



## Summerhaven Wind Energy Centre

### 2014 Bird & Bat Mortality Monitoring

Natural Resource Solutions Inc. conducted post-construction monitoring at the operational Summerhaven Wind Energy Centre near the Town of Nanticoke, in Haldimand County, Ontario. This wind energy project is 124.376MW in size and consists of 56 operational 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 Summerhaven Wind Energy Centre in 2014.

#### Methods

NRSI biologists conducted bird and bat mortality monitoring at the Summerhaven Wind Energy Centre following 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). The implemented monitoring program was approved by the MNRF. Per the MNRF guidelines, the following methods were implemented for the monitoring study:

- A subset of 18 turbines were searched twice weekly from May through October, and once weekly in November;
- The remaining 38 turbines were searched monthly from May to November;
- Searches were conducted in circular areas 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 2014 post-construction mortality monitoring at the Summerhaven Wind Energy Centre, a total of 39 bird mortalities were found within the search radius of the subset of 18 operational turbines. Observed bird mortalities consisted mostly of landbird species that are considered common in the province. The most abundantly observed bird mortality was of the purple martin (*Progne subis*).

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 bird mortality at the Summerhaven Wind Energy Centre of 3.91 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  $5.45 \pm 0.76$  birds/turbine/year (Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2014).

### Bats

During the 2014 post-construction mortality monitoring at the Summerhaven Wind Energy Centre, a total of 238 bat mortalities were found within the search radius of the subset of 18 turbines. Bat mortalities consisted of both resident and migratory species. The most abundantly observed species was the hoary bat (*Lasiurus cinereus*), which accounted for approximately one third of the total bat mortalities observed during the 2014 monitoring period.

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 Summerhaven Wind Energy Centre of 24.99 bats/turbine/year. This is above the MNRF threshold of 10 bats/turbine/year. By comparison, the average bat mortality rate in Ontario is estimated at  $19.08 \pm 2.38$  bats/turbine/year (Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2014).

### Raptors

A total of 5 raptor mortalities were observed at the Summerhaven Wind Energy Centre during 2014 post-construction mortality monitoring. Based on the information collected by NRSI during the monitoring period, the mortality rate was 0.28 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.

## Summary

Based on the results of the 2014 post-construction monitoring at the Summerhaven Wind Energy Centre, none of the single day mortality thresholds were met or exceeded. The mortality thresholds for bats and raptors were exceeded. These thresholds, as defined by MNRF guidelines, and the associated results of the 2014 monitoring at the Summerhaven Wind Energy Centre are briefly outlined below:

MNRF Mortality Threshold	Type of Threshold	2014 Summary Summerhaven
14 birds/turbine/year	Annual Corrected Rate	3.91 birds/turbine/year
10 bats/turbine/year	Annual Corrected Rate	24.99 bats/turbine/year
0.2 raptors/turbine/year	Annual Rate	0.28 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	2 birds at multiple turbines (maximum single day)