Post-construction Fatality Monitoring for Green River Wind Farm Lee and Whiteside Counties, Illinois

Final Report

May 16, 2024 – October 15, 2024

Prepared for:

Green River Wind Farm Phase 1, LLC

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EXECUTIVE SUMMARY

Green River Wind Farm Phase 1, LLC contracted Western EcoSystems Technology, Inc., to conduct post-construction monitoring (PCM) at the Green River Wind Farm (Project) in Lee and Whiteside counties, Illinois. The Project consists of 74 Siemens Gamesa G126 2.625-megawatt (MW) wind turbine generators (and associated access roads) for approximately 194 MW generation. The PCM study was designed to be consistent with the Project's final Habitat Conservation Plan (HCP) for the Indiana bat and northern long-eared bat, as well as guidance described in Tier 4 of the US Fish and Wildlife Service *Land-Based Wind Energy Guidelines*. The objectives of the PCM study were to 1) estimate an overall bat fatality estimate for the Project, 2) determine bat species impacted by Project operations, 3) report the results of Evidence of Absence analysis for Indiana bats and northern long-eared bats in 2024, 4) evaluate the assumption that summer risk to the bat species covered under the incidental take permit is limited to northern long-eared bats at the 24 turbines sited within 305 meters (m; 1,000 feet [ft]) of forest, and 5) document black-billed cuckoo, upland sandpiper, and other avian mortality.

The PCM study consisted of three primary survey components: 1) standardized 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. Biologists and detection dog teams conducted standardized carcass searches from May 16 – October 15, providing coverage of the monitoring period described in the HCP for intensive monitoring years (May 15 – October 15). All 74 turbines were searched twice weekly using one of the following three approaches:

- 40-m (131-ft) cleared plots – plots were mowed regularly of vegetation out to 40 m from the turbine and searched with detection dog teams.
- 70-m (230-ft) hybrid plots – plots were mowed out to 40 m, and from 40–70 m vegetation (soybeans) was left uncleared, searched with detection dog teams.
- 100-m (328-ft) road and pad plots – road and pad (graveled) areas were searched out to 100 m from the turbine base, searched by human biologists.

Eighty-seven bird and 375 bat carcasses were found during 2024 monitoring, but no federally or state-listed threatened or endangered bird or bat species were found during the study. The overall estimated bat fatality rate was 11.44 (90% confidence interval [CI]: 8.44–16.12) bat fatalities/MW (30.02 [90% CI: 22.17–42.31] bat fatalities/turbine). The most commonly found bat species were silver-haired bat (145 carcasses; 38.7% of total bat carcasses) and eastern red bat (111; 29.6%), followed by hoary bat and big brown bat (55 each; 14.7% each). The overall probability of detection (g) for Indiana bat and northern long-eared bat was 0.25 (95% credible interval [CrI]: 0.24–0.25), which was higher than the value targeted in the HCP (g = 0.2). Indiana bats and northern long-eared bats were each estimated to have a mean annual fatality rate of 0.62 (95% CrI: 0–3.10) bats per year. The estimated Indiana bat and northern long-eared bat fatality rates were below the estimated annual rates within the HCP after the third year of intensive monitoring following issuance of the Incidental Take Permit; therefore, no adaptive management is required per the Project's HCP.

STUDY PARTICIPANTS

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REPORT REFERENCE

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1.0 INTRODUCTION

Green River Wind Farm Phase 1, LLC (Green River), a wholly owned subsidiary of National Grid Renewables, LLC, owns the Green River Wind Farm (Project) in Lee and Whiteside counties, Illinois (Figure 1). Green River contracted Western EcoSystems Technology, Inc. (WEST), to conduct post-construction monitoring (PCM) at the Project consistent with the objectives of the Project's *Final Habitat Conservation Plan for the Indiana Bat and Northern Long-Eared Bat* (HCP; Stantec Consulting Services Inc. [Stantec] 2022), as well as guidance described in Tier 4 of the US Fish and Wildlife Service (USFWS) *Land-Based Wind Energy Guidelines* (2012).

PCM followed the Intensive Bat Monitoring protocols described in the HCP. As specified in the HCP, intensive bat monitoring will be conducted during the first three years of Project operation following issuance of the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) Incidental Take Permit (ITP; Stantec 2022). Green River received the ITP on November 1, 2022. Because intensive monitoring was conducted in 2022 prior to issuance of the ITP, PCM during 2024 is considered to be the third year of intensive bat monitoring. WEST also conducted black-billed cuckoo (*Coccyzus erythropthalmus*) and upland sandpiper (*Bartramia longicauda*) fatality monitoring concurrent with the intensive bat monitoring, as described in the Project's *Conservation Plan* (Green River 2023) and the amended Incidental Take Authorization (Illinois Department of Natural Resources [IDNR] 2024). Current Project operations are consistent with the HCP and the ITP; however, Green River has implemented new technology, in coordination with the USFWS (per Section 8.2.2.4 of the HCP), resulting in changes to the curtailment strategy described in the HCP (see Section 3).

The objectives of the study were to: 1) estimate an overall bat fatality estimate for the Project, 2) determine bat species impacted by Project operations, 3) report the results of Evidence of Absence (EoA) analysis for Indiana bats and northern long-eared bats in 2024, 4) evaluate the assumption that summer risk to the bat species covered under the ITP is limited to northern long-eared bats at the 24 turbines sited within 305 meters (m; 1,000 feet [ft]) of forest, and 5) document black-billed cuckoo, upland sandpiper, and other avian mortality.

2.0 STUDY AREA

The Project is in Lee and Whiteside counties, Illinois (Figure 1), approximately 19 kilometers (12 miles) southeast of the city of Sterling, Illinois. Elevation in the Project averages approximately 210 m (689 ft) above mean sea level, and topography is relatively flat (US Geological Survey 2020). Approximately 92% of the nearly 3,456-hectare (8,540-acre) area within the Project is composed of cultivated crops (National Land Cover Database [NLCD] 2024). Corn (*Zea mays*) and soybeans (*Glycine max*) are the most common crop types (US Department of Agriculture National Agricultural Statistical Service 2024). The next most common land cover is developed (e.g., farmsteads, roads) that composes approximately 4% of the site (Figure 2; NLCD 2024). Among IDNR Wildlife Management Areas, the Green River State Wildlife Management Area occurs nearest to the Project, adjacent to the northeast border of the Project.

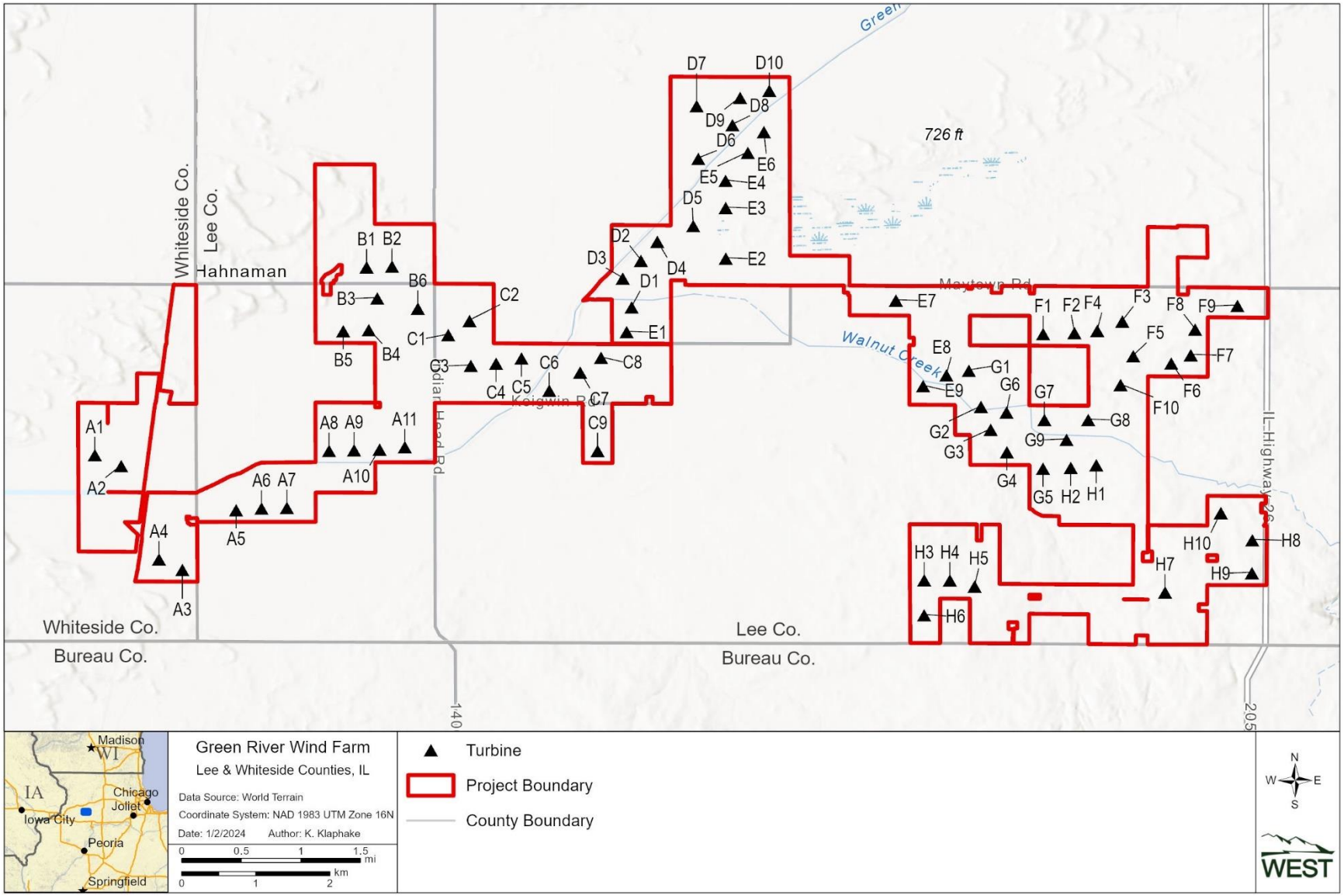

Figure 1. Location of the Green River Wind Farm, Lee and Whiteside counties, Illinois.

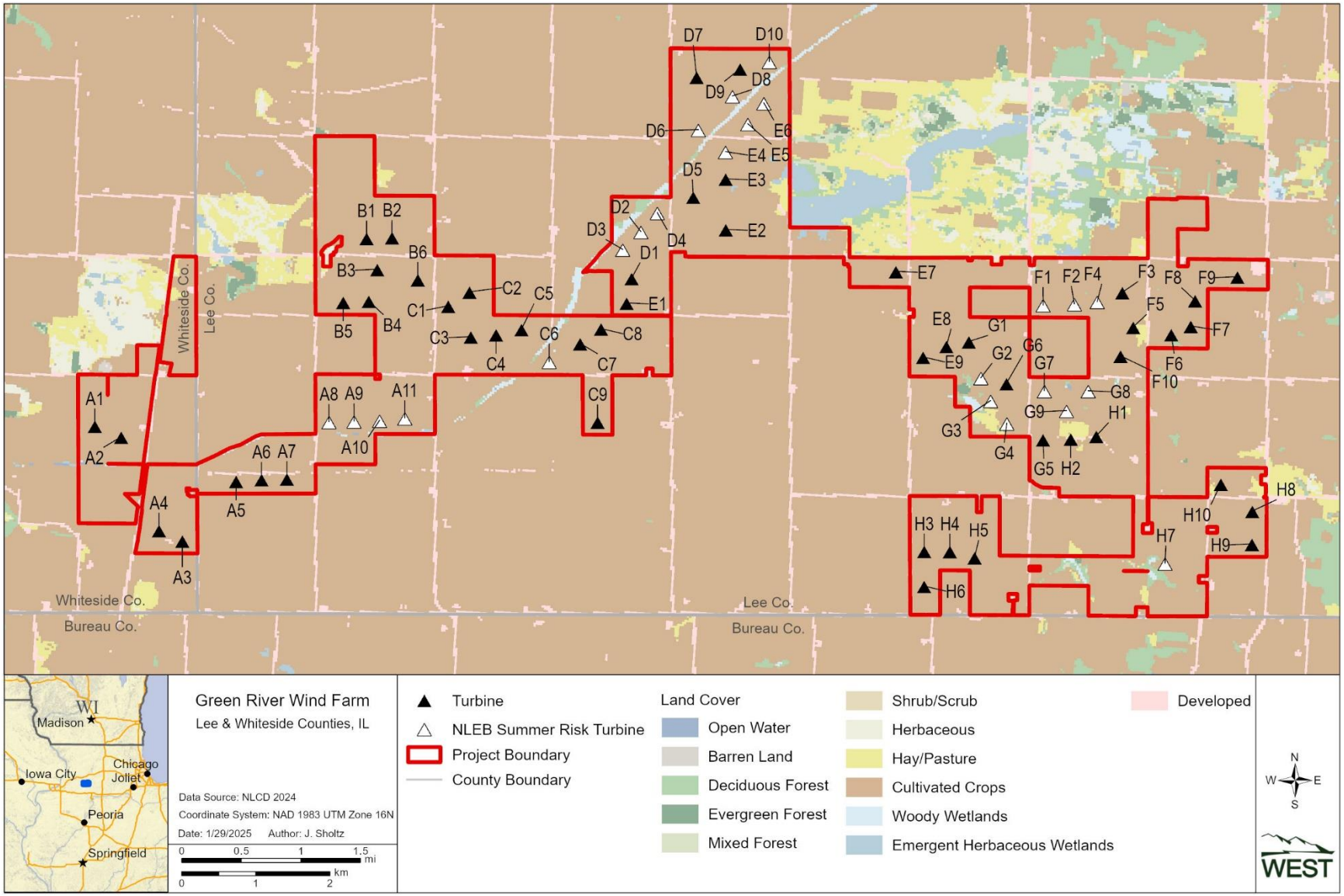

Figure 2. Land cover types in the Green River Wind Farm, Lee and Whiteside counties, Illinois.

3.0 PROJECT DESCRIPTION

The Project became operational in November 2019. The Project consists of 74 Siemens Gamesa G126 2.625-megawatt (MW) wind turbine generators (and associated access roads) for approximately 194 MW generation. Hub height is 83.8 m (275.0 ft), and total turbine height (blade tip height) is 147.8 m (485.0 ft). All turbines are within the migratory range of the Indiana bat and northern-long eared bat. To minimize collision risk to bats, Green River employed a smart curtailment protocol beginning in 2022 (Stephenson and Peterson 2022) in lieu of the curtailment protocol described in the HCP.

The smart curtailment parameters were intended to achieve a reduction in bat exposure comparable to the blanket curtailment protocol described in the HCP (Stephenson and Peterson 2022). Cut-in speeds during 2024 followed those described in the smart curtailment protocol (Stephenson and Peterson 2022), but dates were adjusted slightly due to operational constraints that limited changes to curtailment parameters to certain days of the week (Table 1).

Table 1. Curtailment parameters at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 12 – September 21, 2024.

Curtailment Timing	Temp (Celsius)	Turbine Location	Date		
			May 12 – Jun 15	Jun 16 – Aug 24	Aug 25 – Sep 21
sunset to one hour before sunrise	>10	turbines <305 m from suitable habitat	feather below 5.0 m/s	feather below 5.5 m/s	feather below 5.0 m/s
		turbines >305 m from suitable habitat	feather below 4.0 m/s	feather below 4.0 m/s	feather below 4.0 m/s

Temp = temperature.

m = meter; s = second.

4.0 METHODS

WEST designed the monitoring effort to target a probability of detection, or *g*, of at least 0.2 as specified in the HCP for the 74 wind turbines at the Project. A study plan was submitted to the USFWS on April 30, 2024. The USFWS acknowledged receipt of the plan on May 24, 2024, and did not provide any comments or questions on the plan (Amber Schorg, USFWS, pers. comm.).

4.1 Study Design

The PCM study consisted of three primary survey components: 1) standardized carcass searches (carcass searches) of turbines, 2) searcher efficiency (SEEF) trials to estimate the probability a carcass was found by searchers, and 3) carcass persistence (CP) trials (CPT) to estimate the average length of time a carcass remained in the search area for possible detection. A search area adjustment was estimated to account for carcasses that fell outside of search areas. The methodologies of each of these components and associated analysis are described below.

4.2 Standardized Carcass Searches

4.2.1 Number of Turbines Sampled, Search Frequency, Plot Size, and Plot Selection

Biologists and detection dog teams (each team consisting of one trained detection dog and one biologist/dog handler) conducted carcass searches from May 16 – October 15, providing coverage of the monitoring period described in the HCP for intensive monitoring years (May 15 – October 15; see *Section 7.3.3.1 – Intensive Bat Monitoring* in Stantec 2022). All 74 turbines were searched twice weekly using one of the following three search area (plot) types:

- 40-m (131-ft) cleared plots – plots were mowed regularly of vegetation out to 40 m from the turbine (Figures 3 and 4).
- 70-m (230-ft) hybrid plots – plots were mowed out to 40 m, and from 40–70 m vegetation (soybeans) was left uncleared (Figures 3 and 5).
- 100-m (328-ft) road and pad plots – road and pad (graveled) areas were searched out to 100 m from the turbine base (Figures 3 and 4).

Cleared plots were composed of a single visibility class (cleared), whereas hybrid plots were composed of two visibility classes (cleared [from 0–40 m], and uncleared [from 40–70 m]). Road and pad plots were composed of a single visibility class (roads and pads). Turbines searched as road and pad plots remained the same as during 2022 and 2023. Among the remaining turbines, hybrid plot turbines were randomly selected from those that had soybeans planted in the uncleared portion of the plot (40–70 m from the turbine).[1] Turbines not searched as hybrid plots were searched as cleared plots (Table 2).

Table 2. Search effort by season and plot type at the Green River Wind Farm, Lee and Whiteside counties, Illinois.

Season	Searcher Type	Plot Type	Number of Turbines	Search Interval
summer (May 16 – July 31)	humans	100-m road and pad	48	twice weekly
	detection dog	40-m cleared	17	twice weekly
	detection dog	70-m hybrid	9	twice weekly
fall (August 1 – October 15)	humans	100-m road and pad	48	twice weekly
	detection dog	40-m cleared	17	twice weekly
	detection dog	70-m hybrid	9	twice weekly

m = meter.

Although only 24 turbines were considered to have summer risk for northern long-eared bats, per the HCP, all turbines were searched during intensive bat monitoring to verify this assumption.

[1] Searches began before crops were planted at all turbines. Turbine F9 was selected as a hybrid plot; however, corn was ultimately planted in the uncleared portion of the plot. After the corn reached a height that prevented effective searching (beginning the week of July 1), only the cleared portion (from 0–40 m) of the plot at Turbine F9 was searched through the end of the study period. To maintain the same number of turbines per plot type, Turbine G7 switched from a cleared plot to a hybrid plot during that same search round.

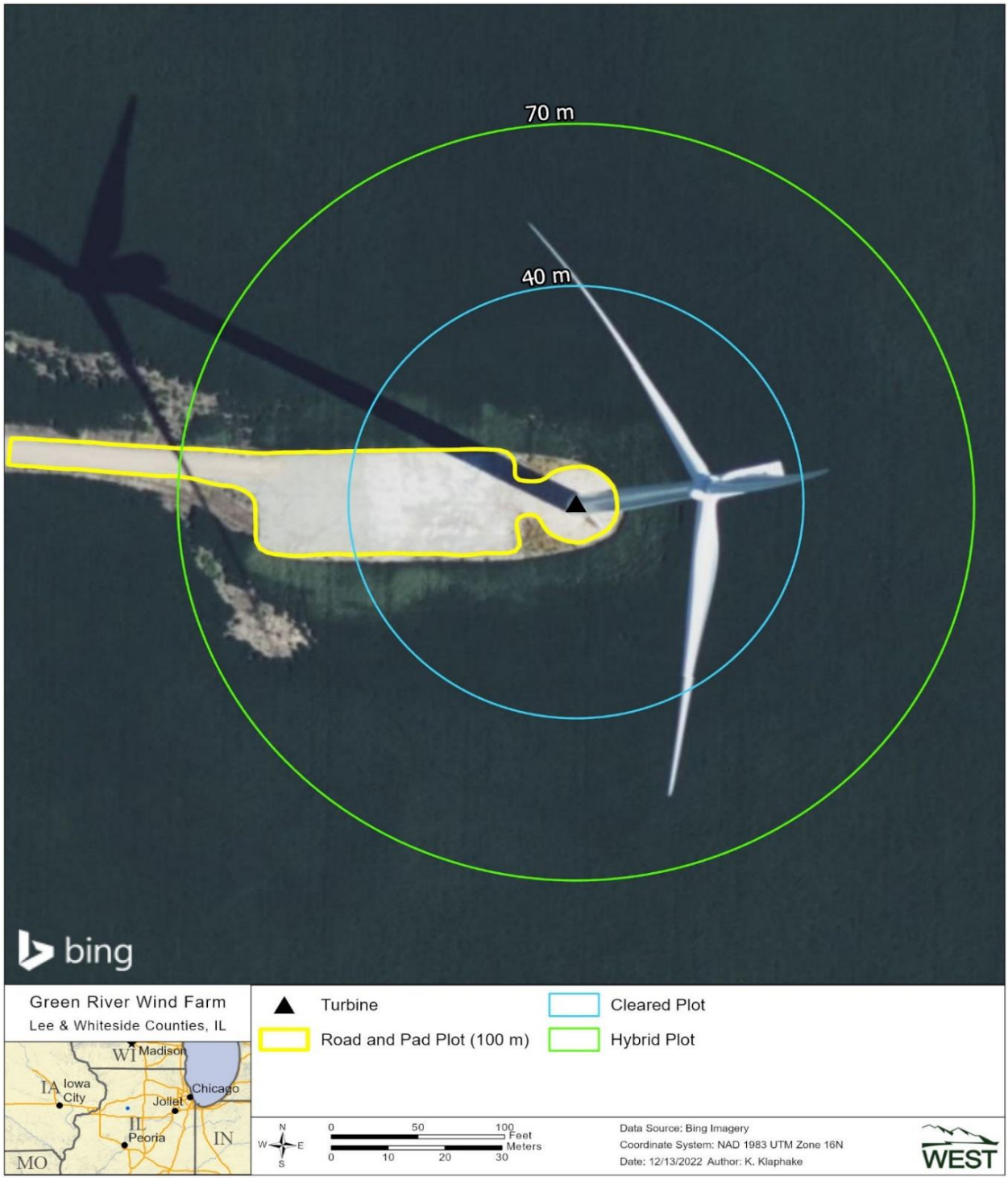

Figure 3. A schematic illustrating the three plot types.

Road and pad plot searches occurred within the turbine pads and access roads out to 100 meters (m; 328 feet [ft]). Cleared plot searches occurred within a 40-m (131-ft) radius of the turbine that was cleared of vegetation. Hybrid plot searches occurred within a 70-m (230-ft) radius of the turbine: 0–40 m from the turbine was cleared of vegetation, and 40–70 m from the turbine was uncleared vegetation (soybeans). Each turbine was assigned one plot type.

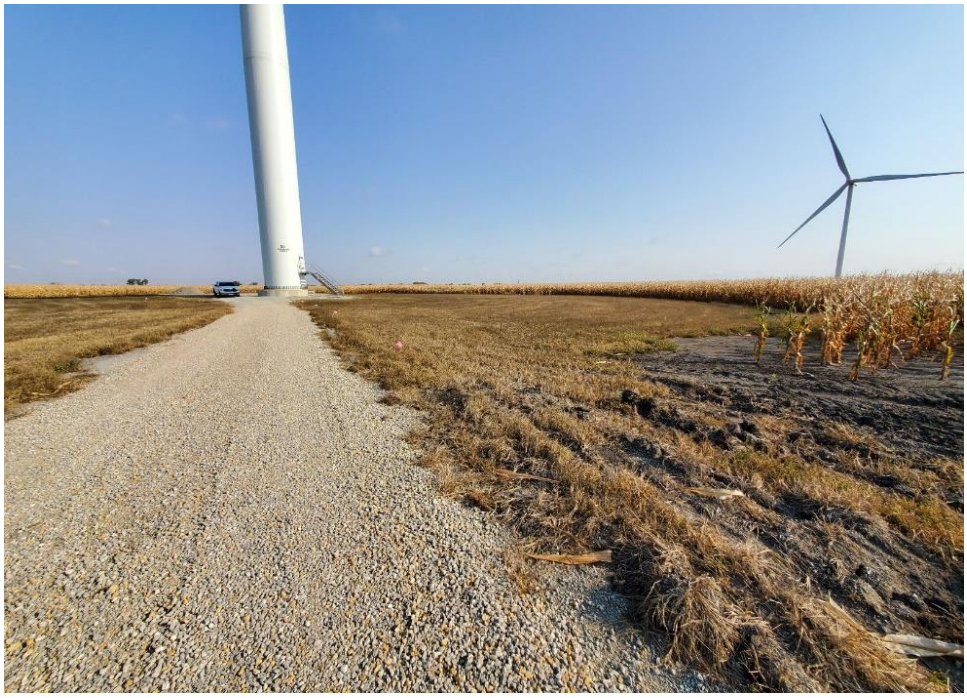

Figure 4. Example of a 40-meter cleared plot at the Green River Wind Farm, Lee and Whiteside counties, Illinois, showing the gravel road and pad associated with a turbine and the mowed area maintained at cleared plots and hybrid plots.

Figure 5. Example of a 70-meter hybrid plot at the Green River Wind Farm, Lee and Whiteside counties, Illinois. Photograph taken from within the uncleared (soybean) portion of the plot (40–70 meters from the turbine).

4.2.2 Search Methods

WEST used two types of search methods: a biologist (human-only visual search), and a detection dog team (olfactory search). All personnel were trained to follow the Project's search protocol, including proper handling and reporting of carcasses. Carcass searches were conducted during daylight hours, beginning as early as first light.

4.2.2.1 Detection Dog Team Training and Evaluation

Detection dogs were considered candidates for carcass searches if they met basic temperament and obedience criteria and demonstrated the trainability to detect bat and/or bird carcasses. Temperament characteristics sought after were high-energy, and a high food or toy drive. Prior to conducting searches at the Project, handlers trained their detection dogs on the scent of bat carcasses following methods derived from search and rescue programs and drug detection (Kay 2012, Helfers 2017). Detection dogs were initially trained with either cotton scent swabs that had been rubbed on bat carcasses before progressing to dehydrated bats, or directly with dehydrated bat carcasses, at increasing distances over a period of three to four weeks. Prior to a field evaluation, the detection dog had to achieve 80% or higher in a scent recognition test, which consisted of 10 blind trial lineups where the dog had to indicate correctly only on dehydrated bats. After passing the scent recognition test, the detection dog and handler were evaluated in the field to measure their performance.

A detection dog coordinator conducted a 1-day field evaluation of each detection dog team. After detection dog teams achieved a SEEF of 75% or greater for dehydrated bats placed during blind evaluation trials, teams were approved to conduct carcass searches. Because the objective of the study focused on detecting bat carcasses, dogs were not explicitly trained on native bird carcasses; however, all detection dogs alerted on bird carcasses in the field. Handlers rewarded detection dogs for bird carcass finds to encourage future alerts to bird carcasses. Detection dog breeds used at the Project included one border collie, one labrador retriever mix, and two border collie/Australian shepherd mixes (Figure 6).

4.2.2.2 Cleared and Hybrid Plot Searches

Detection dog teams searched cleared plots and hybrid plots for bird and bat carcasses (Figure 7). The detection dog team walked transects during searches appropriate to the field conditions. Transects were perpendicular to the wind, allowing the dog to zig-zag across the transect to maximize scent detection. Wind speed, humidity, and vegetation density can affect dispersal of the target odor (i.e., bat carcasses) across the plot. To maximize detection rates during a search, transect width varied with each search, ranging from approximately 15–20 m (49–66 ft) apart. Transect lines were modified during a search only when necessary, to minimize exposure of dogs to search area hazards (e.g., excessive mud), or to compensate for scent-inhibiting search conditions (e.g., more tightly spaced transects in thicker vegetation).

4.2.2.3 Road and Pad Plot Searches

Biologists conducted searches on road and pad plots. Biologists walked transects spaced up to five m (16 ft) apart at a rate of approximately 45–60 m (148–197 ft) per minute on road and pad plots within 100 m of the turbine. Biologists scanned the area for bird and bat carcasses out to approximately 2.5 m (8.2 ft) on both sides of the transects to ensure full visual coverage of each plot.

Figure 6. Photograph of one of the detection dogs (border collie/Australian shepherd mix) following a plot search at the Green River Wind Farm, Lee and Whiteside counties, Illinois.

4.2.3 Data Collection

Data were collected on a tablet data form. After each search, biologists recorded the date, survey start and end times, biologist initials, turbine number, search type (dog-aided or road and pad), and the number of carcasses that were found. When a carcass was found during a search, the biologist placed a marker near it and continued the search. After completing the search, the biologist returned to record information for each carcass on a carcass information data sheet, including the following data:

- date and time
- species
- sex and age (when possible)
- biologist initials
- turbine number
- measured distance from turbine using a handheld rangefinder
- bearing from turbine using a handheld compass
- location of carcass (i.e., coordinates in decimal degrees)
- habitat surrounding the carcass
- condition of carcass (i.e., intact, scavenged, dismembered, feather spot [for birds only], injured)
- estimated time of death (e.g., less than one day, one to two days)

The biologist took digital photographs of each carcass, including any visible injuries, and surrounding habitat. Carcasses found outside of a scheduled search were recorded as incidental discoveries and documented following the same protocol as those found during a search. Carcasses, including incidental discoveries, found in non-search areas (e.g., outside of a plot), or those with an estimated time of death outside of the study period were included in the overall reported fatalities (Appendix A), but were excluded from analysis.

The condition of each carcass found 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 of a carcass in one location (e.g., wings, skeletal remains), or a carcass that has been heavily infested by insects.
- Dismembered—an entire carcass found in multiple pieces due to scavenging or other reasons.
- Injured—a bat or bird found alive.

For bird carcasses, the following category was also used:

- Feather spot—10 or more body feathers (excluding down) or two or more primary feathers at one location, indicating predation or scavenging of a bird carcass.

Bat carcasses were collected under IDNR permit number NH24.5223C. Injured bats were left in place. State-listed bat species were authorized for collection under IDNR Endangered and Threatened Species Permit numbers 20000 and 22512, and T. Travis Brown was authorized to collect federally listed bat carcasses under USFWS permit number ES234121. Biologists experienced in identifying bird and bat species verified all bird and bat carcass identifications. A federally permitted bat biologist (T. Travis Brown [permit number: ES234121-10]) verified the identification of all potential federally or state-listed bat carcasses.

Non-state or federally listed bird fatalities were documented but not collected; carcasses were left in place and marked with spray paint to avoid double counting. State-listed bird fatalities would have been collected under the state permits described above and Migratory Bird Special Purpose Utility Permit MBPER0022957-1. Eagles would have been reported to the USFWS and authorized for collection as directed by the USFWS.

Biologists placed collected carcasses in a sealable plastic bag labeled with a unique carcass identification number and stored them in a freezer on site. Biologists wore leather and nitrile gloves to handle carcasses to reduce the risk of possible transmission of rabies or other diseases. In addition to fatalities, all injured birds and bats observed during surveys were recorded and considered fatalities for analysis.

Tissue samples were collected from heavily scavenged or decomposed bat carcasses that could not be positively identified and had potential to be an Indiana bat or northern long-eared bat. Samples were submitted for DNA identification to the Dr. Jane Huffman Wildlife Genetics Institute at East Stroudsburg University.

Bat carcasses that were heavily scavenged but did not have potential to be an Indiana bat or northern long-eared bat (e.g., fur was present on the wing, or the forearms measured more than 41.0 millimeters [1.6 inches] long) were identified to the closest genus or group possible. These samples were not submitted for DNA identification.

4.3 Bias Trials

4.3.1 Searcher Efficiency Trials

The objective of the SEEF trials was to estimate the probability that a carcass was found by searchers (i.e., biologists or detection dog teams). SEEF trials were conducted in all visibility classes. Biologists conducting carcass searches did not know when SEEF trials were being conducted or the location of the trial carcasses. Trial carcasses consisted of eastern red bats (*Lasiurus borealis*), big brown bats (*Eptesicus fuscus*), hoary bats (*Lasiurus cinereus*), and silver-haired bats (*Lasionycteris noctivagans*) that had previously been found on site. At least 20 bat carcasses were placed per plot type (cleared, hybrid, and road and pad) per season, with at least 18 bat carcasses placed in each visibility class (cleared, uncleared, and road and pad) per season. Although 20 carcasses were planned to be placed per visibility class, crops within some of the hybrid plots were not planted within the entire 40–70-m uncleared search area. Therefore, the predetermined random locations of some carcasses occurred in cleared portions of the 40–70-m search areas, and those carcasses were counted towards the cleared visibility class in analysis. Trials were distributed across multiple dates in each season to incorporate the effect of potential changes in plot conditions on SEEF over time.

Each trial carcass was discreetly marked with a black zip-tie or a piece of electrical tape around the upper forelimb for identification as a trial carcass. Trial carcasses were removed from the freezer the day before the SEEF trial to allow time for the carcasses to thaw. Trial carcasses were placed at predetermined random locations within plots the night before or the morning of the trial.

To avoid attracting scavengers by oversaturating the plot with carcasses, no more than four trial carcasses were placed at a single plot during an individual trial. The trial administrator dropped carcasses from waist-height or higher, and carcasses were allowed to land in a random posture. For detection dog teams, the trial administrator walked in a meandering path before placing each trial carcass to reduce the potential for dogs to associate human scent with bat carcasses. Biologists had one search to locate trial carcasses after carcass placement. Following each search, the biologist recorded the number and location of trial carcasses found. The biologist then confirmed with the trial administrator whether any missed trial carcasses were available for detection.

4.3.2 Carcass Persistence Trials

The objective of CPTs was to estimate the probability that a carcass would persist from the time it was deposited until the next scheduled search. Carcasses could be removed by scavenging or rendered undetectable by farming activities. Trial carcasses were placed at predetermined random locations within plots. At least 20 bat carcasses were placed per plot type to incorporate the effects of varying weather and scavenger densities on CP. Although 20 carcasses were planned to be placed per visibility class, crops within some of the hybrid plots were not planted within the entire 40–70-m uncleared search area. Therefore, the predetermined random locations of some carcasses occurred in cleared portions of the 40–70-m search areas, and the carcasses were counted towards the cleared visibility class in analysis. To avoid attracting scavengers by oversaturating the plot with carcasses, no more than three trial carcasses were placed at a single plot during an individual trial.

Biologists monitored the trial carcasses over a 30-day period according to the following schedule, as closely as possible. Trial carcasses were checked daily for the first four days, then on days 7, 10, 14, and 30. Trial carcasses were monitored until they were completely removed, or the trial period ended. Detection dog teams monitored trial carcasses placed on cleared plots and hybrid plots; biologists monitored trial carcasses placed on road and pad plots.

4.4 Search Area Adjustment

Biologists recorded the boundaries of road and pad plots, cleared plots, and the cleared portions of hybrid plots, using a Juniper Geode sub-meter Global Positioning System unit connected via Bluetooth to a tablet. The 70-m boundaries of hybrid plots were delineated using a 70-m radius buffer around each turbine in a geographic information system (GIS). Unsearchable areas within plots, if present, were also mapped. The plot boundaries were used to verify if carcasses were found inside the search areas and to inform the distribution of carcasses around turbines to estimate the number of carcasses that fell inside or outside of search areas (see Section 5.3 below).

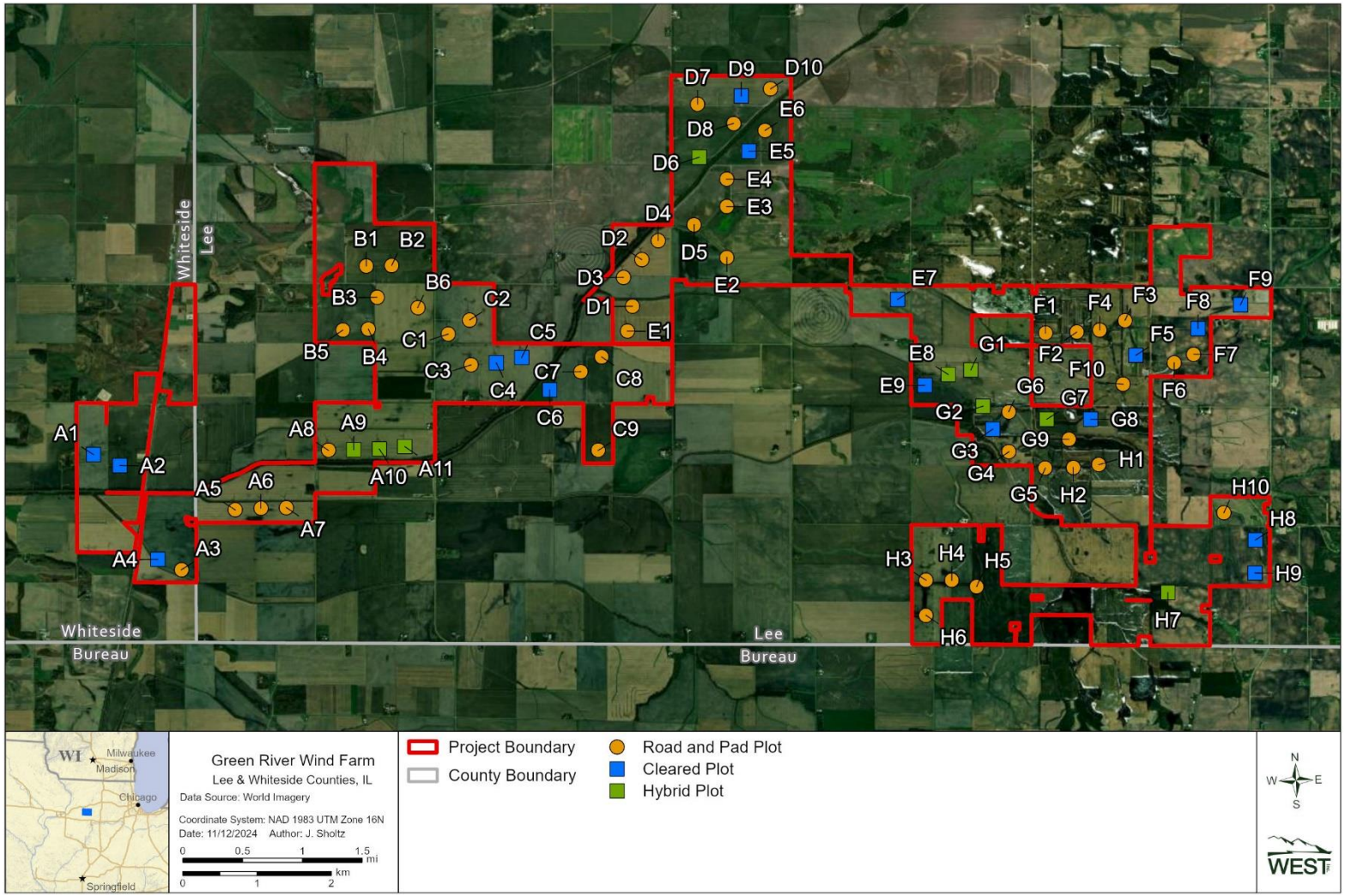

Figure 7. Turbine locations and search types at the Green River Wind Farm, Lee and Whiteside counties, Illinois (May 16 – October 15, 2024).

Note: Turbine F9 was initially selected as a hybrid plot; however, corn was ultimately planted in the uncleared portion of the plot. After the corn reached a height that prevented effective searching (beginning the week of July 1), only the cleared portion (from 0–40 meters) of the plot at Turbine F9 was searched through the end of the study period. To maintain the same number of turbines per plot type, Turbine G7 switched from a cleared plot to a hybrid plot during that same search round.

4.5 Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) measures were implemented at all stages of the study, including in the field, during data entry and analysis, and report writing. All WEST field staff were trained in proper survey techniques, and all data collected were recorded on a tablet data form. Following field surveys, biologists were responsible for inspecting data forms for completeness and accuracy. If errors or anomalies were found, follow-up measures were implemented including discussions and review of field data with biologists and/or Project managers.

WEST field staff were trained on proper tablet data entry procedures. System controls were implemented to ensure correct data were entered; however, if any errors, omissions, or problems were identified in later stages of analysis, they were traced back to the raw data, where appropriate changes and measures were implemented. Data were incorporated into a Microsoft® SQL Server database and were QA/QC'd throughout the course of the study. Statisticians provided an additional level of QA/QC to ensure proper protocols were followed and data collected were congruent with the objectives of the study.

WEST's reporting and review process included project management review, technical editing and content review, senior technical review, and a final review by the project manager before delivery to the client.

4.6 Statistical Analysis

4.6.1 All Bat Fatality Rate Estimation

Carcasses included in the fatality rate estimate were found within plots and had an estimated time of death within the study period. Fatality estimates were calculated for bats by season and for the study period using GenEst (a generalized estimator of fatality; Dalthorp et al. 2018, Simonis et al. 2018). To obtain an overall estimate of fatality, each carcass included in the analysis was adjusted for SEEF, CP, a detection reduction factor (also referred to as "*k*"; see below), and a search area adjustment. Fatality estimates for the different plot types (road and pad, cleared, hybrid) were combined using a weighted average by the relative number of each plot type, and estimates and 90% confidence intervals (CI) were calculated using a parametric bootstrap (Dalthorp et al. 2018) for each individual category listed above, assuming more than five fatalities were detected.

4.6.2 Evidence of Absence Modeling

The EoA modeling framework (Dalthorp et al. 2017) was used to estimate take of the Indiana bat and northern long-eared bat. To estimate take, EoA used the arrival distribution of bats (described below), the number of Indiana bat or northern long-eared bats found, and the estimated overall probability of detecting a bat fatality based on data collected in the field. Data used in the EoA model included number of Indiana bat or northern long-eared bat fatalities, arrival proportions, fatality spatial data from all bats found inside search plots and with an estimated time of death within the search period, and the results of SEEF and CPT.

4.6.3 Searcher Efficiency Estimation

SEEF was estimated separately for plots searched by biologists (i.e., road and pad plots) versus detection dog teams (i.e., cleared plots and hybrid plots) to account for different modes of detection (i.e., biologists searched visually, whereas detection dogs searched using scent). EoA used raw SEEF data (i.e., number of found and available trial carcasses) to inform overall probability of detection. SEEF was modeled using logistic regression (Dalthorp et al. 2018) to determine if searcher efficiency varied by strata (Appendix B). Season (summer or fall) and plot visibility class (cleared or uncleared) were used as potential explanatory variables (covariates) on plots searched by detection dog teams. Season was the only covariate considered on road and pad plots because conditions remained the same on gravel throughout the year. Model selection was completed using an information theoretic approach known as AICc, or corrected Akaike Information Criterion (Burnham and Anderson 2002). The most parsimonious model (the model with the fewest variables) within two AICc units of the model with the lowest AICc value was selected as the best model. SEEF values were input into the EoA software according to the model selection results.

The change in SEEF between successive searches was defined by a parameter called the detection reduction factor (k) that can vary from zero to one. When k is zero, it implies that a carcass missed on the first search would never be found on subsequent searches. A k of one implies SEEF remained constant no matter how many times a carcass was missed (i.e., a carcass that is missed on the first search would have an equal chance of being found on a subsequent search as any other newly available carcass). A value of $k = 0.65$ was assumed to calculate bat fatality estimates using GenEst and EoA, per the HCP.

4.6.4 Carcass Persistence Rate Estimation

CPT data were used to estimate the amount of time, in days, that carcasses remained available to be located by the searcher. CP was estimated separately for plots searched by biologists (i.e., road and pad plots) versus detection dog teams (i.e., cleared plots and hybrid plots) to account for different modes of detection. The average probability that a carcass persisted through the search interval (i.e., the time between scheduled searches) was estimated using an interval-censored survival regression with four potential distributions: exponential, log-logistic, lognormal, and Weibull (Kalbfleisch and Prentice 2002, Dalthorp et al. 2018). Season (summer or fall) and visibility class (cleared or uncleared) were used as potential covariates on plots searched by detection dog teams. Season was the only covariate considered on road and pad plots. The most parsimonious model within two AICc units of the model with the lowest AICc value was selected as the best model. The parameter estimates of the selected model (α [shape] and β [scale], including the 95% CI of β) were used as inputs in the EoA Single Class Module.

4.6.5 Area Adjustment

The search area adjustment accounted for carcasses that fell in unsearched areas within plots, and those that fell beyond the plot boundary. The search area adjustment was calculated as a probability that ranged from zero to one. For example, an area adjustment of 0.75 meant that an estimated 75% of carcasses fell within searched areas within the plot. Unsearched areas were due to survey obstacles such as ground cover (e.g., tall crops), terrain, or farming equipment. The

search area adjustment was estimated as the product of the unsearched area around each turbine and a carcass-density distribution. The carcass-density distribution predicted the likelihood a carcass fell a given distance from the turbine base. In cases where model selection indicated differences in SEEF or CP between the visibility classes within the hybrid plots, the fraction of carcasses associated with each bias factor (SEEF or CP) could also be estimated using the area adjustment models, although this was unnecessary for this study (see Section 5.0).

The carcass density distribution was modeled using site-specific fatality location data. A truncated weighted maximum likelihood (TWL) modeling approach (Khokan et al. 2013) was used to estimate the carcass-density distribution (Appendix C). The TWL approach weights each carcass by the inverse of its probability of detection and the proportion of area searched in each 1.0-m (3.3-ft) annulus around the turbine, out the maximum search area extent (e.g., 40 m for cleared plots). Distributions considered were normal, gamma, Gompertz, and Weibull (parameterized according to R Development Core Team [2016] and Yee [2015]). The proportion of area searched was calculated in a GIS as the amount of area searched divided by the total area searched at each 1.0-m annulus around the turbine.

4.6.6 Carcasses Excluded from Area Adjustment Calculations

Fatalities were excluded from the area adjustment calculation when the carcass was discovered outside of the spatial and temporal scope of the survey design. For example, carcasses found outside of plots were not included in the analysis because the search effort associated with those carcasses was unknown. Carcasses with an estimated time of death outside of the study period (e.g., prior to the start of surveys) were also excluded because the fatality occurred outside of the study period. Carcasses found on a plot outside of a scheduled search (incidentally) were included in analysis if that plot was planned to be searched in the future. If an Indiana bat or northern long-eared bat fatality had been found outside of the spatial or temporal scope of the survey design, the carcass would still be excluded from the search area adjustment estimate, but it would have been included in the EoA fatality estimate following Dalthorp et al. (2020).

4.6.7 Indiana Bat and Northern Long-eared Bat Take and Detection Probability Estimates

EoA was used to estimate the mean annual take rate (λ) and the point estimate of mortality for the Indiana bat and northern long-eared bat. Estimates were calculated using the EoA method (Dalthorp et al. 2017) using the Single Class, Multiple Class, and Multiple Years modules of EoA.

When combining detection probabilities across summer and fall, weights (density-weighted proportion [DWP] in EoA) were used that accounted for assumed arrival proportions[2], curtailment operations, and the proportion of turbines that posed risk in each season (Appendix D).

The probability of detection (*g*) was estimated using the bias corrections for SEEF, CP, and area searched, as well as the assumed seasonality of risk for the Indiana bat and northern long-eared bat (25% in summer and 75% in fall after the HCP-assumed risk proportions were adjusted for

[2] Because no Indiana or northern long-eared bat carcasses were found during the study, we assumed that summer risk occurred only at the 24 turbines within 305 m of forest at the Project per the HCP, and seasonal weights were adjusted to reflect the different number of risk turbines in each season.

number of risk turbines in each season). The EoA Single Class Module was used to estimate the distribution of detection probability in each sub-season. This resulted in alpha (α; Ba in EoA) and beta (β; Bb in EoA) parameters that defined the beta distribution of detection probability in each sub-season. Sub-seasons were needed during the EoA analysis to account for differing turbine operational regimes within seasons (Table 1) and plot changes due to environmental constraints within seasons (see Footnote 1 and note about mold growth in Section 5.1). Sub-seasons are defined in Appendix D1.

The EoA Multiple Class Module was then used to combine detection probability distributions across sub-seasons, with weights for each class defined by the sampling fraction, area searched, and seasonal arrival proportions. The results from the previous monitoring years and the current study were used within the EoA Multiple Years Module to estimate mean take rate λ and its 95% credible interval (CrI).

The EoA Multiple Years Module requires the input ρ, which weights the years according to the relative fatality risk within each year. The values of ρ are 1.0 for years within which operations are typical, but can be less than 1.0 if there is substantial turbine down-time reducing annual risk, or greater than 1.0 if turbines are curtailed less than usual.

5.0 RESULTS

5.1 Standardized Carcass Searches

The 74 turbines were searched twice weekly in summer and fall, totaling 3,166 searches across the study period. The average search interval was 3.60 days (Table 3). Approximately 97% of scheduled searches were completed, with turbine maintenance and weather constraints being the primary reasons for missed searches. Mold growth on soybeans due to excessive rain in the fall created hazardous search conditions for the detection dogs within the uncleared portions of hybrid plots. Therefore, from September 9–22, searches within hybrid plots were restricted to the cleared portions of the plots until the soybeans dried out and the mold dissipated.

Table 3. Search effort by season and plot type at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Season	Searcher Type	Plot Type	Search Interval	Number of Searches
summer (May 16 – July 31)	human	100-m road and pad	3.60	793
	detection dog	40-m cleared	3.60	616
	detection dog	70-m hybrid	3.60	166
fall (August 1 – October 15)	human	100-m road and pad	3.60	1,111
	detection dog	40-m cleared	3.60	383
	detection dog	70-m hybrid	3.60	97
Overall				**3,166**

m = meter.

5.1.1 Species Composition

No state- or federally listed species of bats or birds were found. A full listing of bird (n = 87) and bat (n = 375) carcasses found is presented in Appendix A. Overall, 86 bats were found in the summer and 289 bats were found in the fall (Appendix A). The most commonly found bat species were silver-haired bat (145 carcasses; 38.7% of total bat carcasses) and eastern red bat (111; 29.6%), followed by big brown bat and hoary bat (55 each; 14.7% each). Four unidentified *Lasiurus* bats (1.1%), two evening bats (*Nycticeius humeralis*; 0.5%), one unidentified non-myotis bat, one eastern red/Seminole bat, and one unidentified bat (that failed DNA testing; 0.3% each), were also found (Table 4; Appendix A). Over the course of the monitoring period, 31 heavily scavenged or decomposed bats were sent for genetic testing, and were identified as silver-haired, big brown, eastern red, evening, and hoary bats. Genetic testing of one bat failed to isolate mammal DNA as a result of decomposition, so the species could not be identified. The majority of bat carcasses were recorded on the 40-m cleared plots and 70-m hybrid plots searched by detection dog teams (Table 5).

5.1.2 Carcasses Excluded from Analysis

Thirteen of the 375 bats found were excluded from the overall fatality estimate. Carcasses excluded from analysis included five that were found outside of plots, and eight that had an estimated time of death outside of the study period (Table 4).

Table 4. Number and percent (%) of bat carcasses by species included and excluded from analysis and the search area adjustment at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

	Included in Fatality Estimate		Outside Plot*		Outside Study Period*		Total	
Species	**Total**	**%**	**Total**	**%**	**Total**	**%**	**Total**	**%**
silver-haired bat	139	38.4	2	40	4	50.0	145	38.7
eastern red bat	108	29.8	1	20	2	25.0	111	29.6
big brown bat	54	14.9	0	0	1	12.5	55	14.7
hoary bat	52	14.4	2	40	1	12.5	55	14.7
unidentified *Lasiurus* bat	4	1.1	0	0	0	0	4	1.1
evening bat	2	0.6	0	0	0	0	2	0.5
eastern red bat/Seminole bat	1	0.3	0	0	0	0	1	0.3
unidentified non-myotis	1	0.3	0	0	0	0	1	0.3
unidentified bat	1	0.3	0	0	0	0	1	0.3
Overall	**362**	**100**	**5**	**100**	**8**	**100**	**375**	**100**

Note: Totals may differ due to rounding.

* Carcasses not included in analysis. Bats listed here include those found during the study period that had an estimated time of death outside of the study period.

Table 5. Number and percent (%) of bat carcasses by species and plot type found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

	100-m Road and Pad		40-m Cleared Plot		70-m Hybrid Plot**	
Species	**Total**	**%**	**Total**	**%**	**Total**	**%**
silver-haired bat	53	43.1	65	37.8	27	33.8
eastern red bat	34	27.6	49	28.5	28	35.0
big brown bat	18	14.6	29	16.9	8	10.0
hoary bat	17	13.8	26	15.1	12	15.0
unidentified *Lasiurus* bat	0	0	1	0.6	3	3.8
evening bat	1	0.8	1	0.6	0	0
eastern red bat/Seminole bat	0	0	1	0.6	0	0
unidentified non-myotis	0	0	0	0	1	1.3
unidentified bat	0	0	0	0	1	1.3
Overall	**123**	**100**	**172**	**100**	**80**	**100**

Note: Totals may differ due to rounding.

m = meter.

* See Appendix A2 for the number of bats found per plot type per season.

** Hybrid plots were cleared of vegetation out to 40 meters (m), and from 40–70 m vegetation (soybeans) was uncleared.

5.2 Bias Trials

5.2.1 Searcher Efficiency Trials

Overall, 171 bats were placed for SEEF trials on 24 separate dates; 131 were available to find across all plot types (Table 6). The best-fit model for SEEF on dog-aided plots was the intercept-only model, indicating that SEEF was consistent across visibility classes and seasons (Appendix B1). An intercept-only model also provided the best fit for modeling SEEF on human-searched plots (roads and pads), indicating that SEEF was consistent across seasons (Appendix B2).

Table 6. Searcher efficiency results by season and visibility class at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Season	Visibility Class	Number Placed*	Number Available	Number Found	% Found
summer	uncleared**	18	12	10	83.3
	cleared**	43	32	28	87.5
	roads and pads	23	19	18	94.7
fall	uncleared**	21	18	13	72.2
	cleared**	36	27	22	81.5
	roads and pads	30	23	20	87.0
Overall uncleared**		**39**	**30**	**23**	**76.7**
Overall cleared**		**79**	**59**	**50**	**84.8**
Overall roads and pads		**53**	**42**	**38**	**90.5**

* Although 20 carcasses were planned to be placed per visibility class, crops within some of the hybrid plots were not planted within the entire 40–70-meter uncleared search area. Therefore, the predetermined random locations of some carcasses occurred in the cleared portions of the 40–70-meter search areas, and those carcasses were counted towards the cleared visibility class in analysis.

** Dog-assisted search.

5.2.2 Carcass Persistence Trials

Overall, 120 bat carcasses were placed to estimate CP. An intercept-only model (using an exponential distribution) provided the best fit for modeling bat CP rates on dog-aided plots, indicating that CP was consistent across visibility classes and seasons (Table 7; Appendix B4). A model with a season covariate (using a lognormal distribution) provided the best fit for modeling bat CP rates on human-searched plots (roads and pads; Table 7; Appendix B5).

The estimated median CP time for dog-aided plots was 6.75 days (Table 7, Figure 8). The estimated median CP time for human-searched plots was 10.71 days in summer and 1.89 days in fall. The average probability that a carcass persisted through a 3.5-day search interval was 0.84 (90% CI: 0.81–0.86) on dog-aided plots, 0.86 (90% CI: 0.77–0.93) on human-searched plots in summer, and 0.56 (90% CI: 0.43–0.71) in fall (Figure 8, Appendices B6 and B7).

Table 7. Carcass persistence top models with covariates, distributions, and model parameters for the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Visibility Class*	Season**	Distribution	Estimated Median Removal Times (days)	Parameter 1	Parameter 2
uncleared***	NA	exponential****	6.75	rate = 0.103	–
cleared***	NA	exponential****	6.75	rate = 0.103	–
roads and pads	summer	lognormal****	10.71	meanlog = 2.371	sdlog = 1.674
	fall	lognormal****	1.89	meanlog = 0.637	sdlog = 1.674

* Although 20 carcasses were planned to be placed per visibility class, crops within some of the hybrid plots were not planted within the entire 40–70-meter uncleared search area. Therefore, the predetermined random locations of some carcasses occurred in the cleared portions of the 40–70-meter search areas, and those carcasses were counted towards the cleared visibility class in analysis.

** Not applicable (NA) values are listed when carcass persistence was not modeled by season.

*** Dog-assisted search.

**** Parameterization follows the base R parameterization for this distribution.

5.3 Statistical Analysis

5.3.1 Area Adjustment

The Weibull distribution was the best fit for modeling bat carcass density distributions with respect to distance from the turbine base (Appendix C), regardless of plot type. The TWL area adjustment for bats was 0.89 at hybrid plots, 0.13 at road and pad plots, and ranged from 0.60–0.63 among sub-seasons at cleared plots (Table 8).

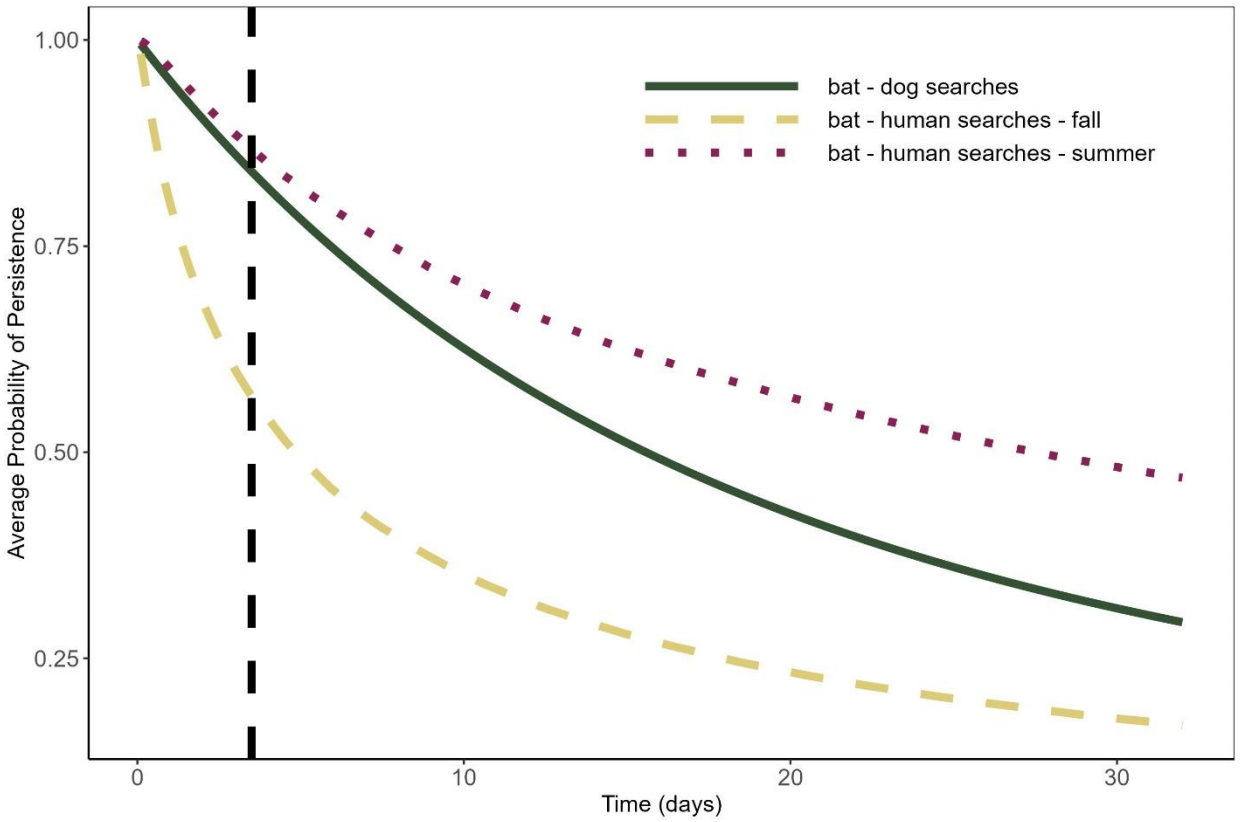

Figure 8. The average probability of carcass persistence over time (in days) at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024. The vertical black dashed line denotes the twice per week search interval.

Table 8. Truncated weighted maximum likelihood search area adjustment estimates for the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Plot Type	Number of Bats*	Distribution	Parameter 1	Parameter 2	Area Adjustment
40-m cleared**	166	Weibull	1.6322	41.6799	0.60–0.63
70-m hybrid	76	Weibull	1.6322	41.6799	0.89
100-m roads and pads	120	Weibull	1.6322	41.6799	0.13

* Number of bats included in the area adjustment analysis by plot type.

** See Spatial Coverage column in Appendix D1 for 40-meter (m) cleared plot area adjustment per sub-season.

(n = 362 bat carcasses).

5.3.2 Bat Fatality Rate

The overall estimated bat fatality rate was 11.44 (90% CI: 8.44–16.12) bat fatalities/MW (30.02 [90% CI: 22.17–42.31] bat fatalities/turbine; Table 9). Estimated bat fatality rates were lower for the summer (1.87 [90% CI: 1.31–2.67] bat fatalities/MW) than the fall (9.57 [90% CI: 6.93–13.71] bat fatalities/MW). The bat fatality rate was similar among plot types in summer (Appendix B6). During fall, the 100-m road and pad plot fatality estimate was 11.61 (90% CI: 7.83–17.57) bat

fatalities/MW, compared to 5.83 (90% CI: 4.51–8.40) bat fatalities/MW on 40-m cleared plots and 3.84 (90% CI: 2.91–5.58) bat fatalities/MW on 70-m hybrid plots (Appendix B7).

Table 9. Estimated fatality rates for combined plot types by season and overall, per megawatt (MW) and per turbine for the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

	Per MW		Per Turbine	
Season	**Estimate**	**90% CI**	**Estimate**	**90% CI**
summer	1.87	1.31–2.67	4.90	3.44–7.00
fall	9.57	6.93–13.71	25.11	18.18–36.00
Overall	**11.44**	**8.44–16.12**	**30.02**	**22.17–42.31**

CI = confidence interval.

5.3.3 Indiana Bat and Northern Long-eared Bat Take Estimates

No Indiana bat or northern long-eared bat carcasses were found during PCM from 2022 through 2024, including at the 24 turbines considered to pose summer risk to northern long-eared bat (i.e., within 305 m of suitable bat habitat) and at the 50 remaining turbines. The HCP defined the period of risk as including summer and fall, and detection probabilities were calculated separately for each season. The HCP noted some uncertainty regarding which turbines could pose risk to northern long-eared bats during the summer. The number of potential turbines which posed summer risk to northern long-eared bats could affect the summer probability of detection value. The EoA analysis conducted here included only the 24 turbines considered to pose summer risk during HCP development, when estimating the detection probability for summer. All turbines were included in the fall estimate.

The probability of detection of an Indiana bat or northern long-eared bat achieved for the 2024 monitoring period was 0.25 (95% CrI: 0.24–0.25; Table 10). Screenshots of the graphical user interface and inputs required to run the EoA Single Class Module, Multiple Class Module, and Multiple Year Module, and stratum-specific *g* distribution values are provided in Appendix D.

The combined probability of detection of an Indiana bat or northern long-eared bat from 2022–2024 was 0.26 (95% CrI: 0.25–0.27; Table 10). The echoPITCH curtailment regime (Stephenson and Peterson 2022) was implemented for all of 2023 and 2024, so 2023 and 2024 were considered “normal” operating years. For 2023 and 2024 ρ was set to 1.0. In the summer of 2022 no curtailment occurred through July 31, so ρ was set to 1.095 for 2022 to account for the increased risk in 2022 compared to operations in 2023 and 2024.

Indiana bats and northern long-eared bats were each estimated to have a mean annual take rate of 0.62 (95% CrI: 0–3.10) bats per year for 2022–2024 (Table 11). The expected average annual take rate reported in the HCP is 1–2 Indiana bats per year and 3–5 northern long-eared bats per year (Stantec 2022). Since the estimated mean annual take rate for Indiana bats is less than 1, and the estimated mean annual take rate for northern long-eared bats is less than 3, no adaptive management triggers have been fired. Based on the overall $\hat{g}$ of 0.26, the 0.5 quantile indicated zero ($M^* = 0$) Indiana bat or northern long-eared bat fatalities occurred since 2022.

Table 10. Probability of detection (*g*), Ba, Bb, and ρ for Indiana bats or northern long-eared bats for each year of intensive monitoring to date at the Green River Wind Farm, Lee and Whiteside counties, Illinois.

Year	Ba*	Bb*	ρ**	*g*	95% CrI
2022	831.73	1,975.09	1.095	0.30	0.28–0.31
2023	640.07	2,039.63	1.0	0.24	0.22–0.26
2024	2,951.82	9,005.19	1.0	0.25	0.24–0.25
Cumulative	2,810.40	7,925.44	NA	0.26	0.25–0.27

* Ba and Bb are the parameters for the beta distribution used to characterize the probability of detection. The *g* value is the mean of that distribution.

** ρ is the weight in the weighted average that is used to combine the probability of detection distributions across years.

CrI = credible interval.

Table 11. Estimated take rates (λ) at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from 2022–2024.

Species	Mean λ (95% CrI)
Indiana bat	0.62 (0–3.10)
northern long-eared bat	0.62 (0–3.10)

CI = confidence interval.

6.0 CONCLUSIONS

The PCM effort completed in 2024 was consistent with the HCP's monitoring requirements and was substantially consistent with the Project's 2024 study plan (see footnotes in Tables 6 and 7 regarding SEEF and CPT placements). The species composition of bat fatalities was similar to other Midwestern wind facilities (WEST 2023), and no state- or federally listed bats or birds were observed as fatalities in 2024.

Although the overall bat fatality rate during 2024 is higher than the bat fatality rate observed during PCM in 2022 and 2023 at the Project (7.05 bats/MW [90% CI: 5.99–8.55] and 5.77 bats/MW [90% CI: 4.56–7.40]; Brown et al. 2023 and 2024, respectively), the 2024 bat fatality rate is less than the bat fatality rate observed during PCM in 2021 at the Project (13.89 bats/MW [90% CI: 10.92–21.36]; Brown et al. 2022). During 2021, turbines were curtailed following protocols in the Project's *Draft Habitat Conservation Plan for the Indiana Bat and Northern Long-Eared Bat* (Stantec 2021). Based on the bat fatality rates from 2022 and 2023 compared to 2021, Brown et al. (2024) suggested that the smart curtailment protocol employed from 2022–2024 (Stephenson and Peterson 2022) may have achieved a reduction in bat exposure greater than the blanket curtailment protocol described in the HCP. However, considering the bat fatality rate in 2024 was relatively similar to 2021 under blanket curtailment, other factors are likely contributing to this inter-annual variability.

Based on the absence of Indiana bat and northern long-eared bat fatalities found from 2022–2024 and the *g* of 0.26 (95% CrI: 0.25–0.27), the estimated fatality rates for both Indiana bats and northern long-eared bats was 0.62 bats per year from 2022–2024, with credible intervals that overlapped with 0. The estimated Indiana bat and northern long-eared bat fatality rates were below the estimated annual rates within the HCP after the third year of intensive monitoring following issuance of the ITP; therefore, no adaptive management is required per the Project's HCP. In addition, WEST did not find evidence (i.e., Indiana bat or northern long-eared bat fatalities) to contradict the assumption that summer risk to the bat species covered under the ITP is limited to northern long-eared bats at the 24 turbines located within 305 m of forest.

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Appendix A. Carcasses Found during 2024 Post-Construction Monitoring at the Green River Wind Farm

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
Bats							
5/16/2024	silver-haired bat	7	A3	incidental	100-m road and pad	scavenged	no
5/16/2024	silver-haired bat	26	A4	carcass search	40-m cleared	intact	yes
5/16/2024	hoary bat	33	A9	carcass search	70-m hybrid	scavenged	yes
5/16/2024	silver-haired bat	26	A9	carcass search	70-m hybrid	scavenged	yes
5/16/2024	big brown bat	3	C9	incidental	100-m road and pad	intact	no
5/16/2024	silver-haired bat	22	F9	carcass search	70-m hybrid	scavenged	yes
5/16/2024	eastern red bat	17	H8	carcass search	40-m cleared	scavenged	yes
5/17/2024	eastern red bat	36	C1	carcass search	100-m road and pad	intact	no
5/20/2024	eastern red bat	50	F9	carcass search	70-m hybrid	scavenged	yes
5/20/2024	eastern red bat	26	F9	carcass search	70-m hybrid	scavenged	yes
5/21/2024	silver-haired bat	36	G8	carcass search	40-m cleared	scavenged	yes
5/23/2024	eastern red bat	63	A10	carcass search	70-m hybrid	scavenged	yes
5/23/2024	hoary bat	26	A11	carcass search	70-m hybrid	intact	yes
5/25/2024	evening bat	25	C1	carcass search	100-m road and pad	intact	no
5/25/2024	hoary bat	56	E7	carcass search**	40-m cleared	scavenged	yes
5/25/2024	silver-haired bat	57	G1	carcass search	70-m hybrid	scavenged	yes
5/27/2024	hoary bat	40	G2	carcass search	70-m hybrid	dismembered	yes
5/27/2024	silver-haired bat	33	H7	carcass search	70-m hybrid	scavenged	yes
5/27/2024	hoary bat	27	H8	carcass search	40-m cleared	scavenged	yes
5/30/2024	silver-haired bat	20	A10	carcass search	70-m hybrid	scavenged	yes
5/31/2024	hoary bat	16	F5	carcass search	40-m cleared	scavenged	yes
6/1/2024	big brown bat	12	C8	carcass search	100-m road and pad	intact	no
6/3/2024	eastern red bat	10	F8	carcass search	40-m cleared	scavenged	yes
6/3/2024	eastern red bat	52	F9	carcass search	70-m hybrid	scavenged	yes
6/3/2024	hoary bat	36	H7	carcass search	70-m hybrid	scavenged	yes
6/3/2024	silver-haired bat	28	H8	carcass search	40-m cleared	scavenged	yes
6/4/2024	eastern red bat	30	E7	carcass search	40-m cleared	scavenged	yes
6/4/2024	silver-haired bat	18	E9	carcass search	40-m cleared	scavenged	yes
6/6/2024	hoary bat	37	A2	carcass search	40-m cleared	scavenged	yes
6/6/2024	silver-haired bat	21	D7	carcass search	100-m road and pad	scavenged	no
6/7/2024	eastern red bat	6	B1	carcass search	100-m road and pad	dismembered	no
6/7/2024	eastern red bat	44	C3	carcass search	100-m road and pad	intact	no
6/7/2024	eastern red bat	20	C4	carcass search	40-m cleared	scavenged	yes
6/7/2024	eastern red bat	60	D6	carcass search	70-m hybrid	scavenged	yes
6/7/2024	eastern red bat	37	E7	carcass search	40-m cleared	scavenged	yes

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
6/7/2024	unidentified non-myotis	1	E8	carcass search	70-m hybrid	injured	yes
6/10/2024	eastern red bat	39	G2	carcass search	70-m hybrid	scavenged	yes
6/12/2024	silver-haired bat	10	C4	carcass search	40-m cleared	scavenged	yes
6/12/2024	eastern red bat	34	H9	carcass search	40-m cleared	scavenged	yes
6/13/2024	silver-haired bat	4	E6	carcass search	100-m road and pad	dismembered	no
6/14/2024	eastern red bat	23	C9	carcass search	100-m road and pad	intact	no
6/15/2024	eastern red bat	49	D6	carcass search	70-m hybrid	dismembered	yes
6/15/2024	eastern red bat	31	E5	carcass search	40-m cleared	intact	yes
6/15/2024	eastern red bat	64	E8	carcass search	70-m hybrid	scavenged	yes
6/17/2024	eastern red bat	70	A10	carcass search	70-m hybrid	scavenged	yes
6/17/2024	silver-haired bat	30	A10	carcass search	70-m hybrid	scavenged	yes
6/17/2024	eastern red bat	5	F10	carcass search	100-m road and pad	scavenged	no
6/17/2024	eastern red bat	22	G5	carcass search	100-m road and pad	intact	no
6/18/2024	big brown bat	23	E7	carcass search	40-m cleared	intact	yes
6/18/2024	silver-haired bat	29	E7	carcass search	40-m cleared	scavenged	yes
6/18/2024	eastern red bat	50	E8	carcass search	70-m hybrid	scavenged	yes
6/18/2024	eastern red bat	36	E8	incidental	70-m hybrid	scavenged	yes
6/20/2024	eastern red bat	17	A1	carcass search	40-m cleared	scavenged	yes
6/27/2024	big brown bat	18	D6	carcass search	70-m hybrid	scavenged	yes
6/28/2024	eastern red bat	0	A8	carcass search	100-m road and pad	intact	no
6/28/2024	eastern red bat	1	C2	carcass search	100-m road and pad	intact	no
6/30/2024	eastern red bat	8	A4	carcass search	40-m cleared	scavenged	yes
7/1/2024	eastern red bat	20	G3	incidental	40-m cleared	scavenged	no
7/1/2024	eastern red bat	41	H9	carcass search	40-m cleared	scavenged	yes
7/5/2024	hoary bat	5	A6	carcass search	100-m road and pad	scavenged	no
7/11/2024	eastern red bat	48	A9	carcass search	70-m hybrid	scavenged	yes
7/11/2024	hoary bat	29	F9	carcass search	40-m cleared	scavenged	yes
7/12/2024	hoary bat	27	E7	carcass search	40-m cleared	intact	yes
7/15/2024	big brown bat	26	F8	carcass search	40-m cleared	scavenged	yes
7/15/2024	eastern red bat	20	H5	carcass search	100-m road and pad	scavenged	no
7/15/2024	eastern red bat	6	H8	carcass search	40-m cleared	scavenged	yes
7/16/2024	eastern red bat	30	C7	carcass search	100-m road and pad	scavenged	no
7/17/2024	eastern red bat	19	A1	carcass search	40-m cleared	scavenged	yes
7/17/2024	hoary bat	1	A1	carcass search	40-m cleared	intact	yes
7/17/2024	hoary bat	1	A1	carcass search	40-m cleared	scavenged	yes
7/17/2024	eastern red bat	9	A9	carcass search	70-m hybrid	scavenged	yes

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
7/18/2024	big brown bat	24	D9	carcass search	40-m cleared	scavenged	yes
7/18/2024	eastern red bat	35	D9	carcass search	40-m cleared	scavenged	yes
7/18/2024	hoary bat	23	H6	carcass search	100-m road and pad	intact	no
7/22/2024	hoary bat	10	G2	carcass search	70-m hybrid	scavenged	yes
7/23/2024	eastern red bat	14	A7	carcass search	100-m road and pad	dismembered	no
7/23/2024	big brown bat	20	E9	carcass search	40-m cleared	dismembered	yes
7/23/2024	eastern red bat	52	G7	carcass search	70-m hybrid	scavenged	yes
7/26/2024	eastern red bat	5	B1	carcass search	100-m road and pad	scavenged	no
7/26/2024	eastern red bat	29	D9	carcass search	40-m cleared	scavenged	yes
7/26/2024	big brown bat	13	E7	carcass search	40-m cleared	intact	yes
7/26/2024	big brown bat	19	E9	carcass search	40-m cleared	intact	yes
7/29/2024	silver-haired bat	11	A11	carcass search	70-m hybrid	scavenged	yes
7/30/2024	eastern red bat	0	C2	carcass search	100-m road and pad	scavenged	no
7/30/2024	hoary bat	18	C7	carcass search	100-m road and pad	scavenged	no
7/30/2024	eastern red bat	43	G7	carcass search	70-m hybrid	scavenged	yes
8/1/2024	big brown bat	20	A1	carcass search	40-m cleared	scavenged	yes
8/1/2024	hoary bat	7	A4	carcass search	40-m cleared	scavenged	yes
8/1/2024	big brown bat	4	A5	carcass search	100-m road and pad	scavenged	no
8/1/2024	big brown bat	16	A6	carcass search	100-m road and pad	scavenged	no
8/1/2024	eastern red bat	37	A9	carcass search	70-m hybrid	scavenged	yes
8/1/2024	big brown bat	0	H2	carcass search	100-m road and pad	scavenged	no
8/1/2024	eastern red bat	43	H8	carcass search	40-m cleared	intact	yes
8/2/2024	hoary bat	21	A6	carcass search	100-m road and pad	scavenged	no
8/2/2024	eastern red bat	14	B6	carcass search	100-m road and pad	scavenged	no
8/2/2024	hoary bat	5	C1	carcass search	100-m road and pad	intact	no
8/2/2024	eastern red bat/Seminole bat	6	C5	carcass search	40-m cleared	scavenged	yes
8/2/2024	big brown bat	36	C6	carcass search	40-m cleared	dismembered	yes
8/2/2024	eastern red bat	20	C6	carcass search	40-m cleared	scavenged	yes
8/5/2024	eastern red bat	4	A2	carcass search	40-m cleared	scavenged	yes
8/5/2024	big brown bat	19	A4	carcass search	40-m cleared	intact	yes
8/5/2024	big brown bat	20	E4	incidental	100-m road and pad	scavenged	no
8/5/2024	silver-haired bat	31	H1	carcass search	100-m road and pad	scavenged	no
8/5/2024	hoary bat	27	H10	carcass search	100-m road and pad	injured	no
8/5/2024	eastern red bat	22	H8	carcass search	40-m cleared	scavenged	yes
8/5/2024	hoary bat	28	H9	carcass search	40-m cleared	dismembered	yes
8/6/2024	eastern red bat	83	B4	carcass search	100-m road and pad	scavenged	no

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
8/6/2024	big brown bat	24	C5	carcass search	40-m cleared	scavenged	yes
8/6/2024	hoary bat	6	C9	carcass search	100-m road and pad	scavenged	no
8/6/2024	hoary bat	8	D1	carcass search	100-m road and pad	scavenged	no
8/6/2024	hoary bat	13	D5	carcass search	100-m road and pad	intact	no
8/6/2024	hoary bat	12	E1	carcass search	100-m road and pad	scavenged	no
8/6/2024	silver-haired bat	28	E8	carcass search	70-m hybrid	scavenged	yes
8/6/2024	big brown bat	25	G1	carcass search	70-m hybrid	scavenged	yes
8/6/2024	eastern red bat	27	G3	carcass search	40-m cleared	scavenged	yes
8/7/2024	eastern red bat	7	F4	incidental	100-m road and pad	intact	no
8/8/2024	hoary bat	28	A11	carcass search	70-m hybrid	scavenged	yes
8/8/2024	eastern red bat	29	A2	carcass search	40-m cleared	scavenged	yes
8/8/2024	eastern red bat	22	A2	carcass search	40-m cleared	scavenged	yes
8/8/2024	eastern red bat	3	F7	carcass search	100-m road and pad	scavenged	no
8/8/2024	eastern red bat	53	G2	carcass search	70-m hybrid	scavenged	yes
8/9/2024	hoary bat	5	A6	carcass search	100-m road and pad	dismembered	no
8/9/2024	eastern red bat	3	B3	carcass search	100-m road and pad	scavenged	no
8/9/2024	big brown bat	5	D6	carcass search	70-m hybrid	intact	yes
8/12/2024	eastern red bat	20	A2	carcass search	40-m cleared	scavenged	yes
8/12/2024	hoary bat	4	H10	carcass search	100-m road and pad	scavenged	no
8/12/2024	eastern red bat	71	H7	incidental**	70-m hybrid	scavenged	yes
8/13/2024	eastern red bat	2	C6	carcass search	40-m cleared	intact	yes
8/13/2024	eastern red bat	37	E9	carcass search	40-m cleared	scavenged	yes
8/15/2024	big brown bat	25	F6	carcass search	100-m road and pad	scavenged	no
8/16/2024	eastern red bat	8	A1	carcass search	40-m cleared	intact	yes
8/16/2024	hoary bat	26	A10	carcass search	70-m hybrid	dismembered	yes
8/16/2024	eastern red bat	26	B4	carcass search	100-m road and pad	scavenged	no
8/17/2024	big brown bat	6	C5	carcass search	40-m cleared	intact	yes
8/17/2024	hoary bat	6	D9	carcass search	40-m cleared	scavenged	yes
8/19/2024	eastern red bat	23	A1	carcass search	40-m cleared	scavenged	yes
8/19/2024	silver-haired bat	20	A1	carcass search	40-m cleared	intact	yes
8/19/2024	big brown bat	19	A2	carcass search	40-m cleared	intact	yes
8/19/2024	eastern red bat	14	A2	carcass search	40-m cleared	scavenged	yes
8/19/2024	silver-haired bat	52	A3	incidental	100-m road and pad	scavenged	no
8/19/2024	silver-haired bat	31	C9	incidental	100-m road and pad	intact	no
8/19/2024	silver-haired bat	33	D7	carcass search	100-m road and pad	scavenged	no
8/19/2024	silver-haired bat	19	E6	carcass search	100-m road and pad	scavenged	no

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
8/19/2024	big brown bat	1	F3	carcass search	100-m road and pad	intact	no
8/19/2024	eastern red bat	38	F7	carcass search	100-m road and pad	intact	no
8/19/2024	silver-haired bat	2	F7	carcass search	100-m road and pad	intact	no
8/19/2024	silver-haired bat	4	G6	carcass search	100-m road and pad	intact	no
8/19/2024	big brown bat	2	H2	carcass search	100-m road and pad	scavenged	no
8/19/2024	silver-haired bat	12	H3	carcass search	100-m road and pad	injured	no
8/19/2024	eastern red bat	3	H4	carcass search	100-m road and pad	scavenged	no
8/19/2024	big brown bat	16	H6	carcass search	100-m road and pad	intact	no
8/20/2024	eastern red bat	10	A11	carcass search	70-m hybrid	intact	yes
8/20/2024	silver-haired bat	12	A3	carcass search	100-m road and pad	scavenged	no
8/20/2024	big brown bat	11	B2	carcass search	100-m road and pad	scavenged	no
8/20/2024	silver-haired bat	5	C1	carcass search	100-m road and pad	intact	no
8/20/2024	silver-haired bat	0	C3	carcass search	100-m road and pad	scavenged	no
8/20/2024	big brown bat	21	C4	carcass search	40-m cleared	intact	yes
8/20/2024	silver-haired bat	24	C4	carcass search	40-m cleared	scavenged	yes
8/20/2024	silver-haired bat	24	C4	carcass search	40-m cleared	scavenged	yes
8/20/2024	big brown bat	35	C5	carcass search	40-m cleared	intact	yes
8/20/2024	eastern red bat	15	C5	carcass search	40-m cleared	scavenged	yes
8/20/2024	silver-haired bat	20	C5	carcass search	40-m cleared	injured	yes
8/20/2024	silver-haired bat	22	C6	carcass search	40-m cleared	scavenged	yes
8/20/2024	silver-haired bat	41	C8	carcass search	100-m road and pad	scavenged	no
8/20/2024	silver-haired bat	1	C8	carcass search	100-m road and pad	intact	no
8/20/2024	silver-haired bat	2	D1	carcass search	100-m road and pad	intact	no
8/20/2024	big brown bat	33	D9	carcass search	40-m cleared	scavenged	yes
8/20/2024	big brown bat	8	D9	carcass search	40-m cleared	scavenged	yes
8/20/2024	eastern red bat	2	D9	carcass search	40-m cleared	intact	yes
8/20/2024	hoary bat	39	D9	carcass search	40-m cleared	intact	yes
8/20/2024	silver-haired bat	14	E2	carcass search	100-m road and pad	intact	no
8/21/2024	eastern red bat	54	D6	carcass search	70-m hybrid	scavenged	yes
8/21/2024	big brown bat	7	E7	carcass search	40-m cleared	scavenged	yes
8/21/2024	big brown bat	3	G2	carcass search	70-m hybrid	scavenged	yes
8/21/2024	hoary bat	8	G2	carcass search	70-m hybrid	scavenged	yes
8/21/2024	big brown bat	35	H9	carcass search	40-m cleared	scavenged	yes
8/21/2024	eastern red bat	37	H9	carcass search	40-m cleared	scavenged	yes
8/21/2024	evening bat	16	H9	carcass search	40-m cleared	scavenged	yes
8/22/2024	big brown bat	64	E8	carcass search	70-m hybrid	scavenged	yes

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
8/22/2024	silver-haired bat	25	F5	carcass search	40-m cleared	scavenged	yes
8/22/2024	eastern red bat	34	G3	carcass search	40-m cleared	scavenged	yes
8/23/2024	big brown bat	32	A1	carcass search	40-m cleared	scavenged	yes
8/23/2024	big brown bat	14	A1	carcass search	40-m cleared	scavenged	yes
8/23/2024	silver-haired bat	20	A2	carcass search	40-m cleared	scavenged	yes
8/24/2024	unidentified lasiurus bat	33	A9	carcass search	70-m hybrid	dismembered	yes
8/24/2024	silver-haired bat	6	C5	carcass search	40-m cleared	scavenged	yes
8/24/2024	big brown bat	17	E5	carcass search	40-m cleared	dismembered	yes
8/24/2024	silver-haired bat	6	E7	carcass search	40-m cleared	scavenged	yes
8/25/2024	hoary bat	9	F8	carcass search	40-m cleared	scavenged	yes
8/25/2024	unidentified lasiurus bat	18	H7	carcass search	70-m hybrid	scavenged	yes
8/25/2024	hoary bat	40	H8	carcass search	40-m cleared	scavenged	yes
8/26/2024	big brown bat	6	F3	carcass search	100-m road and pad	scavenged	no
8/26/2024	eastern red bat	13	F3	carcass search	100-m road and pad	intact	no
8/26/2024	big brown bat	6	G9	carcass search	100-m road and pad	scavenged	no
8/26/2024	hoary bat	53	H6	carcass search	100-m road and pad	scavenged	no
8/27/2024	eastern red bat	14	A1	carcass search	40-m cleared	scavenged	yes
8/27/2024	eastern red bat	4	A1	carcass search	40-m cleared	scavenged	yes
8/27/2024	eastern red bat	10	A10	carcass search	70-m hybrid	scavenged	yes
8/27/2024	big brown bat	11	A4	carcass search	40-m cleared	intact	yes
8/27/2024	eastern red bat	91	A5	carcass search	100-m road and pad	scavenged	no
8/27/2024	silver-haired bat	20	A5	carcass search	100-m road and pad	scavenged	no
8/27/2024	eastern red bat	11	A8	carcass search	100-m road and pad	intact	no
8/27/2024	silver-haired bat	48	A9	carcass search	70-m hybrid	scavenged	yes
8/27/2024	big brown bat	14	C8	carcass search	100-m road and pad	intact	no
8/27/2024	eastern red bat	29	C9	carcass search	100-m road and pad	intact	no
8/27/2024	big brown bat	5	D5	carcass search	100-m road and pad	intact	no
8/27/2024	hoary bat	24	E4	carcass search	100-m road and pad	intact	no
8/29/2024	eastern red bat	13	D7	carcass search	100-m road and pad	scavenged	no
8/29/2024	silver-haired bat	17	E6	carcass search	100-m road and pad	intact	no
8/29/2024	hoary bat	2	F8	carcass search	40-m cleared	intact	yes
8/29/2024	hoary bat	28	H3	carcass search	100-m road and pad	intact	no
8/29/2024	hoary bat	19	H7	carcass search	70-m hybrid	scavenged	yes
8/30/2024	silver-haired bat	46	A8	carcass search	100-m road and pad	intact	no
8/30/2024	eastern red bat	39	B1	carcass search	100-m road and pad	scavenged	no
8/30/2024	eastern red bat	16	C1	carcass search	100-m road and pad	scavenged	no

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
8/30/2024	eastern red bat	12	C1	carcass search	100-m road and pad	scavenged	no
8/30/2024	silver-haired bat	4	C3	carcass search	100-m road and pad	scavenged	no
8/30/2024	hoary bat	21	C8	carcass search	100-m road and pad	scavenged	no
8/30/2024	eastern red bat	13	D3	carcass search	100-m road and pad	scavenged	no
8/31/2024	hoary bat	23	A1	carcass search	40-m cleared	scavenged	yes
8/31/2024	hoary bat	4	A10	carcass search	70-m hybrid	scavenged	yes
8/31/2024	unidentified lasiurus bat	17	A11	carcass search	70-m hybrid	scavenged	yes
8/31/2024	silver-haired bat	16	A2	carcass search	40-m cleared	scavenged	yes
8/31/2024	hoary bat	19	A4	carcass search	40-m cleared	scavenged	yes
8/31/2024	eastern red bat	33	A9	carcass search	70-m hybrid	scavenged	yes
8/31/2024	eastern red bat	8	C5	carcass search	40-m cleared	scavenged	yes
8/31/2024	silver-haired bat	20	D9	carcass search	40-m cleared	scavenged	yes
8/31/2024	big brown bat	4	E7	carcass search	40-m cleared	scavenged	yes
8/31/2024	eastern red bat	30	E7	carcass search	40-m cleared	scavenged	yes
9/2/2024	eastern red bat	36	A1	carcass search	40-m cleared	scavenged	yes
9/2/2024	silver-haired bat	16	D7	carcass search	100-m road and pad	intact	no
9/2/2024	silver-haired bat	7	F7	carcass search	100-m road and pad	intact	no
9/2/2024	eastern red bat	29	H7	carcass search	70-m hybrid	scavenged	yes
9/2/2024	hoary bat	18	H8	carcass search	40-m cleared	scavenged	yes
9/3/2024	silver-haired bat	27	A8	carcass search	100-m road and pad	scavenged	no
9/3/2024	silver-haired bat	7	C3	carcass search	100-m road and pad	scavenged	no
9/3/2024	silver-haired bat	9	C3	carcass search	100-m road and pad	intact	no
9/3/2024	silver-haired bat	9	C5	carcass search	40-m cleared	intact	yes
9/3/2024	eastern red bat	23	D1	carcass search	100-m road and pad	intact	no
9/3/2024	silver-haired bat	33	D3	carcass search	100-m road and pad	scavenged	no
9/3/2024	hoary bat	41	D5	carcass search	100-m road and pad	intact	no
9/3/2024	silver-haired bat	7	E1	carcass search	100-m road and pad	scavenged	no
9/3/2024	silver-haired bat	20	E2	carcass search	100-m road and pad	intact	no
9/3/2024	eastern red bat	12	E8	carcass search	70-m hybrid	scavenged	yes
9/3/2024	hoary bat	46	E8	carcass search	70-m hybrid	scavenged	yes
9/3/2024	silver-haired bat	36	E8	carcass search	70-m hybrid	scavenged	yes
9/3/2024	eastern red bat	31	E9	carcass search	40-m cleared	scavenged	yes
9/3/2024	unidentified lasiurus bat	28	E9	carcass search	40-m cleared	scavenged	yes
9/3/2024	silver-haired bat	33	F5	carcass search	40-m cleared	scavenged	yes
9/3/2024	eastern red bat	39	G1	carcass search	70-m hybrid	scavenged	yes
9/3/2024	silver-haired bat	57	G1	carcass search	70-m hybrid	dismembered	yes

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
9/3/2024	silver-haired bat	14	G1	carcass search	70-m hybrid	intact	yes
9/4/2024	hoary bat	37	A1	carcass search**	40-m cleared	scavenged	yes
9/4/2024	hoary bat	40	A1	carcass search	40-m cleared	intact	yes
9/4/2024	silver-haired bat	24	A1	carcass search	40-m cleared	intact	yes
9/4/2024	eastern red bat	34	A10	carcass search	70-m hybrid	scavenged	yes
9/4/2024	eastern red bat	12	A2	carcass search	40-m cleared	scavenged	yes
9/4/2024	eastern red bat	7	A2	carcass search	40-m cleared	scavenged	yes
9/4/2024	silver-haired bat	23	A2	carcass search	40-m cleared	scavenged	yes
9/4/2024	silver-haired bat	29	F6	carcass search	100-m road and pad	intact	no
9/4/2024	silver-haired bat	6	F8	carcass search	40-m cleared	intact	yes
9/4/2024	silver-haired bat	25	F9	carcass search	40-m cleared	intact	yes
9/4/2024	silver-haired bat	17	H9	carcass search	40-m cleared	intact	yes
9/5/2024	eastern red bat	34	E7	carcass search	40-m cleared	scavenged	yes
9/5/2024	silver-haired bat	40	E7	carcass search	40-m cleared	scavenged	yes
9/5/2024	hoary bat	51	E8	carcass search	70-m hybrid	dismembered	yes
9/5/2024	silver-haired bat	6	E8	carcass search	70-m hybrid	intact	yes
9/5/2024	silver-haired bat	44	G1	carcass search	70-m hybrid	intact	yes
9/5/2024	big brown bat	11	G2	carcass search	70-m hybrid	scavenged	yes
9/9/2024	silver-haired bat	30	A1	carcass search	40-m cleared	intact	yes
9/9/2024	silver-haired bat	12	A9	carcass search	40-m cleared	scavenged	yes
9/9/2024	silver-haired bat	29	D4	incidental	100-m road and pad	scavenged	no
9/10/2024	silver-haired bat	52	A11	incidental**	40-m cleared	scavenged	yes
9/10/2024	silver-haired bat	5	A5	carcass search	100-m road and pad	scavenged	no
9/10/2024	silver-haired bat	13	C6	carcass search	40-m cleared	intact	yes
9/10/2024	silver-haired bat	17	C9	carcass search	100-m road and pad	scavenged	no
9/10/2024	hoary bat	29	H7	carcass search	40-m cleared	scavenged	yes
9/10/2024	hoary bat	31	H7	carcass search	40-m cleared	scavenged	yes
9/10/2024	silver-haired bat	34	H7	carcass search	40-m cleared	scavenged	yes
9/10/2024	eastern red bat	5	H8	carcass search	40-m cleared	scavenged	yes
9/10/2024	silver-haired bat	30	H9	carcass search	40-m cleared	scavenged	yes
9/11/2024	silver-haired bat	35	E9	carcass search	40-m cleared	scavenged	yes
9/11/2024	silver-haired bat	15	F8	carcass search	40-m cleared	scavenged	yes
9/11/2024	big brown bat	13	G1	carcass search	40-m cleared	scavenged	yes
9/11/2024	silver-haired bat	19	G7	carcass search	40-m cleared	scavenged	yes
9/12/2024	silver-haired bat	35	A2	carcass search	40-m cleared	scavenged	yes
9/12/2024	hoary bat	35	A4	carcass search	40-m cleared	scavenged	yes

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
9/13/2024	silver-haired bat	39	C6	carcass search	40-m cleared	scavenged	yes
9/13/2024	silver-haired bat	38	E7	carcass search	40-m cleared	scavenged	yes
9/16/2024	silver-haired bat	45	A11	carcass search	40-m cleared	scavenged	yes
9/16/2024	big brown bat	6	C1	incidental	100-m road and pad	intact	no
9/16/2024	silver-haired bat	32	D8	carcass search	100-m road and pad	scavenged	no
9/16/2024	silver-haired bat	44	F6	carcass search	100-m road and pad	scavenged	no
9/16/2024	big brown bat	30	F8	carcass search	40-m cleared	scavenged	yes
9/16/2024	silver-haired bat	2	G5	carcass search	100-m road and pad	scavenged	no
9/16/2024	big brown bat	32	G8	incidental	40-m cleared	scavenged	yes
9/17/2024	silver-haired bat	27	A8	carcass search	100-m road and pad	scavenged	no
9/17/2024	silver-haired bat	22	C6	carcass search	40-m cleared	intact	yes
9/17/2024	silver-haired bat	6	C9	carcass search	100-m road and pad	scavenged	no
9/17/2024	silver-haired bat	20	D1	carcass search	100-m road and pad	scavenged	no
9/17/2024	silver-haired bat	32	D6	carcass search	40-m cleared	intact	yes
9/17/2024	silver-haired bat	7	D9	carcass search	40-m cleared	intact	yes
9/17/2024	silver-haired bat	18	E8	carcass search	40-m cleared	scavenged	yes
9/17/2024	eastern red bat	33	G1	carcass search	40-m cleared	intact	yes
9/19/2024	silver-haired bat	33	A1	carcass search	40-m cleared	scavenged	yes
9/19/2024	hoary bat	21	A10	carcass search	40-m cleared	scavenged	yes
9/19/2024	silver-haired bat	9	A10	carcass search	40-m cleared	scavenged	yes
9/19/2024	silver-haired bat	33	A11	carcass search	40-m cleared	scavenged	yes
9/19/2024	silver-haired bat	31	A2	carcass search	40-m cleared	scavenged	yes
9/19/2024	hoary bat	20	A4	carcass search	40-m cleared	scavenged	yes
9/19/2024	eastern red bat	14	A9	carcass search	40-m cleared	intact	yes
9/19/2024	silver-haired bat	32	A9	carcass search	40-m cleared	scavenged	yes
9/19/2024	silver-haired bat	24	H1	carcass search	100-m road and pad	scavenged	no
9/20/2024	eastern red bat	10	A6	carcass search	100-m road and pad	scavenged	no
9/20/2024	silver-haired bat	22	C6	carcass search	40-m cleared	scavenged	yes
9/20/2024	silver-haired bat	23	D9	carcass search	40-m cleared	scavenged	yes
9/20/2024	silver-haired bat	22	E7	carcass search	40-m cleared	scavenged	yes
9/23/2024	big brown bat	3	A1	carcass search	40-m cleared	intact	yes
9/23/2024	big brown bat	3	A1	carcass search	40-m cleared	intact	yes
9/23/2024	eastern red bat	3	A2	carcass search	40-m cleared	injured	yes
9/23/2024	silver-haired bat	36	A2	carcass search	40-m cleared	intact	yes
9/23/2024	silver-haired bat	18	A9	carcass search	70-m hybrid	intact	yes
9/23/2024	silver-haired bat	26	D4	incidental	100-m road and pad	scavenged	no

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
9/24/2024	silver-haired bat	19	B1	carcass search	100-m road and pad	intact	no
9/24/2024	silver-haired bat	20	D5	carcass search	100-m road and pad	intact	no
9/24/2024	silver-haired bat	18	D9	carcass search	40-m cleared	intact	yes
9/24/2024	silver-haired bat	7	E1	carcass search	100-m road and pad	scavenged	no
9/24/2024	silver-haired bat	64	E8	carcass search	70-m hybrid	scavenged	yes
9/24/2024	unidentified bat	60	E8	carcass search	70-m hybrid	scavenged	yes
9/26/2024	silver-haired bat	43	A1	carcass search**	40-m cleared	scavenged	yes
9/26/2024	silver-haired bat	58	A10	carcass search	70-m hybrid	scavenged	yes
9/26/2024	silver-haired bat	32	A11	carcass search	70-m hybrid	scavenged	yes
9/26/2024	silver-haired bat	16	A2	carcass search	40-m cleared	scavenged	yes
9/26/2024	silver-haired bat	8	A4	carcass search	40-m cleared	scavenged	yes
9/26/2024	silver-haired bat	6	A9	carcass search	70-m hybrid	scavenged	yes
9/27/2024	silver-haired bat	4	D9	carcass search	40-m cleared	scavenged	yes
9/27/2024	silver-haired bat	24	E8	carcass search	70-m hybrid	intact	yes
9/29/2024	silver-haired bat	47	G7	carcass search	70-m hybrid	scavenged	yes
9/30/2024	silver-haired bat	26	D10	carcass search	100-m road and pad	scavenged	no
9/30/2024	big brown bat	6	E6	carcass search	100-m road and pad	scavenged	no
9/30/2024	hoary bat	15	F8	carcass search	40-m cleared	scavenged	yes
10/1/2024	silver-haired bat	0	A7	carcass search	100-m road and pad	scavenged	no
10/1/2024	eastern red bat	39	E8	carcass search	70-m hybrid	scavenged	yes
10/1/2024	silver-haired bat	15	F5	carcass search	40-m cleared	scavenged	yes
10/1/2024	silver-haired bat	22	F5	carcass search	40-m cleared	scavenged	yes
10/1/2024	big brown bat	67	G1	carcass search	70-m hybrid	scavenged	yes
10/1/2024	big brown bat	28	G8	carcass search	40-m cleared	scavenged	yes
10/1/2024	eastern red bat	20	G8	carcass search	40-m cleared	scavenged	yes
10/1/2024	silver-haired bat	20	G8	carcass search	40-m cleared	scavenged	yes
10/2/2024	silver-haired bat	16	C4	carcass search	40-m cleared	intact	yes
10/3/2024	silver-haired bat	66	A10	carcass search	70-m hybrid	scavenged	yes
10/3/2024	silver-haired bat	33	A2	carcass search	40-m cleared	scavenged	yes
10/3/2024	eastern red bat	36	F1	carcass search	100-m road and pad	intact	no
10/3/2024	silver-haired bat	0	G9	carcass search	100-m road and pad	intact	no
10/4/2024	silver-haired bat	33	C4	carcass search	40-m cleared	scavenged	yes
10/4/2024	silver-haired bat	42	D6	carcass search	70-m hybrid	scavenged	yes
10/7/2024	big brown bat	0	F2	carcass search	100-m road and pad	scavenged	no
10/7/2024	eastern red bat	40	G2	carcass search	70-m hybrid	scavenged	yes
10/7/2024	big brown bat	16	H7	carcass search	70-m hybrid	scavenged	yes

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
10/7/2024	silver-haired bat	35	H7	carcass search	70-m hybrid	scavenged	yes
10/7/2024	silver-haired bat	57	H7	carcass search	70-m hybrid	scavenged	yes
10/8/2024	silver-haired bat	12	A8	carcass search	100-m road and pad	scavenged	no
10/8/2024	silver-haired bat	30	G7	carcass search	70-m hybrid	scavenged	yes
10/8/2024	eastern red bat	38	G8	carcass search	40-m cleared	scavenged	yes
10/10/2024	silver-haired bat	40	A11	carcass search	70-m hybrid	scavenged	yes
10/10/2024	eastern red bat	27	A4	carcass search	40-m cleared	scavenged	yes
10/11/2024	eastern red bat	2	A3	carcass search	100-m road and pad	scavenged	no
10/11/2024	silver-haired bat	26	D9	carcass search	40-m cleared	scavenged	yes
10/11/2024	silver-haired bat	20	E7	carcass search	40-m cleared	scavenged	yes
10/14/2024	eastern red bat	39	E7	carcass search	40-m cleared	scavenged	yes
10/14/2024	silver-haired bat	26	F6	carcass search	100-m road and pad	intact	no
10/14/2024	silver-haired bat	24	F6	carcass search	100-m road and pad	intact	no
10/14/2024	silver-haired bat	28	H6	carcass search	100-m road and pad	intact	no
10/15/2024	silver-haired bat	55	D4	carcass search	100-m road and pad	intact	no
10/15/2024	silver-haired bat	34	F9	carcass search	40-m cleared	scavenged	yes
Birds							
5/16/2024	golden-winged warbler	2	D8	carcass search	100-m road and pad	intact	no
5/16/2024	red-winged blackbird	24	F7	carcass search	100-m road and pad	scavenged	no
5/16/2024	red-winged blackbird	3	H2	carcass search	100-m road and pad	scavenged	no
5/16/2024	horned lark	37	H9	carcass search	40-m cleared	scavenged	yes
5/20/2024	magnolia warbler	17	H4	carcass search	100-m road and pad	intact	no
5/21/2024	American goldfinch	35	G3	carcass search	40-m cleared	intact	yes
5/27/2024	wild turkey	39	H7	carcass search	70-m hybrid	feather spot	yes
6/4/2024	killdeer	20	E9	carcass search	40-m cleared	scavenged	yes
6/4/2024	great blue heron	17	G2	incidental	70-m hybrid	intact	no
6/7/2024	American crow	43	D9	carcass search	40-m cleared	dismembered	yes
6/7/2024	turkey vulture	25	F5	carcass search	40-m cleared	scavenged	yes
6/12/2024	unidentified blackbird	20	E3	carcass search	100-m road and pad	feather spot	no
6/12/2024	unidentified small bird	41	H2	carcass search	100-m road and pad	feather spot	no
6/12/2024	turkey vulture	54	H7	carcass search	70-m hybrid	scavenged	yes
6/13/2024	unidentified large bird	71	A11	carcass search	70-m hybrid	dismembered	yes
6/15/2024	brown-headed cowbird	17	C6	carcass search	40-m cleared	scavenged	yes
6/15/2024	rose-breasted grosbeak	23	G1	carcass search	70-m hybrid	dismembered	yes
6/17/2024	turkey vulture	11	H8	carcass search	40-m cleared	scavenged	yes
6/27/2024	unidentified large bird	51	H2	carcass search	100-m road and pad	dismembered	no

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
6/28/2024	unidentified blackbird	13	E3	carcass search	100-m road and pad	feather spot	no
6/30/2024	cedar waxwing	39	A9	carcass search	70-m hybrid	intact	yes
7/2/2024	cedar waxwing	28	E3	carcass search	100-m road and pad	intact	no
7/5/2024	red-winged blackbird	39	C4	carcass search**	40-m cleared	feather spot	yes
7/8/2024	unidentified flycatcher	0	G6	carcass search	100-m road and pad	scavenged	no
7/9/2024	killdeer	10	A3	carcass search	100-m road and pad	feather spot	no
7/9/2024	barn swallow	40	G7	carcass search	70-m hybrid	scavenged	yes
7/9/2024	red-tailed hawk	52	G7	carcass search	70-m hybrid	injured	yes
7/11/2024	brown-headed cowbird	37	G2	carcass search	70-m hybrid	scavenged	yes
7/11/2024	unidentified passerine	0	H2	carcass search	100-m road and pad	scavenged	no
7/16/2024	downy woodpecker	30	G1	carcass search	70-m hybrid	scavenged	yes
7/22/2024	unidentified blackbird	4	H2	carcass search	100-m road and pad	feather spot	no
7/22/2024	unidentified small bird	31	H2	carcass search	100-m road and pad	feather spot	no
7/22/2024	unidentified passerine	37	H8	carcass search	40-m cleared	feather spot	yes
7/30/2024	killdeer	26	D5	carcass search	100-m road and pad	feather spot	no
7/30/2024	mourning dove	0	G3	carcass search	40-m cleared	dismembered	yes
8/2/2024	eastern kingbird	0	A8	carcass search	100-m road and pad	intact	no
8/5/2024	dickcissel	0	H1	carcass search	100-m road and pad	scavenged	no
8/5/2024	barn swallow	4	H4	carcass search	100-m road and pad	scavenged	no
8/6/2024	rose-breasted grosbeak	48	E8	carcass search	70-m hybrid	scavenged	yes
8/6/2024	killdeer	19	E9	carcass search	40-m cleared	dismembered	yes
8/20/2024	unidentified passerine	24	E5	carcass search	40-m cleared	scavenged	yes
8/29/2024	European starling	22	H7	carcass search	70-m hybrid	scavenged	yes
8/31/2024	chestnut-sided warbler	24	C6	carcass search	40-m cleared	scavenged	yes
8/31/2024	unidentified passerine	6	E7	carcass search	40-m cleared	dismembered	yes
9/2/2024	Blackburnian warbler	17	H7	carcass search	70-m hybrid	scavenged	yes
9/4/2024	American redstart	16	H7	carcass search	70-m hybrid	scavenged	yes
9/5/2024	unidentified passerine	11	E7	carcass search	40-m cleared	dismembered	yes
9/9/2024	Tennessee warbler	37	A1	carcass search	40-m cleared	scavenged	yes
9/10/2024	American redstart	84	B4	carcass search	100-m road and pad	scavenged	no
9/10/2024	American redstart	57	B5	carcass search	100-m road and pad	scavenged	no
9/10/2024	white-breasted nuthatch	40	G2	carcass search	40-m cleared	feather spot	yes
9/10/2024	American redstart	21	H7	carcass search	40-m cleared	scavenged	yes
9/11/2024	unidentified passerine	27	E5	carcass search	40-m cleared	scavenged	yes
9/11/2024	killdeer	48	E9	carcass search	40-m cleared	scavenged	yes
9/11/2024	killdeer	36	E9	carcass search	40-m cleared	feather spot	yes

Appendix A. Complete listing of carcasses found at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Found Date*	Species	Distance from Turbine (m)	Turbine	Search Type	Plot Type	Physical Condition	Dog-Aided Search
9/11/2024	red-winged blackbird	19	F5	carcass search	40-m cleared	scavenged	yes
9/11/2024	American robin	40	G1	carcass search	40-m cleared	feather spot	yes
9/11/2024	cedar waxwing	20	G1	carcass search	40-m cleared	scavenged	yes
9/11/2024	unidentified passerine	36	G1	incidental	40-m cleared	scavenged	yes
9/11/2024	Tennessee warbler	37	G2	incidental	40-m cleared	scavenged	yes
9/11/2024	veery	26	G3	carcass search	40-m cleared	scavenged	yes
9/11/2024	unidentified passerine	30	G7	carcass search	40-m cleared	feather spot	yes
9/11/2024	Tennessee warbler	7	G8	carcass search	40-m cleared	scavenged	yes
9/12/2024	European starling	97	H2	carcass search	100-m road and pad	feather spot	no
9/19/2024	killdeer	34	F8	carcass search	40-m cleared	feather spot	yes
9/20/2024	wild turkey	28	C6	carcass search	40-m cleared	feather spot	yes
9/20/2024	horned lark	4	E7	carcass search	40-m cleared	scavenged	yes
9/21/2024	unidentified passerine	44	D6	carcass search	40-m cleared	scavenged	yes
9/23/2024	European starling	23	A9	carcass search	70-m hybrid	intact	yes
9/24/2024	unidentified thrush	26	G3	carcass search	40-m cleared	feather spot	yes
9/30/2024	unidentified passerine	38	F8	carcass search	40-m cleared	feather spot	yes
9/30/2024	European starling	22	H7	carcass search	70-m hybrid	feather spot	yes
10/1/2024	golden-crowned kinglet	29	A2	carcass search	40-m cleared	scavenged	yes
10/1/2024	golden-crowned kinglet	52	G1	carcass search	70-m hybrid	scavenged	yes
10/3/2024	red-winged blackbird	14	F10	carcass search	100-m road and pad	intact	no
10/4/2024	golden-crowned kinglet	36	D9	carcass search	40-m cleared	scavenged	yes
10/7/2024	golden-crowned kinglet	10	A11	carcass search	70-m hybrid	scavenged	yes
10/7/2024	golden-crowned kinglet	66	H7	carcass search	70-m hybrid	intact	yes
10/7/2024	golden-crowned kinglet	36	H7	carcass search	70-m hybrid	feather spot	yes
10/8/2024	ruby-crowned kinglet	39	A8	carcass search	100-m road and pad	intact	no
10/8/2024	belted kingfisher	26	C6	carcass search	40-m cleared	intact	yes
10/8/2024	house sparrow	35	G3	carcass search	40-m cleared	scavenged	yes
10/10/2024	killdeer	20	A1	carcass search	40-m cleared	feather spot	yes
10/10/2024	golden-crowned kinglet	38	A11	carcass search	70-m hybrid	scavenged	yes
10/10/2024	sedge wren	34	A2	carcass search	40-m cleared	scavenged	yes
10/15/2024	house sparrow	25	F5	carcass search	40-m cleared	scavenged	yes
10/15/2024	yellow-rumped warbler	38	H8	carcass search	40-m cleared	scavenged	yes

* Summer = May 16 – July 31; Fall = August 1 – October 15.

** Carcass was found outside the plot.

m = meter.

Appendix A2. Summary of bat fatalities recorded by season and plot type at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Season	Plot Type*	Number of Searched Turbines	Total Number of Bats Recorded**
summer (May 16 – July 31)	100-m road and pad	48	22
	40-m cleared	17	39
	70-m hybrid	9	25
fall (August 1 – October 15)	100-m road and pad	48	101
	40-m cleared	17	121
	70-m hybrid	9	67
Overall			**375**

* 100-meter (m) road and pad plots were searched by humans, and 40-m cleared plots and 70-m hybrid plots were searched by detection-dog teams.

** Three hundred seventy-five bats in total were found. Thirteen bats were excluded from analysis.

Appendix B. Searcher Efficiency and Carcass Persistence Model Fitting Results, and Bat Fatality Rates and Adjustment Factors

Appendix B1. Searcher efficiency models for bats within dog-aided search plots at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024 (n = 89 bat carcasses).

Covariates*	AICc	Delta AICc
No Covariates	85.89	0**
Season	86.86	0.97
Visibility Class	87.13	1.24
Season + Visibility Class	88.38	2.49
Season x Visibility Class	90.55	4.66

* Visibility class includes uncleared and cleared.

** Selected model.

k fixed at 0.65.

AICc = corrected Akaike Information Criterion.

Delta AICc is the change from the minimum AICc.

Appendix B2. Searcher efficiency models for bats within human-searched plots (roads and pads) from the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024 (n = 42 bat carcasses).

Covariates	AICc	Delta AICc
No Covariates	28.52	0*
Season	29.95	1.43

* Selected model.

k fixed at 0.65.

AICc = corrected Akaike Information Criterion.

Delta AICc is the change from the minimum AICc.

Appendix B3. Number of carcass persistence trial carcasses placed by season and plot type at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Season	Visibility Class	Number of Carcasses Placed
summer	roads and pads	20
	cleared*	28
	uncleared*	12
fall	roads and pads	20
	cleared*	34
	uncleared*	6
Overall roads and pads		**40**
Overall cleared*		**62**
Overall uncleared*		**18**
Overall		**120**

* Dog-assisted search.

Appendix B4. Carcass persistence models with covariates and distributions for bats within dog-aided search plots at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024 (n = 80).

Location Covariates*	Scale Covariates*	Distribution	AICc	Delta AICc
No Covariates	-	exponential	349.68	0**
Season	-	exponential	351.07	1.39
Season	No Covariates	loglogistic	351.21	1.53
No Covariates	No Covariates	Weibull	351.40	1.72
No Covariates	No Covariates	loglogistic	351.55	1.87
No Covariates	No Covariates	lognormal	351.66	1.98
Visibility Class	-	exponential	351.78	2.10
Season	No Covariates	lognormal	351.94	2.26
Season * Visibility Class	-	exponential	352.17	2.49
Season * Visibility Class	No Covariates	loglogistic	352.34	2.66
No Covariates	Season	Weibull	352.41	2.73
Season	Season	loglogistic	352.65	2.97
Season	No Covariates	Weibull	352.86	3.18
Season * Visibility Class	No Covariates	lognormal	352.94	3.26
No Covariates	Season	loglogistic	352.96	3.28
Season + Visibility Class	-	exponential	353.22	3.54
No Covariates	Season	lognormal	353.25	3.57
No Covariates	Visibility Class	Weibull	353.40	3.72
Season	Visibility Class	loglogistic	353.43	3.75
Season + Visibility Class	No Covariates	loglogistic	353.43	3.75
Season	Season	Weibull	353.45	3.77
No Covariates	Visibility Class	lognormal	353.52	3.84
No Covariates	Visibility Class	loglogistic	353.54	3.86
Visibility Class	No Covariates	Weibull	353.55	3.87
Season	Season	lognormal	353.59	3.91
Visibility Class	No Covariates	loglogistic	353.67	3.99
Visibility Class	No Covariates	lognormal	353.72	4.04
Season * Visibility Class	Season	loglogistic	353.90	4.22
Season	Visibility Class	lognormal	354.14	4.46
Season + Visibility Class	No Covariates	lognormal	354.15	4.47
Season * Visibility Class	No Covariates	Weibull	354.30	4.62
No Covariates	Season + Visibility Class	Weibull	354.53	4.85
Visibility Class	Season	Weibull	354.57	4.89
Season * Visibility Class	Visibility Class	loglogistic	354.60	4.92
Season * Visibility Class	Season	lognormal	354.74	5.06
Season * Visibility Class	Season	Weibull	354.77	5.09
Season + Visibility Class	Season	loglogistic	354.85	5.17
Season	Season + Visibility Class	loglogistic	354.89	5.21
Season * Visibility Class	Visibility Class	lognormal	354.96	5.28
Season	Visibility Class	Weibull	355.05	5.37
Season + Visibility Class	No Covariates	Weibull	355.07	5.39
No Covariates	Season + Visibility Class	loglogistic	355.13	5.45
Visibility Class	Season	loglogistic	355.18	5.50
No Covariates	Season + Visibility Class	lognormal	355.29	5.61
Visibility Class	Season	lognormal	355.46	5.78
Visibility Class	Visibility Class	Weibull	355.59	5.91
Season + Visibility Class	Season	Weibull	355.63	5.95
Visibility Class	Visibility Class	lognormal	355.63	5.95
Season + Visibility Class	Visibility Class	loglogistic	355.71	6.03
Visibility Class	Visibility Class	loglogistic	355.72	6.04
Season	Season + Visibility Class	Weibull	355.73	6.05

Appendix B4. Carcass persistence models with covariates and distributions for bats within dog-aided search plots at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024 (n = 80).

Location Covariates*	Scale Covariates*	Distribution	AICc	Delta AICc
Season + Visibility Class	Season	lognormal	355.85	6.17
Season	Season + Visibility Class	lognormal	355.87	6.19
Season * Visibility Class	Visibility Class	Weibull	356.22	6.54
Season * Visibility Class	Season + Visibility Class	loglogistic	356.30	6.62
Season + Visibility Class	Visibility Class	lognormal	356.41	6.73
Visibility Class	Season + Visibility Class	Weibull	356.76	7.08
No Covariates	Season * Visibility Class	Weibull	356.80	7.12
Season * Visibility Class	Season + Visibility Class	lognormal	356.97	7.29
Season * Visibility Class	Season + Visibility Class	Weibull	357.04	7.36
Season + Visibility Class	Season + Visibility Class	loglogistic	357.14	7.46
Season	Season * Visibility Class	loglogistic	357.16	7.48
No Covariates	Season * Visibility Class	loglogistic	357.26	7.58
Season + Visibility Class	Visibility Class	Weibull	357.31	7.63
Visibility Class	Season + Visibility Class	loglogistic	357.40	7.72
No Covariates	Season * Visibility Class	lognormal	357.54	7.86
Visibility Class	Season + Visibility Class	lognormal	357.55	7.87
Season + Visibility Class	Season + Visibility Class	Weibull	357.97	8.29
Season	Season * Visibility Class	Weibull	358.07	8.39
Season + Visibility Class	Season + Visibility Class	lognormal	358.19	8.51
Season	Season * Visibility Class	lognormal	358.21	8.53
Season * Visibility Class	Season * Visibility Class	loglogistic	358.56	8.88
Visibility Class	Season * Visibility Class	Weibull	359.10	9.42
Season * Visibility Class	Season * Visibility Class	lognormal	359.34	9.66
Season * Visibility Class	Season * Visibility Class	Weibull	359.35	9.67
Season + Visibility Class	Season * Visibility Class	loglogistic	359.52	9.84
Visibility Class	Season * Visibility Class	loglogistic	359.60	9.92
Visibility Class	Season * Visibility Class	lognormal	359.85	10.17
Season + Visibility Class	Season * Visibility Class	Weibull	360.33	10.65
Season + Visibility Class	Season * Visibility Class	lognormal	360.59	10.91

* Visibility class includes uncleared and cleared.

** Selected model.

AICc = corrected Akaike Information Criterion.

Delta AICc is the change from the minimum AICc.

Appendix B5. Carcass persistence models with covariates and distributions for bats within human-searched plots (roads and pads) at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024 (n = 40).

Location Covariates	Scale Covariates	Distribution	AICc	Delta AICc
Season	No Covariates	lognormal	170.88	0*
Season	No Covariates	loglogistic	171.08	0.20
Season	Season	lognormal	171.48	0.60
Season	Season	loglogistic	172.20	1.32
Season	Season	Weibull	175.56	4.68
Season	No Covariates	Weibull	175.87	4.99
No Covariates	No Covariates	loglogistic	177.04	6.16
No Covariates	Season	lognormal	177.11	6.23
No Covariates	Season	loglogistic	177.24	6.36
No Covariates	No Covariates	lognormal	177.65	6.77
No Covariates	Season	Weibull	178.91	8.03
No Covariates	No Covariates	Weibull	179.37	8.49
Season	-	exponential	185.48	14.60
No Covariates	-	exponential	191.98	21.10

* Selected model

AICc = corrected Akaike Information Criterion.

Delta AICc is the change from the minimum AICc.

Appendix B6. Estimated fatality rates and adjustment factors with 90% confidence intervals (CI) by plot type for searches conducted during summer at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – July 31, 2024.

	40-m cleared plot 17 turbines searched		70-m hybrid plot 9 turbines searched		100-m road and pad plot 48 turbines searched	
	Estimate	90% CI	Estimate	90% CI	Estimate	90% CI
Search Area Adjustment*						
Bat	0.60–0.61	0.43–0.77	0.89	0.69–0.98	0.13	0.10–0.17
Searcher Efficiency						
Bat	0.82	0.74–0.88	0.82	0.74–0.88	0.90	0.80–0.96
Average Probability of a Carcass Persisting Through the Search Interval**						
Bat	0.84	0.81–0.86	0.84	0.81–0.86	0.86	0.77–0.93
Probability of Available and Detected						
Bat	0.73	0.68–0.78	0.73	0.68–0.78	0.81	0.70–0.90
Estimated Fatality Rates (Fatalities/Turbine/Season)						
Bat	4.36	3.11–6.61	6.37	4.48–9.62	4.75	2.88–7.43
Estimated Fatality Rates (Fatalities/megawatt/Season)						
Bat	1.66	1.19–2.52	2.43	1.71–3.67	1.81	1.10–2.83

m = meter.

* See Spatial Coverage column in Appendix D1 for 40-m cleared plot area adjustment per sub-season.

** The search interval was twice per week.

Appendix B7. Estimated fatality rates and adjustment factors with 90% confidence intervals (CI) by plot type for searches conducted during fall at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from August 1 – October 15, 2024.

	40-m cleared plot 17 turbines searched		70-m hybrid plot 9 turbines searched		100-m road and pad plot 48 turbines searched	
	Estimate	**90% CI**	**Estimate**	**90% CI**	**Estimate**	**90% CI**
Search Area Adjustment*						
Bat	0.60–0.63	0.43–0.78	0.89	0.69–0.98	0.13	0.10–0.17
Searcher Efficiency						
Bat	0.82	0.74–0.88	0.82	0.74–0.88	0.90	0.80–0.96
Average Probability of a Carcass Persisting Through the Search Interval**						
Bat	0.84	0.81–0.86	0.84	0.81–0.86	0.56	0.43–0.71
Probability of Available and Detected						
Bat	0.73	0.68–0.78	0.73	0.68–0.78	0.50	0.37–0.64
Estimated Fatality Rates (Fatalities/Turbine/Season)						
Bat	15.31	11.84–22.04	10.08	7.64–14.66	30.47	20.55–46.12
Estimated Fatality Rates (Fatalities/megawatt/Season)						
Bat	5.83	4.51–8.40	3.84	2.91–5.58	11.61	7.83–17.57

m = meter.

* See Spatial Coverage column in Appendix D1 for 40-m cleared plot area adjustment per sub-season.

** The search interval was twice per week.

Appendix C. Search Area Adjustment Models for Bats from the Green River Wind Farm

Appendix C. Search area adjustment models for bats at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Distribution	AICc	Delta AICc
Weibull	18,280.32	0*
gamma	18,297.79	17.47
normal	18,346.92	66.60
Gompertz	18,447.97	167.65

* Selected model.

AICc = corrected Akaike Information Criterion.

Delta AICc is the change from the minimum AICc.

Appendix D. Screenshots of the Graphical User Interface and Inputs for the Single Class, Multiple Class, and Multiple Year Modules in Evidence of Absence

Appendix D1. Inputs needed to run Evidence of Absence: Single Class Module for all plot types at the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.*

Sub-season/ Date Range	Plot Type	Search Interval (l)	# of Searches	Spatial Coverage (a)	Searcher Efficiency**		Carcass Persistence		
					Carcasses Available	Carcasses Found	Shape (α)	Scale (β)	Distribution
Summer 1 (5/16/24–6/20/24)	40-m cleared	3.5	10	0.61	89	73	-	9.74	exponential
	70-m hybrid	3.5	10	0.89	89	73	-	9.74	exponential
	100-m roads and pads	3.5	10	0.13	42	38	2.80	2.37	lognormal
Summer 2 (6/21/24–6/30/24)	40-m cleared	3.5	3	0.61	89	73	-	9.74	exponential
	70-m hybrid	3.5	2	0.89	89	73	-	9.74	exponential
	100-m roads and pads	3.5	2	0.13	42	38	2.80	2.37	lognormal
	unsearched	-	2	-	-	-	-	-	-
Summer 3 (7/1/24–7/31/24)	40-m cleared	3.5	9	0.60	89	73	-	9.74	exponential
	70-m hybrid	3.5	7	0.89	89	73	-	9.74	exponential
	100-m roads and pads	3.5	9	0.13	42	38	2.80	2.37	lognormal
Fall 1 (8/1/24–8/29/24)	40-m cleared	3.5	8	0.60	89	73	-	9.74	exponential
	70-m hybrid	3.5	8	0.89	89	73	-	9.74	exponential
	100-m roads and pads	3.5	8	0.13	42	38	2.80	0.64	lognormal
Fall 2 (8/30/24–9/8/24)	40-m cleared	3.5	3	0.60	89	73	-	9.74	exponential
	70-m hybrid	3.5	3	0.89	89	73	-	9.74	exponential
	100-m roads and pads	3.5	3	0.13	42	38	2.80	0.64	lognormal
Fall 3 (9/9/24–9/22/24)	40-m cleared	3.5	4	0.63	89	73	-	9.74	exponential
	100-m roads and pads	3.5	4	0.13	42	38	2.80	0.64	lognormal
Fall 4 (9/23/24–10/15/24)	40-m cleared	3.5	7	0.60	89	73	-	9.74	exponential
	70-m hybrid	3.5	7	0.89	89	73	-	9.74	exponential
	100-m roads and pads	3.5	7	0.13	42	38	2.80	0.64	lognormal

* Temporal coverage (v) was set to 1 across all sub-seasons. Seasonality of risk was accounted for in the Multiple Class Module.

** *k* was assumed to equal 0.65 for all strata, per the Habitat Conservation Plan. The total number of searcher efficiency carcasses within a season were applied to each sub-season within that season.

m = meter.

Appendix D2. Inputs needed to run Evidence of Absence: Multiple Class Module Within Season for the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Plot Type	Sub-season	Within-Season Sampling Fraction (DWP)*	Ba**	Bb**
40-m cleared	Summer 1	0.21	314.33	375.40
70-m hybrid	Summer 1	0.25	193.69	96.61
100-m roads and pads	Summer 1	0.54	186.82	1558.56
40-m cleared	Summer 2	0.21	245.11	312.46
70-m hybrid	Summer 2	0.25	904.25	536.41
100-m roads and pads	Summer 2	0.46	259.82	2245.69
unsearched	Summer 2	0.08	0.01	1,000.00
40-m cleared	Summer 3	0.17	313.67	381.90
70-m hybrid	Summer 3	0.29	187.82	95.33
100-m roads and pads	Summer 3	0.54	186.22	1555.44
40-m cleared	Fall 1	0.23	309.88	378.58
70-m hybrid	Fall 1	0.12	190.28	95.88
100-m roads and pads	Fall 1	0.65	37.29	507.18
40-m cleared	Fall 2	0.23	246.85	319.76
70-m hybrid	Fall 2	0.12	157.11	87.00
100-m roads and pads	Fall 2	0.65	37.55	517.78
40-m cleared	Fall 3	0.35	266.60	315.33
100-m roads and pads	Fall 3	0.65	37.46	513.37
40-m cleared	Fall 4	0.23	304.99	374.26
70-m hybrid	Fall 4	0.12	187.82	95.33
100-m roads and pads	Fall 4	0.65	37.32	508.08

* The weight (DWP) is the arrival proportion multiplied by the operations factor, then rescaled to sum to one across seasons. Operations in summer represent the reduced number of turbines with summer risk.

** Ba and Bb are the parameters for the beta distribution used to characterize the probability of detection.

m = meter; DWP = density-weighted proportion.

Appendix D3. Weights used to combine detection probability distributions across sub-seasons within seasons for the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Season	Seasonal Arrival Proportion	Relative Operation of Turbines	Risk Turbine Weight	Re-Scaled Season Weight (DWP)*
Summer 1	0.23	1.00	0.32	0.47
Summer 2	0.06	1.00	0.32	0.13
Summer 3	0.20	1.00	0.32	0.40
Fall 1	0.19	1.00	1.00	0.38
Fall 2	0.07	1.00	1.00	0.13
Fall 3	0.09	1.00	1.00	0.18
Fall 4	0.15	1.00	1.00	0.30

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

Appendix D4. Data inputs for the Evidence of Absence Multiple Class Module used to combine detection probability distributions across sub-seasons within seasons for the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Season	Weight (DWP)*	Ba**	Bb**	*g* (95% CrI)***
Summer 1	0.47	876.79	1865.52	0.32 (0.30–0.34)
Summer 2	0.13	1664.17	3957.45	0.30 (0.28–0.31)
Summer 3	0.40	773.41	1595.06	0.33 (0.31–0.35)
Fall 1	0.38	506.36	1707.70	0.23 (0.21–0.25)
Fall 2	0.13	454.94	1592.33	0.22 (0.20–0.24)
Fall 3	0.18	331.14	1283.57	0.21 (0.19–0.23)
Fall 4	0.30	502.81	1700.46	0.23 (0.21–0.25)

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

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

***CrI = credible interval.

Appendix D5. Inputs needed to run Evidence of Absence: Multiple Class Module Seasons for the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Season	Arrival Proportion	Operations*	Weight (DWP)*	Ba**	Bb**
summer	0.50	0.32	0.24	2,103.71	4,482.83
fall	0.50	1	0.76	1,627.77	5,660.27

* The weight (density-weighted proportion [DWP]) is the arrival proportion multiplied by the operations factor, then rescaled to sum to one across seasons. Operations in summer represent the smaller number of turbines with summer risk compared to fall migration risk.

** Ba and Bb are the parameters for the beta distribution used to characterize the probability of detection.

m = meter.

Appendix D6. Data inputs for the Evidence of Absence Multiple Class Module used to combine detection probability distributions across seasons within the study period for the Green River Wind Farm, Lee and Whiteside counties, Illinois, from May 16 – October 15, 2024.

Season	Weight (DWP)*	Ba**	Bb**	g (95% CrI)***
summer	0.24	2,103.71	4,482.83	0.32 (0.31–0.33)
fall	0.76	1,627.77	5,660.27	0.22 (0.21–0.23)

* The weight (density-weighted proportion [DWP]) is the arrival proportion multiplied by the operations factor, then rescaled to sum to one across seasons. Operations in summer represent the reduced number of turbines with summer risk.

** Ba and Bb are the parameters for the beta distribution used to characterize the probability of detection.

*** CrI = credible interval

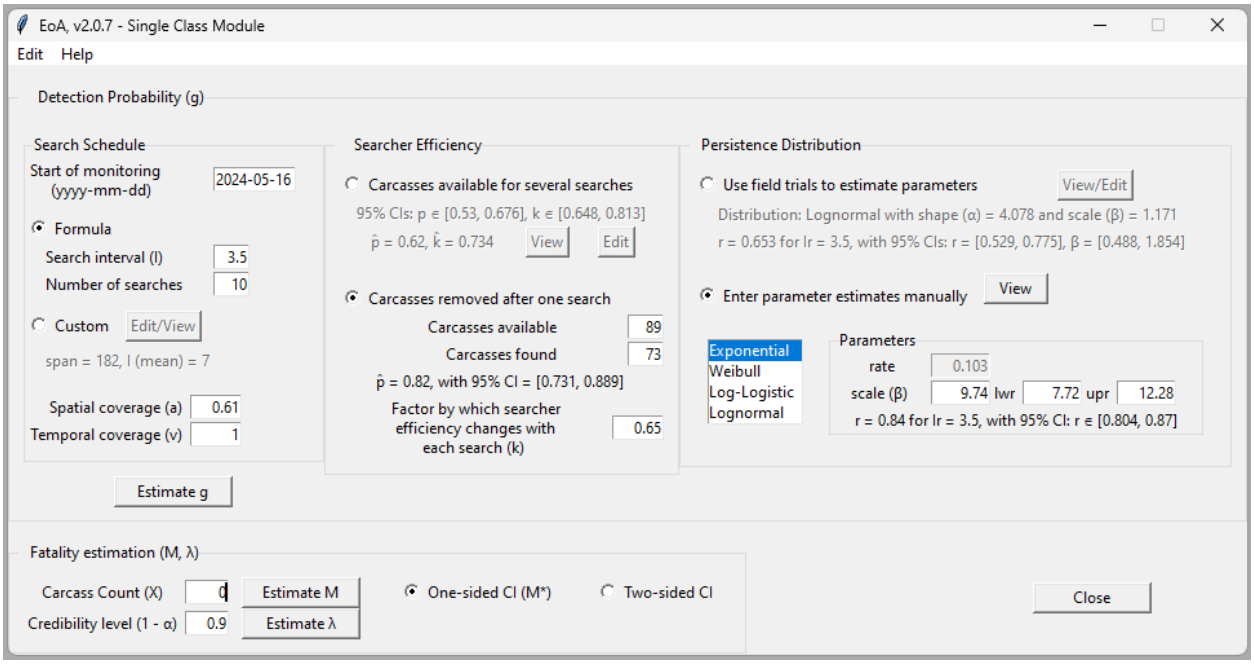
m = meter.

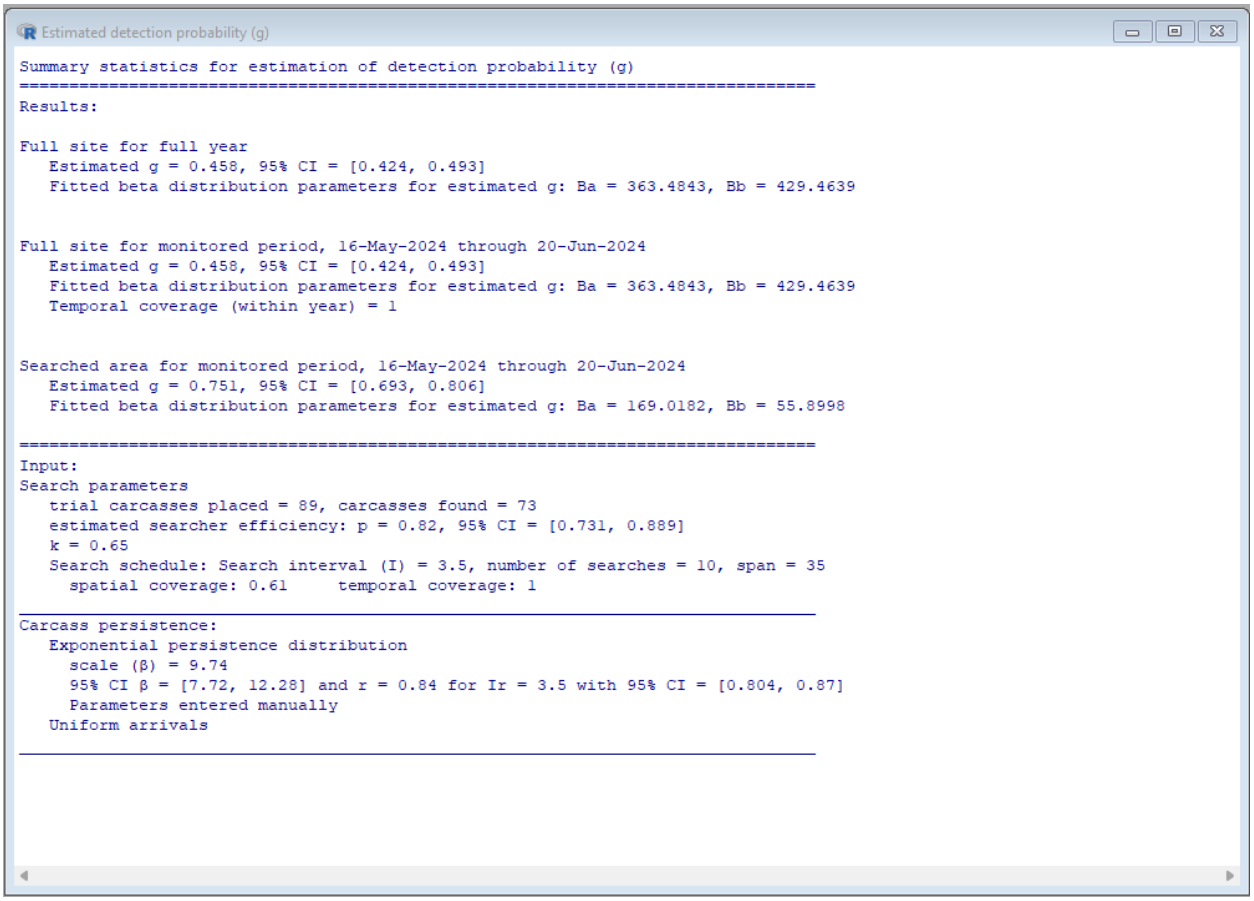
Appendix D7. Inputs needed to run Evidence of Absence: Multiple Years Module for the Green River Wind Farm, Lee and Whiteside counties, Illinois, from 2022–2024.

Year	Ba*	Bb*	rho
2022	831.73	1,975.09	1.095
2023	640.07	2,039.63	1
2024	2,951.82	9,005.19	1
Cumulative	2,810.40	7,925.44	NA

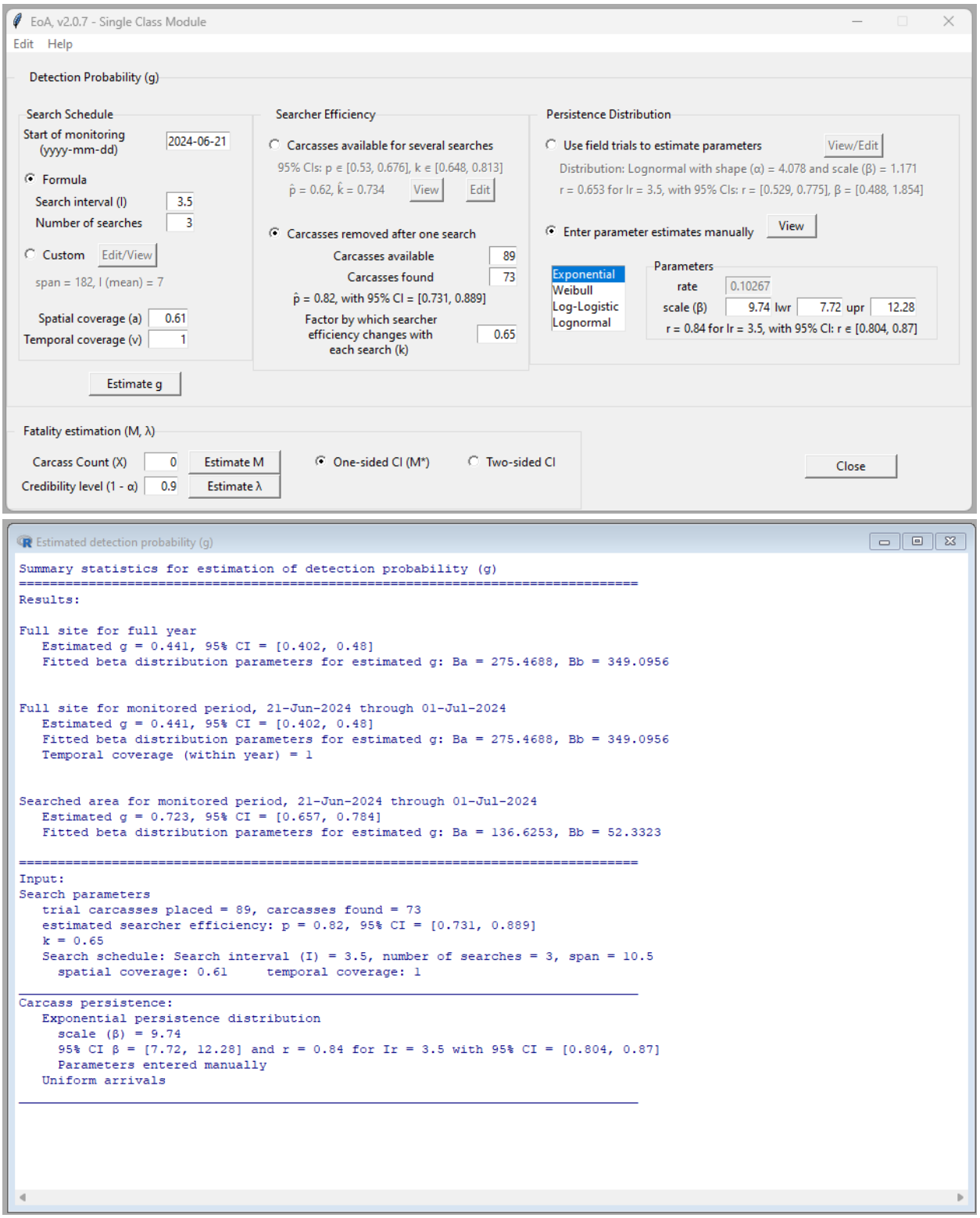
* Ba and Bb are the parameters for the beta distribution used to characterize the probability of detection.

rho = weight for combining years.

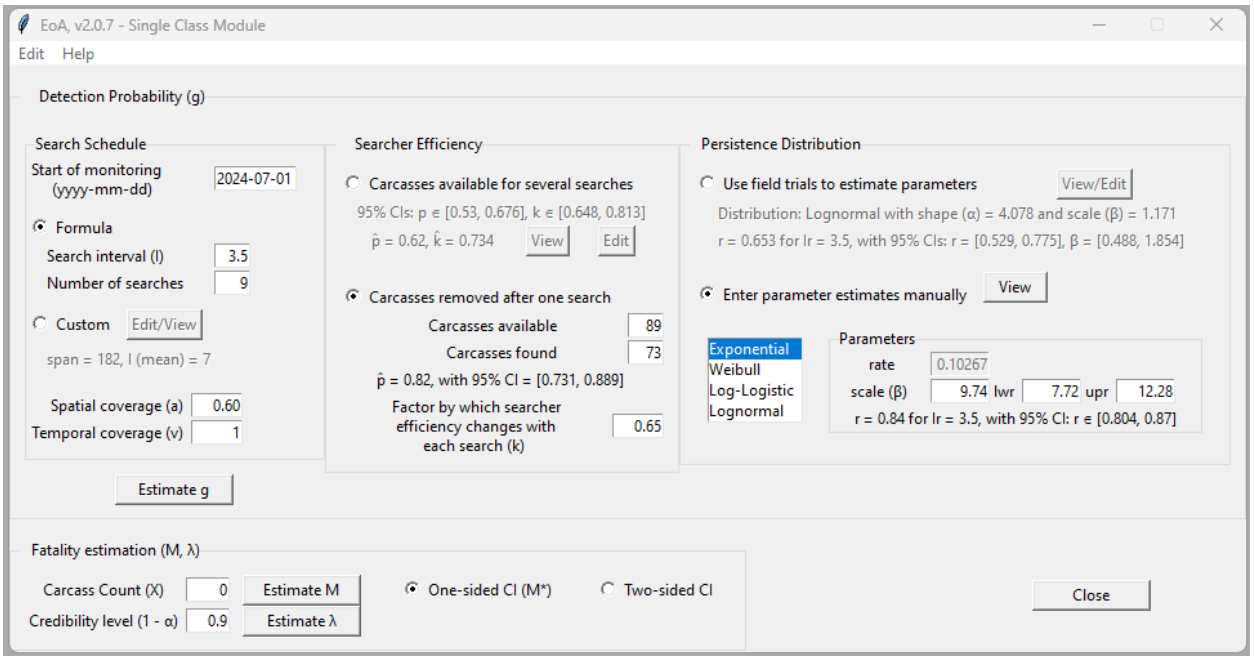


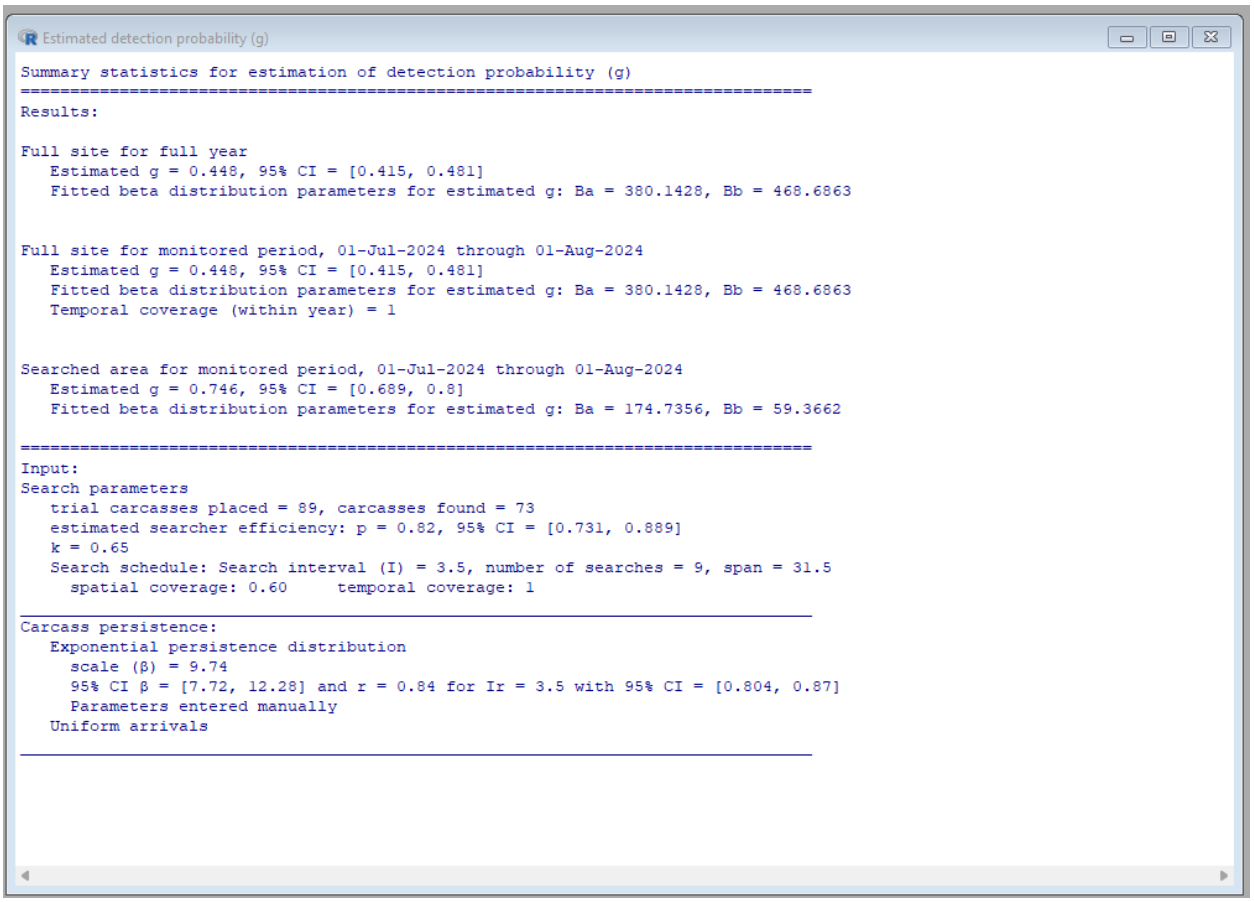


Appendix D8. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Summer 1, 40-meter cleared plot searches at five turbines, searched at a 3.5-day interval in 2024.

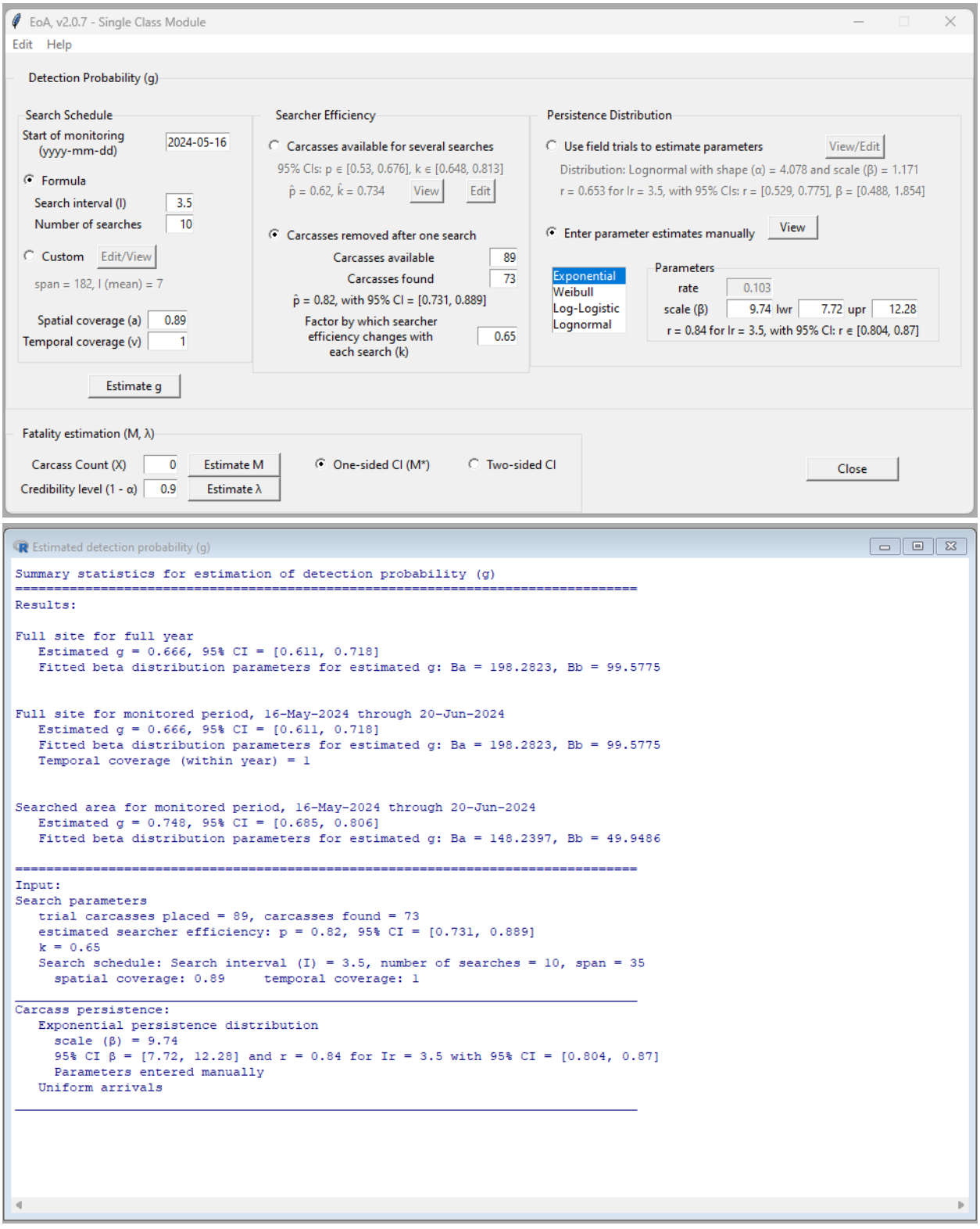


Appendix D9. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Summer 2, 40-meter cleared plot searches at five turbines, searched at a 3.5-day interval in 2024.

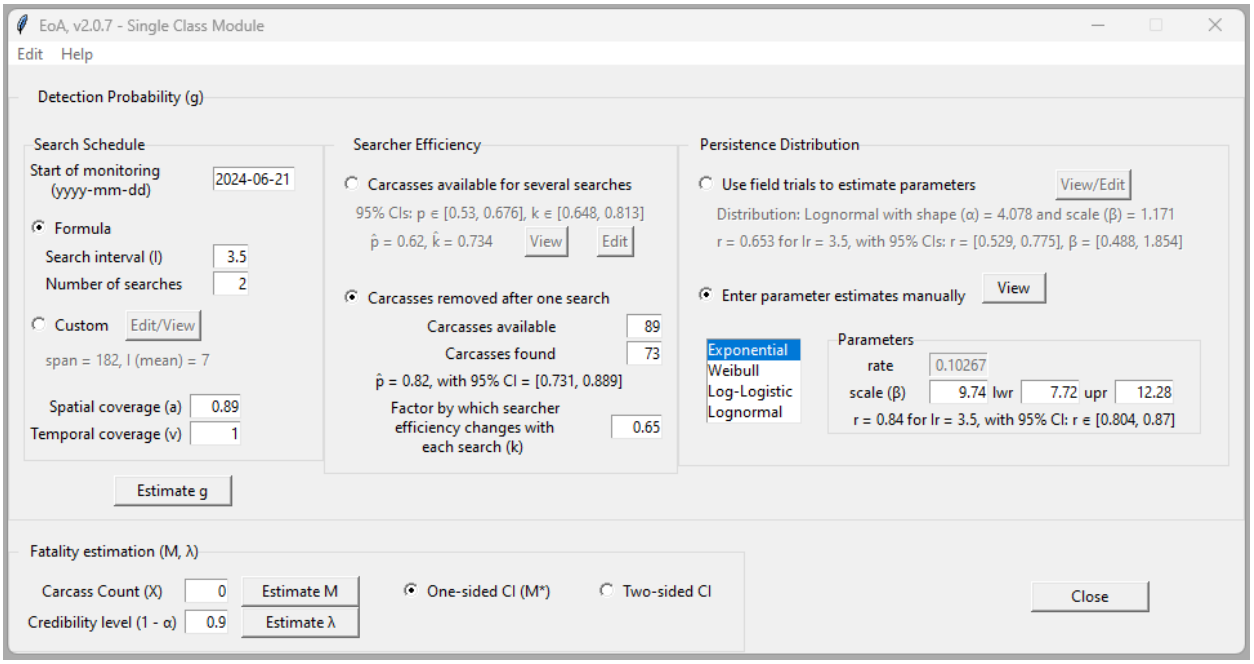


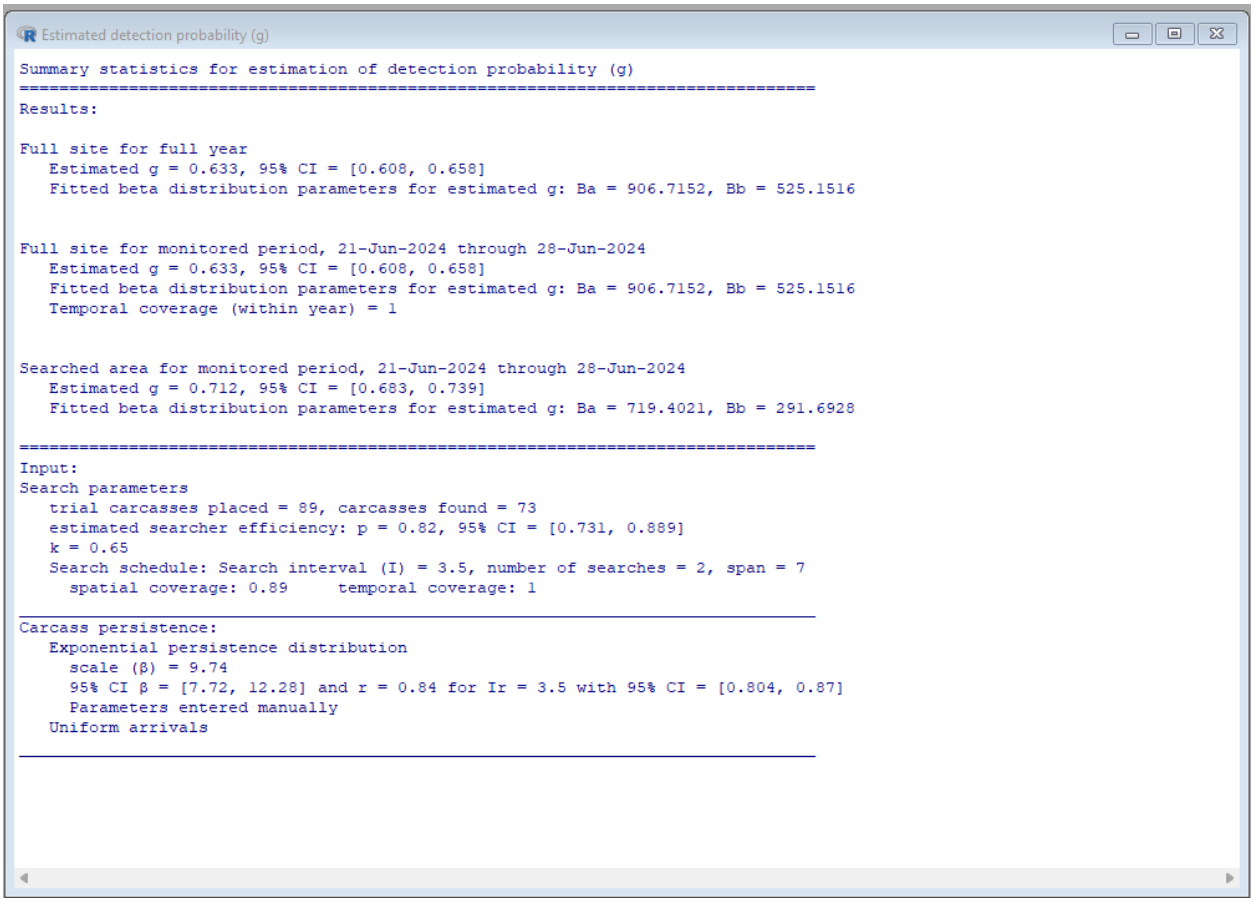


Appendix D10. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Summer 3, 40-meter cleared plot searches at four turbines, searched at a 3.5-day interval in 2024.

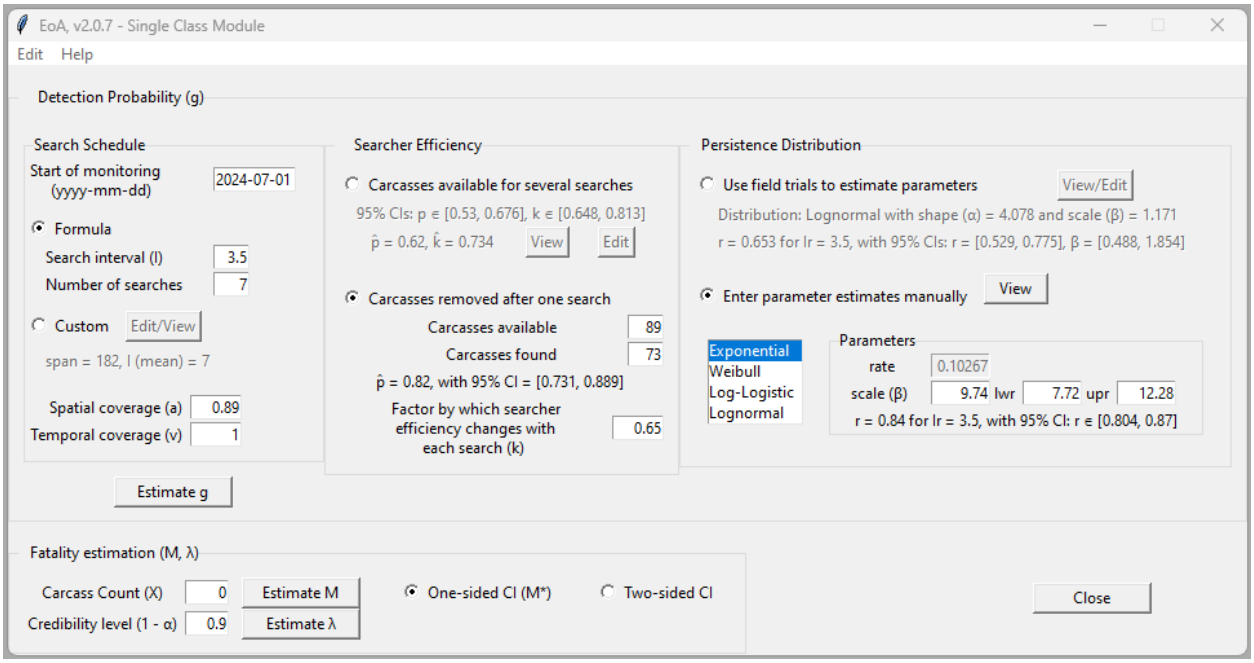


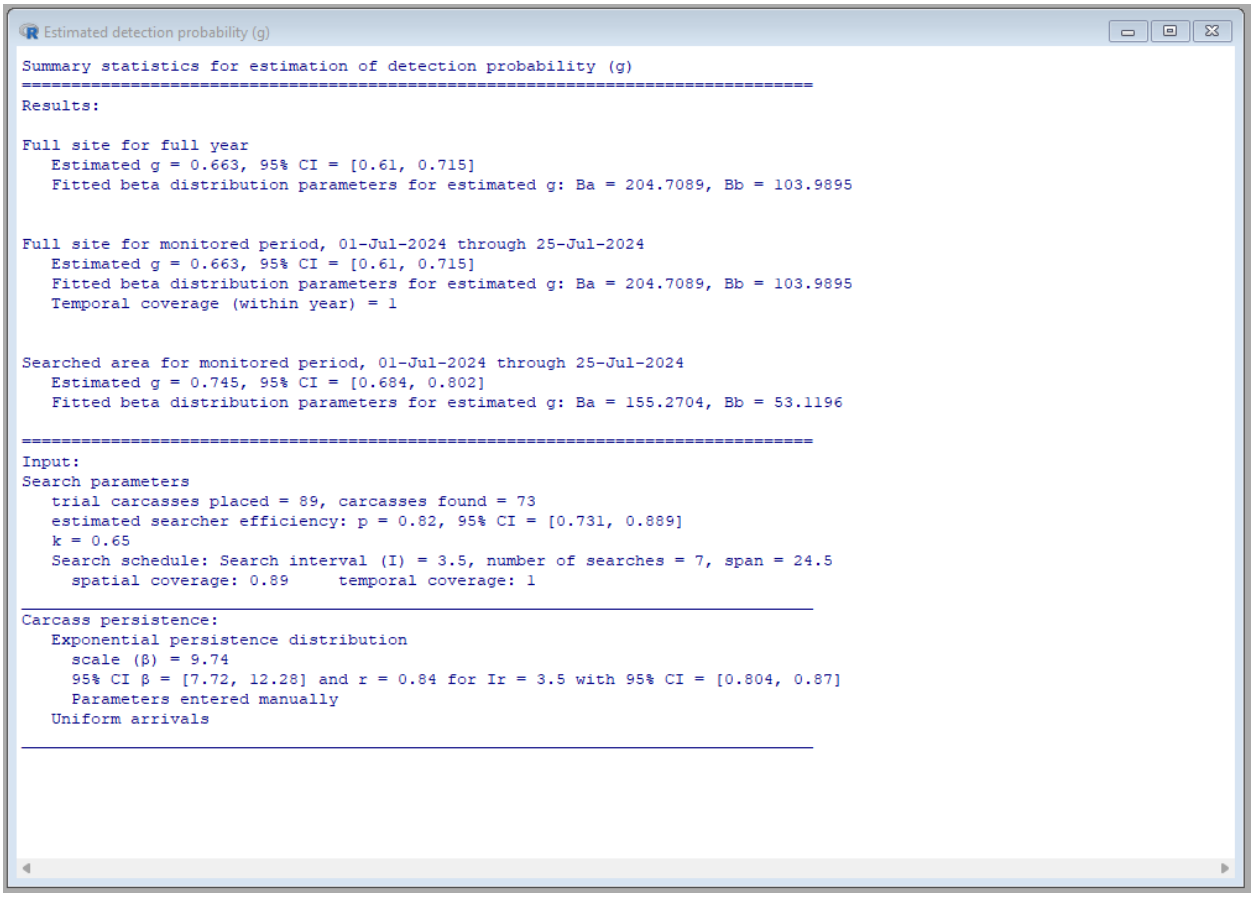
Appendix D11. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Summer 1, 70-meter hybrid plot searches at six turbine, searched at a 3.5-day interval in 2024.



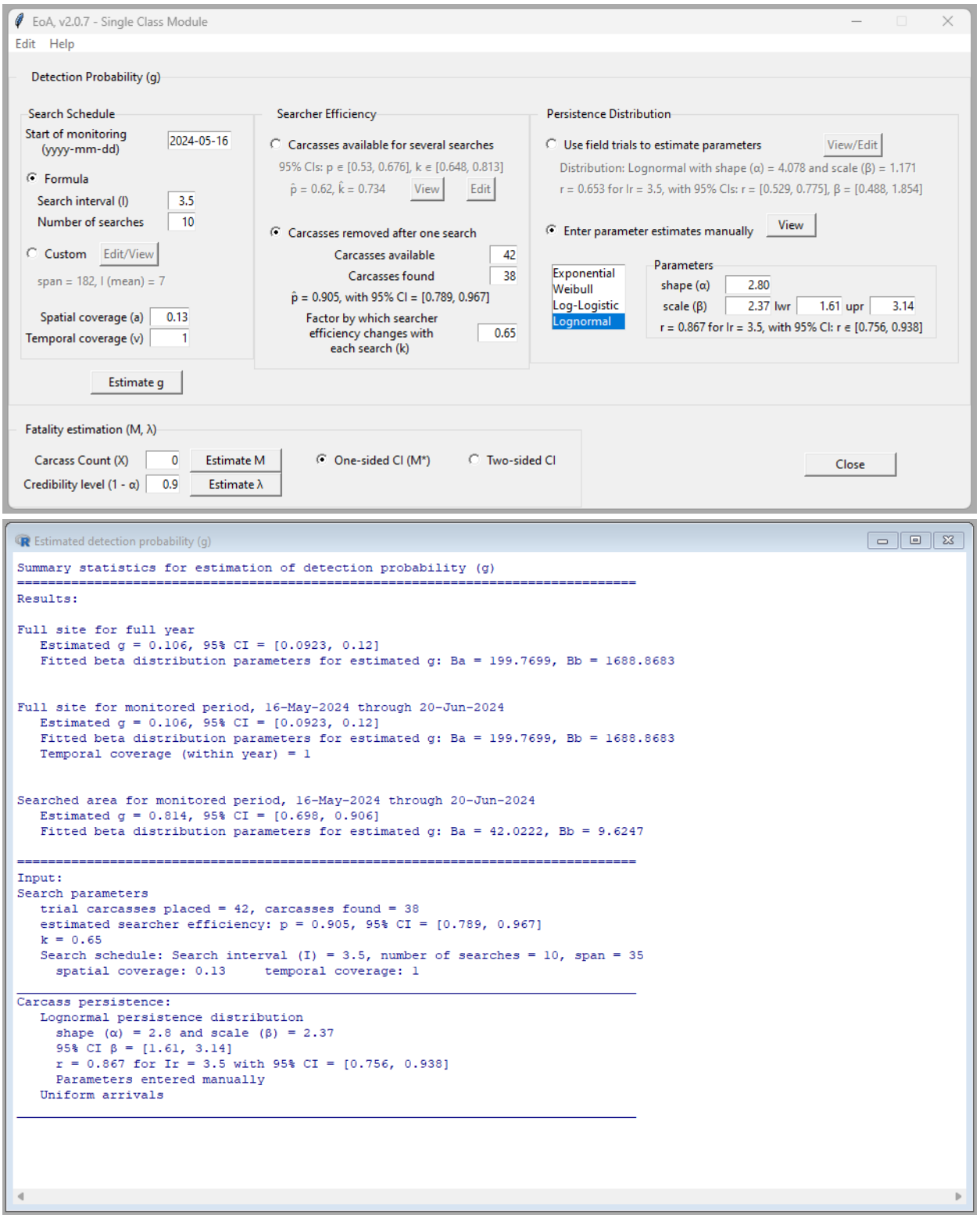


Appendix D12. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Summer 2, 70-meter hybrid plot searches at six turbine, searched at a 3.5-day interval in 2024.

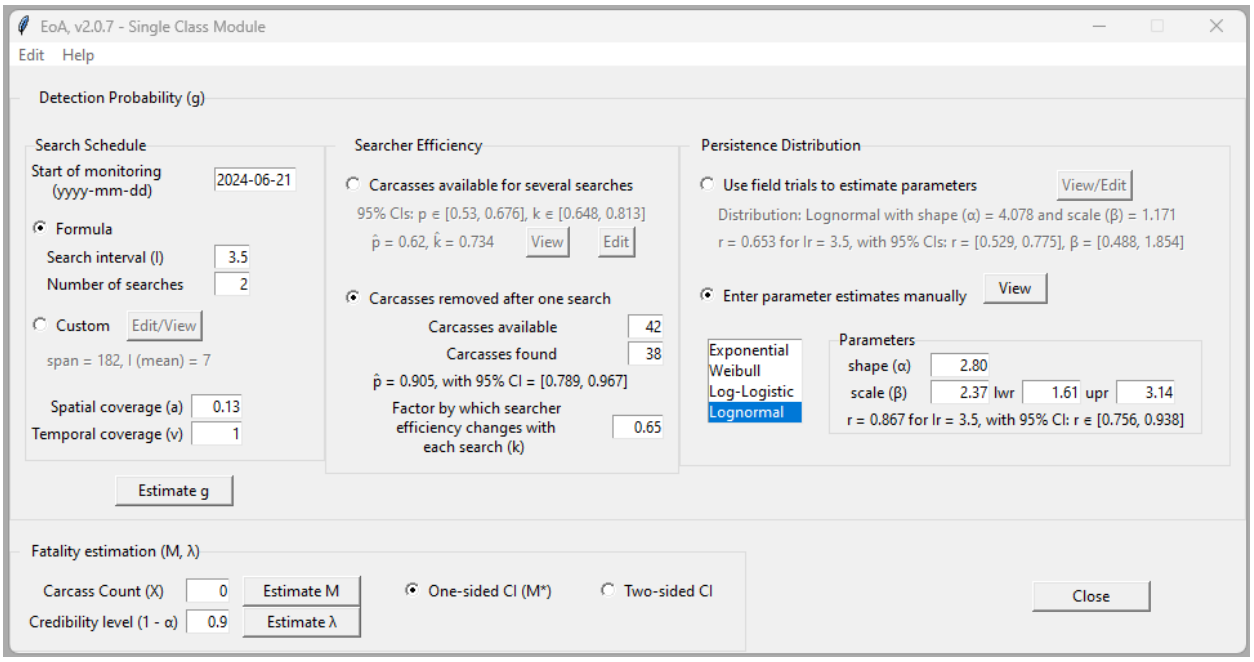


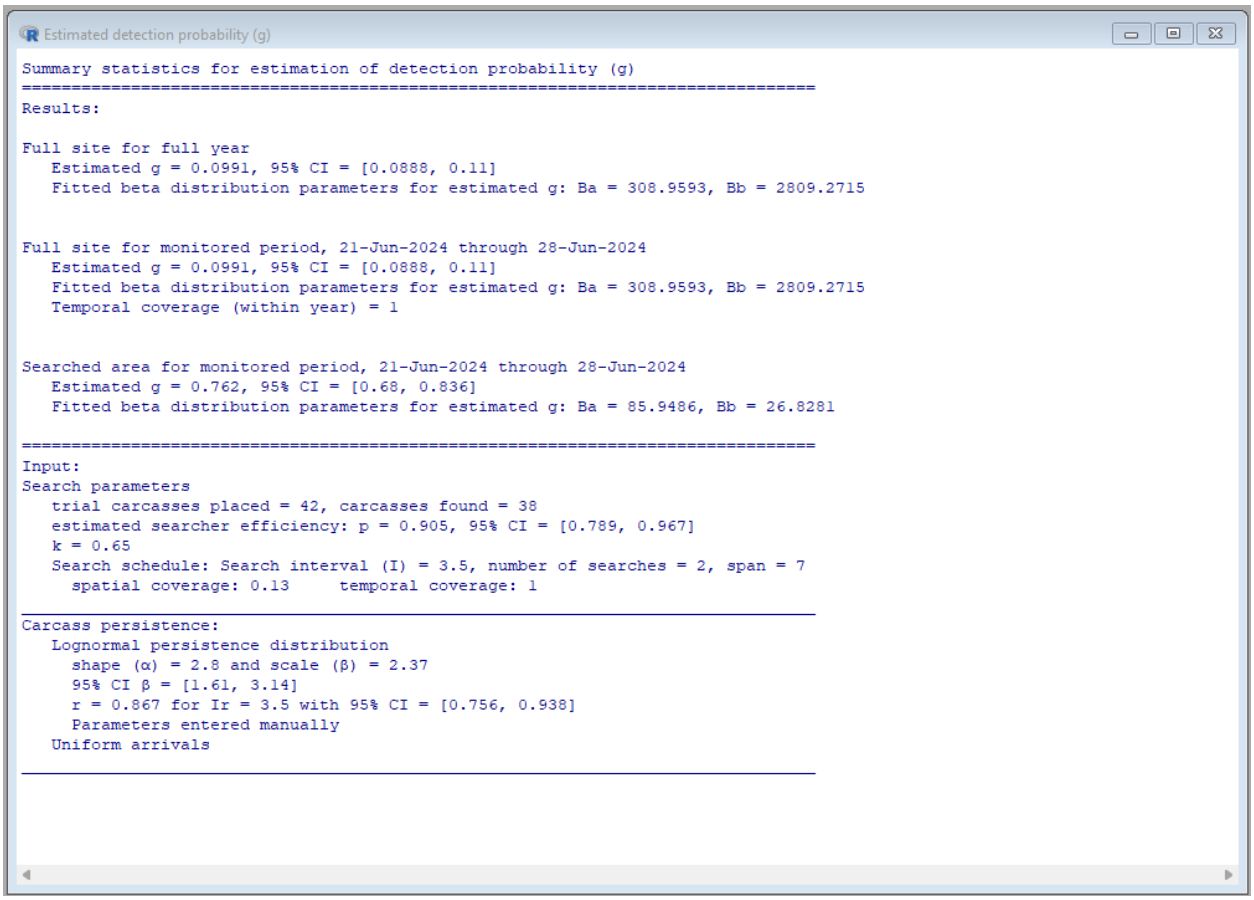


Appendix D13. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Summer 3, 70-meter hybrid plot searches at seven turbine, searched at a 3.5-day interval in 2024.

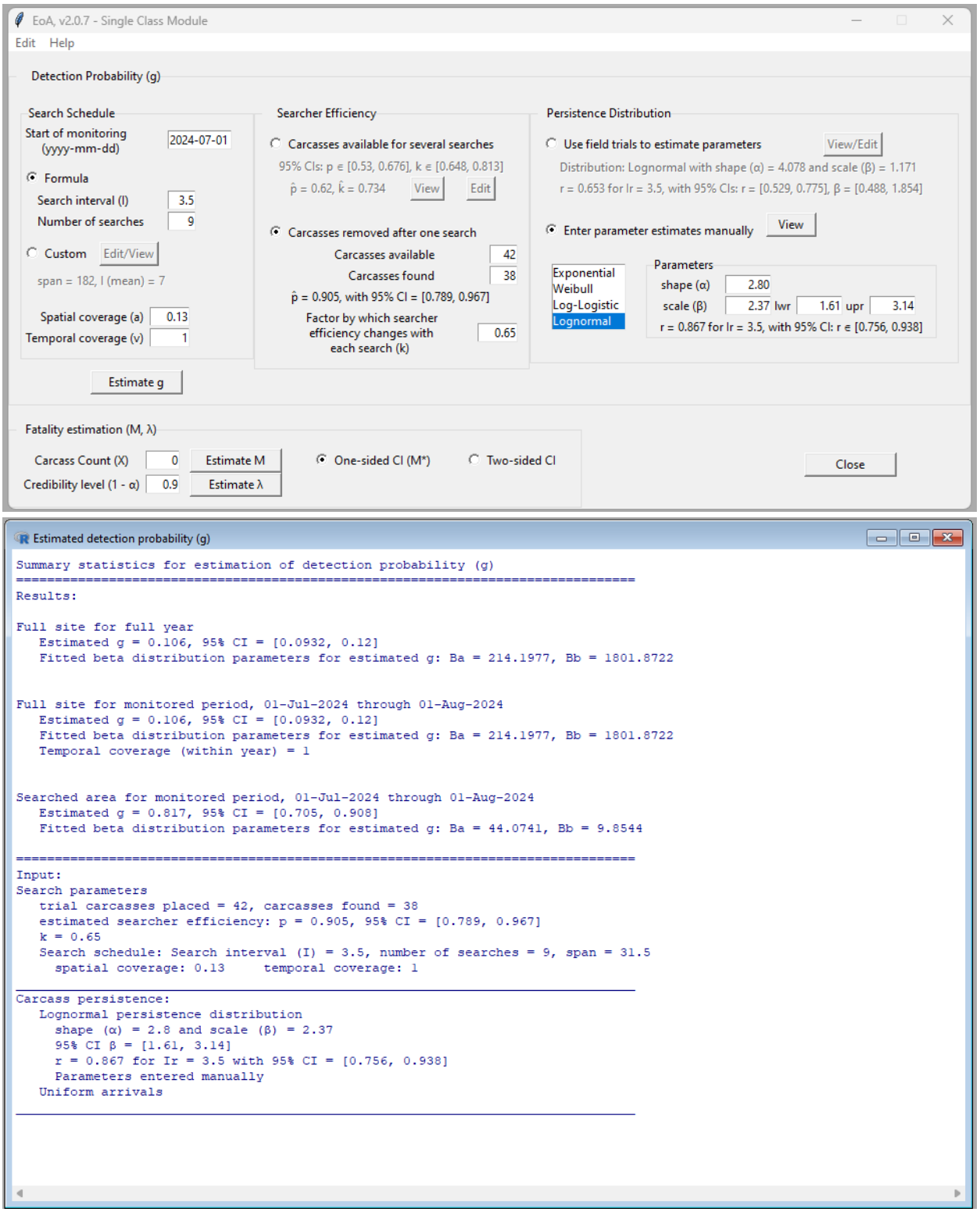


Appendix D14. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Summer 1, 100-meter road and pad plot searches at 13 turbines, searched at a 3.5-day interval in 2024.

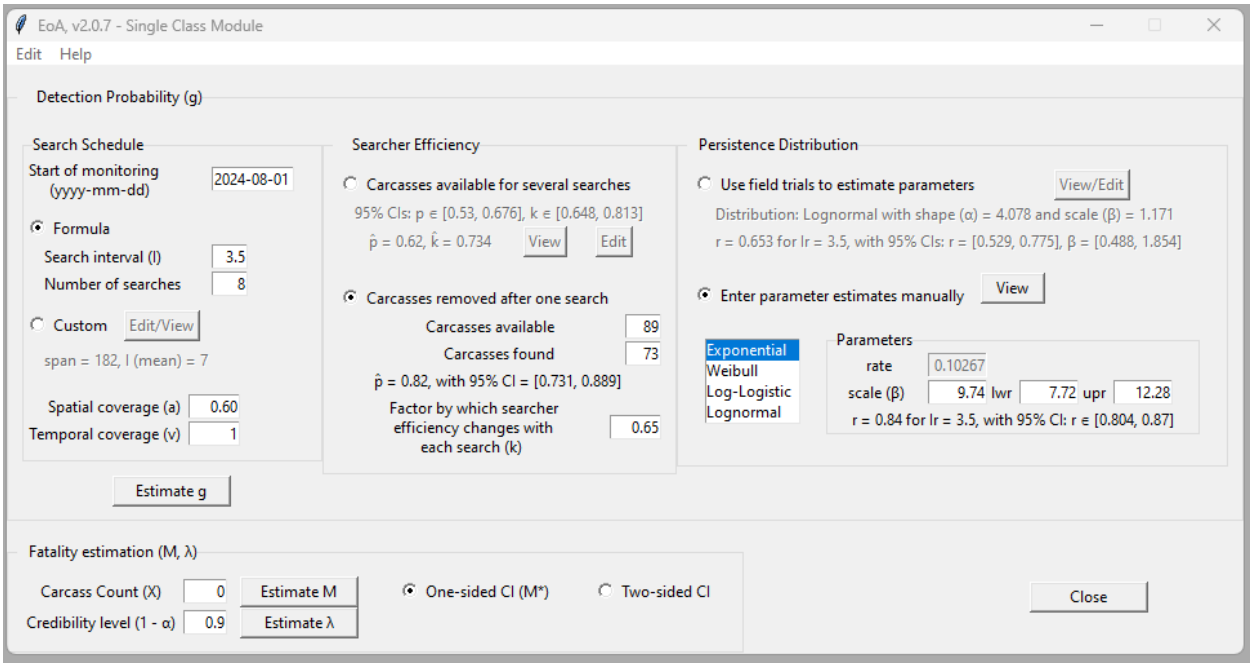


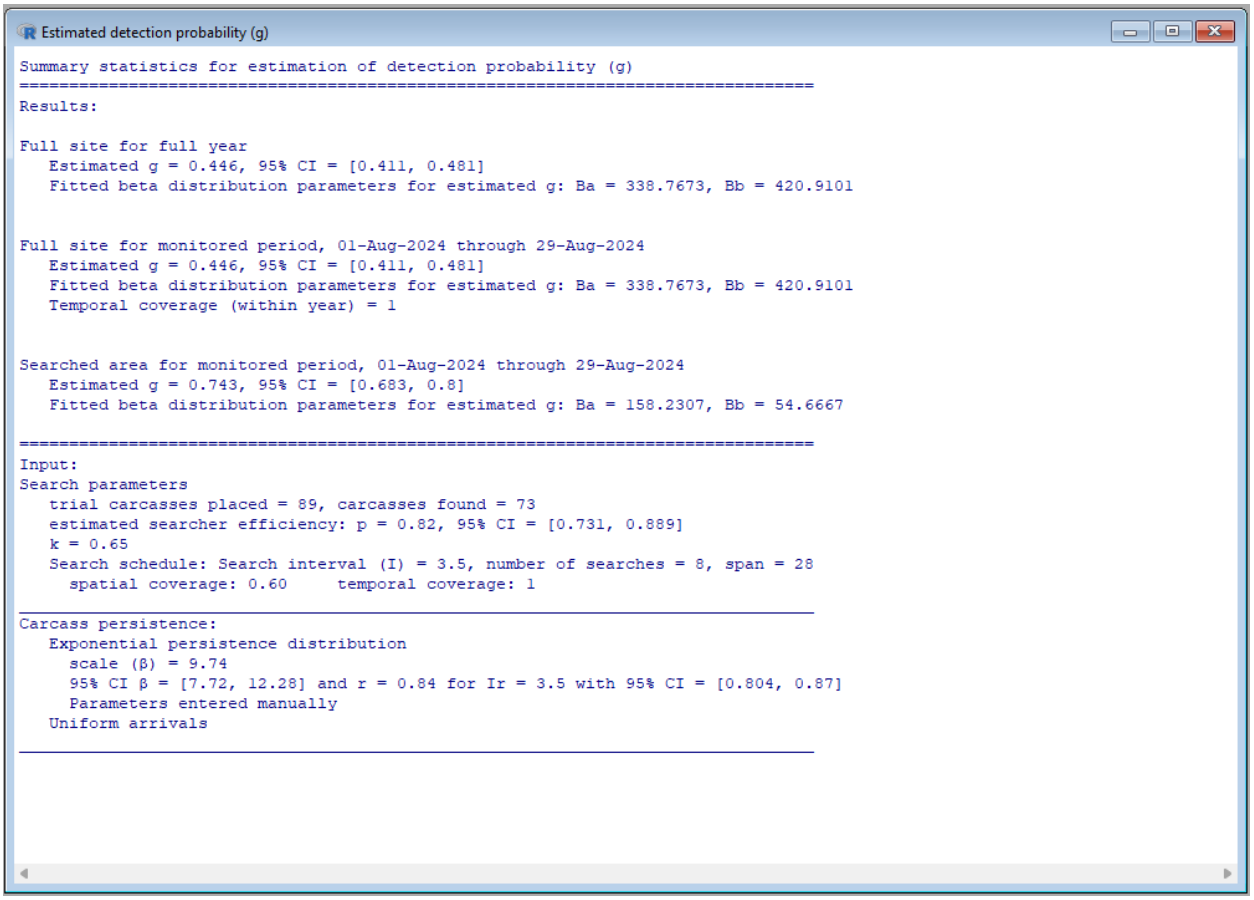


Appendix D15. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Summer 2, 100-meter road and pad plot searches at 11 turbines, searched at a 3.5-day interval in 2024.

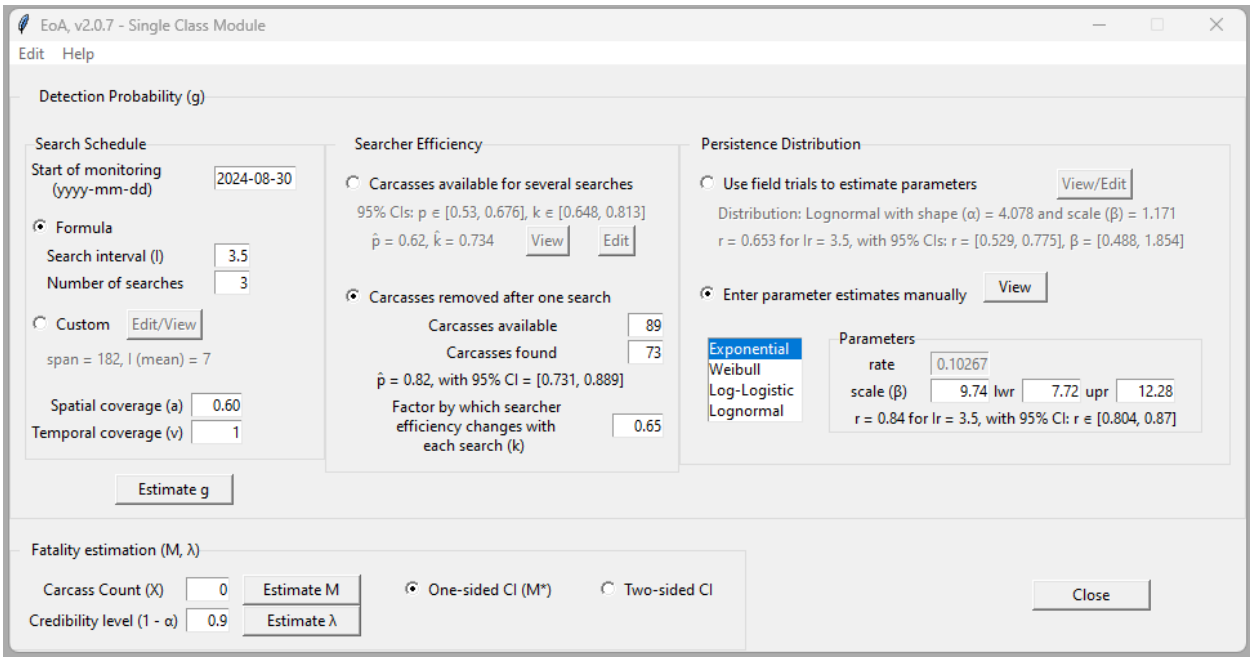


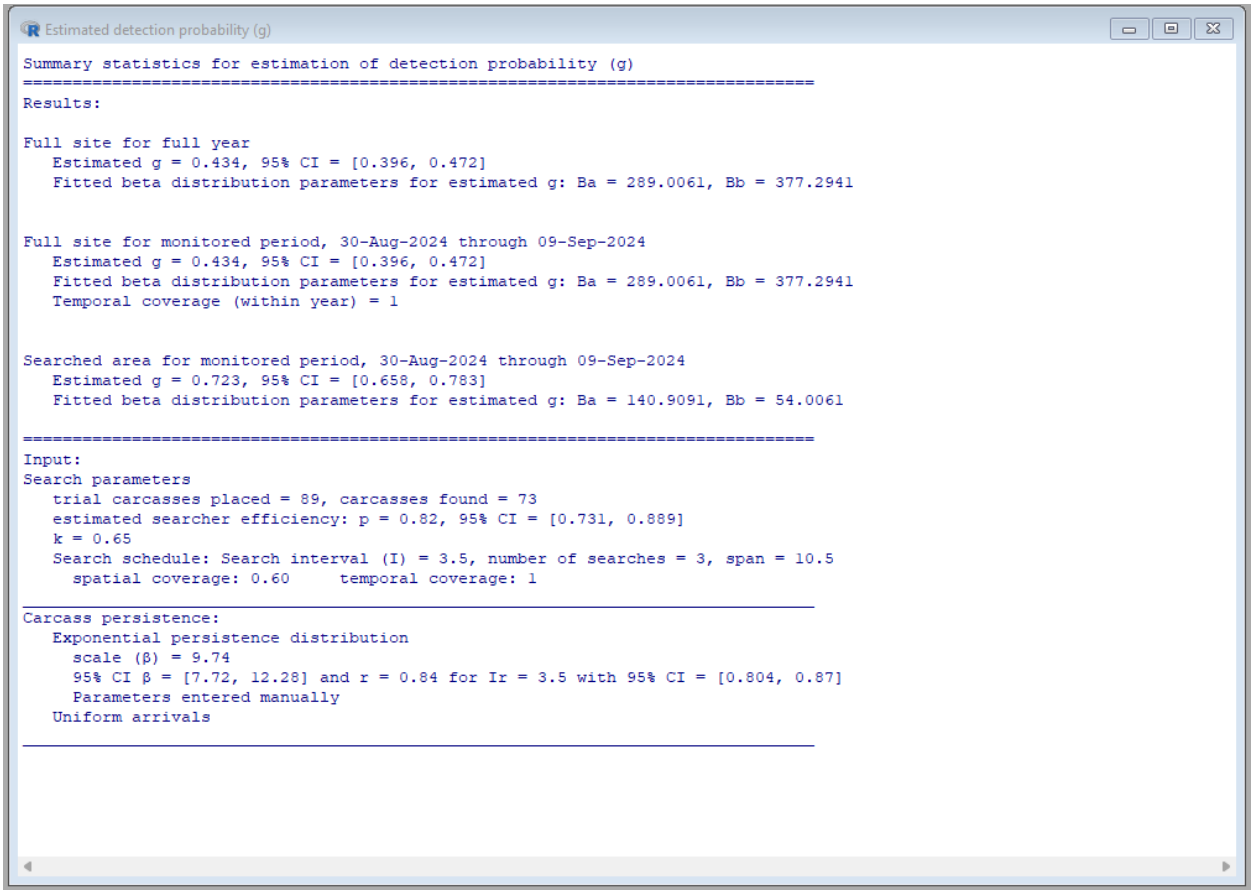
Appendix D16. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Summer 3, 100-meter road and pad plot searches at 13 turbines, searched at a 3.5-day interval in 2024.



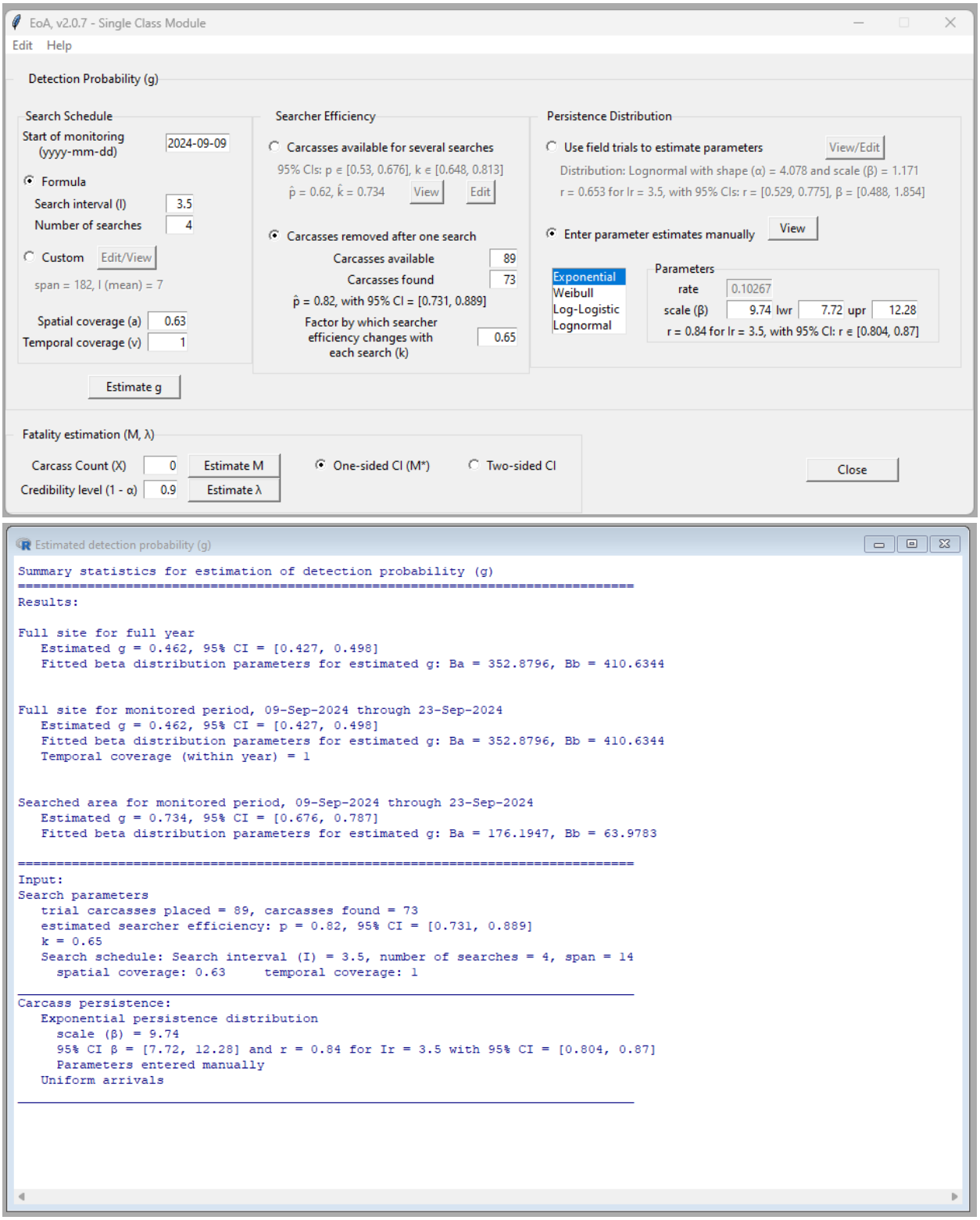


Appendix D17. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 1, 40-meter cleared plot searches at 17 turbines, searched at a 3.5-day interval in 2024.

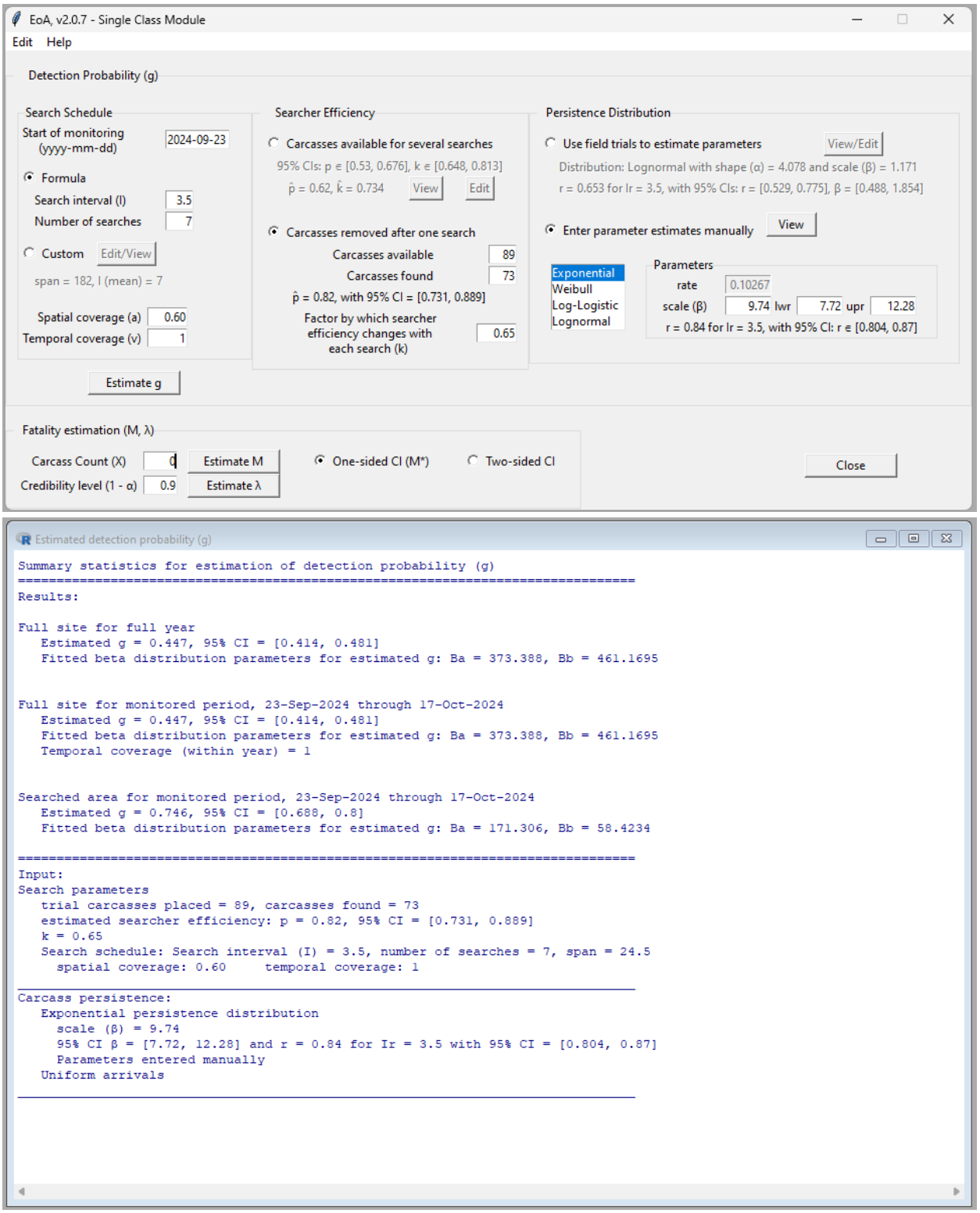




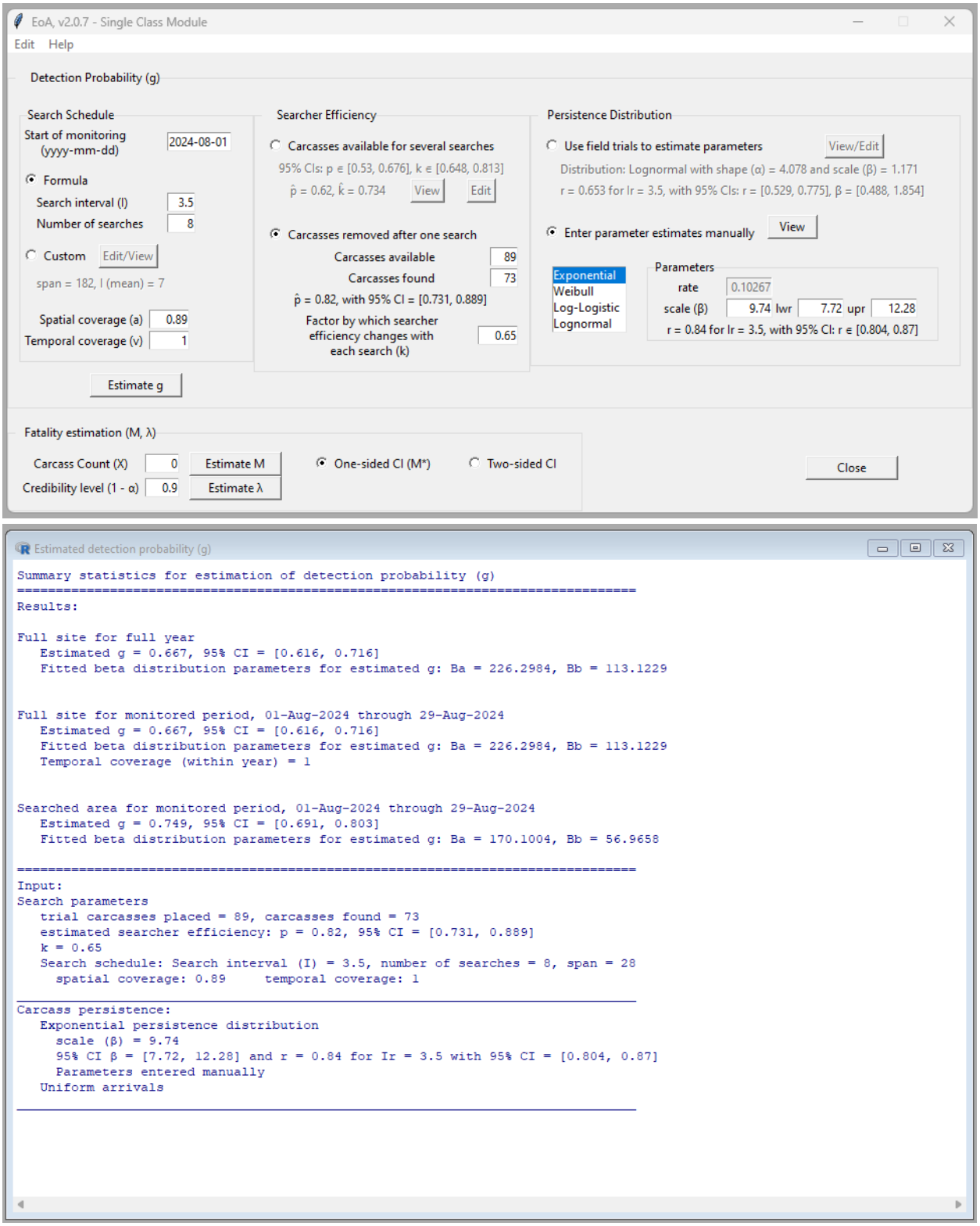
Appendix D18. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 2, 40-meter cleared plot searches at 17 turbines, searched at a 3.5-day interval in 2024.



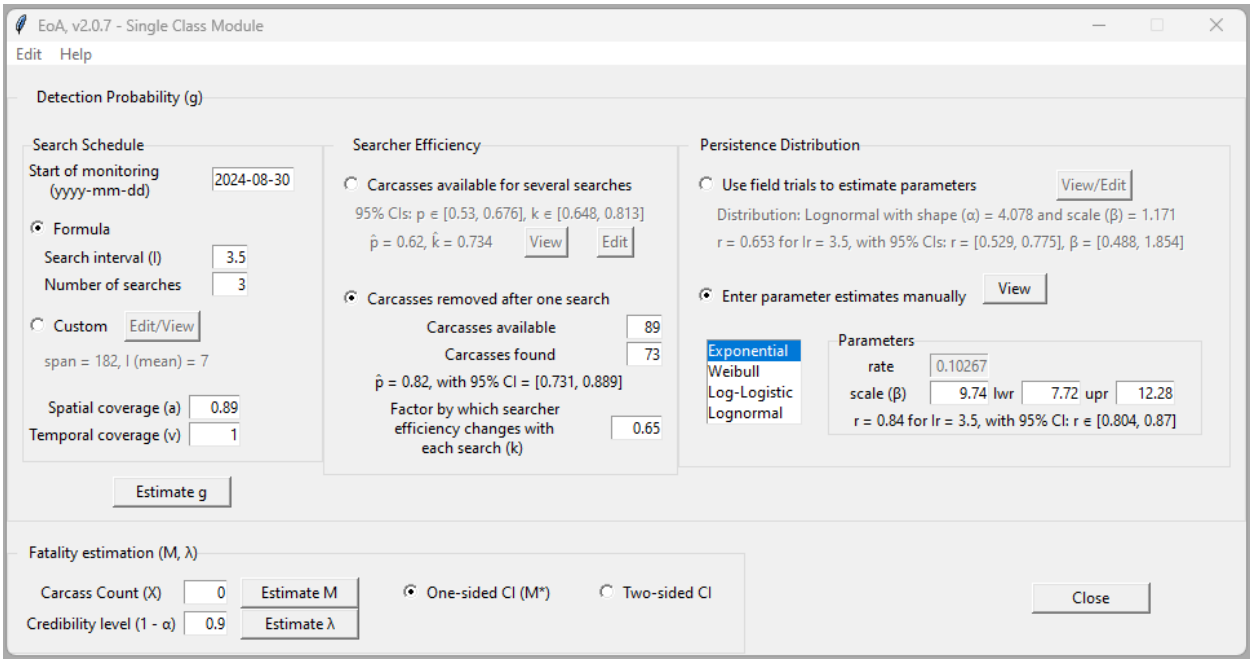
Appendix D19. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 3, 40-meter cleared plot searches at 26 turbines, searched at a 3.5-day interval in 2024.

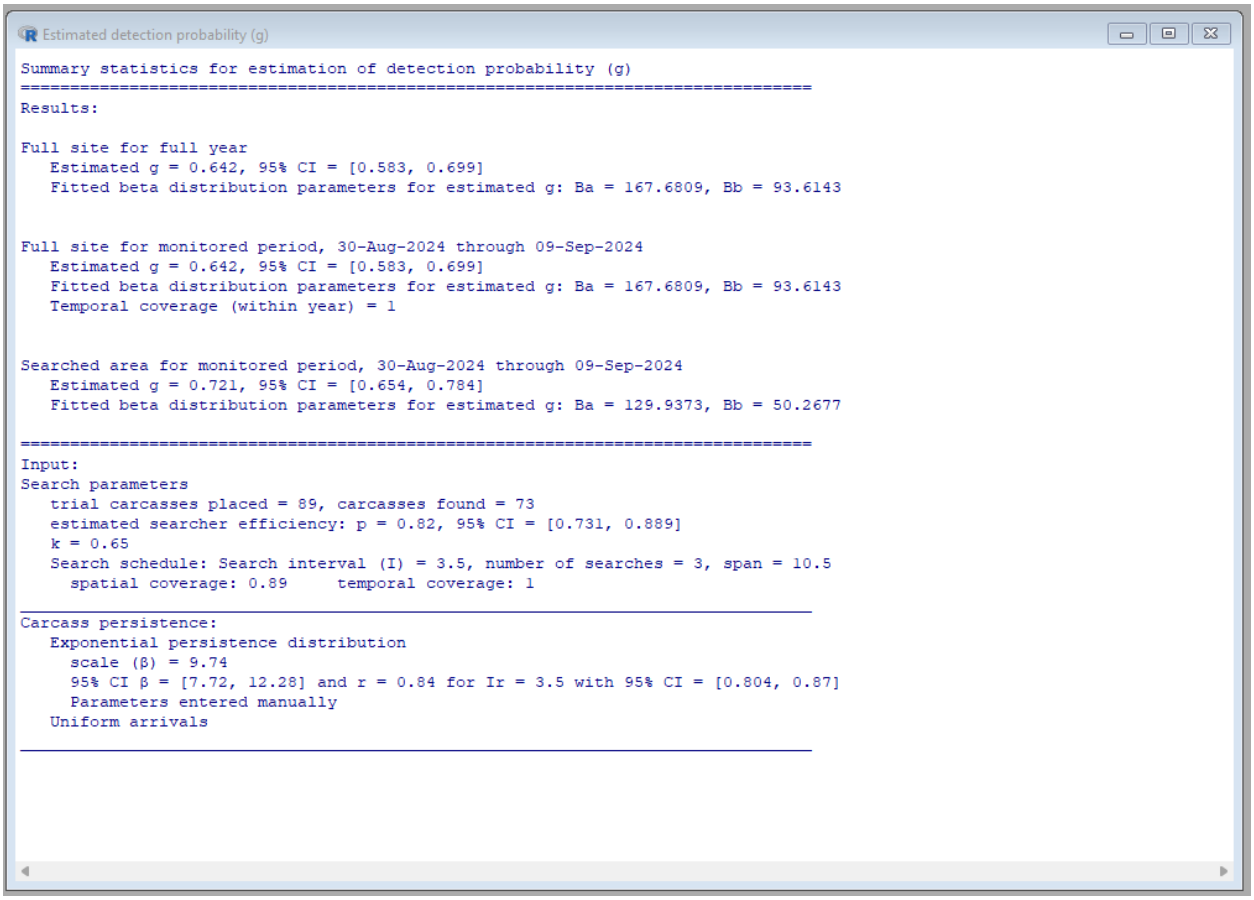


Appendix D20. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 4, 40-meter cleared plot searches at 17 turbines, searched at a 3.5-day interval in 2024.

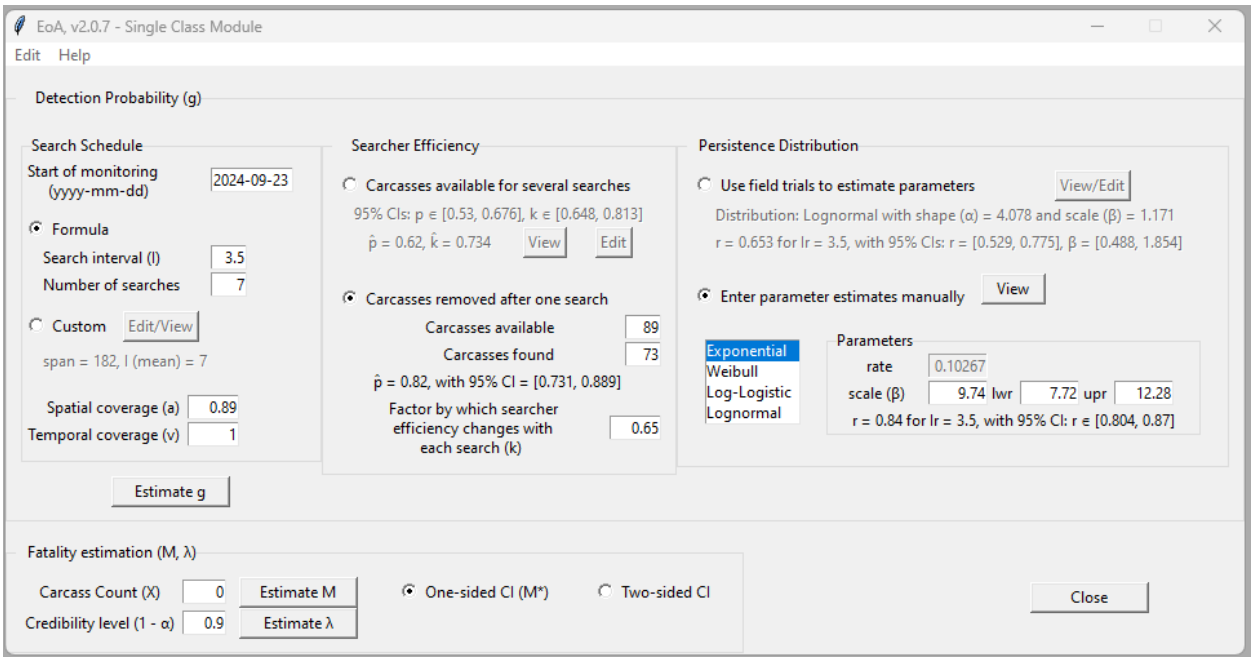


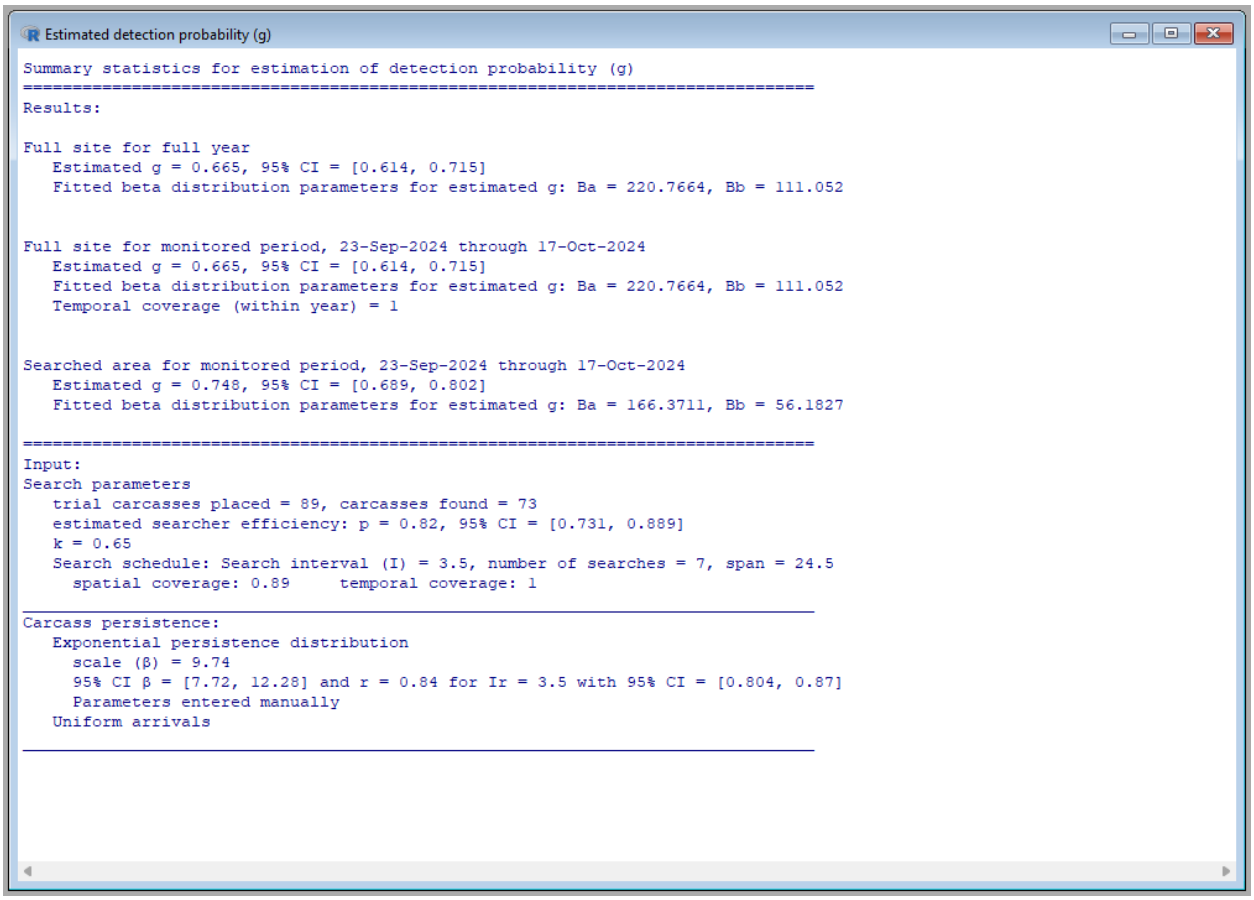
Appendix D21. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 1, 70-meter hybrid plot searches at nine turbines, searched at a 3.5-day interval in 2024.



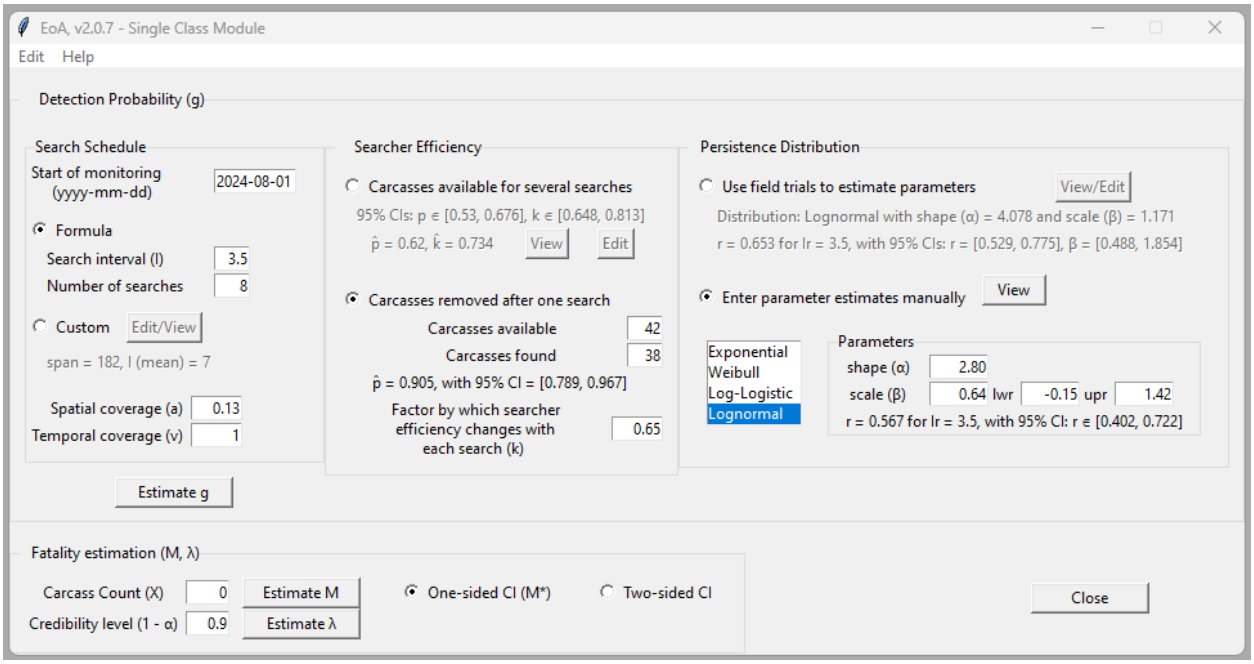


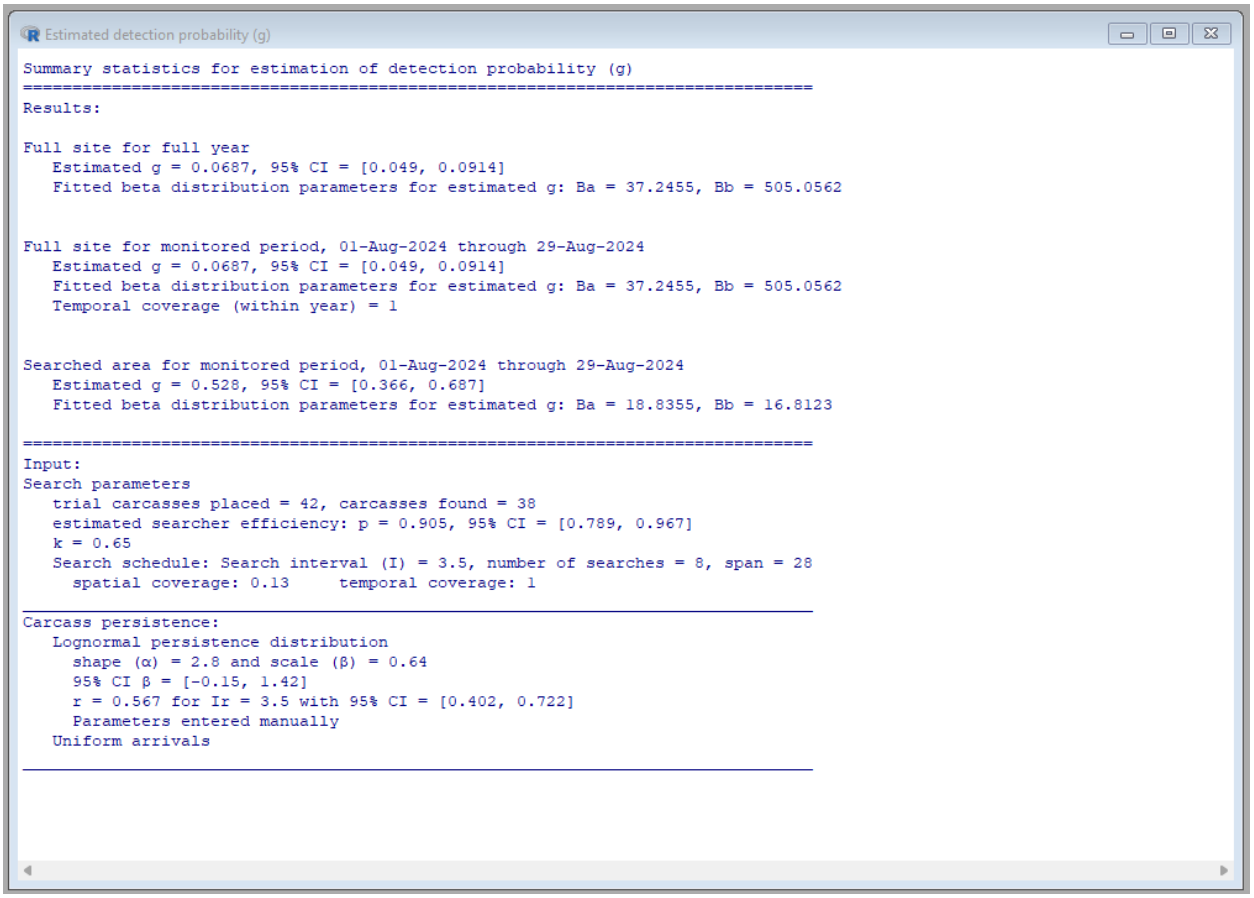
Appendix D22. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 2, 70-meter hybrid plot searches at nine turbines, searched at a 3.5-day interval in 2024.



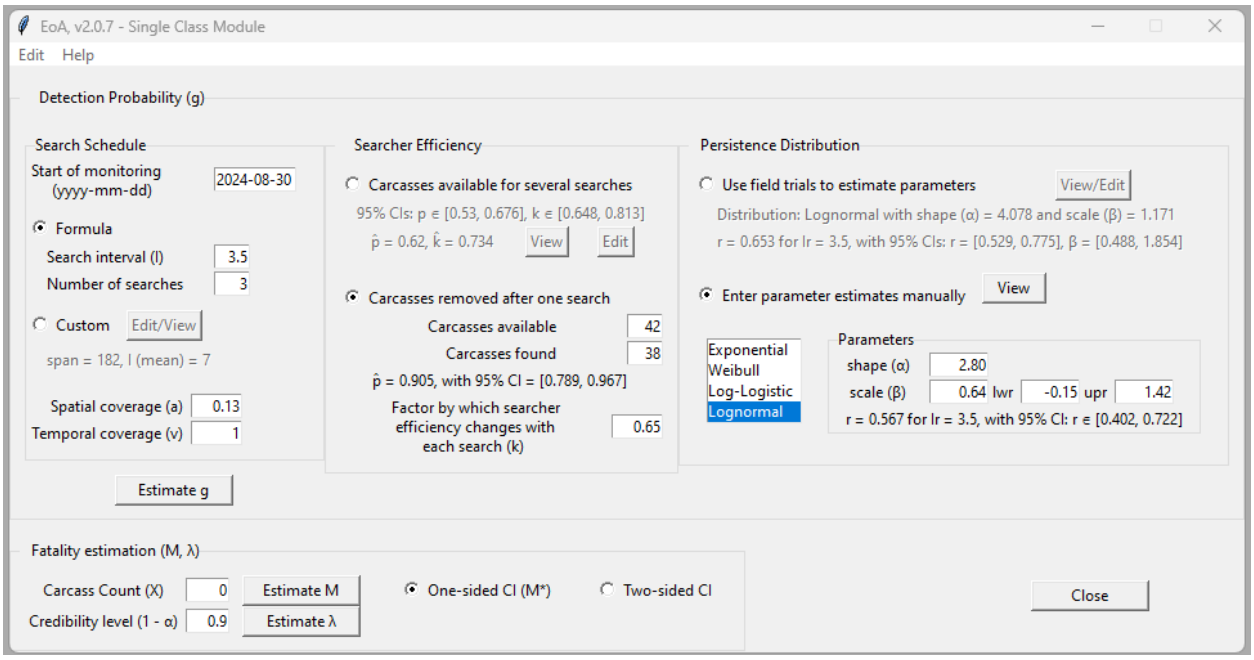


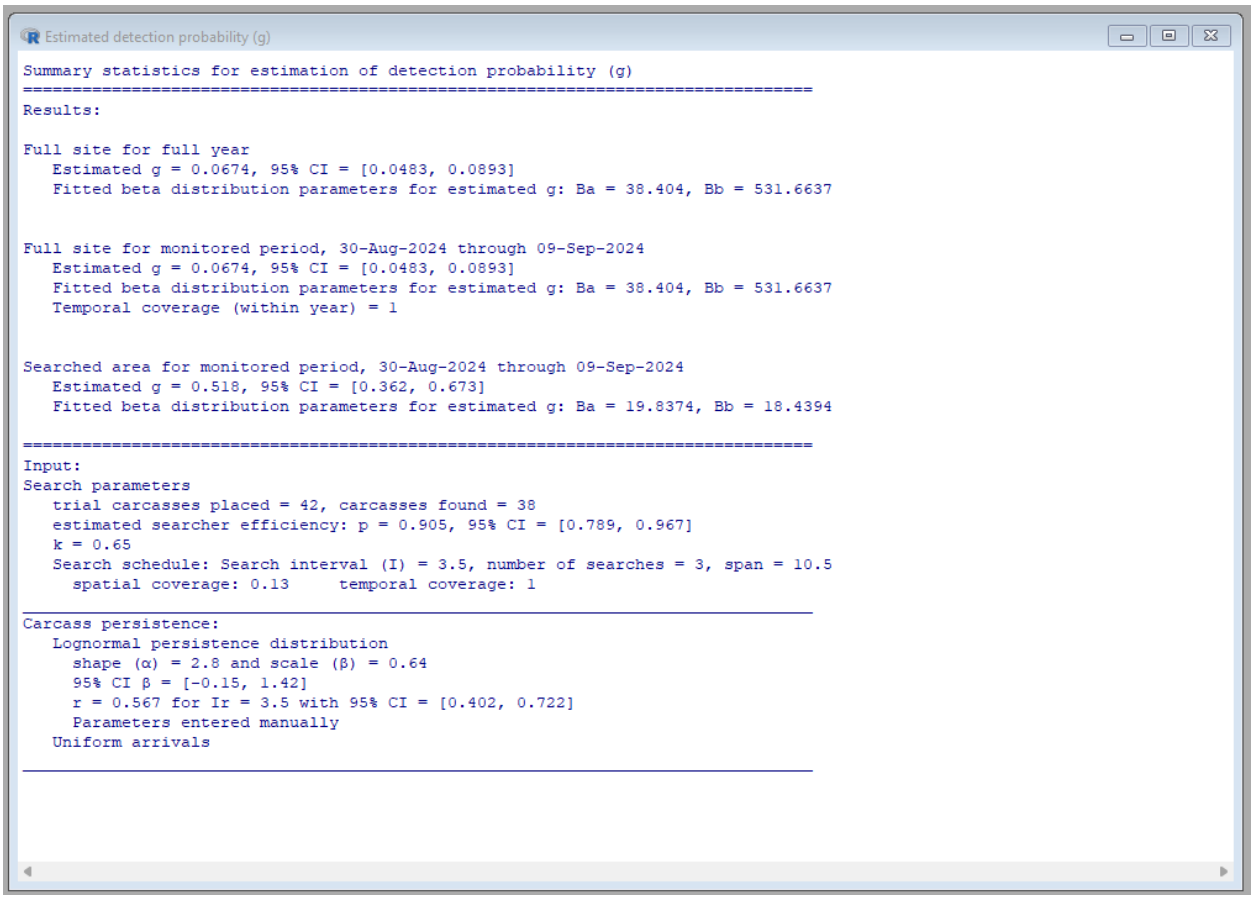
Appendix D23. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 4, 70-meter hybrid plot searches at nine turbines, searched at a 3.5-day interval in 2024.



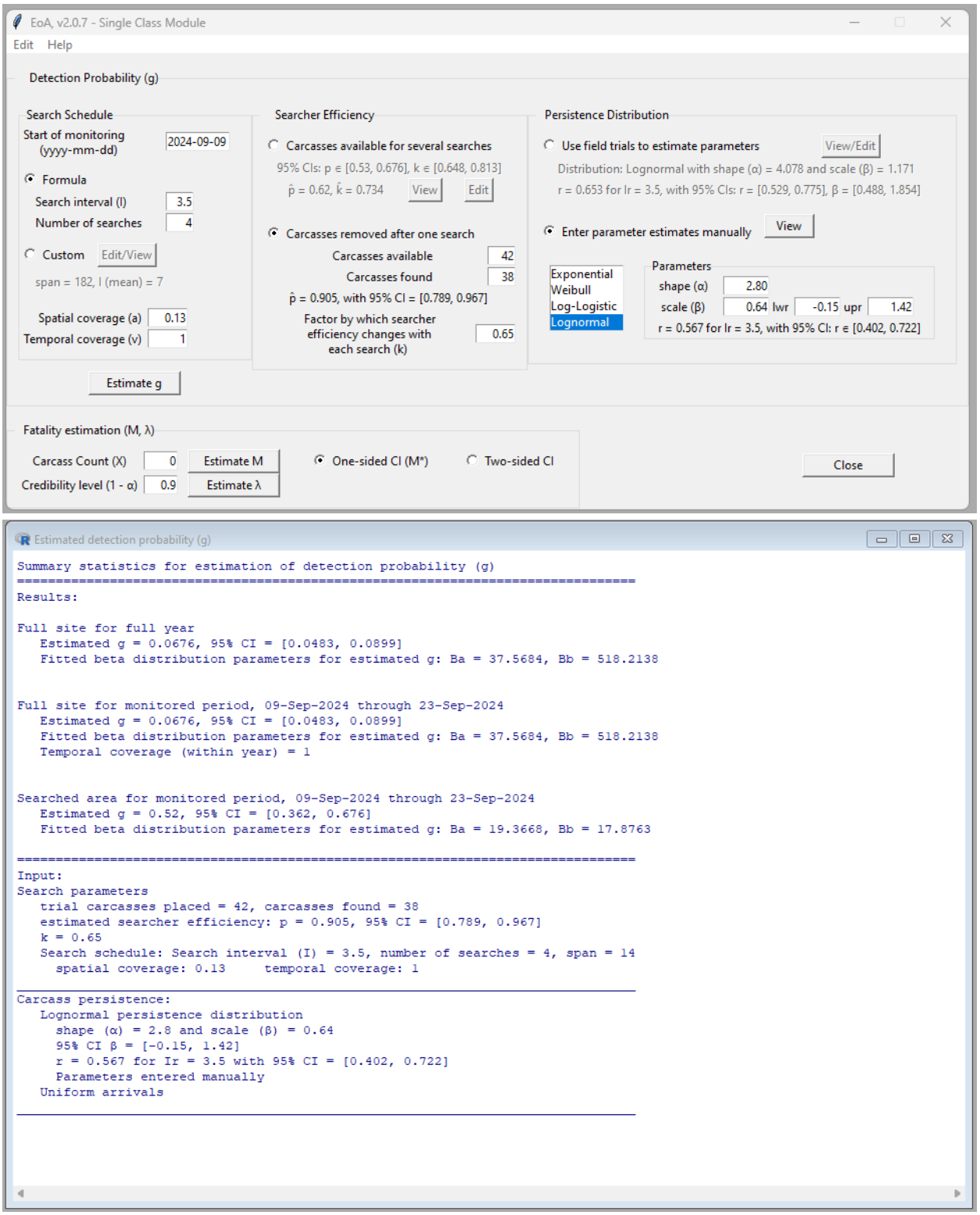


Appendix D24. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 1, 100-meter road and pad plot searches at 48 turbines, searched at a 3.5-day interval in 2024.

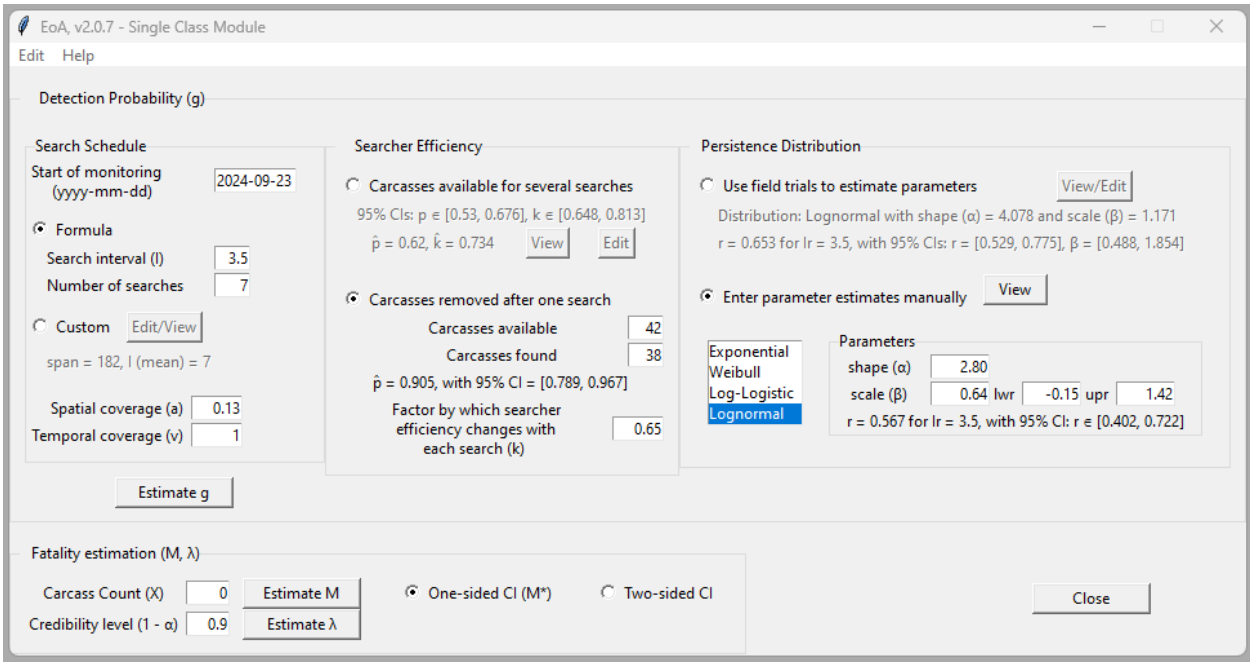


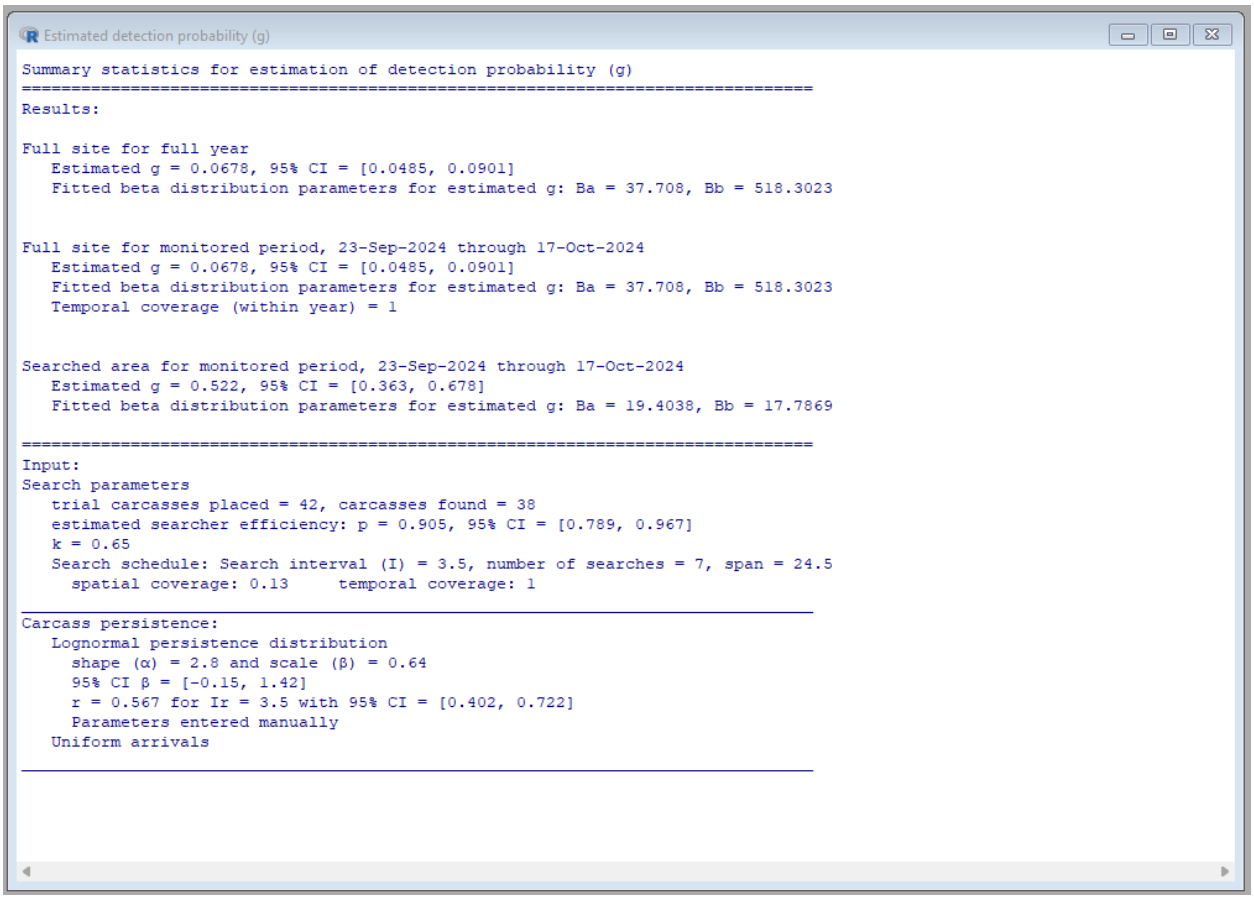


Appendix D25. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 2, 100-meter road and pad plot searches at 48 turbines, searched at a 3.5-day interval in 2024.

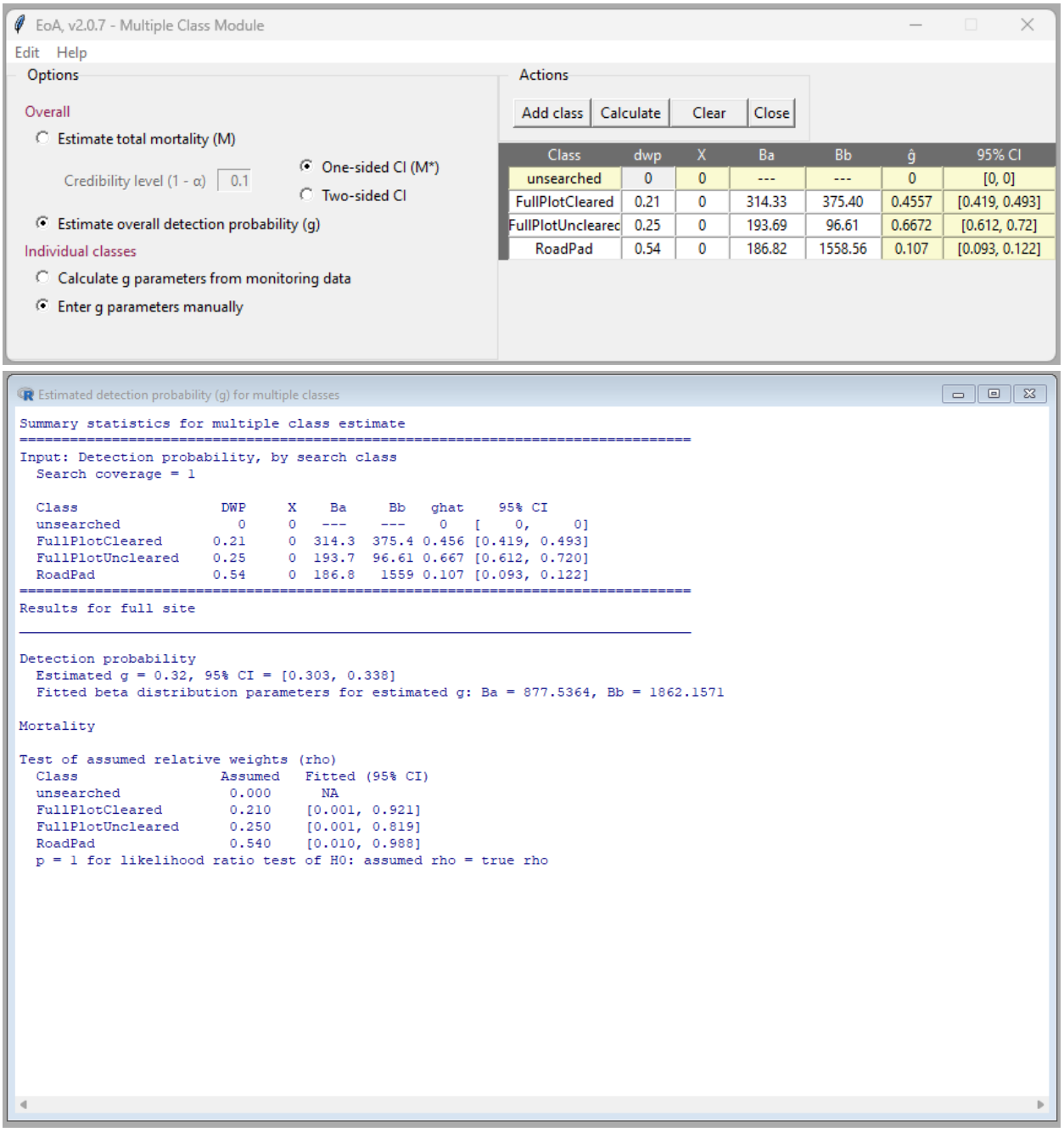


Appendix D26. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 3, 100-meter road and pad plot searches at 48 turbines, searched at a 3.5-day interval in 2024.

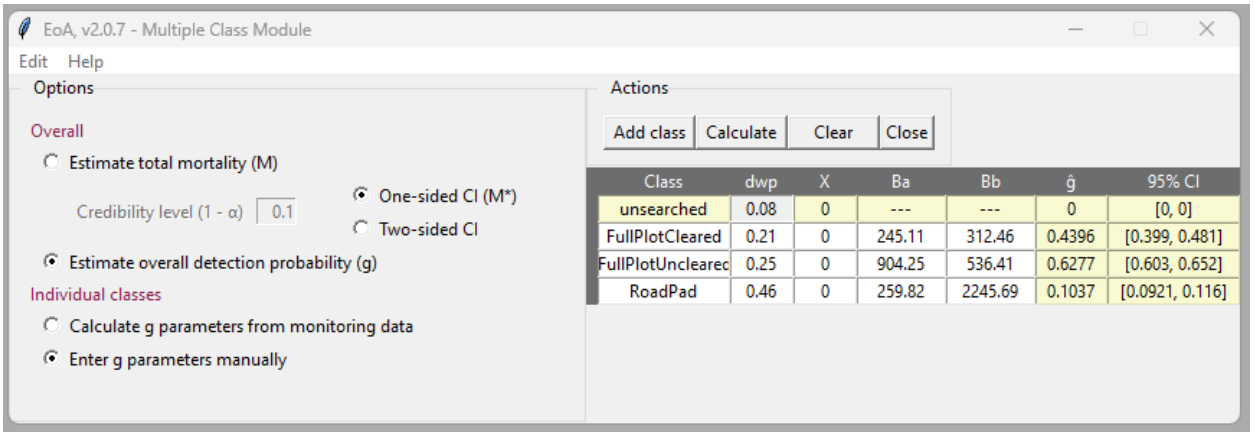


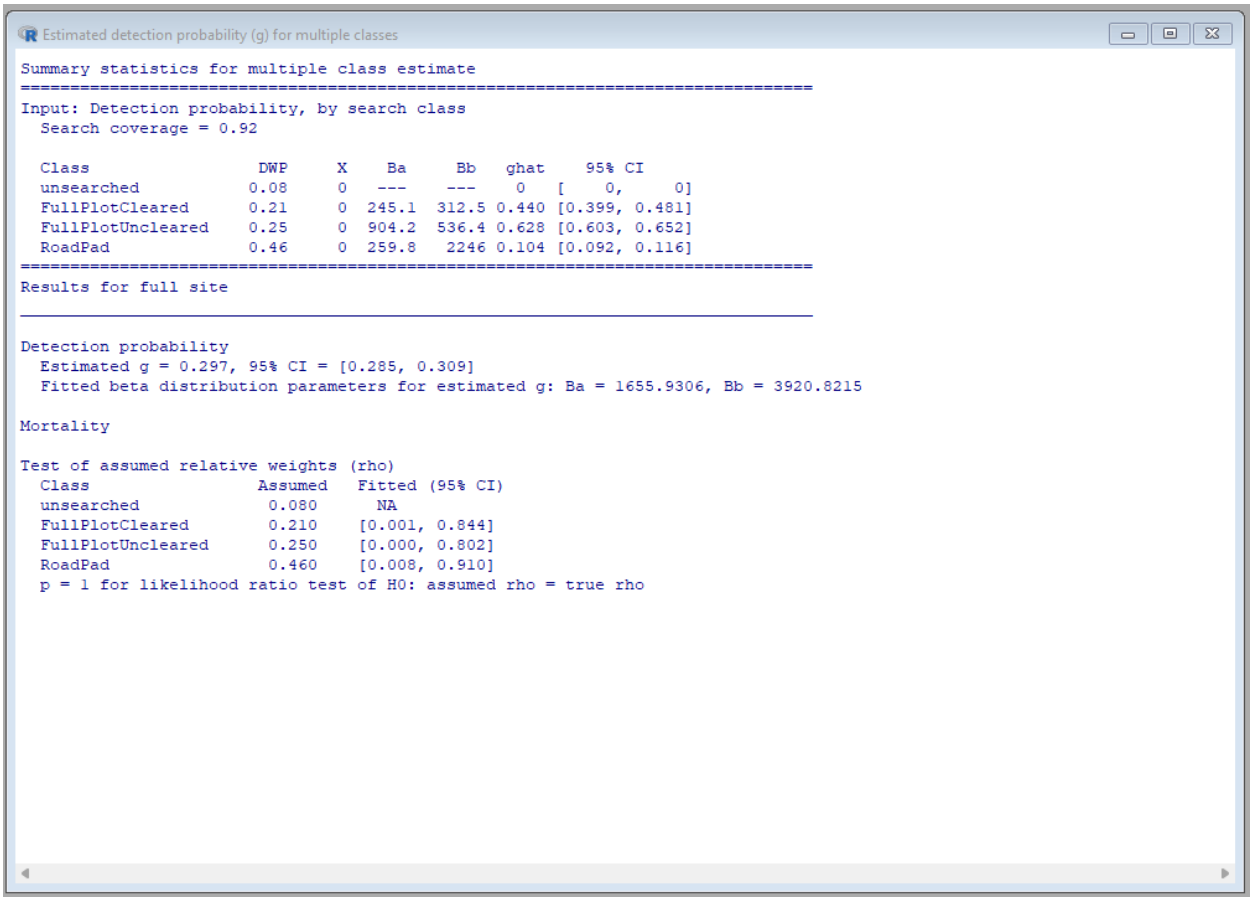


Appendix D27. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Single Class Module inputs for Fall 4, 100-meter road and pad plot searches at 48 turbines, searched at a 3.5-day interval in 2024.

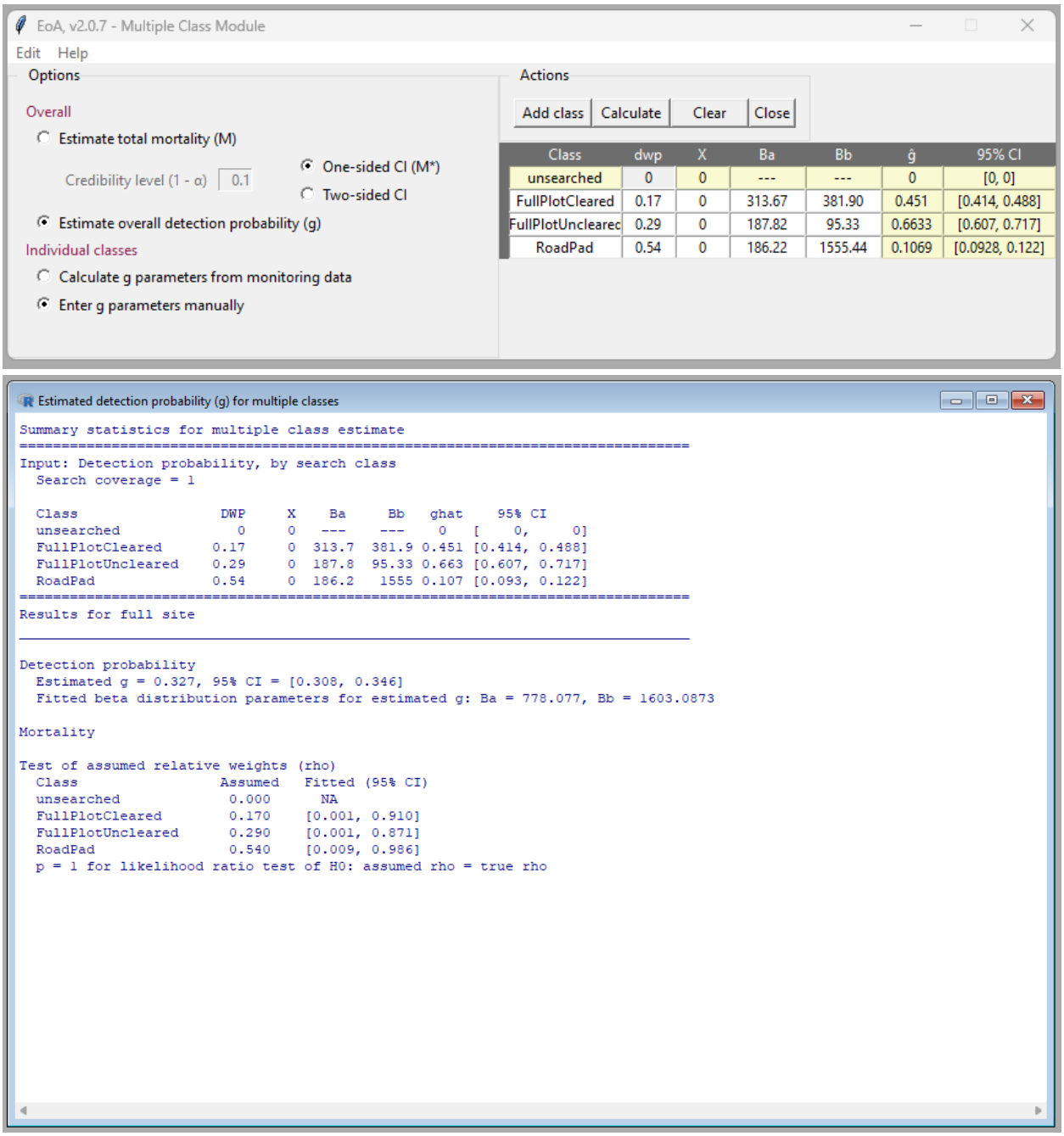


Appendix D28. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Class Module inputs for combining all Summer 1 plot types during 2024 (n= 24), searched at a 3.5-day interval.

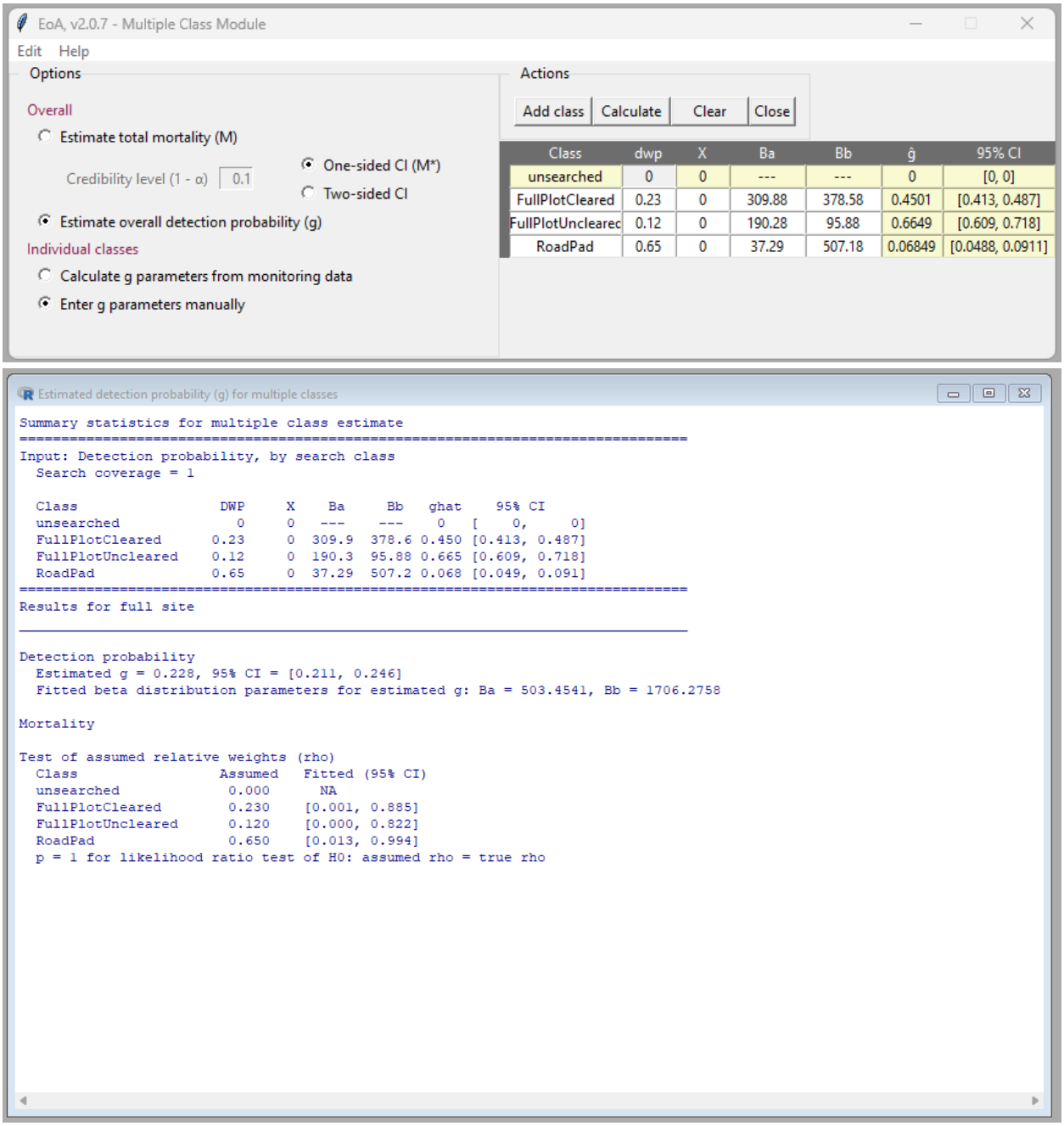




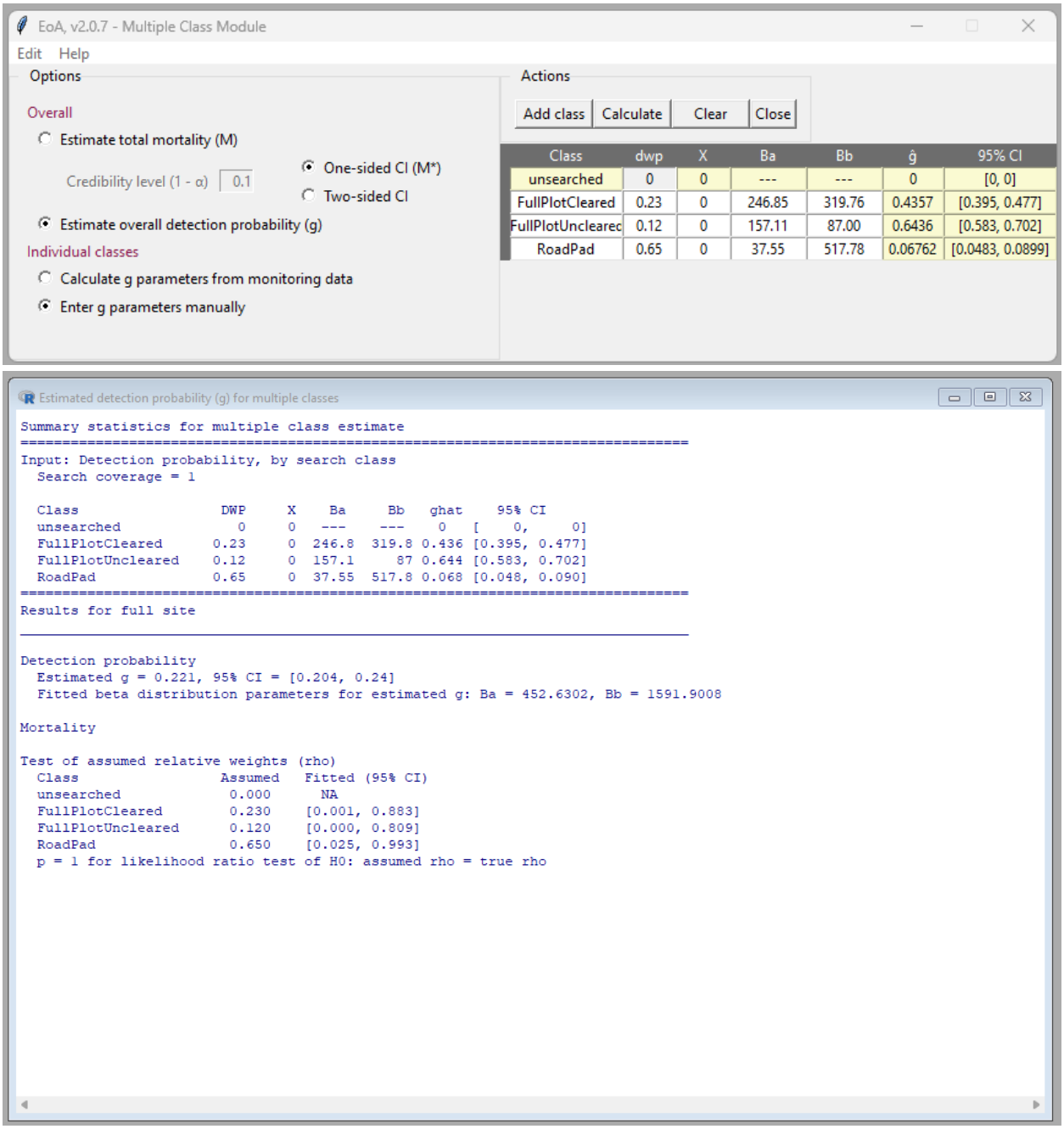
Appendix D29. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Class Module inputs for combining all Summer 2 plot types during 2024 (n= 24), searched at a 3.5-day interval.



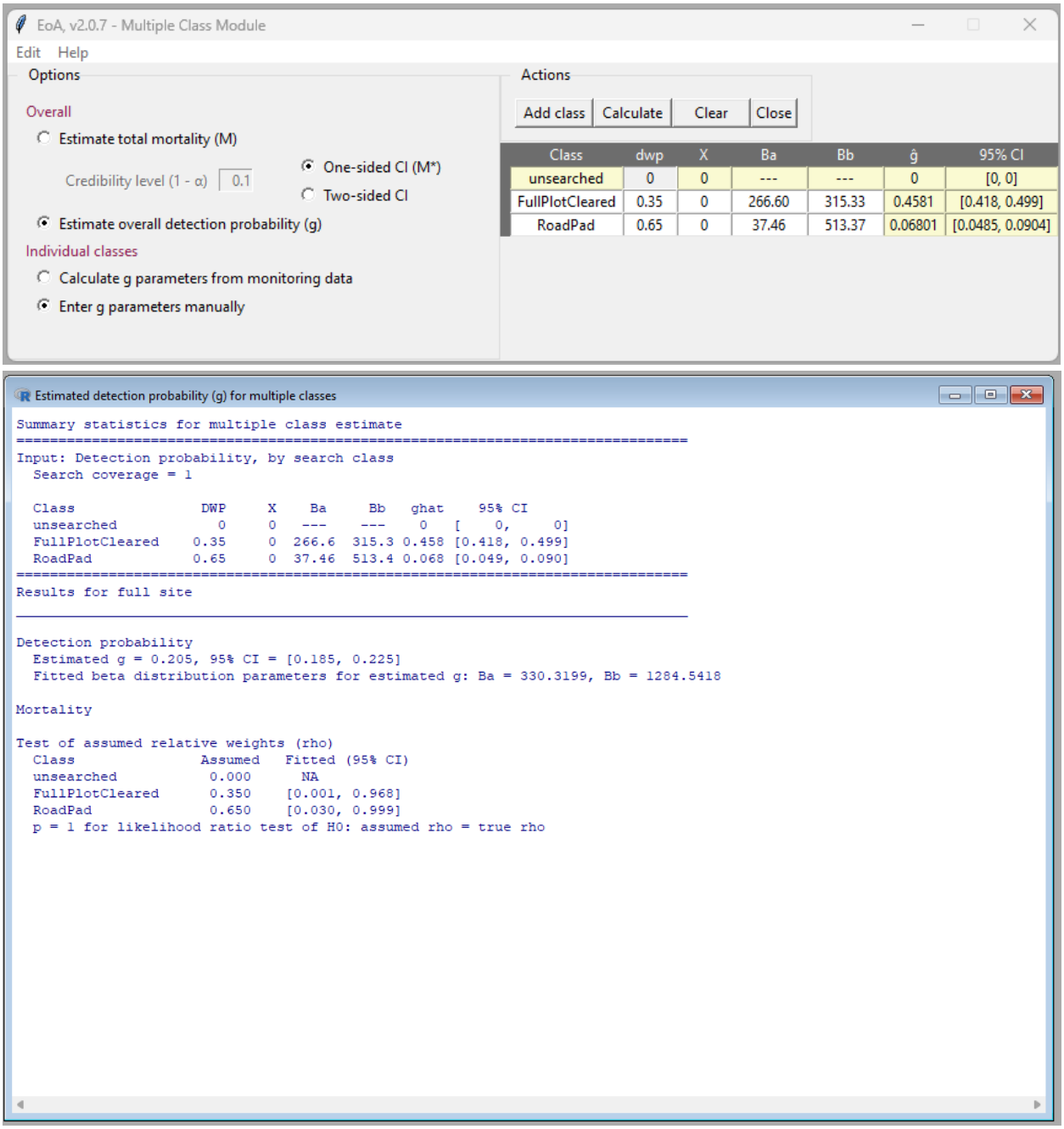
Appendix D30. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Class Module inputs for combining all Summer 3 plot types during 2024 (n= 24), searched at a 3.5-day interval.



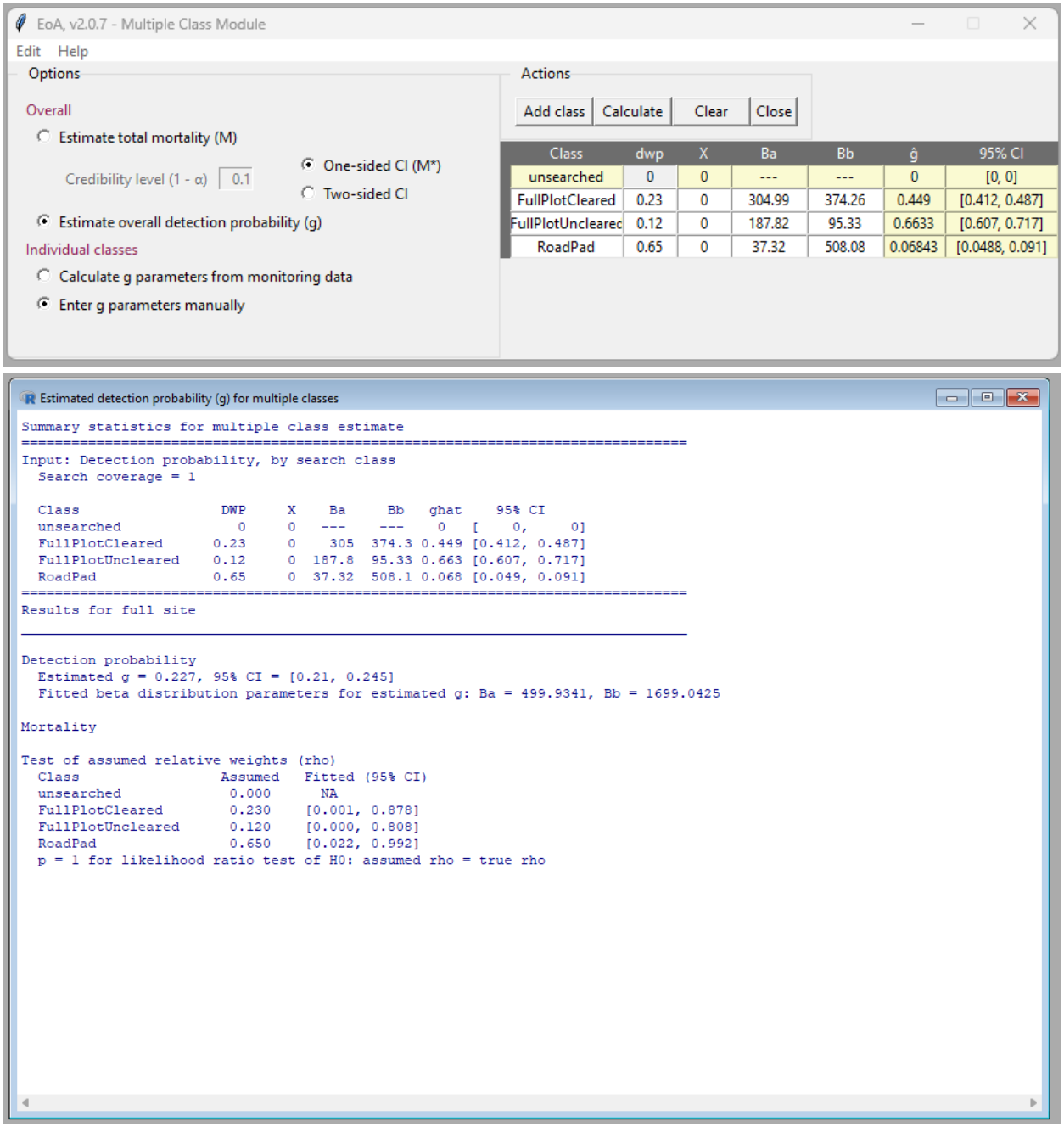
Appendix D31. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Class Module inputs for combining all Fall 1 plot types during 2024 (n= 74), searched at a 3.5-day interval.



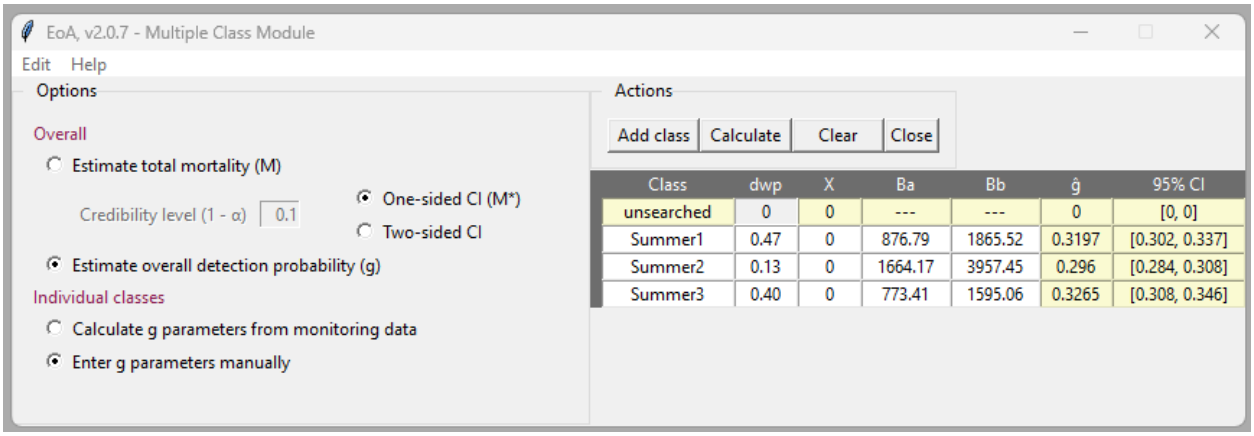
Appendix D32. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Class Module inputs for combining all Fall 2 plot types during 2024 (n= 74), searched at a 3.5-day interval.

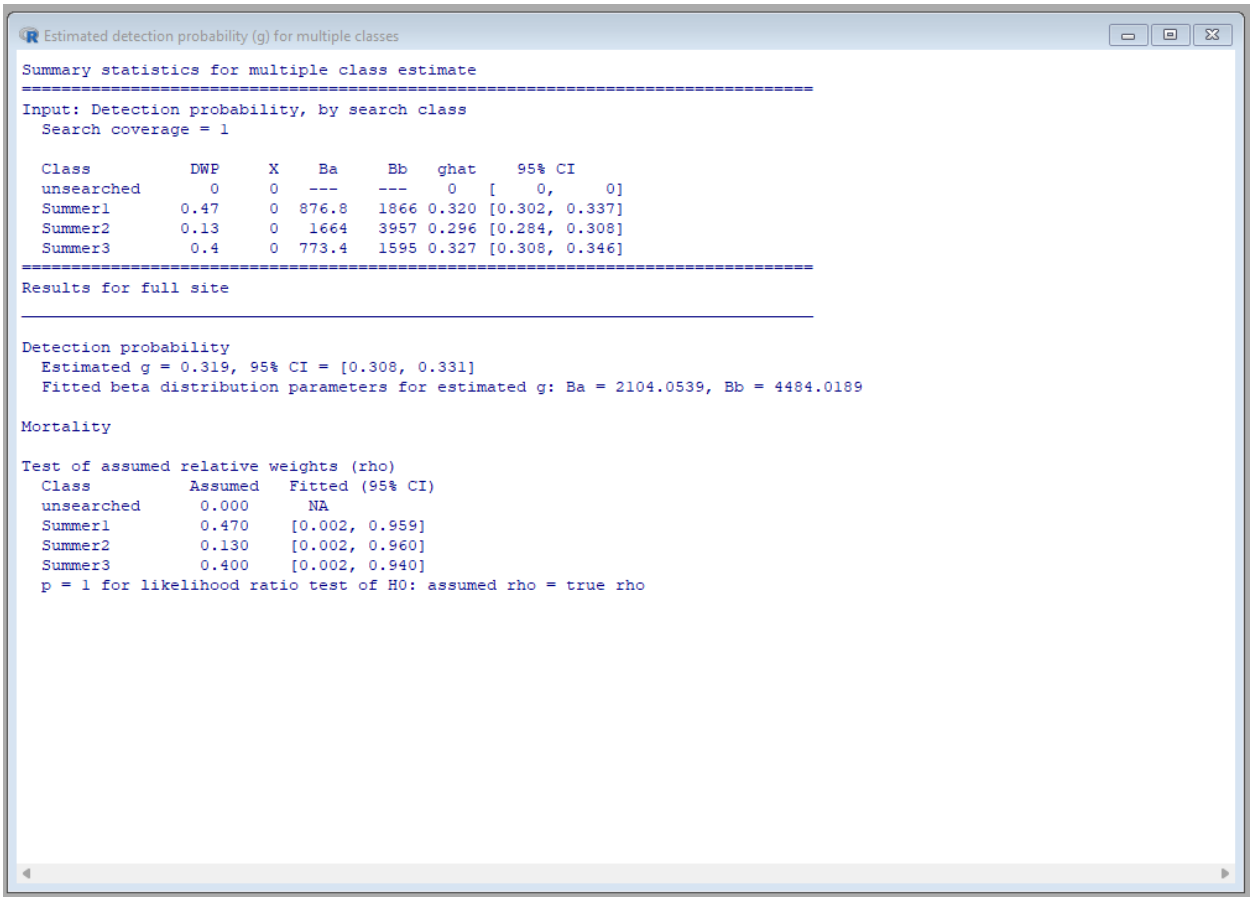


Appendix D33. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Class Module inputs for combining all Fall 3 plot types during 2024 (n= 74), searched at a 3.5-day interval.

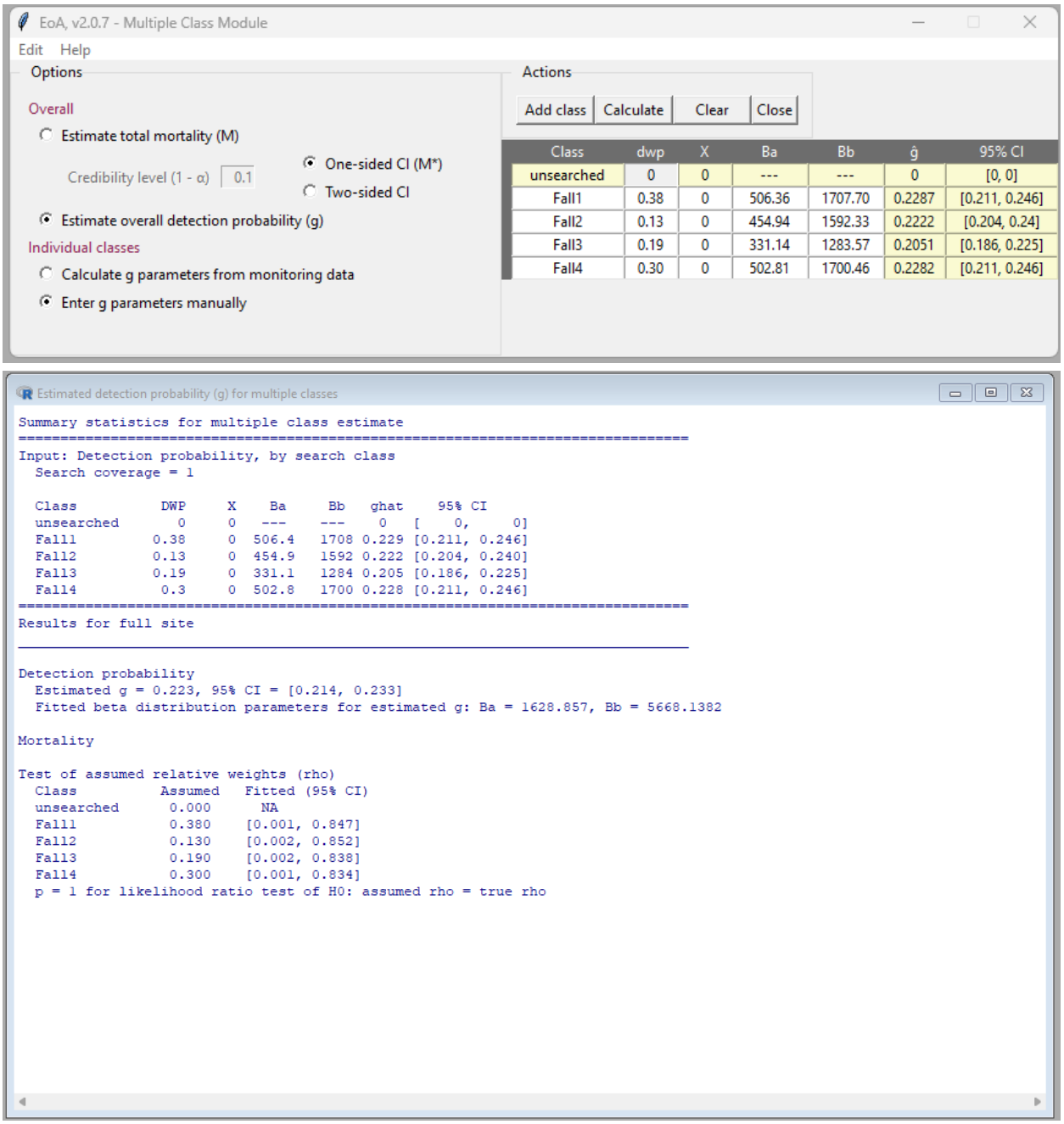


Appendix D34. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Class Module inputs for combining all Fall 4 plot types during 2024 (n= 74), searched at a 3.5-day interval.

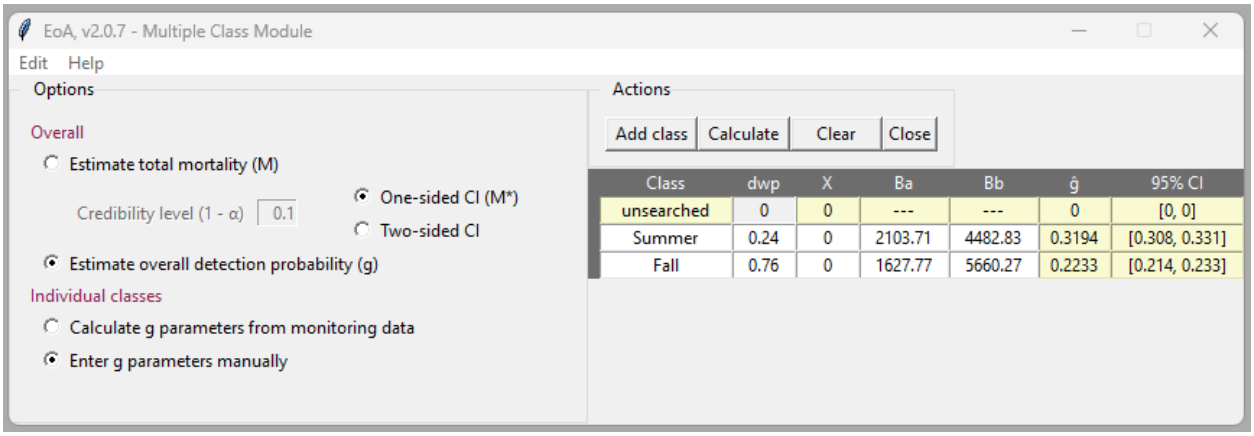


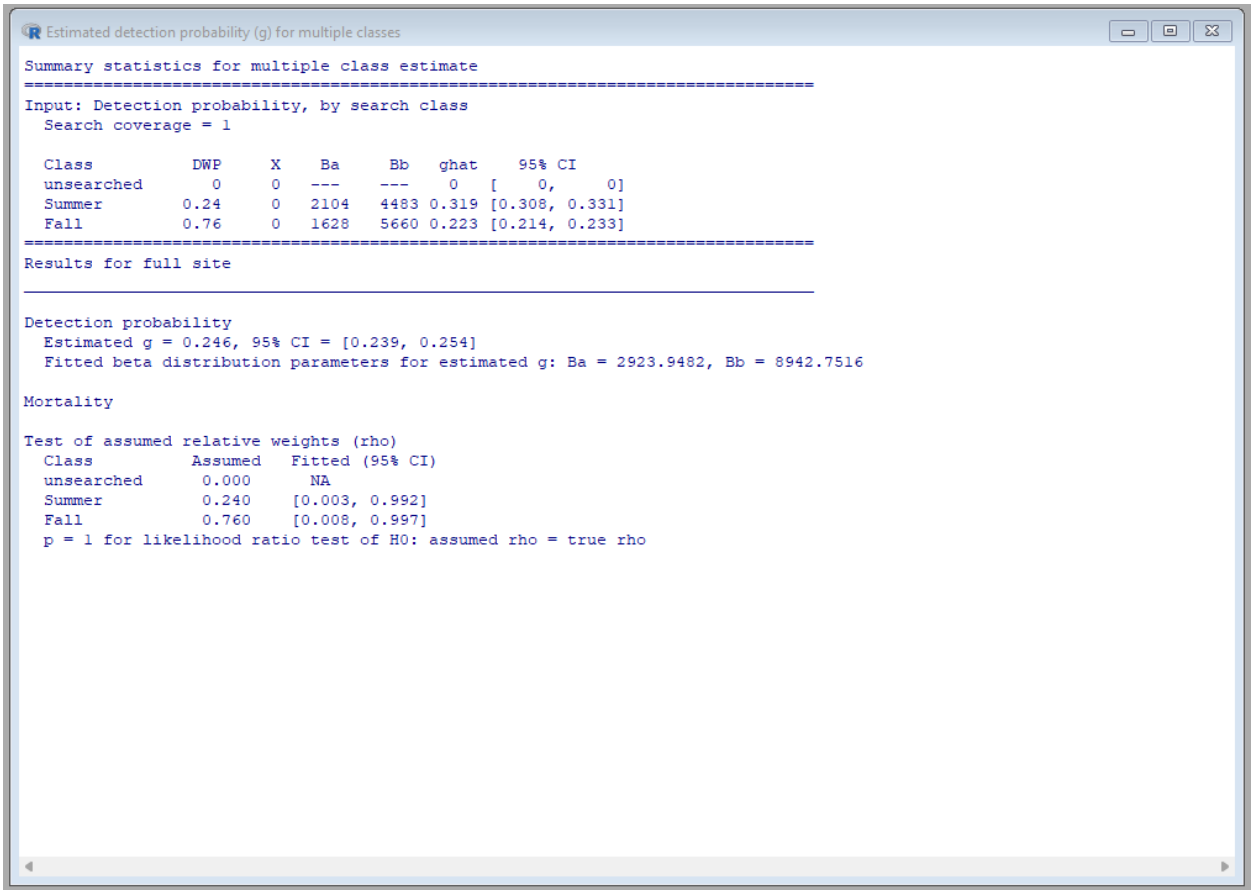


Appendix D35. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Class Module inputs for combining Summer plot types during 2024, searched at a 3.5-day interval.

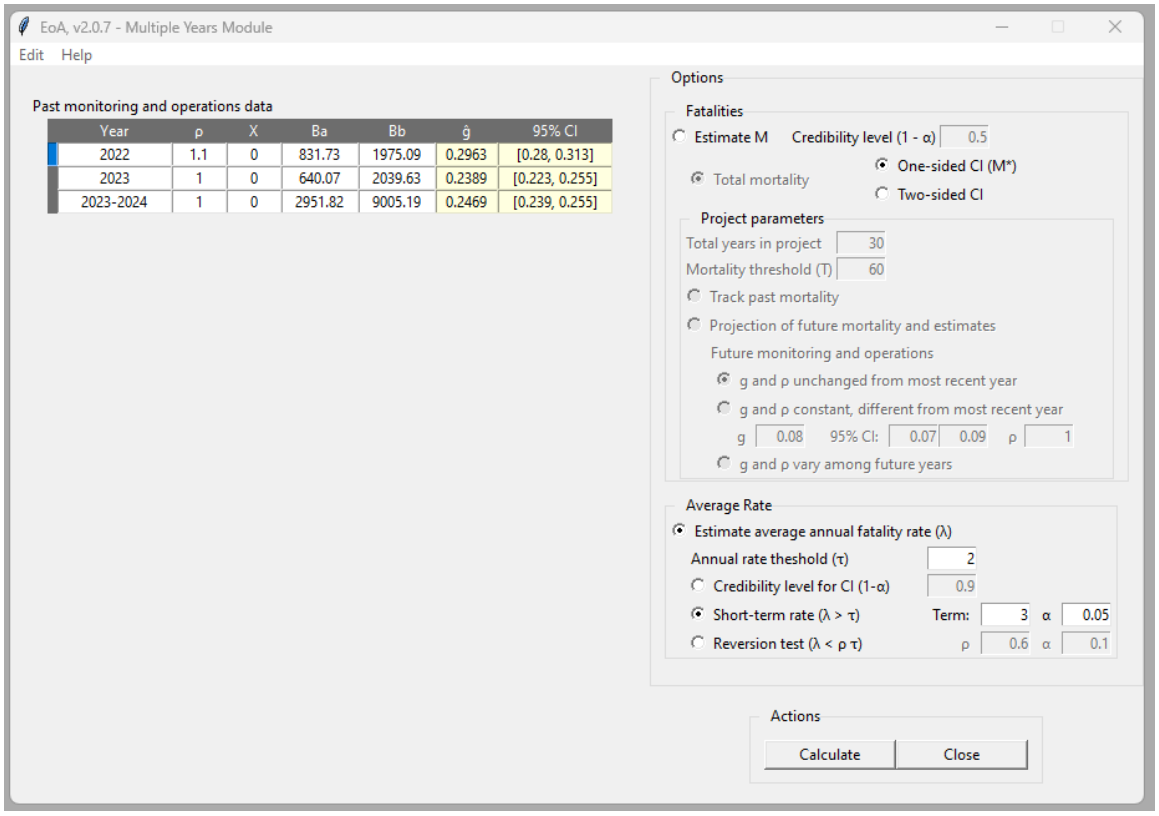


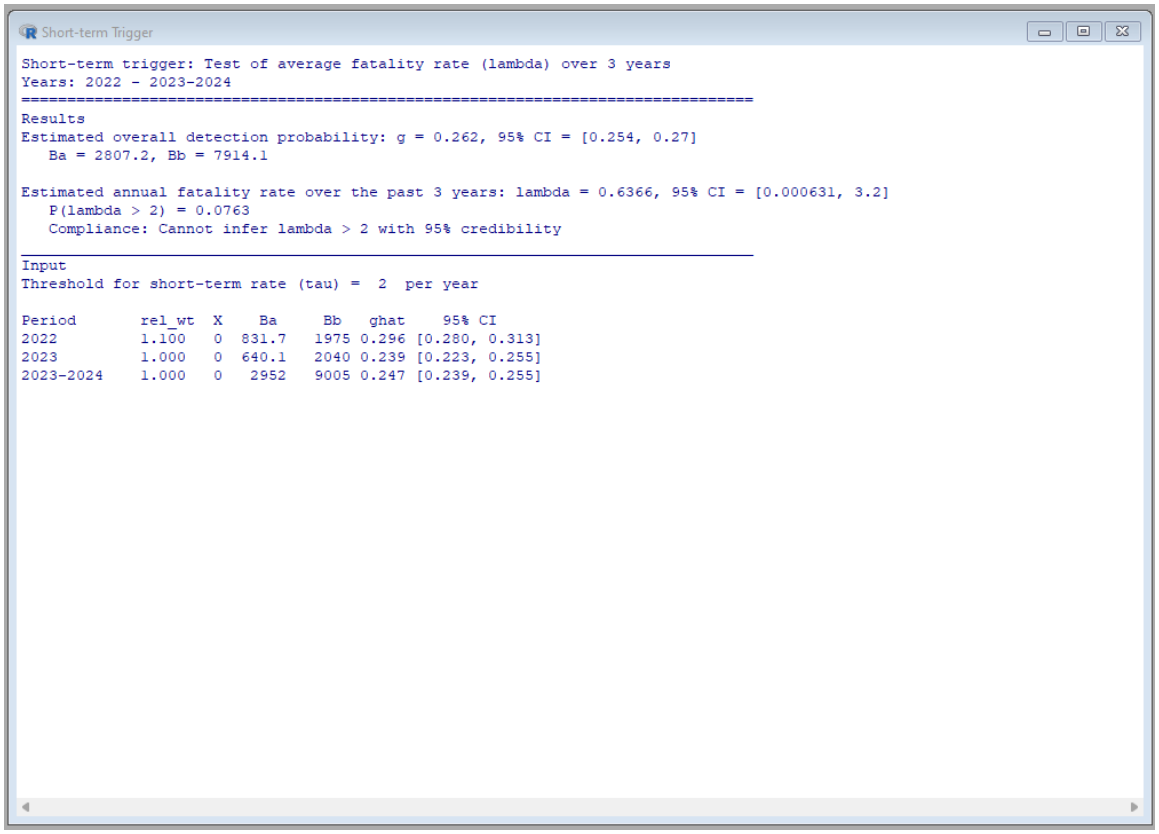
Appendix D36. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Class Module inputs for combining Fall plot types during 2024, searched at a 3.5-day interval.



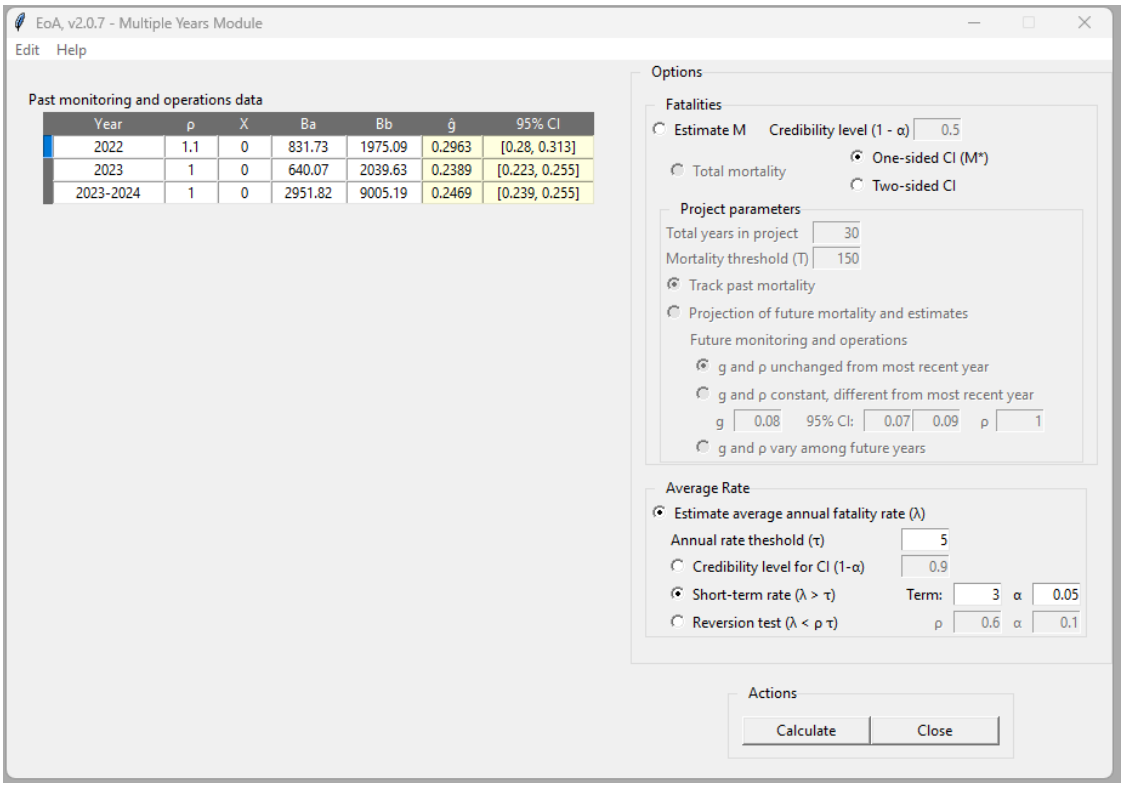


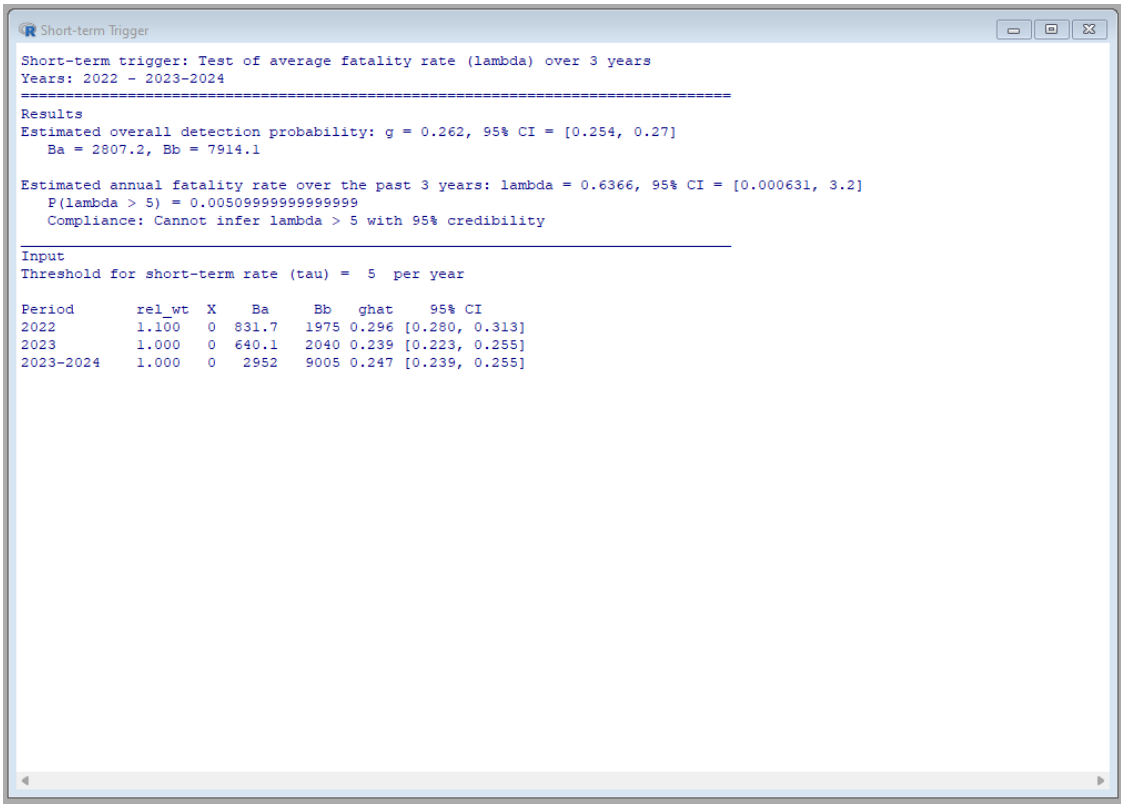
Appendix D37. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Class Module inputs for combining Summer and Fall plot types during 2024, searched at a 3.5-day interval.





Appendix D38. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Years Module inputs for combining 2022 through 2024 for Indiana bat.





Appendix D39. Screenshot of Evidence of Absence (v2.0.7) graphical user interface, Multiple Years Module inputs for combining 2022 through 2024 for northern long-eared bat.