

Appendix D
Dakota Skipper Survey Summary

**Buffalo Ridge II, Iberdrola Renewables
Brookings County, SD
Butterfly Survey Results**

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Report

Submitted
to

Joyce Pickle, Environmental Scientist
HDR Engineering, Inc.
701 Xenia Avenue South, Suite 600
Minneapolis, MN 55416

Submitted
by

Gerald Selby
Ecological and GIS Services
807 North W Street
Indianola, Iowa 50125-4731
515-961-0718
jsselby@mchsi.com

Overview

This report summarizes the results of rare prairie butterfly surveys conducted by Ecological and GIS Services in July of 2008 for HDR Engineering, Inc as part of their environmental assessment for the Buffalo Ridge II Wind Power Project in Brookings County, South Dakota. Primary target species included Dakota skipper (*Hesperia dacotae*) and Ottoe skipper (*H. ottoe*). Secondary targets included Poweshiek skipperling (*Oarisma poweshiek*) and regal fritillary (*Speyeria idalia*). Three sites were identified by HDR as having habitat that might support the primary target species. During the initial surveys regal fritillaries were found at all three sites and Poweshiek skipperlings were found on prairie adjacent to Site #1, but those surveys suggested that the only site with habitat for the primary target species that might be impacted by the project was Site #1. Those habitat areas at Site #1 were targeted for an additional survey, but no Dakota and Ottoe skippers were found. Habitat that could be impacted by the project occurs within the transmission corridor that connects the northern and southern portions of the site. Even though the primary target species were not found at the site, the presence of healthy populations of both Poweshiek skipperlings and regal fritillaries on prairie adjacent to the site suggests the possibility that they could also occur there and that care should be taken not to damage the native prairie within the transmission corridor.

I (Gerald Selby, owner) conducted the butterfly surveys with the assistance of two college interns, Bradley Gordon and Matthew Selby. Data were collected using a GPS unit and ArcPad software (UTM coordinate system Zone 15; Datum = NAD83). Shape files for the butterfly data and survey route track logs were reprojected to Zone 14 and are also included as a part of this report. Data were collected for the distribution and abundance of all butterfly species observed during the surveys. Abundance data for all observations are summarized in a series of tables and distribution data for target species and the routes surveyed are illustrated in a series of maps.

On 7 July I made a brief reconnaissance tour of the project area (Sites #1 and #2) and met with Joyce Pickle, Environmental Scientist for HDR to discuss the project. Surveys were conducted at all three sites on 8 July. No Dakota or Ottoe skippers were seen at any of the sites. Regal fritillaries were present at all three sites and a healthy population of Poweshiek skipperlings was found on prairie adjacent to Site #1. Sites #2 and #3 were dominated by nonnative pasture or very degraded prairie and were unlikely to support populations of the primary target species. Based on the results of the initial surveys and the quality of the habitat it was determined that additional surveys were not needed at those sites. The southern portion of Site #1 was entirely within a bean field and the northern portion was mostly nonnative pasture or degraded prairie. However, the transmission corridor between the southern and northern portions contained higher quality prairie that could support Dakota or Ottoe skippers. Poweshiek skipperling observations were on prairie slopes outside of the site boundaries and most of them were a fair distance east of the southern portion. A second survey was conducted on 11 July that focused on prairie slopes immediately east of the north unit and on the transmission corridor. There were a significant number of regal fritillaries seen during that survey but there were no Dakota skippers, Ottoe skippers, or Poweshiek skipperlings. Site survey summary information, data tables summarizing the survey results, and figures illustrating the routes surveyed and the distribution of target species observations can be found below.

Site Survey Summaries

Buffalo Ridge II – Skipper Survey Site #1

Date: **8 July 2008 (Tuesday)**

Surveyor: **Jerry Selby (1st Obs); Brad Gordon (2nd Obs); Matthew Selby (3rd Obs, Data)**

Time: 10:35 a.m. – 1:20 p.m. (South) and 1:45 p.m. – 3:25 p.m. (North) (4 hrs 25 min)

Weather:

Start South: Temp = 75° F	Wind = 4-6 mph NW; gusts to 10 mph	% Clear = 100
End South: Temp = 78° F	Wind = 10-12 mph NW; gusts to 16 mph	% Clear = 90-100
Start North: Temp = 78° F	Wind = 10-12 mph NW; gusts to 14 mph	% Clear = 90-100
End North: Temp = 78° F	Wind = 6-8 mph NW; gusts to 10 mph	% Clear = 100

Primary Target Species Observed: NONE

Secondary Target Species Observed: *Oarisma Poweshiek* (Poweshiek skipperling) – 37
Speyeria idalia (Regal fritillary) – 83

Buffalo Ridge II – Skipper Survey Site #2

Date: **8 July 2008 (Tuesday)**

Surveyor: **Jerry Selby (1st Obs); Brad Gordon (2nd Obs); Matthew Selby (3rd Obs, Data)**

Time: 3:55 p.m. – 4:50 p.m. (55 min)

Weather: **Start:** Temp = 78° F Wind = 4-6 mph NW; gusts to 8 mph % Clear = 100
End: Temp = 79° F Wind = 6-8 mph NW; gusts to 11 mph % Clear = 90-100

Primary Target Species Observed: NONE

Secondary Target Species Observed: *Speyeria idalia* (Regal fritillary) – 16

Buffalo Ridge II – Skipper Survey Site #3

Date: **8 July 2008 (Tuesday)**

Surveyor: **Jerry Selby (1st Obs); Brad Gordon (2nd Obs); Matthew Selby (3rd Obs, Data)**

Time: 5:30 p.m. – 6:45 p.m. (1 hr 15 min)

Weather: **Start:** Temp = 78° F Wind = 6-8 mph NW; gusts to 10 mph % Clear = 90-100
End: Temp = 76° F Wind = 5-6 mph NW; gusts to 7 mph % Clear = 90-100

Primary Target Species Observed: NONE

Secondary Target Species Observed: *Speyeria idalia* (Regal fritillary) – 4

Buffalo Ridge II – Skipper Survey Site #1 (North Portion and Transmission Corridor)

Date: **11 July 2008 (Friday)**

Surveyor: **Jerry Selby (1st Obs); Matthew Selby (2nd Obs); Brad Gordon (3rd Obs, Data)**

Time: 10:10 a.m. – 11:40 a.m. (1 hr 30 min)

Weather: **Start:** Temp = 82° F Wind = 12-14 mph S; gusts to 19 mph % Clear = 100
End: Temp = 87° F Wind = 19-20 mph S; gusts to 27 mph % Clear = 100

Primary Target Species Observed: NONE

Secondary Target Species Observed: *Speyeria idalia* (Regal fritillary) – 40

Table 1. Butterfly observations during 8 July, 2008 surveys at Buffalo Ridge II. Comparison of Skipper Sites #1, #2, and #3.

Species Observed	# Obs			Total	Comments
	Site 1	Site 2	Site 3		
<i>Anatrytone logan?</i>	2			2	
<i>Boloria bellona</i>	11			11	
<i>Boloria selene</i>	1			1	
<i>Cercyonis pegala</i>	22	2		24	7♂; 3C1; 2 mating pairs
<i>Coenonympha tullia</i>	8	2	2	12	1@Echiangu; 1@Heliheli
<i>Colias eurytheme</i>			1	1	
<i>Colias</i> sp.	3		1	4	
<i>Danaus plexippus</i>	9	9		18	2 mating pairs
<i>Lycaena dione</i>	1			1	
<i>Oarisma poweshiek</i>	37			37	3♂, 2♀; 5C1, 1C1+; 1@Heliheli; 7@Echiangu; 2Courtship; photos
<i>Papilio polyxenes</i>	2			2	
<i>Phyciodes tharos</i>	2			2	
<i>Pieris rapae</i>	2		1	3	
<i>Plebejus melissa</i>	4			4	3♀; 2C1+; 1@Echiangu
<i>Polites mystic</i>	13	3	1	17	3♂, 4♀; 1C1, 3C2, 1C2+, 1C3-, 2C3; 4@Cardnuta; 1@Phlopilo; 1@Melioffi
<i>Polites peckius</i>		1	1	2	1@Cardnuta
<i>Polites themistocles</i>	2	1		3	2♂, 1♀; 2C1, 1C2; 1@Echiangu; 2@Cardnuta
<i>Satyrodes eurydice</i>	4			4	
Skip sp.	3		2	5	2 Paired flight
<i>Speyeria aphrodite</i>	2			2	1C1
<i>Speyeria cybele</i>	1			1	
<i>Speyeria idalia</i>	83	16	4	103	5♂; 4C1, 1C1-; 2 Flushed; 2 Courtship; 1@Liliphil; 3@Cardnuta
<i>Speyeria</i> sp.	2			2	
Total Count:	214	34	13	261	
Total Species:	19	7	6	20	
Observations/Hour:	48	37	10	40	

Table 2. Butterfly observations during 8 July, 2008 surveys at Buffalo Ridge II, Skipper Site #1. Comparison of the north portion, south portion, and the transmission corridor connecting them.

Species Observed	# Obs			Total	Comments
	North	Corridor	South		
<i>Anatrytone logan?</i>		2		2	
<i>Boloria bellona</i>	7	3	1	11	
<i>Boloria selene</i>			1	1	
<i>Cercyonis pegala</i>	2	5	15	22	7♂; 4C1; 2 mating pairs
<i>Coenonympha tullia</i>	1	4	3	8	1@Heliheli; 1@Echiangu
<i>Colias</i> sp.	3			3	
<i>Danaus plexippus</i>		4	5	9	1 mating pair
<i>Lycaena dione</i>		1		1	
<i>Oarisma poweshiek</i>	2		35	37	3♂, 2♀; 5C1, 1C1+; 7@Echiangu; 1@Heliheli; 2 Courtship; photos
<i>Papilio polyxenes</i>			2	2	
<i>Phyciodes tharos</i>		2		2	
<i>Pieris rapae</i>	1		1	2	
<i>Plebejus melissa</i>	2		2	4	3♀; 2C1+; 1@Echiangu
<i>Polites mystic</i>		10	3	13	2♀; 2♂; 1C1, 1C2, 1C2+, 2C3; 2@Cardnuta; 1@Melioffi; 1@Phlopilo;
<i>Polites themistocles</i>		1	1	2	1♀C1; 1♂C1; 1@Echiangu
<i>Satyrodes eurydice</i>		3	1	4	
Skip sp.		3		3	2 Paired Flight
<i>Speyeria aphrodite</i>			2	2	1C1
<i>Speyeria cybele</i>		1		1	
<i>Speyeria idalia</i>	20	21	42	83	5♂; 4C1, 1C1-; 1 Flushed; 2 Courtship; 1@Liliphil; 2@Cardnuta
<i>Speyeria</i> sp.	1		1	2	
Total Count:	39	60	115	214	
Total Species:	8	12	14	19	
Observations/Hour:	-	-	-	48	

Table 3. Butterfly observations during 11 July, 2008 surveys at Buffalo Ridge II, Skipper Site #1. Comparison of the north portion and the transmission corridor.

Species Observed	# Obs			Comments
	North	Corridor	Total	
<i>Anatrytone logan?</i>		1	1	
<i>Boloria bellona</i>	4	1	5	
<i>Cercyonis pegala</i>	1	7	8	
<i>Colias eurytheme</i>		1	1	
<i>Colias</i> sp.	2	1	3	
<i>Danaus plexippus</i>	1	6	7	1C1; 2 Courtship
<i>Lycaena hyllus</i>		1	1	@Heliheli
<i>Papilio polyxenes</i>	4		4	2 Paired Flight
<i>Phyciodes tharos</i>		1	1	@Heliheli
<i>Satyroides eurydice</i>		2	2	
Skipper sp.	2	1	3	1@Heliheli; at least one had Poweshiek (?) type flight
<i>Speyeria aphrodite</i>		2	2	
<i>Speyeria idalia</i>	20	20	40	1♂C1; 4@ <i>Cardnuta</i>
Total Count:	34	44	78	
Total Species:	7	10	11	
Observations/Hour:	-	-	52	

Other Observations:

Catocola sp. – 1

Butterfly Checklist for Buffalo Ridge II Surveys

Scientific names include Opler and Warren (2003) and NABA (2001) for comparison

Common names follow NABA (2001)

Species Code – 1st three letters of genus and species names; used for recording field data

* Designates nomenclature differences between Opler and Warren (2003), and NABA (2001)

** Designates species mentioned in report, but not observed during surveys

Code	Opler & Warren (2003)	NABA (2001)	
	Binomial	Binomial	Common Name
Analog	<i>Anatrytone logan</i>	<i>Anatrytone logan</i>	Delaware Skipper
Atraro	<i>Atrytone arogos</i> **	<i>Atrytone arogos</i>	Arogos Skipper
Bolbel	<i>Boloria bellona</i>	<i>Boloria bellona</i>	Meadow Fritillary
Bolsel	<i>Boloria selene</i>	<i>Boloria selene</i>	Silver-bordered Fritillary
Cerpeg	<i>Cercyonis pegala</i>	<i>Cercyonis pegala</i>	Common Wood-Nymph
Coetul	<i>Coenonympha tullia</i> *	<i>Coenonympha tullia inornata</i>	Inornate Common Ringlet
Coleur	<i>Colias eurytheme</i>	<i>Colias eurytheme</i>	Orange Sulphur
Colphi	<i>Colias philodice</i>	<i>Colias philodice</i>	Clouded Sulphur
Danple	<i>Danaus plexippus</i>	<i>Danaus plexippus</i>	Monarch
Hesdac	<i>Hesperia dacotae</i> **	<i>Hesperia dacotae</i>	Dakota Skipper
Hesott	<i>Hesperia ottoe</i> **	<i>Hesperia ottoe</i>	Ottoe Skipper
Lycdio	<i>Lycaena dione</i>	<i>Lycaena dione</i>	Gray Copper
Lychyl	<i>Lycaena hyllus</i>	<i>Lycaena hyllus</i>	Bronze Copper
Oarpow	<i>Oarisma poweshiek</i>	<i>Oarisma poweshiek</i>	Poweshiek Skipperling
Pappol	<i>Papilio polyxenes</i>	<i>Papilio polyxenes</i>	Black Swallowtail
Phytha	<i>Phyciodes tharos</i>	<i>Phyciodes tharos</i>	Pearl Crescent
Pierap	<i>Pieris rapae</i>	<i>Pieris rapae</i>	Cabbage White
Plemel	<i>Plebejus melissa</i> *	<i>Lycaeides melissa</i>	Melissa Blue
Polmys	<i>Polites mystic</i>	<i>Polites mystic</i>	Long Dash
Polpec	<i>Polites peckius</i>	<i>Polites peckius</i>	Peck's Skipper
Polthe	<i>Polites themistocles</i>	<i>Polites themistocles</i>	Tawny-edged Skipper
Sateur	<i>Satyrodes eurydice</i>	<i>Satyrodes eurydice</i>	Eyed Brown
Speaph	<i>Speyeria aphrodite</i>	<i>Speyeria aphrodite</i>	Aphrodite Fritillary
Specyb	<i>Speyeria cybele</i>	<i>Speyeria cybele</i>	Great Spangled Fritillary
Speida	<i>Speyeria idalia</i>	<i>Speyeria idalia</i>	Regal Fritillary

North American Butterfly Association (NABA). 2001. Checklist & English names of North American butterflies (2nd edition). <http://www.naba.org/ftp/check2com.pdf>

Opler, P. A. and A. D. Warren. 2003. Butterflies of North America. 2. Scientific names list for butterfly species of North America, north of Mexico. http://www.biology.ualberta.ca/old_site/uasm//Opler&Warren.pdf

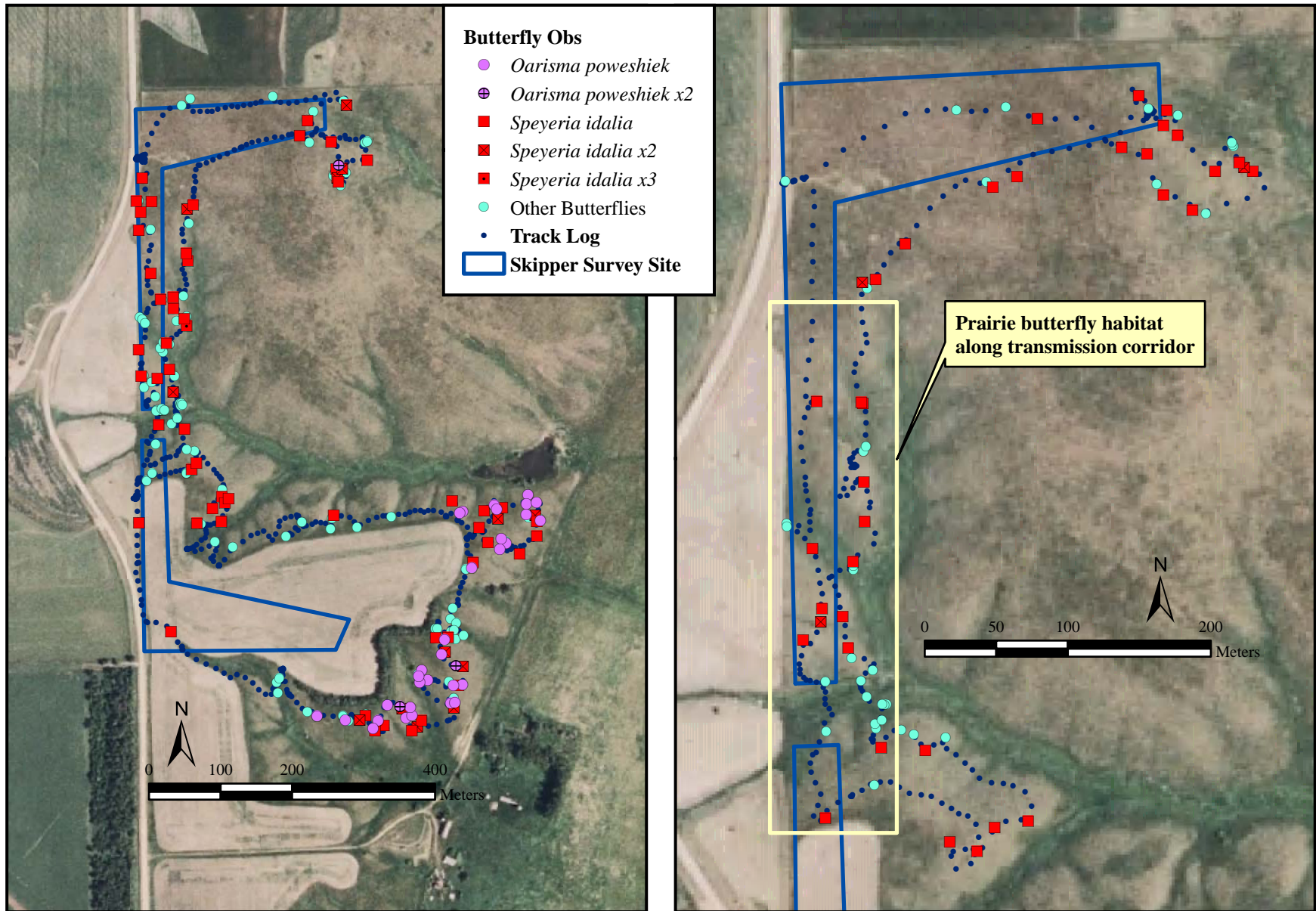


Figure 1. Buffalo Ridge II wind power project: July 8, 2008 (left) and July 11, 2008 (right) butterfly surveys at Skipper Survey Site #1.

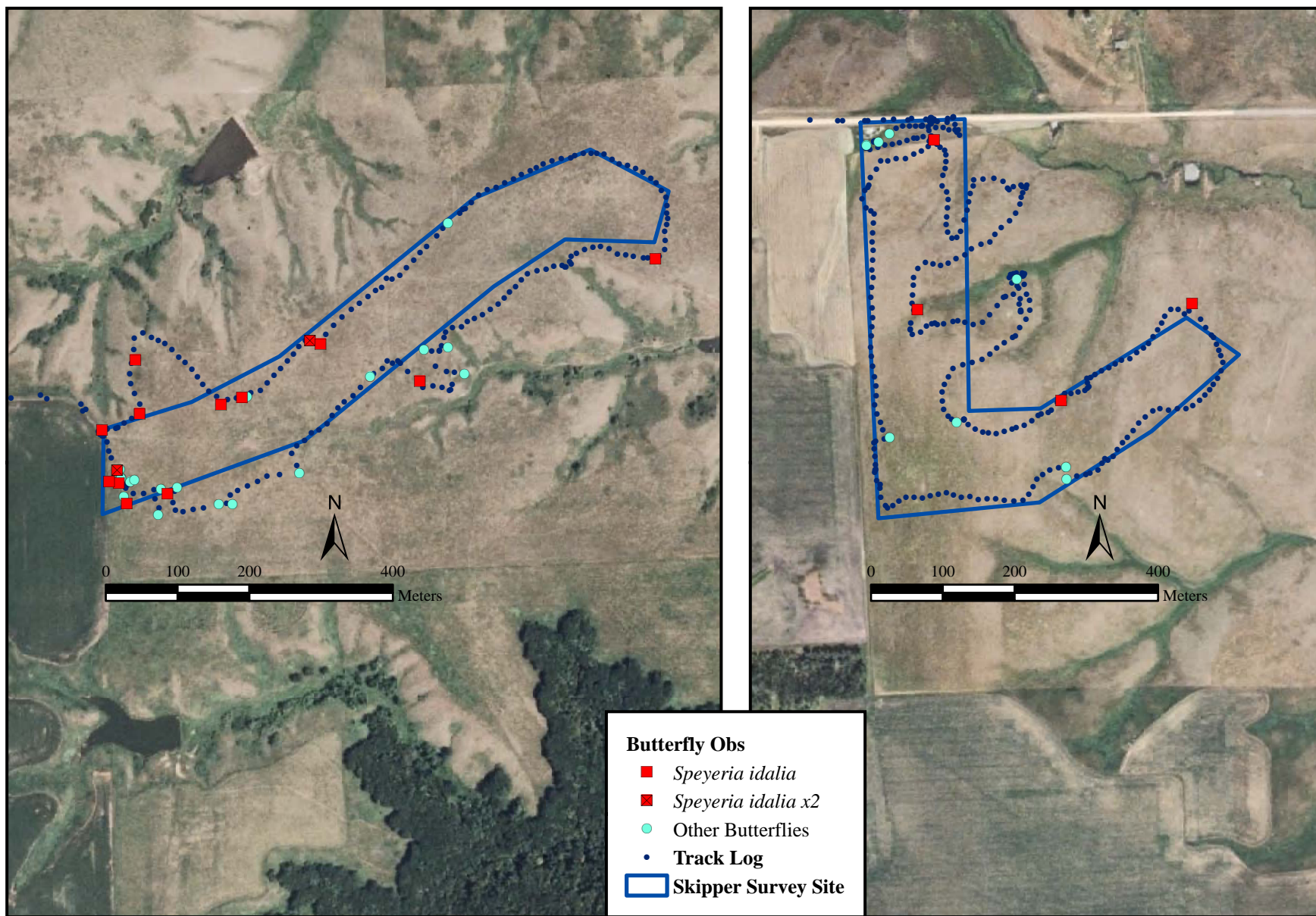


Figure 2. Buffalo Ridge II wind power project: July 8, 2008 butterfly surveys at Skipper Survey Site #2 (left) and Site #3 (right).