

**Post-construction Monitoring Study for the
Prosperity Wind Project
Piatt County, Illinois**

**Final
April 28 – October 15, 2025**



**Prepared for:
Prosperity Wind, LLC**

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EXECUTIVE SUMMARY

Prosperity Wind, LLC is operating the Prosperity Wind Project (Project) in Piatt County, Illinois. Commercial operation of the Project began on May 21, 2025. The Project consists of 50 Vestas V162 6.0-megawatt (MW) wind turbines with a total generating capacity of approximately 300 MW. This report details the first year of post-construction monitoring (PCM) study conducted in 2025, consistent with Section 6.4 of the Project's Habitat Conservation Plan (HCP) and Incidental Take Permit (ITP; ESPE13505300) for Indiana bats, northern long-eared bats, and tricolored bats (Covered Species); and state Incidental Take Authorization (ITA; 284) for Indiana bats and northern long-eared bats.

PCM was completed in accordance with the Year 1 PCM Study Plan for the Project, which was provided to the US Fish and Wildlife Service on March 24, 2025. The overall goals of this PCM study were to monitor for fatalities of the Covered Species and to evaluate compliance with incidental take authorization granted under the Project's ITP and ITA. The Year 1 monitoring effort was designed to target a minimum probability of detection (g) value of 0.2, and to provide the necessary data to evaluate if adaptive management was triggered.

Searches began on April 28 during the turbine testing phase of the Project and before the project reached full commercial operation. Standardized searches were completed for bat carcasses on three plot types: road and pad plots searched to 100 m (328 ft) from the turbine, as well as cleared and uncleared 80-m (262-ft) radius circular plots. Technicians searched road and pad plots once per week at 49 of the 50 turbines during spring (April 28 – May 15); one turbine was not operational. Technicians searched road and pad plots twice weekly at 13 turbines during the summer (May 16 – July 31), and twice weekly at 29 of 30 turbines during the fall (July 15 – October 15); one turbine was not operational. Detection-dog teams searched 11 cleared circular plots and nine uncleared circular plots twice per week in the fall. Searcher efficiency and carcass persistence trials were conducted across plot types during each study season to correct for detection bias and removal bias.

No Covered Species were found at the Project during the 2025 study period. A total of 904 bats were found during the study and incidentally, and 739 bats were included in analysis to calculate area adjustment factors for Evidence of Absence. The most commonly found bat species were eastern red bat (48.8%), followed by silver-haired bat (21.2%), hoary bat (17.3%) and big brown bat (9.0%).

The overall g value for Year 1 was 0.28 (95% credible interval [CrI]: 0.26–0.30), which exceeded the target of 0.20. No adaptive management actions were triggered in Year 1. Triggers based on annual take rates of Covered Species will not be assessed until Year 3, per the HCP.

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REPORT REFERENCE

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INTRODUCTION

Prosperity Wind, LLC (Prosperity) is operating the Prosperity Wind Project (Project) in Piatt County, Illinois. The Project became fully operational in May 2025 and consists of 50 Vestas V162 6.0-megawatt (MW) wind turbines with a total generating capacity of approximately 300 MW. Turbine towers are approximately 345 feet (ft; 105 meters [m]) in height and the rotor blade diameter is 532 ft (162 m), with a maximum height from tower base to highest blade tip of 186 m (610 ft).

On October 28, 2024, Prosperity obtained an Incidental Take Permit (ITP; ESPer13505300) for the federally listed endangered Indiana bat (*Myotis sodalis*) and northern long-eared bat (*M. septentrionalis*), and the federally proposed as endangered tricolored bat (*Perimyotis subflavus*; hereafter, Covered Species) from the US Fish and Wildlife Service (USFWS). On April 8, 2025, the Illinois Department of Natural Resources (IDNR) approved an Incidental Take Authorization (ITA; 284) for Indiana bat and northern long-eared bat. The IDNR is not authorized to provide an ITA for species that are not officially listed by the state as threatened or endangered; therefore, the ITA does not include tricolored bat. Post-construction monitoring (PCM) is required by the ITP and ITA to determine if the level of take of the Covered Species complies with the authorized take and to evaluate if adaptive management measures are triggered.

Western EcoSystems Technology, Inc. (WEST) completed a PCM study designed to achieve a probability of detection, or *g*, of 0.2, consistent with the Project's HCP. The objective of this study was to comply with the PCM requirements as outlined in the Project's HCP, ITP, and ITA and determine if adaptive management thresholds were triggered. This report presents the results of the first year of PCM conducted at the Project from April 28 – October 15, 2025.

PROJECT AREA

The Project is located in Piatt County, Illinois, 2.5 miles (4.0 kilometers) southeast of Farmer City, Illinois (Figure 1). The Project's Permit Area covers 23,780 acres (9,623 hectares). According to the National Land Cover Database ([NLCD] 2024), the primary land cover type within the Permit Area is cultivated crops (94.6%), followed by developed areas (5.3%). All other land cover types individually account for 0.1% or less of the Permit Area (NLCD 2024; Figure 1, Table 1).

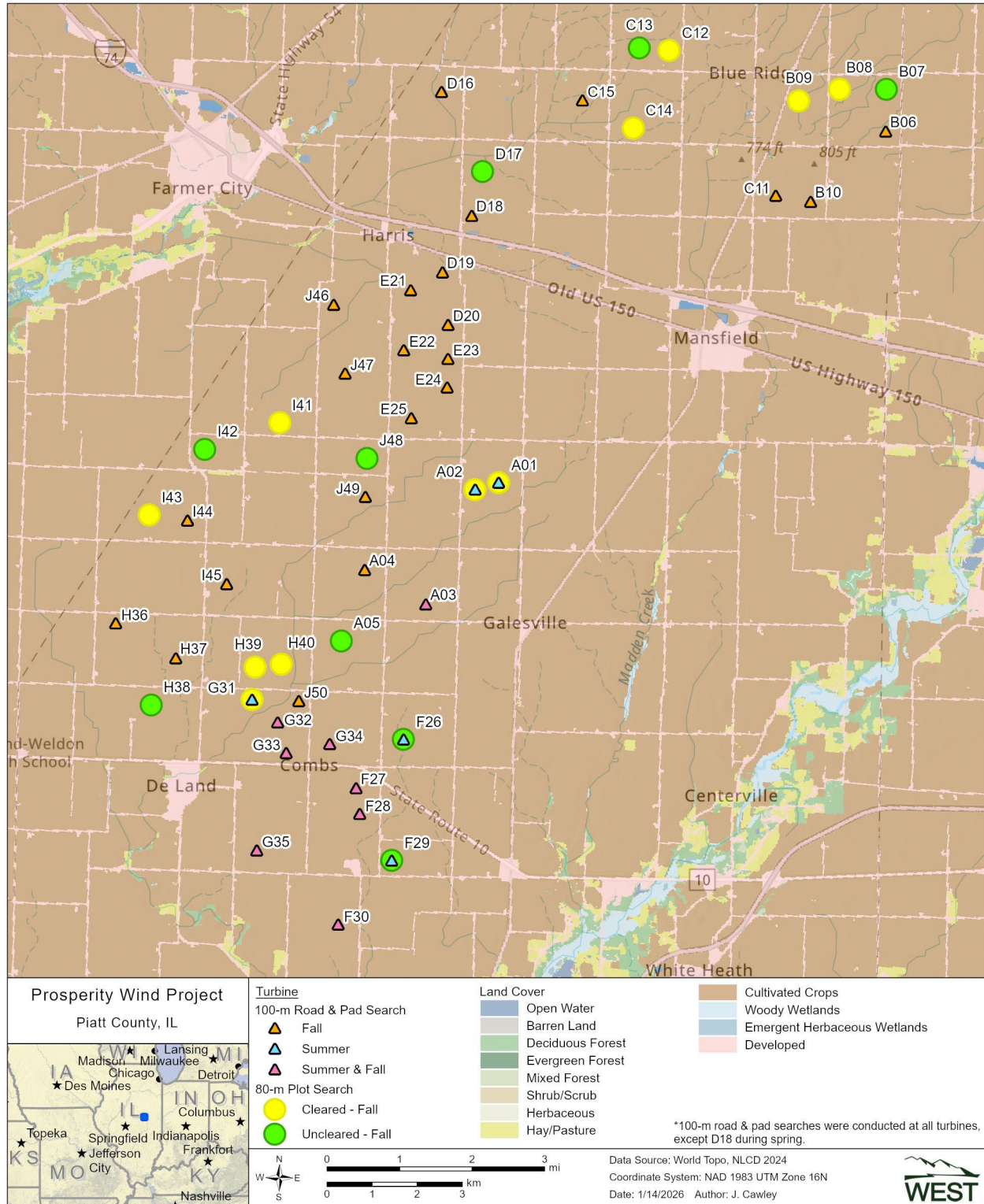


Figure 1. Land cover types and turbine locations by plot type and season, within and around the Prosperity Wind Project, Piatt County, Illinois.

Table 1. Land cover types, acreages, and percent (%) composition within the Prosperity Wind Project, Piatt County, Illinois.

Land Cover Class	Acres	% Composition
Cultivated Crops	22,497	94.6
Developed ¹	1,257	5.3
Hay/Pasture	13	0.1
Open Water	10	<0.1
Evergreen Forest	2	<0.1
Mixed Forest	1	<0.1
Emergent Herbaceous Wetlands	<1	<0.1
Herbaceous	<1	<0.1
Woody Wetlands	<1	<0.1
Total	23,780	100²

¹ Developed land cover types may include open space, low intensity, medium intensity, and high intensity.

² Sums of values may not equal totals shown due to rounding.

Source: National Land Cover Database 2024.

METHODS

This PCM study consisted of three primary survey components: 1) standardized carcass searches (carcass searches) of turbines, 2) searcher efficiency trials to estimate the probability a carcass was found by searchers, and 3) carcass persistence trials to estimate the average length of time a carcass remained in the search area for possible detection. In addition, a search area adjustment was estimated to account for carcasses that fell outside of search areas.

WEST developed monitoring protocols for the first year of PCM to achieve a minimum *g* value of 0.2, as outlined in the Project's HCP. The Study Plan was submitted to the USFWS on March 24, 2025.

Standardized Carcass Searches

Standardized carcass searches were completed in the spring, summer and fall and varied by season (Appendix A). Searches were conducted within three search areas (plots): road and pad, cleared circular, and uncleared circular.

Search Methods

Human technicians (technicians) conducted searches of road and pad plots, and detection-dog teams conducted searches of the cleared and uncleared circular plots (Figure 1). All personnel were trained to follow the Project's Study Plan, including proper handling and reporting of carcasses. Carcass searches were conducted during the day, beginning as early as first light.

Technician Searches

During road and pad searches, the technician started at 100 m (328 ft) from the turbine and walked the access road at a rate of approximately 45–60 m (148–197 ft) per minute toward the turbine on one side of the road, around the back of the turbine, then traversed the gravel crane pad multiple times and walked back to the starting point on the other side of the road. The

technician searched out to 1.0 m (3.3 ft) from each side of the road and pad plot to ensure full visual coverage of each plot.

Detection-dog Team Searches

Detection-dog teams, which consist of a trained detection dog and the handler, searched cleared and uncleared 80 m (262 ft) radius circular plots. Prior to each search, dog handlers determined the start point and the number of transects needed to cover the plot after considering wind speed and direction, as well as crop row direction and density (when applicable). Dog handlers oriented the detection dog to start searches perpendicular to the wind to maximize scent detection. Both windspeed and crop density can affect dispersal of the target odor (i.e., bat carcasses) across the plot. To maximize detection rates during an olfactory search, transect width varied with vegetation density, ranging from five to 10 m (16–33 ft) apart in densely vegetated areas to 10–15 m (33–49 ft) in shorter vegetation.

Number of Turbines Sampled, Search Frequency, and Plot Size

Road and Pad Plots

Technicians conducted carcass searches on road and pad plots at 49¹ turbines once per week from April 28 – May 15 (spring), at 13 turbines twice per week from May 16 – July 31 (summer; Figure 1), and at 29² turbines twice per week from August 1 – October 15 (fall; Figure 2; Table 2). Road and pad plots included the graveled area of the turbine pad and access road(s) out to 100 m from the turbine base.

Cleared and Uncleared Circular Plots

Twenty circular plots were searched by detection-dog teams during fall (Figure 2). Circular plots included 11 plots cleared of vegetation (cleared plots) and nine plots where soybean (*Glycine max*) crops were grown during the study period (uncleared plots). Uncleared plots had access channels (two perpendicular 1.5-m [5.0-ft] wide strips mowed across the plot allowing the detection-dog team to traverse the plot more easily) that were maintained during the fall. Following crop harvest in the fall, all of the uncleared plots were considered cleared and analyzed with the other cleared plots for the duration of the study period. For analysis purposes, this divided the fall season into Fall1 (with both cleared and uncleared plots) and Fall2 (cleared plots only).

Table 2. Search effort by season and plot type at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Season	Plot Type	Search Turbines	Search Interval	Search Type
Spring (April 28 – May 15)	100-m road and pad	49 ¹	weekly	technician
Summer (May 16 – July 31)	100-m road and pad	13 ²	twice weekly	technician
Fall (August 1 – October 15)	100-m road and pad	29 ³	twice weekly	technician

¹ Of the 50 turbines, one (D18) was not yet operational during spring surveys.

² Of the 30 turbines to be searched via road and pad plots, one (B10) was not available for searches due to maintenance for the majority of fall.

Table 2. Search effort by season and plot type at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Season	Plot Type	Search Turbines	Search Interval	Search Type
	80-m cleared circular plot	11	twice weekly	detection-dog
	80-m uncleared circular plot	9	twice weekly	detection-dog

¹. One turbine (D18) was not operational during the spring and was not searched.

². Includes all turbines within 4.8 kilometers (3.0 miles) of suitable summer habitat for tricolored bat. Per the Habitat Conservation Plan, summer surveys did not contribute to the *g* of 0.2.

³. One turbine (B10) was not available for searches due to maintenance for the majority of fall and was not searched.
m = meter.

Data Collection

For each scheduled search, the searcher (either technician or dog handler) recorded the date, start and end times, searcher name, turbine number, type of search, aided search type (“none” for technicians or “dog” for detection-dog teams), and if any fatalities were found. When a fatality was found, a flag was placed near it and the search continued. After searching the entire area, the searcher returned to record information for each fatality on a fatality data sheet, including the date and time, species, sex and age (when possible), searcher name, turbine number, measured distance from turbine, azimuth from turbine, Global Positioning System (GPS) location of carcass, land cover surrounding carcass, condition of carcass (i.e., intact, scavenged, dismembered, injured), and estimated time of death (e.g., less than one day, two days). All fatalities had the location plotted on a map of the search area. Carcasses found in non-search areas (e.g., outside the plot boundary) or outside the scheduled study period, were recorded as incidental discoveries and documented following the same protocol for those found during standard searches.

Although the Covered Species were the focal interest of the study, all bat carcasses that were detected were recorded. The condition of each bat carcass was recorded using the following categories:

- Intact—a carcass that is complete, not badly decomposed, and shows no sign of being fed upon by a predator or scavenger.
- Scavenged—an entire carcass that shows signs of being fed upon by a predator or scavenger, or a portion(s) of a carcass in one location (e.g., wings, skeletal remains, portion of a carcass), or a carcass that is heavily infested by insects.
- Dismembered—a carcass found in multiple pieces distributed more than 3.3 ft apart from one another due to scavenging or other reasons.
- Injured—a bat found alive.

Digital photographs were taken of each fatality, including any visible injuries, and surrounding habitat. Bat carcasses were collected under the Project’s ITP (ESPER13505300), WEST’s Federal Native Endangered and Threatened Species Recovery Permit (ES234121), WEST’s IDNR Endangered and Threatened Species Permit (26604), and WEST’s IDNR Wildlife Salvage Permit (NH25.5223A). Searchers placed all bat carcasses in a re-sealable plastic bag, which was

labeled with the unique carcass identification number, turbine number, and date, for storage in a freezer onsite. Leather and latex gloves were used to handle all bat carcasses to eliminate possible transmission of rabies or other zoonotic diseases.

Carcasses that were found in non-search areas (e.g., outside of a plot boundary), found outside of the scheduled study period, or were determined to have occurred prior to the study period were recorded as incidental discoveries and documented following the same protocol as those found during standard searches, but these carcasses were not included in analysis. Carcasses found within the plots either during scheduled searches or between scheduled searches (incidental observations) were included in the analysis.

Carcass Identification and Agency Notification

Federally permitted bat biologists (ES234121-10, ES26854C-2, ES81968B-2, ESER9604902, and ES03495B-3) provided identification confirmation and verified all potential *Myotis* carcasses via photographs. Tissue samples were collected from all potential *Myotis* or unidentifiable bat carcasses (as per the ITP and ITA) and submitted to a USFWS-approved laboratory in two separate batches on August 5 and October 15, 2025. After DNA³ samples were taken, the carcasses were retained in a freezer onsite.

Bias Trials

Searcher Efficiency Trials

The objective of searcher efficiency trials was to estimate the probability that a carcass was found by a technician or detection dog. Searcher efficiency trials were conducted in the same areas where carcass searches occurred. Searchers did not know when searcher efficiency trials were being conducted or the location of the trial carcasses. When available, trial carcasses for road and pad plots consisted of bats found during previous carcass searches. If bat carcasses were not available, house mice (*Mus musculus*) were used as trial carcasses. Bat carcasses were used for all other plot types and species used in bias trials included eastern red bats (*Lasiurus borealis*), big brown bats (*Eptesicus fuscus*), hoary bats (*Lasiurus cinereus*) and silver-haired bats (*Lasionycteris noctivagans*).

Searcher efficiency trials were conducted separately per plot type (road and pad, cleared, and uncleared) and per season (summer and fall; Appendix B1 and B2). Due to the shortened spring season, bias trials were not completed in spring. Trials were conducted on multiple dates in each season to account for potential changes in plot conditions on searcher efficiency over time. At least 20 trials were placed per plot type during summer and fall. A trial administrator oversaw the placement and recording of the availability for each of these trial carcasses. Each trial carcass was discreetly marked with a tabbed black zip-tie with a unique number around the upper forelimb for identification as a trial carcass.

³ Deoxyribonucleic acid.

For detection-dog teams, trial carcasses were placed the night before or in the early morning of the search to allow time for a scent cone to develop prior to scheduled searches and to reduce the possibility of leaving a scent trail. The trial administrator walked in a meandering path to the placement location and dropped the trial carcass from waist-height or higher allowing the carcass to land in a random posture. Searchers had one chance to locate the trial carcass after carcass placement. The number and location of trial carcasses placed, were recorded, and whether each trial carcass was found or missed. Immediately following the search, any carcasses that were missed were checked to confirm availability. Only carcasses confirmed as available were used to calculate searcher efficiency rates.

Carcass Persistence Trials

The objective of carcass persistence trials was to estimate the length of time (in days) a carcass would persist or be available for detection in the field. Carcasses could be removed by scavengers or rendered undetectable by activities such as farming. Twenty trial carcasses were placed per plot type per season (summer and fall). These carcasses were placed throughout the seasons to incorporate the effects of varying weather and scavenger densities on carcass persistence. No more than three trial carcasses were placed at a time in any one search area to avoid potential “over-seeding” and attracting scavengers.

Technicians monitored the trial carcasses over a 30-day period according to the following schedule. Carcasses were checked daily for the first four days, then on days 7, 10, 14, 20, and 30. Trial carcasses were monitored until completely removed, or the trial period ended, whichever occurred first. At the end of the 30-day period, any remaining carcasses were removed. Detection-dog teams were used to determine when carcasses were removed from the circular plots (cleared and uncleared), whereas technicians determined the status of carcasses placed on road and pad plots.

Search Plot Mapping

Technicians delineated the boundaries of all circular cleared plot search areas and road and pad search areas using a Juniper Geode sub-meter Global Positioning System unit. Circular uncleared plot search areas were delineated by creating a 80-meter buffer based on the center of the turbine in ArcGIS⁴. Any unsearchable areas within a plot boundary were also mapped. Plot boundaries were used to verify if carcasses were found inside the plot and to inform an area adjustment based on the spatial distribution of carcasses.

Quality Assurance and Quality Control

Quality assurance and quality control measures were implemented at all stages of the study, including in the field, during data entry and analysis, and report writing. Following searches, technicians were responsible for inspecting data forms for completeness, accuracy, and legibility. Potentially erroneous data were identified using a series of database queries. Irregular codes or data suspected as questionable were discussed with the technician and/or Project Manager. Errors, omissions, or problems identified in later stages of analysis were traced back to the raw

⁴ Geographic information system software, Esri, Redlands, California.

data forms, and appropriate changes and measures were implemented. A Microsoft SQL database was developed to store, organize, and retrieve search data. All data forms and electronic data files were retained for reference.

Statistical Analysis

The Evidence of Absence (EoA; Dalthorp et al. 2017) modeling framework was used to estimate detection probability (g). Data used in the EoA model included spatial distribution of all bat carcasses found within plots during the study period, and the results of searcher efficiency and carcass persistence trials.

Searcher Efficiency Estimation

Searcher efficiency was estimated separately for technicians and detection-dog teams to account for different modes of detection (i.e., technicians use sight whereas dogs use scent). The EoA model uses raw searcher efficiency data (e.g., number of found and available trial carcasses) to inform overall probability of detection. However, to determine if searcher efficiency data should be pooled or separated by strata such as season and/or plot type, searcher efficiency was modeled using logistic regression. Season was included as a potential covariate for the technician model, and plot type was included as a potential covariate for the detection-dog team model. For both the technician and detection-dog team models, selection was completed using an information theoretic approach known as AICc, or corrected Akaike Information Criterion (Burnham and Anderson 2002). The best-supported model was selected as the most parsimonious model (fewest parameters) within two AICc units of the model with the lowest AICc value. Searcher efficiency values were input into the EoA model software according to the model selection results.

The change in searcher efficiency between successive searches was defined by a parameter called the detection reduction factor (k) that can range from zero to one. When k is zero, it implies a carcass that was missed on the first search would never be found on subsequent searches. A k of one implies searcher efficiency remained constant no matter how many times a carcass was missed. Huso et al. (2017) estimated a value of $k = 0.67$ for bats, and this value was used to calculate estimates for the Covered Species using the EoA model.

Carcass Persistence Rate Estimation

Data collected during carcass persistence trials were used to estimate the amount of time, in days, that carcasses remained available to be located by the technician or detection-dog team. The average probability a bat carcass persisted was estimated using an interval-censored survival regression with four potential distributions: exponential, loglogistic, lognormal, and Weibull distributions (Kalbfleisch and Prentice 2002, Dalthorp et al. 2018). As with searcher efficiency, carcass persistence models were estimated separately for technician and detection-dog teams to account for different modes of detection. Search area type and season were included as potential covariates. The best-supported model was selected as the most parsimonious model within two AICc units of the model with the lowest AICc value. The parameter estimates of the selected model (shape [α] and scale [β], including the 95% Confidence Interval [CI] of β), were used as

inputs in the EoA Single Class module. The EoA software requires the 95% CI for β regardless of the CI selected for the take estimates.

Search Area Adjustment

The search area adjustment was calculated to determine the distribution of bat carcasses and the proportion of bat carcasses occurring within the search areas. The search area adjustment accounted for unsearched areas beneath turbines and was calculated as a probability that ranged from zero to one. The area adjustment was estimated as the product of the proportion of searched area around each turbine and a carcass-density distribution; the proportion of area searched was calculated in a geographic information system program as the amount of area searched divided by the total area searched in each 1.0-m annulus around the turbine.

A truncated weighted maximum likelihood (TWL) modeling approach (Khokan et al. 2013) was used to estimate the carcass-density distribution using site-specific bat carcass locations. Bat carcasses were included in the area adjustment analysis if the carcass was in the search area and estimated to occur within the study period, based on the estimated time of death. A bat carcass was excluded from the search area adjustment analysis when the carcass was discovered outside of the spatial or temporal scope of the monitoring design. The TWL approach assigns a weight to each bat carcass. Weights are the inverse of the product of the probability of individual carcass detection within-stratum, $g_{stratum}$, (see below) and the proportion of area searched within the 1.0-m annulus (around the turbine) within which a carcass occurred. Although there is potential to have different carcass density distributions due to differences in turbine operation across seasons, there was an insufficient sample size to examine these effects. The distributions considered were normal, gamma, Gompertz, and Weibull parameterized according to the R Development Core Team (2016) and Yee and Moler (2023). The best-supported model was selected as the most parsimonious model within two AICc units of the model with the lowest AICc value.

Carcasses Excluded from Area Adjustment

Fatalities were excluded from the area adjustment calculation in the EoA model when a carcass was discovered outside of the spatial and temporal scope of the study design. For example, carcasses found outside a designated plot were not included in the analysis because the area adjustment calculation accounts for these carcasses by adjusting for unsearched areas. Carcasses occurring prior to the start of searches (e.g., a carcass found in the summer in a plot that was not searched until the fall) were also excluded because the carcass occurred outside of the study period. Note that carcasses found incidentally in a plot were included in the analysis if that plot had a scheduled search during the next round of searches. If a fatality of a Covered Species was found outside of the spatial or temporal scope of the study design, it would still be excluded from the area adjustment estimate but would be included in the EoA fatality estimate according to Dalthorp et al. (2020).

Covered Species Take and Arrival Proportions

The proportion of annual fatalities expected within a season is called the arrival proportion and was used to weight g_{season} in the overall g estimate. The Midwest Wind Energy Multi-Species HCP

arrival proportions for bats were used: 11% in spring and 89% in fall, assuming there was no summer risk (USFWS 2016). The Project is not anticipated to have risk to Covered Species during the summer maternity season, but monitoring will include summer during the first two years to confirm this. Probability of detection estimates were calculated using the EoA model (Dalthorp et al. 2017), using the Single Class and Multiple Class modules of EoA. No annual take rate (λ) for a Covered Species was needed for this study.

Detection Probability, Density Weighted Proportion, and Weights

The probability of detection (g) was estimated using bias corrections for searcher efficiency, carcass persistence, and area searched, as well as the assumed seasonality of risk (arrival proportion) for the Covered Species. The EoA Single Class module was used to estimate the distribution of detection probability in each search stratum, and area adjustment was included in the Single Class module for each stratum. This resulted in alpha and beta parameters that defined the beta distribution of detection probability in each stratum. Unsearched areas were treated as a distinct stratum and assigned a detection probability of 10^{-5} . The EoA Multiple Class Module was then used to combine detection probability distributions across strata within a season, with weights for each class defined by the sampling fraction for each plot type. Weights (density-weighted proportion or "DWP" in the software) represent the relative fatality risk within each search stratum or season and are used for combining detection probabilities.

The Multiple Class Module was used again to combine the strata across seasons using arrival proportions to define the weights for each class to get a single annual beta distribution. The Multiple Years Module will be used to combine detection probabilities across years. The Multiple Years Module requires the input p , which weights the years appropriately based on relative turbine operations, to combine beta distribution parameters. The weight (p) of 0.92 associated with this year accounts for lower relative fatality risk associated with a non-operational turbine during part of the study period. Yearly weights will be used after the third year of monitoring when the annual take rate of the Covered Species will be tested based on a rolling average detection probability using the per study g estimates and the relative weights for each of the three study periods (Dalthorp et al. 2017).

Differences in the level of turbine operations (e.g., turbines down for maintenance for extended periods within a season) were also considered. The relative turbine operation weight was defined as the proportion of operational turbine nights relative to total potential turbine nights within a given stratum, where a turbine night can be defined as a single night at a single turbine. Given that turbines undergo routine maintenance, relative turbine operations were considered normal unless the proportion of operational turbine nights was less than 0.90 during the study period. Per the HCP, adaptive management triggers will be evaluated using annual take rates (λ) after Year 3.

RESULTS

Standardized Carcass Searches

In the spring, 144 searches were completed, while 269 searches were completed in the summer and 997 searches were completed in the fall (Table 3). Sixty-four searches (4.3%) were missed due to ground conditions at cleared plots, turbine maintenance, weather constraints, or safety hazards. A total of 904 bat carcasses were found during searches and incidentally (Table 4). No Covered Species or other federally or state-listed bat species were found during the study.

Table 3. Number of searches per plot type at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Season	Plot Type	Search Interval (days)	Number of Searches
spring (April 28 – May 15)	road and pad (100 m)	7.0	144
summer (May 16 – July 31) ¹	road and pad (100 m) ²	3.5	269
	road and pad (100 m)	3.5	602
fall (August 1 – October 15)	cleared circular plot (80 m)	3.5	258
	uncleared circular plot (80 m)	3.5	137

¹ These were not used to contribute to the g of 0.2, which will be accomplished through spring and fall surveys alone.

² Includes 13 turbines that are within 4.8 kilometers (3.0 miles) of suitable summer habitat for tricolored bat.

m = meter

Species Composition

Thirty-six bats were found during the spring, 75 during summer, and 793 bats were found during the fall. The most commonly found bat species were eastern red bat (48.8%), followed by silver-haired bat (21.2%), hoary bat (17.3%) and big brown bat (9.0%). In addition, evening bat (*Nycticeius humeralis*; $n = 13$; 1.4%), eastern red bat or Seminole (*Lasiurus seminolus*) bat ($n = 9$; 1.0%), unidentified *Lasiurus* bat ($n = 5$; 0.6%), unidentified non-*Myotis* ($n = 5$; 0.6%), and Seminole bat ($n = 2$; 0.2%) were also found. Twelve bats that could not be identified visually were submitted for DNA testing, and these DNA-identified bats are included in the totals above.

A total of 739 bats were used in analysis to estimate the spatial distribution of bat carcasses within the search plots to produce area adjustment factors for the EoA model. One hundred sixty-five bats were excluded from the area adjustment calculation. Ninety-five bats were excluded because the bats were found outside of search areas, 67 were excluded because they were determined to have occurred outside the study period based on estimated time of death, and three bats were excluded from analysis due to being found at turbines that were unavailable to be searched for the majority of the season (Table 4).

Table 4. Number and percent (%) of carcasses by species included and excluded from the area adjustment analysis at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Species	Included in Area Adjustment		Outside Search Area*		Outside Study Period*		Other*		Total	
	Total	%	Total	%	Total	%	Total	%	Total	%
eastern red bat	363	49.1	49	51.6	28	41.8	1	33.3	441	48.8
silver-haired bat	164	22.2	17	17.9	9	13.4	2	66.7	192	21.2
hoary bat	124	16.8	17	17.9	15	22.4	0	0	156	17.3
big brown bat	65	8.8	6	6.3	10	14.9	0	0	81	9.0
evening bat	8	1.1	5	5.3	0	0	0	0	13	1.4
eastern red bat or Seminole bat	8	1.1	0	0	1	1.5	0	0	9	1.0
unidentified <i>Lasiurus</i> bat	3	0.4	0	0	2	3.0	0	0	5	0.6
unidentified non- <i>Myotis</i>	2	0.3	1	1.1	2	3.0	0	0	5	0.6
Seminole bat	2	0.3	0	0	0	0	0	0	2	0.2
Overall Bats	739	100	95	100	67	100	3	100	904	100

* Carcasses not included in analysis.

Sums of values may not equal totals shown due to rounding.

Bias Trials

Searcher Efficiency Trials

A total of 92 bats were placed for searcher efficiency trials in summer and fall across road and pad search plots and in fall across circular plots; 81 of these remained available for searchers to find (Appendix B1 and B2). Technicians found 100% of available carcasses (20 out of 20) in road and pad plots in the summer and 90.0% of available carcasses (18 out of 20) in the fall (Appendix B2), while detection-dog teams found 78.0% of available carcasses (32 out of 41) in circular plots in the fall (Appendix B1).

The null (no covariates) model was selected as the top model for roads and pads, indicating that there were similar searcher efficiency rates between summer and fall on roads and pads (Appendix B4). Searcher efficiency rates for roads and pads observed in summer and fall were also applied to searches conducted during the abbreviated spring season. The selected model for searcher efficiency in circular plots did not include plot type as a covariate, indicating there were no substantial differences (delta AICc of 2.21) in searcher efficiency rates between cleared and uncleared plots for detection-dog teams (Appendix B3).

Carcass Persistence Trials

A total of 81 bat carcasses were placed to estimate carcass persistence (60 bats, 21 mice; Appendix C1). The selected model for road and pad plots had a loglogistic distribution, indicating there were similar persistence times across summer and fall (Appendix C3). Persistence times observed in summer and fall were also applied to searches conducted during the abbreviated spring season. For road and pad plots, the estimated median carcass persistence was 6.26 days (Appendix C4).

The selected model for circular plots had an exponential distribution and did not include plot type as a covariate, indicating there were no substantial differences in persistence time distributions between cleared and uncleared plots (Appendix C2), with the estimated median carcass persistence of 6.88 days (Appendix C4).

Statistical Analysis

Search Area Adjustment

The area adjustment calculation included 739 bats that were found during the study at road and pad plots (199 bats) and circular plots (540 bats). The best-fit model for the distribution of bats with respect to distance from turbine was a Weibull distribution (Appendix D1) with peak carcass density about 30 m (98 ft) from the turbine (Appendix D3). The estimated TWL area adjustments for bats were 0.11 for road and pad plots and 0.84 for circular plots (Appendix D2).

Probability of Detection

The overall probability of detecting a bat carcass (g) during the 2025 study period was 0.28 (95% credible interval [CrI]: 0.26–0.30; Table 5), which exceeded the target of 0.2. Inputs required to run the EoA Single Class module and stratum-specific g distribution values and inputs are presented in Appendix E.

Table 5. Data inputs for the Evidence of Absence Multiple Years Module used to combine detection probability distributions across years for the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Year	Ba ¹	Bb ¹	g (95% CrI)	ρ	Carcass Count		
					INBA	NLEB	TRBA
2025	438.69	1143.21	0.28 (0.26–0.30)	0.92	0	0	0

¹ Ba and Bb are the α and β parameters of a beta distribution describing the detection probability distribution.

CrI = credible interval; INBA = Indiana bat, NLEB = northern long-eared bat; TRBA = tricolored bat.

DISCUSSION

The Year 1 study objectives were to comply with the PCM requirements for Covered Species as outlined in the Project's HCP, ITP, and ITA, and determine if adaptive management thresholds were triggered. The overall g value was higher than the target value designated in the HCP ($g = 0.2$), which is most likely due to longer carcass persistence times in the fall for circular plots, higher estimated percentage of bat carcasses found within search areas, and higher fatality area coverage for the circular plots. No adaptive management actions were triggered for the ITP or ITA because no Covered Species were found in Year 1. Triggers based on annual take rates (even if zero Covered Species are found) will not be assessed until the end of Year 3 monitoring, per the HCP.

REFERENCES

- Burnham, K. P. and D. R. Anderson. 2002. Model Selection and Multimodel Inference: A Practical Information-Theoretic Approach. Second Edition. Springer, New York, New York.
- Dalthorp, D., M. M. P. Huso, and D. Dail. 2017. Evidence of Absence (V2.0) Software User Guide. US Geological Survey (USGS) Data Series 1055. USGS, Reston, Virginia. 109 pp. doi: 10.3133/ds1055. Available online: <https://pubs.usgs.gov/ds/1055/ds1055.pdf>
- Dalthorp, D. H., L. Madsen, M. M. Huso, P. Rabie, R. Wolpert, J. Studyvin, J. Simonis, and J. M. Mintz. 2018. GenEst Statistical Models—a Generalized Estimator of Mortality. US Geological Survey Techniques and Methods, Book 7, Chapter A2. 13 pp. doi: 10.3133/tm7a2. Available online: <https://pubs.usgs.gov/tm/7a2/tm7a2.pdf>
- Dalthorp, D., P. Rabie, M. Huso, and A. T. Tredennick. 2020. Some Approaches to Accounting for Incidental Carcass Discoveries in Non-Monitored Years Using the Evidence of Absence Model. Open-File Report 2020-1027. US Geological Survey, 24 pp. doi: 10.3133/ofr20201027. Available online: <https://pubs.er.usgs.gov/publication/ofr20201027>
- Esri. 2025. World Imagery and Aerial Photos (World Topo). ArcGIS Resource Center. Environmental Systems Research Institute (Esri), producers of ArcGIS software, Redlands, California. Accessed November 2025. Available online: <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=10df2279f9684e4a9f6a7f08febac2a9>
- Huso, M., D. Dalthorp, and F. Korner-Nievergelt. 2017. Statistical Principles of Post-Construction Fatality Monitoring Design. In: M. Perrow, ed. Wildlife and Wind Farms, Conflicts and Solutions. Vol. 2, Onshore: Monitoring and Mitigation. Pelagic Publishing, Exeter, United Kingdom.
- Kalbfleisch, J. D. and R. L. Prentice. 2002. The Statistical Analysis of Failure Time Data. John Wiley & Sons, Hoboken, New Jersey.
- Khokan, M. R., W. Bari, and J. A. Khan. 2013. Weighted Maximum Likelihood Approach for Robust Estimation: Weibull Model. Dhaka University Journal of Science 61(2): 153-156.
- National Land Cover Database (NLCD). 2024. Annual National Land Cover Database: Annual NLCD Collection 1.0: 2023 Land Cover of CONUS. US Geological Survey, Sioux Falls, South Dakota. Released October 2024. doi: 10.5066/P94UXNTS.
- R Development Core Team. 2016. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria. Available online: <http://www.R-project.org/>
- US Fish and Wildlife Service (USFWS). 2016. Midwest Wind Energy Multi-Species Habitat Conservation Plan: Public Review Draft. USFWS Midwest Region in collaboration with the States of Iowa, Illinois, Indiana, Michigan, Minnesota, Missouri, and Wisconsin and the American Wind Energy Association. April 2016.
- Yee, T. and C. Moler. 2023. VGAM: Vector Generalized Linear and Additive Models. R package version 1.1.9. R: A language and environment for statistical computing. September 19, 2023. Available online: <https://cran.r-project.org/web/packages/VGAM/index.html>

Appendix A. Overview of Study Design and Search Methods

Appendix A. Overview of study design and search methods for post-construction monitoring for the Prosperity Wind Project, Piatt County, Illinois, April 28 –October 15, 2025.

Design Component	Sampling Unit
Plot type	cleared and uncleared circular plots ¹ ; road and pad searches
Number of plots (percent of all turbines)	50 (100%)
Size/shape	80-meter (m) radius circle centered on turbine; 100-m road and pad searches
Search interval	road and pads once weekly in spring and twice weekly in summer and fall; circular plots twice weekly in fall
Search period	April 28 –October 15, 2025
Spring dates	April 28 – May 15, 2025
Summer dates	May 16 – July 31, 2025
Fall dates	August 1 – October 15, 2025
Searcher efficiency seasons	summer and fall
Searcher efficiency carcass sizes	bat
Carcass persistence trials seasons	summer and fall
Carcass persistence trials carcass sizes	bat
Turbine Specifications	
Turbine model	Vestas V162 6.0-megawatt (50 turbines)
Hub height	345 feet (ft)
Rotor diameter	532 ft
Blade serrations (yes/no)	yes

¹ Detection-dog teams aided searches of circular plots

Appendix B. Searcher Efficiency Results and Models

Appendix B1. Searcher efficiency results for bats for circular plots as a function of season at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Season	Search Area Type	# Placed	# Available	# Found	% Found	Aided Search Type
fall	cleared	26	23	18	78.3	Yes*
	uncleared	20	18	14	77.8	Yes*
Overall		46	41	32	78.0	-

* dog aided search.

Appendix B2. Searcher efficiency results for bats for road and pad search areas as a function of season at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Season	Search Area Type	# Placed	# Available	# Found	% Found
summer	road and pad	21	20	20	100
fall	road and pad	25	20	18	90.0
Overall		46	40	38	95.0

Appendix B3. Searcher efficiency models for bats for circular plots from the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025 (n = 41).

Covariates	k Value	AICc	Delta AICc
no covariates	k fixed at 0.67	45.26	0*
plot search type	k fixed at 0.67	47.47	2.21

* Selected model.

AICc = Corrected Akaike Information Criterion; Delta AICc is the change from the minimum AICc.

Appendix B4. Searcher efficiency models for bats for road and pad search areas from the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025 (n = 40).

Covariates	k Value	AICc	Delta AICc
no covariates	k fixed at 0.67	17.99	0*

* Selected model.

AICc = Corrected Akaike Information Criterion; Delta AICc is the change from the minimum AICc.

Appendix C. Carcass Persistence Modeling Results and Trial Data

Appendix C1. All carcasses placed for carcass persistence trials by date, season, species, and turbine at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Date Placed	Season	Species	Turbine	Before Removal ¹	After Removal²
05/19/2025	summer	house mouse	A01	05/25/2025	05/29/2025
05/19/2025	summer	house mouse	A01	05/23/2025	05/26/2025
05/19/2025	summer	house mouse	A02	05/25/2025	05/28/2025
05/19/2025	summer	house mouse	A02	05/25/2025	05/28/2025
05/19/2025	summer	house mouse	A03	05/19/2025	05/20/2025
05/19/2025	summer	house mouse	F27	05/23/2025	05/25/2025
05/19/2025	summer	house mouse	G31	05/25/2025	05/29/2025
05/19/2025	summer	house mouse	G31	06/17/2025	06/17/2025
05/19/2025	summer	house mouse	G33	05/21/2025	05/22/2025
05/19/2025	summer	house mouse	G34	05/21/2025	05/23/2025
06/23/2025	summer	house mouse	A03	06/25/2025	06/26/2025
06/23/2025	summer	house mouse	F26	06/26/2025	06/29/2025
06/23/2025	summer	house mouse	F26	06/26/2025	06/29/2025
06/23/2025	summer	house mouse	F28	06/27/2025	06/30/2025
06/23/2025	summer	house mouse	F29	07/03/2025	07/07/2025
06/23/2025	summer	house mouse	F30	06/24/2025	06/24/2025
06/23/2025	summer	house mouse	G31	06/25/2025	06/26/2025
06/23/2025	summer	house mouse	G31	06/23/2025	06/25/2025
06/23/2025	summer	house mouse	G35	06/26/2025	06/27/2025
06/23/2025	summer	house mouse	G35	07/22/2025	07/22/2025
08/04/2025	fall	silver-haired bat	G32	08/07/2025	08/11/2025
08/04/2025	fall	hoary bat	G32	08/07/2025	08/11/2025
08/04/2025	fall	silver-haired bat	I44	09/03/2025	09/03/2025
08/04/2025	fall	hoary bat	I44	08/24/2025	09/03/2025
08/04/2025	fall	silver-haired bat	I45	08/07/2025	08/10/2025
08/04/2025	fall	eastern red bat	I45	08/13/2025	08/17/2025
08/04/2025	fall	hoary bat	J46	08/10/2025	08/13/2025
08/04/2025	fall	silver-haired bat	J47	08/13/2025	08/17/2025
08/04/2025	fall	big brown bat	J49	08/04/2025	08/04/2025
08/04/2025	fall	silver-haired bat	J49	09/03/2025	09/03/2025
08/10/2025	fall	hoary bat	B07	08/10/2025	08/12/2025
08/10/2025	fall	hoary bat	B07	08/31/2025	09/09/2025
08/10/2025	fall	eastern red bat	B08	08/11/2025	08/12/2025
08/10/2025	fall	hoary bat	B09	09/09/2025	09/09/2025
08/10/2025	fall	evening bat	B09	09/09/2025	09/09/2025
08/10/2025	fall	hoary bat	C12	08/20/2025	08/23/2025
08/10/2025	fall	eastern red bat	D17	08/12/2025	08/13/2025
08/10/2025	fall	hoary bat	D17	08/30/2025	09/09/2025
08/10/2025	fall	eastern red bat	I41	08/10/2025	08/10/2025
08/10/2025	fall	big brown bat	I42	08/16/2025	08/19/2025
08/10/2025	fall	eastern red bat	I42	08/30/2025	09/08/2025
08/10/2025	fall	eastern red bat	I43	08/12/2025	08/13/2025
08/10/2025	fall	eastern red bat	I43	08/30/2025	09/08/2025
08/10/2025	fall	hoary bat	J48	08/20/2025	08/23/2025
08/10/2025	fall	eastern red bat	J48	08/19/2025	08/23/2025
09/08/2025	fall	eastern red bat	A01	09/11/2025	09/14/2025
09/08/2025	fall	eastern red bat	A01	09/14/2025	09/17/2025
09/08/2025	fall	hoary bat	A01	09/17/2025	09/22/2025
09/08/2025	fall	eastern red bat	A02	09/10/2025	09/11/2025
09/08/2025	fall	eastern red bat	A02	09/11/2025	09/14/2025
09/08/2025	fall	eastern red bat	A02	09/11/2025	09/14/2025

Appendix C1. All carcasses placed for carcass persistence trials by date, season, species, and turbine at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Date Placed	Season	Species	Turbine	Before Removal ¹	After Removal²
09/08/2025	fall	big brown bat	A02	09/11/2025	09/14/2025
09/08/2025	fall	big brown bat	A05	09/09/2025	09/09/2025
09/08/2025	fall	eastern red bat	A05	09/11/2025	09/14/2025
09/08/2025	fall	eastern red bat	C13	09/08/2025	09/08/2025
09/08/2025	fall	hoary bat	C13	09/14/2025	09/17/2025
09/08/2025	fall	big brown bat	C14	09/17/2025	09/21/2025
09/08/2025	fall	big brown bat	C14	09/21/2025	09/28/2025
09/08/2025	fall	big brown bat	C14	09/21/2025	09/28/2025
09/08/2025	fall	eastern red bat	F26	09/09/2025	09/10/2025
09/08/2025	fall	hoary bat	F26	09/11/2025	09/14/2025
09/08/2025	fall	hoary bat	F26	09/11/2025	09/14/2025
09/08/2025	fall	hoary bat	F29	09/09/2025	09/10/2025
09/08/2025	fall	eastern red bat	F29	09/11/2025	09/14/2025
09/08/2025	fall	eastern red bat	F29	09/29/2025	10/07/2025
09/08/2025	fall	hoary bat	G31	09/08/2025	09/10/2025
09/08/2025	fall	hoary bat	G31	09/09/2025	09/11/2025
09/08/2025	fall	eastern red bat	H38	09/09/2025	09/11/2025
09/08/2025	fall	hoary bat	H38	09/10/2025	09/11/2025
09/08/2025	fall	hoary bat	H39	09/11/2025	09/15/2025
09/08/2025	fall	eastern red bat	H39	09/15/2025	09/18/2025
09/15/2025	fall	hoary bat	A03	09/17/2025	09/17/2025
09/15/2025	fall	silver-haired bat	B06	10/15/2025	10/15/2025
09/15/2025	fall	silver-haired bat	C15	09/19/2025	09/22/2025
09/15/2025	fall	silver-haired bat	D16	10/15/2025	10/15/2025
09/15/2025	fall	hoary bat	D18	09/25/2025	09/29/2025
09/15/2025	fall	eastern red bat	D20	09/22/2025	09/25/2025
09/15/2025	fall	eastern red bat	E22	09/19/2025	09/22/2025
09/15/2025	fall	eastern red bat	E23	09/15/2025	09/15/2025
09/15/2025	fall	hoary bat	E25	09/17/2025	09/17/2025
09/15/2025	fall	eastern red bat	E25	09/19/2025	09/22/2025

¹ Last date checked before removal

² Date checked after removal

Appendix C2. Carcass persistence models with covariates and distributions for bats on cleared and uncleared circular plots at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025 (n = 41).

Location Covariates	Scale Covariates	Distribution	AICc	Delta AICc
no covariates	—	exponential	187.18	0*
plot search type	—	exponential	188.88	1.70
no covariates	no covariates	Weibull	189.38	2.20
no covariates	no covariates	loglogistic	189.49	2.31
no covariates	no covariates	lognormal	189.59	2.41
plot search type	no covariates	Weibull	191.21	4.03
plot search type	no covariates	lognormal	191.25	4.07
plot search type	no covariates	loglogistic	191.28	4.10
no covariates	plot search type	Weibull	191.71	4.53
no covariates	plot search type	loglogistic	191.78	4.60
no covariates	plot search type	lognormal	191.90	4.72
plot search type	plot search type	Weibull	193.65	6.47
plot search type	plot search type	loglogistic	193.69	6.51
plot search type	plot search type	lognormal	193.69	6.51

* Selected model.

AICc = corrected Akaike Information Criterion; Delta AICc is the change from the minimum AICc.

Appendix C3. Carcass persistence models with covariates and distributions for bats on roads and pads at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025 (n = 40).

Location Covariates	Scale Covariates	Distribution	AICc	Delta AICc
no covariates	no covariates	loglogistic	178.69	0*
no covariates	no covariates	lognormal	180.67	1.98
no covariates	—	exponential	184.13	5.44
no covariates	no covariates	Weibull	185.07	6.38

* Selected model.

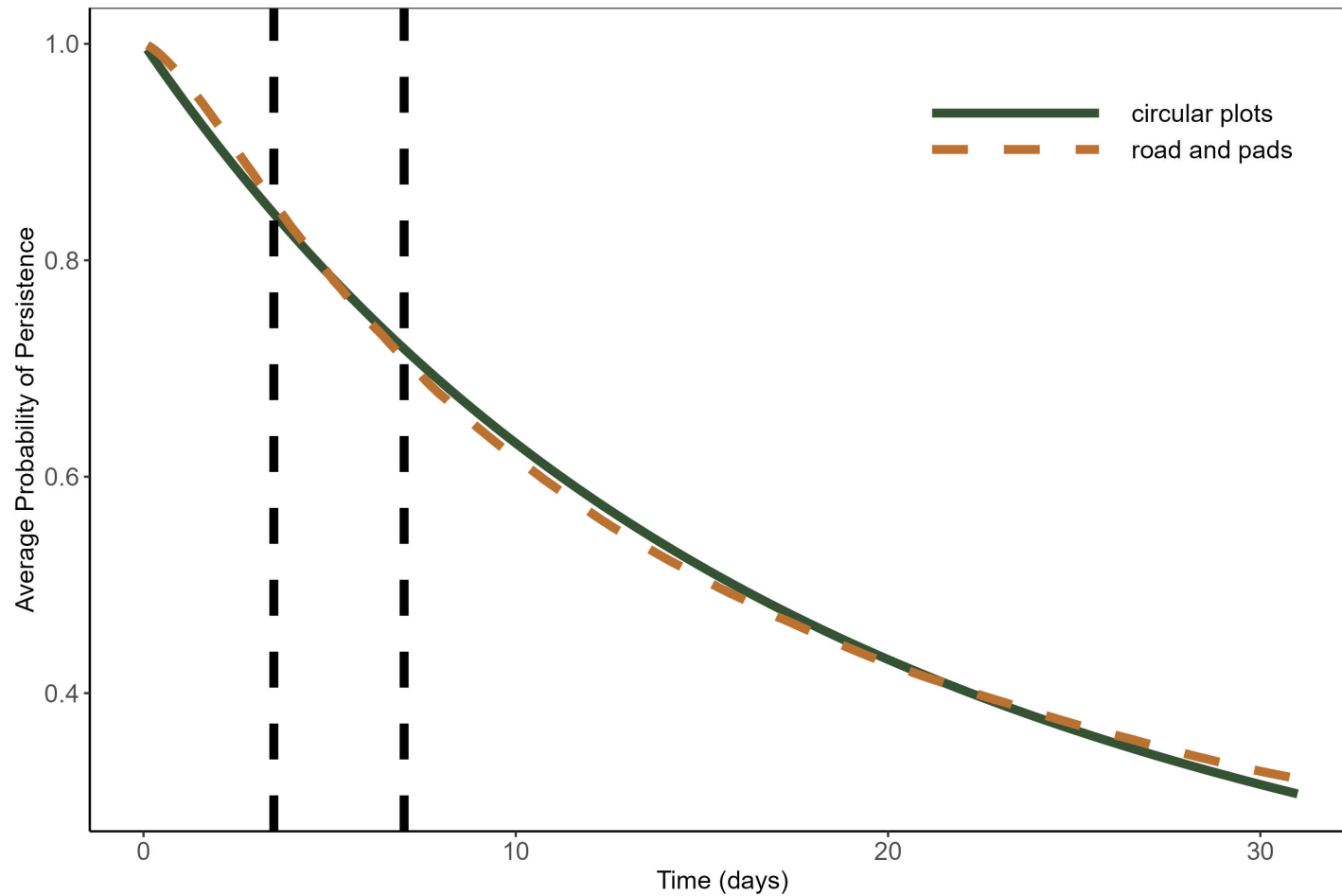
AICc = corrected Akaike Information Criterion; Delta AICc is the change from the minimum AICc

Appendix C4. Carcass persistence top models with covariates, distributions, and model parameters for the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Size Class	Plot Type	Distribution	Predicted Median Removal Times (days)	Parameter 1	Parameter 2	Search Type
bats	80-m circular plots	exponential*	6.88	rate_R = 0.101	—	detection-dog team
bats	100-m road and pad	loglogistic**	6.26	shape = 0.711	scale = 1.834	technician

* Parameterization follows the base R parameterization for this distribution.

** Parameterization follows the FAdist parameterization for this distribution.



Appendix C5. Average probability of carcass persistence as a function of time (days) for bat size class carcasses placed at the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025. Average search interval was 3.5- and 7-days, and represented by a vertical line on the figure.

Appendix D. Area Adjustment Modeling Results

Appendix D1. Search area adjustment models for bats from the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Distribution	AICc	Delta AICc
Weibull	26,559.20	0*
gamma	26,576.86	17.67
normal	26,590.36	31.17
Gompertz	26,607.87	48.68

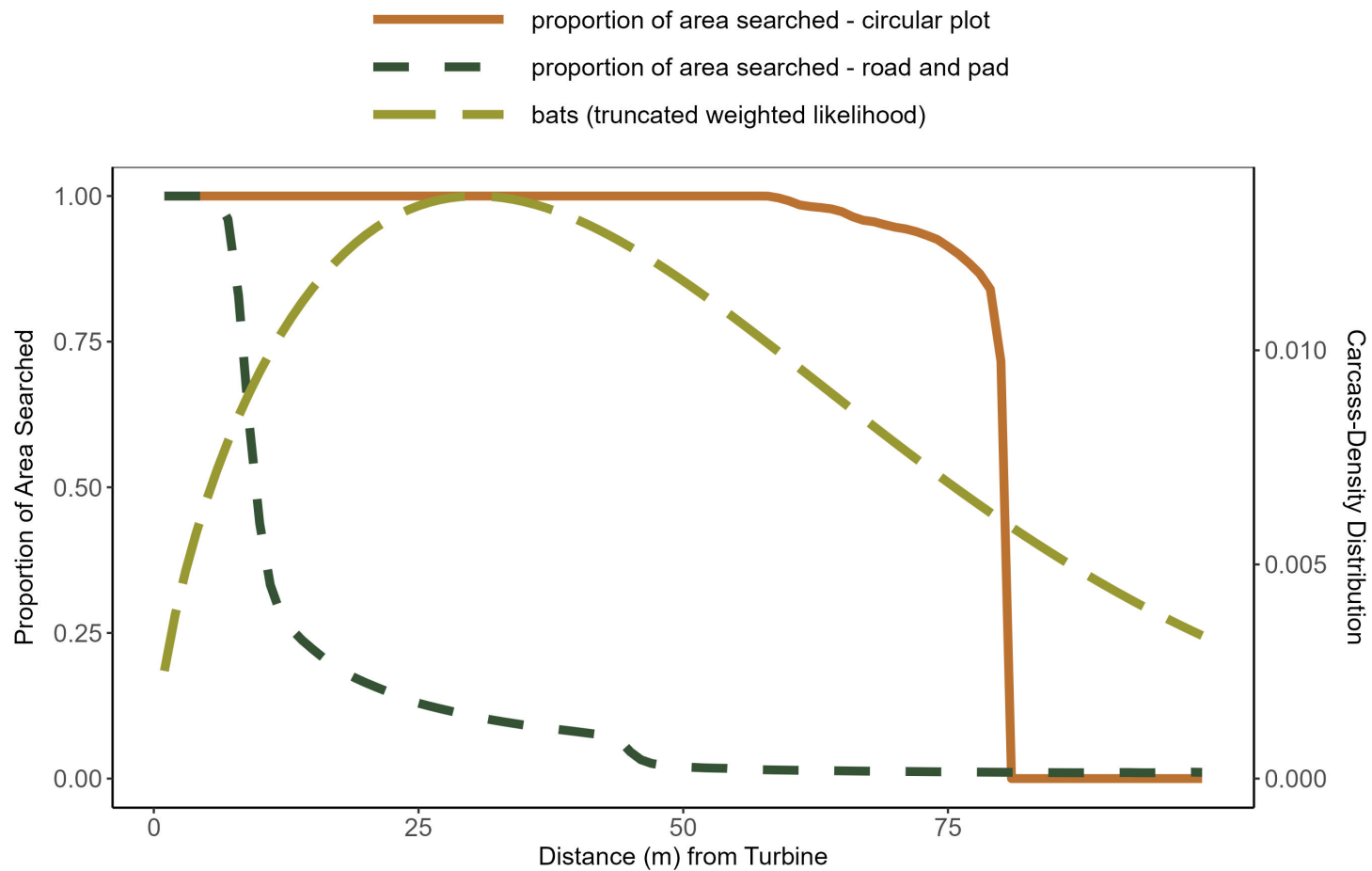
* Selected model.

AICc = Corrected Akaike Information Criterion; Delta AICc is the change from the minimum AICc.

Appendix D2. Truncated weighted maximum likelihood search area adjustment estimates for bats for the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025 (n = 739).

Size Class	Area Adjustment	Search Area Type	Distribution	Parameter 1	Parameter 2
bat	0.84	80-m circular	Weibull	1.6040	56.0109
	0.11	100-m road and pad	Weibull	1.6040	56.0109

m = meter



Appendix D3. Estimated all sizes all plots carcass-density distribution, and proportion of area searched by distance from turbine at Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

**Appendix E. Evidence of Absence Inputs for Single Class, Multiple Class, and Multiple
Years Modules**

Appendix E1. Data inputs needed for the Evidence of Absence Single Class Module for the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Season	Search Area Type	# of Turbines	Search Interval (days)	Average Number of Searches	Spatial Coverage (a)	Searcher Efficiency ¹		Carcass Persistence ²				
						Carcasses Available	Carcasses Found	Distribution	Shape (α)	Scale (β)	β CI (95%)	r ³
spring	road and pad	49	7	3	0.11	40	38	loglogistic	1.41	6.26	4.29–9.13	0.71
summer	road and pad	13	3.50	21	0.11	40	38	loglogistic	1.41	6.26	4.29–9.13	0.86
fall 1	circular plot	20	3.50	15	0.84	41	32	exponential	–	9.92	7.24–13.61	0.84
fall 1	road and pad	29	3.50	16	0.11	40	38	loglogistic	1.41	6.26	4.29–9.13	0.86
fall 2	circular plot	19	3.50	5	0.84	41	32	exponential	–	9.92	7.24–13.61	0.84
fall 2	road and pad	29	3.50	5	0.11	40	38	loglogistic	1.41	6.26	4.29–9.13	0.86
fall 2	unsearched	2	–	–	–	–	–	–	–	–	–	–

¹ The detection reduction factor k was assumed to equal 0.67 for all strata.

² Parameterization follows the Evidence of Absence parameterization according to Dalthorp, et al. 2017.

³ The probability that a carcass persisted through the search interval.

Temporal coverage (v) was set to 1 across all strata. Seasonality of risk is accounted for in the Multiple Class Module.

CI = confidence interval

Appendix E2. Data inputs for the Evidence of Absence Multiple Class Module used to combine detection probability distributions across strata within seasons for the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Season	Search Area Type	# of Turbines	Weight (DWP) ¹	Ba ²	Bb ²	g (95% CrI) ³
fall 1	circular plot	20	0.41	119.95	74.03	0.62 (0.55–0.69)
fall 1	road and pad	29	0.59	438.59	4225.66	0.09 (0.09–0.10)
fall 2	circular plot	19	0.38	108.26	71.01	0.60 (0.54–0.67)
fall 2	road and pad	29	0.58	422.60	4096.83	0.09 (0.09–0.10)
fall 2	unsearched	2	0.04	0.01	1000.00	0.00 (0–0)

¹ The density-weighted proportion (DWP) is the fraction of carcasses expected within the stratum during each season.

² Ba and Bb are the α and β parameters of a beta distribution describing the detection probability distribution.

³ g = probability of detection; CrI = credible interval.

Appendix E3. Data inputs for the Evidence of Absence Multiple Class Module used to combine detection probability distributions across subseasons within seasons for the Prosperity Wind Project, Piatt County, Illinois, from April 28 – October 15, 2025.

Season	Weight (DWP) ¹	Ba ²	Bb ²	g (95% CrI) ³
fall 1	0.78	267.07	601.32	0.31 (0.28–0.33)
fall 2	0.22	245.98	622.46	0.28 (0.26–0.31)

¹ The density-weighted proportion (DWP) is the fraction of carcasses expected within the stratum.

² Ba and Bb are the α and β parameters of a beta distribution describing the detection probability distribution.

³ g = probability of detection; CrI = credible interval.