**Ministry of**
**Natural Resources**
615 John Street North
Aylmer ON N5H 2S8
Tel: 519-773-9241
Fax: 519-773-9014

**Ministère des**
**Richesses naturelles**
615, rue John Nord
Aylmer ON N5H 2S8
Tél: 519-773-9241
Téléc: 519-773-9014

Ontario

October 22, 2010

Brad West
Manager Business Development, Wind
Suncor Energy Services Inc.
P.O. Box 2844, 150 - 6th Ave. S.W.
Calgary, AB T2P 3E3

Dear Mr. West

**RE: Kent Breeze Bird and Bat Post-Construction Monitoring Plan – Final Version**

On June 7, 2010, the Ministry of Natural Resources (MNR) provided a letter confirming the natural heritage assessment for the Kent Breeze and MacLeod Wind Farm Project, as required under Section 28 of the Renewable Energy Approval Regulation (O. Reg. 359/09). This confirmation letter contained an attachment that outlined additional MNR requirements, which included our request that a post-construction monitoring and adaptive management plan for the project be submitted for our review and comment.

The MNR is satisfied that the document entitled "Kent Breeze Wind Farm: Environmental Effects Monitoring Plan for Bats and Birds" prepared for Kent Breeze Corp by Biologic and submitted to the MNR on October 22, 2010 meets the MNR's Draft Bird and Bat Guidelines.

Please contact Ron Gould, Species at Risk Biologist with the Aylmer District office at 519-773-4735 or ron.gould@ontario.ca regarding the application for a 17(2)(b) permit under the *Endangered Species Act*, 2007. As well, contact Amelia Argue, Sr. Fish and Wildlife Technical Specialist with the Chatham Area Office at 519-354-1425 or amelia.argue@ontario.ca regarding the application for a Scientific Collectors Permit under the Fish and Wildlife Conservation Act.

If Biologic or Kent Breeze Corp requires deviation from this current monitoring plan as the project progresses, the MNR requests to be consulted in advance of any changes to the methodology in the monitoring plan. As well, the MNR requests to be consulted if the mortality thresholds stated in the monitoring plan for birds and/or bats are reached to discuss mitigation options and adaptive management strategies.

If you have any questions, please contact me.

Sincerely,

HRiddell

Heather Riddell
A/Planning Ecologist, Aylmer District
(519) 773-4723

cc. Kristina Rudzki (MOE)
Dave Hayman (Biologic)
Erin Cotnam (MNR)
Holly Simpson (MNR)

BioLogic

AQUATIC AND TERRESTRIAL ECOSYSTEM PLANNERS

**Kent Breeze Wind Farm**

# Environmental Effects Monitoring Plan
## For Bats and Birds

Prepared for:
**Kent Breeze Corp**

Revised: October 21, 2010


**Head Office**
110 Riverside Drive, Suite 201
London, Ontario N6H 4S5
Telephone: 519-434-1516
Fax: 519-434-0675

www.biologic.ca

**Windsor Office**
2280 Ambassador Drive
Windsor, Ontario N9G 4E4
Telephone: 519-966-1645
Fax: 519-966-1645

## TABLE OF CONTENTS

## 1.0 CONTEXT AND LOCATION

The Kent Breeze Wind Farms is a Class 4 wind facility which will consist of **eight** 2.5MW GE wind **turbines** (site plan attached) on 85 metre towers, for a total nameplate capacity of 20MW. The wind farm is located in northeast Chatham-Kent, about 6 km west of Thamesville. The turbines are located east and west of Huff's Side Road between Evergreen Line and Longwoods Road. Land use in the area is primarily row crop agriculture.

A pre-construction monitoring program was conducted for this site which was included with the design and operations report (IBI, 2010). Considering the results of the monitoring program and review of the site, this site was classified as a low sensitivity area for migratory birds based on Environment Canada's publication, "Wind Turbines and Birds, A Guidance Document for Environmental Assessment " (2006). In addition, there were no identified features (topography or hibernacula) which would indicate an elevated bat sensitivity based on the Ontario Ministry of Natural Resources Working Draft "Guideline to Assist in the Review of Wind Power Proposals, Potential Impacts to Bat and Bat Habitats" (August, 2007).

Since pre-construction monitoring studies were undertaken and the background natural heritage reports were completed, the Ontario Ministry of Natural Resources have developed a new guideline document for bat monitoring (Bats and Bat Habitats - Guidelines for Wind Power Projects (MNR, 2010) with a focus on post construction mortality monitoring efforts. A revised bird monitoring guideline has not yet been released, however, an interim guidance document on bird post-construction monitoring has been developed (OMNR letter to IBI, August 16, 2010) which outlines monitoring effort, time requirements and raptor mortality surveys. Data will be collected concurrently at this project to estimate bird and bat mortality rates.

# 2.0 PURPOSE AND TIMING OF BIRD AND BAT MORTALITY SURVEYS

## 2.1 Purpose

The purpose of the post-construction monitoring program is to determine estimated mortality rates for birds and bats..The Ontario Ministry of Natural Resources have established a standard of post-construction monitoring, with the vision of developing comparable databases throughout the Province. This data will help to guide and focus future turbine installations and/or develop effective and efficient monitoring and mitigation protocols.

These standards include three years of mortality surveys, carcass removal studies and searcher efficiency trials through the active bat and bird season (May 1 – October 31 extended to November 30th for raptors). Because this site is less than 10 turbines, all eight turbines will be monitored through this time period.

Estimated mortality levels for bats and birds are calculated through observed mortalities per turbine, which is modified by taking into account searcher efficiency and loss through scavenging of carcasses. Estimated annual mortality per turbine will be calculated and if threshold numbers are exceeded for birds or bats, mitigation measures will be necessary. Thresholds are detailed in Section 6.0 with mitigation options provided in Section 7.0. If thresholds identified in Section 6.0 are met for birds or bats for this project, mitigation measures will be implemented in consultation with MNR with the goal of lowering the estimated mortality rate to an acceptable level.

## 2.2 Timing

Bird and bat mortality monitoring will be conducted at all eight turbines for **three years** following the beginning of operations of 50% of the turbines. Birds and bat mortality will be surveyed between May 1st and October 31st at the **same time** (Table 1 – Proposed Survey Schedule). Surveys will be done **twice a week**, although adjustment to the specific day may occur if weather patterns suggest high levels of activity (ie during spring migration, a cold front is passing through on the day of the scheduled field work and spring migration acitivity is expected to be higher the next day ). The schedule would be adjusted to ensure the twice per week visits still occur.

While bat and passerine bird activity becomes negligible by the end of October, raptor migration continues into the month of November. The MNR interim guidance (letter to IBI - August 16 2010) requests that raptor mortalities surveys be conducted once per week from May 1st to September 30th and once per month from October 1st to November 30th. As a result, weekly raptor mortality monitoring for this project will continue until the end of November.

If estimated annual mortality rates meet the thresholds identified in Section 6.0, mitigation measures will be considered/implemented in consultation with the MNR and the monitoring will continue on the same schedule for three additional years for birds and for three additional years for bats.

## 3.0 DATA COLLECTION

Data will be collected and recorded in order to determine the following:

- Observed mortality incidences for birds and bats at individual turbines and for the project as a whole
- A carcass removal factor [see Section 4.0 for details]
- A searcher efficiency factor [see Section 5.0 for details]
- An annual estimated mortality rate per turbine expressed as # / turbine / year

### Search Area

- A 50-metre radius circle around all eight turbines will be searched on each survey (example survey field sheet attached).

- For a period of 3 years, ground cover around turbines will be maintained at a minimal level in order to facilitate more accurate mortality surveys. This would involve maintaining 90% bare ground with vegetation height less than 15 cm through tillage and/or planting the study area in grass to be mowed regularly. Tillage and mowing schedules will be timed to occur immediately following a carcass search to protect carcasses within the study area and to minimize mechanical impacts to birds from the tillage and mowing activity. The field technicians will notify the operation manager when vegetation cover is nearing maintenance and coordinate the maintenance with their next field survey date. While mowed grass does not strictly fall into the visibility class structure provided by MNR (Table 1), mowed grass provides excellent visibility and would be considered Class 1. Areas exceeding Class 1 visibility will be mapped. Survey efforts and searcher efficiency trials will be increased to reflect the reduced visibility for these areas.

**Table 1: Mortality Monitoring Visibility Class (from MNR, 2010)**

| % Vegetation Cover | Vegetation Height | Visibility Class |
|---|---|---|
| $\geq$ 90% bare ground | $\leq$ 15 cm tall | Class 1 (Easy) |
| $\geq$ 25% bare ground | $\leq$ 15 cm tall | Class 2 (Moderate) |
| $\leq$ 25% bare ground | $\leq$ 25% > 30 cm tall | Class 3 (Difficult) |
| Little or no bare ground | $\geq$ 25% > 30 cm tall | Class 4 (Very Difficult) |

- The 50m circular search area will be examined using parallel transects 5.0 – 6.0 metres apart which allows for a visual search of 2.5 – 3.0 metres on each side.

- Carcasses will be approximated on the field survey sheets (attached) to field verify UTM coordinates collected at the same time.

- Surveys will be conducted by suitably trained field personnel and supervised by both Dave Hayman, M.Sc. and Dave Martin. Both Dave Hayman and Dave Martin have considerable experience in pre-construction monitoring for wind turbines (approved and planned – 45 sites), including coordinating up to six field surveyors for multiple wind turbine projects. Dave Martin is an expert in faunal species identification and field survey protocols. James Holdsworth, Linda Wladarski and Will Huys, field technicians employed by BioLogic, will provide the field support for post-construction monitoring data collection. These staff will provide consistency of data collection throughout the three years of the post-construction project.

- These trained field personnel will be responsible for finding and photographing carcasses and completing the field data sheets (attached) including species, date, time, location, carcass condition.

- The condition of each carcass collected will be recorded in one of the following categories:

    - **Intact:** a carcass that is not badly decomposed and shows no sign of having been fed upon by a predator or scavenger, although it may show signs of traumatic injury such amputation from a turbine collision.

    - **Scavenged:** an entire carcass that shows signs of having been fed upon by a predator or scavenger or a partial carcass that has been scavenged, with portions of it (for example, wings, skeletal remains, legs, pieces of skin) found in more than one location.

- All carcasses will be suitably labelled and stored. Confirmation of species identification and determination of age and sex will be conducted by the supervising biologists. Photographs and/or the actual carcass will be used to finalize the data.

Based on UTM coordinates, distance to nearest turbine will be calculated and checked against the field data sheets. Information will be plotted cumulatively to determine whether or not selected areas of the 50m radius are more likely to contain carcasses. Mortalities of bats and birds will also be plotted against weather pattern information to assess conditions which most likely increase mortality probability.

After data confirmation, carcasses of the following species found during bat mortality searches will be stored in a freezer and used, if needed, in carcass removal or searcher efficiency trials, assuming they are in reasonable condition (intact as defined by MNR, 2010):

- *Lasionycteris noctivagans*
- *Lasiurus cinereus*
- *Lasiurus borealis*

Because of White-nose Syndrome contamination risks, the following species will not be used in carcass removal or searcher efficiency trials:

- *Myotis septentrionalis*
- *Myotis lucifugus*
- *Myotis leibii*
- *Perimyotis subflavus*
- *Eptesicus fuscus*

Instead, these five species of bats will be collected and sent to the Canadian Cooperative Wildlife Health Centre (CCWHC) in Guelph for testing for WNS. Submission protocols have been discussed with D. Cristo at the CCWHC and would include:

- specimen double bagged with copy of notes in middle layer.
- specimen frozen and sent by courier (COD) in ice packs in hard bodied cooler
- can accumulate specimens for up to three weeks before shipping.

Results will be reported to MNR in annual report.

### Incidentally discovered carcasses

Bird and bat carcasses may be discovered incidental to formal searches. These carcasses will be processed (i.e. collected, recorded, etc.), and the fatality data will be included with the calculation of fatality rates. If

the incidentally discovered carcass is found outside a formal search plot, the data will be reported separately.

### Permits

The survey team will obtain the required permits for collecting, handling, storing and transporting injured birds and bats and carcasses. They are:

1 A 17(2)b permit (or equivalent) from MNR as required under *ESA 2007* to collect, possess and transport Species at Risk carcasses.

2 A Scientific Collector's Permit from MNR as required under the *Fish and Wildlife Conservation Act* to possess and transport wildlife.

3 A Scientific Collector's Permit from Environment Canada as required by the *Migratory Bird Convention Act, 1994* to collect, possess and utilize carcasses of migratory birds for use in carcass and searcher efficiency trials.

### Safety precautions for handling carcasses

Searchers handling carcasses will use proper gloves or tools. All searchers will have updated rabies pre-exposure vaccinations.

### Injured birds

Injured birds and bats will be transported to a licensed animal care centre.

## 4.0 CARCASS REMOVAL TRIALS

Carcass removal trials will follow the guidelines outlined in Bats and Bat Habitats: Guidelines for Wind Power Projects. Draft 2010.

Specifically, carcass removal trials at the Kent Breeze wind farm will use the following guidelines.

- Carcass removal trials for birds and bats will be conducted **once a month**.
- A **minimum of 10 carcasses** will be used for each trial.
- Carcasses removal trials will be conducted in a **variety of weather conditions**. Weather conditions will be recorded.
- Carcasses will be **distributed across the range of different substrates** present at the eight turbines.
- Carcasses will be **placed before daylight using gloves and boots** to avoid imparting human smell that might bias trial results (i.e. attract scavengers, etc.).
- Trials will continue until all the carcasses are removed or have sufficiently decomposed (i.e. up to 2 weeks).
- To avoid confusion with turbine-related fatalities, **trial carcasses** will be **marked** (e.g. clipping of ear, wing leg, fur; hole-punching ear; etc.) **with a unique identification**, so they can be identified as a study carcass.
- Carcasses used will be **as fresh as possible** since frozen or decomposed carcasses are less attractive to scavengers. If **frozen carcasses** are used, they **will be thawed** prior to beginning carcass removal trials.
- A mix of **bat, other small brown mammal and bird carcasses** will be used depending on availability.

### Scavenger Correction Factor

The following correction factor formula will be used to determine the corrected scavenger rate for each season and for each year.

The proportion of carcasses remaining after each search interval are pooled to calculate the overall scavenger correction (Sc) factor:

$$Sc = \frac{nvisit1 + nvisit2 + nvisit3}{nvisit0 + nvisit1 + nvisit2}$$

Sc is the proportion of carcasses not removed by scavengers over the search period

nvisit0 is the total number of carcasses placed

nvisit1 – nvisit3… are the numbers of carcasses remaining on visits 1 through 3

## 5.0 SEARCHER EFFICIENCY TRIALS

Searcher efficiency trials will follow the guidelines outlined in Bats and Bat Habitats: Guidelines for Wind Power Projects. Draft 2010.

Specifically, searcher efficiency trials at the Kent Breeze wind farm will use the following guidelines.

- Searcher efficiency trials will be conducted once per month at the Kent Breeze wind farm during the mortality-monitoring season.
- A minimum of 10 carcasses per searcher per visibility class (see visibility class table in Section 3.0) will be used. The searcher efficiency trial carcasses will be spread out over the survey period. The average efficiency per searcher across all visibility classes will be used for calculations. Raw data for all searchers will be submitted with the annual report.
- Searcher efficiency **trials** will be conducted **for each individual searcher**. The searcher will not be notified when they are participating in an efficiency trial to avoid potential search biases.
- Trial carcasses will be discreetly marked (e.g. clipping of ear, wing, leg, fur, hole-punching ear, etc.) with a unique identification so that they can be identified as a study carcass.
- Trial carcasses will be randomly placed within the search area and the location will be recorded so that they can be retrieved if they are not found during the trial.
- A mix of **bat, other small brown mammal and bird carcasses** will be used depending on availability.
- If **frozen carcasses** are used, they **will be thawed** prior to beginning searcher efficiency trials.

### Searcher Efficiency Factor

A searcher efficiency (Se) factor will be calculated for each searcher as follows:

$$Se = \frac{\text{number of test carcasses found}}{\text{number of test carcasses placed} - \text{number of carcasses scavenged}}$$

The number of turbines that each individual searches will vary so it will be necessary to calculate a weighted average that reflects the proportion of turbines each searcher searched. The weighted average or overall searcher efficiency will be calculated as follows:

$$Se_o = Se1(n1/T) + Se2(n2/T) + Se3(n3/T)\ldots \text{where}$$

$Se_o$ is the overall searcher efficiency

Se1 and 2 and 3… are individual searcher efficiency ratings

n1 and 2 and 3… are number of turbines searched by each searcher

T is the total number of turbines searched by all searchers

# 6.0 ESTIMATED MORTALITY AND NOTIFICATION THRESHOLDS

## 6.1 Estimated Mortality Thresholds for Birds

Annual thresholds for birds will be:

- 18 birds/turbine/year at individual turbines [i.e 144 birds for the Kent Breeze project]
- 0.1 raptor/turbine/year [i.e. 1 raptor of provincial conservation concern]
- 0.2 raptors/turbine/year [i.e. 2 individuals of other raptor or vulture species]

The threshold for a significant single event bird mortality will be based on observed mortality will be:

- 10 birds observed at any one turbine
- 33 birds observed within the wind farm

## 6.2 Estimated Mortality Thresholds for Bats

Annual estimated thresholds for bats will be:

- 10 bats/turbine/year [i.e. 80 bats for the Kent Breeze project]

The threshold for a significant single event bat mortality will be:

- 10 bats observed at any one turbine
- more than 40 bats observed within the wind farm (half the annual threshold)

## 6.3 Threshold Notification

OMNR will be notified immediately when:

- any Species at Risk are killed or injured
- single significant event observed mortality as noted in Section 6.1 and 6.2.

Otherwise, if annual estimated mortailities exceed the annual thresholds noted in Section 6.1 and 6.2, OMNR will be notified through the annual report submission.

## 6.4 Reporting

Annual post-construction monitoring reports will summarize and analyze the results of the mortality monitoring. Reports will be completed within three months of the end of each year's survey period. The report will be submitted to the Ontario Ministry of Environment and copied to the Ontario Ministry of Natural Resources. These reports will also be maintained on file at the head office of Kent Breeze Corporation, or its parent company, Suncor Energy Products Inc., and available to the Ontario Ministry of Environment and Ontario Ministry of Natural Resources upon request.

Annual mortality rates will be expressed as number of estimated mortalities per turbine.

Reports will include sections on the results of the carcass removal and searcher efficiency trials and include the raw data.

The report will summarize any mortalities of priority bird species in Bird Conservation Region (BCR) 13 and other species of concern such as raptors and declining grassland species

Annual estimated mortality rates will be compared to levels at other sites that have publicly available post-construction monitoring data.

## 7.0 Adaptive Management Plan

The adaptive management plan outlines mitigation measures that will be implemented if single event observed or annual estimated mortality thresholds are met, exceeded or anticipated before the end of the monitoring period.

### 7.1 Single Event Thresholds

MNR will be notified immediately when:

- Any Species at Risk are killed or injured.
- Significant single event observed mortality threshold exceeded (described in Section 6.1 and 6.2)

If any of the above-described scenarios occur, Kent Breeze will review potential mitigative actions in consultation with MNR. These could start with any or all of the following:

- Review the possible factors that may have contributed to the high levels of mortality estimated [see above comments about single event mortality [e.g. weather conditions, time of year when density of birds or bats is particularly high]
- Increase the survey frequency (conduct additional survey the next day and/or when similar weather patterns occur.
- Carry out behavioural or movement surveys

In the event the single event threshold is triggered for bats then Kent Breeze will immediately begin operational mitigations outlined below, based on the assessment of the situation and the appropriate mitigation.

### 7.2 Annual Estimated Mortality Threshold

If the estimated annual mortality rate exceeds thresholds, then Kent Breeze will consider one or more of the following operational mitigations in consultation with MNR:

- Shut down one or more turbines depending on where the higher than anticipated mortalities occurred for a set period of time [e.g. a few days to as long as the core migration period].

- Change wind turbine cut-in speed to 5.5 m/s or feather the turbine blades when wind speeds are below 5.5 m/s for the period when higher than acceptable estimated mortality rates are occurring. This mitigation applies to bats since bats are most active in low winds speeds.

- Schedule maintenance shutdown periods to coincide with anticipated high estimated [estimated is correct in this context] mortality periods.

- Retrofit problematic turbines with experimental deterrent devices and/or commercially available devices if they are developed during the duration of the post construction monitoring period. Prior to implementing this mitigation, Kent Breeze will consult with MNR regarding the effectiveness of these devices.

### Contingency Plan

A contingency plan addresses immediate mitigation actions necessary in case of large, unforeseen levels of estimated annual or observed single event mortality. A contingency plan describes the mitigation measures (e.g. temporary blade feathering or turbine shutdown) that will be implemented in the event that unanticipated high estimated mortality rates are observed.

The action taken depends on whether the event involves birds and/or bats and, if it involves birds whether the species are diurnal or nocturnal migrants. If the event involves bats or nocturnal bird migrants, then the contingency action would be to feather the turbine blades from dusk to dawn. If the event involves diurnal migrants then the turbine(s) will be shutdown during the day.

The surveyors will inform the operation manager immediately and the operation manager will implement the operational mitigation depending on which species are involved, as described above. MNR staff will be called immediately to discuss whether additional actions are warranted and for how long the emergency mitigation should continue.

## 8.0 REFERENCES

BioLogic, 2010. Natural Heritage Assessment Report for Renewable Energy Approval - Kent Breeze and MacLeod Windfarm. For Kent Breeze Corp. May 2010.

Environment Canada (2006). Wind Turbines and Birds, A Guidance Document for Environmental Assessment.

Environment Canada, 2007. Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds. April 2007. Environment Canada – Canadian Wildlife Service.

IBI, 2010. Design and Operations Report. March 2010. Kent Breeze Wind Farms. IBI Group.

MNR, 2007. Working Draft Guideline to Assist in the Review of Wind Power Proposals. Potential Impacts to Birds and Bat Habitats. August 2007. V1.0. Ontario Ministry of Natural Resources.

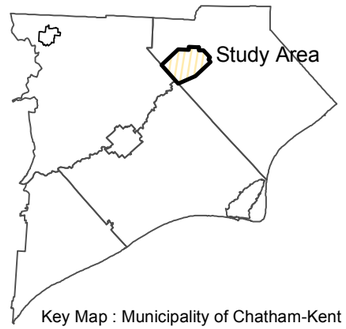
MNR, 2010. Bats and Bat Habitats. Guidelines for Wind Power Projects. March 2010. Ontario Ministry of Natural Resources.

MNR letter, August 16 2010. Kent Breeze Wind Farm Environmental Effects Monitoring Plan for Bats and Birds (with reference to some interim bird mortality monitoring guidelines to use for this plan).

NEM, 2007. Avian Study. October 2007. Neil Morris Environmental for Kent Breeze Corp. and MacLeod Windmill Project Inc.

pers. comm Heather Riddell (various dates, 2010). Guidance for Kent Breeze Wind Farm: Post-construction Monitoring via emails, letters and telephone conversations.

# Kent Breeze Wind Farms & Macleod Windmill Project




## Site Plan

### Legend

- Turbine
- Removed Turbine
- Points of Reception
- Points of Reception (Participating)
- Farm Buildings
- Access Road
- Underground Cable
- Utility Line
- 300m Project Area Buffer
- Significant Woodlot (As per Official Plan)
- Other Vegitation
- Contour Line
- Railroad
- Road
- Watercourse
- Closed Tile Drain
- Agriculture

0 500 1,000
Metres

1:17,500 (11 X 17 Layout)

July 9, 2010

IBI GROUP

J:\20443\5.8 GIS\Maps\Map Created For Suncore 2010-03-24\PMMConceptual Site Plan-2010-07-09.mxd

Proposed Survey Schedule

Study Area: Kent Breeze

Birds and Bats May 1 to October 31

| | M | T | W | R | F | Sa | Su |
|---|---|---|---|---|---|---|---|
| week 1 | 1-8* | | | 2-8,1 | | | |
| week 2 | | 3-8,1,2 | | | 4-8,1-3 | | |
| week 3 | 5-4 | | | 6-5 | | | |
| week 4 | | 7,8,1-6 | | | 8,1-7 | | |

Raptor Migration November 1 to November 30

| | M | T | W | R | F | Sa | Su |
|---|---|---|---|---|---|---|---|
| week 1 | 1-8 | | | | | | |
| week 2 | | 2-8,1 | | | | | |
| week 3 | | | 3-8,1,2 | | | | |
| week 4 | | | | 4-8,1-3 | | | |

* - turbine numbers to be rotated through the schedule.

Note: Indicate if shedule is adjusted and why.

Kent Breeze Wind Farm - Main Field Data Sheet

Turbine #: _____ UTM: _____ Date: _____ Survey Transect Orientation: _____

Investigators: _____ Wind Speed _____

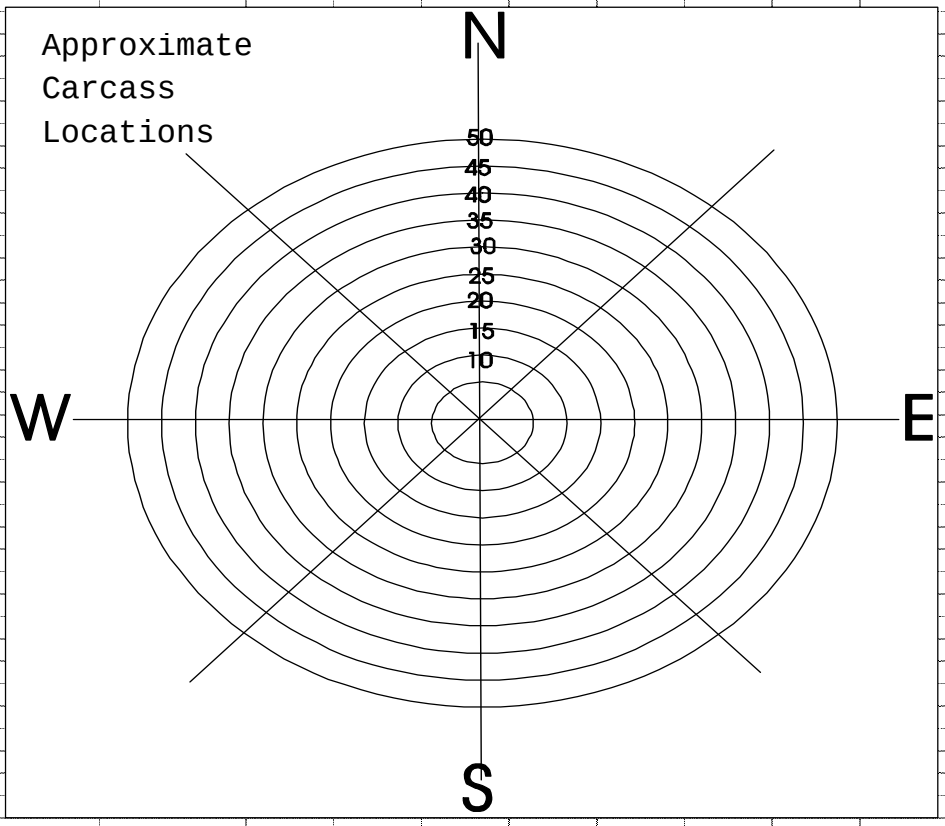
Direction _____ Start _____

Cloud Cover _____ End _____

Rain in last 24 hrs _____

| Carcass # | UTM | | Bat | Bird | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | East | North | mmdd-# | mmdd-letter | Time | Species | Sex | Age | Condition | Injuries |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |

Approximate Carcass Locations




Checked By: _____ Date: _____

Notes: See Example on Next Page

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AQUATIC AND TERRESTRIAL ECOSYSTEM PLANNERS

Example

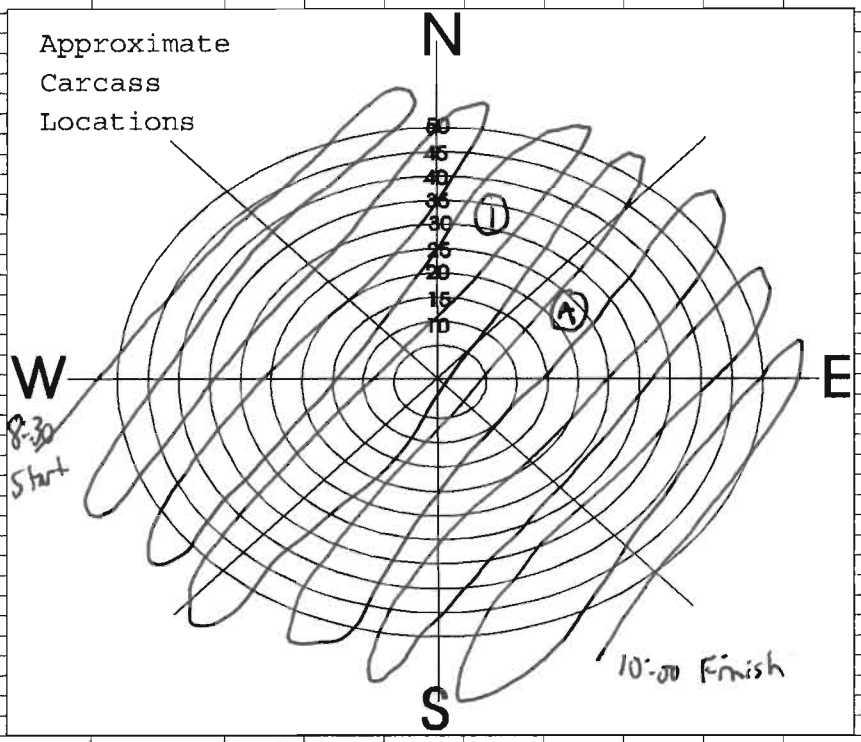
Kent Breeze Wind Farm - Main Field Data Sheet

Turbine #: 8 UTM: x, y Date: Sept 2/11 Survey Transect Orientation: N, NE

Investigators: RA + JH

| | |
|---|---|
| Wind Speed | 10 |
| Direction | N |
| Cloud Cover | 50% |
| Rain in last 24 hrs | none |
| Start | 8:30 |
| End | 10:00 |

| Carcass # | UTM East | UTM North | Bat mmdd-# | Bird mmdd-letter | Time | Species | Sex | Age | Condition | Injuries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $x_2$ | $y_2$ | | 0902-A | 9:05 | Robin | ✓ M | 2 | intact | minor | Wing clipped |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | $x_1$ | $y_1$ | 0902-1 | | 9:20 | Brown | ✓ M | 1 | S | violent | head missing |
| 5 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |




Checked By: DM Date: Sept 4/11

Notes: Bat carcass frozen for future use
vegetation needs tending

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