analysis, and results of the first year of post-construction mortality monitoring that was conducted at the Bornish Wind Energy Centre in 2015.

Methods

NRSI biologists conducted bird and bat mortality monitoring at the Bornish Wind Energy Centre following Ministry of Natural Resources and Forestry (MNRF) guidelines (*Bats and Bat Habitats: Guidelines for Wind Power Projects*, July 2011; and *Birds and Bird Habitats: Guidelines for Wind Power Projects*, December 2011) and the project's Environmental Effects Monitoring Plan (EEMP) (NRSI 2013). The implemented monitoring program was approved by the MNRF. Per the MNRF guidelines and EEMP, the following methods were implemented for the monitoring study:

- A subset of 14 turbines were searched twice weekly from May through October, and once weekly in November;
- The remaining 31 turbines were searched monthly from May to November;
- Searches were conducted in circular plots with a 50m radius, centered at each turbine tower;
- Search plots were maintained to be free of crops, weeds, and debris for high visibility of potential mortalities;
- Searcher efficiency trials were conducted in each study season to assess the effectiveness of each searcher;
- Scavenger removal trials were conducted in each study season to assess the level of scavenging activity at the turbines.

Results

Birds

During the 2015 post-construction mortality monitoring at the Bornish Wind Energy Centre, a total of 20 bird mortalities were found within the search radius of the subset of 14 turbines. Observed bird mortalities consisted mostly of landbird species that are considered common in the province.

Following the MNRF Guidelines, NRSI biologists inputted the searcher efficiency, scavenger removal, and proportion of area searched variables into the MNRF's estimated mortality equation to determine an estimated rate of bird mortality at the Bornish Wind Energy Centre of 2.17 birds/turbine/year. This is below the MNRF threshold of 14 birds/turbine/year. By comparison, the average bird mortality rate in

Ontario is estimated at 5.45 ± 0.76 birds/turbine/year (Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2014).

Bats

During the 2015 post-construction mortality monitoring at the Bornish Wind Energy Centre, a total of 88 bat mortalities were found within the search radius of the subset of 14 turbines. Bat mortalities consisted of both resident and migratory species.

Following the MNRF Guidelines, NRSI biologists inputted the searcher efficiency, scavenger removal, and percent area searched variables into the MNRF's estimated mortality equation to determine an estimated rate of bat mortality at the Bornish Wind Energy Centre of 9.01 bats/turbine/year. This is below the MNRF threshold of 10 bats/turbine/year. By comparison, the average bat mortality rate in Ontario is estimated at 19.08 ± 2.38 bats/turbine/year (Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2014).

Raptors

A total of 6 raptor mortalities were observed within the search radius of the subset of 14 turbines at the Bornish Wind Energy Centre during 2015 post-construction mortality monitoring. Based on the information collected by NRSI during the monitoring period, the mortality rate was estimated to be 0.42 raptors/turbine/year. This is above the MNRF threshold of 0.2 raptors/turbine/year. At this time, the Bird Studies Canada Wind Energy Bird and Bat Monitoring Database Summary Findings do not calculate average raptor mortality, so there is no Ontario average raptor mortality rate available for comparison. In accordance with MNRF guidelines for exceeding a raptor threshold, two years of scoped mortality and cause and effects monitoring will be conducted at the Bornish Wind Energy Centre.

Summary

Based on the results of the 2015 post-construction monitoring at the Bornish Wind Energy Centre, none of the single day mortality thresholds were met or exceeded. The annual mortality thresholds for birds and bats were not exceeded. The annual mortality threshold for raptors was exceeded. These thresholds, as defined by MNRF guidelines, and the associated results of the 2015 monitoring at the Bornish Wind Energy Centre are briefly outlined below:

MNRF Mortality Threshold	Type of Threshold	2015 Summary Bornish
14 birds/turbine/year	Annual Corrected Rate	2.17 birds/turbine/year
10 bats/turbine/year	Annual Corrected Rate	9.01 bats/turbine/year
0.2 raptors/turbine/year	Annual Rate	0.42 raptors/turbine/year
10 or more birds at one turbine	Single Day Event	1 bird at one turbine (maximum single day)
33 or more birds at multiple turbines	Single Day Event	1 bird at multiple turbines (maximum single day)