

Pre-Construction Bat Survey Guidelines for Wind Farm development in NB*

Fish & Wildlife

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*These guidelines should be considered a living document and are subject to change as new information becomes available Bats

BATS

Pre-construction Site Surveys for bats will be required for all proposed wind power development projects. Predictions regarding risks and associated impacts to bat species and/or their habitat (e.g., locations of hibernacula, maternity colonies, swarming sites, migration routes, etc.) can not be made at this time, as little is known about bats in NB. As more information becomes available and predictive capabilities and risk assessment improve, the level and type of pre-construction site monitoring may be modified at sites with certain characteristics.

Pre-construction Site Surveys are conducted to determine:

- a) Species (or species group) occurrence,
- b) Bat activity levels and use rates (e.g., detections, relative abundance, seasonal timing, areas of concern),
- c) presence (or probable presence) of significant bat habitat in the area of the proposed development, including significant hibernacula (winter roosts), significant maternity roosts, swarming sites, migration/movement corridors, etc.

The Pre-construction Site Survey is intended to build on the information collected during the Preliminary Information Gathering stage to provide a more complete picture of potential impacts to bats and their habitats at a proposed development site. Key considerations for designing a pre-construction site survey include identifying use of the area by resident and/or migratory bats, and identifying bat activity within the blade sweep area.

Proponents are required to prepare a Pre-construction Site Survey Plan for DNR's review. Information collected throughout the Pre-construction Site Surveys will be used to inform and direct mitigation and site planning.

Survey Equipment

Monitoring should be done using a fixed location acoustic inventory technique. This method samples species composition and abundance by detecting the echolocation calls of bats while using minimum human resources. The Anabat SD-II (or equivalent) bat detectors should be the equipment of choice.

Acoustic monitoring should gather data within the entire height range of the proposed wind turbine blade sweep area (e.g., 25m – 110m). This may be achieved by elevating a microphone or by using a microphone that detects bat frequencies within this range. It is recognized that there may be some logistical limitations in some cases to the extent that a microphone can be elevated, however it is expected that every possible effort will be made to meet this requirement. In some cases, meteorological towers or constructed turbine towers may be used; it may also be necessary to put up special temporary towers (e.g., flag pole or scaffold-type assembly) for bat surveys.

Requirements

A minimum of one year pre-construction survey including the summer and fall season will be required. Additional survey effort will be required if high risk habitat features are present in the proposed wind farm development (see Table 1).

Additional survey periods are required if the site is :

- Within 5km of a known hibernacula, or potential cave or abandoned mine. These sites are particularly sensitive to disturbances and have the potential to experience high bat activity at particular times of the year.
- Within 500m from a coast line or other major water body (large lakes and rivers. These areas have potential to concentrate foraging and migratory movement.
- Located on or near forested ridge habitat. These areas are known to be migratory routes for bats and numbers may be concentrated here

Wind turbines positioned in open, flat areas at least 1 km from bodies of water, riparian habitats, and forest edges appear to be associated with lower bat mortality.

Survey Period and Effort

Monitoring should be conducted through-the-night, from sunset until sunrise during the breeding season (i.e., June and July) and during the late summer - early fall migratory period (i.e., August and September) (See table 1).

The minimum requirements for pre-construction monitoring effort and timing for both breeding and migration periods should be 40 hours of survey distributed on a minimum of 10 nights, with a

minimum of 4 hours per/night (to the earliest 30 minutes after sunset). Both survey periods need a minimum of 10 nights (not necessarily consecutive) of data under optimal weather conditions.

Survey stations are stationary points that are positioned in such a way as to provide adequate coverage of the spatial distribution of the proposed wind turbine placements (e.g., if known, survey stations should be established at sites where wind turbines are proposed to be constructed, to the extent possible; if turbine locations are not known, survey stations should cover the full spatial extent of the site and all habitat types).

The number of survey stations will vary depending on the size of the proposed wind power development (i.e., number of wind turbines and distribution/arrangement) and habitat composition. Sites of ≤ 10 turbines may require 2-3 survey stations, with an extra station being added for each 10 additional turbines. These stations may be distributed at site corners, middle, turbine clusters and unique habitat types. The final number and location of the monitoring stations it to be approved by DNR.

Table 1. Pre-construction monitoring requirements for all potential wind farm development areas and additional requirements for high risk areas.

Inventory dates	Number of hours recorded per survey station *	Recorded time per night
Required monitoring effort for all sites		
June 1 st – June 30 th	40 hours of survey distributed on a minimum of 10 nights	Minimum of 4 hours per night, starting 30 minutes after sunset
Aug 15 th – Sept 15 th	40 hours of survey distributed on a minimum of 10 nights	Minimum of 4 hours per night, starting 30 minutes after sunset
Additional survey period in high risk areas		
July 1 st – July 31 st	40 hours of survey distributed on a minimum of 5 nights	Minimum of 4 hours per night, starting 30 minutes after sunset
Sept 15 th – Oct 15 th	40 hours of survey distributed on a minimum of 5 nights	Minimum of 4 hours per night, starting 30minutes after sunset

*Surveying on nights with adverse weather conditions will not count towards the minimum number of survey nights

Weather Conditions

Surveys are to be conducted on nights of seasonal temperatures with no precipitation and low winds (<20km/h). This will be at the discretion of the surveyors because sites are chosen for the regular occurrence of high winds.

Weather conditions (e.g., air temperature, wind speed/direction, precipitation, etc.) must be documented throughout each night of monitoring to aid interpretation of bat activity data.

Design and analysis

Bat survey design and data analysis are to be undertaken by a qualified biologist skilled in bat identification and monitoring. The pre construction survey methodology is to be reviewed and approved by the Department of Natural Resources.

The data from all surveys should be analyzed to the species level, where possible, and will be used to identify relative abundance of bats in terms of call level activity. A report summarizing bat activity and diversity for the project and in context of bat activity data for the rest of NB and other wind farms will be prepared and provided to NB DNR.