

Ernestown Wind Park

Marsh Bird Breeding Area Habitat-use Surveys Report

Prepared by: *M.K. Ince and Associates Ltd.*

Prepared for: *Ernestown Windpark LP*

July 12, 2013



M.K. INCE AND ASSOCIATES LTD.

Renewable Energy & Environmental Consulting

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1 INTRODUCTION

Site investigations of the Ernestown Wind Park project location determined the presence of two candidate marsh bird breeding areas (MBBA01 and MBBA02). MBBA01 is classified as a generalized Candidate Significant Wildlife Habitat (GcSWH) as it meets the criteria outlined in Table 1 of Appendix D in the *Natural Heritage Assessment Guide* (NHAG) (MNR, 2011). In accordance with the NHAG, GcSWH are treated as existing and significant within 120 metres of the project location. MBBA02 was identified based on the presence of shallow waters for foraging, as well as sufficient emergent aquatic vegetation for cover.

Table 1-1 provides a description of MBBA01 and MBBA02. **Figure 1-1** depicts the location of MBBA02 within the Ernestown Wind Park project area.

Table 1-1: Description of Candidate Marsh Bird Breeding Areas

| Feature ID | Project Components within 120 m | Attributes and Composition | | Function | Associated Natural Features |
|------------|---|----------------------------|--|---|-----------------------------|
| | | Size | ELC Community | | |
| MBBA01 | MBBA01 (classified as GcSWH given distance to project component within 120 m) | 0.60 ha | SAS1 and MAMM1-3 (ELC IDs: 10 and 11, respectively) | Provides nesting habitat in wetlands for marsh birds. Wetlands contain shallow water and emergent vegetation. | Wetland (WE08) |
| MBBA02 | Access Road (15m) Collector (23m) Hardstand (20m) Bladeswept area (0m) | 7.2 ha | SAS1 and MAMM1-3 (ELC IDs: 12 and 22, respectively); MEMM3 (ELC IDs: 21, 25) | | Wetland (WE02) |

The *Natural Heritage Evaluation of Significance Report* (MKI, 2012) did not report on the outcomes of the evaluation of significance for MBBA02, due to seasonality constraints and surveys unable to be conducted prior to the submission of the Natural Heritage Assessment. Consequently MBBA02 was treated as significant and subject to additional habitat-use surveys to determine significance. This process of treating a habitat as significant and committing to undertake studies prior to construction is outlined in Appendix D of the *Natural Heritage Assessment Guide* (MNR, 2011).

This report presents the results from the pre-construction habitat-use surveys for MBBA02.

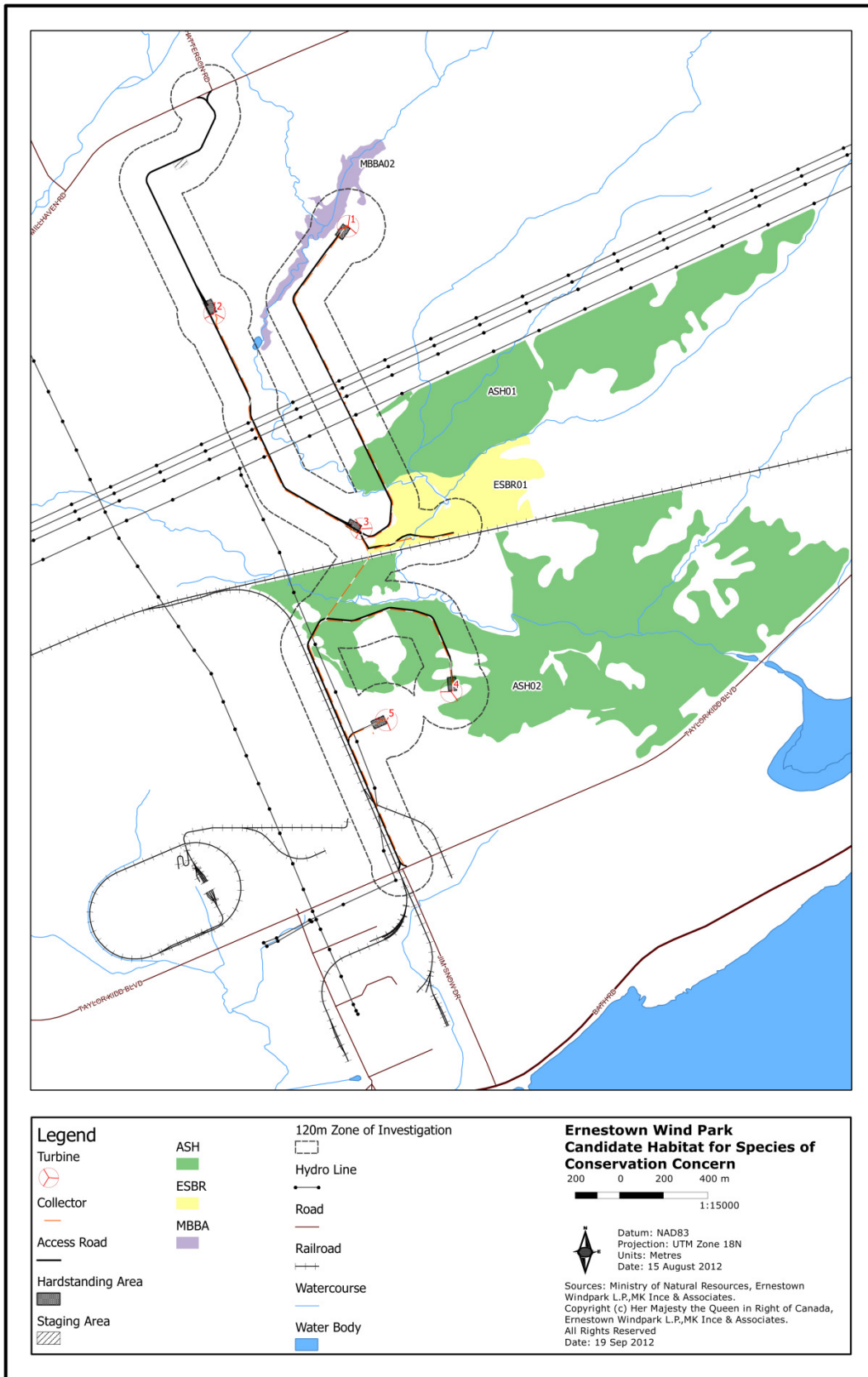


Figure 1-1: Map indicating location of candidate Marsh Breeding Bird area at Ernestown Wind Park

2 METHODOLOGY

Detailed methodology for pre-construction surveys to evaluate the significance of MBBA02 was provided within the *Natural Heritage Environmental Impact Study Report* (MKI, 2012). In May 2013, prior to the commencement of surveys, the Ministry of Natural Resources (MNR) was contacted with a copy of the methodology copied from the *Natural Heritage Environmental Impact Study Report* (MKI, 2012) to again confirm the protocol. **Appendix A** contains the protocol and related correspondence.

To summarize, field staff visited candidate marsh bird breeding habitat twice between mid-May and early-July with at least 10 days between surveys to observe for the presence of marsh birds breeding and evaluate habitat according to *Bird and Bird Habitats: Guidelines for Wind Power Projects* (OMNR, 2011) and the *Marsh Monitoring Protocol* (BSC, 2003). As marsh birds can be cryptic, call playback was used to supplement passive point count surveys. A recording was played during point counts to elicit vocalizations by nesting marsh birds. Surveys were weather-dependent in that no surveys were conducted during bad weather or in the presence of precipitation, both which would affect survey results.

3 RESULTS

A summary of the pre-construction habitat-use surveys for MBBA02 at the Ernestown Wind Park Project is provided in **Table 3-1** below. Details on the dates, time, weather conditions during each site visit, as well as the names of each of the investigators are provided.

Table 3-1: Summary of Site Visits

| Date | Habitat Surveyed | Start/ End Time | Weather Conditions | Site Investigators |
|------------|------------------|--------------------|--|-------------------------------------|
| 2013-05-22 | MBBA02 (point 1) | 18:52-19:07 | Temp: 24°C Cloud Cover: 1/10 Wind (beaufort): 0 Precipitation: none | Rhiannon Leshyk, Erin Jaggard |
| | MBBA02 (point 2) | 19:17-19:32 | | |
| | MBBA02 (point 3) | 19:44-19:59 | | |
| | MBBA02 (point 4) | 20:06-20:21 | | |
| 2013-07-04 | MBBA02 (point 1) | 20:05-20:20 | Temp: 27°C Cloud Cover: 0/10 Wind (beaufort): 1 Precipitation: none | Rob Tymstra |
| | MBBA02 (point 2) | 19:43-19:58 | | |
| | MBBA02 (point 3) | 20:30-20:45 | | |
| | MBBA02 (point 4) | 19:11-19:26 | | |

All marsh bird breeding observations made during the two site visits can be seen in **Table 3-2** below. Please see **Appendix B** for a copy of all field forms as well as field map indicating the location of each of the observations.

Table 3-2: All Marsh Bird Breeding Observations during Pre-Construction Habitat-Use Surveys of MBBA02

| Date | Candidate Habitat | Observations | | |
|------------|-------------------|---------------------------|--|---|
| | | Focal Species | Secondary Species | |
| | | | Ariel Foragers | Outside Flythrough |
| 2013-05-22 | MBBA02-01 | No focal species observed | -2 Song sparrows -3 Red-winged Blackbirds -3 Eastern Kingbirds -1 Common Yellowthroat -1 Warbling Vireo | - Bobolink - Song Sparrow - Common Yellowthroat - Baltimore Oriole - American Goldfinch - Savannah Sparrow - Ring-billed Gull - Barn Swallow |
| | MBBA02-02 | No focal Species observed | -2 Song Sparrows -1 Red-winged Blackbird -1 Chestnut-sided Warbler -3 Eastern Kingbirds -3 Common Yellowthroats -2 Yellow Warbler | - American Robin - Ring-billed Gull - Red-winged Blackbird - Killdeer |
| | MBBA02-03 | No focal Species observed | -4 Common Yellowthroats -3 Song Sparrows -1 Yellow Warbler | - Blue Jay - Ring-billed Gull - Kingbird - American Goldfinch - Vesper Sparrow - Duck sp. - Killdeer |
| | MBBA02-04 | No focal species observed | -3 Song Sparrows -1 Common Yellowthroat -1 Gray Catbird | - Ring-billed Gull - Blue Jay - Killdeer - American Goldfinch - Red-winged Blackbird |
| 2013-06-04 | MBBA02-01 | No focal species observed | -4 Red-winged Blackbird -1 Warbling Vireo -2 Cedar Waxlings | No outside flythroughs observed |
| | MBBA02-02 | No focal species observed | -3 Common Yellowthroats -2 Swamp Sparrows -1 American Goldfinch -2 Yellow Warblers -1 Blue Jay | No outside flythroughs observed |
| | MBBA02-03 | No focal species observed | -2 Blue Jays -1 Cedar Waxling -1 American Robin -1 Song Sparrow -1 American Woodcock -1 Common Yellowthroat -1 Vesper Sparrow | No outside flythroughs observed |
| | MBBA02-04 | No focal species observed | -3 Song Sparrows -1 Great Crested Flycatcher -1 Downy Woodpecker -1 White-breasted Nuthatch -2 American Crows -2 Red-eyes Vireo -2 Common Yellowthroat | No outside flythroughs observed |

To evaluate the habitat, the *Significant Wildlife Habitat Ecoregion 6E Criterion Schedule* (MNR, 2012) was used. This document states that marsh bird breeding areas are considered significant if the presence of five or more nesting pairs of Sedge Wrens or Marsh Wrens or one pair of Sandhill Cranes or breeding by any combination of five or more of the focal species (American Bittern, Virginia Rail, Sora, Common Moorhen, American Coot, Pied-billed Grebe, Marsh Wren, Sedge Wren, Common Loon, Sandhill Crane, Green Heron, Trumpeter Swan, Black Tern and Yellow Rail) are observed within candidate SWH. Any wetland with even a single pair of breeding Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is considered significant. If Yellow Rail or Black Tern is encountered the habitat will also be considered habitat for special concern and rare wildlife species, as these species are currently listed as Special Concern by COSSARO.

There were insufficient marsh bird breeding observations made during the two site visits for MBBA02 to meet significance requirements.

4 CONCLUSION

There were two site visits made to Ernestown Wind Park for the evaluation of one candidate habitat treated as significant in the *Natural Heritage Evaluation of Significance Report* (MKI, 2012). Pre-construction habitat-use surveys were conducted in June and July of 2013. There were insufficient observations of breeding marsh birds made both in abundance and diversity to meet the requirements for significance. Consequently, the potential negative environmental effects and mitigation measures as well as the environmental effects monitoring plan for MBBA02, presented in the *Natural Heritage Environmental Impact Study Report* (MKI, 2012), are not applicable to the Ernestown Wind Park Project, as the habitat has been determined to be not significant.

5 REFERENCES

- Bird Studies Canada. 2003. *The Marsh Monitoring Program – Training Kit and Instructions for Surveying Marsh Birds, Amphibians and Their Habitats*. 2003 Edition. 40p.
- Ministry of Natural Resources. 2011b. *Bird and Bird Habitats: Guidelines for Wind Power Projects*. Queen’s Printer for Ontario. 32 p.
- M.K. Ince and Associates. 2012. *Natural Heritage Evaluation of Significance Report*. 133p.
- M.K. Ince and Associates. 2012. *Natural Heritage Environmental Impact Study Report*. 78p.
- Ministry of Natural Resources. 2011. *Bird and Bird Habitats: Guidelines for Wind Power Projects*. Queen’s Printer for Ontario. 32 p.
- Ministry of Natural Resources. 2012. *Significant Wildlife Habitat Ecoregion 6E Criterion Schedule*. 42p.
- Ministry of Natural Resources. 2011. *Natural Heritage Assessment Guide for Renewable Energy Projects*. 99p.

6 QUALIFICATIONS AND LIMITATIONS

M. K. Ince & Associates Ltd. (MKI) has prepared this report in accordance with its proposal and information provided by its Client. The information and analysis contained herein is for the sole benefit of the Client and save for regulatory review purposes may not be relied upon by any other person.

MKI's assessment was made in accordance with guidelines, regulations and procedures believed to be current at this time. Changes in guidelines, regulations and enforcement policies can occur at any time and such changes could affect the conclusions and recommendations of this report.

The reports, maps and related documents may rely on information provided to MKI by the Client. This information may include but is not limited to manufacturer and construction specifications and other related information. Maps are created using a Geographic Information System (GIS) that compiles records, information, and data from various sources which may contain errors. While we have referred to and made use of reports, maps and geospatial data and specifications prepared by others, we assume no liability for the accuracy of the information contained within.

Maps and documents made available by MKI are not legal surveys and are not intended to be used as such. No original surveying is included as part of these maps. If any contradictions exist between this document and relevant municipal, provincial or federal laws, regulations, codes, or policies, the text of the laws, regulations, codes or policies will be the legal authority.

APPENDIX A – PROTOCOL AND CORRESPONDENCE

- Survey protocol, extracted from Natural Heritage Environmental Impact Study Report, September 28, 2012 (two pages)
- Email correspondence, May 13, 2013 through May 21, 2013 (two pages)

calling in a 180° semi-circle. Observers will record, date, start and end time, duration of count, weather conditions, observer name, and species richness and abundance. Data will be recorded on Frog and Toad Field Forms (see **Appendix A4**).

Species of particular interest (focal species): Eastern Newt, American Toad, Spotted Salamander, Four-toed Salamander, Blue-spotted Salamander, Gray Treefrog, Spring Peeper, Western Chorus Frog, Northern Leopard Frog, Pickerel Frog, Green Frog, Mink Frog, and Bullfrog.

The *Draft Ecoregion 6E Criterion Schedule* (OMNR, 2012) will be used to evaluate candidate habitat for significance. This document states that a habitat is considered significant if the presence of a breeding population of 1 or more of the focal salamander or 3 or more of the listed frog and toad species with at least 20 individuals (adult, juveniles, eggs/larval masses) is noted. Wetlands with confirmed breeding Bullfrogs are significant. If the candidate habitat is determined to be significant then the SWH is ELC ecosite wetland area and associated shoreline.

MARSH BIRD BREEDING HABITAT (MBBA02)

Field staff will visit identified candidate marsh bird breeding habitat to observe for the presence of marsh breeding birds and will evaluate habitat according to the *Bird and Bird Habitats: Guidelines for Wind Power Projects* (OMNR, 2011a) and the *Marsh Monitoring Protocol* (BSC, 2003). As marsh birds can be cryptic, call playback will be used to supplement passive point count surveys. Field staff will carry an audio device (i.e. MP3 player) and a portable speaker which will be played during point counts to elicit vocalizations by nesting marsh birds. Point count protocol will follow that of the Marsh Monitoring Protocol (MMP), modified from *Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Calls* (Konze & McLaren, 1997). Observers will be stationed at the edge of the wetland with the playback device, with the number of stations differing depending on wetland size but stations will be at least 250 m apart. Each station will consist of a 100 m radius semi-circle within which observers will record all birds identified within 100 m. Stations will be surveyed twice, between mid-May and early-July with at least 10 days between surveys. Surveys will be conducted in the evening starting after 6:00PM and ending before sunset. Second station surveys will be conducted in the same sequence and at the same location as the first surveys. Additionally, surveys will be weather-dependent in that no surveys are to be conducted during bad weather or in the presence of precipitation, both which would affect survey results.

Point counts will last for 15 minutes with an initial 5 minutes before conducting the survey to account for noise disturbance from approaching the site. The point count will begin with an initial passive 5 minute listening period followed by the playback. The recording will be played containing calls from, American Bittern, Virginia Rail, Sora, Least Bittern, Pied-Billed Grebe, Yellow Rail and a combination of American Coot and Common Moorhen. Each call lasts for 30 seconds followed by 30 seconds of silence so that the observer can record any calls. The playback will last for 5 minutes followed by a passive listening period for the remaining 5 minutes of the point count. Observers will record all focal species as well as all other birds heard or seen within the focal radius. Aerial foragers observed foraging within the point count radius will be recorded but non-focal species that fly through or outside the 100 m radius point count area will be tallied separately. Observers will also record standard data including: start and end time, date and weather conditions.

Species of particular interest (focal species) include: American Bittern, Virginia Rail, Sora, Common Moorhen, American Coot, Pied-billed Grebe, Marsh Wren, Sedge Wren, Common Loon, Sandhill Crane, Green Heron, Trumpeter Swan, Black Tern (COSSARO: Special Concern), and Yellow Rail (COSSARO: Special Concern).

The *Draft Ecoregion 6E Criterion Schedule* (OMNR, 2012) will be used to evaluate candidate habitat for significance. This document states that a habitat is considered significant if the presence of five or more nesting pairs of Sedge Wrens or Marsh Wrens or one pair of Sandhill Cranes or breeding by any combination of five or more of the focal species are observed within the candidate SWH. Any wetland with even a single pair of breeding Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is considered significant. If Yellow Rail or Black Tern is encountered the habitat will also be considered habitat for special concern and rare wildlife species, as these species are currently listed as Special Concern by COSSARO. If the habitat is determined to be significant then the area of the ELC ecosite will be considered the significant wildlife habitat.



Erin Jaggard <erin.jaggard@mkince.ca>

Ernestown Marsh Breeding Bird - survey locations and protocol review

2 messages

Erin Jaggard <erin.jaggard@mkince.ca>
To: "Prevost, Eric (MNR)" <eric.prevost@ontario.ca>

Mon, May 13, 2013 at 2:11 PM

Dear Eric

I hope all is well and that you are staying warm this May :)

We are preparing for our Marsh Breeding Birds surveys at the Ernestown project which will commence in the next week or two. Please review the attached kmz where I've marked the hypothetical MBBA point count locations (need to be >250 m apart, also note the easternmost portion of the MBBA candidate habitat is not within leased land, so the fourth survey point is right up against the property line with observations hopefully extending into the neighbouring property).

Please provide any feedback on the survey locations if modifications are required.

Regards,
Erin

--

Erin Jaggard, MSc

Environmental Project Coordinator

M.K. Ince and Associates Ltd.

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Phone: 905.628.0077


Fax: 905.628.1329

Email: erin.jaggard@mkince.ca

Web: www.mkince.ca

3 attachments

 **Ernestown EIS 2012-09-28 Pre-Construction Protocols.pdf**
227K

 **Map 3 - sHSCC_GM_19sep2012.pdf**
244K

 **Ernestown - proposed MBBA survey points.kmz**
1K

Prevost, Eric (MNR) <eric.prevost@ontario.ca>
To: Erin Jaggard <erin.jaggard@mkince.ca>

Tue, May 21, 2013 at 9:11 AM

Hi Erin,

Everything looks good.

Eric R. Prevost

Renewable Energy

Planning Ecologist

Ontario Ministry of Natural Resources

Peterborough District

300 Water Street

Peterborough ON

K9J 7M7

Phone - (705) 755-3134

From: Erin Jaggard [mailto:erin.jaggard@mkince.ca]

Sent: May-13-13 2:12 PM

To: Prevost, Eric (MNR)

Subject: Ernestown Marsh Breeding Bird - survey locations and protocol review

[Quoted text hidden]









APPENDIX B – FIELD FORMS AND MAPS

- Map depicting survey locations, July 12, 2013 (1 page)
- Field forms, May 22, 2013 and July 4, 2013 (8 pages)

Ernestown Wind Park

Ernestown Wind Park, LP
Loyalist Township, Ontario

Marsh Breeding Bird EOS Survey Map

-  Marsh Breeding Bird Habitat
-  MBBA Point Count Location
-  Watercourse
-  Waterbody
-  Project Location 120 m Buffer
-  Road
-  Railroad
-  Building

Date: July 12, 2013

Author/Updated: RFL/HV

Confirmed: TB

Drawing Number: HE-ETWN-MBBA-2013-07-12

0 400 m

1 : 12 000 at 8.5" x 11"



 **M.K. INCE AND ASSOCIATES LTD.**
Renewable Energy & Environmental Consulting

Background Data Sources: Ontario Base Mapping, Ontario Ministry of Natural Resources © Queen's Printer for Ontario.

Projection: NAD 83 UTM Zone 18. All maps produced by M. K. Ince and Associates Ltd. are subject to our statement of qualifications and limitations.

Marsh Bird Data Form

Project Name/Number: Ernesttown

MMB ID: MBBA 02 Station # (if >1): 3

Surveyors: RL & EJ & FC Evening or Morning Survey? (circle one) Evening

GPS UTM coordinates: 18T 0362296 4899769 Visit #: 1

Date: (yr/mm/dd): 2013/05/22 Start Time: 19:44 Finish Time: 19:59 10-minute Survey? 15

Playback used ? Y or N (circle) , if no why? _____

Precip: None/Dry Damp _____ Haze _____ Fog _____ Drizzle _____ Rain _____

Air Temp ° C: 24 Cloud Cover (10th): 1 Beaufort Wind Scale: 0

Remarks:

FOCAL SPECIES:

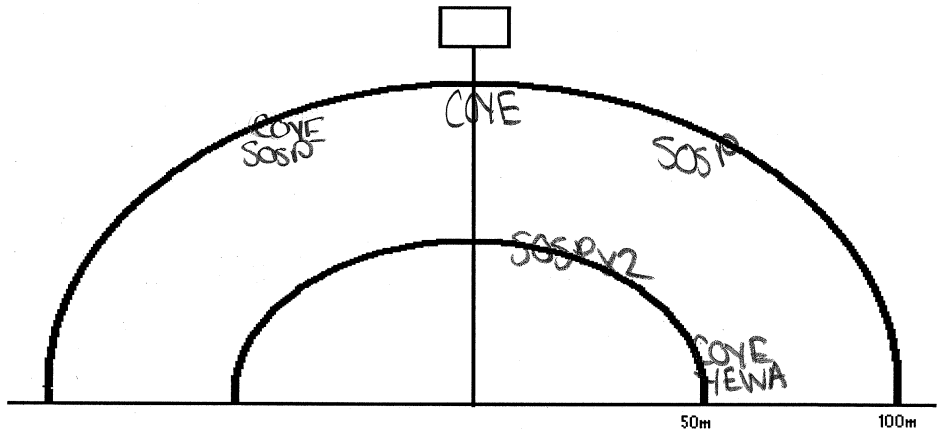
- American Bittern (AMBI) Black Rail (BLRA) King Rail (KIRA) Pied-Billed Grebe (PBGR) Virginia Rail (VIRA)
 American Coot (AMCO) Common Moorhen (COMO) Least Bittern (LEBI) Sora (SORA) Yellow Rail (YEAR)

| Species Code | Detected during: (please fill choice circle) | | | | | | | | | | | Direction | Within 100 m | Detected at previous Point | Comments | |
|--------------|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------|--------------------------|------------------|
| | Before/After survey Period | Pass. Min. 0-1 | Pass. Min. 1-2 | Pass. Min. 2-3 | Pass. Min. 3-4 | Pass. Min. 4-5 | LEBI min. 5-6 | SORA min. 6-7 | VIRA min. 7-8 | MOOT min. 8-9 | PBGR min. 9-10 | | | | | Pass. Min. 10-15 |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
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| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

SECONDARY SPECIES

| Species | Min 0-5 | Min. 5-10 | Min. 10-15 |
|---------|---------|-----------|------------|
| COYE | III | I | |
| SOSP | II | | I |
| YENWA | I | | |

| | |
|-------|---------|
| BLIA | DUCK SP |
| RBGU | KILL |
| KING7 | |
| AMG10 | |
| VFSP | |



Secondary Species Summary (to be completed after survey)

| Species Code | # Observed | | | | Species Code | # Observed | | | | Species Code | # Observed | | | |
|--------------|------------|---------|-----------|-------------------------------------|--------------|------------|----------|-----------|-------------------------------------|--------------|------------|----------|-----------|-------------------------------------|
| | Min0-5 | Min5-10 | Min 10-15 | O/F | | Min0-5 | Min 5-10 | Min 10-15 | O/F | | Min 0-5 | Min 5-10 | Min 10-15 | O/F |
| COYE | 3 | 1 | | <input type="checkbox"/> | RBGU | | | | <input checked="" type="checkbox"/> | DUCKSP | | | | <input checked="" type="checkbox"/> |
| SOSP | 2 | | | <input type="checkbox"/> | KING7 | | | | <input checked="" type="checkbox"/> | KILL | | | | <input checked="" type="checkbox"/> |
| YENWA | | | | <input type="checkbox"/> | AMG10 | | | | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> |
| BLIA | | | | <input checked="" type="checkbox"/> | VFSP | | | | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> |

Marsh Bird Breeding Habitat Evaluation Form

| | | | |
|--|---|------------------------------|---------------------------------|
| Project Name/Number: ERNESTOWN | | | |
| MMB ID: MBBA-PC-1 | | Station # (if >1): | |
| Surveyors: RT | Evening or Morning Survey? (circle one) | | |
| GPS UTM coordinates: 362546, 4900241 | | Visit #: 2 | |
| Date: (yr/mm/dd): 2013/07/04 | Start Time: 805 | Finish Time: 0820 | Background Noise Code (1-4): |
| Precip: None/Dry <input checked="" type="checkbox"/> Damp <input type="checkbox"/> Haze <input type="checkbox"/> Fog <input type="checkbox"/> Drizzle <input type="checkbox"/> Rain <input type="checkbox"/> | | | |
| Air Temp ° C: 27°C | | Cloud Cover (10th): 0 | Beaufort Wind Scale: W-1 |
| Remarks: | | | |

FOCAL SPECIES:

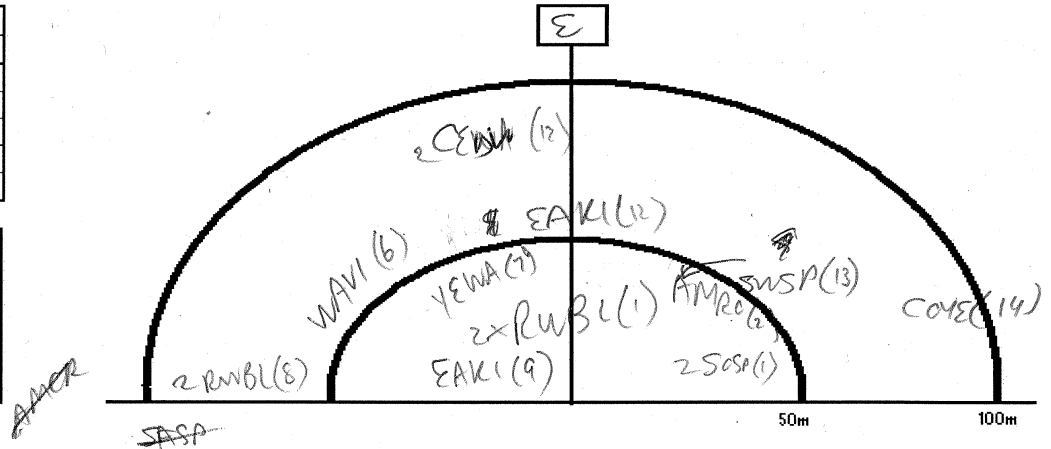
American Bittern (AMBI) Black Rail (BLRA) King Rail (KIRA) Pied-Billed Grebe (PBGR) Virginia Rail (VIRA)
 American Coot (AMCO) Common Moorhen (COMO) Least Bittern (LEBI) Sora (SORA) Yellow Rail (YEAR)

| Species Code | Detected during: (please fill choice circle) | | | | | | | | | | Direction | Within 100 m | Detected at previous Point | Comments | |
|--------------|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|----------------|
| | Before/After survey Period | Pass. Min. 0-1 | Pass. Min. 1-2 | Pass. Min. 2-3 | Pass. Min. 3-4 | Pass. Min. 4-5 | LEBI min. 5-6 | SORA min. 6-7 | VIRA min. 7-8 | MOOT min. 8-9 | | | | | PBGR min. 9-10 |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |

SECONDARY SPECIES

| Species | Min 0-5 | Min. 5-10 | Min. 10-15 |
|-------------|---------|-----------|------------|
| EAKI | | 1 | 1 |
| | | | |
| | | | |
| | | | |

| | |
|--|--|
| | |
| | |
| | |
| | |



Secondary Species Summary (to be completed after survey)

| Species Code | # Observed | | | | Species Code | # Observed | | | | Species Code | # Observed | | | |
|--------------|------------|----------|-----------|-----------------------|--------------|------------|----------|-----------|-----------------------|--------------|------------|----------|-----------|-----------------------|
| | Min0-5 | Min5-10 | Min 10-15 | O/F | | Min0-5 | Min 5-10 | Min 10-15 | O/F | | Min 0-5 | Min 5-10 | Min 10-15 | O/F |
| RWBL | 2 | 2 | | <input type="radio"/> | EAKI | | | | <input type="radio"/> | SOSP | 2 | | | <input type="radio"/> |
| WAVI | | 1 | | <input type="radio"/> | COME | | | 1 | <input type="radio"/> | | | | | <input type="radio"/> |
| CEDW | | 2 | | <input type="radio"/> | SWSP | | | 1 | <input type="radio"/> | | | | | <input type="radio"/> |
| YEWA | | 1 | | <input type="radio"/> | AMRO | 1 | | | <input type="radio"/> | | | | | <input type="radio"/> |

Marsh Bird Breeding Habitat Evaluation Form

| | | | |
|--|--|---|--------------------------------|
| Project Name/Number: ERNESTOWN | | | |
| MMB ID: MBBA PC-2 | | | Station # (if >1): |
| Surveyors: RT | | Evening or Morning Survey? (circle one) | |
| GPS UTM coordinates: 362446 4900010 | | Visit #: 2 | |
| Date: (yr/mm/dd): 2013-07-04 | | Start Time: 743 | Finish Time: 758 |
| Background Noise Code (1-4): 0 | | | |
| Precip: None/Dry <input checked="" type="checkbox"/> Damp <input type="checkbox"/> Haze <input type="checkbox"/> Fog <input type="checkbox"/> Drizzle <input type="checkbox"/> Rain <input type="checkbox"/> | | | |
| Air Temp ° C: 27 | | Cloud Cover (10th): 0 | Beaufort Wind Scale: W1 |
| Remarks: | | | |

FOCAL SPECIES:

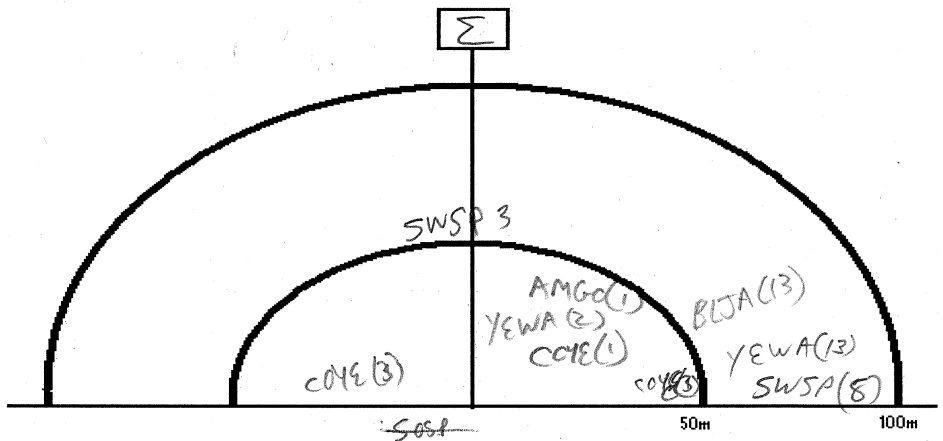
American Bittern (AMBI) Black Rail (BLRA) King Rail (KIRA) Pied- Billed Grebe (PBGR) Virginia Rail (VIRA)
 American Coot (AMCO) Common Moorhen (COMO) Least Bittern (LEBI) Sora (SORA) Yellow Rail (YEAR)

| Species Code | Detected during: (please fill choice circle) | | | | | | | | | | | Direction | Within 100 m | Detected at previous Point | Comments | | |
|--------------|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------|--------------------------|--------------------------|--|
| | Before/After survey Period | Pass. Min. 0-1 | Pass. Min. 1-2 | Pass. Min. 2-3 | Pass. Min. 3-4 | Pass. Min. 4-5 | LEBI min. 5-6 | SORA min. 6-7 | VIRA min. 7-8 | MOOT min. 8-9 | PBGR min. 9-10 | | | | | Pass. Min. 10-15 | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

SECONDARY SPECIES

| Aerial Foragers Talley | | | |
|------------------------|---------|-----------|------------|
| Species | Min 0-5 | Min. 5-10 | Min. 10-15 |
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| Outside Fly- Throughs List | |
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Secondary Species Summary (to be completed after survey)

| Species Code | # Observed | | | | Species Code | # Observed | | | | Species Code | # Observed | | | |
|--------------|------------|---------|-----------|--------------------------|--------------|------------|----------|-----------|--------------------------|--------------|------------|----------|--------------------------|-----|
| | Min0-5 | Min5-10 | Min 10-15 | O/F | | Min0-5 | Min 5-10 | Min 10-15 | O/F | | Min 0-5 | Min 5-10 | Min 10-15 | O/F |
| COYE | 3 | | | <input type="checkbox"/> | BLJA | | | 1 | <input type="checkbox"/> | | | | <input type="checkbox"/> | |
| SWSP | 1 | 1 | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | |
| AMCO | 1 | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | |
| YEWA | 1 | | 1 | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | |

Marsh Bird Breeding Habitat Evaluation Form

| | | | |
|---|--|---|--------------------------------|
| Project Name/Number: <u>ERNESTOWN</u> | | | |
| MMB ID: <u>MRBA - PC-3</u> | | | Station # (if >1): |
| Surveyors: <u>RT</u> | | Evening or Morning Survey? (circle one) | |
| GPS UTM coordinates: <u>362495 4099750</u> | | Visit #: <u>2</u> | |
| Date: (yr/mm/dd): <u>2013-07-04</u> | | Start Time: <u>2030</u> | Finish Time: <u>2045</u> |
| Background Noise Code (1-4): <u>0</u> | | | |
| Precip: None/Dry _____ Damp _____ Haze _____ Fog _____ Drizzle _____ Rain _____ | | | |
| Air Temp ° C: <u>27°C</u> | | Cloud Cover (10th): <u>0</u> | Beaufort Wind Scale: <u>W1</u> |
| Remarks: | | | |

FOCAL SPECIES:

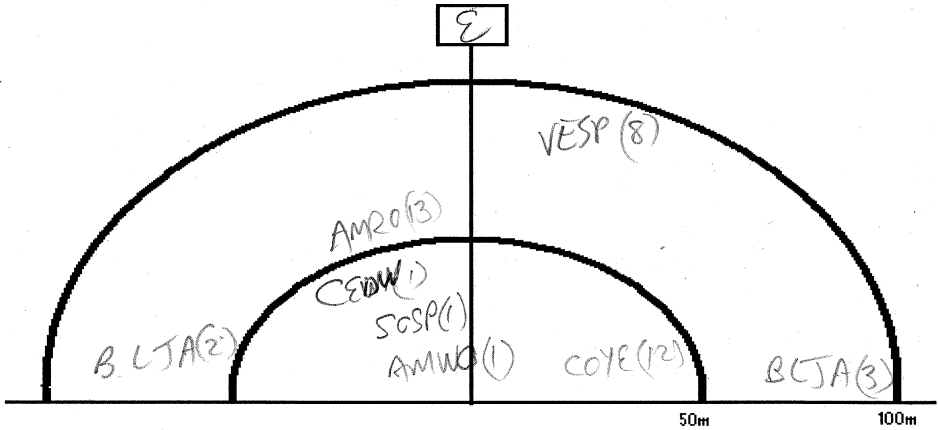
American Bittern (AMBI) Black Rail (BLRA) King Rail (KIRA) Pied- Billed Grebe (PBGR) Virginia Rail (VIRA)
 American Coot (AMCO) Common Moorhen (COMO) Least Bittern (LEBI) Sora (SORA) Yellow Rail (YEAR)

| Species Code | Detected during: (please fill choice circle) | | | | | | | | | | | Direction | Within 100 m | Detected at previous Point | Comments | | |
|--------------|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|--|
| | Before/After survey Period | Pass. Min. 0-1 | Pass. Min. 1-2 | Pass. Min. 2-3 | Pass. Min. 3-4 | Pass. Min. 4-5 | LEBI min. 5-6 | SORA min. 6-7 | VIRA min. 7-8 | MOOT min. 8-9 | PBGR min. 9-10 | | | | | Pass. Min. 10-15 | |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |

SECONDARY SPECIES

| Aerial Foragers Talley | | | |
|------------------------|---------|-----------|------------|
| Species | Min 0-5 | Min. 5-10 | Min. 10-15 |
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| Outside Fly- Throughs List | |
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Secondary Species Summary (to be completed after survey)

| Species Code | # Observed | | | | Species Code | # Observed | | | | Species Code | # Observed | | | |
|--------------|------------|---------|-----------|-----------------------|--------------|------------|----------|-----------|-----------------------|--------------|------------|----------|-----------------------|-----|
| | Min0-5 | Min5-10 | Min 10-15 | O/F | | Min0-5 | Min 5-10 | Min 10-15 | O/F | | Min 0-5 | Min 5-10 | Min 10-15 | O/F |
| BLJA | 2 | | | <input type="radio"/> | AMWO | 1 | | 1 | <input type="radio"/> | | | | <input type="radio"/> | |
| CEDW | 1 | | | <input type="radio"/> | COYE | | | 1 | <input type="radio"/> | | | | <input type="radio"/> | |
| AMRO | | | 1 | <input type="radio"/> | VE SP | | 1 | | <input type="radio"/> | | | | <input type="radio"/> | |
| SOSP | 1 | | | <input type="radio"/> | | | | | <input type="radio"/> | | | | <input type="radio"/> | |

Marsh Bird Breeding Habitat Evaluation Form

| | | | |
|--|--|---|---------------------------------|
| Project Name/Number: <u>Ernestown</u> | | | |
| MMB ID: <u>MBBA PC #4</u> | | | Station # (if >1): |
| Surveyors: <u>RT</u> | | Evening or Morning Survey? (circle one) | |
| GPS UTM coordinates: <u>362224 4899507</u> | | Visit #: <u>2</u> | |
| Date: (yr/mm/dd): <u>2013-07-04</u> | | Start Time: <u>19:11</u> | Finish Time: <u>19:26</u> |
| Background Noise Code (1-4): <u>0-1</u> | | | |
| Precip: None/Dry <input checked="" type="checkbox"/> Damp <input type="checkbox"/> Haze <input type="checkbox"/> Fog <input type="checkbox"/> Drizzle <input type="checkbox"/> Rain <input type="checkbox"/> | | | |
| Air Temp ° C: <u>27°</u> | | Cloud Cover (10th): <u>0</u> | Beaufort Wind Scale: <u>1-2</u> |
| Remarks: | | | |

FOCAL SPECIES:

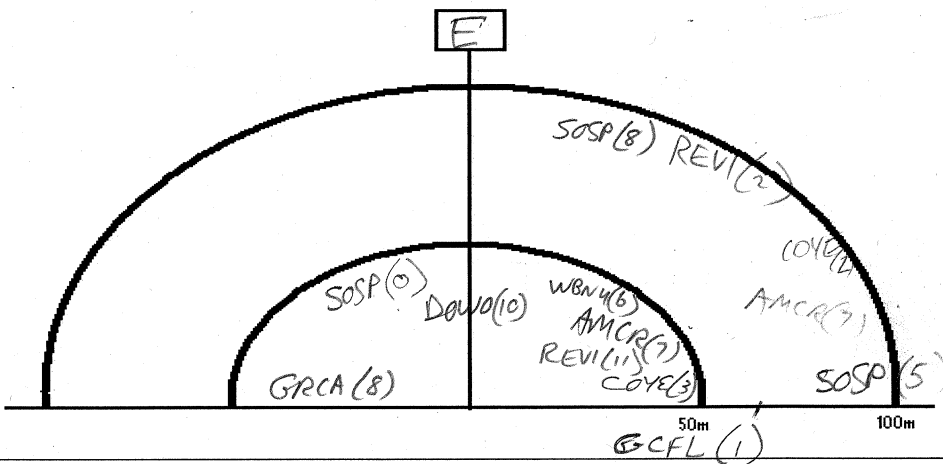
American Bittern (AMBI) Black Rail (BLRA) King Rail (KIRA) Pied-Billed Grebe (PBGR) Virginia Rail (VIRA)
 American Coot (AMCO) Common Moorhen (COMO) Least Bittern (LEBI) Sora (SORA) Yellow Rail (YEAR)

| Species Code | Detected during: (please fill choice circle) | | | | | | | | | | | Direction | Within 100 m | Detected at previous Point | Comments | | |
|--------------|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------|--------------------------|--------------------------|--|
| | Before/After survey Period | Pass. Min. 0-1 | Pass. Min. 1-2 | Pass. Min. 2-3 | Pass. Min. 3-4 | Pass. Min. 4-5 | LEBI min. 5-6 | SORA min. 6-7 | VIRA min. 7-8 | MOOT min. 8-9 | PBGR min. 9-10 | | | | | Pass. Min. 10-15 | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

SECONDARY SPECIES

| Aerial Foragers Tally | | | |
|-----------------------|---------|-----------|------------|
| Species | Min 0-5 | Min. 5-10 | Min. 10-15 |
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| Outside Fly- Throughs List | |
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Secondary Species Summary (to be completed after survey)

| Species Code | # Observed | | | | Species Code | # Observed | | | | Species Code | # Observed | | | |
|--------------|------------|----------|-----------|--------------------------|--------------|------------|----------|-----------|--------------------------|--------------|------------|----------|--------------------------|-----|
| | Min 0-5 | Min 5-10 | Min 10-15 | O/F | | Min 0-5 | Min 5-10 | Min 10-15 | O/F | | Min 0-5 | Min 5-10 | Min 10-15 | O/F |
| SOSP | 2 | 1 | | <input type="checkbox"/> | AMCR | | 2 | | <input type="checkbox"/> | | | | <input type="checkbox"/> | |
| GCFL | 1 | | | <input type="checkbox"/> | REVI | 1 | | 1 | <input type="checkbox"/> | | | | <input type="checkbox"/> | |
| DOWO | | 1 | | <input type="checkbox"/> | COYE | 2 | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | |
| WBNU | | 1 | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | |