



## Adelaide Wind Energy Centre 2015 Bird & Bat Mortality Monitoring

Natural Resource Solutions Inc. (NRSI) conducted post-construction monitoring at the operational Adelaide Wind Energy Centre near the Town of Strathroy in Middlesex County, Ontario. This wind energy project has a generating capacity of 60MW and consists of 37 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 Adelaide Wind Energy Centre in 2015.

### Methods

NRSI biologists conducted bird and bat mortality monitoring at the Adelaide 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 12 turbines were searched twice weekly from May through October, and once weekly in November;
- The remaining 25 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 Adelaide Wind Energy Centre, a total of 55 bird mortalities were found within the search radius of the subset of 12 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 Adelaide Wind Energy Centre of 6.56 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 2015 post-construction mortality monitoring at the Adelaide Wind Energy Centre, a total of 58 bat mortalities were found within the search radius of the subset of 12 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 Adelaide Wind Energy Centre of 7.74 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  $19.08 \pm 2.38$  bats/turbine/year (Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2014).

### Raptors

A total of 2 raptor mortalities were observed within the search radius of the subset of 12 turbines at the Adelaide Wind Energy Centre during 2015 post-construction mortality monitoring. Based on the information collected by NRSI during the monitoring period, the mortality rate was 0.17 raptors/turbine/year. This is below 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 2015 post-construction monitoring at the Adelaide Wind Energy Centre, 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 2015 monitoring at the Adelaide Wind Energy Centre are briefly outlined below:

| MNRF Mortality Threshold              | Type of Threshold     | 2015 Summary Adelaide                             |
|---------------------------------------|-----------------------|---|
| 14 birds/turbine/year                 | Annual Corrected Rate | 6.56 birds/turbine/year                           |
| 10 bats/turbine/year                  | Annual Corrected Rate | 7.74 bats/turbine/year                            |
| 0.2 raptors/turbine/year              | Annual Rate           | 0.17 raptors/turbine/year                         |
| 10 or more birds at one turbine       | Single Day Event      | 3 birds at one turbine (maximum single day)       |
| 33 or more birds at multiple turbines | Single Day Event      | 4 birds at multiple turbines (maximum single day) |