



Quixote One Wind Farm 2016 Bird & Bat Mortality Monitoring

Natural Resource Solutions Inc. (NRSI) conducted post-construction monitoring at the operational Quixote One Wind Farm, located in Bruce County within the municipality of Kincardine, Ontario. This wind energy project has a generating capacity of 2.35MW and consists of 1 turbine. 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 Quixote One Wind Farm in 2016.

Methods

NRSI biologists conducted bird and bat mortality monitoring at the Quixote One Wind Farm 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) (Golder Associates Ltd. 2013). In accordance with the MNRF guidelines and the approved EEMP, the following methods were implemented for the monitoring study:

- The turbine was searched twice weekly from May through October, and once weekly in November;
- Searches were conducted in circular plots with a 50m radius, centered at the turbine tower;
- 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.
- Although not required by the guidelines or EEMP, search plots were maintained to be free of crops, weeds, and debris for high visibility of potential mortalities, to the extent possible.

Results

Birds

During the 2016 post-construction mortality monitoring at the Quixote One Wind Farm, 2 bird mortalities were found within the search radius. Both mortalities were small landbird species that are considered common in the province.

Following the MNRF Guidelines, NRSI biologists incorporated 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 Quixote One Wind Farm of 4.44 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 6.14 ± 0.31 birds/turbine/year (Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2016).

Bats

During the 2016 post-construction mortality monitoring at the Quixote One Wind Farm, 2 bat mortalities were found within the search radius. Both mortalities were long-distance migratory bat species.

Following the MNRF Guidelines, NRSI biologists incorporated 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 Quixote One Wind Farm of 4.55 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 18.52 ± 0.79 bats/turbine/year (Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2016).

Raptors

No raptor mortalities were observed within the search radius at the Quixote One Wind Farm during 2016 post-construction mortality monitoring. Based on the information collected by NRSI during the monitoring period, the mortality rate was 0.00 raptors/wind power project. This is below the MNRF threshold 2 raptors/wind power project. By comparison, the average raptor mortality rate in Ontario is estimated at 0.2 ± 0.01 raptors/turbine/year (Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2016).

Summary

Based on the results of the 2016 post-construction monitoring at the Quixote One Wind Farm, none of the annual or single day mortality thresholds were met or exceeded. These thresholds, as defined by MNRF guidelines, and the associated results of the 2016 monitoring at the Quixote One Wind Farm are briefly outlined below:

MNRF Mortality Threshold	Type of Threshold	2016 Summary
14 birds/turbine/year	Annual Corrected Rate	4.44 birds/turbine/year
10 bats/turbine/year	Annual Corrected Rate	4.55 bats/turbine/year
2 raptors/wind power project	Annual Rate	0.00 raptors/wind power project
10 or more birds at one turbine	Single Day Event	2 birds at one turbine (maximum single day)
33 or more birds at multiple turbines	Single Day Event	Not Applicable (The Project only consists of one turbine)