POST-CONSTRUCTION BAT MONITORING ASSESSMENT REPORT (APRIL 2023 – OCTOBER 2023) ITP PERMIT NUMBER ESPER0047314

JORDAN CREEK WIND ENERGY CENTER WARREN AND BENTON COUNTIES, INDIANA

Prepared for

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EXECUTIVE SUMMARY

The Jordan Creek Wind Energy Center (project) is an operational 404.1-megawatt (MW) wind facility equipped with 131 General Electric (GE) 2.82 MW wind turbine generators (WTG), 14 GE 2.3 MW WTGs, and one GE 2.52 MW WTG, located in Warren and Benton counties, Indiana. The project consists of approximately 70,904 acres and is located approximately 20 miles west of West Lafayette, Indiana, 10 miles northeast of Danville, Illinois, and six miles east of Hoopeston, Illinois. Jordan Creek Wind Farm, LLC (JCW) contracted Atwell, LLC (Atwell) to determine the potential impact on bats during the 2023 spring and fall seasons.

In June 2022, JCW submitted a Habitat Conservation Plan (HCP) to the U.S. Fish and Wildlife Service – Indiana Field Office (USFWS – INFO) in support of an Incidental Take Permit (ITP) for federally listed endangered Indiana bats (*Myotis sodalis*) and federally listed threatened northern long-eared bats (*Myotis septentrionalis*; uplisted to endangered in March 2023). The USFWS – INFO issued an ITP on July 22, 2022, which authorizes the take of 193 Indiana bats and 97 northern long-eared bats over the 30-year permit term and is subject to compliance with, and implementation of the HCP. The Jordan Creek Wind Energy Center has been operating under the ITP requirements since August 1, 2022, which includes conducting post-construction mortality monitoring (PCMM) for bats.

In total, 4,259 road and pad plot searches and 1,806 full plot searches were completed for standardized PCMM surveys during the 2023 spring and fall seasons (April 3 to May 11, 2023, and August 2 through October 15, 2023, respectively). All 146 turbines were typically searched weekly in the spring and every two days in the fall. Prior to the start of standardized surveys each season, a “clearance sweep” was performed to remove any carcasses from search plots. Pre-spring clearance sweeps were conducted at all 146 turbines between March 27 and April 1, 2023. Pre-fall clearance sweeps were conducted at 140 of 146 turbines on July 31 and August 1, 2023, at five turbines on August 2, 2023, and at one turbine on August 6, 2023.

During the spring and fall seasons, 612 bat carcasses representing eight species were found during standardized surveys, including: eastern red bat (*Lasiurus borealis*; 326 carcasses), silver-haired bat (*Lasionycteris noctivagans*; 163 carcasses), hoary bat (*Lasiurus cinereus*; 57 carcasses), big brown bat (*Eptesicus fuscus*; 46 carcasses), evening bat (*Nycticeius humeralis*; state-listed endangered; nine carcasses), Seminole bat (*Lasiurus seminolus*; six carcasses), Indiana bat (federally and state-listed endangered; three carcasses), and little brown bat (*Myotis lucifugus*; state-listed endangered; one carcass). One additional bat was identified as either silver-haired bat or big brown bat but could not be identified to species.

In total, 147 searcher efficiency trial carcasses consisting of bat carcasses from previous years were placed throughout the study period. In the spring, searcher efficiency rates were 78.1% and

97.0% at full plots and road and pad plots, respectively. In the fall, searcher efficiency rates were 55.6% and 91.4% at full plots and road and pad plots, respectively.

In total, 120 carcass persistence trials consisting of bat carcasses from previous years were placed throughout the study, including 60 per season (30 per plot type). Trial carcasses were monitored for 30 days. The estimated overall median probabilities of persistence by day 1 were 0.957 and 0.957 in the spring and fall, respectively. The estimated overall median probabilities of persisting to day 3 after placement were 0.852 and 0.859 in spring and fall, respectively. The estimated overall median probabilities of persistence by day 7 were 0.698 and 0.721 in the spring and fall, respectively.

Using a Generalized Mortality Estimator (GenEst), the spring and fall bat fatality estimate at the project were 3.11 bats/turbine (1.12 bats/MW; 453.73 total bats) in the spring and 31.84 bats/turbine (11.50 bats/MW; 4,648.04 total bats) in the fall.

In total, three Indiana bats and no northern long-eared bat carcasses were found during standardized surveys. An additional Indiana bat was located incidentally outside of the monitoring season. Based on Evidence of Absence (EoA) modelling for each species, the median take estimates were 18 Indiana bats (95% confidence interval: 7, 38) and zero northern long-eared bats (95% confidence interval: 0, 7) during the 2023 monitoring season. The mean mortality rate (λ) was 20.20 (95% confidence interval: 6.010, 43.110) for Indiana bats and 2.25 (95% confidence interval: 0.002, 11.310) for northern long-eared bats. The estimated overall detection probability for the 2023 spring and fall monitoring seasons combined was 0.224 (95% confidence interval: 0.196, 0.254; Ba = 177.1478 and Bb= 613.7074) for both species, which exceeded a target detection probability of 0.20.

A detection probability of approximately 0.20 is expected during baseline monitoring (years 1 through 3). The overall detection probability following two years of baseline monitoring is 0.248 (95% confidence interval: 0.231, 0.266). The cumulative median take estimates for Indiana and northern long-eared bats after two years are 37 fatalities and zero fatalities, respectively, which are below take limits authorized under the ITP.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
AICc	Akaike information criterion (corrected)
AMMs	avoidance and minimization measures
Atwell	Atwell, LLC
JCW	Jordan Creek Wind Farm, LLC
DWP	density-weighted proportion
EoA	Evidence of Absence (v2.0)
ESA	Endangered Species Act
FRWF	Fowler Ridge Wind Farm
ft	foot/feet
GE	General Electric
GenEst	Generalized Mortality Estimator
HCP	Habitat Conservation Plan
ITP	Incidental Take Permit
m	meter(s)
m/s	meter(s) per second
MRLC	Multi Resolution Land Characteristics
MW	megawatt
PCMM	post-construction mortality monitoring
project	Jordan Creek Wind Energy Center
U.S.C.	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USFWS-INFO	U.S. Fish and Wildlife Service - Indiana Field Office
WTG	wind turbine generator

2023 SUMMARY TABLE

	Spring Full Plots	Spring Road/Pad Plots	Fall Full Plots	Fall Road/Pad Plots	Annual	Cumulative[a]
Dates	April 1 through May 15		August 1 through October 15		-	2022 – 2023
Search Interval	7		2		-	-
Number of Plots Searched	44	102	44	102	-	-
Plot Shape	Square	Circle	Square	Circle	-	-
Plot Dimensions	100 m × 100 m	100 m radius	100 m × 100 m	100 m radius	-	-
Searcher Efficiency (SEEF)	0.781	0.970	0.556	0.914	-	-
SEEF Carcass Type	Bats	Bats	Bats	Bats	-	-
Median Carcass Persistence (CP)	7.20 days	5.48 days	7.66 days	7.66 days	-	-
CP Carcass Type	Bats	Bats	Bats	Bats	-	-
EoA Detection Probability (ĝ)	-	-	-	-	0.224	0.248
Average DWP	0.8890	0.0447	0.8890	0.0447	0.2989[b]	-
Count of Observed Carcasses	29	12	419	152	612	1503
Estimated Number of Fatalities (GenEst)	453.73		4648.04		-	-
Estimated Indiana Bat Fatalities (EoA)	-		-		18	37
Estimated Northern Long-eared Bat Fatalities (EoA)	-		-		0	0

[a] Cumulative estimates are based on fall monitoring in 2022 and spring and fall monitoring in 2023. Spring surveys under the habitat conservation plan baseline monitoring protocols were not conducted in 2022 as the incidental take permit was issued after the 2022 spring season concluded.

[b] The annual DWP is the overall spatial coverage adjusted by the proportion of each plot type and expected seasonal *Myotis* mortality.

1 INTRODUCTION

Jordan Creek Wind Farm, LLC (JCW) is a limited liability company and an indirect wholly owned subsidiary of NextEra Energy Resources, LLC. The Jordan Creek Wind Energy Center (project) is an operational 404.1-megawatt (MW) wind farm equipped with 131 General Electric (GE) 2.82 MW wind turbine generators (WTG), 14 GE 2.3 MW WTGs, and one GE 2.52 MW WTG, located in Warren and Benton counties, Indiana (Figure 1).

JCW contracted Atwell, LLC (Atwell) to perform post-construction mortality monitoring (PCMM) surveys and evaluate the potential impact from project operations on bats during the 2023 season. This report documents the results of that work. The survey and statistical methods were developed in coordination with U.S. Fish and Wildlife Service (USFWS) and incorporated relevant guidance and research findings.

This study was conducted under a Habitat Conservation Plan (HCP) that was submitted to the USFWS in support of an application for an Incidental Take Permit (ITP; see Section 1.3) for the federally listed endangered Indiana bat (*Myotis sodalis*) and federally listed threatened northern long-eared bat (*Myotis septentrionalis*). On November 29, 2022, the USFWS announced a final rule to reclassify the northern long-eared bat as endangered. The rule took effect on March 31, 2023.

This report covers the second year of baseline PCMM studies (spring and fall) for the project since implementation of the HCP. Year 1 baseline PCMM studies for the project consisted of monitoring during the fall 2022 season only (Atwell 2023).

1.1 STUDY AREA

The project consists of approximately 70,904 acres and is located in west-central Indiana, approximately 20 miles west of West Lafayette, Indiana, 10 miles northeast of Danville, Illinois, and six miles east of Hoopeston, Illinois (Figure 1). The project spans portions of Jordan, Liberty, Prairie, Pine, and Steuben townships within Warren County, and portions of Grant and Hickory Grove townships within Benton County (Figure 1).

The topography within the project is relatively flat, with elevations ranging from approximately 656 feet (ft) to 834 ft above mean sea level.

Overall, the project is dominated by agricultural land-use consisting mostly of corn (*Zea mays*) and soybeans (*Glycine max*). According to the 2021 National Land Cover Database, 95.2% of the land is classified as cultivated crops (67,531.2 acres), followed by 3.9% (2747.7 acres) of land classified as developed (open space; low, medium, and high intensities), 0.5% (327.9 acres) of land classified as deciduous forest, and 0.3% (183.0 acres) classified as hay/pasture. Woody wetlands, barren

land, open water, emergent herbaceous wetlands, herbaceous land cover, and mixed and evergreen forests collectively make up the remaining 0.1% (113.9 acres) of land cover within the project area (Figure 2) (MRLC 2023). Conservation Reserve Program land is also located within the project area.

1.2 BUFFERED AREAS

In November 2018, USFWS and JCW established 1,000 ft protective buffers around forested lands that were identified as potential summer habitat for the federally listed endangered Indiana bat and federally listed threatened northern long-eared bat. These protective buffers (hereafter referred to singularly as a "bat avoidance buffer") cover 4,532 acres of the 70,904-acre project. The bat avoidance buffer was based on communication with the U.S. Fish and Wildlife Service – Indiana Field Office (USFWS – INFO) and was informed by desktop research, on-site investigation, and 2017 mist netting and telemetry surveys. All turbines have been sited outside of this 1,000-ft bat avoidance buffer to minimize potential summer impacts to Indiana bats and northern long-eared bats (Figure 3).

1.3 INCIDENTAL TAKE PERMIT

JCW has determined that operation of the project may result in take of the federally listed endangered Indiana bat and the federally listed threatened northern long-eared bat. Section 9(a)(1)(B) of the Endangered Species Act (ESA), 16 U.S. Code (U.S.C.) § 1538 (a)(1)(B) states that it is unlawful for any person to "take" an endangered species. In addition, take of any threatened species is prohibited pursuant to 50 Code of Federal Regulations § 17.31, issued by the USFWS under the authority of Sections 4(d) and 9(a)(1)(G) of the ESA, 16 U.S.C, §§ 1533 (d) and 1538(a)(1)(G), respectively. Under the ESA, otherwise lawful activities that may cause or result in the incidental take of federally listed threatened or endangered species is prohibited. Section 10 of the ESA allows for certain limited exceptions to the ESA's prohibitions for private actions. Section 10(a)(1)(B) of the ESA provides a mechanism for the USFWS to issue an ITP that authorizes the take of a species listed as threatened or endangered, provided that the take is incidental to, and not the purpose of, the operation of the otherwise lawful activity.

In June 2022, JCW submitted to the USFWS – INFO a final HCP in support of that ITP application and in accordance with the requirements set forth under Section 10(a)(1)(B) of the ESA, as amended, and applicable USFWS guidance documents (Atwell 2022).

On July 22, 2022, the USFWS – INFO issued JCW an incidental take permit (Permit Number: ESPER0047314), which authorizes the take of 193 Indiana bats and 97 northern long-eared bats over the 30-year permit term and is subject to compliance with, and implementation of the HCP. JCW seeks to reduce take of Indiana and northern long-eared bats by at least 50% of unminimized take estimates through careful project planning and turbine siting (implemented prior to

construction of the project), as well as implementation of operational curtailment strategies (Atwell 2022). These curtailment strategies are described in Section 1.3.1.

JCW has developed three PCMM protocols to be used for the project: Baseline Monitoring, Implementation Monitoring, and Adaptive Management Monitoring. Details of these protocols are described within the HCP (Atwell 2022). A fourth PCMM protocol, Preliminary Monitoring, was implemented prior to HCP development and ITP issuance. The timing of these protocols is implemented as follows:

- JCW performed preliminary monitoring at the project in spring and fall 2021 and spring of 2022. These studies were conducted under a technical assistance letter from the USFWS – INFO to allow for operations while JCW prepared the HCP.
- Baseline monitoring will be conducted for the first three years of operation under the ITP.
- Implementation monitoring will be conducted from year 4 through year 30.
- Adaptive management monitoring will occur for two years following any deviations from avoidance and minimization measures (AMMs) outlined in the HCP, including if any short or long-term trigger has been met (see Section 3.7.1).

2023 is the second year of PCMM studies for the project since implementation of the HCP. As such, PCMM studies were conducted under the baseline monitoring protocol. Prior to the start of the 2022 fall monitoring season, and in consultation with USFWS – INFO, JCW decided to increase monitoring effort beyond what was outlined in the HCP (Atwell 2022) in order to ensure a detection probability of at least 0.20. Monitoring methods used for the study summarized in this report are described in Section 2.

To satisfy ITP report requirements, this report summarizes estimates of bat mortality and the results of take compliance monitoring at the project completed for spring and fall 2023 under the July 22, 2022, ITP.

1.3.1 ITP Minimization Measures

The following minimization measures were proposed within the June 2022 HCP and authorized under the July 22, 2022, ITP as a means of reducing Indiana bat and northern long-eared bat take over the permit term:

- Curtailment of all spring turbine operation by feathering to a cut-in speed of 3.0 meters/second (m/s) based on a 10-minute rolling average from ½ hour before sunset to ½ hour after sunrise during the fall migratory season (April 1 – May 15) when ambient temperature is above 10 degrees Celsius (°C).

- Curtailment of all fall turbine operation by feathering to a cut-in speed of 5.0 m/s based on a 10-minute rolling average from ½ hour before sunset to ½ hour after sunrise during the fall migratory season (August 1 – October 15) when ambient temperature is above 10°C.

Due to higher-than-expected bat carcasses observed during the fall 2022 monitoring season, JCW decided to increase the fall cut-in speed at all turbines to 6.0 m/s from ½ hour before sunset to ½ hour after sunrise for the fall 2023 monitoring season.

The USFWS requested data verifying spring and fall 2023 operational compliance for turbines 3, 16, 43, 50, 71, 97, 101, 118, 134, and 143 on April 4, May 11, August 24, September 15, and October 7. This data will be provided to USFWS separately.

1.4 STUDY OBJECTIVES

The objectives of the study were to do the following:

- Perform scheduled carcass searches and associated bias trials for the spring and fall seasons (in accordance with the HCP).
- Collect information on bat carcasses found during the search period at the project.
- Evaluate and calculate project-specific bat mortality estimates for the fall survey season.
- Achieve a target detection probability of 0.2 or greater.
- Estimate take of Indiana and northern long-eared bats (i.e., covered species) to monitor compliance with limits authorized in the ITP.

2 SURVEY METHODS

2.1 STANDARDIZED CARCASS SEARCHES

Standardized carcass searches occurred during the spring (April 3 to May 11, 2023) and fall (August 2 to October 15, 2023) seasons. Turbines were assigned one of two search plot types: road and pad plot or full plot. Road and pad plots were searched out to 100 meters (m) from the center of the turbine. Searchers scanned the entire surface area of the road and pad for carcasses by walking transects, with the initial survey start location at 100 m from the turbine (Figure 4). The road and pad search area was field-delineated using a Trimble DA2 Catalyst global navigation satellite system receiver (Trimble, Inc. 2021) with submeter accuracy.

Full plot search areas comprised a 100 m by 100 m plot with the wind turbine located at the center of the search area. Full plots were mowed to keep vegetation low and increase searcher

efficiency. Plots were surveyed by walking 17 linear transects, each approximately 6 m wide, until the entire plot was surveyed (Figure 4).

In total, 44 turbines were searched as full plots and only road and pad searches were conducted at the remaining 102 turbines. Each turbine's assigned plot type remained the same throughout the annual monitoring period. All 146 turbines were typically searched weekly during the spring and every two days during the fall. Some turbines, on occasion, were not searched on a particular day due to turbine maintenance, farming activity, technician availability, or inclement weather conditions (e.g., lightning, impassable roads). The lack of searches at some turbines during the scheduled timeframe was accounted for during statistical analysis.

Prior to each season, a "clearance sweep" search was performed to remove any carcasses from standardized search plots. Pre-spring clearance sweeps were conducted at all 146 turbines between March 27 and April 1, 2023. Pre-fall clearance sweeps were conducted at 140 of 146 turbines on July 31 and August 1, 2023, at five turbines (turbines 63, 106, 107, 126, and 127) on August 2, 2023, and at one turbine (turbine 1) on August 6, 2023. Any carcasses found during clearance sweeps were designated as incidental and were excluded from analysis. To provide a more conservative fatality estimate, carcasses present within the search area during the clearance sweep that were potentially missed by the searcher but located during a subsequent search, were included in the fatality estimate. These potentially missed carcasses included those found after the initial clearance sweep that were assigned an estimated time of death prior to the clearance sweep.

Standardized carcasses were defined as those found within the scheduled search window and search area. Incidental finds were defined as carcasses found outside of the scheduled search window or search area (i.e., off plot). Incidental finds were not included in fatality estimates but are reported in Appendix A-1.

For each bat carcass found, the following data were collected:

- Unique carcass ID
- Survey date and time
- Turbine (i.e., plot) number
- Distance and bearing from the nearest turbine
- UTM coordinates
- Species
- Carcass sex, age, and reproductive condition (when possible)
- Carcass condition (intact, partial, dismembered, fur spot(s), alive, or other)

- Forearm length, when possible
- Ground cover where carcass was found
- Estimated time of death
- Current and previous night's weather conditions.

When avian carcasses were encountered during searches, the same data as above were generally collected for the carcass (excluding forearm length); however, avian carcasses were not included in analysis for this study. A list of avian carcasses found during the 2023 spring and fall seasons is provided as Appendix A-2.

2.2 SEARCHER EFFICIENCY TRIALS

The objective of searcher efficiency trials was to correct for detection bias by adjusting for trial carcasses found compared to total carcasses available to the searcher. Trials were conducted blindly so the searcher was not aware of when trials were being conducted. Carcasses used for the trials consisted of bats with confirmed species identifications (eastern red bat, silver-haired bat, big-brown bat) found on site in 2022 or earlier. In total, 147 trial carcasses were placed, including 70 in the spring and 77 in the fall. Seventy-five carcasses were placed at full plot locations (35 in spring and 40 in fall) and 72 were placed at road and pad plot locations (35 in spring and 37 in fall).

Date, turbine number, distance from the turbine, and direction from the turbine were recorded prior to placement within the plot. Turbines were randomly selected for the searcher efficiency trial and no more than two carcasses were placed at a single turbine. Carcasses were discreetly marked (in a manner so the marking did not influence searcher detection) to indicate that the carcass was part of the study. Any trial carcasses that were missed on the first search following placement were collected and were not available to be found during subsequent searches.

2.3 CARCASS PERSISTENCE TRIALS

Carcass persistence trials were used to determine the length of time a carcass would remain within the search area before being scavenged (e.g., by scavengers, insects) or removed from the search area by another means (e.g., weather event, full plot mowing, agricultural tilling). Carcass persistence trials were conducted twice during each season. Carcasses used for the trials consisted of bats with confirmed species identifications (eastern red bat, silver-haired bat, big-brown bat) found on site in 2022 or earlier. For each trial, 30 carcasses were placed at randomly selected turbines (60 carcasses per season; 120 total). Samples were allocated to each plot type evenly for a total of 15 carcasses per trial (30 carcasses per season; 60 total) placed at each plot type.

In the spring, carcasses were typically checked by the searcher on days 1, 2, 3, 4, 7, 10, 14, 21, and 30, as survey conditions allowed. In the fall, carcasses were typically checked on days 1, 2, 3, and 4, then whenever the turbine was visited for a scheduled search (i.e., typically every two days) through day 30, as survey conditions allowed. In one case, turbine access was restricted following day 8, precluding additional checks between the date last observed and the end of the study.

The condition of each carcass was recorded as intact, signs of scavenging, fur spot, or missing during each day of observation. Once a carcass was recorded as "missing," technicians continued checks for the carcass on designated check days in the spring and for at least the subsequent seven scheduled searches in the fall. If the carcass was not rediscovered during subsequent checks, the carcass was deemed missing on the originally missed day. If a missing carcass was relocated on a subsequent check, technicians would continue checking that carcass until the 30 day trial concluded. This check protocol was implemented to account for carcass checks where the carcass was missed by the observer (e.g., due to condition or location shift) rather than being truly missing. Once the 30-day trial concluded, remaining carcasses were removed.

3 STATISTICAL METHODOLOGY

3.1 GENEST

Analyses were performed using a Generalized Mortality Estimator (GenEst) v1.4.9 (Dalthorp et al. 2018; Simonis et al. 2018). This program uses five separate data sources and user-populated general inputs to run three separate, but related, analyses. The three analyses (discussed in further detail below) used to estimate the mortality rate include searcher efficiency, carcass persistence, and density-weighted proportion (DWP). DWP was calculated separately for each turbine based on the total number of observed carcasses, their distances from the nearest turbine, and area of the plot searched, and was input into GenEst. These analyses, combined with the carcass observation data and a known search schedule, ultimately provide a median estimate of the number of fatalities at a wind facility while taking into consideration imperfect detection probability. GenEst provides a median estimate rather than a mean because the mortality probability distribution is generally right-skewed, which is not uncommon for mortality data. Because a mean estimate may be strongly influenced by the degree of skewness (Simonis et al. 2018), the median is a more robust measure.

GenEst uses a sophisticated, carcass-specific detection probability to provide fatality estimates. However, for simplicity, the program provides basic detection probability summaries that are based on searcher efficiency, carcass persistence, and the average search interval. The estimates are then stratified by the covariates or predictor variables selected for fatality estimation. While these detection probability summaries are not specifically used to provide a fatality estimate, an estimate of detection probability may provide useful planning insight (Simonis et al. 2018).

To determine median estimates, the number of parametric bootstrap iterations was set to 10,000 in GenEst and was used to build 90% confidence intervals around parameter estimates (Simonis et al. 2018). As this study focused on providing a fatality estimate for bats only, size class was not included as a variable.

3.2 DEFINITION OF VARIABLES

Table 1 provides definitions for variables used for the statistical analyses.

Table 1. Definitions of Variables Used for Analysis

Variable	Definition
I	Search interval—the number of days between searches.
v	Temporal coverage—the proportion of all carcasses expected to arrive during the monitored period.
p	Searcher efficiency—the probability an observer will find a present carcass during the first search after it arrived.
k	The proportional change in searcher efficiency with successive searches.
r_t	The estimated probability that a carcass arriving at a uniform random time in an interval of *t* days persists until the end of the interval.
MedianCP	The median number of days a carcass will persist after day 0.
$\hat{M}_i$	The estimated number of carcasses falling within distance band i.
$\sum\hat{M}_i$	The total number of estimated carcasses.
$f\hat{M}_i$	The estimated proportion of carcasses falling within distance band i.
X	The total number of observed carcasses during searches.
X_i	The total number of carcasses observed within distance band i, pooled across the entire wind facility.
fA_{Avg_i}	The proportion of area surveyed in distance band i averaged across all turbines.
$fA_{Search_{i,j}}$	The proportion of area surveyed within distance band i at turbine j.
f_{within}	A correction factor representing the estimated proportion of carcasses occurring within the turbine search radius. This correction factor is applied to the calculated DWP for road and pad plots to account for carcasses falling outside of the search radius. For this study, this value was set to 0.99.
a	Spatial coverage-- a density-weighted proportion (DWP) of carcasses falling within the searched area.
DWP_j	The calculated, uncorrected DWP for turbine j.
$DWPC_j$	The corrected DWP value for turbine j. This is the product of DWP_j * $f_{within.}$
$\hat{g}$	The estimated probability of detection.
M*	The estimated number of fatalities.
λ	Fatality rate
Ba and Bb	Parameters that characterize the detection probability.

3.3 SEARCHER EFFICIENCY

Searcher efficiency is the probability that a searcher will find a carcass given that the carcass falls within the search area (Simonis et al. 2018). Searcher efficiency was modeled separately for each season with two parameters: *p*, the probability that a present carcass is found during the first search after it arrived, and *k*, the proportional change in searcher efficiency with successive searches. Plot type (full plot or road and pad plot) was included as a predictor variable. Data from all searcher efficiency trials were pooled, and searcher efficiency was modeled with *k* set at 0.75. While searchers in this study had only one opportunity to find trial carcasses, data suggests that *k* tends to remain relatively consistent at 0.75 (Dalthorp 2019 pers. comm.).

GenEst provided corrected Akaike information criterion (AICc) results for two models per season (Table 2). AICc estimates the relative quality of statistical models for a given set of data. Models with lower AICc scores are generally considered to fit the data better while using fewer predictor variables.

Table 2. Models Evaluated for Searcher Efficiency Trials

Model	k value[a]	AICc[b]	ΔAICc[c]
Spring			
p ~ PlotType	*k* fixed at 0.75	46.78	0.00
p ~ constant	*k* fixed at 0.75	50.55	3.77
Fall			
p ~ PlotType	*k* fixed at 0.75	74.11	0.00
p ~ constant	*k* fixed at 0.75	84.54	10.43

[a]k is the proportional change in searcher efficiency with successive searches. It remains fixed at 0.75 per D. Dalthorp (personal communication).

[b] AICc is the corrected Akaike's Information Criterion.

[c] ΔAICc is the difference in AICc values between a particular model and the top model. When comparing a set of models, lower ΔAICc values are generally considered better models.

The *p ~ PlotType* model was selected for spring and summer fatality estimation (Table 3) as it had the lower AICc score (spring ΔAICc = 3.77 and fall ΔAICc = 10.43 where ΔAICc is the difference between the model with the lowest and second lowest AICc value).

Table 3.Searcher Efficiency and Carcass Persistence Models Selected for Fatality Estimation in GenEst

Analysis	Model[a]
Spring	
Searcher Efficiency	*p* ~ PlotType
Carcass Persistence	exponential distribution; l~constant
Fall	
Searcher Efficiency	*p* ~ PlotType
Carcass Persistence	lognormal distribution; l~constant, s~constant

[a] For carcass persistence, "l" refers to location and "s" refers to scale in GenEst. Exponential distributions are not modeled with a scale parameter.

3.4 CARCASS PERSISTENCE

Carcass persistence is the probability that a carcass arriving on day 0 will remain on day *t* (e.g., despite scavenging, decomposition, mowing, weather event, etc.) (Simonis et al. 2018). All trial carcasses from each trial were pooled each season for analysis. For 60 trial carcasses in the spring and 60 trial carcasses in the fall, the last day of detection from day 0 and first day of absence from day 0 were input into GenEst with plot type used as predictor variable. Carcasses that were still present at the end of the trial period (including one carcass that could no longer be checked after day 8 due to turbine access restrictions) were assigned a value of “INF” for the first day of absence. Four distributions were modeled: exponential, Weibull, lognormal, and loglogistic. The resulting 14 models per season were compared using AICc (Table 4), and the most parsimonious models were selected for fatality estimation (Table 3). The selected model for the spring was the exponential distribution with constant location formula (ΔAICc = 1.1). The selected model for the fall was the lognormal distribution with constant location and scale formulas (ΔAICc = 0.33).

Table 4. Models Evaluated to Determine the Best Distribution and Explanatory Variables for Estimating Carcass Persistence Time

Distribution	Location Formula	Scale Formula	AICc	ΔAICc
Spring				
exponential	l ~ constant	-	272.62	0.00
exponential	l ~ PlotType	-	273.72	1.10
weibull	l ~ constant	s ~ constant	274.75	2.13
weibull	l ~ PlotType	s ~ constant	275.94	3.32
weibull	l ~ constant	s ~ PlotType	276.72	4.10
weibull	l ~ PlotType	s ~ PlotType	277.63	5.01
loglogistic	l ~ constant	s ~ constant	278.94	6.32
lognormal	l ~ constant	s ~ constant	279.59	6.97
loglogistic	l ~ PlotType	s ~ constant	279.80	7.18
lognormal	l ~ PlotType	s ~ constant	280.07	7.45
loglogistic	l ~ constant	s ~ PlotType	280.44	7.82
lognormal	l ~ constant	s ~ PlotType	281.15	8.53
loglogistic	l ~ PlotType	s ~ PlotType	281.25	8.63
lognormal	l ~ PlotType	s ~ PlotType	281.63	9.01
Fall				
lognormal	l ~ constant	s ~ constant	310.57	0.00
lognormal	l ~ constant	s ~ PlotType	310.90	0.33
loglogistic	l ~ constant	s ~ constant	311.39	0.82
loglogistic	l ~ constant	s ~ PlotType	311.70	1.13
weibull	l ~ constant	s ~ constant	312.15	1.58
weibull	l ~ constant	s ~ PlotType	312.34	1.77
lognormal	l ~ PlotType	s ~ constant	312.59	2.02
lognormal	l ~ PlotType	s ~ PlotType	312.90	2.33
weibull	l ~ PlotType	s ~ constant	313.19	2.62
loglogistic	l ~ PlotType	s ~ constant	313.48	2.91
weibull	l ~ PlotType	s ~ PlotType	313.69	3.12
loglogistic	l ~ PlotType	s ~ PlotType	313.84	3.27
exponential	l ~ constant	-	315.28	4.71
exponential	l ~ PlotType	-	315.74	5.17

3.5 DENSITY-WEIGHTED PROPORTION

DWP is the expected proportion of carcasses to fall within the searched area of each individual turbine (Simonis et al. 2018). This estimated value takes into consideration the distance of a

carcass from the turbine as carcass density around a turbine may differ with increasing distance from the turbine (Hull and Muir 2010).

For road and pad plots, pooled counts of carcasses within 10 m distance bands were used to estimate the proportion of carcasses falling within each band, $f\hat{M}_i$, where i = the distance band (e.g., 0 to 10 m, out to a maximum of 100 m). These proportions were then multiplied by the turbine-specific proportion of searched area in the plot at each distance band, i. Turbine-specific road and pad DWPs were calculated based on bat carcasses observed during the 2023 monitoring season pooled across spring and fall to provide a larger sample size for calculating DWP. Only non-incidental carcasses found during road and pad searches were used for DWP calculation.

Specifically, $f\hat{M}_i = \hat{M}_i/\sum\hat{M}_i$ where $\hat{M}_i = X_i/ fA_{Avg_i}$ and $\sum\hat{M}_i$ is the sum of $\hat{M}$ across all distance bands. X_i is the number of pooled carcass observations in each distance band, i, and fA_{Avg_i} is the average proportion of area surveyed in each distance band, i, across all turbines assigned to road and pad plots. DWP at each turbine is then calculated as $DWP_j = \sum(f\hat{M}_i * fA_{Search_{i,j}})$, where j is the specific turbine number and $fA_{Search_{i,j}}$ is the proportion of area surveyed within distance band i at turbine j.

The calculated DWP within the 100 m search radius (DWP_j) was then adjusted to account for carcasses falling beyond the search radius using $DWP_{C_j} = DWP_j * f_{within}$ where f_{within} is the estimated proportion of carcasses occurring within the search radius. For this study, f_{within} is determined from publicly available results from similar studies.

Hull and Muir (2010) reported percentile distances of the fall zone modeled for bats at small, medium, and large turbine sizes based on data from their study sites. For large size turbines (94 m hub height and 112 m rotor diameter, similar to those in operation at the project), modeling suggested that 99% of bat carcasses fell within 66.46 m of the turbine (Hull and Muir 2010). This is less than the 100 m search radius of this study's road and pad plots. Therefore, turbine-specific DWP values for road and pad plots were calculated as $DWP_{C_j} = DWP_j * 0.99$. The average corrected DWP for road and pad plots at the project in spring and fall 2023 was 0.0447.

The Fowler Ridge HCP (WEST 2013) estimated the proportion of bat carcasses to fall within its square 80 m × 80 m full plots' dimensions based on a 2011 PCMM study that assessed carcasses within an 80-m radius circular full plot (Good et al. 2012). Fowler Ridge Wind Farm (FRWF) is located approximately five miles north of the project, in Benton County Indiana, and is located within a similar physiography and is at a similar elevation as the project. FRWF studies were designed with a robust sample size of large cleared plots that were used to provide mortality estimates that better accounted for carcasses found at greater distances from turbines (Good et al. 2012). Using the full set of carcass data from the 2011 PCMM season at Fowler Ridge Wind

Farm (Good et al. 2012), DWP values for 100 m × 100 m full plot locations at the project were calculated as 0.889 (i.e., approximately 88.9% of bat carcasses fall within the 100 m × 100 m square plot).

3.6 PROJECT-SPECIFIC FATALITY ESTIMATE

To calculate a fatality estimate using GenEst, searcher efficiency models and carcass persistence models were first selected (see Sections 3.3 and 3.4 above; Table 3). For searcher efficiency, the "plot type" model (*p* ~ PlotType) was selected for both spring and fall. For carcass persistence, an exponential distribution with constant location formula (i.e., l~constant) was selected for the spring, whereas a lognormal distribution with constant location and scale formulas (i.e., l ~ constant, s~constant) was selected for the fall (Table 3).

Other inputs required to calculate mortality in GenEst included the *Fraction of Facility Surveyed*, turbine-specific *Density-Weighted Proportions* (discussed above), and the *Observation Date* for each carcass found. GenEst combines the carcass *Observation Date* with *Turbine Search Schedule* (uploaded to GenEst as a separate database) to estimate detection probability following arrival (Simonis et al. 2018). All 146 turbines within the project were surveyed for carcasses in the spring and fall. Therefore, *Fraction of Facility Surveyed* was set to 1. *Density-weighted Proportion* and *Turbine Search Schedule* are provided as separate CSV files that are uploaded to GenEst.

3.7 EVIDENCE OF ABSENCE

Evidence of Absence (EoA) software version 2.0 (Dalthorp et al. 2017) multiple class module was used to model estimated take of federally listed endangered Indiana bats and northern long-eared bats during the monitoring period. EoA uses several parameters to estimate a detection probability ($\hat{g}$), which is ultimately used to estimate take levels at a user-defined credibility level. Detection probability is a function of search interval, timespan of survey effort, spatial (*a*) and temporal (*v*) coverage, searcher efficiency (p), the factor by which searcher efficiency changes between subsequent searches (*k*),and carcass persistence (*r*).

Within the multiple class module, total mortality (M) was estimated with a 50% credibility level and ĝ parameters were calculated from monitoring data by adding a search class for each plot type and season. A credibility level of 50% was used as this value provides a median estimate. Inputs used for each class (i.e., plot type per season) are provided in Table 5.

Table 5. Search Class Inputs for Multiple Class Analysis in EoA

Variable	Spring Full Plots	Spring Road and Pad Plots	Fall Full Plots	Fall Road and Pad Plots
Search Schedule				
Start of monitoring	2023-04-03	2023-04-03	2023-08-02	2023-08-02
Search interval (days)	7	7	2	2
Number of searches	6	6	37	37
Temporal coverage (v)	1	1	1	1
Searcher Efficiency				
Carcasses available	32	33	36	35
Carcasses found	25	32	20	32
Factor by which searcher efficiency changes with each search (k)	0.75	0.75	0.75	0.75
Persistence Distribution (from field trials)				
Distribution	Exponential	Exponential	Exponential	Lognormal
Shape (α)	0.0964	0.1265	0.0790	3.4900
Scale (β)	10.3780	7.9081	12.6630	2.1944
95% confidence interval for β	[7.0374, 15.3043]	[5.3951, 11.5917]	[8.4750, 18.9206]	[1.4570, 2.9319]
r for Ir = 7 (spring) and 2 (fall)	0.727	0.664	0.925	0.886
95% confidence interval for r	[0.634, 0.803]	[0.560, 0.751]	[0.891, 0.949]	[0.791, 0.960]
Fatality Estimation				
Indiana bat carcass count (X)[a]	0	0	4	0
Northern long-eared bat carcass count (X)	0	0	0	0
Credibility level	0.5	0.5	0.5	0.5

[a] One Indiana bat carcass found incidentally on July 27, 2023 (outside of the monitoring season) was included in the EoA analysis per section 9.2.2.6 of the HCP (Atwell 2022).

Mortality monitoring began on April 3 and August 2, 2023, for spring and fall seasons, respectively. Surveys were conducted once per week for six weeks in the spring for a total of six searches in the spring, and every two days for a total of 37 searches in the fall. Temporal coverage was set to 1 in order to keep the period of inference restricted to each season.

Searcher efficiency and carcass persistence were based on field trials during the spring and fall seasons, and the results were entered into EoA. The factor by which searcher efficiency changes between subsequent searches was set to 0.75 (Dalthorp 2019 pers. comm.). Exponential persistence distributions were selected for both plot types in the spring and full plots in the fall. A lognormal distribution was selected for road and pad plots in the fall. These distributions were selected as they were recommended as the most appropriate model by EoA given the data from field trials (Table 5).

In total, three Indiana bat carcasses and zero northern long-eared bat carcasses were found over the course of standardized surveys in the spring and fall. All Indiana bat carcasses were discovered at full plots in the fall. A fourth Indiana bat carcass was discovered incidentally at a full plot during the summer (i.e., outside of the monitoring season). Section 9.2.2.6 of the HCP indicates that if the carcass of a covered species is discovered and the mortality is estimated to have occurred between May 16 and July 31, it will be accounted for in the project take estimate by including it in the EoA analysis (Atwell 2022). As such, the estimated take of Indiana bats was based on a total of four carcasses with the incidental carcass being lumped with the fall carcasses for purposes of fatality estimation. Therefore, the EoA analysis was run twice: once with carcass count (X) set to four at full plots in the fall (and zero for all other plot types and seasons) to represent observed Indiana bat take and once with carcass count set to zero for all search classes to represent observed northern long-eared bat take. Searcher efficiency and carcass persistence estimates using EoA for each search class are provided in Section 4.6.

Associated Ba and Bb values, which are parameters that characterize the detection probability, are also provided with the EoA search class output. These Ba and Bb values (see Section 4.6) for each search class were entered into the multiple class module to provide a single combined take estimate for each covered species during the monitoring period.

Spatial coverage for each plot type was manually entered into the “dwp” field of the multiple class module. Spatial coverage was the average DWP (see Section 3.5) of turbines searched for each plot type (i.e., 0.8890 and 0.0447 for full plots and road and pad plots, respectively), weighted by the proportion of each plot type (i.e., 0.301 and 0.699 for full plots and road and pad plots, respectively) and the estimated seasonal collision risk for *Myotis*. Spring, summer, and fall *Myotis* mortality was estimated as 4%, 30%, and 66%, in the spring, summer, and fall, respectively, as described in the HCP for Jordan Creek (Atwell 2022). Considering that all turbines are located outside of the 1,000-ft bat avoidance buffer (Section 1.2) and Indiana and northern

long-eared bat mortality is typically not expected during the summer season, seasonal risk was estimated as 6% in the spring and 94% in the fall. Therefore, spatial coverage at full plots was 0.0161 and 0.2515 in the spring and fall, respectively, whereas spatial coverage at road and pad plots was 0.0019 and 0.0294 in the spring and fall, respectively. Approximately 70.11% of the expected fall zone for bats (accounting for seasonal collision risk) was unsearched. Therefore, 0.7011 was entered into the "dwp" field for the "unsearched" class in the multiple class module.

Cumulative take estimates (M*) will be tracked with a 50% credibility level over the life of the ITP using the "Track past mortality" option in EoA's multiple years module.

3.7.1 Adaptive Management Triggers

The EoA software has incorporated a framework that addresses specific adaptive management "triggers" to help ensure permit compliance and potentially alleviate the project from current AMMs described in Section 6.2 of the HCP (Atwell 2022). Adaptive management triggers built into the software include the short-term trigger, long-term trigger, and reversion trigger (Dalthorp et al. 2017) and are described below:

- The short-term trigger acts as a warning tool and fires when the annual fatality rate is greater than a given threshold over the course of one or a few years. JCW will utilize a 3-year window for the short-term trigger against the estimated annual take (6.41 Indiana bats and 3.20 northern long-eared bats) with a 99% credibility level (Atwell 2022), as recommended by the software to protect against the trigger firing unnecessarily (Dalthorp et al. 2017). The short-term trigger was not applicable to the 2023 monitoring results as it was the second year of monitoring under the HCP and ITP.
- The long-term trigger indicates when total cumulative take has exceeded the authorized threshold (i.e., 193 Indiana bats and 97 northern long-eared bats) with a certain credibility level. As described above, JCW will track estimated cumulative take (M*) using EoA's multiple years module with a 50% credibility level. This credibility level was determined to most accurately track fatality rates over time while reducing the likelihood of a false trigger (i.e., firing before the cumulative take limit has been exceeded) (Dalthorp et al. 2017).
- The reversion trigger indicates when fatality rates are low enough to allow for a less restrictive operational minimization strategy that will not result in annual fatality rates exceeding the take limit at a given credibility level. JCW is requesting take of 6.41 Indiana bats/year and 3.20 northern long-eared bats/year based on an estimated 50% reduction in take due to the implementations of AMMs. JCW is committed to this biological goal and will utilize the reversion trigger against the lesser of the estimated rate (i.e., (t) will be 6.41 Indiana bats and 3.20 northern long-eared bats) or the average annual take rate as

calculated using EoA after three years of Baseline Monitoring. JCW will initially run the reversion test with a 99% credibility level and 50% assumed relative mortality rate (ρ) in Year 5, allowing for 3 years of Baseline Monitoring and 2 years of Implementation Monitoring to be completed prior to considering reducing AMMs.

4 RESULTS

4.1 STANDARDIZED CARCASS SEARCHES

Throughout the spring and fall seasons at the project, 4,259 road and pad plot and 1,806 full plot searches were completed during standardized surveys, excluding clearance sweeps at 102 road and pad plots and 44 plots in both the spring and fall. In total, 612 bat carcasses representing eight species were found across 119 turbine locations during standardized searches (Figure 5). Eastern red bat (*Lasiurus borealis*) and silver-haired bat (*Lasionycteris noctivagans*) were the most commonly found species, followed by hoary bat (*Lasiurus borealis*) then big brown bat (*Eptesicus fuscus*). One bat was identified as either silver-haired bat or big brown bat but could not be identified to species.

Carcass counts of all bat species found during standardized surveys in the spring and fall, as well as the proportion of all bats represented by each species, are presented in Table 6.

Table 6. Species Composition of Observed Bat Carcasses

Common Name	Federal Status[a]	State Status[b]	Scientific Name	Count[c]	Percentage of All Bat Carcasses
Eastern red bat	-	SC	*Lasiurus borealis*	326	53.3%
Silver-haired bat	-	SC	*Lasionycteris noctivagans*	163	26.6%
Hoary bat	-	SC	*Lasiurus cinereus*	57	9.3%
Big brown bat	-	-	*Eptesicus fuscus*	46	7.5%
Evening bat	-	SE	*Nycticeius humeralis*	9	1.5%
Seminole bat	-	-	*Lasiurus seminolus*	6	1.0%
Indiana bat[d]	FE	SE	*Myotis sodalis*	3	0.5%
Little brown bat[e]	-	SE	*Myotis lucifugus*	1	0.2%
Silver-haired or big brown bat	-	SC/-	*Lasiurus borealis/seminolus*	1	0.2%
All Species	-	-	-	612	100.0%

[a] FE = federally listed endangered. A hyphen indicates no listing status.

[b] SE = state-listed endangered; SC = state special concern; a hyphen indicates no listing status.

[c] Incidental finds were excluded from analysis and are not included in this table.

[d] An additional Indiana bat carcass was discovered incidentally on July 27, 2023 (outside of the monitoring season) and included in the EoA analysis per section 9.2.2.6 of the HCP (Atwell 2022). However, it is excluded from this table.

[e] As of preparation of this table, little brown bat is under review for federal listing status.

In addition to the 612 bats found during standardized surveys, 119 bats were found incidentally, including bats found during clearance sweeps, outside of standardized search areas, or outside of the spring and fall seasons. As previously mentioned, one Indiana bat carcass discovered incidentally on July 27, 2023 (outside of the monitoring season), was excluded from the GenEst analysis but included in the EoA analysis per section 9.2.2.6 of the HCP (Atwell 2022). A list of all bat carcasses found during searches, including incidentals not summarized in Table 6, is provided in Appendix A-1. Avian carcasses were not included in the analysis; however, a list of avian carcasses found during searches is provided in Appendix A-2.

Of the 612 bats included in analysis, 41 carcasses (6.7%) were found during the spring season and 571 carcasses (93.3%) were found during the fall season.

More bat carcasses were found at full plots compared to road and pad plots (448 carcasses, or 73.2% at full plots; 164 carcasses, or 26.8% at road and pad plots; Table 7). At full plots, a majority of carcasses were found within 40 m of the turbine (65.2%), with most carcasses found within the 30 to 40 m distance band. At road and pad plots, a majority of carcasses were found within 30 m of the turbine (63.4%), with most carcasses being found within the 0 to 10 m distance band. A breakdown of the distribution of bat carcasses at each plot type is provided in Table 7.

Table 7. Total Counts of Bat Carcasses by Plot Type and Distance from Turbine

Distance Band (m)	Full Plots[a]	Percentage[a, b] (Full Plots)	Roads/Pads Plots	Percentage[b] (Road and Pad Plots)	Total Standardized Carcasses[c]	Percentage[b] (All Plots)
0 to 10	54	12.1%	59	36.0%	113	18.5%
10 to 20	59	13.2%	21	12.8%	80	13.1%
20 to 30	71	15.8%	24	14.6%	95	15.5%
30 to 40	108	24.1%	20	12.2%	128	20.9%
40 to 50	102	22.8%	14	8.5%	116	19.0%
50 to 60	44	9.8%	12	7.3%	56	9.2%
60 to 70	10	2.2%	7	4.3%	17	2.8%
70 to 80	N/A	N/A	3	1.8%	3	0.5%
80 to 90	N/A	N/A	3	1.8%	3	0.5%
90 to 100	N/A	N/A	1	0.6%	1	0.2%
Total	448	73.2%	164	26.8%	612	100.0%

[a] N/A indicates not applicable. The maximum distance a carcass could be found within the standardized 100 m × 100 m full plot was approximately 70.7 m (i.e., the corner of the square plot).

[b] Percentage for each distance band is based on the total number of standardized carcasses for each plot type. The total percentage for each plot type is based on all plots combined.

[c] Incidental finds were excluded from analysis and are not included in this table.

4.2 SENSITIVE SPECIES

Three Indiana bat carcasses were found over the course of standardized spring and fall surveys (Figure 6). All Indiana bat carcasses discovered during standardized surveys were found at full plots in the fall, including one each at turbines 1 (August 18, 2023), 102 (September 4, 2023), and 86 (September 9, 2023). One additional Indiana bat carcass was found incidentally at turbine 73 (full plot) on July 27, 2023 (summer season), when standardized bat carcass searches were not conducted. No northern long-eared bats were discovered during 2023 PCMM surveys. Section 4.6 provides take estimates for Indiana and northern long-eared bats, which are species covered under the HCP (Atwell 2022).

One state-listed endangered little brown bat (*Myotis lucifugus*) and nine state-listed endangered evening bats (*Nycticeius humeralis*) were found within standardized search plots during spring and fall monitoring periods (Figure 6). The little brown bat was found at turbine 53 on September 2, 2023. Little brown bat is currently under review for federal listing status (USFWS 2023). Evening bats were found at the following turbines:

- turbine 5 (May 8 and August 24, 2023)
- turbine 19 (August 23, 2023)

- turbine 49 (August 11, 2023)
- turbine 73 (October 6, 2023)
- turbine 74 (August 14, 2023)
- turbine 79 (August 14, 2023)
- turbine 104 (August 5, 2023)
- turbine 106 (August 9, 2023)

An additional five evening bats were found incidentally at the following turbines:

- turbine 3 (July 31, 2023; clearance sweep)
- turbine 6 (July 31, 2023; clearance sweep)
- turbine 40 (October 6, 2023; outside of standardized search area)
- turbine 79 (August 2, 2023; outside of standardized search area)
- turbine 104 (August 1, 2023; clearance sweep)

Furthermore, seven evening bats were incidentally found during the summer season, when standardized bat carcass searches were not conducted. These bats were located at the following turbines:

- turbine 26 (June 7, 2023)
- turbine 45 (May 17, 2023)
- turbine 59 (May 30, 2023)
- turbine 70 (May 25, 2023)
- turbine 122 (July 13, 2023)
- turbine 125 (May 31, 2023)
- turbine 135 (May 19,2023)

No federally or state-listed threatened or endangered bird species were discovered over the course of standardized PCMM surveys in the spring or fall.

4.3 SEARCHER EFFICIENCY

As previously described, 147 searcher efficiency trial carcasses were placed throughout the study period, including 70 in the spring and 77 in the fall. Seventy-five were placed at full plot locations (35 in spring and 40 in fall) and 72 were placed at road and pad plot locations (35 in the spring

and 37 in the fall). Eleven carcasses were scavenged prior to the search and were subsequently removed from the searcher efficiency calculation, including five in the spring (three at full plots and two at road and pad plots) and six in the fall (four at full plots and two at road and pad plots). As such, the total number of available carcasses for searchers was 65 in the spring (32 at full plots and 33 at road and pad plots) and 71 in the fall (36 at full plots and 35 at road and pad plots; Table 8). Searcher efficiency was higher at road and pad plots (97.0% and 91.4% in spring and fall, respectively; Table 8) compared to full plots (78.1% and 55.6% in spring and fall, respectively; Table 8). Overall searcher efficiency was higher in the spring (87.7%) than the fall (73.2%; Table 8).

Table 8. Searcher Efficiency Estimates by Season and Plot Type

Predictor Variable	n[a]	*p*[b]	90% Confidence Interval	
Spring				
Full Plots	32	0.781	0.639	0.878
Road and Pad Plots	33	0.970	0.858	0.994
Overall[c]	65	0.877	0.793	0.930
Fall				
Full Plots	36	0.556	0.419	0.685
Road and Pad Plots	35	0.914	0.798	0.966
Overall[c]	71	0.732	0.638	0.810

[a] n is the number of carcasses placed for the searcher efficiency trial excluding carcasses scavenged prior to search.

[b] *p* is the calculated searcher efficiency.

[c] Overall searcher efficiency was estimated in GenEst using a constant searcher efficiency model. However, this model was not selected for fatality estimation.

4.4 Carcass Persistence

In all, 120 trial carcasses were placed throughout the study period, including 60 per season (30 at full plots and 30 at road and pad plots). In total, 30 carcasses (50%) were remaining after seven days in the spring and 45 carcasses (75%) were remaining after two days in the fall. By mid-trial (day 14 for spring; 15 for fall), 10 (16.7%) and 20 (33.9%) carcasses were remaining in the spring and fall, respectively. By the end of the trial (day 30), three (5.0%) and 11 (18.6%) carcasses were remaining in the spring and fall, respectively. The percents remaining at days 15 and 30 in the fall are based on a total of 59 carcasses rather than 60 since one carcass was no longer available for checks following day 8.

The estimated overall median probabilities of persisting to day 1 after placement were 0.947 and 0.957 in spring and fall, respectively (Table 9; Figures 7a and 7b). The estimated overall median probabilities of persisting to day 3 after placement were 0.852 and 0.859 in spring and fall, respectively (Table 9; Figures 7a and 7b). The estimated overall median probabilities of persisting

to day 7 were 0.698 and 0.721 in spring and fall, respectively (Table 9; Figures 7a and b). In general, the probability of persisting throughout the entire 30-day trial period was higher in the fall compared to the spring (0.424 and 0.311 by day 28 for fall and spring, respectively; Table 9; Figures 7a and b). During the spring, carcasses had a greater probability of persisting through the search interval (i.e., day 7) at full plots than road and pad plots (Table 9). During the fall, carcasses had a higher probability of persisting through the search interval (i.e., day 2) at full plots compared to road and pad plots (Table 9; see probability for r3). Based on the selected models for fatality estimation in GenEst (Table 3), median carcass persistence in the spring and fall was 6.32 days and 7.84 days, respectively. Estimates provided in Table 9 do not represent the proportion of carcasses remaining at the end of an interval of *t* days (where *t* = 1, 3, 7, 14, or 28 days) but rather the probability that a carcass arriving within an interval of *t* days persists until the end of the interval.

Table 9. Carcass Persistence Estimates by Season and Plot Type

Plot Type	n[a]	MedianCP[b]	90% CI		Probability of Persistence[c]													
					r_1	90% CI		r_3	90% CI		r_7	90% CI		r_{14}	90% CI		r_{28}	90% CI	
Spring																			
Full Plots[e]	30	7.20	5.26	9.83	0.953	0.937	0.966	0.868	0.825	0.902	0.727	0.652	0.790	0.549	0.455	0.636	0.346	0.263	0.437
Road and Pad Plots[e]	30	5.48	4.03	7.45	0.939	0.919	0.955	0.832	0.781	0.873	0.664	0.581	0.735	0.469	0.377	0.559	0.274	0.206	0.356
Overall	60	6.32	5.08	7.87	0.947	0.935	0.957	0.852	0.820	0.879	0.698	0.643	0.746	0.511	0.445	0.575	0.311	0.255	0.371
Fall																			
Full Plots[e]	30	7.66	5.45	10.76	0.975	0.938	0.993	0.886	0.820	0.940	0.740	0.661	0.816	0.577	0.491	0.659	0.405	0.319	0.490
Road and Pad Plots[e]	30	7.66	5.45	10.76	0.931	0.866	0.975	0.823	0.749	0.894	0.693	0.625	0.768	0.565	0.499	0.633	0.432	0.362	0.498
Overall	60	7.84	5.53	11.11	0.957	0.920	0.982	0.859	0.798	0.911	0.721	0.648	0.789	0.576	0.497	0.651	0.424	0.345	0.502

[a] n is the number of carcasses placed for the carcass persistence trial.

[b] MedianCP is the estimated median number of days a carcass will persist after day 0.

[c] Probability of persistence is the estimated median probability that a carcass arriving at a uniform random time in an interval of t days (i.e., 1, 3, 7, 14, 28 days) persists until the end of the interval.

[d] Estimates for full plots and road and pad plots in the spring were determined using an exponential model with the location formula a function of plot type; however, this model was not selected for fatality estimation in GenEst.

[e] Estimates for full plots and road and pad plots in the fall were determined using a lognormal model with constant location formula the scale formula a function of plot type; however, this model was not selected for fatality estimation in GenEst.

4.5 PROJECT-SPECIFIC FATALITY ESTIMATION

In total, 612 bat carcasses (Appendix A-1) were found during standardized searches and input into GenEst to calculate adjusted project-specific fatality estimates for the fall season. The estimated probability of detection (ĝ) was higher in fall than spring (Table 10), likely due to a shorter search interval (i.e., more frequent searches) in the fall.

Probability of detection was higher at road and pad plots in both the spring and fall (Table 10), which was primarily driven by higher searcher efficiency rates at road and pad plots. As previously mentioned, the ĝ-values provided in GenEst (and presented in Table 10) are simplistic estimates based on searcher efficiency estimates, carcass persistence estimates, and the average search interval. However, these estimates do not incorporate spatial coverage of survey plots (i.e., DWP).

Table 10. GenEst Detection Probability Estimates by Season and Plot Type

Plot Type	Estimated Detection Probability (ĝ)[a]	90% Confidence Interval (lower)	90% Confidence Interval (upper)
Spring			
Full Plots	0.618	0.522	0.690
Road and Pad Plots	0.713	0.642	0.764
Overall[b]	0.669	0.604	0.725
Fall			
Full Plots	0.721	0.609	0.813
Road and Pad Plots	0.878	0.816	0.928
Overall[b]	0.814	0.744	0.873

[a] The ĝ-values presented in this table are a function of the selected searcher efficiency model, the selected carcass persistence model, and the average search interval. They do not account for spatial coverage (i.e., DWP).

[b] The overall detection probability in spring and fall were determined using constant searcher efficiency and carcass persistence models. While constant carcass persistence models were used for spring and fall fatality estimation in GenEst, searcher efficiency was modeled as a function of Plot Type.

The median fatality estimate was higher in the fall (31.84 bat fatalities/turbine or 11.50 bat fatalities/MW) compared to the spring (3.11 bat fatalities/turbine or 1.12 bat fatalities/MW) (Table 11).

Table 11. Bat Fatality Estimates by Season

Season	Total Bats[a]	Percentage[b]	Median Fatality Estimate	90 % Confidence Interval (lower)	90 % Confidence Interval (upper)
Facility-Wide					
Spring	41	6.70%	453.73	275.36	674.76
Fall	571	93.30%	4648.04	4051.23	5313.30
Per Turbine[c]					
Spring	41	6.70%	3.11	1.89	4.62
Fall	571	93.30%	31.84	27.75	36.39
Per Megawatt[d]					
Spring	41	6.70%	1.12	0.68	1.67
Fall	571	93.30%	11.50	10.03	13.15

[a] Incidental finds were excluded from analysis and are not included in this table.

[b] Percentage is the percent of total bats found during each season.

[c] Based on 146 turbines.

[d] Based on 404.1 MW.

4.6 ESTIMATED TAKE OF COVERED SPECIES

Carcasses of three Indiana bats, a species covered under the HCP (Atwell 2022), were found during fall surveys. As previously mentioned, a fourth Indiana bat carcass was discovered incidentally during the summer (i.e., outside of the monitoring season) and included in the take analysis per Section 9.2.2.6 of the HCP (Atwell 2022). No northern long-eared bat carcasses were found at the project during fall surveys.

Results from the searcher efficiency and carcass removal trials, as well as spatial coverage of the site, were input into EoA to model estimated Indiana bat and northern long-eared bat take. Using the multiple class module, EoA estimated searcher efficiency during the spring season to be 0.781 (95% confidence interval: 0.618, 0.896) at full plots and 0.970 (95% confidence interval: 0.867, 0.997) at road and pad plots. Searcher efficiency during the fall season was estimated to be 0.556 (95% confidence interval: 0.394, 0.708) at full plots and 0.914 (95% confidence interval: 0.789, 0.975) at road and pad plots.

For a search interval of seven days in the spring, carcass persistence (*r*) was estimated to be 0.727 (95% confidence interval: 0.634, 0.803) and 0.664 (95% confidence interval: 0.560, 0.751) at full plots and road and pad plots, respectively. For a search interval of two days in the fall, carcass persistence was estimated to be 0.925 (95% confidence interval: 0.891, 0.949) and 0.886 (95% confidence interval: 0.789, 0.975) at full plots and road and pad plots, respectively.

Ba and Bb values, detection probabilities, and “dwp” values that were input into the multiple classes module for each season and plot type are shown in Table 12. The overall spatial coverage for full plots and road and pad plots combined was 0.2989.

The estimated overall detection probability in 2023 was 0.224 (95% confidence interval: 0.196, 0.254; Ba = 177.1478 and Bb= 613.7074; Table 13). With four Indiana bat carcasses found at full plots during standardized surveys in the fall (X = 4), the median fatality estimate for Indiana bats (M*) was 18 fatalities in 2023 and the mean mortality rate (λ) was 20.20 (95% confidence interval: 6.01, 43.11; Table 13). With no northern long-eared bat carcasses found at the project in 2023, the median fatality estimate for northern long-eared bats was zero fatalities in 2023 and the mean λ was 2.25 (95% confidence interval: 0.002, 11.310; Table 13). EoA outputs are provided in Appendix B.

The “Track past mortality” option in EoA’s multiple years module was used to track cumulative take with a 50% credibility level at the project over the life of the ITP. The overall detection probability following two years of baseline monitoring is 0.248 (95% confidence interval: 0.231, 0.266). The cumulative median take estimates for Indiana and northern long-eared bats after two years are 37 and zero fatalities, respectively (Table 14). Cumulative mean λ estimates are 38.36 and 2.019 for Indiana and northern long-eared bat, respectively (Table 14). As such, the overall annual mean λ after two years of monitoring is 19.18 (95% confidence interval: 8.96, 33.30) Indiana bats and 1.009 (95% confidence interval: 0.001, 5.070) northern long-eared bats (Appendix B).

Table 12. Multiple Class Module Inputs to Estimate Take of HCP-Covered Species using Evidence of Absence

Season	Plot Type	dwp[a]	Indiana Bat Carcass Count (X)[b]	Northern Long-eared Bat Carcass Count (X)	Ba[c]	Bb[c]	Detection Probability (ĝ)	95% Confidence Interval for ĝ (lower limit)	95% Confidence Interval for ĝ (upper limit)
Spring	Full Plot	0.0161	0	0	43.0410	27.9740	0.606	0.491	0.716
Spring	Road and Pad Plot	0.0019	0	0	60.2270	33.6730	0.641	0.542	0.735
Fall	Full Plot	0.2515	4	0	40.5020	13.7380	0.747	0.624	0.852
Fall	Road and Pad Plot	0.0294	0	0	42.6180	7.0670	0.858	0.749	0.939

[a] "dwp" is the average density-weighted proportion for each plot type weighted by the proportion of plots the plot type comprises and the estimated seasonal proportions of *Myotis* mortality as described in the Jordan Creek HCP (Atwell 2022) adjusted for spring and fall only.

[b] One Indiana bat carcass found incidentally on July 27, 2023 (outside of the monitoring season) was included in the EoA analysis per section 9.2.2.6 of the HCP (Atwell 2022).

[c] Ba and Bb values for each plot type were determined from search class inputs in EoA's multiple class module.

Table 13. Overall Detection Probability, Median Fatality Estimate, and Mean Fatality Rate Estimate for HCP-Covered Species

Species	Carcass Count (x)[a]	Overall Detection Probability (ĝ)	95% CI for ĝ (lower limit)[b]	95% CI for ĝ (upper limit)[b]	Ba[c]	Bb[c]	Median Fatality Estimate (M*)	95% CI for M* (lower limit)[b]	95% CI for M* (upper limit)[b]	Mean Fatality Rate Estimate (λ)	95% CI for λ (lower limit)[b]	95% CI for λ (upper limit)[b]
Indiana bat	4	0.224	0.196	0.254	177.1478	613.7074	18	7	38	20.20	6.010	43.110
Northern long-eared bat	0	0.224	0.196	0.254	177.1478	613.7074	0	0	7	2.25	0.002	11.310

[a] One Indiana bat carcass found incidentally on July 27, 2023 (outside of the monitoring season) was included in the EoA analysis per section 9.2.2.6 of the HCP (Atwell 2022).

[b] CI = Confidence Interval.

[c] Ba and Bb values were calculated from EoA's multiple class module and characterize the overall detection probability.

Table 14. Cumulative Mortality Estimates for Covered Species (2022 – 2023)

Year	Carcass Count (X)[a]	Detection Probability (ĝ)	Median Fatality Estimate (M*)	95% CI for M* (lower limit)[b]	95% CI for M* (upper limit)[b]	Mean Fatality Rate Estimate (λ)	95% CI for λ (lower limit)[b]	95% CI for λ (upper limit)[b]
Indiana bat								
2022[b]	5	0.272	19	9	37	20.250	7.001	40.470
2023	9	0.248	37	20	61	38.360	17.910	66.580
Northern long-eared bat								
2022[c]	0	0.272	0	0	6	1.840	0.002	9.253
2023	0	0.248	0	0	7	2.019	0.002	10.150

[a] One Indiana bat carcass found incidentally on July 27, 2023 (outside of the monitoring season) was included in the EoA analysis for the 2023 season per section 9.2.2.6 of the HCP (Atwell 2022).

[b] CI = Confidence Interval

[c] 2022 mortality estimates are based on the fall season only.

5 DISCUSSION

Over the course of the study, 612 bat carcasses representing eight species were found during standardized surveys. Using GenEst, the estimated adjusted fatality rates in the spring and fall were 3.11 bats/turbine (1.12 bats/MW; 453.73 total bats) and 31.84 bats/turbine (11.50 bats/MW; 4,648.04 total bats), respectively (Table 11). The project fatality estimate for the fall was 14.2% lower than the fall 2022 fatality estimate (13.40 bats/MW) (Atwell 2023). Turbines were curtailed to a cut-in speed of 6.0 m/s for the entire 2023 fall season whereas for the 2022 fall season, they were curtailed to a cut-in speed of 5.0 m/s between August 1 and September 23, and to a cut-in speed of 6.9 m/s between September 24 and October 15.

Seasonal estimates for the project were higher than recent mean fatality estimates at the nearby FRWF, which reported 0.34 bats/MW and 5.27 bats/MW, in the spring and fall of 2021, respectively. Turbines at FRWF were feathered below a cut-in speed of 3.5 m/s in the spring and 5.0 m/s in the fall. (Good et al. 2022).

Eastern red bats made up a majority of the carcasses found at the project (53.3%) followed by silver-haired bat (26.6%), and hoary bat (9.3%) (Table 6). This is similar to the species composition found at other wind facilities throughout the Midwest, including FWRF. However, specific proportions of each species may differ (Arnett et al. 2008; AWWI 2018; Good et al. 2022). Based on the timing of peak carcass counts, it was likely that these were fall migrants.

Bat carcass counts were relatively low throughout the spring and higher in the fall, with carcass counts generally peaking in late August (Figure 8). This temporal influx of carcasses at the project is similar to trends from other wind facilities throughout the Midwest and United States as a whole. A majority of bat carcasses tend to correspond with the fall migratory period and dispersal from summer breeding grounds (Johnson 2005; Arnett et al. 2008; AWWI 2018). The timing of peak carcass counts in the fall was primarily driven by eastern red bats (78.0%) with smaller contributions from hoary (9.2%), silver-haired (5.5%), and big brown bats (4.6%) (Figure 9). Silver-haired bat, which was the species with the second-highest carcass count in 2023 overall, peaked a week later than eastern red bats and the cumulative bat count (Figure 9). While a secondary peak occurred at the beginning of the fall season in early August, this may have been due to the discovery of carcasses that arrived prior to the fall season but were missed during pre-season clearance sweeps. These carcasses were retained for analysis to provide a more conservative estimate.

On an individual turbine basis, full plots had more observed bat carcasses at the project than road and pad plots. This was expected since full plots have a greater amount of area searched compared to roads and pads, particularly at distance bands closer to the turbine tower where a greater proportion of carcasses are likely to be found (Hull and Muir 2010). Mortality rate

estimates were adjusted during data analysis to account for the differences in search area between plot types.

During the spring, bat carcasses were generally distributed throughout the project turbine array and there did not appear to be any areas of concentration for bats overall (Figure 5a). While turbines closest to forested habitat tended to have slightly higher counts of observed bat carcasses in the fall, carcasses were generally distributed throughout the project turbine array and there did not appear to be any areas of major concentration for bats overall (Figure 5b). Turbines 140 and 48, full plots in the northeastern and west-central portions of the project area, respectively, had the most carcasses, each with 19 carcasses discovered in the fall (Figure 5b).

Three federally listed endangered Indiana bats were found over the course of standardized surveys in the fall and one Indiana bat was found incidentally in the late summer. An additional nine state-listed endangered evening bats and one state-listed endangered little brown bat were found on-site during standardized surveys. All federally and state-listed bat species were found during the fall season, with the exception of one evening bat found at turbine 5 during the final week of the spring season. Indiana bat carcasses tended to be found at turbines in the eastern and southern portions of the project area (Figure 6), which is similar to the locations of Indiana bat carcasses found at the project during fall 2022 (Atwell 2023). Turbines near the eastern boundary of the project are closest to woodland habitat associated with Mud Pine Creek while turbines near the southern boundary of the project are close to smaller forest patches associated with tributaries of the Wabash River (Figure 6). Seven fewer evening bats (46.7%) were discovered during the 2023 fall season compared to the 2022 fall season (Atwell 2023). Whereas evening bat and little brown bat carcasses seemed to be concentrated in the eastern and northern portions of the project in 2022 (Atwell 2023), there was less of a clear pattern in 2023 (Figure 6).

The overall detection probability of 0.224 in 2023 exceeded the target detection probability of 0.2 established in the HCP (Atwell 2022). Monitoring efforts in 2022 (fall only) resulted in a detection probability of 0.272. As such, the two-year average detection probability following one year of fall monitoring in 2022 and one year of spring and fall monitoring in 2023 is 0.248.

In total, nine Indiana bats and no northern long-eared bats were detected over the course of PCMM surveys in 2022 and 2023, and the cumulative take after two years of monitoring, based on EoA modelling, is estimated to be 37 Indiana bats and zero northern long eared bats, which are below take limits authorized under the ITP. The long-term trigger threshold has not been exceeded for either species. As this was the second year of baseline monitoring under the HCP, the short-term trigger is not applicable since a minimum of three years of monitoring data will be used to determine if the project is at risk of exceeding its take limit. Long-term progress toward

the total authorized take limit will be tracked over the life of the ITP using EoA's multiple years module.

6 REFERENCES

Arnett EB, Brown WK, Erickson WP, Fiedler JK, Hamilton BL, Henry TH, Jain A, Johnson GD, Kerns J, Koford RR, et al. 2008. Patterns of bat fatalities at wind energy facilities in North America. The Journal of Wildlife Management. 72(1):61–78.

Atwell [Atwell LLC]. 2022. Habitat conservation plan. Jordan Creek Wind Energy Center. Warren and Benton counties, Indiana. https://ecos.fws.gov/docs/plan_documents/thcp/thcp_3483.pdf.

Atwell [Atwell LLC]. 2023. Post-construction bat monitoring assessment report (August 2022 - October 2022). Jordan Creek Wind Energy Center. Warren and Benton counties, Indiana.

AWWI [American Wind Wildlife Institute]. 2018. AWWI technical report: a summary of bat fatality data in a nationwide database. Washington (DC). https://awwi.org/wp-content/uploads/2019/02/AWWI-Bat-Technical-Report_07_25_18_FINAL.pdf.

Dalthorp D. 2019. Pers. comm. Email to M. Lester re GenEst questions October 22. Corvallis (OR): U.S. Geological Survey.

Dalthorp D, Huso M, Dail D. 2017. Evidence of Absence (v2.0) Software User Guide. https://pubs.usgs.gov/ds/1055/ds1055.pdf.

Dalthorp DH, Simonis J, Madsen L, Huso M, Rabie P, Mintz JM, Wolpert R, Studyvin J, Korner-Nievergelt F. 2018. Generalized mortality estimator (GenEst) - R code and GUI: U.S. Geological Survey software release. https://www.usgs.gov/software/genest-a-generalized-estimator-mortality.

Good RE, Merrill A, Simon S, Murray K, Bay K. 2012. Bat monitoring studies at the Fowler Ridge wind energy facility: Benton County, Indiana. April 1 - October 31, 2011. Bloomington (IN): Western EcoSystems Technology Inc.

Good RE, Nasman K, Ciecka A. 2022. Bat evaluation monitoring studies at the Fowler Ridge Wind Farm. Benton County, Indiana. April 1 - October 15, 2021. Bloomington (IN): Western EcoSystems Technology Inc.

Hull CL, Muir S. 2010. Search areas for monitoring bird and bat carcasses at wind farms using a Monte-Carlo model. Australasian Journal of Environmental Management. 17(2):77–87.

Johnson GD. 2005. A review of bat mortality at wind-energy developments in the United States. Bat Research News. 46(2):45–49.

MRLC [Multi-Resolution Land Characteristics Consortium]. 2023. NLCD 2021 land cover (CONUS). https://www.mrlc.gov/data/nlcd-2021-land-cover-conus.

Simonis J, Dalthorp D, Huso M, Mintz J, Madsen L, Rabie P, Studyvin J. 2018. GenEst user guide - software for a generalized estimator of mortality. In: Book 7, Automated Data Processing and

Computations, Chapter C19. (U.S. Geological Survey Techniques and Methods). https://pubs.usgs.gov/tm/7c19/tm7c19.pdf.

Trimble, Inc. 2021. Datasheet. Trimble DA2. GNSS receiver for the Trimble catalyst service. https://geospatial.trimble.com/sites/geospatial.trimble.com/files/2021-09/Datasheet%20-%20Trimble%20DA2%20GNSS%20Receiver%20-%20English%20UK.pdf.

USFWS [U.S. Fish and Wildlife Service]. 2023. Little brown bat (*Myotis lucifugus*). Environmental Conservation Online System (ECOS). https://ecos.fws.gov/ecp/species/9051.

WEST [Western EcoSystems Technology Inc]. 2013. Fowler Ridge Wind Farm: Benton County, Indiana: Indiana Bat Habitat Conservation Plan. Cheyenne, WY: Western EcoSystems Technology, Inc. http://www.fws.gov/midwest/endangered/permits/hcp/FowlerRidge/pdf/DraftHCPFowlerRdgWindFarmMarch2013.pdf.

FIGURES

Jordan Creek Wind Energy Center

Figure 1: Regional Setting

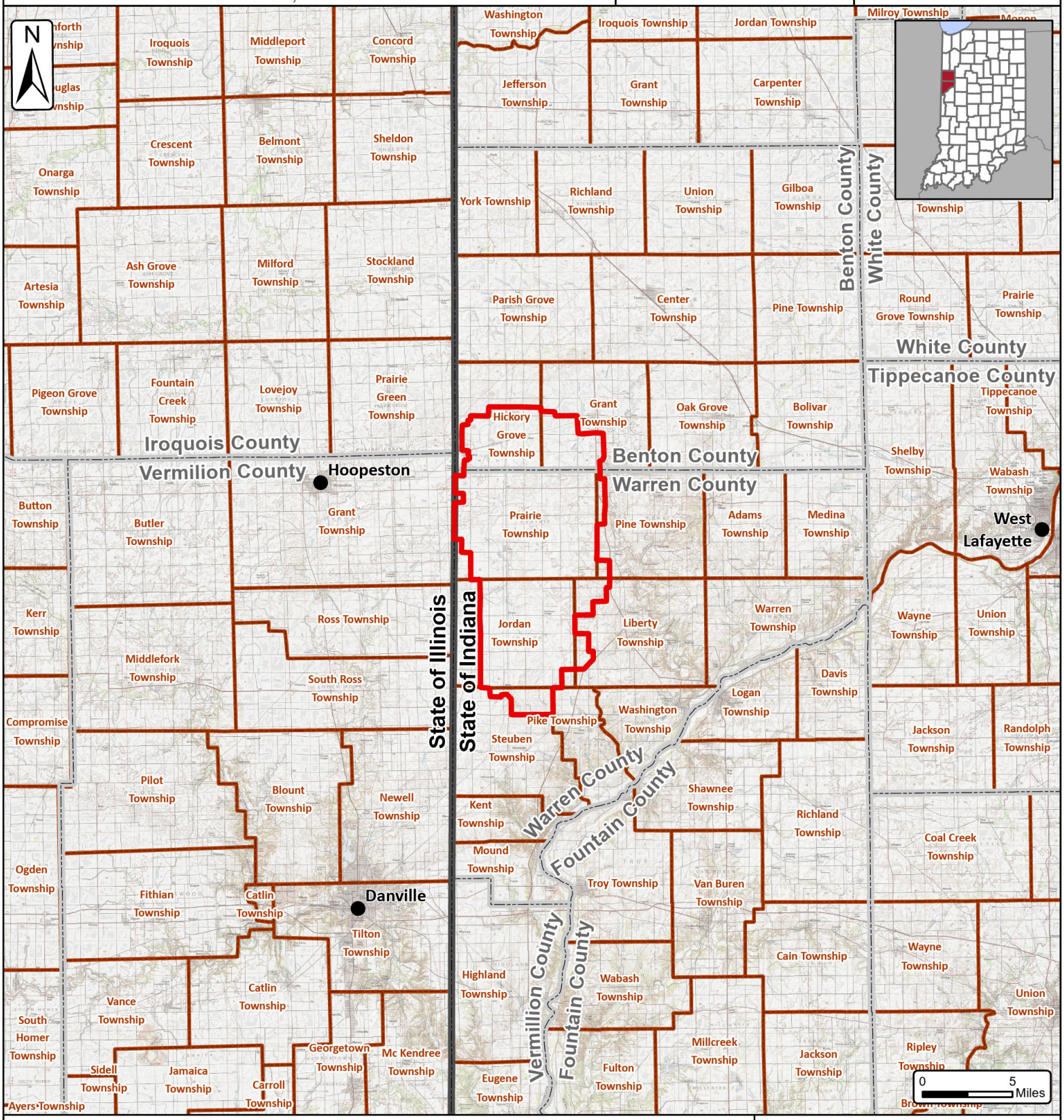
Warren and Benton Counties, Indiana

Client:

Jordan Creek Wind Farm, LLC

Issue Date:
12/27/2023

Atwell, LLC Project:
20004828



- Populated Places (USGS)
- Project Boundary (06/06/2019) (~70,904 acres)
- Township Boundary
- County Boundary
- State Boundary

Source: USGS Topographic Basemap

ATWELL

Jordan Creek Wind Energy Center

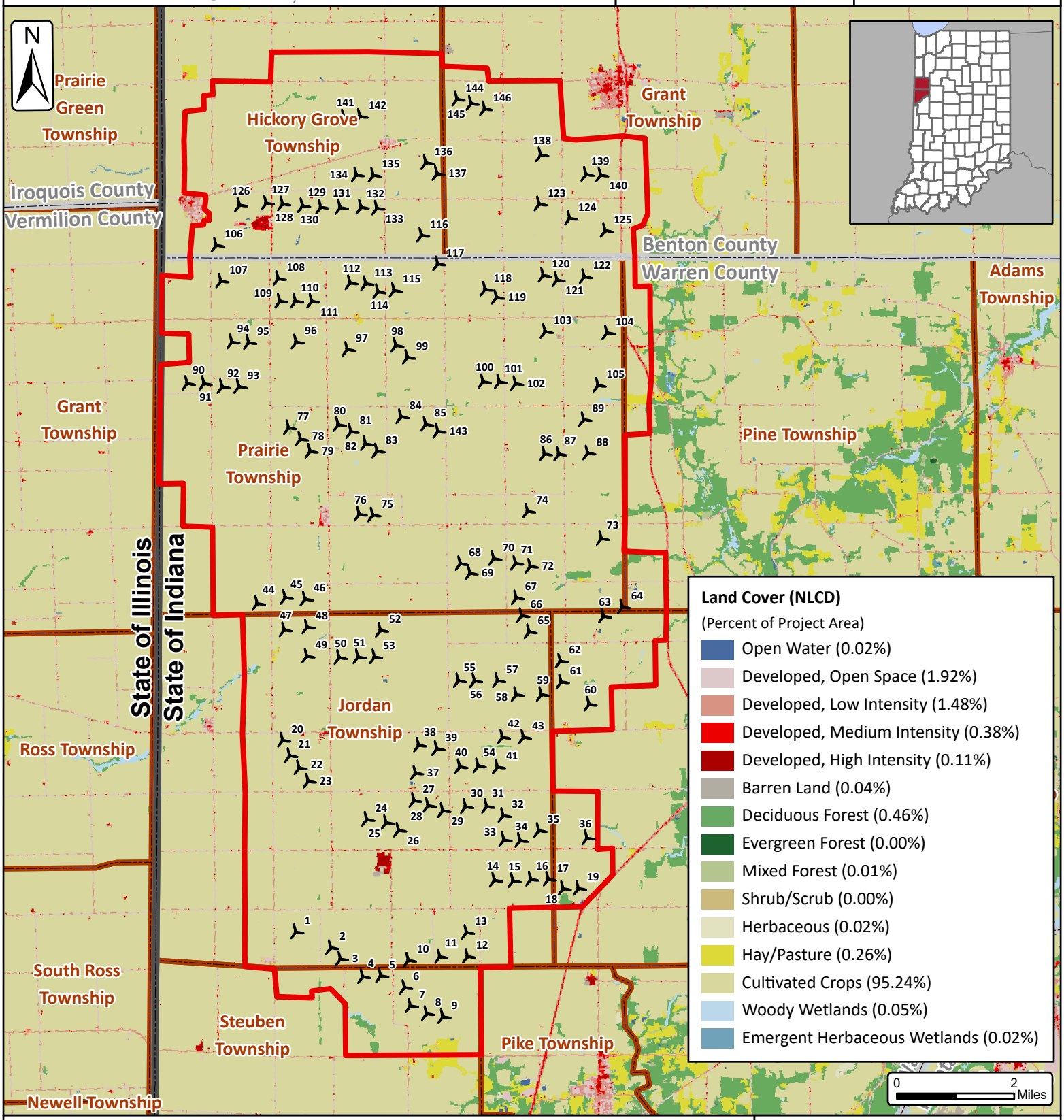
Figure 2: National Land Cover Database

Warren and Benton Counties, Indiana

Client:
Jordan Creek Wind Farm, LLC

Issue Date:
10/26/2023

Atwell, LLC Project:
20004828



As-Built Turbine Locations (4/16/2020)

Project Boundary (06/06/2019) (~70,904 acres)

Township Boundary

County Boundary

State Boundary

Source: National Land Cover Database (USGS, 2021)

ATWELL

Jordan Creek Wind Energy Center

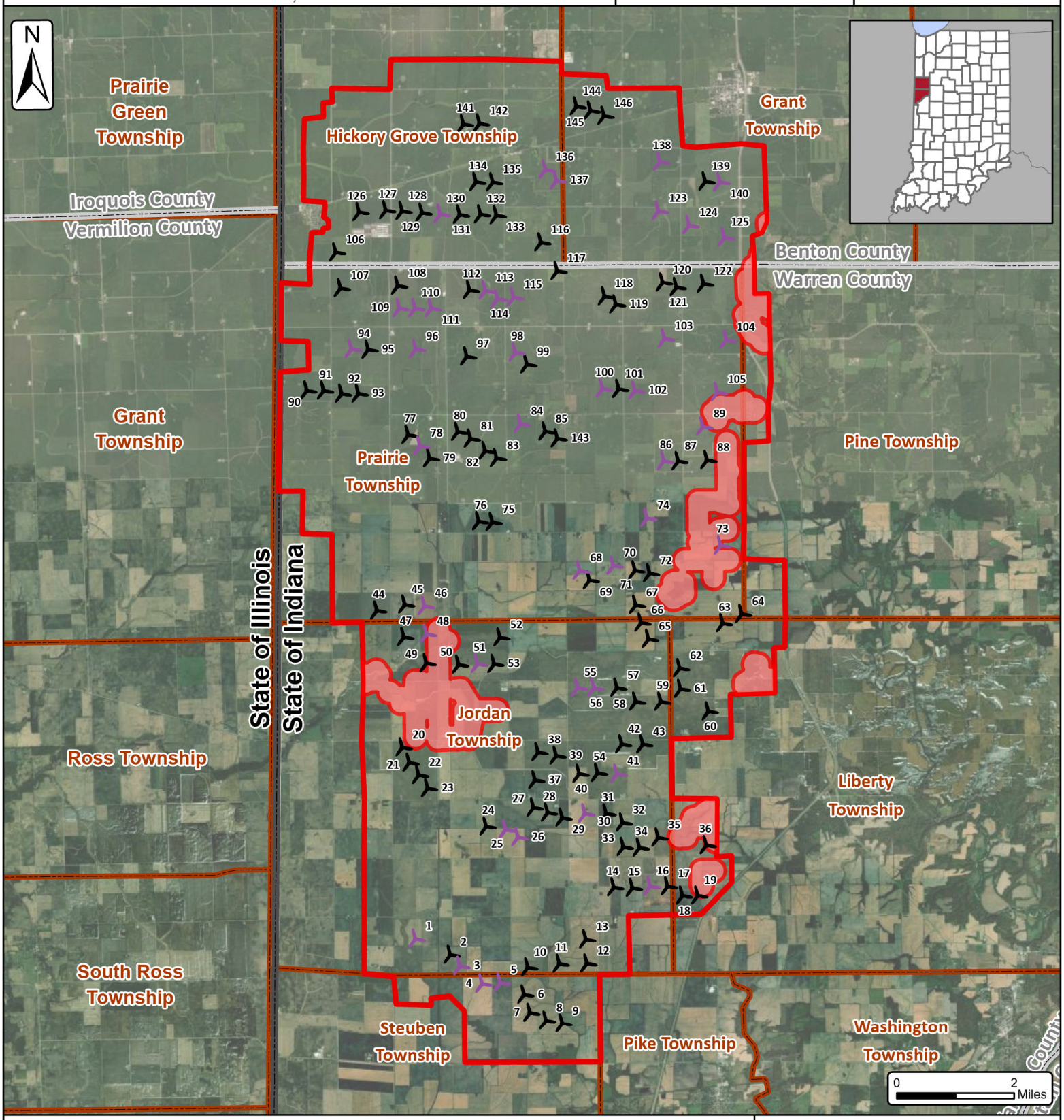
Figure 3: As-Built Turbines and Bat Carcass Search Locations

Warren and Benton Counties, Indiana

Client:
Jordan Creek Wind Farm, LLC

Issue Date:
12/27/2023

Atwell, LLC Project:
20004828



As-Built Turbine Locations (4/16/2020)

- 102 Turbines Surveyed as Road and Pad Plots
- 44 Turbines Surveyed as 100 meter x 100 meter Cleared Full Plots

- USFWS Bat Avoidance Buffer
- Project Boundary (06/06/2019) (~70,904 acres)

- Township Boundary
- County Boundary
- State Boundary

Source: Esri World Imagery

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Jordan Creek Wind Energy Center

Figure 4: Example Schematic of Search Strategies

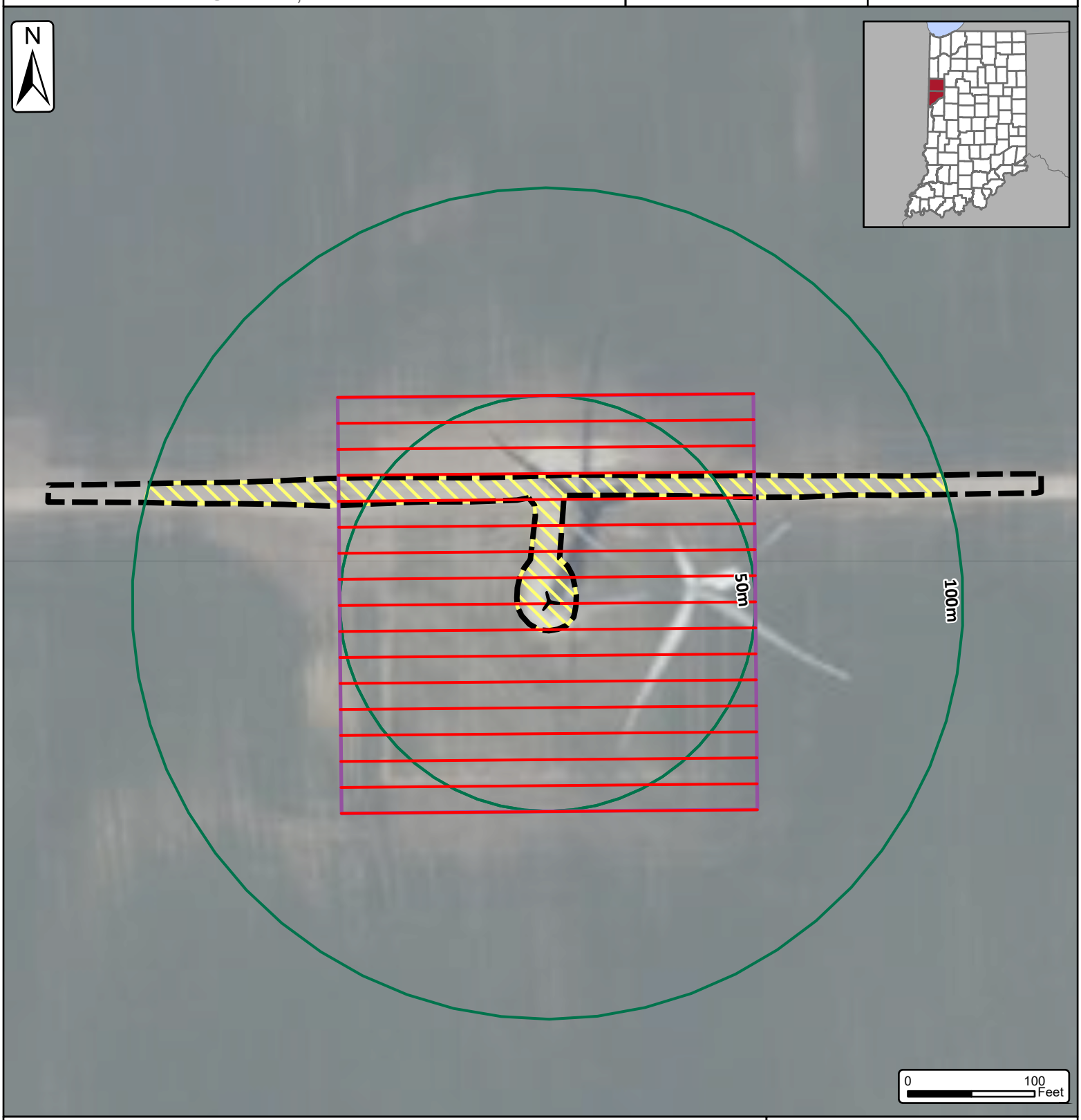
Warren and Benton Counties, Indiana

Client:

Jordan Creek Wind Farm, LLC

Issue Date:
10/26/2023

Atwell, LLC Project:
20004828



As-Built Turbine Locations (4/16/2020)
100 m x 100 m full plot
100 m x 100 m full plot transect
Distance from Turbine
Field-delineated Access Road
Road and Pad Search Area

Source: National Agriculture Imagery Program (2022)

ATWELL

Jordan Creek Wind Energy Center

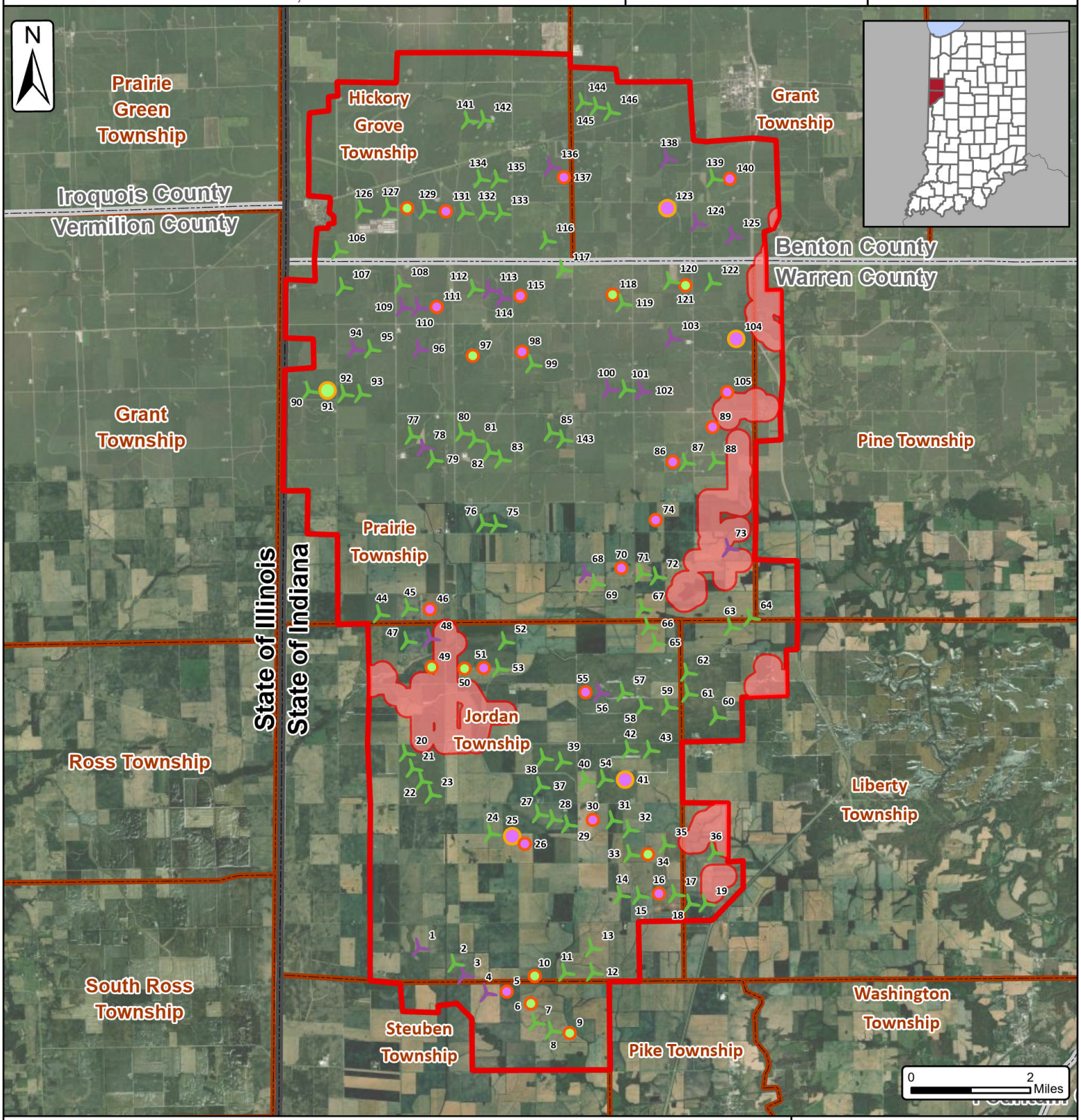
Figure 5a: Weighted Standardized Bat Carcass Discoveries (Spring)

Warren and Benton Counties, Indiana

Client:
Jordan Creek Wind Farm, LLC

Issue Date:
12/27/2023

Atwell, LLC Project:
20004828



- Road and Pad Plot with Standardized Bat Fatalities
- Cleared Full Plot with Standardized Bat Fatalities
- Road and Pad Plot with Zero Standardized Bat Fatalities
- Cleared Full Plot with Zero Standardized Bat Fatalities
- USFWS Bat Avoidance Buffer
- Project Boundary (06/06/2019) (~70,904 acres)
- Township Boundary
- State Boundary
- County Boundary

Weighted Standardized Fatalities
- 1
- 2

Source: Esri World Imagery

ATWELL

Jordan Creek Wind Energy Center

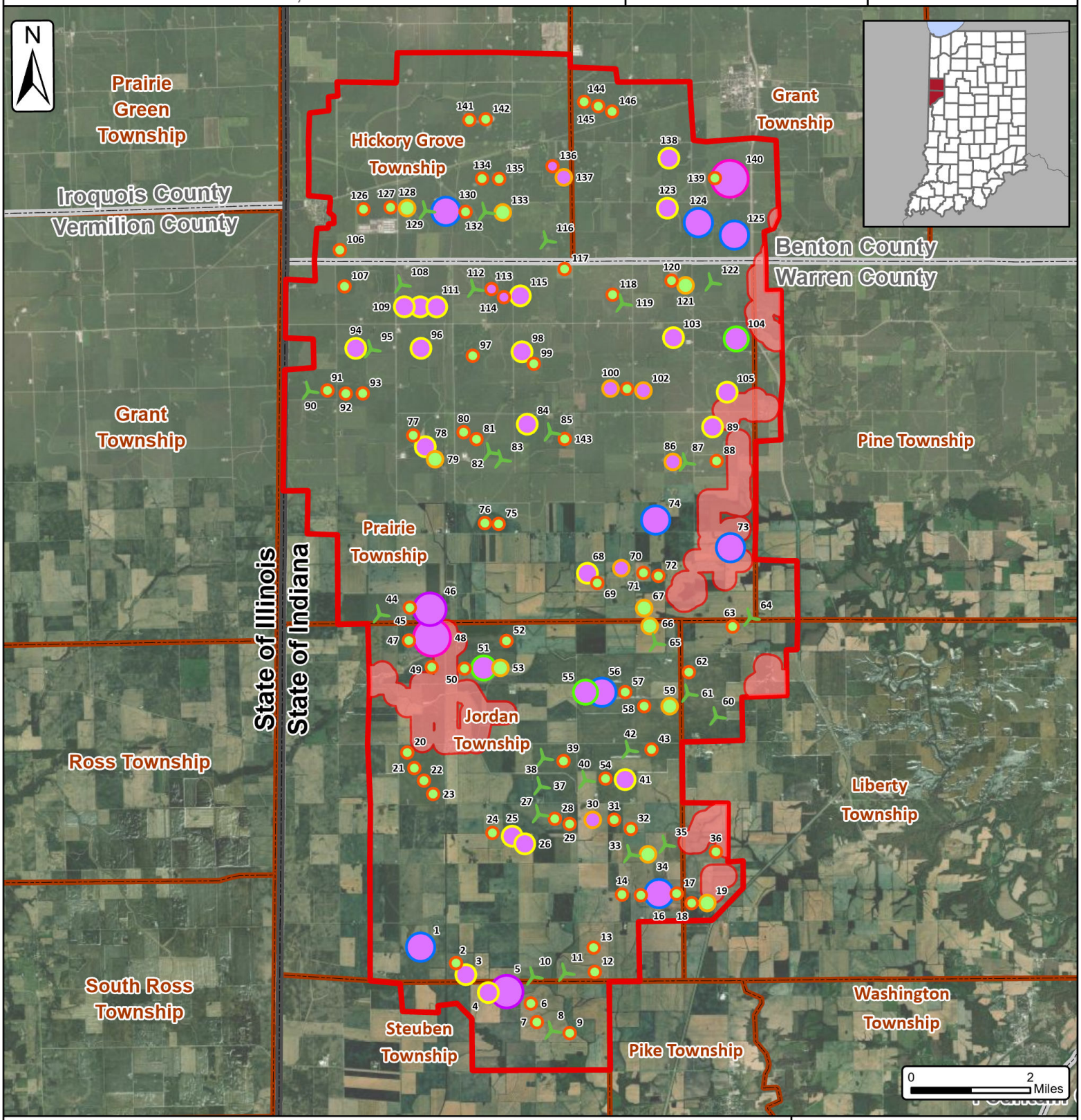
Figure 5b: Weighted Standardized Bat Carcass Discoveries (Fall)

Warren and Benton Counties, Indiana

Client:
Jordan Creek Wind Farm, LLC

Issue Date:
12/27/2023

Atwell, LLC Project:
20004828



- Road and Pad Plot with Standardized Bat Fatalities
- Cleared Full Plot with Standardized Bat Fatalities
- Road and Pad Plot with Zero Standardized Bat Fatalities
- Cleared Full Plot with Zero Standardized Bat Fatalities
- USFWS Bat Avoidance Buffer
- Project Boundary (06/06/2019) (~70,904 acres)
- Township Boundary
- State Boundary
- County Boundary

Weighted Standardized Fatalities

- 1 - 3
- 4 - 6
- 7 - 9
- 10 - 12
- 13 - 15
- 16 - 18
- 19

Source: Esri World Imagery

ATWELL

Jordan Creek Wind Energy Center

Figure 6: Locations of Sensitive Bat Species

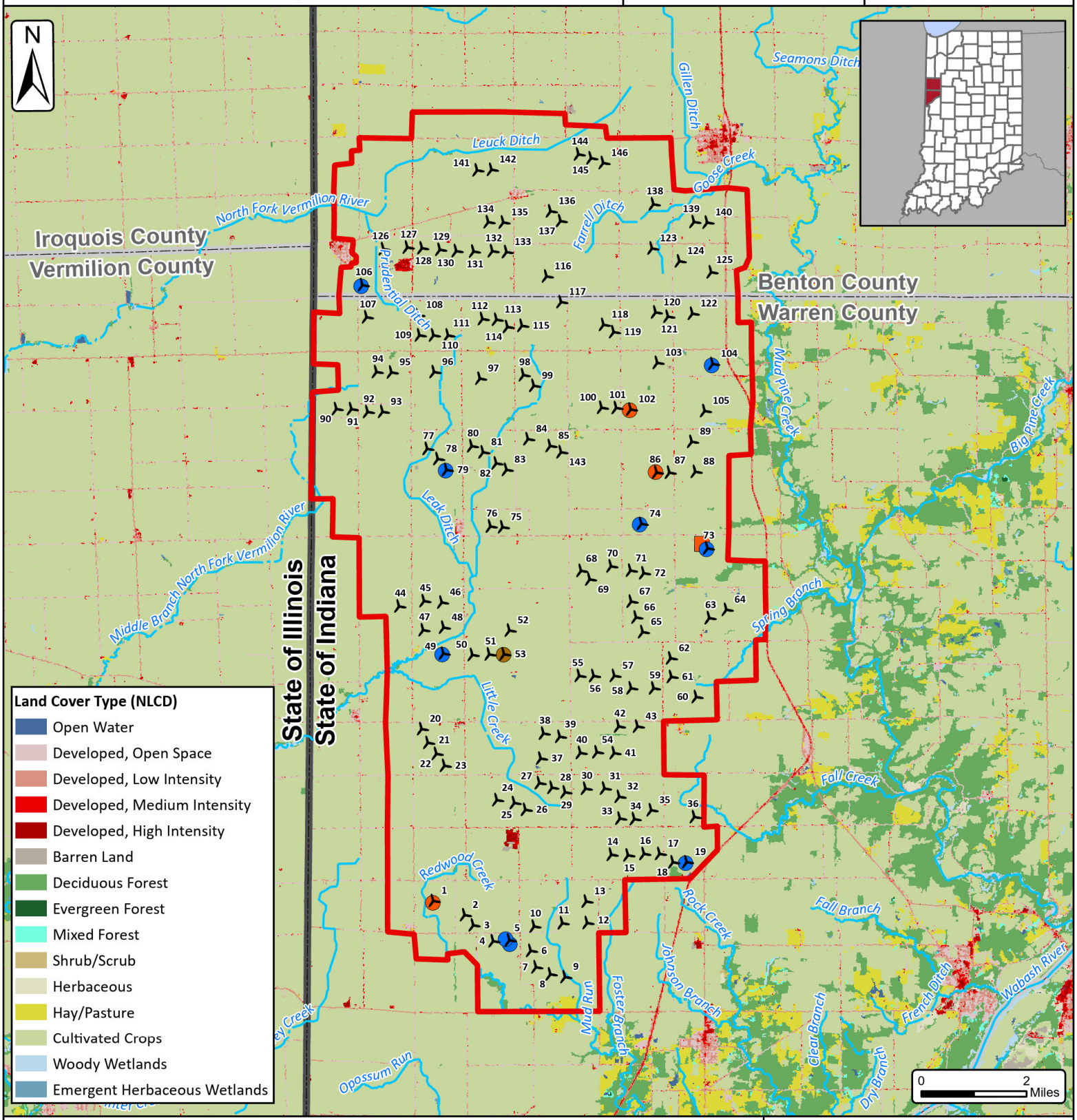
Warren and Benton Counties, Indiana

Client:

Jordan Creek Wind Farm, LLC

Issue Date:
12/13/2023

Atwell, LLC Project:
20004828



Land Cover Type (NLCD)

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Herbaceous
- Hay/Pasture
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

- Indiana bat (federally and state-listed endangered)
- Little brown bat (state-listed endangered*)
- Evening bat (state-listed endangered)
- Indiana bat (Incidental find; federally and state-listed endangered)
- As-Built Turbine Locations (4/16/2020)
- Watercourse (NHD)
- Project Boundary (06/06/2019) (~70,904 acres)
- State Boundary
- County Boundary

*As of the preparation of this report, little brown bat is under review for federal listing status.

Source: USGS NLCD Land Cover

ATWELL

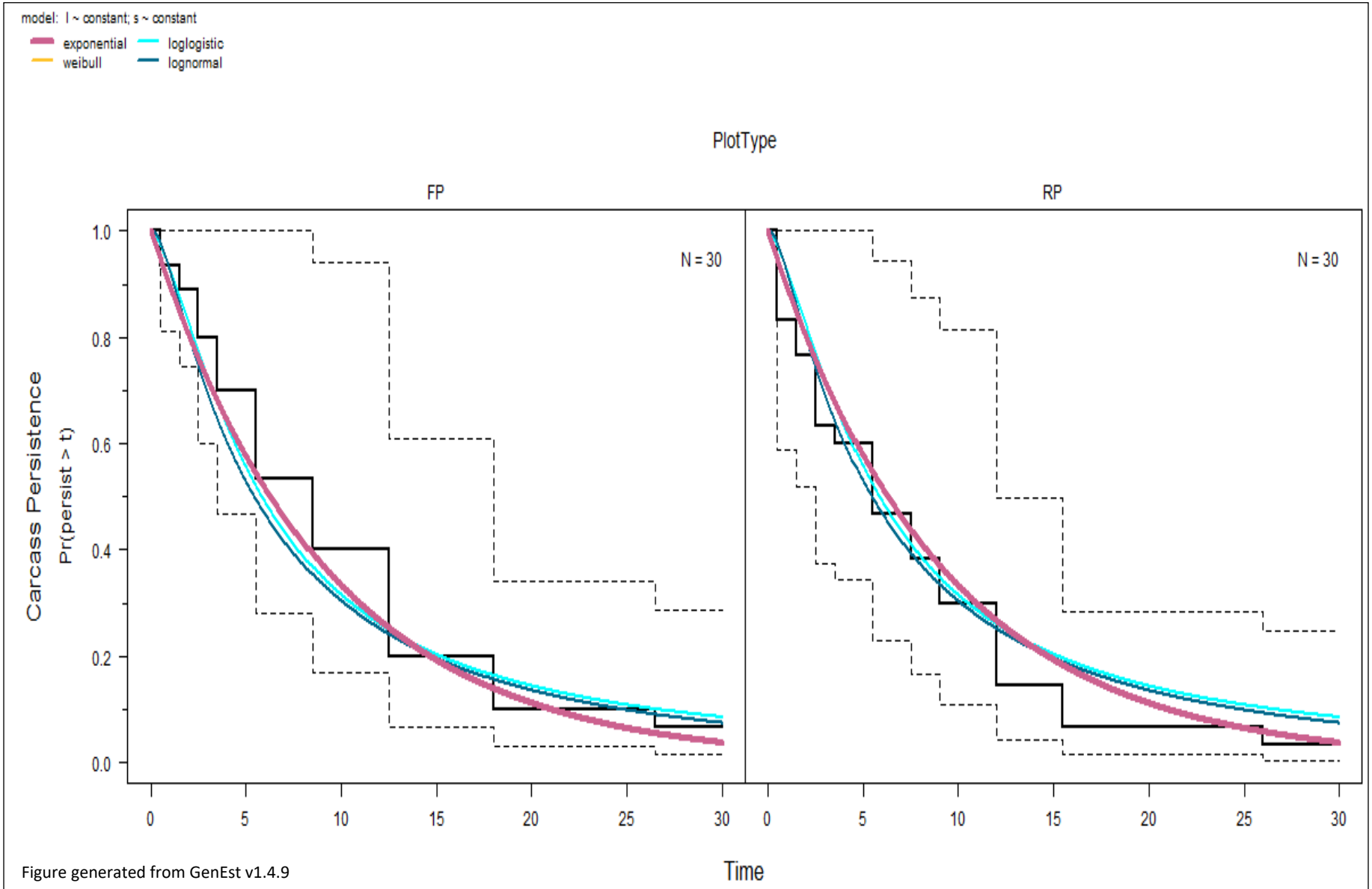


Figure generated from GenEst v1.4.9

Spring Bat Carcass Persistence Rates by Plot Type

Figure 7a

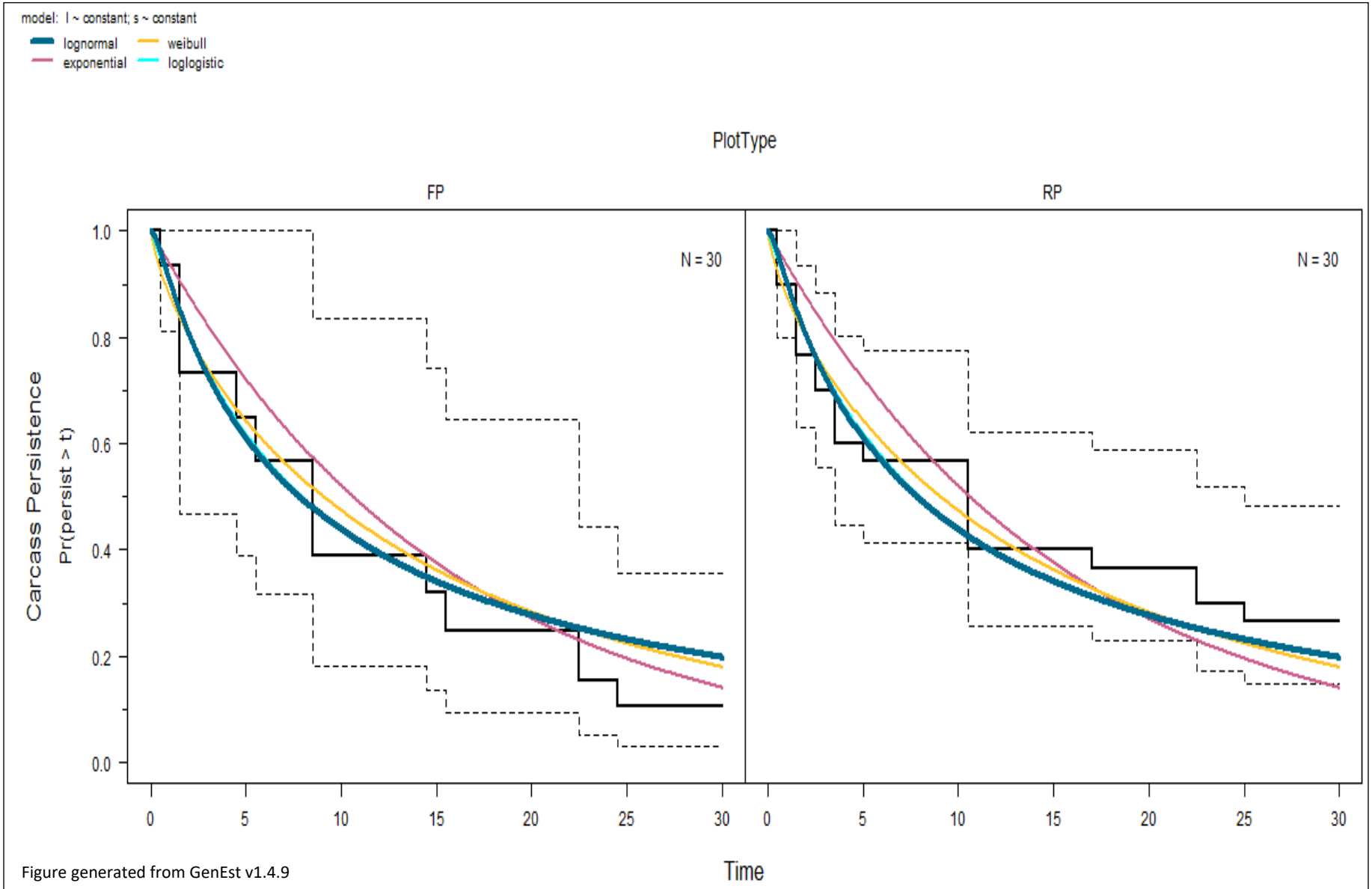
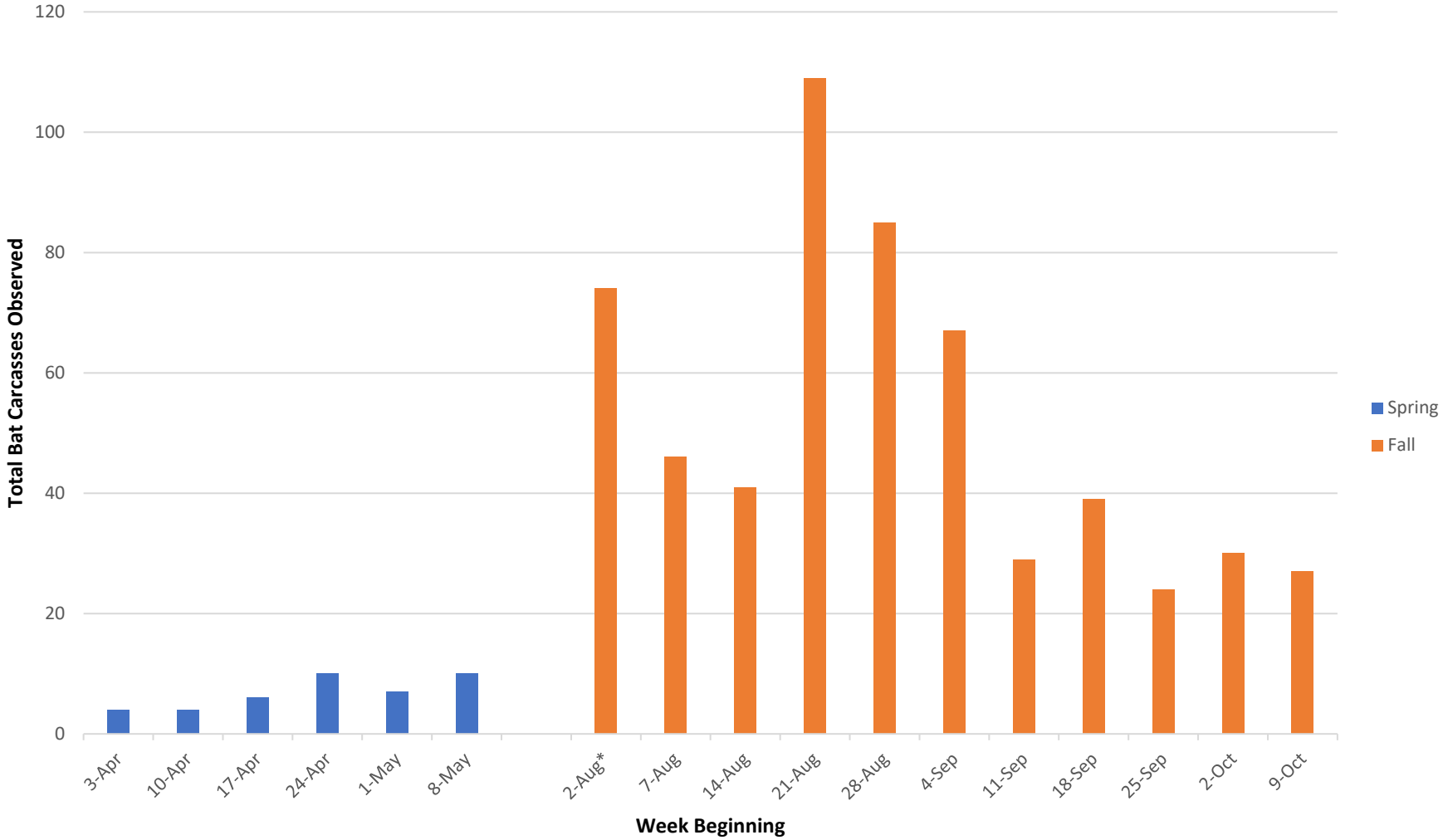


Figure generated from GenEst v1.4.9

Fall Bat Carcass Persistence Rates by Plot Type

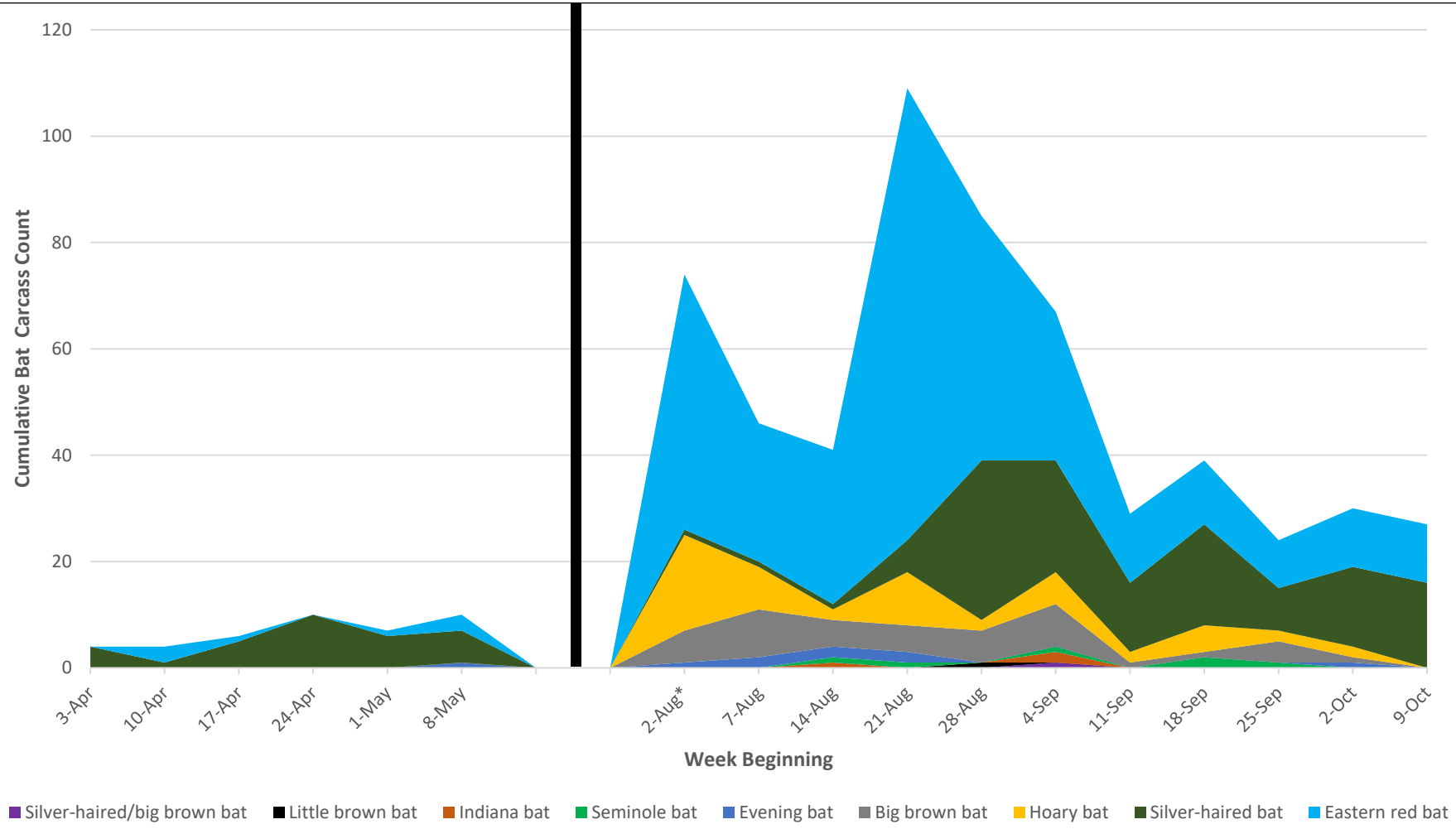
Figure 7b



1-Apr to 15-May = spring season (3.0 m/s cut-in; turbines searched weekly)
1-Aug to 15-Oct = fall season (6.0 m/s cut-in; turbines searched every two days)
* The week beginning August 2nd is a short week (5 days) as clearance sweeps were conducted at the beginning of the week (July 31 and August 1). Data from clearance sweeps are excluded from this figure.

Total Bat Carcass Discoveries by Week at Jordan Creek Wind Energy Center

Figure 8



1-Apr to 15-May = spring season (3.0 m/s cut-in; turbines searched weekly)
1-Aug to 15-Oct = fall season (6.0 m/s cut-in; turbines searched every two days)
* The week beginning August 2nd is a short week (5 days) as clearance sweeps were conducted at the beginning of the week (July 31 and August 1). Data from clearance sweeps are excluded from this figure.

Cumulative Bat Species Carcass Discoveries by Week at Jordan Creek Wind Energy Center

Figure 9

APPENDICES

APPENDIX A-1

LIST OF BAT CARCASSES LOCATED DURING POST-CONSTRUCTION MONITORING SURVEYS AT JORDAN CREEK WIND ENERGY CENTER

List of Bat Carcasses Located during Post-construction Monitoring Surveys at Jordan Creek Wind Energy Center

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Silver-haired bat	*Lasionycteris noctivagans*	20230404_SHBA_128_1	128	RP	04/04/23	4.5	205	16T 458662 4482259	I	41.3	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230406_SHBA_111_1	111	FP	04/06/23	9.7	217	16T 459432 4479581	I	40.0	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230407_SHBA_086_1	86	FP	04/07/23	43.2	124	16T 465813 4475320	I	42.5	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230407_SHBA_118_1	118	RP	04/07/23	4.1	290	16T 464190 4479874	P	39.8	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230411_SHBA_025_1	25	FP	04/11/23	45.9	341	16T 461325 4465326	I	41.0	A	U	No
Eastern red bat	*Lasiurus borealis*	20230411_ERBA_104_1	104	FP	04/11/23	28.1	9	16T 467527 4478675	I	39.8	A	M	No
Eastern red bat	*Lasiurus borealis*	20230412_ERBA_089_1	89	FP	04/12/23	51.3	61	16T 466905 4476299	I	38.5	A	M	No
Eastern red bat	*Lasiurus borealis*	20230413_ERBA_010_1	10	RP	04/13/23	3.4	153	16T 461913 4461500	I	42.7	A	F	No
Eastern red bat	*Lasiurus borealis*	20230417_ERBA_074_1	74	FP	04/17/23	14.9	180	16T 465298 4473764	I	39.3	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230418_SHBA_016_1	16	FP	04/18/23	29.0	38	16T 465307 4463716	I	42.1	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230418_SHBA_025_1	25	FP	04/18/23	42.8	18	16T 461353 4465323	I	41.4	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230420_SHBA_046_1	46	FP	04/20/23	58.4	28	16T 459202 4471481	I	43.8	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230420_SHBA_050_1	50	RP	04/20/23	65.8	58	16T 460151 4469853	I	40.1	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230420_SHBA_051_1	51	FP	04/20/23	50.1	327	16T 460586 4469872	I	41.9	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230424_SHBA_070_1	70	FP	04/24/23	41.1	15	16T 464370 4472528	I	41.5	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230424_SHBA_091_1	91	RP	04/24/23	35.3	307	16T 456437 4477384	I	41.5	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230424_SHBA_115_1	115	FP	04/24/23	25.2	301	16T 461678 4479878	I	38.9	A	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Silver-haired bat	*Lasionycteris noctivagans*	20230425_SHBA_084_1	84	FP	04/25/23	39.0	273	16T 461814 4476401	P	43.3	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230425_SHBA_084_2	84	FP	04/25/23	32.7	47	16T 461877 4476421	P	31.2	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230425_SHBA_084_3	84	FP	04/25/23	38.0	293	16T 461818 4476414	P	41.7	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230425_SHBA_098_1	98	FP	04/25/23	26.3	334	16T 461720 4478379	P	41.0	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230426_SHBA_041_1	41	FP	04/26/23	31.3	307	16T 464380 4466798	D	NA	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230427_SHBA_049_1	49	RP	04/27/23	6.1	258	16T 459203 4469865	I	41.0	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230427_SHBA_104_1	104	FP	04/27/23	56.3	328	16T 467493 4478695	I	42.4	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230502_SHBA_006_1	6	RP	05/02/23	5.6	290	16T 461795 4460762	I	42.6	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230502_SHBA_130_1	130	FP	05/02/23	31.5	309	16T 459687 4482186	P	49.4	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230502_SHBA_137_1	137	FP	05/02/23	49.1	321	16T 462876 4483093	I	41.6	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230503_SHBA_123_1	123	FP	05/03/23	37.8	332	16T 465679 4482227	I	40.6	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230503_SHBA_123_2	123	FP	05/03/23	46.9	352	16T 465690 4482240	P	41.7	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230503_SHBA_140_1	140	FP	05/03/23	15.2	34	16T 467399 4482983	F	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230504_ERBA_055_1	55	FP	05/04/23	37.3	337	16T 463344 4469185	P	40.7	A	M	No
Evening bat	*Nycticeius humeralis*	20230508_EVBA_005_1	5	FP	05/08/23	2.2	159	16T 461152 4461085	P	30.3	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230508_SHBA_009_1	9	RP	05/08/23	5.1	279	16T 462837 4459951	I	40.3	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230508_SHBA_091_1	91	RP	05/08/23	90.6	79	16T 456554 4477380	I	39.3	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230509_SHBA_026_1	26	FP	05/09/23	36.8	356	16T 461675 4465108	P	38.7	A	U	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Silver-haired bat	*Lasionycteris noctivagans*	20230509_SHBA_034_1	34	RP	05/09/23	56.8	182	16T 465002 4464700	I	41.9	A	F	No
Eastern red bat	*Lasiurus borealis*	20230510_ERBA_030_1	30	FP	05/10/23	10.7	51	16T 463528 4465708	I	40.2	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230510_SHBA_041_1	41	FP	05/10/23	47.8	293	16T 464361 4466798	I	42.3	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230511_SHBA_097_1	97	RP	05/11/23	74.0	227	16T 460344 4478211	I	38.1	A	F	No
Eastern red bat	*Lasiurus borealis*	20230511_ERBA_105_1	105	FP	05/11/23	39.9	278	16T 467224 4477217	I	42.1	A	F	No
Eastern red bat	*Lasiurus borealis*	20230511_ERBA_121_1	121	RP	05/11/23	6.5	176	16T 466167 4480099	I	39.2	A	F	No
Hoary bat	*Lasiurus cinereus*	20230802_HOBA_005_1	5	FP	08/02/23	41.3	345	16T 461141 4461127	I	48.1	A	F	No
Big brown bat	*Eptesicus fuscus*	20230802_BBBA_013_1	13	RP	08/02/23	5.9	20	16T 463513 4462258	D	46.9	U	U	No
Eastern red bat	*Lasiurus borealis*	20230802_ERBA_032_1	32	RP	08/02/23	26.9	328	16T 464534 4465469	I	39.3	U	M	No
Eastern red bat	*Lasiurus borealis*	20230802_ERBA_041_1	41	FP	08/02/23	55.6	302	16T 464358 4466809	P	39.4	U	M	No
Eastern red bat	*Lasiurus borealis*	20230802_ERBA_054_1	54	RP	08/02/23	21.7	186	16T 463874 4466790	P	36.6	U	M	No
Big brown bat	*Eptesicus fuscus*	20230802_BBBA_055_1	55	FP	08/02/23	34.5	302	16T 463329 4469169	I	45.9	U	F	No
Eastern red bat	*Lasiurus borealis*	20230802_ERBA_055_1	55	FP	08/02/23	6.0	75	16T 463364 4469152	I	37.9	U	M	No
Hoary bat	*Lasiurus cinereus*	20230802_HOBA_056_1	56	FP	08/02/23	46.9	30	16T 463823 4469184	I	51.1	A	M	No
Hoary bat	*Lasiurus cinereus*	20230802_HOBA_056_2	56	FP	08/02/23	32.6	321	16T 463779 4469169	P	49.2	U	U	No
Hoary bat	*Lasiurus cinereus*	20230802_HOBA_059_1	59	RP	08/02/23	25.9	217	16T 465613 4468729	I	54.6	A	M	No
Eastern red bat	*Lasiurus borealis*	20230802_ERBA_074_1	74	FP	08/02/23	39.1	282	16T 465260 4473787	I	39.8	U	F	No
Hoary bat	*Lasiurus cinereus*	20230802_HOBA_078_1	78	FP	08/02/23	11.9	178	16T 459093 4475805	D	49.4	U	U	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230802_ERBA_096_1	96	FP	08/02/23	3.2	197	16T 459000 4478472	I	41.3	A	F	No
Hoary bat	*Lasiurus cinereus*	20230802_HOBA_125_1	125	FP	08/02/23	34.3	206	16T 467484 4481419	I	50.8	J	F	No
Eastern red bat	*Lasiurus borealis*	20230802_ERBA_139_1	139	RP	08/02/23	25.7	217	16T 466972 4482972	I	36.8	U	F	No
Eastern red bat	*Lasiurus borealis*	20230802_ERBA_145_1	145	RP	08/02/23	9.4	339	16T 463853 4484975	I	34.5	U	M	No
Eastern red bat	*Lasiurus borealis*	20230803_ERBA_021_1	21	RP	08/03/23	78.4	0	16T 458713 4467223	P	42.9	U	F	No
Eastern red bat	*Lasiurus borealis*	20230803_ERBA_028_1	28	RP	08/03/23	9.6	6	16T 462496 4465750	I	43.8	A	F	No
Eastern red bat	*Lasiurus borealis*	20230803_ERBA_046_1	46	FP	08/03/23	35.9	83	16T 459210 4471434	I	40.7	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230803_SHBA_046_1	46	FP	08/03/23	12.8	324	16T 459167 4471440	P	39.5	U	U	No
Big brown bat	*Eptesicus fuscus*	20230803_BBBA_048_1	48	FP	08/03/23	45.0	256	16T 459180 4470651	I	45.5	U	U	No
Eastern red bat	*Lasiurus borealis*	20230803_ERBA_048_1	48	FP	08/03/23	43.1	45	16T 459254 4470692	I	40.8	U	U	No
Hoary bat	*Lasiurus cinereus*	20230803_HOBA_048_1	48	FP	08/03/23	25.2	165	16T 459230 4470637	I	50.2	U	U	No
Eastern red bat	*Lasiurus borealis*	20230803_ERBA_051_1	51	FP	08/03/23	18.1	89	16T 460631 4469830	I	40.8	U	F	No
Hoary bat	*Lasiurus cinereus*	20230803_HOBA_104_1	104	FP	08/03/23	6.0	62	16T 467528 4478650	P	54.8	U	U	No
Big brown bat	*Eptesicus fuscus*	20230804_BBBA_070_1	70	FP	08/04/23	39.4	262	16T 464320 4472483	P	53.3	U	U	No
Eastern red bat	*Lasiurus borealis*	20230804_ERBA_073_1	73	FP	08/04/23	17.3	274	16T 467296 4473013	I	40.9	U	M	No
Big brown bat	*Eptesicus fuscus*	20230804_BBBA_140_1	140	FP	08/04/23	8.5	260	16T 467382 4482969	P	46.4	U	U	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_016_1	16	FP	08/05/23	30.5	293	16T 465261 4463705	I	40.4	A	F	No
Hoary bat	*Lasiurus cinereus*	20230805_HOBA_016_1	16	FP	08/05/23	48.7	331	16T 465266 4463736	I	51.8	A	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_046_1	46	FP	08/05/23	2.6	167	16T 459175 4471427	I	40.4	U	F	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_046_2	46	FP	08/05/23	48.9	332	16T 459152 4471473	I	41.0	J	F	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_048_1	48	FP	08/05/23	15.8	312	16T 459212 4470672	I	37.9	A	M	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_048_2	48	FP	08/05/23	14.9	194	16T 459220 4470647	I	40.1	J	F	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_048_3	48	FP	08/05/23	31.6	206	16T 459210 4470633	I	39.3	J	M	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_051_1	51	FP	08/05/23	28.5	321	16T 460595 4469852	P	40.1	U	U	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_052_1	52	RP	08/05/23	1.9	199	16T 461234 4470553	I	41.8	J	F	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_068_1	68	FP	08/05/23	9.5	335	16T 463436 4472369	I	40.1	J	M	No
Hoary bat	*Lasiurus cinereus*	20230805_HOBA_068_1	68	FP	08/05/23	50.2	265	16T 463390 4472356	P	50.7	J	M	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_069_1	69	RP	08/05/23	24.5	269	16T 463680 4472095	I	41.4	J	F	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_084_1	84	FP	08/05/23	54.4	227	16T 461813 4476362	I	39.3	A	M	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_084_2	84	FP	08/05/23	24.0	275	16T 461829 4476401	I	40.2	J	F	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_098_1	98	FP	08/05/23	12.8	130	16T 461741 4478347	I	39.1	J	F	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_104_1	104	FP	08/05/23	17.0	21	16T 467529 4478663	I	39.0	J	F	No
Evening bat	*Nycticeius humeralis*	20230805_EVBA_104_1	104	FP	08/05/23	13.5	191	16T 467520 4478634	I	33.5	J	M	No
Hoary bat	*Lasiurus cinereus*	20230805_HOBA_104_1	104	FP	08/05/23	6.4	296	16T 467517 4478650	D	56.0	U	U	No
Big brown bat	*Eptesicus fuscus*	20230805_BBBA_105_1	105	FP	08/05/23	48.5	303	16T 467223 4477238	I	49.2	J	F	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_105_1	105	FP	08/05/23	40.0	216	16T 467240 4477179	I	38.4	A	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_110_1	110	FP	08/05/23	8.6	285	16T 458985 4479597	D	37.1	U	U	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_110_2	110	FP	08/05/23	9.7	88	16T 459003 4479595	P	38.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_111_1	111	FP	08/05/23	55.5	216	16T 459405 4479544	I	38.5	J	M	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_111_2	111	FP	08/05/23	28.1	287	16T 459411 4479597	I	37.1	A	M	No
Hoary bat	*Lasiurus cinereus*	20230805_HOBA_111_1	111	FP	08/05/23	55.6	226	16T 459398 4479550	I	51.5	A	M	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_135_1	135	RP	08/05/23	57.9	320	16T 461120 4483072	D	36.5	U	U	No
Eastern red bat	*Lasiurus borealis*	20230805_ERBA_137_1	137	FP	08/05/23	18.6	184	16T 462905 4483036	I	40.4	A	F	No
Hoary bat	*Lasiurus cinereus*	20230806_HOBA_003_1	3	FP	08/06/23	5.3	323	16T 460048 4461560	P	56.6	J	F	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_005_1	5	FP	08/06/23	36.0	305	16T 461122 4461108	I	38.4	A	M	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_012_1	12	RP	08/06/23	32.4	180	16T 463534 4461563	P	42.5	A	F	No
Hoary bat	*Lasiurus cinereus*	20230806_HOBA_015_1	15	RP	08/06/23	11.8	170	16T 464803 4463642	I	53.9	J	M	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_025_2	25	FP	08/06/23	4.7	197	16T 461338 4465278	I	41.5	J	F	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_025_1	25	FP	08/06/23	39.4	269	16T 461300 4465282	P	40.0	J	F	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_026_1	26	FP	08/06/23	26.6	147	16T 461692 4465049	I	41.0	J	F	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_058_1	58	RP	08/06/23	15.9	190	16T 464937 4468741	I	38.7	J	M	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_062_1	62	RP	08/06/23	21.3	186	16T 466153 4469642	I	39.0	J	F	No
Hoary bat	*Lasiurus cinereus*	20230806_HOBA_066_1	66	RP	08/06/23	60.8	271	16T 465049 4470921	I	52.2	A	F	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_067_1	67	RP	08/06/23	43.4	273	16T 464922 4471408	I	40.6	J	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_073_1	73	FP	08/06/23	30.6	239	16T 467287 4472996	I	42.3	J	F	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_074_1	74	FP	08/06/23	3.8	325	16T 465296 4473782	I	38.6	J	F	No
Hoary bat	*Lasiurus cinereus*	20230806_HOBA_074_1	74	FP	08/06/23	48.9	289	16T 465252 4473795	I	52.5	A	F	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_081_1	81	RP	08/06/23	12.6	276	16T 460465 4476009	I	38.5	A	M	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_094_1	94	FP	08/06/23	6.6	320	16T 457235 4478497	I	37.6	J	M	No
Eastern red bat	*Lasiurus borealis*	20230806_ERBA_096_1	96	FP	08/06/23	43.3	49	16T 459034 4478503	I	39.2	A	M	No
Hoary bat	*Lasiurus cinereus*	20230806_HOBA_123_1	123	FP	08/06/23	21.4	223	16T 465682 4482178	F	49.8	U	U	No
Hoary bat	*Lasiurus cinereus*	20230806_HOBA_138_1	138	FP	08/06/23	37.9	156	16T 465766 4483507	I	56.0	J	U	No
Hoary bat	*Lasiurus cinereus*	20230807_HOBA_070_1	70	FP	08/07/23	39.2	265	16T 464320 4472485	I	52.9	A	F	No
Eastern red bat	*Lasiurus borealis*	20230807_ERBA_105_1	105	FP	08/07/23	51.9	213	16T 467235 4477168	I	41.1	A	F	No
Eastern red bat	*Lasiurus borealis*	20230807_ERBA_107_1	107	RP	08/07/23	0.3	92	16T 456953 4480167	D	38.6	U	U	No
Hoary bat	*Lasiurus cinereus*	20230807_HOBA_107_1	107	RP	08/07/23	2.1	341	16T 456952 4480169	I	51.8	A	M	No
Eastern red bat	*Lasiurus borealis*	20230807_ERBA_136_1	136	FP	08/07/23	50.3	227	16T 462567 4483323	I	39.3	A	M	No
Eastern red bat	*Lasiurus borealis*	20230808_ERBA_007_1	7	RP	08/08/23	3.5	230	16T 461955 4460254	I	NA	J	F	No
Eastern red bat	*Lasiurus borealis*	20230808_ERBA_009_1	9	RP	08/08/23	2.1	66	16T 462844 4459951	I	38.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230808_ERBA_070_1	70	FP	08/08/23	52.9	231	16T 464318 4472455	I	39.6	A	M	No
Eastern red bat	*Lasiurus borealis*	20230808_ERBA_125_1	125	FP	08/08/23	43.5	73	16T 467541 4481462	P	41.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230808_ERBA_125_2	125	FP	08/08/23	40.7	345	16T 467489 4481489	P	41.4	U	U	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230808_ERBA_140_1	140	FP	08/08/23	42.1	164	16T 467402 4482930	P	40.8	U	U	No
Eastern red bat	*Lasiurus borealis*	20230809_ERBA_034_1	34	RP	08/09/23	4.5	247	16T 465000 4464755	I	37.7	A	F	No
Hoary bat	*Lasiurus cinereus*	20230809_HOBA_046_1	46	FP	08/09/23	41.7	103	16T 459215 4471420	P	52.6	J	U	No
Evening bat	*Nycticeius humeralis*	20230809_EVBA_106_1	106	RP	08/09/23	8.9	256	16T 456825 4481147	I	35.0	J	M	No
Hoary bat	*Lasiurus cinereus*	20230810_HOBA_004_1	4	FP	08/10/23	56.0	327	16T 460625 4461113	D	52.5	U	U	No
Hoary bat	*Lasiurus cinereus*	20230810_HOBA_138_1	138	FP	08/10/23	16.3	141	16T 465761 4483529	P	51.3	U	U	No
Big brown bat	*Eptesicus fuscus*	20230811_BBBA_024_1	24	RP	08/11/23	13.5	182	16T 460806 4465362	I	47.8	J	M	No
Eastern red bat	*Lasiurus borealis*	20230811_ERBA_025_1	25	FP	08/11/23	19.7	280	16T 461320 4465286	P	42.1	A	F	No
Eastern red bat	*Lasiurus borealis*	20230811_ERBA_046_1	46	FP	08/11/23	56.6	122	16T 459222 4471399	I	38.7	A	M	No
Eastern red bat	*Lasiurus borealis*	20230811_ERBA_046_2	46	FP	08/11/23	6.4	328	16T 459171 4471435	I	38.0	A	F	No
Eastern red bat	*Lasiurus borealis*	20230811_ERBA_046_3	46	FP	08/11/23	9.2	306	16T 459167 4471435	I	42.0	A	M	No
Evening bat	*Nycticeius humeralis*	20230811_EVBA_049_1	49	RP	08/11/23	7.6	308	16T 459203 4469871	I	33.2	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230811_SHBA_050_1	50	RP	08/11/23	11.9	8	16T 460097 4469830	P	44.6	U	F	No
Big brown bat	*Eptesicus fuscus*	20230811_BBBA_102_1	102	FP	08/11/23	41.3	56	16T 465037 4477301	I	49.0	A	F	No
Eastern red bat	*Lasiurus borealis*	20230811_ERBA_104_1	104	FP	08/11/23	48.6	72	16T 467569 4478662	I	36.6	A	M	No
Eastern red bat	*Lasiurus borealis*	20230812_ERBA_001_1	1	FP	08/12/23	36.7	14	16T 458844 4462346	I	40.0	A	F	No
Big brown bat	*Eptesicus fuscus*	20230812_BBBA_003_1	3	FP	08/12/23	41.5	163	16T 460063 4461516	I	34.8	J	M	No
Big brown bat	*Eptesicus fuscus*	20230812_BBBA_005_1	5	FP	08/12/23	12.8	90	16T 461164 4461087	I	46.8	J	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Hoary bat	*Lasiurus cinereus*	20230812_HOBA_055_1	55	FP	08/12/23	45.6	24	16T 463377 4469192	P	54.3	A	U	No
Eastern red bat	*Lasiurus borealis*	20230812_ERBA_056_1	56	FP	08/12/23	17.0	167	16T 463803 4469127	P	38.6	A	U	No
Hoary bat	*Lasiurus cinereus*	20230812_HOBA_067_1	67	RP	08/12/23	3.7	244	16T 464962 4471404	I	47.3	J	M	No
Eastern red bat	*Lasiurus borealis*	20230812_ERBA_079_2	79	RP	08/12/23	4.9	355	16T 459354 4475483	I	38.0	J	M	No
Eastern red bat	*Lasiurus borealis*	20230812_ERBA_079_3	79	RP	08/12/23	3.3	29	16T 459356 4475481	I	37.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230812_ERBA_079_1	79	RP	08/12/23	32.0	4	16T 459357 4475510	I	39.8	J	M	No
Eastern red bat	*Lasiurus borealis*	20230812_ERBA_086_1	86	FP	08/12/23	19.4	106	16T 465796 4475339	I	38.1	A	M	No
Eastern red bat	*Lasiurus borealis*	20230812_ERBA_125_1	125	FP	08/12/23	27.8	39	16T 467517 4481471	P	40.6	U	U	No
Eastern red bat	*Lasiurus borealis*	20230812_ERBA_138_1	138	FP	08/12/23	8.9	278	16T 465742 4483543	I	38.5	A	M	No
Big brown bat	*Eptesicus fuscus*	20230812_BBBA_140_1	140	FP	08/12/23	16.8	258	16T 467374 4482967	P	46.0	J	M	No
Big brown bat	*Eptesicus fuscus*	20230813_BBBA_048_1	48	FP	08/13/23	7.9	32	16T 459228 4470668	I	47.3	A	F	No
Big brown bat	*Eptesicus fuscus*	20230813_BBBA_052_1	52	RP	08/13/23	3.6	272	16T 461231 4470555	D	41.6	U	U	No
Eastern red bat	*Lasiurus borealis*	20230813_ERBA_084_1	84	FP	08/13/23	29.9	70	16T 461881 4476409	I	40.9	J	F	No
Big brown bat	*Eptesicus fuscus*	20230813_BBBA_104_1	104	FP	08/13/23	7.4	59	16T 467529 4478651	I	46.6	A	M	No
Eastern red bat	*Lasiurus borealis*	20230813_ERBA_104_1	104	FP	08/13/23	8.2	62	16T 467530 4478651	I	38.4	A	M	No
Hoary bat	*Lasiurus cinereus*	20230813_HOBA_105_1	105	FP	08/13/23	45.2	136	16T 467295 4477179	I	53.4	A	M	No
Big brown bat	*Eptesicus fuscus*	20230813_BBBA_115_1	115	FP	08/13/23	47.1	354	16T 461695 4479912	I	43.3	A	F	No
Eastern red bat	*Lasiurus borealis*	20230813_ERBA_120_1	120	RP	08/13/23	31.3	184	16T 465787 4480207	I	40.7	J	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Big brown bat	*Eptesicus fuscus*	20230814_BBBA_003_1	3	FP	08/14/23	31.9	325	16T 460033 4461582	I	51.3	J	M	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_004_1	4	FP	08/14/23	11.2	126	16T 460664 4461059	I	39.8	U	U	No
Big brown bat	*Eptesicus fuscus*	20230814_BBBA_005_1	5	FP	08/14/23	46.1	325	16T 461125 4461125	I	51.0	A	U	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_005_1	5	FP	08/14/23	47.0	326	16T 461125 4461126	I	40.1	J	F	No
Big brown bat	*Eptesicus fuscus*	20230814_BBBA_007_1	7	RP	08/14/23	3.2	329	16T 461956 4460259	I	43.7	A	M	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_031_1	31	RP	08/14/23	13.6	343	16T 464096 4465713	I	41.5	A	F	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_055_1	55	FP	08/14/23	2.8	335	16T 463357 4469153	I	35.6	U	F	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_055_2	55	FP	08/14/23	42.0	136	16T 463387 4469120	I	36.8	A	M	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_057_1	57	RP	08/14/23	1.5	254	16T 464429 4469141	I	35.7	J	F	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_059_1	59	RP	08/14/23	82.7	255	16T 465549 4468728	D	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_073_1	73	FP	08/14/23	21.7	120	16T 467332 4473001	I	38.3	U	F	No
Evening bat	*Nycticeius humeralis*	20230814_EVBA_074_1	74	FP	08/14/23	23.5	295	16T 465277 4473789	I	34.1	U	M	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_077_1	77	RP	08/14/23	21.8	266	16T 458748 4476127	I	40.4	J	F	No
Evening bat	*Nycticeius humeralis*	20230814_EVBA_079_1	79	RP	08/14/23	12.4	17	16T 459358 4475490	I	35.3	J	M	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_089_1	89	FP	08/14/23	40.5	168	16T 466868 4476235	I	38.7	A	F	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_128_1	128	RP	08/14/23	7.1	326	16T 458660 4482269	I	40.9	J	F	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_138_1	138	FP	08/14/23	42.5	297	16T 465713 4483561	I	39.3	A	M	No
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_142_1	142	RP	08/14/23	50.0	353	16T 460805 4484692	I	NA	U	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Big brown bat	*Eptesicus fuscus*	20230815_BBBA_025_1	25	FP	08/15/23	6.1	25	16T 461342 4465288	I	48.3	J	F	No
Eastern red bat	*Lasiurus borealis*	20230815_ERBA_111_1	111	FP	08/15/23	36.1	304	16T 459408 4479609	I	38.8	A	M	No
Eastern red bat	*Lasiurus borealis*	20230815_ERBA_115_1	115	FP	08/15/23	16.7	141	16T 461710 4479852	P	NA	U	F	No
Hoary bat	*Lasiurus cinereus*	20230815_HOBA_115_1	115	FP	08/15/23	28.9	228	16T 461678 4479846	I	51.9	A	F	No
Eastern red bat	*Lasiurus borealis*	20230816_ERBA_001_1	1	FP	08/16/23	47.9	47	16T 458870 4462343	P	39.1	J	M	No
Eastern red bat	*Lasiurus borealis*	20230816_ERBA_123_1	123	FP	08/16/23	44.5	325	16T 465671 4482230	I	39.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230816_ERBA_124_1	124	FP	08/16/23	20.6	149	16T 466541 4481777	I	40.0	J	F	No
Eastern red bat	*Lasiurus borealis*	20230816_ERBA_125_1	125	FP	08/16/23	44.6	256	16T 467456 4481439	I	38.0	U	M	No
Eastern red bat	*Lasiurus borealis*	20230816_ERBA_140_1	140	FP	08/16/23	25.0	215	16T 467376 4482950	I	30.8	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230817_SHBA_102_1	102	FP	08/17/23	64.8	310	16T 464953 4477320	D	NA	U	F	No
Eastern red bat	*Lasiurus borealis*	20230817_ERBA_105_1	105	FP	08/17/23	45.9	295	16T 467222 4477231	I	39.8	A	F	No
Indiana bat	*Myotis sodalis*	20230818_INBA_001_1	1	FP	08/18/23	30.7	146	16T 458852 4462285	I	38.4	U	M	No
Eastern red bat	*Lasiurus borealis*	20230818_ERBA_005_1	5	FP	08/18/23	46.2	342	16T 461137 4461131	I	40.8	U	F	No
Eastern red bat	*Lasiurus borealis*	20230818_ERBA_041_1	41	FP	08/18/23	22.6	49	16T 464422 4466794	I	41.2	A	F	No
Hoary bat	*Lasiurus cinereus*	20230818_HOBA_125_1	125	FP	08/18/23	26.2	31	16T 467513 4481472	I	51.1	A	M	No
Seminole bat	*Lasiurus seminolus*	20230818_SEBA_140_1	140	FP	08/18/23	17.3	303	16T 467376 4482980	I	41.9	A	F	No
Eastern red bat	*Lasiurus borealis*	20230819_ERBA_137_1	137	FP	08/19/23	43.6	52	16T 462941 4483081	P	41.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230820_ERBA_056_1	56	FP	08/20/23	50.4	321	16T 463768 4469183	I	41.7	U	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230820_ERBA_067_1	67	RP	08/20/23	5.8	294	16T 464960 4471408	I	39.3	U	M	No
Eastern red bat	*Lasiurus borealis*	20230820_ERBA_071_1	71	RP	08/20/23	3.5	99	16T 464957 4472354	I	40.0	U	M	No
Big brown bat	*Eptesicus fuscus*	20230820_BBBA_074_1	74	FP	08/20/23	47.9	321	16T 465268 4473816	D	47.5	U	U	No
Eastern red bat	*Lasiurus borealis*	20230820_ERBA_074_1	74	FP	08/20/23	29.1	67	16T 465325 4473790	P	38.3	U	U	No
Eastern red bat	*Lasiurus borealis*	20230820_ERBA_125_1	125	FP	08/20/23	40.3	114	16T 467536 4481433	D	42.0	J	F	No
Eastern red bat	*Lasiurus borealis*	20230821_ERBA_016_1	16	FP	08/21/23	18.4	260	16T 465271 4463690	I	40.5	J	M	No
Eastern red bat	*Lasiurus borealis*	20230821_ERBA_022_1	22	RP	08/21/23	46.8	181	16T 458968 4466758	I	39.6	A	F	No
Hoary bat	*Lasiurus cinereus*	20230821_HOBA_048_1	48	FP	08/21/23	50.7	292	16T 459177 4470681	I	54.6	A	F	No
Eastern red bat	*Lasiurus borealis*	20230821_ERBA_101_1	101	RP	08/21/23	4.2	63	16T 464563 4477331	I	40.4	A	M	No
Eastern red bat	*Lasiurus borealis*	20230821_ERBA_113_1	113	FP	08/21/23	41.4	277	16T 460883 4480063	I	39.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230821_ERBA_115_1	115	FP	08/21/23	35.3	322	16T 461678 4479893	D	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230821_ERBA_136_1	136	FP	08/21/23	57.5	298	16T 462553 4483384	P	37.5	U	M	No
Eastern red bat	*Lasiurus borealis*	20230821_ERBA_143_1	143	RP	08/21/23	64.6	272	16T 462797 4475993	I	49.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_002_1	2	RP	08/22/23	55.0	278	16T 459734 4461878	I	38.8	A	M	No
Big brown bat	*Eptesicus fuscus*	20230822_BBBA_003_1	3	FP	08/22/23	30.9	289	16T 460022 4461566	I	46.7	A	F	No
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_005_1	5	FP	08/22/23	30.2	272	16T 461121 4461088	P	39.2	U	U	No
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_012_1	12	RP	08/22/23	17.7	191	16T 463531 4461578	I	39.6	J	M	No
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_066_1	66	RP	08/22/23	63.8	271	16T 465046 4470921	I	35.5	J	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_066_2	66	RP	08/22/23	29.7	270	16T 465080 4470920	I	41.4	J	F	No
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_071_1	71	RP	08/22/23	35.7	184	16T 464951 4472319	I	38.7	J	M	No
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_078_1	78	FP	08/22/23	21.3	201	16T 459085 4475797	I	41.0	A	F	No
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_125_1	125	FP	08/22/23	46.1	188	16T 467493 4481404	I	39.7	U	F	No
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_125_2	125	FP	08/22/23	17.5	116	16T 467515 4481442	I	40.3	U	F	No
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_140_1	140	FP	08/22/23	19.0	156	16T 467398 4482953	I	39.7	A	M	No
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_140_2	140	FP	08/22/23	31.6	184	16T 467388 4482939	I	39.6	J	F	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_016_1	16	FP	08/23/23	29.2	154	16T 465302 4463667	D	39.0	A	F	No
Evening bat	*Nycticeius humeralis*	20230823_EVBA_019_1	19	RP	08/23/23	1.6	287	16T 466591 4463429	I	34.0	J	F	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_029_1	29	RP	08/23/23	29.7	84	16T 462924 4465599	I	40.0	J	F	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_034_1	34	RP	08/23/23	9.4	239	16T 464996 4464752	P	37.0	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230823_SHBA_036_1	36	RP	08/23/23	50.9	183	16T 466837 4464756	P	40.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_048_1	48	FP	08/23/23	59.8	311	16T 459179 4470701	I	42.2	U	F	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_051_1	51	FP	08/23/23	8.8	20	16T 460616 4469838	I	42.5	A	F	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_053_1	53	RP	08/23/23	35.6	310	16T 461038 4469851	P	43.3	A	M	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_068_1	68	FP	08/23/23	4.2	108	16T 463444 4472359	I	40.4	A	F	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_084_1	84	FP	08/23/23	51.9	320	16T 461820 4476439	I	39.5	U	F	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_084_2	84	FP	08/23/23	34.2	355	16T 461850 4476433	I	37.9	A	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_098_1	98	FP	08/23/23	37.9	219	16T 461707 4478326	I	38.1	U	M	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_100_1	100	FP	08/23/23	45.6	288	16T 464070 4477354	I	41.6	J	F	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_103_1	103	FP	08/23/23	33.5	351	16T 465822 4478729	A	NA	U	U	No
Big brown bat	*Eptesicus fuscus*	20230823_BBBA_105_1	105	FP	08/23/23	18.6	262	16T 467245 4477209	P	44.7	A	U	No
Hoary bat	*Lasiurus cinereus*	20230823_HOBA_105_1	105	FP	08/23/23	32.2	31	16T 467280 4477239	I	55.3	A	U	No
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_121_1	121	RP	08/23/23	35.6	357	16T 466165 4480141	I	38.7	J	M	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_001_1	1	FP	08/24/23	54.1	333	16T 458811 4462359	D	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_004_1	4	FP	08/24/23	33.4	355	16T 460652 4461099	I	32.9	A	M	No
Evening bat	*Nycticeius humeralis*	20230824_EVBA_005_1	5	FP	08/24/23	20.8	298	16T 461133 4461097	D	35.8	U	U	No
Hoary bat	*Lasiurus cinereus*	20230824_HOBA_005_1	5	FP	08/24/23	30.6	328	16T 461135 4461113	I	47.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_041_1	41	FP	08/24/23	44.8	32	16T 464429 4466817	I	41.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_043_1	43	RP	08/24/23	46.0	1	16T 465128 4467632	I	38.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_078_1	78	FP	08/24/23	24.1	111	16T 459115 4475808	I	42.6	J	M	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_088_1	88	RP	08/24/23	30.3	1	16T 466961 4475387	I	37.5	A	M	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_091_1	91	RP	08/24/23	9.8	329	16T 456460 4477371	I	41.6	J	F	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_092_1	92	RP	08/24/23	40.1	73	16T 456997 4477284	I	40.4	A	F	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_094_1	94	FP	08/24/23	21.7	331	16T 457229 4478511	I	42.5	A	F	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_124_1	124	FP	08/24/23	39.4	325	16T 466508 4481827	D	37.4	J	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_124_2	124	FP	08/24/23	43.4	65	16T 466570 4481813	I	40.7	J	F	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_128_1	128	RP	08/24/23	42.0	360	16T 458664 4482305	I	39.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_128_2	128	RP	08/24/23	57.0	359	16T 458663 4482320	D	39.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_130_1	130	FP	08/24/23	16.1	79	16T 459727 4482169	I	41.7	A	F	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_130_2	130	FP	08/24/23	32.9	297	16T 459682 4482181	I	41.1	U	U	No
Hoary bat	*Lasiurus cinereus*	20230824_HOBA_130_1	130	FP	08/24/23	23.3	352	16T 459708 4482189	D	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_139_1	139	RP	08/24/23	5.2	240	16T 466983 4482990	I	40.5	A	M	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_141_1	141	RP	08/24/23	35.3	360	16T 460370 4484663	I	39.9	A	F	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_142_1	142	RP	08/24/23	37.7	357	16T 460809 4484680	F	NA	U	F	No
Eastern red bat	*Lasiurus borealis*	20230824_ERBA_146_1	146	RP	08/24/23	49.7	86	16T 464277 4484820	I	38.2	U	F	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_016_1	16	FP	08/25/23	42.8	360	16T 465289 4463736	P	39.4	A	F	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_017_1	17	RP	08/25/23	11.7	192	16T 465765 4463678	I	38.3	U	M	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_018_1	18	RP	08/25/23	65.5	119	16T 466230 4463396	I	42.3	A	F	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_024_1	24	RP	08/25/23	6.5	148	16T 460810 4465370	P	37.8	U	U	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_026_1	26	FP	08/25/23	3.3	188	16T 461677 4465068	I	41.0	J	F	No
Big brown bat	*Eptesicus fuscus*	20230825_BBBA_034_1	34	RP	08/25/23	6.5	208	16T 465001 4464751	I	45.5	U	F	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_047_1	47	RP	08/25/23	25.4	358	16T 458597 4470615	I	37.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_068_1	68	FP	08/25/23	45.9	338	16T 463423 4472403	I	38.0	U	U	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_075_1	75	RP	08/25/23	6.4	354	16T 461053 4473721	I	41.8	J	F	No
Hoary bat	*Lasiurus cinereus*	20230825_HOBA_084_1	84	FP	08/25/23	44.3	37	16T 461880 4476434	D	39.8	U	U	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_099_1	99	RP	08/25/23	7.6	359	16T 462046 4478036	P	38.5	U	F	No
Hoary bat	*Lasiurus cinereus*	20230825_HOBA_103_1	103	FP	08/25/23	9.0	83	16T 465836 4478697	I	56.6	A	F	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_111_1	111	FP	08/25/23	22.4	18	16T 459445 4479610	I	38.4	U	M	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_111_2	111	FP	08/25/23	18.1	304	16T 459423 4479599	I	37.9	U	M	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_117_1	117	RP	08/25/23	31.8	86	16T 462933 4480581	I	42.2	U	F	No
Eastern red bat	*Lasiurus borealis*	20230825_ERBA_137_1	137	FP	08/25/23	32.0	170	16T 462912 4483023	I	40.3	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230826_SHBA_003_1	3	FP	08/26/23	51.9	284	16T 460001 4461569	I	41.1	J	M	No
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_041_1	41	FP	08/26/23	30.1	166	16T 464412 4466750	I	40.3	J	F	No
Hoary bat	*Lasiurus cinereus*	20230826_HOBA_056_1	56	FP	08/26/23	35.9	83	16T 463835 4469148	P	55.8	U	U	No
Hoary bat	*Lasiurus cinereus*	20230826_HOBA_056_2	56	FP	08/26/23	16.7	282	16T 463783 4469147	P	53.0	A	M	No
Hoary bat	*Lasiurus cinereus*	20230826_HOBA_072_1	72	RP	08/26/23	26.1	265	16T 465331 4472268	I	54.6	A	U	No
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_078_1	78	FP	08/26/23	14.7	65	16T 459106 4475823	P	38.9	U	M	No
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_078_2	78	FP	08/26/23	1.3	331	16T 459092 4475818	P	41.3	A	F	No
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_100_1	100	FP	08/26/23	7.4	189	16T 464112 4477332	D	34.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_102_1	102	FP	08/26/23	47.4	184	16T 464999 4477231	I	41.0	U	F	No
Big brown bat	*Eptesicus fuscus*	20230826_BBBA_123_1	123	FP	08/26/23	10.5	351	16T 465695 4482204	I	43.8	U	U	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_125_1	125	FP	08/26/23	31.3	14	16T 467507 4481480	I	39.3	A	M	No
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_130_1	130	FP	08/26/23	48.7	345	16T 459699 4482213	D	40.1	U	U	No
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_140_1	140	FP	08/26/23	23.7	354	16T 467388 4482994	I	39.9	A	F	No
Hoary bat	*Lasiurus cinereus*	20230826_HOBA_140_1	140	FP	08/26/23	22.2	236	16T 467372 4482958	I	55.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_142_1	142	RP	08/26/23	58.7	1	16T 460812 4484701	D	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_145_1	145	RP	08/26/23	5.5	194	16T 463855 4484961	I	38.2	U	U	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_026_1	26	FP	08/27/23	43.9	236	16T 461641 4465047	I	39.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_029_1	29	RP	08/27/23	1.3	24	16T 462895 4465597	I	39.0	U	M	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_030_1	30	FP	08/27/23	21.4	285	16T 463499 4465707	I	41.0	J	F	No
Seminole bat	*Lasiurus seminolus*	20230827_SEBA_034_1	34	RP	08/27/23	48.9	185	16T 465000 4464708	I	39.0	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230827_SHBA_036_1	36	RP	08/27/23	10.9	170	16T 466842 4464796	I	42.0	J	F	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_045_1	45	RP	08/27/23	56.7	182	16T 458631 4471421	I	38.0	U	M	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_046_1	46	FP	08/27/23	52.0	346	16T 459162 4471480	D	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_046_2	46	FP	08/27/23	39.6	226	16T 459146 4471402	I	39.4	A	M	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_048_1	48	FP	08/27/23	29.3	88	16T 459253 4470662	I	42.5	U	F	No
Big brown bat	*Eptesicus fuscus*	20230827_BBBA_051_1	51	FP	08/27/23	47.7	55	16T 460652 4469857	P	47.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_051_1	51	FP	08/27/23	6.5	70	16T 460619 4469832	I	38.8	J	M	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_104_1	104	FP	08/27/23	26.8	142	16T 467539 4478626	I	39.7	U	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_109_1	109	FP	08/27/23	10.5	60	16T 458573 4479606	D	41.8	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230827_SHBA_115_1	115	FP	08/27/23	27.8	200	16T 461690 4479839	I	40.4	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230827_SHBA_120_1	120	RP	08/27/23	23.2	180	16T 465789 4480215	I	39.9	J	M	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_127_1	127	RP	08/27/23	31.5	183	16T 458215 4482257	I	39.6	J	F	No
Eastern red bat	*Lasiurus borealis*	20230827_ERBA_133_1	133	RP	08/27/23	37.6	108	16T 461283 4482110	P	41.1	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230827_SHBA_133_1	133	RP	08/27/23	34.5	250	16T 461215 4482110	I	40.7	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230828_SHBA_001_1	1	FP	08/28/23	17.9	166	16T 458839 4462293	D	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230828_ERBA_003_1	3	FP	08/28/23	30.2	334	16T 460038 4461583	I	38.5	U	M	No
Big brown bat	*Eptesicus fuscus*	20230828_BBBA_005_1	5	FP	08/28/23	13.6	296	16T 461139 4461093	I	49.2	J	F	No
Big brown bat	*Eptesicus fuscus*	20230828_BBBA_005_2	5	FP	08/28/23	21.8	283	16T 461130 4461092	I	43.8	U	U	No
Eastern red bat	*Lasiurus borealis*	20230828_ERBA_005_1	5	FP	08/28/23	30.6	224	16T 461130 4461065	I	38.5	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230828_SHBA_005_1	5	FP	08/28/23	13.6	296	16T 461139 4461093	I	49.2	U	U	No
Big brown bat	*Eptesicus fuscus*	20230828_BBBA_006_1	6	RP	08/28/23	16.3	266	16T 461784 4460759	P	47.6	U	U	No
Eastern red bat	*Lasiurus borealis*	20230828_ERBA_006_1	6	RP	08/28/23	44.3	272	16T 461756 4460762	I	39.4	U	M	No
Eastern red bat	*Lasiurus borealis*	20230828_ERBA_041_1	41	FP	08/28/23	24.4	260	16T 464381 4466775	I	35.7	U	M	No
Eastern red bat	*Lasiurus borealis*	20230828_ERBA_056_1	56	FP	08/28/23	25.9	150	16T 463812 4469121	I	41.0	U	F	No
Big brown bat	*Eptesicus fuscus*	20230828_BBBA_059_1	59	RP	08/28/23	5.8	275	16T 465623 4468750	I	45.1	A	M	No
Eastern red bat	*Lasiurus borealis*	20230828_ERBA_067_1	67	RP	08/28/23	81.3	269	16T 464884 4471404	I	37.8	U	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Hoary bat	*Lasiurus cinereus*	20230828_HOBA_073_1	73	FP	08/28/23	23.3	102	16T 467336 4473007	I	50.8	U	M	No
Eastern red bat	*Lasiurus borealis*	20230828_ERBA_077_1	77	RP	08/28/23	54.8	271	16T 458715 4476130	I	42.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20230828_ERBA_080_1	80	RP	08/28/23	22.5	186	16T 460129 4476177	I	38.4	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230828_SHBA_089_1	89	FP	08/28/23	16.8	134	16T 466872 4476263	P	39.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230828_ERBA_124_1	124	FP	08/28/23	42.6	337	16T 466514 4481834	I	38.3	U	M	No
Eastern red bat	*Lasiurus borealis*	20230828_ERBA_146_1	146	RP	08/28/23	7.1	149	16T 464231 4484811	I	36.9	A	M	No
Eastern red bat	*Lasiurus borealis*	20230829_ERBA_016_1	16	FP	08/29/23	5.6	31	16T 465292 4463698	I	39.5	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230829_SHBA_020_1	20	RP	08/29/23	4.8	275	16T 458521 4467567	I	39.9	U	M	No
Eastern red bat	*Lasiurus borealis*	20230829_ERBA_025_1	25	FP	08/29/23	34.7	85	16T 461374 4465285	I	38.3	U	U	No
Eastern red bat	*Lasiurus borealis*	20230829_ERBA_025_2	25	FP	08/29/23	38.6	359	16T 461339 4465321	I	39.7	U	U	No
Eastern red bat	*Lasiurus borealis*	20230829_ERBA_025_3	25	FP	08/29/23	16.4	235	16T 461326 4465273	I	NA	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230829_SHBA_026_1	26	FP	08/29/23	20.6	289	16T 461658 4465078	I	38.5	U	M	No
Eastern red bat	*Lasiurus borealis*	20230829_ERBA_030_1	30	FP	08/29/23	48.0	308	16T 463482 4465731	I	38.3	U	M	No
Big brown bat	*Eptesicus fuscus*	20230829_BBBA_046_1	46	FP	08/29/23	42.0	290	16T 459135 4471444	I	49.5	A	F	No
Big brown bat	*Eptesicus fuscus*	20230829_BBBA_048_1	48	FP	08/29/23	45.1	124	16T 459261 4470636	P	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230829_ERBA_094_1	94	FP	08/29/23	50.0	247	16T 457193 4478473	I	39.3	A	F	No
Eastern red bat	*Lasiurus borealis*	20230829_ERBA_110_1	110	FP	08/29/23	7.8	249	16T 458986 4479592	D	39.4	U	M	No
Eastern red bat	*Lasiurus borealis*	20230829_ERBA_110_2	110	FP	08/29/23	21.0	309	16T 458977 4479608	P	39.7	U	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230829_ERBA_118_1	118	RP	08/29/23	12.9	192	16T 464191 4479860	I	39.0	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230830_SHBA_001_1	1	FP	08/30/23	23.8	103	16T 458858 4462305	I	40.2	U	M	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_015_1	15	RP	08/30/23	0.6	173	16T 464801 4463653	P	37.6	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230830_SHBA_055_1	55	FP	08/30/23	7.1	299	16T 463352 4469154	I	42.0	U	M	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_056_1	56	FP	08/30/23	29.4	77	16T 463828 4469150	I	40.4	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230830_SHBA_056_1	56	FP	08/30/23	39.4	273	16T 463760 4469146	I	43.4	U	U	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_066_1	66	RP	08/30/23	6.1	353	16T 465109 4470926	I	42.3	U	F	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_070_1	70	FP	08/30/23	30.2	263	16T 464329 4472485	I	39.1	U	F	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_073_1	73	FP	08/30/23	3.9	304	16T 467310 4473014	I	39.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_124_1	124	FP	08/30/23	49.0	197	16T 466516 4481748	I	41.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_124_2	124	FP	08/30/23	60.6	44	16T 466573 4481838	I	40.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_124_3	124	FP	08/30/23	50.9	213	16T 466503 4481752	I	43.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_138_1	138	FP	08/30/23	24.8	334	16T 465740 4483564	I	37.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_140_1	140	FP	08/30/23	32.5	118	16T 467419 4482955	I	39.0	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230830_SHBA_140_1	140	FP	08/30/23	3.7	247	16T 467387 4482969	I	40.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20230830_ERBA_144_1	144	RP	08/30/23	6.4	25	16T 463476 4485093	P	39.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230831_ERBA_030_1	30	FP	08/31/23	41.5	145	16T 463543 4465667	I	38.9	U	M	No
Eastern red bat	*Lasiurus borealis*	20230831_ERBA_048_1	48	FP	08/31/23	38.3	280	16T 459186 4470668	I	40.2	U	U	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230831_ERBA_051_1	51	FP	08/31/23	24.3	48	16T 460631 4469846	I	NA	U	M	No
Eastern red bat	*Lasiurus borealis*	20230831_ERBA_068_1	68	FP	08/31/23	41.0	155	16T 463457 4472323	I	NA	U	M	No
Eastern red bat	*Lasiurus borealis*	20230831_ERBA_100_1	100	FP	08/31/23	21.5	161	16T 464120 4477319	I	41.1	A	F	No
Eastern red bat	*Lasiurus borealis*	20230831_ERBA_104_1	104	FP	08/31/23	48.6	212	16T 467497 4478606	I	41.3	A	F	No
Hoary bat	*Lasiurus cinereus*	20230831_HOBA_110_1	110	FP	08/31/23	51.8	252	16T 458944 4479579	I	55.1	U	U	No
Eastern red bat	*Lasiurus borealis*	20230901_ERBA_014_1	14	RP	09/01/23	52.2	180	16T 464290 4463624	I	38.1	U	M	No
Eastern red bat	*Lasiurus borealis*	20230901_ERBA_096_1	96	FP	09/01/23	15.8	145	16T 459010 4478462	I	38.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230902_ERBA_016_1	16	FP	09/02/23	34.8	309	16T 465262 4463715	I	40.3	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230902_SHBA_025_1	25	FP	09/02/23	61.1	219	16T 461301 4465235	I	41.3	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230902_SHBA_046_1	46	FP	09/02/23	9.3	215	16T 459169 4471422	I	39.0	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230902_SHBA_051_1	51	FP	09/02/23	41.2	299	16T 460577 4469850	I	42.9	J	F	No
Little Brown Bat	*Myotis lucifugus*	20230902_LBBA_053_1	53	RP	09/02/23	25.9	35	16T 461080 4469849	I	36.4	U	F	No
Eastern red bat	*Lasiurus borealis*	20230902_ERBA_101_1	101	RP	09/02/23	27.0	61	16T 464583 4477342	I	39.0	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230902_SHBA_110_1	110	FP	09/02/23	28.9	73	16T 459021 4479603	I	40.0	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230902_SHBA_126_1	126	RP	09/02/23	5.4	296	16T 457480 4482248	I	39.0	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230902_SHBA_133_1	133	RP	09/02/23	34.7	244	16T 461216 4482107	I	41.0	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_001_1	1	FP	09/03/23	44.2	86	16T 458879 4462313	I	39.7	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_001_2	1	FP	09/03/23	8.2	131	16T 458841 4462305	I	40.6	U	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_004_1	4	FP	09/03/23	49.4	356	16T 460652 4461115	I	40.1	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_005_1	5	FP	09/03/23	9.5	340	16T 461148 4461096	I	39.4	J	F	No
Eastern red bat	*Lasiurus borealis*	20230903_ERBA_013_1	13	RP	09/03/23	11.6	72	16T 463522 4462256	I	39.8	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_013_1	13	RP	09/03/23	28.1	89	16T 463539 4462253	I	40.1	U	F	No
Eastern red bat	*Lasiurus borealis*	20230903_ERBA_055_1	55	FP	09/03/23	21.5	359	16T 463358 4469172	D	NA	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_055_1	55	FP	09/03/23	45.0	94	16T 463403 4469147	I	42.1	J	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_055_2	55	FP	09/03/23	59.8	42	16T 463398 4469195	I	41.8	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_056_1	56	FP	09/03/23	38.7	353	16T 463795 4469182	I	39.9	J	F	No
Eastern red bat	*Lasiurus borealis*	20230903_ERBA_063_1	63	RP	09/03/23	41.1	3	16T 467352 4470923	P	39.5	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_086_1	86	FP	09/03/23	36.5	293	16T 465744 4475359	I	42.1	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_093_1	93	RP	09/03/23	27.7	1	16T 457417 4477300	I	40.3	U	M	No
Eastern red bat	*Lasiurus borealis*	20230903_ERBA_096_1	96	FP	09/03/23	4.0	90	16T 459005 4478475	I	40.3	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_097_1	97	RP	09/03/23	7.7	264	16T 460391 4478260	I	40.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20230903_ERBA_124_1	124	FP	09/03/23	37.3	41	16T 466555 4481823	I	37.0	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_130_1	130	FP	09/03/23	39.2	37	16T 459735 4482197	I	39.6	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_130_2	130	FP	09/03/23	47.2	2	16T 459713 4482213	P	39.9	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_130_3	130	FP	09/03/23	42.2	83	16T 459753 4482171	I	39.5	J	M	No
Eastern red bat	*Lasiurus borealis*	20230903_ERBA_140_1	140	FP	09/03/23	67.8	225	16T 467342 4482923	P	39.0	U	U	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_141_1	141	RP	09/03/23	28.5	354	16T 460367 4484656	I	40.0	U	F	No
Big brown bat	*Eptesicus fuscus*	20230904_BBBA_020_1	20	RP	09/04/23	31.3	94	16T 458557 4467564	I	46.6	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230904_SHBA_020_1	20	RP	09/04/23	23.2	89	16T 458549 4467567	I	40.5	U	M	No
Eastern red bat	*Lasiurus borealis*	20230904_ERBA_051_1	51	FP	09/04/23	45.5	303	16T 460575 4469855	I	43.6	A	F	No
Eastern red bat	*Lasiurus borealis*	20230904_ERBA_053_1	53	RP	09/04/23	44.9	60	16T 461104 4469850	I	41.1	U	F	No
Eastern red bat	*Lasiurus borealis*	20230904_ERBA_053_2	53	RP	09/04/23	46.2	60	16T 461105 4469851	I	40.8	U	F	No
Eastern red bat	*Lasiurus borealis*	20230904_ERBA_068_1	68	FP	09/04/23	48.9	254	16T 463393 4472347	I	40.4	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230904_SHBA_068_1	68	FP	09/04/23	12.6	73	16T 463452 4472364	I	40.6	U	M	No
Eastern red bat	*Lasiurus borealis*	20230904_ERBA_084_1	84	FP	09/04/23	56.1	47	16T 461894 4476437	I	39.0	U	F	No
Indiana bat	*Myotis sodalis*	20230904_INBA_102_1	102	FP	09/04/23	9.1	344	16T 465000 4477287	I	37.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20230904_ERBA_109_1	109	FP	09/04/23	46.7	61	16T 458605 4479623	I	40.1	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230904_SHBA_109_1	109	FP	09/04/23	26.8	179	16T 458564 4479574	I	40.0	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230904_SHBA_121_1	121	RP	09/04/23	4.3	236	16T 466163 4480103	I	40.0	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230904_SHBA_137_1	137	FP	09/04/23	18.7	159	16T 462913 4483037	I	NA	J	F	No
Big brown bat	*Eptesicus fuscus*	20230905_BBBA_001_1	1	FP	09/05/23	9.2	99	16T 458844 4462309	I	46.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230905_ERBA_001_1	1	FP	09/05/23	63.5	48	16T 458882 4462353	I	40.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230905_ERBA_001_2	1	FP	09/05/23	49.2	66	16T 458880 4462330	I	40.0	U	F	No
Big brown bat	*Eptesicus fuscus*	20230905_BBBA_004_1	4	FP	09/05/23	19.0	89	16T 460674 4461066	I	44.0	J	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230905_ERBA_005_1	5	FP	09/05/23	13.1	326	16T 461144 4461098	I	37.0	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230905_SHBA_078_1	78	FP	09/05/23	12.1	2	16T 459093 4475829	P	40.8	U	M	No
Big brown bat	*Eptesicus fuscus*	20230905_BBBA_092_1	92	RP	09/05/23	35.7	74	16T 456993 4477282	P	42.0	A	U	No
Seminole bat	*Lasiurus seminolus*	20230905_SEBA_094_1	94	FP	09/05/23	34.5	45	16T 457264 4478516	I	41.0	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230905_SHBA_123_1	123	FP	09/05/23	33.5	86	16T 465730 4482196	I	41.3	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230905_SHBA_123_2	123	FP	09/05/23	9.1	113	16T 465705 4482190	I	41.9	U	F	No
Eastern red bat	*Lasiurus borealis*	20230905_ERBA_124_1	124	FP	09/05/23	9.8	317	16T 466524 4481802	I	41.5	J	F	No
Eastern red bat	*Lasiurus borealis*	20230905_ERBA_125_1	125	FP	09/05/23	15.8	85	16T 467515 4481451	I	37.9	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230905_SHBA_125_1	125	FP	09/05/23	26.7	62	16T 467523 4481462	I	40.1	U	U	No
Silver-haired bat/Big brown bat	*Lasionycteris noctivagans/Eptesicus fuscus*	20230906_SHBA/BBBA_016_1	16	FP	09/06/23	38.0	336	16T 465274 4463728	I	28.0	U	U	No
Hoary bat	*Lasiurus cinereus*	20230906_HOBA_028_1	28	RP	09/06/23	6.7	313	16T 462490 4465745	I	52.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230906_ERBA_069_1	69	RP	09/06/23	6.0	247	16T 463699 4472093	I	40.2	U	F	No
Hoary bat	*Lasiurus cinereus*	20230906_HOBA_076_1	76	RP	09/06/23	13.4	90	16T 460696 4473740	I	52.3	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230906_SHBA_103_1	103	FP	09/06/23	38.5	65	16T 465862 4478712	P	41.6	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230907_SHBA_001_1	1	FP	09/07/23	37.1	60	16T 458867 4462329	P	39.7	U	U	No
Eastern red bat	*Lasiurus borealis*	20230907_ERBA_003_1	3	FP	09/07/23	40.9	295	16T 460014 4461573	I	39.5	U	F	No
Hoary bat	*Lasiurus cinereus*	20230907_HOBA_003_1	3	FP	09/07/23	40.7	303	16T 460017 4461578	P	52.4	U	M	No
Big brown bat	*Eptesicus fuscus*	20230907_BBBA_004_1	4	FP	09/07/23	23.0	37	16T 460669 4461084	I	47.1	A	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230907_ERBA_005_1	5	FP	09/07/23	11.9	65	16T 461162 4461092	D	37.7	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230907_SHBA_055_1	55	FP	09/07/23	45.5	80	16T 463403 4469158	I	43.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230907_ERBA_056_1	56	FP	09/07/23	9.2	233	16T 463792 4469138	I	41.0	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230907_SHBA_078_1	78	FP	09/07/23	36.2	2	16T 459094 4475853	I	40.8	U	U	No
Eastern red bat	*Lasiurus borealis*	20230907_ERBA_089_1	89	FP	09/07/23	31.5	124	16T 466886 4476257	I	39.2	A	M	No
Big brown bat	*Eptesicus fuscus*	20230907_BBBA_096_1	96	FP	09/07/23	20.3	98	16T 459021 4478472	I	46.4	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230907_SHBA_096_1	96	FP	09/07/23	41.1	3	16T 459003 4478516	I	41.3	J	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230907_SHBA_096_2	96	FP	09/07/23	55.2	45	16T 459040 4478514	I	41.1	U	U	No
Eastern red bat	*Lasiurus borealis*	20230907_ERBA_123_1	123	FP	09/07/23	41.8	29	16T 465717 4482230	I	38.0	A	M	No
Hoary bat	*Lasiurus cinereus*	20230908_HOBA_030_1	30	FP	09/08/23	37.9	275	16T 463482 4465705	I	50.0	U	M	No
Eastern red bat	*Lasiurus borealis*	20230908_ERBA_048_1	48	FP	09/08/23	20.8	314	16T 459209 4470676	P	41.0	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230908_SHBA_048_1	48	FP	09/08/23	36.7	346	16T 459215 4470697	I	41.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230908_ERBA_100_1	100	FP	09/08/23	43.7	187	16T 464108 4477296	I	42.5	J	F	No
Eastern red bat	*Lasiurus borealis*	20230908_ERBA_103_1	103	FP	09/08/23	30.7	38	16T 465846 4478720	I	41.0	U	M	No
Eastern red bat	*Lasiurus borealis*	20230908_ERBA_103_2	103	FP	09/08/23	17.3	280	16T 465810 4478699	I	39.3	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230908_SHBA_103_1	103	FP	09/08/23	30.4	113	16T 465855 4478684	I	40.9	U	U	No
Eastern red bat	*Lasiurus borealis*	20230908_ERBA_121_1	121	RP	09/08/23	8.5	39	16T 466172 4480112	I	39.1	U	M	No
Eastern red bat	*Lasiurus borealis*	20230908_ERBA_121_2	121	RP	09/08/23	4.6	264	16T 466162 4480105	I	39.3	A	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Silver-haired bat	*Lasionycteris noctivagans*	20230908_SHBA_137_1	137	FP	09/08/23	46.1	289	16T 462863 4483070	I	40.0	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230909_SHBA_004_1	4	FP	09/09/23	53.7	220	16T 460620 4461025	I	39.0	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230909_SHBA_006_1	6	RP	09/09/23	2.9	71	16T 461803 4460761	I	41.0	J	F	No
Hoary bat	*Lasiurus cinereus*	20230909_HOBA_056_1	56	FP	09/09/23	15.8	302	16T 463786 4469152	D	55.1	U	U	No
Big brown bat	*Eptesicus fuscus*	20230909_BBBA_059_1	59	RP	09/09/23	55.5	112	16T 465680 4468728	I	43.0	U	M	No
Eastern red bat	*Lasiurus borealis*	20230909_ERBA_086_1	86	FP	09/09/23	7.4	151	16T 465781 4475338	I	39.0	J	M	No
Indiana bat	*Myotis sodalis*	20230909_INBA_086_1	86	FP	09/09/23	44.6	358	16T 465776 4475389	I	39.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230909_ERBA_123_1	123	FP	09/09/23	13.5	353	16T 465695 4482207	D	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230909_ERBA_134_1	134	RP	09/09/23	60.7	52	16T 460745 4483078	I	38.1	U	M	No
Eastern red bat	*Lasiurus borealis*	20230909_ERBA_140_1	140	FP	09/09/23	36.1	119	16T 467422 4482953	I	39.8	J	F	No
Eastern red bat	*Lasiurus borealis*	20230909_ERBA_144_1	144	RP	09/09/23	59.4	126	16T 463521 4485052	I	38.2	A	M	No
Hoary bat	*Lasiurus cinereus*	20230910_HOBA_016_1	16	FP	09/10/23	39.1	226	16T 465261 4463666	I	53.8	A	M	No
Big brown bat	*Eptesicus fuscus*	20230910_BBBA_019_1	19	RP	09/10/23	15.7	189	16T 466590 4463413	I	42.0	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230910_SHBA_050_1	50	RP	09/10/23	3.3	283	16T 460092 4469819	I	40.1	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230911_SHBA_041_1	41	FP	09/11/23	43.3	29	16T 464426 4466817	I	42.0	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230911_SHBA_074_1	74	FP	09/11/23	37.3	196	16T 465288 4473743	P	39.6	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230911_SHBA_079_1	79	RP	09/11/23	50.4	313	16T 459318 4475513	P	40.5	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230911_SHBA_086_1	86	FP	09/11/23	45.6	257	16T 465733 4475334	P	42.3	U	U	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230911_ERBA_091_1	91	RP	09/11/23	26.1	35	16T 456480 4477384	I	39.7	U	F	No
Eastern red bat	*Lasiurus borealis*	20230911_ERBA_096_1	96	FP	09/11/23	47.0	153	16T 459022 4478433	D	38.4	U	U	No
Eastern red bat	*Lasiurus borealis*	20230911_ERBA_130_1	130	FP	09/11/23	8.8	305	16T 459704 4482171	P	41.1	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230911_SHBA_130_1	130	FP	09/11/23	39.1	161	16T 459724 4482129	I	40.3	U	M	No
Eastern red bat	*Lasiurus borealis*	20230912_ERBA_026_1	26	FP	09/12/23	47.1	51	16T 461714 4465101	P	40.4	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230913_SHBA_003_1	3	FP	09/13/23	33.3	153	16T 460066 4461526	P	40.9	U	F	No
Big brown bat	*Eptesicus fuscus*	20230913_BBBA_073_1	73	FP	09/13/23	64.1	133	16T 467360 4472968	I	47.5	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230913_SHBA_140_1	140	FP	09/13/23	34.1	281	16T 467357 4482977	I	40.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230914_ERBA_016_1	16	FP	09/14/23	32.7	293	16T 465259 4463706	P	41.9	U	F	No
Eastern red bat	*Lasiurus borealis*	20230914_ERBA_048_1	48	FP	09/14/23	30.0	168	16T 459230 4470632	I	41.2	U	U	No
Hoary bat	*Lasiurus cinereus*	20230915_HOBA_031_1	31	RP	09/15/23	16.0	360	16T 464100 4465716	P	53.8	U	F	No
Hoary bat	*Lasiurus cinereus*	20230915_HOBA_074_1	74	FP	09/15/23	41.9	192	16T 465289 4473738	I	52.8	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230915_SHBA_074_1	74	FP	09/15/23	31.9	224	16T 465276 4473756	P	41.3	U	U	No
Eastern red bat	*Lasiurus borealis*	20230915_ERBA_140_1	140	FP	09/15/23	55.2	208	16T 467364 4482922	P	38.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230915_ERBA_140_2	140	FP	09/15/23	13.2	199	16T 467386 4482958	I	38.2	U	F	No
Eastern red bat	*Lasiurus borealis*	20230916_ERBA_019_1	19	RP	09/16/23	11.8	192	16T 466590 4463417	I	38.2	U	M	No
Eastern red bat	*Lasiurus borealis*	20230916_ERBA_110_1	110	FP	09/16/23	55.9	298	16T 458944 4479621	P	39.0	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230916_SHBA_114_1	114	FP	09/16/23	40.6	232	16T 461224 4479808	I	40.6	U	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230917_ERBA_041_1	41	FP	09/17/23	31.2	264	16T 464374 4466776	I	40.9	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230917_SHBA_054_1	54	RP	09/17/23	48.1	143	16T 463905 4466773	P	41.1	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230917_SHBA_073_1	73	FP	09/17/23	28.8	178	16T 467314 4472983	P	39.5	U	F	No
Eastern red bat	*Lasiurus borealis*	20230917_ERBA_074_1	74	FP	09/17/23	31.1	335	16T 465285 4473807	P	38.2	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230917_SHBA_078_1	78	FP	09/17/23	63.4	48	16T 459140 4475859	P	39.6	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230917_SHBA_124_1	124	FP	09/17/23	30.0	324	16T 466513 4481819	P	39.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230917_ERBA_130_1	130	FP	09/17/23	54.4	300	16T 459664 4482193	I	39.6	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230918_SHBA_024_1	24	RP	09/18/23	63.6	183	16T 460803 4465312	D	39.6	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230918_SHBA_046_1	46	FP	09/18/23	39.4	121	16T 459208 4471409	I	40.4	U	M	No
Eastern red bat	*Lasiurus borealis*	20230918_ERBA_051_1	51	FP	09/18/23	20.2	86	16T 460633 4469831	I	39.3	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230918_SHBA_100_1	100	FP	09/18/23	49.7	115	16T 464158 4477318	I	41.5	U	F	No
Eastern red bat	*Lasiurus borealis*	20230918_ERBA_104_1	104	FP	09/18/23	25.6	146	16T 467537 4478626	I	43.1	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230919_SHBA_002_1	2	RP	09/19/23	14.5	265	16T 459774 4461869	I	42.0	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230919_SHBA_055_1	55	FP	09/19/23	34.3	80	16T 463392 4469156	P	40.3	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230919_SHBA_059_1	59	RP	09/19/23	34.7	128	16T 465656 4468728	I	41.2	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230919_SHBA_073_1	73	FP	09/19/23	31.2	249	16T 467284 4473001	I	41.2	U	F	No
Hoary bat	*Lasiurus cinereus*	20230919_HOBA_078_1	78	FP	09/19/23	19.3	326	16T 459082 4475833	I	52.3	U	M	No
Eastern red bat	*Lasiurus borealis*	20230919_ERBA_089_1	89	FP	09/19/23	54.3	132	16T 466900 4476238	I	41.9	U	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Silver-haired bat	*Lasionycteris noctivagans*	20230919_SHBA_089_1	89	FP	09/19/23	19.2	83	16T 466879 4476277	P	40.0	U	M	No
Eastern red bat	*Lasiurus borealis*	20230919_ERBA_124_1	124	FP	09/19/23	21.0	29	16T 466541 4481813	I	40.1	U	F	No
Eastern red bat	*Lasiurus borealis*	20230919_ERBA_140_1	140	FP	09/19/23	44.3	148	16T 467414 4482933	I	40.0	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230919_SHBA_140_1	140	FP	09/19/23	27.1	49	16T 467411 4482988	A	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20230921_ERBA_016_1	16	FP	09/21/23	29.8	360	16T 465289 4463723	P	NA	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230921_SHBA_016_1	16	FP	09/21/23	40.5	224	16T 465261 4463664	I	43.0	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230921_SHBA_019_1	19	RP	09/21/23	16.6	185	16T 466591 4463412	P	41.0	U	U	No
Hoary bat	*Lasiurus cinereus*	20230921_HOBA_023_1	23	RP	09/21/23	13.3	94	16T 459227 4466438	I	58.1	U	F	No
Seminole bat	*Lasiurus seminolus*	20230921_SEBA_046_1	46	FP	09/21/23	66.4	315	16T 459128 4471477	I	41.0	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230921_SHBA_098_1	98	FP	09/21/23	15.3	50	16T 461743 4478365	I	40.8	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230921_SHBA_109_1	109	FP	09/21/23	50.9	345	16T 458551 4479650	I	40.8	U	M	No
Eastern red bat	*Lasiurus borealis*	20230921_ERBA_110_1	110	FP	09/21/23	30.7	159	16T 459004 4479566	P	42.0	U	U	No
Hoary bat	*Lasiurus cinereus*	20230921_HOBA_115_1	115	FP	09/21/23	29.8	264	16T 461670 4479862	I	51.0	U	F	No
Seminole bat	*Lasiurus seminolus*	20230921_SEBA_115_1	115	FP	09/21/23	30.3	289	16T 461671 4479875	I	41.1	U	F	No
Eastern red bat	*Lasiurus borealis*	20230922_ERBA_001_1	1	FP	09/22/23	29.7	299	16T 458809 4462325	I	39.7	A	M	No
Eastern red bat	*Lasiurus borealis*	20230922_ERBA_012_1	12	RP	09/22/23	2.7	97	16T 463537 4461595	D	NA	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230922_SHBA_096_1	96	FP	09/22/23	41.3	141	16T 459027 4478443	I	40.9	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230922_SHBA_124_1	124	FP	09/22/23	31.9	135	16T 466553 4481772	I	38.0	A	U	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Hoary bat	*Lasiurus cinereus*	20230923_HOBA_104_1	104	FP	09/23/23	63.6	227	16T 467476 4478604	I	49.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230923_ERBA_109_1	109	FP	09/23/23	27.9	25	16T 458576 4479626	I	38.0	U	F	No
Hoary bat	*Lasiurus cinereus*	20230923_HOBA_109_1	109	FP	09/23/23	22.7	319	16T 458549 4479618	I	50.0	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230924_SHBA_070_1	70	FP	09/24/23	38.6	279	16T 464321 4472495	P	40.2	U	U	No
Big brown bat	*Eptesicus fuscus*	20230924_BBBA_073_1	73	FP	09/24/23	29.2	51	16T 467336 4473030	I	50.6	U	U	No
Eastern red bat	*Lasiurus borealis*	20230924_ERBA_073_1	73	FP	09/24/23	31.3	203	16T 467301 4472983	I	41.1	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230924_SHBA_073_1	73	FP	09/24/23	29.8	228	16T 467291 4472992	I	42.7	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20230924_SHBA_073_2	73	FP	09/24/23	20.9	34	16T 467325 4473029	I	40.8	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230924_SHBA_089_1	89	FP	09/24/23	50.0	309	16T 466821 4476306	I	42.1	J	M	No
Eastern red bat	*Lasiurus borealis*	20230924_ERBA_098_2	98	FP	09/24/23	32.7	287	16T 461700 4478365	P	NA	U	M	No
Hoary bat	*Lasiurus cinereus*	20230925_HOBA_046_1	46	FP	09/25/23	29.7	243	16T 459148 4471416	I	64.0	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230925_SHBA_051_1	51	FP	09/25/23	27.2	15	16T 460620 4469856	P	38.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20230925_ERBA_103_1	103	FP	09/25/23	18.4	292	16T 465810 4478703	I	40.8	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230925_SHBA_111_1	111	FP	09/25/23	34.8	233	16T 459410 4479568	F	41.4	U	U	No
Eastern red bat	*Lasiurus borealis*	20230925_ERBA_114_1	114	FP	09/25/23	11.1	208	16T 461251 4479823	I	39.1	U	M	No
Big brown bat	*Eptesicus fuscus*	20230926_BBBA_001_1	1	FP	09/26/23	39.9	224	16T 458807 4462282	I	50.0	U	F	No
Big brown bat	*Eptesicus fuscus*	20230926_BBBA_041_1	41	FP	09/26/23	50.8	318	16T 464371 4466817	P	47.0	U	F	No
Big brown bat	*Eptesicus fuscus*	20230926_BBBA_136_1	136	FP	09/26/23	35.9	311	16T 462577 4483381	I	49.9	U	F	No
Eastern red bat	*Lasiurus borealis*	20230927_ERBA_068_1	68	FP	09/27/23	19.3	198	16T 463434 4472342	I	40.1	U	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20230927_ERBA_098_1	98	FP	09/27/23	38.8	208	16T 461713 4478321	P	42.6	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230927_SHBA_103_1	103	FP	09/27/23	51.7	316	16T 465791 4478733	P	38.5	U	U	No
Seminole bat	*Lasiurus seminolus*	20230928_SEBA_058_1	58	RP	09/28/23	6.6	225	16T 464935 4468752	I	40.1	U	M	No
Eastern red bat	*Lasiurus borealis*	20230928_ERBA_074_1	74	FP	09/28/23	46.9	180	16T 465298 4473732	D	NA	U	U	No
Hoary bat	*Lasiurus cinereus*	20230928_HOBA_074_1	74	FP	09/28/23	52.1	289	16T 465249 4473796	I	52.8	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230928_SHBA_074_1	74	FP	09/28/23	10.9	175	16T 465299 4473768	I	40.2	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230928_SHBA_093_1	93	RP	09/28/23	24.7	359	16T 457416 4477297	I	37.8	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230928_SHBA_093_2	93	RP	09/28/23	24.7	359	16T 457416 4477297	I	41.4	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230928_SHBA_124_1	124	FP	09/28/23	4.7	261	16T 466526 4481794	I	41.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20230928_ERBA_125_1	125	FP	09/28/23	44.4	200	16T 467484 4481408	D	43.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20230929_ERBA_068_1	68	FP	09/29/23	56.1	245	16T 463389 4472337	P	38.2	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20230929_SHBA_104_1	104	FP	09/29/23	44.3	53	16T 467558 4478674	I	40.7	U	U	No
Eastern red bat	*Lasiurus borealis*	20230930_ERBA_124_1	124	FP	09/30/23	47.8	265	16T 466483 4481791	P	38.8	U	U	No
Eastern red bat	*Lasiurus borealis*	20230930_ERBA_138_1	138	FP	09/30/23	1.3	7	16T 465751 4483543	I	40.2	U	M	No
Big brown bat	*Eptesicus fuscus*	20231001_BBBA_084_1	84	FP	10/01/23	27.6	33	16T 461868 4476422	I	44.0	U	M	No
Eastern red bat	*Lasiurus borealis*	20231002_ERBA_074_1	74	FP	10/02/23	37.8	295	16T 465264 4473795	I	40.4	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20231002_SHBA_089_1	89	FP	10/02/23	5.8	169	16T 466861 4476269	I	42.2	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231004_SHBA_032_1	32	RP	10/04/23	36.7	330	16T 464530 4465478	P	40.4	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20231004_SHBA_140_1	140	FP	10/04/23	38.2	136	16T 467417 4482943	D	42.0	U	U	No
Eastern red bat	*Lasiurus borealis*	20231005_ERBA_052_1	52	RP	10/05/23	11.7	266	16T 461223 4470554	I	40.0	U	M	No

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Eastern red bat	*Lasiurus borealis*	20231005_ERBA_111_1	111	FP	10/05/23	38.6	287	16T 459401 4479600	D	38.4	A	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20231006_SHBA_004_1	4	FP	10/06/23	34.2	206	16T 460640 4461035	I	42.4	U	F	No
Eastern red bat	*Lasiurus borealis*	20231006_ERBA_005_1	5	FP	10/06/23	42.2	70	16T 461191 4461101	I	40.1	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231006_SHBA_005_1	5	FP	10/06/23	4.2	196	16T 461150 4461083	P	41.8	U	U	No
Eastern red bat	*Lasiurus borealis*	20231006_ERBA_056_1	56	FP	10/06/23	57.0	300	16T 463750 4469172	I	38.0	U	U	No
Hoary bat	*Lasiurus cinereus*	20231006_HOBA_057_1	57	RP	10/06/23	83.6	300	16T 464358 4469183	I	46.0	U	M	No
Big brown bat	*Eptesicus fuscus*	20231006_BBBA_070_1	70	FP	10/06/23	33.1	342	16T 464349 4472520	I	48.0	U	F	No
Evening bat	*Nycticeius humeralis*	20231006_EVBA_073_1	73	FP	10/06/23	4.3	10	16T 467314 4473016	P	37.1	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20231006_SHBA_123_1	123	FP	10/06/23	45.8	45	16T 465729 4482226	P	40.5	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231006_SHBA_138_1	138	FP	10/06/23	44.8	22	16T 465768 4483583	P	44.0	U	F	No
Hoary bat	*Lasiurus cinereus*	20231006_HOBA_141_1	141	RP	10/06/23	39.5	4	16T 460373 4484667	I	54.1	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20231007_SHBA_016_1	16	FP	10/07/23	3.8	358	16T 465289 4463697	P	41.1	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20231007_SHBA_016_2	16	FP	10/07/23	39.2	83	16T 465328 4463698	I	42.5	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20231007_SHBA_026_1	26	FP	10/07/23	39.8	109	16T 461715 4465058	I	42.2	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231007_SHBA_026_2	26	FP	10/07/23	46.4	183	16T 461675 4465025	I	42.0	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231007_SHBA_046_1	46	FP	10/07/23	56.0	144	16T 459207 4471384	I	42.8	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20231007_SHBA_048_1	48	FP	10/07/23	51.3	24	16T 459245 4470708	I	40.5	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20231007_SHBA_048_2	48	FP	10/07/23	33.3	110	16T 459255 4470650	I	41.2	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20231007_SHBA_048_3	48	FP	10/07/23	50.9	124	16T 459266 4470633	I	40.2	U	M	No
Eastern red bat	*Lasiurus borealis*	20231007_ERBA_051_1	51	FP	10/07/23	34.8	128	16T 460640 4469808	I	NA	U	F	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20231007_ERBA_100_1	100	FP	10/07/23	51.8	149	16T 464140 4477295	I	43.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20231007_ERBA_103_1	103	FP	10/07/23	26.2	96	16T 465853 4478693	I	41.0	U	F	No
Eastern red bat	*Lasiurus borealis*	20231007_ERBA_131_1	131	RP	10/07/23	3.8	301	16T 460239 4482150	I	37.1	U	F	No
Eastern red bat	*Lasiurus borealis*	20231008_ERBA_125_1	125	FP	10/08/23	39.6	126	16T 467531 4481426	I	38.0	U	M	No
Eastern red bat	*Lasiurus borealis*	20231008_ERBA_128_1	128	RP	10/08/23	6.4	218	16T 458660 4482258	I	40.1	U	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231009_SHBA_018_1	18	RP	10/09/23	7.1	288	16T 466166 4463430	A	NA	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20231009_SHBA_105_1	105	FP	10/09/23	49.5	137	16T 467297 4477175	I	41.1	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231009_SHBA_109_1	109	FP	10/09/23	15.4	66	16T 458578 4479607	I	41.3	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231009_SHBA_126_1	126	RP	10/09/23	47.2	106	16T 457530 4482232	I	40.5	A	F	No
Eastern red bat	*Lasiurus borealis*	20231009_ERBA_133_1	133	RP	10/09/23	27.9	113	16T 461273 4482111	I	NA	A	F	No
Eastern red bat	*Lasiurus borealis*	20231010_ERBA_089_1	89	FP	10/10/23	13.3	162	16T 466864 4476262	P	NA	U	M	No
Eastern red bat	*Lasiurus borealis*	20231010_ERBA_094_1	94	FP	10/10/23	9.3	162	16T 457242 4478483	P	NA	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20231011_SHBA_022_1	22	RP	10/11/23	29.9	185	16T 458966 4466775	I	40.5	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231011_SHBA_046_1	46	FP	10/11/23	26.2	102	16T 459200 4471424	I	41.5	U	F	No
Eastern red bat	*Lasiurus borealis*	20231011_ERBA_048_1	48	FP	10/11/23	42.2	136	16T 459253 4470631	P	NA	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20231011_SHBA_051_1	51	FP	10/11/23	30.3	15	16T 460621 4469859	I	40.2	U	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20231011_SHBA_084_1	84	FP	10/11/23	30.9	76	16T 461883 4476406	D	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20231012_ERBA_062_1	62	RP	10/12/23	79.6	226	16T 466098 4469608	I	38.5	A	M	No
Eastern red bat	*Lasiurus borealis*	20231012_ERBA_074_1	74	FP	10/12/23	42.8	279	16T 465256 4473786	I	39.0	A	M	No
Eastern red bat	*Lasiurus borealis*	20231013_ERBA_098_1	98	FP	10/13/23	33.2	182	16T 461730 4478322	I	39.1	A	M	No

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Eastern red bat	*Lasiurus borealis*	20231013_ERBA_098_2	98	FP	10/13/23	40.0	148	16T 461752 4478321	P	NA	A	F	No
Eastern red bat	*Lasiurus borealis*	20231013_ERBA_098_3	98	FP	10/13/23	32.6	118	16T 461760 4478340	P	41.9	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231013_SHBA_098_1	98	FP	10/13/23	46.8	251	16T 461687 4478340	I	38.2	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20231013_SHBA_105_1	105	FP	10/13/23	3.5	96	16T 467267 4477211	P	41.2	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20231013_SHBA_115_1	115	FP	10/13/23	50.2	236	16T 461658 4479837	I	40.0	A	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20231014_SHBA_094_1	94	FP	10/14/23	50.9	255	16T 457190 4478479	I	40.4	A	U	No
Eastern red bat	*Lasiurus borealis*	20231014_ERBA_124_1	124	FP	10/14/23	14.8	314	16T 466520 4481805	I	42.0	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231015_SHBA_039_1	39	RP	10/15/23	4.5	301	16T 462742 4467299	I	42.3	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20231015_SHBA_094_1	94	FP	10/15/23	39.4	135	16T 457267 4478464	A	NA	U	U	No
Eastern red bat	*Lasiurus borealis*	20231015_ERBA_130_1	130	FP	10/15/23	42.9	205	16T 459693 4482127	I	38.8	J	M	No
Silver-haired bat	*Lasionycteris noctivagans*	20231015_SHBA_130_1	130	FP	10/15/23	62.8	137	16T 459754 4482120	A	NA	U	U	No
Silver-haired bat	*Lasionycteris noctivagans*	20231015_SHBA_130_2	130	FP	10/15/23	36.0	104	16T 459746 4482157	I	41.3	A	F	No
Silver-haired bat	*Lasionycteris noctivagans*	20230509_SHBA_066_1	66	RP	05/09/23	24.9	263	16T 465085 4470917	I	40.6	A	U	Yes
Evening bat	*Nycticeius humeralis*	20230517_EVBA_045_1	45	RP	05/17/23	NA	NA	NA	I	34.8	U	U	Yes
Evening bat	*Nycticeius humeralis*	20230519_EVBA_135_1	135	RP	05/19/23	12.7	12	16T 461160 4483040	I	34.9	A	U	Yes
Evening bat	*Nycticeius humeralis*	20230525_EVBA_070_1	70	FP	05/25/23	17.2	81	16T 464376 4472491	I	36.9	A	U	Yes
Evening bat	*Nycticeius humeralis*	20230530_EVBA_059_1	59	RP	05/30/23	6.8	274	16T 465622 4468750	I	35.0	A	F	Yes
Evening bat	*Nycticeius humeralis*	20230531_EVBA_125_1	125	FP	05/31/23	8.1	73	16T 467507 4481452	D	34.9	A	U	Yes
Hoary bat	*Lasiurus cinereus*	20230606_HOBA_052_1	52	RP	06/06/23	NA	NA	NA	I	53.5	A	M	Yes
Evening bat	*Nycticeius humeralis*	20230607_EVBA_026_1	26	FP	06/07/23	13.5	273	16T 461664 4465072	I	36.7	A	F	Yes
Hoary bat	*Lasiurus cinereus*	20230615_HOBA_055_1	55	FP	06/15/23	NA	NA	NA	I	51.5	A	M	Yes

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Mexican free-tailed bat	*Tadarida brasiliensis*	20230712_MFTB_022_1	22	RP	07/12/23	4.8	177	16T 458969 4466800	I	42.8	A	M	Yes
Evening bat	*Nycticeius humeralis*	20230713_EVBA_122_1	122	RP	07/13/23	5.9	347	16T 466913 4480195	I	36.2	A	U	Yes
Big brown bat	*Eptesicus fuscus*	20230724_BBBA_070_1	70	FP	07/24/23	2.7	202	16T 464358 4472486	A	NA	U	U	Yes
Silver-haired bat	*Lasionycteris noctivagans*	20230724_SHBA_090_1	90	RP	07/24/23	NA	NA	NA	P	NA	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230727_ERBA_073_1	73	FP	07/27/23	3.8	183	16T 467313 4473008	P	41.1	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230727_ERBA_073_2	73	FP	07/27/23	8.3	160	16T 467316 4473004	D	NA	U	U	Yes
Indiana bat	*Myotis sodalis*	20230727_INBA_073_1	73	FP	07/27/23	43.2	347	16T 467304 4473054	P	29.0	U	F	Yes
Hoary bat	*Lasiurus cinereus*	20230727_HOBA_103_1	103	FP	07/27/23	33.1	1	16T 465828 4478729	I	50.4	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230728_ERBA_003_1	3	FP	07/28/23	10.8	249	16T 460041 4461552	I	40.0	J	M	Yes
Eastern red bat	*Lasiurus borealis*	20230728_ERBA_004_1	4	FP	07/28/23	24.1	14	16T 460661 4461089	I	39.7	J	M	Yes
Eastern red bat	*Lasiurus borealis*	20230728_ERBA_004_2	4	FP	07/28/23	37.3	18	16T 460667 4461101	I	40.0	J	F	Yes
Big brown bat	*Eptesicus fuscus*	20230728_BBBA_036_1	36	RP	07/28/23	0.9	74	16T 466841 4464807	A	NA	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230728_ERBA_036_1	36	RP	07/28/23	2.2	56	16T 466842 4464808	I	38.1	A	M	Yes
Eastern red bat	*Lasiurus borealis*	20230728_ERBA_094_1	94	FP	07/28/23	14.0	44	16T 457249 4478502	P	40.8	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_003_1	3	FP	07/31/23	24.4	318	16T 460035 4461574	I	40.9	A	M	Yes
Evening bat	*Nycticeius humeralis*	20230731_EVBA_003_1	3	FP	07/31/23	18.2	210	16T 460042 4461540	P	34.4	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_004_1	4	FP	07/31/23	66.7	315	16T 460608 4461113	I	38.9	A	M	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_005_1	5	FP	07/31/23	51.2	244	16T 461105 4461065	I	36.9	A	M	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_005_2	5	FP	07/31/23	36.7	348	16T 461144 4461123	P	39.7	U	M	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_005_3	5	FP	07/31/23	22.7	28	16T 461162 4461107	I	43.6	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_005_4	5	FP	07/31/23	39.7	38	16T 461176 4461118	D	38.6	U	U	Yes

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Hoary bat	*Lasiurus cinereus*	20230731_HOBA_005_1	5	FP	07/31/23	26.3	265	16T 461125 4461085	I	55.7	U	U	Yes
Evening bat	*Nycticeius humeralis*	20230731_EVBA_006_1	6	RP	07/31/23	5.7	29	16T 461803 4460765	D	30.0	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_007_1	7	RP	07/31/23	5.0	212	16T 461955 4460252	I	40.3	U	M	Yes
Hoary bat	*Lasiurus cinereus*	20230731_HOBA_010_1	10	RP	07/31/23	75.0	180	16T 461911 4461428	P	57.5	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_011_1	11	RP	07/31/23	3.7	5	16T 462776 4461599	I	40.3	A	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_015_1	15	RP	07/31/23	0.9	20	16T 464291 4463677	I	40.9	J	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_015_2	15	RP	07/31/23	4.7	307	16T 464287 4463679	P	NA	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_040_1	40	RP	07/31/23	30.7	227	16T 463349 4466774	D	NA	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_040_2	40	RP	07/31/23	30.0	229	16T 463349 4466775	D	38.8	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_040_3	40	RP	07/31/23	2.7	62	16T 463374 4466796	D	37.3	A	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_041_2	41	FP	07/31/23	39.5	261	16T 464366 4466773	I	41.5	J	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_041_1	41	FP	07/31/23	40.5	261	16T 464365 4466773	I	41.4	A	M	Yes
Big brown bat	*Eptesicus fuscus*	20230731_BBBA_054_1	54	RP	07/31/23	1.6	25	16T 463877 4466813	I	52.0	J	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_054_1	54	RP	07/31/23	2.7	301	16T 463874 4466813	D	35.3	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_055_1	55	FP	07/31/23	7.5	317	16T 463353 4469156	I	31.0	A	M	Yes
Hoary bat	*Lasiurus cinereus*	20230731_HOBA_055_1	55	FP	07/31/23	20.2	195	16T 463353 4469131	I	55.0	J	U	Yes
Hoary bat	*Lasiurus cinereus*	20230731_HOBA_055_2	55	FP	07/31/23	34.3	80	16T 463392 4469156	P	55.0	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_056_1	56	FP	07/31/23	20.5	263	16T 463779 4469141	I	39.0	J	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_056_2	56	FP	07/31/23	6.2	66	16T 463805 4469146	P	40.4	U	F	Yes
Hoary bat	*Lasiurus cinereus*	20230731_HOBA_058_1	58	RP	07/31/23	30.7	150	16T 464955 4468730	I	51.7	J	M	Yes

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Eastern red bat	*Lasiurus borealis*	20230731_ERBA_059_1	59	RP	07/31/23	6.6	313	16T 465624 4468754	I	39.0	J	M	Yes
Hoary bat	*Lasiurus cinereus*	20230731_HOBA_070_1	70	FP	07/31/23	33.1	333	16T 464344 4472518	I	55.5	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_072_1	72	RP	07/31/23	15.5	284	16T 465342 4472274	P	38.0	A	M	Yes
Big brown bat	*Eptesicus fuscus*	20230731_BBBA_073_1	73	FP	07/31/23	47.6	7	16T 467319 4473059	P	46.5	J	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_073_1	73	FP	07/31/23	48.6	7	16T 467319 4473060	I	38.9	J	M	Yes
Big brown bat	*Eptesicus fuscus*	20230731_BBBA_077_1	77	RP	07/31/23	17.8	269	16T 458752 4476128	P	44.0	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_086_1	86	FP	07/31/23	11.9	225	16T 465769 4475336	I	38.5	J	M	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_093_1	93	RP	07/31/23	6.7	31	16T 457420 4477278	P	41.5	A	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_094_1	94	FP	07/31/23	31.1	1	16T 457240 4478523	I	37.7	A	M	Yes
Hoary bat	*Lasiurus cinereus*	20230731_HOBA_094_1	94	FP	07/31/23	43.6	336	16T 457222 4478532	I	52.4	A	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_095_1	95	RP	07/31/23	5.0	360	16T 457697 4478480	I	44.5	U	M	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_095_2	95	RP	07/31/23	6.0	180	16T 457697 4478469	P	39.3	A	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_124_1	124	FP	07/31/23	29.5	284	16T 466502 4481802	I	37.9	U	M	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_125_1	125	FP	07/31/23	13.4	37	16T 467507 4481461	I	37.5	A	F	Yes
Hoary bat	*Lasiurus cinereus*	20230731_HOBA_125_1	125	FP	07/31/23	28.0	54	16T 467522 4481466	P	55.5	A	U	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_138_1	138	FP	07/31/23	37.3	291	16T 465716 4483555	P	40.6	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_140_1	140	FP	07/31/23	19.8	190	16T 467387 4482951	I	40.7	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_140_2	140	FP	07/31/23	8.6	86	16T 467399 4482971	I	40.0	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230731_ERBA_140_3	140	FP	07/31/23	4.8	71	16T 467395 4482972	I	40.3	J	F	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_020_1	20	RP	08/01/23	40.3	86	16T 458566 4467569	P	42.0	U	F	Yes

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Big brown bat	*Eptesicus fuscus*	20230801_BBBA_046_1	46	FP	08/01/23	2.8	330	16T 459173 4471432	I	44.5	J	U	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_046_1	46	FP	08/01/23	20.7	37	16T 459187 4471446	P	39.0	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_048_1	48	FP	08/01/23	48.2	323	16T 459195 4470700	D	38.0	A	U	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_051_2	51	FP	08/01/23	38.3	54	16T 460644 4469852	P	38.2	U	M	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_051_1	51	FP	08/01/23	43.2	314	16T 460582 4469860	P	39.0	A	U	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_053_1	53	RP	08/01/23	3.2	359	16T 461065 4469831	D	38.8	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_082_1	82	RP	08/01/23	10.8	110	16T 460886 4475663	P	37.4	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_085_1	85	RP	08/01/23	4.4	76	16T 462534 4476186	P	38.9	U	F	Yes
Hoary bat	*Lasiurus cinereus*	20230801_HOBA_100_1	100	FP	08/01/23	36.8	287	16T 464078 4477350	I	56.9	A	F	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_104_1	104	FP	08/01/23	2.9	52	16T 467525 4478649	I	48.4	A	M	Yes
Evening bat	*Nycticeius humeralis*	20230801_EVBA_104_1	104	FP	08/01/23	47.8	134	16T 467557 4478614	I	36.5	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_108_1	108	RP	08/01/23	8.3	302	16T 458519 4480223	I	44.3	A	M	Yes
Hoary bat	*Lasiurus cinereus*	20230801_HOBA_108_1	108	RP	08/01/23	1.9	148	16T 458527 4480217	P	56.3	J	U	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_109_1	109	FP	08/01/23	14.7	251	16T 458550 4479596	P	38.8	A	F	Yes
Eastern red bat	*Lasiurus borealis*	20230801_ERBA_116_1	116	RP	08/01/23	11.1	95	16T 462475 4481366	I	41.9	U	F	Yes
Big brown bat	*Eptesicus fuscus*	20230801_BBBA_130_1	130	FP	08/01/23	46.3	304	16T 459673 4482192	I	44.3	J	M	Yes
Hoary bat	*Lasiurus cinereus*	20230801_HOBA_132_1	132	RP	08/01/23	6.2	302	16T 460810 4482156	P	56.3	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230802_ERBA_063_1	63	RP	08/02/23	7.7	24	16T 467353 4470889	P	39.2	U	M	Yes
Evening bat	*Nycticeius humeralis*	20230802_EVBA_079_1	79	RP	08/02/23	16.3	13	16T 459358 4475494	I	34.1	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230804_ERBA_125_1	125	FP	08/04/23	71.5	45	16T 467550 4481500	P	40.0	U	M	Yes

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Eastern red bat	*Lasiurus borealis*	20230806_ERBA_055_1	55	FP	08/06/23	94.1	292	16T 463271 4469186	I	39.2	A	M	Yes
Eastern red bat	*Lasiurus borealis*	20230807_ERBA_108_1	108	RP	08/07/23	124.1	268	16T 458402 4480215	D	40.9	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230813_ERBA_048_1	48	FP	08/13/23	62.7	1	16T 459225 4470724	P	37.8	A	M	Yes
Eastern red bat	*Lasiurus borealis*	20230814_ERBA_079_1	79	RP	08/14/23	14.9	338	16T 459349 4475492	I	39.1	J	F	Yes
Eastern red bat	*Lasiurus borealis*	20230815_ERBA_112_1	112	RP	08/15/23	26.5	191	16T 460488 4480056	I	43.0	A	F	Yes
Eastern red bat	*Lasiurus borealis*	20230819_ERBA_121_1	121	RP	08/19/23	7.7	135	16T 466172 4480100	I	40.5	J	F	Yes
Eastern red bat	*Lasiurus borealis*	20230822_ERBA_041_1	41	FP	08/22/23	61.2	265	16T 464344 4466774	P	40.1	A	F	Yes
Eastern red bat	*Lasiurus borealis*	20230823_ERBA_085_1	85	RP	08/23/23	13.3	94	16T 462543 4476184	I	38.9	A	M	Yes
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_079_1	79	RP	08/26/23	45.2	341	16T 459340 4475521	I	40.3	A	F	Yes
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_079_2	79	RP	08/26/23	40.9	359	16T 459354 4475519	I	41.5	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230826_ERBA_140_2	140	FP	08/26/23	55.4	248	16T 467339 4482950	I	38.2	A	M	Yes
Silver-haired bat	*Lasionycteris noctivagans*	20230828_SHBA_097_1	97	RP	08/28/23	6.6	125	16T 460404 4478257	I	42.2	U	F	Yes
Eastern red bat	*Lasiurus borealis*	20230901_ERBA_010_1	10	RP	09/01/23	16.6	195	16T 461907 4461487	I	NA	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20230902_ERBA_022_1	22	RP	09/02/23	14.6	199	16T 458964 4466791	P	38.3	U	M	Yes
Hoary bat	*Lasiurus cinereus*	20230903_HOBA_081_1	81	RP	09/03/23	55.1	262	16T 460423 4476000	P	54.6	U	U	Yes
Big brown bat	*Eptesicus fuscus*	20230903_BBBA_090_1	90	RP	09/03/23	35.9	57	16T 456035 4477389	P	45.3	U	U	Yes
Silver-haired bat	*Lasionycteris noctivagans*	20230903_SHBA_090_1	90	RP	09/03/23	29.0	38	16T 456023 4477392	I	42.3	U	M	Yes
Seminole bat	*Lasiurus seminolus*	20230906_SEBA_017_1	17	RP	09/06/23	5.0	44	16T 465771 4463693	I	41.0	U	M	Yes
Eastern red bat	*Lasiurus borealis*	20230907_ERBA_060_1	60	RP	09/07/23	8.9	340	16T 466928 4468481	P	39.2	U	M	Yes
Eastern red bat	*Lasiurus borealis*	20230919_ERBA_054_1	54	RP	09/19/23	10.7	171	16T 463878 4466801	I	39.5	U	F	Yes

Common Name	*Scientific Name*	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Condition[b]	Forearm Length (mm)	Age[c]	Sex[d]	Incidental Find?
Silver-haired bat	*Lasionycteris noctivagans*	20230921_SHBA_139_1	139	RP	09/21/23	6.6	147	16T 466991 4482987	I	38.9	U	M	Yes
Eastern red bat	*Lasiurus borealis*	20230924_ERBA_098_1	98	FP	09/24/23	81.8	240	16T 461660 4478315	P	38.4	U	M	Yes
Evening bat	*Nycticeius humeralis*	20231006_EVBA_040_1	40	RP	10/06/23	27.1	189	16T 463367 4466768	A	NA	U	U	Yes
Eastern red bat	*Lasiurus borealis*	20231014_ERBA_008_1	8	RP	10/14/23	101.5	253	16T 462299 4460008	I	39.7	A	M	Yes
Silver-haired bat	*Lasionycteris noctivagans*	20231016_SHBA_075_1	75	RP	10/16/23	3.7	260	16T 461050 4473714	A	NA	U	U	Yes
Silver-haired bat	*Lasionycteris noctivagans*	20231016_SHBA_103_1	103	FP	10/16/23	10.9	338	16T 465823 4478706	I	40.8	U	U	Yes
Silver-haired bat	*Lasionycteris noctivagans*	20231018_SHBA_129_1	129	RP	10/18/23	32.5	357	16T 459210 4482243	I	40.2	U	M	Yes
Silver-haired bat	*Lasionycteris noctivagans*	20231024_SHBA_027_1	27	RP	10/24/23	5.0	71	16T 462114 4465883	I	41.2	U	M	Yes
Eastern red bat	*Lasiurus borealis*	20231106_ERBA_008_1	8	RP	11/06/23	29.2	182	16T 462395 4460008	I	37.7	U	M	Yes

[a] Plot Type: FP = cleared full plot; RP = road and pad plot

[b] Condition: I = Intact; P = Partial; D = Dismembered; F = Fur spot; A = Alive

[c] Age: A = Adult; J = Juvenile; U = Unknown

[d] Sex: M = Male; F = Female; U = Unknown

NA (Not Applicable) indicates data not recorded.

APPENDIX A-2

LIST OF AVIAN CARCASSES LOCATED DURING POST-CONSTRUCTION MONITORING SURVEYS AT JORDAN CREEK WIND ENERGY CENTER

List of Avian Carcasses Located during Post-construction Monitoring Surveys at Jordan Creek Wind Energy Center

Common Name	Scientific Name	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Incidental Find?[b]
Brown-headed Cowbird	*Molothrus ater*	20230403_BHCO_094_1	94	FP	4/3/23	57.0	331	16T 457212 4478542	No
Ruby-crowned Kinglet	*Regulus calendula*	20230412_RCKI_144_1	144	RP	4/12/23	88.5	31	16T 463519 4485163	No
Golden-crowned Kinglet	*Regulus satrapa*	20230413_GCKI_119_1	119	RP	4/13/23	34.1	87	16T 464536 4479649	No
Chimney Swift	*Chaetura pelagica*	20230502_CHSW_136_1	136	FP	5/2/23	42.4	24	16T 462621 4483396	No
Brown Thrasher	*Toxostoma rufum*	20230509_BRTH_078_1	78	FP	5/9/23	64.2	313	16T 459046 4475861	No
Killdeer	*Charadrius vociferus*	20230803_KILL_026_1	26	FP	8/3/23	50.7	116	16T 461723 4465049	No
Unknown Passerine	*Passeriformes sp.*	20230803_XXPA_105_1	105	FP	8/3/23	45.5	40	16T 467293 4477246	No
Unknown Passerine	*Passeriformes sp.*	20230803_XXPA_105_2	105	FP	8/3/23	44.7	43	16T 467294 4477244	No
Tree Swallow	*Tachycineta bicolor*	20230803_TRES_111_1	111	FP	8/3/23	57.6	29	16T 459466 4479639	No
Purple Martin	*Progne subis*	20230804_PUMA_008_1	8	RP	8/4/23	29.3	164	16T 462404 4460009	No
Horned Lark	*Eremophila alpestris*	20230804_HOLA_124_1	124	FP	8/4/23	44.1	339	16T 466515 4481836	No
Horned Lark	*Eremophila alpestris*	20230805_HOLA_016_1	16	FP	8/5/23	39.9	2	16T 465291 4463733	No
Horned Lark	*Eremophila alpestris*	20230808_HOLA_001_1	1	FP	8/8/23	52.8	46	16T 458873 4462347	No
Brown-headed Cowbird	*Molothrus ater*	20230808_BHCO_140_1	140	FP	8/8/23	28.5	308	16T 467368 4482988	No
Cliff Swallow	*Petrochelidon pyrrhonota*	20230810_CLSW_092_1	92	RP	8/10/23	9.2	43	16T 456965 4477279	No
Cliff Swallow	*Petrochelidon pyrrhonota*	20230811_CLSW_037_1	37	RP	8/11/23	6.7	21	16T 462159 4466641	No
Killdeer	*Charadrius vociferus*	20230812_KILL_130_1	130	FP	8/12/23	14.3	205	16T 459705 4482153	No
House Wren	*Troglodytes aedon*	20230813_HOWR_048_1	48	FP	8/13/23	24.7	110	16T 459247 4470653	No
Horned Lark	*Eremophila alpestris*	20230813_HOLA_084_1	84	FP	8/13/23	26.2	136	16T 461871 4476380	No
Killdeer	*Charadrius vociferus*	20230814_KILL_055_1	55	FP	8/14/23	44.1	19	16T 463373 4469192	No
Rock Pigeon	*Columba livia*	20230815_ROPI_030_1	30	FP	8/15/23	58.4	236	16T 463471 4465669	No
Killdeer	*Charadrius vociferus*	20230816_KILL_032_1	32	RP	8/16/23	62.8	346	16T 464533 4465507	No
Brown-headed Cowbird	*Molothrus ater*	20230818_BHCO_093_1	93	RP	8/18/23	20.0	292	16T 457398 4477280	No
Horned Lark	*Eremophila alpestris*	20230818_HOLA_140_1	140	FP	8/18/23	2.5	166	16T 467391 4482968	No
Killdeer	*Charadrius vociferus*	20230819_KILL_114_1	114	FP	8/19/23	49.2	72	16T 461303 4479848	No
Cooper's Hawk	*Accipiter cooperii*	20230820_COHA_125_1	125	FP	8/20/23	46.1	68	16T 467542 4481467	No
Blackburnian Warbler	*Setophaga fusca*	20230821_BLBW_048_1	48	FP	8/21/23	33.9	284	16T 459191 4470670	No
Cliff Swallow	*Petrochelidon pyrrhonota*	20230821_CLSW_068_1	68	FP	8/21/23	33.3	30	16T 463457 4472389	No
Cliff Swallow	*Petrochelidon pyrrhonota*	20230823_CLSW_051_1	51	FP	8/23/23	53.0	244	16T 460565 4469807	No
Killdeer	*Charadrius vociferus*	20230823_KILL_102_1	102	FP	8/23/23	13.5	213	16T 464995 4477267	No
Mourning Dove	*Zenaida macroura*	20230823_MODO_122_1	122	RP	8/23/23	3.0	116	16T 466917 4480188	No
Bay-breasted Warbler	*Setophaga castanea*	20230824_BBWA_004_1	4	FP	8/24/23	37.8	312	16T 460627 4461091	No
Indigo Bunting	*Passerina cyanea*	20230824_INBU_095_1	95	RP	8/24/23	4.0	270	16T 457693 4478475	No
Bay-breasted Warbler	*Setophaga castanea*	20230825_BBWA_052_1	52	RP	8/25/23	6.4	345	16T 461233 4470561	No
Cliff Swallow	*Petrochelidon pyrrhonota*	20230826_CLSW_056_1	56	FP	8/26/23	45.6	139	16T 463829 4469109	No
Horned Lark	*Eremophila alpestris*	20230826_HOLA_057_1	57	RP	8/26/23	16.7	5	16T 464432 4469158	No
Killdeer	*Charadrius vociferus*	20230826_KILL_094_1	94	FP	8/26/23	23.3	49	16T 457257 4478507	No
Bay-breasted Warbler	*Setophaga castanea*	20230828_BBWA_004_1	4	FP	8/28/23	45.2	328	16T 460631 4461104	No

Common Name	Scientific Name	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Incidental Find?[b]
Red-eyed Vireo	*Vireo olivaceus*	20230828_REVI_125_1	125	FP	8/28/23	38.1	310	16T 467470 4481474	No
Cape May Warbler	*Setophaga tigrina*	20230829_CMWA_102_1	102	FP	8/29/23	40.5	317	16T 464975 4477308	No
Alder/Willow Flycatcher	*Empidonax alnorum/traillii*	20230901_TRFL_094_1	94	FP	9/1/23	44.0	225	16T 457208 4478461	No
Turkey Vulture	*Cathartes aura*	20230903_TUVU_040_1	40	RP	9/3/23	23.4	166	16T 463377 4466772	No
Turkey Vulture	*Cathartes aura*	20230903_TUVU_040_2	40	RP	9/3/23	20.5	164	16T 463377 4466775	No
Turkey Vulture	*Cathartes aura*	20230903_TUVU_040_3	40	RP	9/3/23	20.8	162	16T 463378 4466775	No
Purple Martin	*Progne subis*	20230905_PUMA_004_1	4	FP	9/5/23	24.1	84	16T 460679 4461068	No
Cliff Swallow	*Petrochelidon pyrrhonota*	20230905_CLSW_089_1	89	FP	9/5/23	49.2	23	16T 466879 4476320	No
Unknown small bird	*Aves sp. (small)*	20230907_XXSB_138_1	138	FP	9/7/23	19.0	262	16T 465732 4483539	No
Tennessee Warbler	*Oreothlypis peregrina*	20230908_TEWA_103_1	103	FP	9/8/23	46.1	175	16T 465831 4478650	No
Tennessee Warbler	*Oreothlypis peregrina*	20230909_TEWA_074_1	74	FP	9/9/23	28.7	280	16T 465270 4473784	No
Ruby-throated Hummingbird	*Archilochus colubris*	20230909_RTHU_089_1	89	FP	9/9/23	35.0	274	16T 466825 4476277	No
European Starling	*Sturnus vulgaris*	20230911_EUST_005_1	5	FP	9/11/23	20.1	353	16T 461149 4461107	No
Black-throated Green Warbler	*Setophaga virens*	20230912_BTNW_102_1	102	FP	9/12/23	43.5	268	16T 464959 4477277	No
Black-and-white Warbler	*Mniotilta varia*	20230913_BAWW_124_1	124	FP	9/13/23	35.9	186	16T 466527 4481759	No
Wilson's Warbler	*Cardellina pusilla*	20230913_WIWA_139_1	139	RP	9/13/23	41.9	240	16T 466951 4482972	No
Tree Swallow	*Tachycineta bicolor*	20230915_TRES_096_1	96	FP	9/15/23	58.5	327	16T 458969 4478524	No
Swainson's Thrush	*Catharus ustulatus*	20230915_SWTH_130_1	130	FP	9/15/23	56.8	55	16T 459758 4482198	No
Tennessee Warbler	*Oreothlypis peregrina*	20230915_TEWA_130_1	130	FP	9/15/23	43.1	146	16T 459735 4482130	No
Chimney Swift	*Chaetura pelagica*	20230915_CHSW_140_1	140	FP	9/15/23	46.0	352	16T 467384 4483016	No
Red-eyed Vireo	*Vireo olivaceus*	20230916_REVI_025_1	25	FP	9/16/23	40.0	332	16T 461321 4465318	No
Philadelphia Vireo	*Vireo philadelphicus*	20230916_PHVI_113_1	113	FP	9/16/23	36.6	199	16T 460912 4480023	No
Killdeer	*Charadrius vociferus*	20230916_KILL_114_1	114	FP	9/16/23	25.2	15	16T 461263 4479857	No
Brown-headed Cowbird	*Molothrus ater*	20230917_BHCO_002_1	2	RP	9/17/23	96.5	272	16T 459692 4461874	No
Cliff Swallow	*Petrochelidon pyrrhonota*	20230917_CLSW_054_1	54	RP	9/17/23	54.4	226	16T 463837 4466774	No
House Sparrow	*Passer domesticus*	20230917_HOSP_060_1	60	RP	9/17/23	2.5	130	16T 466933 4468471	No
Cliff Swallow	*Petrochelidon pyrrhonota*	20230917_CLSW_078_1	78	FP	9/17/23	60.0	306	16T 459044 4475852	No
Philadelphia Vireo	*Vireo philadelphicus*	20230917_PHVI_097_1	97	RP	9/17/23	60.1	214	16T 460365 4478211	No
Palm Warbler	*Setophaga palmarum*	20230918_PAWA_106_1	106	RP	9/18/23	85.2	183	16T 456829 4481064	No
Killdeer	*Charadrius vociferus*	20230918_KILL_110_1	110	FP	9/18/23	21.3	356	16T 458992 4479616	No
American Redstart	*Setophaga ruticilla*	20230918_AMRE_127_1	127	RP	9/18/23	3.1	324	16T 458215 4482291	No
Tennessee Warbler	*Oreothlypis peregrina*	20230919_TEWA_001_1	1	FP	9/19/23	52.4	202	16T 458815 4462262	No
Black-throated Green Warbler	*Setophaga virens*	20230919_BTNW_073_1	73	FP	9/19/23	33.4	32	16T 467331 4473040	No
American Redstart	*Setophaga ruticilla*	20230919_AMRE_096_1	96	FP	9/19/23	53.3	152	16T 459026 4478428	No
Killdeer	*Charadrius vociferus*	20230919_KILL_123_1	123	FP	9/19/23	51.2	278	16T 465646 4482201	No
Killdeer	*Charadrius vociferus*	20230921_KILL_137_1	137	FP	9/21/23	58.0	317	16T 462867 4483097	No
Killdeer	*Charadrius vociferus*	20230924_KILL_114_1	114	FP	9/24/23	19.8	71	16T 461275 4479839	No
Black-throated Green Warbler	*Setophaga virens*	20230925_BTNW_084_1	84	FP	9/25/23	44.9	26	16T 461873 4476439	No
Ruby-crowned Kinglet	*Regulus calendula*	20230925_RCKI_107_1	107	RP	9/25/23	3.4	233	16T 456950 4480165	No
Bay-breasted Warbler	*Setophaga castanea*	20230926_BBWA_041_1	41	FP	9/26/23	40.2	284	16T 464366 4466789	No
Bay-breasted Warbler	*Setophaga castanea*	20230926_BBWA_125_1	125	FP	9/26/23	33.1	11	16T 467506 4481482	No

Common Name	Scientific Name	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Incidental Find?[b]
Chimney Swift	*Chaetura pelagica*	20230926_CHSW_125_1	125	FP	9/26/23	43.6	264	16T 467456 4481445	No
Killdeer	*Charadrius vociferus*	20230926_KILL_137_1	137	FP	9/26/23	60.9	228	16T 462861 4483014	No
American Golden-Plover	*Pluvialis dominica*	20230927_AMGP_068_1	68	FP	9/27/23	47.6	224	16T 463407 4472326	No
Unknown Warbler	*Parulidae sp.*	20230927_XXWA_114_1	114	FP	9/27/23	41.8	180	16T 461256 4479791	No
Killdeer	*Charadrius vociferus*	20230928_KILL_086_1	86	FP	9/28/23	67.9	228	16T 465727 4475299	No
Tree Swallow	*Tachycineta bicolor*	20230929_TRES_026_1	26	FP	9/29/23	37.7	242	16T 461644 4465054	No
Palm Warbler	*Setophaga palmarum*	20231001_PAWA_103_1	103	FP	10/1/23	26.5	160	16T 465836 4478671	No
Tree Swallow	*Tachycineta bicolor*	20231001_TRES_110_1	110	FP	10/1/23	28.9	214	16T 458977 4479571	No
Tree Swallow	*Tachycineta bicolor*	20231001_TRES_111_1	111	FP	10/1/23	20.8	42	16T 459452 4479604	No
Tree Swallow	*Tachycineta bicolor*	20231003_TRES_025_1	25	FP	10/3/23	11.9	28	16T 461345 4465293	No
Chimney Swift	*Chaetura pelagica*	20231004_CHSW_073_1	73	FP	10/4/23	24.8	348	16T 467308 4473036	No
Yellow-billed Cuckoo	*Coccyzus americanus*	20231005_YBCU_026_1	26	FP	10/5/23	45.0	52	16T 461713 4465099	No
House Sparrow	*Passer domesticus*	20231005_HOSP_045_1	45	RP	10/5/23	4.4	262	16T 458629 4471477	No
Black-throated Green Warbler	*Setophaga virens*	20231006_BTNW_070_1	70	FP	10/6/23	47.2	114	16T 464402 4472469	No
Mourning Dove	*Zenaida macroura*	20231006_MODO_123_1	123	FP	10/6/23	43.9	64	16T 465736 4482213	No
Nashville Warbler	*Oreothlypis ruficapilla*	20231007_NAWA_017_1	17	RP	10/7/23	75.6	106	16T 465840 4463668	No
Magnolia Warbler	*Setophaga magnolia*	20231007_MAWA_026_1	26	FP	10/7/23	53.6	52	16T 461720 4465104	No
Magnolia Warbler	*Setophaga magnolia*	20231007_MAWA_046_1	46	FP	10/7/23	28.1	151	16T 459188 4471405	No
Ruby-crowned Kinglet	*Regulus calendula*	20231007_RCKI_100_1	100	FP	10/7/23	39.0	113	16T 464149 4477324	No
Golden-crowned Kinglet	*Regulus satrapa*	20231008_GCKI_005_1	5	FP	10/8/23	42.9	144	16T 461176 4461052	No
Ruby-crowned Kinglet	*Regulus calendula*	20231008_RCKI_094_1	94	FP	10/8/23	34.2	144	16T 457259 4478464	No
Golden-crowned Kinglet	*Regulus satrapa*	20231008_GCKI_096_1	96	FP	10/8/23	30.0	178	16T 459002 4478445	No
Golden-crowned Kinglet	*Regulus satrapa*	20231008_GCKI_096_2	96	FP	10/8/23	45.6	164	16T 459013 4478431	No
Brown-headed Cowbird	*Molothrus ater*	20231008_BHCO_129_1	129	RP	10/8/23	4.3	213	16T 459209 4482207	No
Black-throated Green Warbler	*Setophaga virens*	20231008_BTNW_138_1	138	FP	10/8/23	37.7	183	16T 465749 4483504	No
Golden-crowned Kinglet	*Regulus satrapa*	20231009_GCKI_016_1	16	FP	10/9/23	42.2	83	16T 465331 4463698	No
Lincoln's Sparrow	*Melospiza lincolnii*	20231009_LISP_016_1	16	FP	10/9/23	55.6	146	16T 465320 4463647	No
Golden-crowned Kinglet	*Regulus satrapa*	20231009_GCKI_068_1	68	FP	10/9/23	53.3	144	16T 463471 4472317	No
European Starling	*Sturnus vulgaris*	20231009_EUST_105_1	105	FP	10/9/23	28.9	212	16T 467248 4477187	No
Palm Warbler	*Setophaga palmarum*	20231009_PAWA_131_1	131	RP	10/9/23	65.3	129	16T 460293 4482107	No
Ruby-crowned Kinglet	*Regulus calendula*	20231010_RCKI_001_1	1	FP	10/10/23	32.3	156	16T 458848 4462281	No
Palm Warbler	*Setophaga palmarum*	20231010_PAWA_056_1	56	FP	10/10/23	56.5	142	16T 463834 4469099	No
Golden-crowned Kinglet	*Regulus satrapa*	20231010_GCKI_087_1	87	RP	10/10/23	23.3	188	16T 466166 4475313	No
Brown Creeper	*Certhia americana*	20231011_BRCR_046_1	46	FP	10/11/23	28.7	185	16T 459172 4471401	No
Golden-crowned Kinglet	*Regulus satrapa*	20231011_GCKI_046_1	46	FP	10/11/23	43.8	54	16T 459210 4471455	No
Killdeer	*Charadrius vociferus*	20231012_KILL_005_1	5	FP	10/12/23	21.6	233	16T 461134 4461074	No
Black-throated Green Warbler	*Setophaga virens*	20231012_BTNW_124_1	124	FP	10/12/23	44.8	23	16T 466548 4481836	No
Unknown Passerine	*Passeriformes sp.*	20231013_XXPA_103_1	103	FP	10/13/23	41.7	297	16T 465790 4478715	No
Nashville Warbler	*Oreothlypis ruficapilla*	20231014_NAWA_089_1	89	FP	10/14/23	42.2	40	16T 466887 4476307	No
Ruby-crowned Kinglet	*Regulus calendula*	20231014_RCKI_139_1	139	RP	10/14/23	45.9	245	16T 466946 4482973	No
European Starling	*Sturnus vulgaris*	20230328_EUST_130_1	130	FP	3/28/23	11.8	138	16T 459719 4482157	Yes

Common Name	Scientific Name	Carcass ID	Turbine No.	Plot Type[a]	Date	Distance from Turbine (m)	Bearing from Turbine (degrees)	Coordinates (UTM)	Incidental Find?[b]
Killdeer	*Charadrius vociferus*	20230329_KILL_102_1	102	FP	3/29/23	31.6	237	16T 464976 4477261	Yes
Cooper's Hawk	*Accipiter cooperii*	20230330_COHA_041_1	41	FP	3/30/23	36.8	358	16T 464404 4466816	Yes
Red-winged Blackbird	*Agelaius phoeniceus*	20230413_RWBL_054_1	54	RP	4/13/23	16.2	333	16T 463869 4466826	Yes
Brown-headed Cowbird	*Molothrus ater*	20230419_BHCO_032_1	32	RP	4/19/23	20.5	317	16T 464534 4465461	Yes
Brown-headed Cowbird	*Molothrus ater*	20230419_BHCO_032_2	32	RP	4/19/23	14.1	352	16T 464546 4465460	Yes
Golden-crowned Kinglet	*Regulus satrapa*	20230419_GCKI_101_1	101	RP	4/19/23	32.9	74	16T 464591 4477338	Yes
Downy Woodpecker	*Dryobates pubescens*	20230420_DOWO_023_1	23	RP	4/20/23	17.5	80	16T 459231 4466442	Yes
Brown-headed Cowbird	*Molothrus ater*	20230425_BHCO_059_1	59	RP	4/25/23	29.4	166	16T 465636 4468721	Yes
Turkey Vulture	*Cathartes aura*	20230619_TUVU_029_1	29	RP	6/19/23	35.5	89	16T 462930 4465596	Yes
Peregrine Falcon	*Falco peregrinus*	20230708_PEFA_123_1	123	FP	7/8/23	19.3	26	16T 465705 4482211	Yes
Red-tailed Hawk	*Buteo jamaicensis*	20230725_RTHA_102_1	102	FP	7/25/23	46.7	85	16T 465049 4477282	Yes
Tree Swallow	*Tachycineta bicolor*	20230731_TRES_009_1	9	RP	7/31/23	15.0	7	16T 462844 4459965	Yes
Dickcissel	*Spiza americana*	20230801_DICK_108_1	108	RP	8/1/23	2.0	78	16T 458528 4480219	Yes
Killdeer	*Charadrius vociferus*	20230801_KILL_109_1	109	FP	8/1/23	27.9	268	16T 458536 4479600	Yes
Purple Martin	*Progne subis*	20230812_PUMA_140_1	140	FP	8/12/23	52.5	164	16T 467405 4482920	Yes
Canada Warbler	*Cardellina canadensis*	20230822_CAWA_064_1	64	RP	8/22/23	51.3	176	16T 467877 4471080	Yes
Tennessee Warbler	*Oreothlypis peregrina*	20230913_TEWA_078_1	78	FP	9/13/23	52.0	184	16T 459089 4475765	Yes
American Redstart	*Setophaga ruticilla*	20230914_AMRE_097_1	97	RP	9/14/23	9.2	196	16T 460396 4478252	Yes
Unknown small bird	*Aves sp. (small)*	20230915_XXSB_124_1	124	FP	9/15/23	91.8	273	16T 466439 4481800	Yes
Magnolia Warbler	*Setophaga magnolia*	20230917_MAWA_041_1	41	FP	9/17/23	58.6	262	16T 464347 4466771	Yes
Mourning Dove	*Zenaida macroura*	20230918_MODO_099_1	99	RP	9/18/23	224.1	353	16T 462021 4478251	Yes
Killdeer	*Charadrius vociferus*	20230921_KILL_121_1	121	RP	9/21/23	7.9	236	16T 466160 4480101	Yes
Yellow-bellied Flycatcher	*Empidonax flaviventris*	20230924_YBFL_041_1	41	FP	9/24/23	69.3	265	16T 464336 4466773	Yes
Tennessee Warbler	*Oreothlypis peregrina*	20230924_TEWA_064_1	64	RP	9/24/23	23.5	171	16T 467877 4471108	Yes
Unknown small bird	*Aves sp. (small)*	20231002_XXSB_096_1	96	FP	10/2/23	60.0	272	16T 458941 4478477	Yes
Red-eyed Vireo	*Vireo olivaceus*	20231006_REVI_057_1	57	RP	10/6/23	40.9	6	16T 464435 4469182	Yes
Northern Parula	*Setophaga americana*	20231009_NOPA_132_1	132	RP	10/9/23	119.8	112	16T 460926 4482107	Yes
Golden-crowned Kinglet	*Regulus satrapa*	20231013_GCKI_084_1	84	FP	10/13/23	99.9	269	16T 461753 4476398	Yes
Ruby-crowned Kinglet	*Regulus calendula*	20231014_RCKI_135_1	135	RP	10/14/23	118.0	296	16T 461051 4483079	Yes
Nashville Warbler	*Oreothlypis ruficapilla*	20231018_NAWA_133_1	t133	RP	10/18/23	4.1	199	16T 461246 4482118	Yes
Golden-crowned Kinglet	*Regulus satrapa*	20231025_GCKI_057_1	t057	RP	10/25/23	69.8	304	16T 464373 4469181	Yes
Horned Lark	*Eremophila alpestris*	20231031_HOLA_120_1	t120	RP	10/31/23	1.9	66	16T 465791 4480239	Yes
Chipping Sparrow	*Spizella passerina*	20231108_CHSP_072_1	t072	RP	11/8/23	116.0	270	16T 465241 4472270	Yes
Fox Sparrow	*Passerella iliaca*	20231113_FOSP_079_1	t079	RP	11/13/23	129.1	288	16T 459232 4475519	Yes
European Starling	*Sturnus vulgaris*	20231218_EUST_026_1	t026	FP	12/18/23	22.6	274	16T 461655 4465073	Yes
Brown-headed Cowbird	*Molothrus ater*	20231219_BHCO_040_1	t040	RP	12/19/23	41.4	229	16T 463340 4466768	Yes
American Kestrel	*Falco sparverius*	20231228_AMKE_140_1	t140	FP	12/28/23	39.6	153	16T 467408 4482935	Yes

[a] Plot Type: FP = cleared full plot; RP = road and pad plot

[b] For avian species, non-incidental finds are those that were located within the search plot during standardized surveys. However, avian species were not included in fatality estimate analysis.

APPENDIX B

EOA OUTPUTS FOR TAKE ESTIMATES OF COVERED SPECIES

Summary statistics for multiple class estimate [Indiana bat]

Input: Detection probability, by search class
Search coverage = 0.2989

Class	DWP	X	Ba	Bb	ghat	95% CI
unsearched	0.701	0	---	---	0	[0, 0]
Spring_FP	0.0161	0	43.04	27.97	0.606	[0.491, 0.716]
Spring_RP	0.0019	0	60.23	33.67	0.641	[0.542, 0.735]
Fall_FP	0.252	4	40.5	13.74	0.747	[0.624, 0.852]
Fall_RP	0.0294	0	42.62	7.067	0.858	[0.749, 0.939]

Results for full site

Detection probability
Estimated g = 0.224, 95% CI = [0.196, 0.254]
Fitted beta distribution parameters for estimated g: Ba = 177.1478, Bb = 613.7074

Mortality
M* = 18 for credibility 1 - alpha = 0.5, i.e., P(M <= 18) >= 50%
Estimated annual fatality rate: lambda = 20.2, 95% CI = [6.01, 43.11]

Test of assumed relative weights (rho)

Class	Assumed	Fitted (95% CI)
unsearched	0.701	NA
Spring_FP	0.016	[0.000, 0.135]
Spring_RP	0.002	[0.000, 0.131]
Fall_FP	0.252	[0.092, 0.293]
Fall_RP	0.029	[0.000, 0.098]

p = 0.70414 for likelihood ratio test of H0: assumed rho = true rho

Mortality rates (lambda) by class

Class	Median	IQR	95% CI
unsearched	---	---	---
Spring_FP	0.38	[0.08, 1.10]	[0.00, 4.22]
Spring_RP	0.36	[0.08, 1.04]	[0.00, 3.96]
Fall_FP	5.62	[3.96, 7.70]	[1.80, 13.04]
Fall_RP	0.27	[0.06, 0.77]	[0.00, 2.95]

Posterior distribution of M

m	p(M = m)	p(M > m)
0	0.0000	1.0000
1	0.0000	1.0000
2	0.0000	1.0000
3	0.0000	1.0000
4	0.0012	0.9988
5	0.0042	0.9946
6	0.0089	0.9857
7	0.0150	0.9707
8	0.0217	0.9490
9	0.0286	0.9204
10	0.0351	0.8853

11	0.0408	0.8446
12	0.0454	0.7992
13	0.0489	0.7503
14	0.0511	0.6992
15	0.0522	0.6470
16	0.0523	0.5946
17	0.0515	0.5431
18	0.0500	0.4931
19	0.0479	0.4452
20	0.0453	0.3999
21	0.0424	0.3575
22	0.0394	0.3181
23	0.0363	0.2818
24	0.0331	0.2487
25	0.0301	0.2186
26	0.0271	0.1915
27	0.0243	0.1672
28	0.0217	0.1455
29	0.0193	0.1262
30	0.0170	0.1092
31	0.0150	0.0942
32	0.0132	0.0811
33	0.0115	0.0696
34	0.0100	0.0596
35	0.0087	0.0509
36	0.0075	0.0433
37	0.0065	0.0368
38	0.0056	0.0312
39	0.0048	0.0264
40	0.0041	0.0223
41	0.0035	0.0187
42	0.0030	0.0157
43	0.0026	0.0131
44	0.0022	0.0109
45	0.0019	0.0090
46	0.0016	0.0075
47	0.0013	0.0061
48	0.0011	0.0050
49	0.0010	0.0040
50	0.0008	0.0032
51	0.0007	0.0025
52	0.0006	0.0020
53	0.0005	0.0015
54	0.0004	0.0011
55	0.0003	0.0007
56	0.0003	0.0004
57	0.0002	0.0002
58	0.0002	0.0000

Summary statistics for multiple class estimate [Northern Long-eared Bat]

Input: Detection probability, by search class
Search coverage = 0.2989

Class	DWP	X	Ba	Bb	ghat	95% CI
unsearched	0.701	0	---	---	0	[0, 0]
Spring_FP	0.0161	0	43.04	27.97	0.606	[0.491, 0.716]
Spring_RP	0.0019	0	60.23	33.67	0.641	[0.542, 0.735]
Fall_FP	0.252	0	40.5	13.74	0.747	[0.624, 0.852]
Fall_RP	0.0294	0	42.62	7.067	0.858	[0.749, 0.939]

Results for full site

Detection probability
Estimated g = 0.224, 95% CI = [0.196, 0.254]
Fitted beta distribution parameters for estimated g: Ba = 177.1478, Bb = 613.7074

Mortality
M* = 0 for credibility 1 - alpha = 0.5, i.e., P(M <= 0) >= 50%
Estimated annual fatality rate: lambda = 2.25, 95% CI = [0.00222, 11.31]

Test of assumed relative weights (rho)

Class	Assumed	Fitted (95% CI)
unsearched	0.701	NA
Spring_FP	0.016	[0.001, 0.258]
Spring_RP	0.002	[0.000, 0.260]
Fall_FP	0.252	[0.000, 0.253]
Fall_RP	0.029	[0.000, 0.236]

p = 1 for likelihood ratio test of H0: assumed rho = true rho

Mortality rates (lambda) by class

Class	Median	IQR	95% CI
unsearched	---	---	---
Spring_FP	0.38	[0.08, 1.10]	[0.00, 4.22]
Spring_RP	0.36	[0.08, 1.04]	[0.00, 3.96]
Fall_FP	0.31	[0.07, 0.89]	[0.00, 3.41]
Fall_RP	0.27	[0.06, 0.77]	[0.00, 2.95]

Posterior distribution of M

m	p(M = m)	p(M > m)
0	0.5138	0.4862
1	0.1652	0.3210
2	0.0984	0.2226
3	0.0644	0.1582
4	0.0441	0.1142
5	0.0310	0.0832
6	0.0221	0.0610
7	0.0160	0.0450
8	0.0117	0.0333
9	0.0086	0.0247
10	0.0064	0.0183

11	0.0047	0.0136
12	0.0035	0.0100
13	0.0027	0.0073
14	0.0020	0.0053
15	0.0015	0.0038
16	0.0011	0.0027
17	0.0009	0.0018
18	0.0007	0.0012
19	0.0005	0.0007
20	0.0004	0.0003
21	0.0003	0.0000

Summary statistics for mortality estimates through 2 years [Indiana bat]

Results

M* = 37 for 1 - Î± = 0.5, i.e., P(M <= 37) >= 50%
Estimated overall detection probability: g = 0.248, 95% CI = [0.231, 0.266]
Ba = 572.38, Bb = 1734.6
Estimated baseline fatality rate (for rho = 1): lambda = 19.18, 95% CI = [8.96, 33.3]

Cumulative Mortality Estimates

				mean			
Year	X	g	M*	median	95% CI	lambda	95% CI
2022	5	0.272	19	19	[9, 37]	20.25	[7.001, 40.47]
2023	9	0.248	37	37	[20, 61]	38.36	[17.91, 66.58]

Annual Mortality Estimates

				mean			
Year	X	g	M*	median	95% CI	lambda	95% CI
2022	5	0.272	19	19	[9, 37]	20.2500	[7.0010, 40.4700]
2023	4	0.224	18	18	[7, 38]	20.2200	[6.0130, 43.1100]

Test of assumed relative weights (rho) and potential bias

	Fitted rho
Assumed rho	95% CI
1	[0.436, 1.567]
1	[0.433, 1.564]

p = 0.96666 for likelihood ratio test of H0: assumed rho = true rho
Quick test of relative bias: 1.001

==========

Input

Year (or period)	rho	X	Ba	Bb	ghat	95% CI
2022	1.000	5	519.3	1388	0.272	[0.252, 0.292]
2023	1.000	4	177.1	613.7	0.224	[0.196, 0.254]

Summary statistics for mortality estimates through 2 years [Northern Long-eared Bat]

Results

M* = 0 for 1 - Î± = 0.5, i.e., P(M <= 0) >= 50%
Estimated overall detection probability: g = 0.248, 95% CI = [0.231, 0.266]
Ba = 572.38, Bb = 1734.6
Estimated baseline fatality rate (for rho = 1): lambda = 1.009, 95% CI = [0.000999, 5.07]

Cumulative Mortality Estimates

				mean			
Year	X	g	M*	median	95% CI	lambda	95% CI
2022	0	0.272	0	0	[0, 6]	1.84	[0.00181, 9.253]
2023	0	0.248	0	0	[0, 6]	2.019	[0.001999, 10.15]

Annual Mortality Estimates

				mean			
Year	X	g	M*	median	95% CI	lambda	95% CI
2022	0	0.272	0	0	[0, 6]	1.8400	[0.0018, 9.2530]
2023	0	0.224	0	0	[0, 7]	2.2460	[0.0022, 11.3100]

Test of assumed relative weights (rho) and potential bias

	Fitted rho
Assumed rho	95% CI
1	[0.010, 1.991]
1	[0.008, 1.990]

p = 1 for likelihood ratio test of H0: assumed rho = true rho
Quick test of relative bias: 0.99

==========

Input

Year (or period)	rho	X	Ba	Bb	ghat	95% CI
2022	1.000	0	519.3	1388	0.272	[0.252, 0.292]
2023	1.000	0	177.1	613.7	0.224	[0.196, 0.254]