



BURCHILL WIND PROJECT

SUMMARY OF ENVIRONMENTAL STUDIES

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naturalforces

Introduction

This unofficial document provides a summary of environmental studies conducted by the Proponent, Natural Forces Development Limited Partnership, for the Burchill Wind Project. For detailed studies and assessments, see the Burchill Wind Project Environmental Assessment and associated documents at <https://www.naturalforces.ca/burchill-wind-project.html>.

1.1 Birds

A. Bird Studies Completed

- a. **Overall:** The area studied for bird activity covered a large portion of the Lorneville Peninsula (Figure 1). Across all survey periods, a total of 19,324 individual birds, representing 101 species were observed. 93% were observed flying outside of the study area, instead flying along the coasts of the peninsula. Most commonly observed group were waterbirds, particularly ducks, scoters and cormorants. All species found in Interior forest habitat during surveys (e.g. blue-headed vireo, ovenbird, black-throated green warbler, winter wren) are considered common in New Brunswick.
- b. **Breeding bird surveys**
 - Monitoring for all breeding birds
 - 516 observations representing 46 species
 - Most commonly observed species: Black-throated green warbler(88), hermit thrush(43), blue-headed vireo (36)
 - No confirmed breeders, although some species were observed at the same location over 2 counts so they are potential breeders. Overall low breeding behaviour in this area. No large flocks of birds observed during breeding bird surveys
 - Specific surveys for: spring owls and common nighthawks
 - 1 pair of common nighthawks were observed, they are a Species of Conservation Concern (SOCC)
 - 3 owls detected, likely all barred owls
- c. To study **spring migration**, the following surveys were completed:
 - passage migration counts studying bird presence, activity and behaviour
 - 15,125 individual birds representing 60 species. Most commonly observed species were scotor species (8,168), unidentified duck species (2749), and double crested cormorants (847)
 - 99% of observances outside of study area
 - migration stopover counts to estimate how many birds use the site as a stop during migration
 - 989 individuals representing 63 species
 - Most commonly observed species: American robin (90), fox sparrow 961), black-throated green warbler (61), and turkey vulture (62)

- d. To study **fall migration**, the following surveys were completed:
 - Point count surveys
 - 1,888 individuals representing 45 species were observed. The most commonly observed species in descending order include “gulls” (572), double crested cormorants (396), and “passerines” (232)
 - migration stopover counts to estimate how many birds use the site as a stop during migration
 - 652 individual birds representing 49 species were observed. The most commonly observed species were: black capped chickadee (142), Golden-crown kinglet (112), and yellow-rumped warbler (109)
- B. Other details
 - a. **Species of Conservation Concern (SOCC)** are populations that are potentially vulnerable to disturbances or changes in the environment, typically due to present population levels of a species. Across all survey periods, a total of 9 SOCC were observed inside the study area. The most frequently observed SOCC were turkey vultures.
 - b. **Species at Risk (SAR)** are defined in the report as those species that are listed as ‘extirpated’, ‘endangered’, or ‘threatened’ on the federal SARA or the NB SAR. SAR observed were : bald eagle, peregrine falcon, olive-sided flycatcher and common nighthawk
 - a. Using measurements of the study area, estimates of birds flying over the study area, and estimated turbine rotor sweep, it is estimated that bird mortality will 0.58 birds per turbine per year
- C. Future studies
 - a. **Winter surveys** for resident birds are currently being completed and will be submitted as another addendum

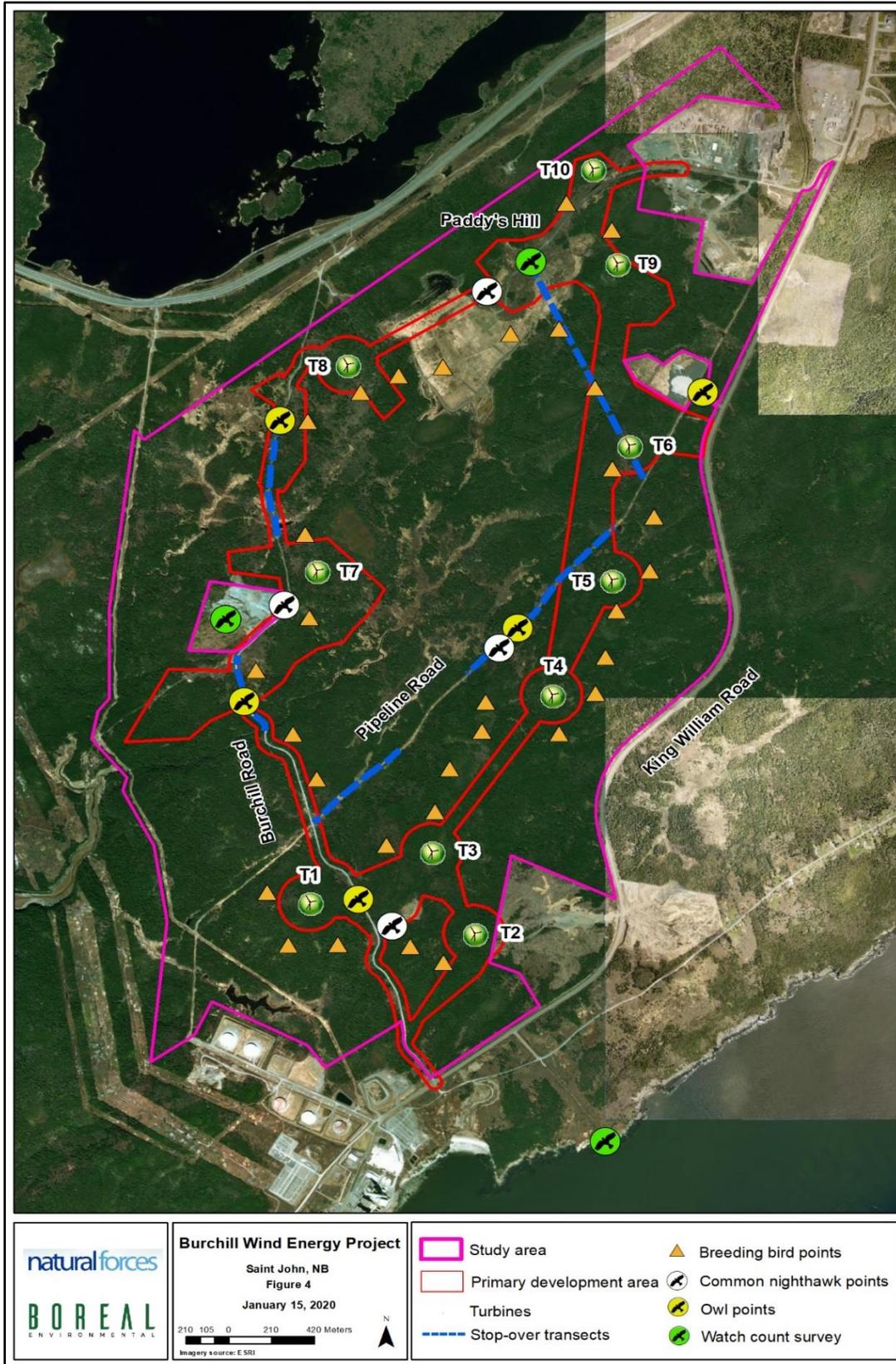


Figure 1. Location of point counts, watch count stations, and transects for all bird surveys done in 2019.

1.2 Bats

A. Bat Habitat types

- a. There are no significant water features on site
- b. No known bat hibernacula within 5km of site. Closest cave is Greenhead, approximately 10 km away

B. Acoustic monitoring

- a. Detectors recorded bat passes for half an hour before sunset to half an hour after sunrise, and number and species of bats were identified by echolocation frequency. Any call that couldn't be identified to species was classified as an unidentified bat.
- b. All bat species in New Brunswick are considered Species of Conservation Concern (SOCC).
- c. Monitoring occurred from June 1st to October 15th 2019. Bat activity was very low in the study area, there was an average of 0.32 bat calls per detector night (Roughly 1 call every 3 days).
- d. Survey does not suggest the presence of active breeding colonies.
- e. Calls detected were: little brown bat (91), big brown bat (84), hoary bat (40), unknown (5), eastern red bat (2)
- f. The estimate turbine mortality for bats in Atlantic Canada is 0.26 bats per turbine per year.

1.3 Wildlife

- a. The following species were observed during surveys. All mammals observed have population levels considered secure.

- | | |
|---------------------|----------------------------|
| • Eastern coyote | • American black bear |
| • Snowshoe hare | • North American porcupine |
| • Eastern chipmunk | • Raccoon |
| • White-tailed deer | • American red squirrel |
| • American moose | • Red fox |
| • River Otter | • Meadow vole |
| • Mink | • Striped Skunk |

1.4 Fish and fish Habitat

- a. 74 watercourses were identified and delineated. Most are ephemeral and likely don't support fish habitat. Fish or fish supporting habitat were observed at the following watercourses: Maguires Cove Brook, Burchill's Brook, Frenchman's Creek, Mill Creek, and Marsh Brook.
- b. No historic records of fish Species At Risk or Species of Special Concern within 5 km of proposed project area

1.5 Habitat

A. Habitat types observed on site were:

- Shrub land
- Mixed softwood aged 50 to 100+ years
- Dry with rocky outcrops
- Dry with mixed softwood and rocky outcrops
- Mixed softwood

1.6 Vegetation

A. Overall

- a. 294 plant species were identified on site. Of these, the following five species are considered rare: purple false foxglove, coastal sedge, Wiegand's sedge, Loesel's twayblade, and cloudberry. Purple false foxglove was found mainly in disturbed areas such as along edges of roadways. Coastal sedge, Loesel's twayblade and cloudberry are considered uncommon but secure in New Brunswick.

1.7 Wetlands and Watercourses

A. Overall:

- a. The lands around the proposed turbines were explored on foot to delineate wetlands and watercourses near original turbine locations. There are no mapped wetlands from GeoNB within 150m from the turbines.
- b. The majority of wetlands on site are mature treed swamps (Trees approximately minimum of 40 years old, area has been harvested previously)
- c. 74 watercourses were identified and delineated. Most are ephemeral and likely don't support fish habitat. Fish or fish supporting habitat were observed at the following watercourses: Maguires Cove Brook, Burchill's Brook, Frenchman's Creek, Mill Creek, and Marsh Brook.
- d. Wetland Functional assessments were completed for all wetlands over 0.5 hectares and wetlands smaller than 0.5 ha that were considered distinctive i.e. having a noteworthy feature, being located in a highly disturbed area etc.
- e. 27 small wetlands and 25 large wetlands were delineated on the project site
- f. Additional surveys will be completed in the spring to study areas that were not previously studied with the old layout