



Nation Rise Wind Farm 2022 Bird & Bat Mortality Monitoring

Natural Resource Solutions Inc. (NRSI) conducted post-construction monitoring at the operational Nation Rise Wind Farm, located within the Township of North Stormont and the United Counties of Stormont, Dundas and Glengarry, Ontario. This wind energy project has a generating capacity of 100MW and consists of 29 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 Nation Rise Wind Farm in 2022.

Methods

NRSI biologists conducted bird and bat mortality monitoring at the Nation Rise Wind Farm following Ministry of Natural Resources and Forestry (MNRF) guidelines (*Bats and Bat Habitats: Guidelines for Wind Power Projects*, July 2011; *Birds and Bird Habitats: Guidelines for Wind Power Projects*, December 2011), the project's Environmental Effects Monitoring Plan (EEMP; NRSI 2017), and the project's *Mortality Monitoring Turbine Subset Selection Memo* (NRSI 2022). In accordance with the MNRF guidelines, the approved EEMP, and the *Turbine Subset Selection Memo* (NRSI 2022), the following methods were implemented for the monitoring study:

- A subset of 10 turbines were searched twice-weekly from May through October, and once-weekly in November;
- The remaining 19 turbines were searched monthly from May to November;
- Searches were conducted in circular plots with a 50m radius, centered at each turbine;
- Searcher efficiency trials were conducted in each study season to assess the effectiveness of each searcher; and
- Scavenger removal trials were conducted in each study season to assess the level of scavenging activity at the turbines.

Results

Birds

During 2022 post-construction mortality monitoring at the Nation Rise Wind Farm, 12 bird mortalities were documented within the search radii of the subset of 10 turbines. Observed bird mortalities consisted of landbird species, the majority of which 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 Nation Rise Wind Farm of **2.96 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 4.9 ± 0.06 birds/turbine/year (Birds Canada Wind Energy Bird and Bat Monitoring Database, *Summary Findings*, November 2018).

Raptors

During 2022 post-construction mortality monitoring at the Nation Rise Wind Farm, one raptor mortality was documented within the search radii of the subset of 10 turbines. Based on the information collected by NRSI biologists during the monitoring period, the mortality rate was estimated to be **0.15 raptors/turbine/year**. This is below the MNRF threshold of 0.2 raptors/turbine/year. By comparison, the average raptor mortality rate in Ontario is estimated at 0.3 ± 0.004 raptors/turbine/year (Birds Canada Wind Energy Bird and Bat Monitoring Database, *Summary Findings*, November 2018). No mortalities of provincially tracked raptors were documented within the search radii of the subset of 10 turbines.

Bats

During 2022 post-construction mortality monitoring at the Nation Rise Wind Farm, 43 bat mortalities were documented within the search radii of the subset of 10 turbines. Observed bat mortalities consisted of both resident and long-distance migratory species.

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 bat mortality at the Nation Rise Wind Farm of **10.69 bats/turbine/year**. This exceeds the MNRF threshold of 10 bats/turbine/year. By comparison, the average bat mortality rate in Ontario is estimated at 11.7 ± 0.1 bats/turbine/year (Birds Canada Wind Energy Bird and Bat Monitoring Database, *Summary Findings*, November 2018).

Summary

Based on the results of the 2022 post-construction monitoring program at the Nation Rise Wind Farm, the bat mortality threshold was exceeded. No other annual or single day mortality thresholds were met or exceeded. These thresholds, as defined by the MNRF guidelines, and the associated results of the 2022 monitoring at the Nation Rise Wind Farm are briefly outlined below.

MNRF Mortality Threshold	Type of Threshold	2022 Summary Nation Rise Wind Farm
14 birds/turbine/year	Annual Corrected Rate	2.96 birds/turbine/year
0.2 raptors/turbine/year	Annual Corrected Rate	0.15 raptors/turbine/year
0.1 provincially tracked raptors/turbine/year	Annual Corrected Rate	0.0 provincially tracked raptors/turbine/year
10 bats/turbine/year	Annual Corrected Rate	10.69 bats/turbine/year
10 or more birds at one turbine	Single Day Event	No occurrence
33 or more birds at multiple turbines	Single Day Event	No occurrence