



Lynn Bark Gen-Tie Transmission Line Reroute

Bat Species Presence/Absence Survey

PREPARED FOR

Lynn Bark Energy Center, LLC

DATE

05 October 2026

REFERENCE

2025-0116152



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1. INTRODUCTION

Lynn Bark Energy Center, LLC (Lynn Bark), a wholly owned subsidiary of Savion, LLC, is proposing a transmission line reroute in Martin County, Kentucky (Project). The original gen-tie transmission route has been realigned which will require tree removal and trimming along approximately 7-kilometers of suitable bat summer roosting habitat (Appendix A). The new route overlaps with areas previously surveyed in 2025 at both the start and end of the gen-tie corridor. As a result, 5-kilometers of the new route was surveyed in 2026 to ensure a comprehensive survey of the total Project (Appendix A – Figure 1).

The Project is located within the consultation ranges of the federally endangered Indiana (*Myotis sodalis*; IBAT), northern long-eared (*Myotis septentrionalis*; NLEB) and gray bat (*Myotis grisescens*; GBAT). The Project is also located within the range of the tricolored bat (*Perimyotis subflavus*; TCB) which is proposed for listing as federally endangered but the final listing determination timeline is currently unknown. Environmental Resources Management, Inc. (ERM) was contracted by Lynn Bark to conduct a presence/probable absence mist-net survey for IBAT, NLEB, GBAT, and TCB within the proposed Project. This report documents agency coordination, describes survey methods, and summarizes results from the 2026 mist-net survey.

2. SCOPE OF THE BAT SURVEY EFFORT

The Project contains suitable bat habitat and could potentially support IBAT, NLEB, GBAT and TCB (collectively referred to as “listed bats”). Current survey protocols for determining the presence or probable absence of these bats are outlined in the 2026 Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines (Guidelines; USFWS 2026). The Project is linear and may affect up to 5-kilometers of suitable forested habitat. Per the Guidelines, to determine the presence or probable absence of IBAT and NLEB for linear projects, a minimum of four net nights per kilometer of suitable habitat must be surveyed across two calendar nights within the appropriate timeframe for hibernating bats (May 15th – August 15th; USFWS 2026).

2.1 AGENCY COORDINATION

Prior to conducting surveys, a site-specific study plan was submitted to the United States Fish and Wildlife Service (USFWS) on 21 July 2026 and received approval the same day. The mist-net survey was completed under USFWS Section 10 Permit Numbers ESPER0003405 and ESPER5971669-1 and Kentucky Collection Permit’s 2611221 and 2611189. Appendix B contains relevant agency correspondence.

2.2 LISTED BAT SPECIES AND HABITAT

The listed bats (except GBAT) with the potential to occur in the Project overwinter in caves, culverts, or mines and spend the remainder of the year in forested areas. GBAT’s utilize caves year-round. No known occupied hibernacula were identified within the Project Area by USFWS and KDFWR or were observed during field surveys.

General habitat requirements outside of the hibernation period include the availability of calm surface water, foraging areas, and suitable roosts.



3. PROJECT SURVEY METHODS

3.1 SURVEY AREA

The Project is located south of the town of Inez including areas along Wolf Creek, South Wolf Creek Road and Walnut Fork Road in Martin County, Kentucky. The Project contains potential bat habitat in the form of upland and bottomland forested corridors and creeks for foraging. There are multiple creeks that run through the Project that provide drinking resources. Land cover was considered optimal at all the sites as the area is largely forested (Appendix A).

Site LBR-01alt is on Walnut Fork Road. Nets were placed along an all-terrain vehicle (ATV) trail corridor. The site itself did not have any water resources but there were multiple creeks and road ruts within 1-kilometer of where nets were placed. Forest structure was considered moderate as the site had some diversity in age and species of trees. Roost habitat was moderate because there were large trees and snags present. Dominant tree species include red maple (*Acer rubrum*), tulip poplar (*Liriodendron tulipifera*), and white oak (*Quercus alba*). The canopy is closed with a dense subcanopy consisting of saplings of dominant tree species and smaller tree species such as red mulberry (*Morus rubra*). The ATV trail is lined heavily with multiflora rose (*Rosa multiflora*) and other woody shrubs and vines.

Site LBR-02 is on Walnut Fork Road just south of LBR-01. Nets were placed along ATV trail corridor. The site itself did not have any water resources but there were multiple creeks and road ruts within 0.5-kilometer of where nets were placed. Dominant tree species include red maple, tulip poplar, American sycamore (*Platanus occidentalis*), and American beech (*Fagus grandifolia*). The subdominant tree species include sassafras (*Sassafras albidum*), American elm (*Ulmus americana*), and red mulberry. The canopy is moderately closed, and the mid-to-understory is dense with saplings of dominant and subdominant trees. Roost habitat was considered moderate with snags and varying age and diversity of tree species.

Site LBR-03 is on Walnut Fork Road just south of LBR-01 and LBR-02. Nets were placed along an ATV trail leading to a large wildlife opening. The canopy is closed and the dominant tree species include American Elm, box elder (*Acer negundo*), and Kentucky coffeetree (*Gymnocladus dioica*). The subdominant tree species include American sycamore, red mulberry, and tree of heaven (*Ailanthus altissima*). The mid-to-understory ranges from moderately dense to consisting of smaller trees and shrubs including multiflora rose. The roost habitat was considered moderate as there were large trees and a few snags present within the site.

Site LBR-04 is on Cassius Moore Road. Nets were placed along a road corridor leading up to the cemetery. Water resources were considered optimal as Wolf Creek is just southwest of the site. Dominant tree species include American beech, eastern black oak (*Quercus velutina*), and tulip poplar. The canopy is closed with a dense mid-to-understory that includes subdominant trees such as sassafras and red bud (*Cercis canadensis*), and saplings of dominant tree species. Roost habitat and forest structure are considered moderate as there were snags along Wolf Creek and diversity of tree age and species.

Site LBR-05 is located on Wolf Creek with nets placed along the stream corridor. A thin riparian zone is on each side of the creek and the dominant tree species include yellow buckeye (*Aesculus*

flava), American sycamore, and box elder. The subdominant species include black walnut (*Juglans nigra*) and red maple. Groundcover within the riparian area is thick with woody vines and herbaceous plants. Roosting habitat was considered high as there are many snags along Wolf Creek.

A habitat description of the mist-net locations was completed on electronic mist-net datasheets (Appendix C). The emphasis of this description was habitat form: size and relative abundance of large trees and snags that may potentially serve as roost trees, canopy closure, understory clutter/openness, distance to water, stream, or pond characteristics (if mist-nets were placed over them), and flight areas.

3.2 MIST-NET SITE SELECTION

A federally permitted bat biologist chose suitable net locations within the Project (Appendix A – Figure 2). Site selection targeted areas throughout the Project that were suspected to have high amount of bat activity and the best available bat habitat. Site location was also influenced by property access. Net placement was based on a variety of characteristics, including canopy cover, presence of potential flight areas, proximity to water, and forest conditions found within the Project area. General habitat types selected included the following characteristics:

- Large trees (>3 inches Diameter at breast height; DBH) that can support primary maternity roosts;
- An open canopy, allowing solar exposure to warm roost sites;
- Forested edges and large forested openings; and
- Stream area (or other water source) for drinking and prey presence.

While riparian areas often provide successful mist-net sites, upland areas (e.g., trails or logging roads) also provide suitable sites (Kiser and MacGregor 2005). In upland areas, road ruts or other areas of standing water frequently facilitate capture of a variety of bat species. The actual location and orientation of each mist-net was determined in the field. Mist-net locations and dates surveys are provided below in Table 1. Mist-net site photographs are provided in Appendix C.

3.3 MIST-NETTING SURVEY METHODS

Mist-net surveys were conducted by qualified biologists from 29 July – 08, and 12 August 2026. In accordance with the Guidelines, the Project received a total of 10 net nights of survey effort at five sites (two mist-nets for two nights per site; Table 1). No mist-net locations were netted for more than two consecutive nights. Nets were deployed 30 minutes prior to sunset and monitored every 10 minutes for a total of five hours each night. Bats were live-caught and released unharmed near the point of capture. Biological and morphometric data (e.g., species, sex, age class, reproductive condition, mass, and forearm length) were recorded using Survey123 digital data collection for each bat captured. In addition, the height and the specific net set of capture were recorded for each bat. Processing of bats were completed within 30 minutes from the time the bat was removed from the net.

TABLE 1. MIST-NET LOCATIONS AND DATES SURVEYED AT THE LYNN BARK GEN-TIE TRANSMISSION LINE REROUTE PROJECT IN MARTIN COUNTY, KENTUCKY 2026.

Site	Net	Dates Surveyed (2026)	Latitude	Longitude
LBR-01alt	A	04-05 August	37.77291857	-82.52594496
LBR-01alt	B	04-05 August	37.77292168	-82.52656644
LBR-02	A	02-03 August	37.77138173	-82.51358316
LBR-02	B	02-03 August	37.77103647	-82.51512384
LBR-03	A	07, 12 August	37.76435967	-82.51097791
LBR-03	B	07, 12 August	37.76511262	-82.51073171
LBR-04	A	31 July-01 August	37.76078682	-82.49359019
LBR-04	B	31 July-01 August	37.76083691	-82.49414316
LBR-05	A	29-30 July	37.7603208	-82.48810864
LBR-05	B	29-30 July	37.7607614	-82.48838474

Weather conditions were documented on Survey123 digital datasheets during the surveys and included temperature obtained from a digital thermometer, wind speed estimated using the Beaufort Wind Scale, percent cloud cover estimate, and moon phase (if visible). Surveys were to be repeated if any of the following weather conditions occur:

- Temperature falls below 50°F any time during survey period;
- Precipitation for more than 30 minutes, or intermittent throughout the survey period; or
- Sustained strong (9 miles/hour) winds for 30 minutes or more.

Weather conditions were valid for all nights of survey. Current White-nose Syndrome (WNS) decontamination protocols (WNSDMWG 2024) were followed for all capture and handling equipment.

3.4 RADIO-TELEMETRY METHODS

Radio-telemetry was conducted on two adult lactating female TCBs. The transmitters were 0.27-gram LB-2X models made by Holohil Systems, LTD in 2026. The transmitters were activated and tested before being attached between the scapulae of the bat (after a small patch of fur was removed) with non-toxic surgical adhesive. A Model R1000 (Communications Specialists, Inc., Orange, California) tracking receiver and 150 FB 3-element Yagi directional antenna was used to locate day roosts used by the radio-tagged bat. Daytime tracking of radio-tagged bats was conducted for a maximum of seven days, unless the transmitter failed or fell off sooner.

4. RESULTS

4.1 MIST-NETTING SURVEY RESULTS

The mist-net survey was successfully completed following the Guidelines and weather protocols on 29 July – 8 and 12 August 2026. Survey effort consisted of a total of 10 net nights of survey effort, resulting in a total capture of 12 bats of three species (Table 2). Tricolored bats were captured at one of the five sites (Site LBR-05) and a total of four TCBs were captured; therefore, radio-telemetry was conducted to locate diurnal roosts (Appendix A – Figures 3 and 4). Radio-transmitters were attached to two of the four TCBs (Table 3). Additional morphometric data and representative photographs of captured bats are provided in Appendix D and Appendix E.

TABLE 2. SUMMARY OF BAT CAPTURE DEMOGRAPHICS AT THE LYNN BARK GEN-TIE TRANSMISSION LINE REROUTE PROJECT IN MARTIN COUNTY, KENTUCKY 2026.

Species	Adult Male		Adult Female				Juvenile		Escaped	Total
	NR	SC	NR	PG	L	PL	M	F		
Big brown bat (<i>Eptesicus fuscus</i>)	-	1	1	-	-	1	-	-	-	3
Eastern red bat (<i>Lasiurus borealis</i>)	-	2	-	-	-	-	1	2	-	5
Tricolored bat (<i>Perimyotis subflavus</i>)	-	-	-	-	2	-	2	-	-	4
Total	-	3	1	-	2	1	3	2	-	12

Notes: Reproductive status: (NR) non-reproductive; (SC) Scrotal; (PG) pregnant; (L) lactating; (PL) post-lactating; (M) Male; and (F) Female.

TABLE 3. SUMMARY OF TRICOLORED BAT CAPTURES ON THE LYNN BARK GEN-TIE TRANSMISSION LINE REROUTE PROJECT IN MARTIN COUNTY, KENTUCKY 2026.

Date (2026)	Site Caught	Age	Sex	Reproductive status	Mass (g)	RFA (mm)	Band (KYF&W)	Transmitter (150.xxx)
29 July	LBR-05	J	M	NR	4.5	32	C23000	Too small
29 July	LBR-05	J	M	NR	5	33	C22999	Too small
30 July	LBR-05	A	F	L	7	34	C22998	150.911
30 July	LBR-05	A	F	L	6.5	34	C22997	150.869

Notes: Age: (A) adult; (J) juvenile; Sex: (M) Male; and (F) Female; Reproductive status: (NR) non-reproductive; (PL) post-lactating.

4.2 RADIO-TELEMETRY RESULTS

Radio-telemetry began on 31 July 2026 after two female, lactating TCBs were radio-tagged on 30, July 2026 at site LBR-05 (Table 4; Appendix A – Figure 3). Search efforts were conducted on 31 July – 06 August 2026. Bat 150.869 was located or triangulated during all seven days of tracking while the signal for bat 150.911 was only detected on 4 August 2026 (Appendix A – Figure 4). The tracking team searched all accessible roads by vehicle within a 3-mile radius of the capture site for a minimum of four hours per day.

TABLE 4. DAILY LOCATIONS OF RADIO TAGGED TRICOLORED BATS FOUND DURING TRACKING EFFORTS AT THE LYNN BARK GEN-TIE TRANSMISSION LINE REROUTE PROJECT IN MARTIN COUNTY, KENTUCKY 2026.

Tagged Bat	Daily Bat Locations (2026)						
	7/31	8/1	8/2	8/3	8/4	8/5	8/6
150.911	NS	NS	NS	NS	Signal west of 37.765384, -82.485679	NS	NS
150.869	Triangulation (37.767840, -82.489540)	150.869-01	150.869-01	Triangulation (37.767840, -82.48944)	Triangulation (37.767480, -82.490980)	Triangulation (37.76784, -82.48944)	Triangulation (37.76650, -82.48685)

Note: NS = No Signal

A total of one roost area was located for TCB 150.869 while all other roost areas were triangulated to Ashlog Branch because access was not permitted on these parcels. Roost 150.869-01 was tracked to leaves in a cluster of trees. The exact tree could not be determined because of the overlapping branches from multiple trees. Tree species in the roost cluster include red maple, flowering dogwood (*Cornus florida*), and different oak species (*Quercus sp.*). Roost area 150.869-01 was within 10-meters of Wolf Creek on the west side of South Wolf Creek Road. No roost areas were located within the proposed transmission line corridor.

TABLE 5. LOCATIONS OF ROOST AREAS USED BY RADIO-TAGGED TRICOLORED BATS AT THE LYNN BARK GEN-TIE TRANSMISSION LINE REROUTE PROJECT IN MARTIN COUNTY, KENTUCKY 2026.

Roost ID	Date First Found (2026)	Bat Frequency (150.XXX)	Latitude	Longitude	# of Days Used
150.869-01	01 August	150.869	37.763886	-82.489715	2
Triangulation	31 July	150.869	37.767840	-82.489540	5

5. CONCLUSION

A total of 10 net nights of survey effort were completed at five sites for 10 calendar nights under the appropriate weather conditions, meeting the suggested level of effort to determine the presence or probable absence of listed bats at a site. No IBATs, NLEBs, or GBATs were captured; however, four TCBs were captured and radio-telemetry was conducted on two adult, lactating females. The location of one roost tree was determined while the rest were triangulated to private property in which access was not granted. All roost trees (identified and triangulated) were located outside of the proposed reroute of the transmission line corridor and will not be impacted by the Project.

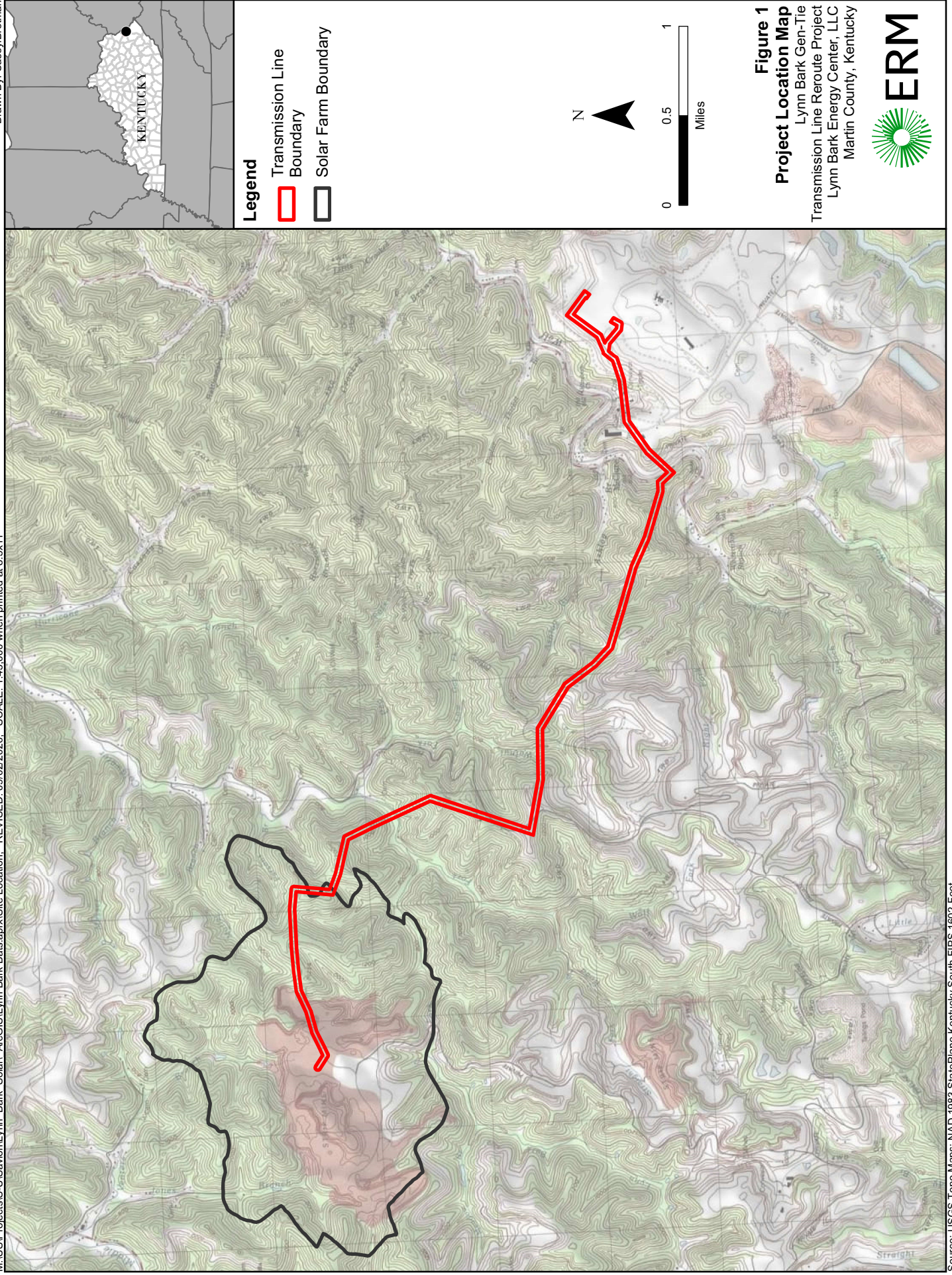
The survey effort has determined the probable absence of NLEBs, GBATs, and IBATs within the Project. Therefore, Lynn Bark assumes no impact on the federally endangered bat species and assumes no further agency coordination will be required regarding bats for this Project. Tricolored bats are currently proposed for federal endangered listing and are not yet protected under the Endangered Species Act; therefore, no further coordination is required unless the TCB gets uplisted prior to Project completion or the transmission line route changes significantly.

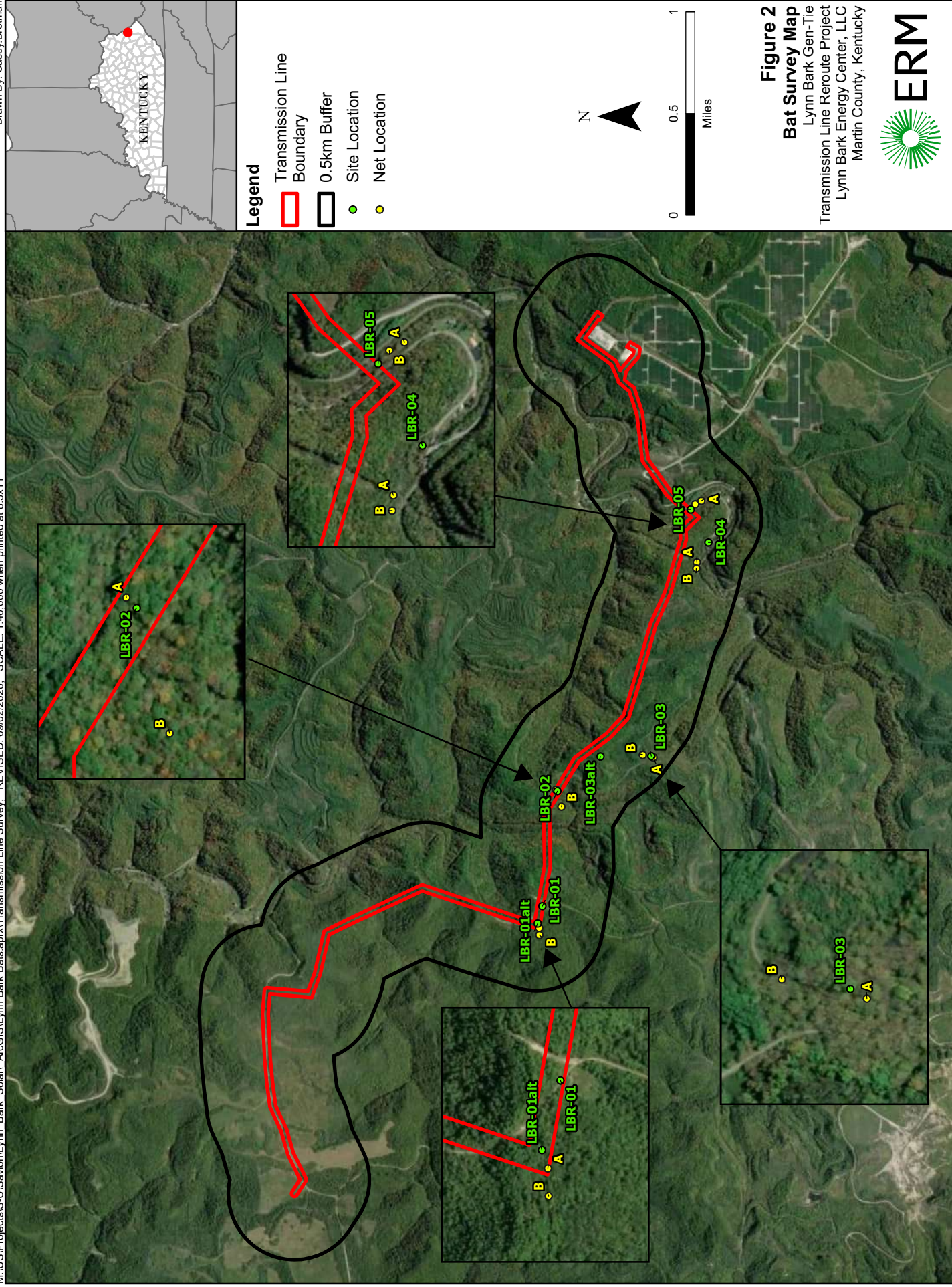
6. REFERENCES

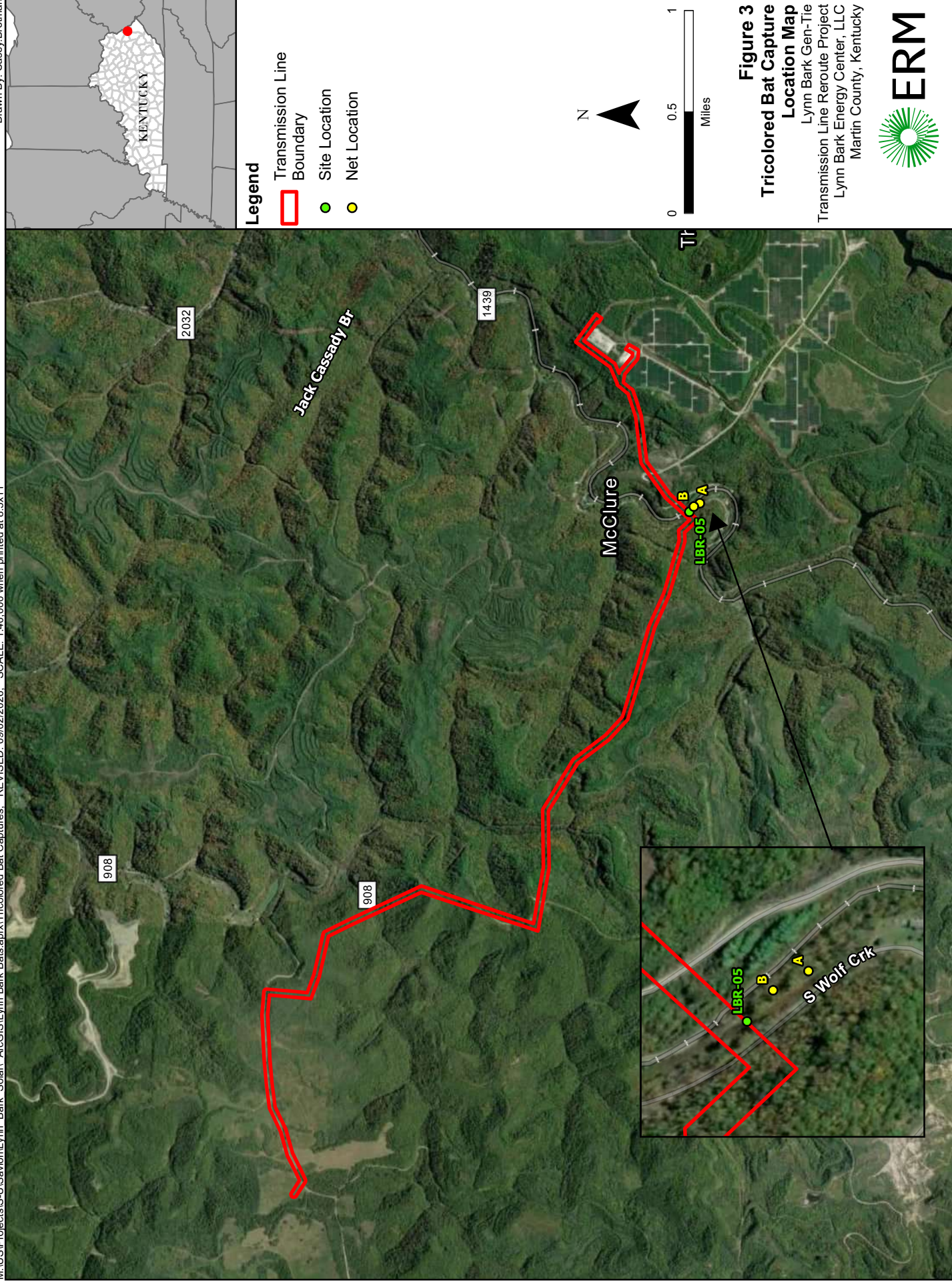
- Kiser, J.D. and J.R. MacGregor. 2005. Indiana bat (*Myotis sodalis*) mist-net surveys for coal mining activities. Pp.45-54 in Proceedings of Indiana bat % coal mining: a technical interactive forum (K. Vories and A. Harrington, eds). U.S. Department of Interior, Office of Surface Mining, Alton, Illinois, 229 pp.
- USFWS. 2026. Range-wide Indiana Bat & Northern Long-eared Bat Survey Guidelines. In U.S. Fish and Wildlife Service [Report]. U.S. Fish and Wildlife Service, Region 3, Bloomington, MN. <https://www.fws.gov/library/collections/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines>. Updated April 14, 2025.
- White-nose Syndrome Disease Management Working Group (WNSDMWG). 2024. National White-nose Syndrome Decontamination Protocol. In White-nose Syndrome Response Team (pp. 1–10). https://www.whitenosesyndrome.org/_files/ugd/89ad3b_08588927deb04c37a2ba97bbc75a95f8.pdf

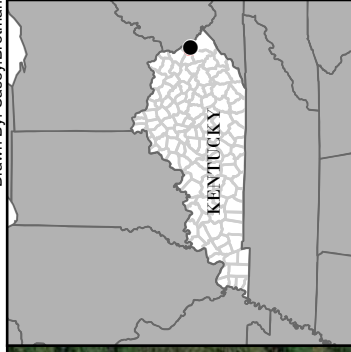
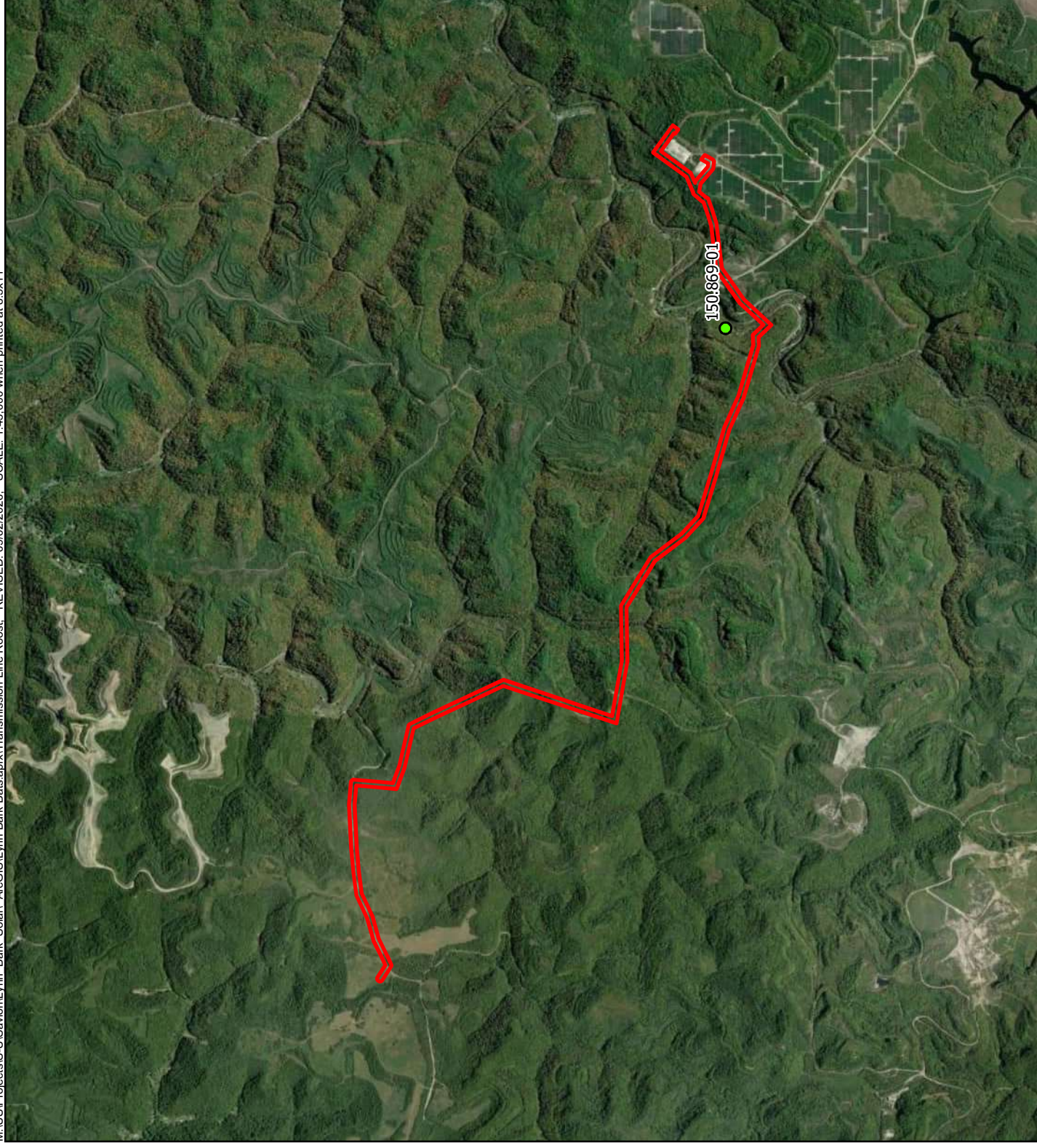


APPENDIX A FIGURES









Legend

- Transmission Line Boundary
- Roost Tree

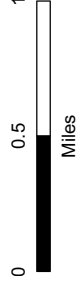


Figure 4

Roost Tree Location Map

Lynn Bark Gen-Tie
Transmission Line Reroute Project
Lynn Bark Energy Center, LLC
Martin County, Kentucky





APPENDIX B AGENCY COORDINATION



A Note on Bat Survey and Monitoring Activities Requiring Site-Specific Authorization

All survey, monitoring, and/or other similar research activities for federally listed bats that may result in take (as defined in the Endangered Species Act (ESA) as listed below) are regulated under the U.S. Fish and Wildlife Service's 10(a)(1)(A) Recovery Permit program. The Section 10(a)(1)(A) Recovery Permit (Permit) authorizes certain activities for scientific purposes or to enhance the propagation or survival of listed species ([50 CFR §17.22](#)).

One of the conditions within the Permit states that permittees are required to coordinate with the appropriate USFWS Field Office and obtain written concurrence before conducting permitted activities. Compliance is typically achieved through the submission of a **Site-Specific Authorization (SSA)** request which provides the local Field Office with detailed information on proposed survey methods, timing, and locations.

The requirement for Field Office authorization ensures that:

1. Proposed activities are consistent with the conditions of the Permit.
2. USFWS biologists can determine whether the activity may result in take, if alternative actions can be used to avoid or minimize take, and whether additional conservation measures are warranted.
3. Potential impacts to listed bat species are reviewed in the context of range-wide and local population status, seasonality, magnitude, and permanence of activity.

The following bat survey, monitoring, and/or research activities that may result in take must be completed by [a qualified biologist](#) holding a valid Federal Recovery Permit and require a SSA:

- Handling/capturing bats with mist nets or harp traps, or other methods
- Entering hibernacula, maternity caves, or other roosts known to be occupied by bats
- Emergence surveys from trees or other roosts that may disturb bat activity
- Collecting biological samples (e.g. hair, blood, DNA)
- Temporary or permanent marking of bats (e.g. banding, pit tagging, radio-tagging)

Activities that are not likely to result in take of bats (e.g., acoustical surveys) do not require an SSA. However, regardless of whether authorization is required, project proponents are encouraged to use the fillable [Site Study Plan Form for Bat Survey and Monitoring](#) when coordinating with Field Offices and following the recommendations in the Bat Survey Guidelines. The form streamlines survey reviews by ensuring all necessary information is provided and gives Field Offices an opportunity to provide feedback on proposed surveys. Additionally, the SSA Service-approval page (p. 6) of the fillable form facilitates the required authorization (when necessary) of your request as part of the USFWS Field Office Study Plan review.

If you are uncertain if an SSA is required for a proposed project or survey, review the conditions specified in your Permit, or contact your local Field Office or Regional Recovery Permit Coordinator.



Study Plan Form for Bat Surveys and Monitoring (v. 2.6)

PROJECT & SURVEY INFORMATION

Project Name: Lynn Bark Gen-Tie Proposed Survey Start Date: 7/28/2026
Project Proponent's Name (e.g., client/company/institution): Lynn Bark Energy Center, LLC
Project Location: State(s): KY County(s): Martin
Latitude: 37.764505 Longitude: -82.510866
REQUIRED: Attach shapefiles and/or Google Earth® KMZ files
(mapping must show project boundaries, impacted forest habitat (if known) and all proposed survey sites)
Files are attached: Yes ☒ No ☐
File link/URL (if applicable): _____

Project Summary. In the space provided below, please provide a description of the proposed action, including any activities that will permanently or temporarily alter the current environment and existing habitat features.

The project consists of the gen-tie transmission line for the Lynn Bark Energy Center. In 2025, two bat surveys were conducted for both the solar field and the original gen-tie route. Since then, the gen-tie route has been realigned, which will require tree removal/trimming along approximately 7 kilometers of suitable summer roosting habitat for the Indiana bat, northern long-eared bat, gray bat, and tricolored bat. The new route overlaps with areas previously surveyed in 2025 at both the start and end of the gen-tie corridor. As a result, 5 kilometers of the new route will be surveyed in 2026 to ensure comprehensive survey of the project.

CONTACT INFORMATION

Project Manager/Primary Point of Contact (POC): Ellen Mullins Phone: 662-722-1132
Field Survey Crew Leader (if different from POC): Crystal Griffin, Theresa Wetzell, Crystal Birdsall Cell Phone: 413-579-4150, 931-273-8921, 479-747-0420
Institution/Company Name: ERM
Mailing Address: 901 Woodland St., Nashville, TN 37206 Resumes included for all personnel: Yes ☒
POC Email Address: ellen.mullins@erm.com
USFWS Sec. 10(a)(1)(A) Permit No.(s) (if applicable): ESPER5971699-1, ESPER0003405
State Permit No.(s) (if applicable): SC2611147, SC2611189, SC2611221

Have project proponents been informed that abiding by protective time-of-year restrictions (where available) may be sufficient to avoid take of federally listed bats and (in some cases) may negate the need for a bat survey? Yes ☐ No ☒

Have project proponents been informed that the Service does not require presence/probable absence surveys for federally listed species and that presence can be assumed in a project area containing suitable habitat? Yes ☐ No ☒

Will this survey be conducted on private or public lands? (Check both if applicable): Private ☒ Public ☐

Has permission of all necessary landowners/managing agencies been obtained? Yes

No ☐

If no, explain: _____

Does this project have a federal nexus¹? Yes ☐

No ☐

Unsure ☒

If yes, explain: _____

IPaC² Consultation Code (if applicable): 2025-0116152

Purpose of Survey:

Official P/A Survey ☒

Research ☐

Monitoring ☐

Educational Outreach/Training ☐

Other: _____

Survey Target Species:

Indiana bat (IBAT) ☒

Northern long-eared bat (NLEB) ☒

Tricolored bat (TCB) ☒

Other: Gray bat

Has a Habitat Assessment* of the project area been conducted? Yes

No ☐

If yes, how was the habitat assessment conducted? Field ☐

Desktop ☐

Combo ☒

(*if available, attach a written report)

Is suitable habitat³ present (or assumed present) for all “target” species? Yes

No ☐

If no, explain: _____

Does this project fall within the outer-tier⁴ of any “target” species known home range? Yes ☐ No ☐ Unsure

If yes, which species: _____

Project Configuration

Is this project **linear** (≥1 km in total length)? Yes

No ☐

Combo ☐

Unsure ☐

If yes, how many 1-km sections containing suitable IBAT/NLEB habitat will be impacted? ⁵ _____

Is this project **non-linear**?

Yes ☐

No

Combo ☐

Unsure ☐

If yes, how many acres of suitable IBAT/NLEB habitat is in the overall project area? _____

If yes, how many acres of suitable IBAT/NLEB habitat will be directly impacted/cleared? _____

PROPOSED METHODS & SURVEY LEVEL OF EFFORT

Identify which method (acoustics, mist-netting, combination) proposed to be used: mist-netting

Has availability of high-quality sites for target species been assessed via ground-truthing to meet the required LOE?

Yes

No ☐

(If No, justify method selection):

¹ A project or action that is authorized, funded, and/or permitted by a federal agency.

² <https://ipac.ecosphere.fws.gov/>

³ See Bat Survey Guidelines regarding suitable habitat definitions.

⁴ See Bat Survey Guidelines regarding what constitutes “out-tier” of a known bat colony's range.

ACOUSTICS

Total number of detector sites proposed to be surveyed: _____ Number of detector nights/site: _____

Total number of detector nights for entire survey: _____

Total proposed number of calendar nights to complete the entire survey: _____

Detector(s) (Brand, Model): _____ Microphone(s): directional ☐ omnidirectional ☐

Recording Format: Full Spectrum ☐ Zero-Crossings ☐

FWS-Approved⁵ Acoustic Bat ID Software: **KaPro**: vers.____ Classifier, NA vers. ____ **BCID** vers.____
SonoBat: vers. ____ Classifier ____ Other: _____

Species to be included for automatic software ID classification analysis:

EPFU ☐ CORA ☐ COTO ☐ LABO ☐ LACI ☐ LANO ☐ LASE ☐ TABR ☐ MYCI ☐ MYEV ☐ MYGR ☐ MYLU ☐
MYLE ☐ MYSE ☐ MYSO ☐ MYTH ☐ MYVO ☐ NYHU ☐ PESU ☐ Others: _____

Will qualitative analysis (i.e., visual vetting) be used? Yes ☐ No ☐ Unsure ☐

Name(s) of qualified biologist(s) conducting qualitative/visual identifications (attach resume or link with qualifications):

MIST-NETTING

Total number of net sites to be surveyed:⁵ _____ Total number of net nights/site: ⁴ _____

Total number of net nights for entire survey (No. of sites X No. of net nights/site): ²⁰ _____

Total proposed number of calendar nights to complete the entire survey: ¹⁰ _____

A) Maximum number of net set-ups that will be operated/checked (10-min interval) on a given calendar night at a given survey site: ² _____

B) Minimum Number of personnel present to operate/check X (see A) net set-ups on a given site: ² _____

C) Proposed Staffing Rate (A divided by B): ¹ _____

Staffing Rate

Number of Section 10-permitted biologists per net site (or state-permitted in USFWS R5): ¹ _____

Do you propose to band bats? Yes _____ No ☐

If yes, please answer the following:

What species will be banded? COTO ☒ MYGR ☒ MYLU ☒ MYSE ☐ MYSO ☒ PESU ☒

Others: MYLE _____

If banding *Myotis* sp. or PESU, specify band size: ^{2.4mm on PESU and MYLE, 2.9mm on others} _____

Describe your proposed bands (color and letter-numbers) and banding scheme: ^{Aluminum split ring arm bands provided by KDFWR} _____

Will banding pliers be used? Yes _____ No ☐

Will any biological samples be collected from captured bats (e.g., guano, hair, swab, wing punch)? Yes ☐ No ☐

If yes, explain: _____

Name of institution or facility to conduct DNA analysis: _____

⁵ <https://www.fws.gov/media/automated-acoustic-bat-id-software-programs>

RADIO-TRACKING

Will any bats be radio-tagged and tracked? Yes ☐ No ☐

If yes, please answer following:

Which species will be radio-tagged? IBAT, NLEB, TCB

Name of USFWS Section 10 permitted biologist(s) who will apply transmitter(s): Crystal Griffin, Theresa Wetzel, or Crystal Birdsall

Make/model and approximate weight of transmitter(s) to be used: LB-2X, 0.27g

Manufacturer date and estimated life-span of transmitters to be used: 2025 & 2026 8-12 days

Frequency range (MHz) of transmitters (e.g., 150.xxx or 172.xxx): 150.xxx

If radio-tracking multiple targeted bats/species, what criteria* will be used in selecting individuals?

For each target species (except gray bat); the first individual captured at each and any pregnant or lactating female. No more than 5 TCB will be tagged.

Will all radio-tagged bats be tracked (min. of 4-hrs. search effort/day) to their diurnal roosts for the minimum recommended period of 7 days? Yes ☐ No ☐

If no, explain: _____

Will night-time foraging data/telemetry be collected? Yes ☐ No ☐

Glue used for attaching transmitters: Type: Latex-based Surgical Cerr Name: Torbot

(*for additional space, use p.5) Manufacturer Torbot Group, Inc. Other: _____

EMERGENCY SURVEYS

After diurnal roost sites of radio-tagged bats are identified, will emergence surveys be conducted at each identified roost (assuming landowner permission is obtained)? Yes ☐ No ☐

If yes, how many emergence surveys/roost? 2 (none on PESU)

Have you identified a small number (e.g., ≤10) of potentially suitable roost trees* that you propose to conduct emergence surveys for? Yes ☐ No ☐

(*If yes, provide photographs of each tree documenting that all of the tree can be observed by the surveyor along with coordinates (lat/long and/or KML/shapefile) of all trees to be surveyed.)

POTENTIAL HIBERNACULA SURVEYS

Are any known hibernacula used by the target species located within or adjacent to the project area?

Yes ☐ No ☐ Unknown ☐

If yes or unknown, list sites or explain: _____

Has your desktop analysis identified any natural or man-made features that could be used as a hibernaculum by any of the target bat species? Yes ☐ No ☐

If yes, underground features (e.g., caves, mines, tunnels, bunkers, cisterns) present: Yes ☐ No ☐

If yes, above-ground features* (e.g., crawl spaces) present: Yes ☐ No ☐

If unknown, explain: _____

Are you requesting approval of a field survey for potential hibernacula at this time? Yes* ☐ No ☐

(*If yes, attach a separate narrative explaining how the project area(s) will be surveyed for potential hibernacula.)

Are you submitting the results of a Habitat Assessment of potentially suitable hibernacula identified from field surveys? Yes* ☐ No ☐

(*If yes, provide a Habitat Assessment Data Sheet for each potential hibernaculum/portal(s)⁶ identified to be surveyed.)

⁶ If multiple cave entrances/portals, please list all locations.

BRIDGE & CULVERT ASSESSMENTS

Do any bridges or culverts exist within the project area that have the potential to be used by the target species?

Yes ☐ No

If 'yes', complete the following fields:

Structure type(s) (check all that apply): Bridge ☐ Culvert ☐ Other ☐

If "other", explain: _____

Survey methodology for structure(s) (check all that apply):

Visual inspection ☐ Guano collection ☐ Emergence survey ☐ Acoustics* ☐

Mist-net* ☐ Harp-trap* ☐ Other _____

(*Due to site-specific conditions of structures, coordination with the local USFWS Field Office and appropriate state agency(ies) is necessary before proceeding with these survey methodologies)

Will guano be collected and analyzed to confirm species ID? Yes ☐ No ☐

If "yes", name of institution/entity performing analysis: _____

Acknowledgment that USFWS bats & transportation structures virtual training materials¹⁰ have been viewed: Yes ☐

ADDITIONAL SURVEY INFORMATION

Will the proposed bat survey deviate from the current version of the USFWS Survey Guidelines?⁷ Yes ☐ No

If 'yes', provide justification for any departures or modifications to the guidelines, as well as any additional pertinent information, below:

I hereby acknowledge that the information being provided to the Service is accurate and complete as of today's date.

Signature: _____

Date: 7/21/2026

⁷ Proposed surveys deviating from the current Range-wide Bat Survey Guidelines will only be accepted with a thoroughly described justification; coordinate with your local USFWS Field Office (<https://www.fws.gov/our-facilities>) for acceptable modifications.



United States Department of the Interior
Fish and Wildlife Service
Ecological Services Program



SITE-SPECIFIC AUTHORIZATION FOR ESA SECTION 10(a)(1)(A) ACTIVITIES

Our Field Office has reviewed your study plan and found it to contain sufficient information. When signed, this statement serves as your site-specific authorization to conduct the proposed activities authorized by your section 10(a)(1)(A) federal permit (permit) at the specified locations included in the attached Study Plan Form and must be carried with your permit when conducting work for this project. All activities must be carried out with strict adherence to conditions and authorizations specified in your permit as well as your state permit(s) (if needed). The permit issued by our agency authorizing the activities (if applicable) must remain with the surveyor at all times. For proposed activities on private lands, this authorization is not valid without explicit private landowner permission.

In addition to the final survey report, surveyors must maintain supporting data and files and use the appropriate U.S. Fish and Wildlife Service (USFWS) bat survey data spreadsheet, available on the Range-wide Bat Survey Guidelines website, for reporting Section 10(a)(1)(A) permit-authorized results. If the work expands beyond the scope of your original study plan or if there are adverse effects to bats that were not anticipated, cease all survey and/or research activities, and contact this office prior to continuing. Additionally, if a federally listed bat is captured or detected, this USFWS Field Office must be notified within 48 hours.

Approving Official: Mike Armstrong

Email: Mike_Armstrong@fws.gov

Field Office: Kentucky

Phone: (502) 229-4632

Authorized as Proposed: ☐

Authorized with Conditions: ☒

- (1) Ensure net set placements reflect habitats present on site and preferred by MYSO, MYSE, and PESU.
- (2) Provide adequate written justification for any net sets that do not fill the corridor from side to side, extending beyond the corridor boundaries and into the interior forest
- (3) Ensure transmitters are thoroughly tested for proper functioning prior to the study.
- (4) Contact the POC if any modifications are made to this plan after authorization.
- (5) Not meeting these conditions may result in denial of survey results.

Not Authorized ☐ *(see comments)*

Additional Comments

Signature: _____

Date: 7/21/26

⁸<https://www.fws.gov/library/collections/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines>



CRYSTAL BIRDSALL BIOLOGIST

Survey Expertise

- Presence/Probable Absence Surveys
- Research Surveys
- Radio Telemetry
- Acoustic Monitoring
- Harp Trapping
- Habitat Assessments
- Habitat Restoration

Education

B.S. Environmental Science, Summa Cum Laude, 2015, Westfield State University, Westfield, Massachusetts.

A.S. Biology, 2013, Holyoke Community College, Holyoke, Massachusetts.

Professional Experience

Environmental Resources Management

Managing technical consultant
March 2025 – Current

Copperhead Environmental Consulting, Inc.

Wildlife Biologist
May 2021 – March 2025

Copperhead Environmental Consulting, Inc.

Biological Technician
May 2018 – April 2021

Burns and McDonald, IA

Wildlife Technician
July 2020 – October 2020

United States Geological Survey, CA

Aquatic & Invertebrate Ecology Intern
July 2016 – January 2017

The Animal Sanctuary, New Zealand

Wildlife Rehabilitation Intern
October 2015 – late December 2015

Massachusetts Department of Fish and Game Division of Ecological Restoration

Bacterial Source Tracking Intern
May 2014 – September 2014



Qualifications and Background

Miss Birdsall is a Wildlife Biologist with extensive experience in both terrestrial and aquatic ecology. Over the past nine years, she has both assisted and lead numerous environmental and biological surveys over a wide geographical area including the Eastern United States. Surveys include presence/probable absence, research, and species baseline assessment surveys for taxa such as bats, birds, macro-invertebrates, butterflies, and fish. Miss Birdsall has eight years of survey experience dealing with eastern bat species. She is proficient in handling and identifying eastern bat species, setting up and operating mist nets and harp traps, safely removing bats from nets and traps, activating, and applying transmitters, and banding of bats. She is also accomplished in radio telemetry, acoustic monitoring, and emergence counts; and is knowledgeable in the decontamination process for the prevention of spreading WNS. Her field experience has given her the opportunity to handle and identify a total of 17 eastern bat species, which includes the federally endangered Indiana bat, Northern long-eared bat, gray bat, and Virginia big-eared bat. As well as the Federally proposed tri-colored bat.

Certifications/Training

USFWS Federal Permit for Native Endangered and Threatened Species Recovery Permit E & T Wildlife

- ESPER5971699 Added as an authorized Individual for all species and all activities except wing punching, swabbing, or guano collection in 2025
- ES94849B-2 Added as an authorized Individual for all species and all activities except wing punching in 2024
- ES94849B-2 Added as an authorized Individual for all species and all activities except entering hibernacula and wing punching 2023
- ES94849B-2 Added as an authorized Individual for all species except Ozark big eared bat and all activities except entering hibernacula and wing punching in 2022

Rabies Pre Exposure Vaccination, 2018. Titer checked in 2020 and every year after

Vertical Cave Training – 2021 in house and every year thru 2025

Mine Safety and Health Training (MSHA) – 2025 Expires 5/31/2027

OSHA, CPR, AED, First Aid and Bloodborne Pathogens

- Training in 2016 and every 2 years
- OSHA 10 Hour Safety and Health – 2021
- OSHA 30 Hour Safety and Health - 2023

Selected Project Experience

AEP Transmission Line Potential Hibernacula Survey, Pike County, Kentucky. 2025.

Working as a permitted biologist and site leader conducted a phase 1 habitat assessment for potential suitable hibernacula for T & E bat species.

Lynn Bark Transmission Line Presence/probable Absence survey for Endangered Bats, Martin County, Kentucky. 2025.

Working as a permitted biologist and site leader, selected mist net sites, deployed nets, removed bats from nets, and obtained morphometric measurements across 10 nights for a total of 20 net nights. Species identified 15 red bats (*Lasiurus borealis*), 11 Big brown bats (*Eptesicus fuscus*), 9 tricolored bats (*Perimyotis subflavus*) and 1 hoary bat (*Lasiurus cinereus*). Applied bands to all tri-colored bats and applied 4 transmitters to 4 tri-colored bats. Bats were prepared for radio transmitter attachment by trimming a small patch of fur from the interscapular region of the back and applying a nontoxic surgical adhesive. Tricolored bats were tracked for 6 days and 4 diurnal roosts were located.

Lynn Bark Energy Center Solar Presence/probable Absence survey for Endangered Bats, Martin County, Kentucky. 2025.

Working as a permitted biologist and site leader, selected mist net sites, deployed nets, removed bats from nets, and obtained morphometric measurements across 2 nights for a total of 7 net nights. Species identified 12 red bats, and 10 big brown bats.

AEP Transmission Line Presence/probable Absence survey for Endangered Bats, Floyd and Johnson Counties, Kentucky. 2025.

Working as a permitted biologist and site leader, selected mist net sites, deployed nets, removed bats from nets, and obtained morphometric measurements across 33 nights for a total of 66 net nights. Species identified 51 big brown bats, 27 red bats, 2 hoary bats.

Clearway Energy Group Catamount Wind: Potential hibernacula Survey, Grant and Tucker Counties, West Virginia. 2025.

Working as a permitted biologist and site leader conducted a phase 1 habitat assessment for potential suitable hibernacula for MYSO, MYSE, COVI and PESU.

KY F&W Winter Hibernacula Population Counts, Bus Stop Cave, Lee County, Kentucky. 2025.

Working as a permitted biologist, entered winter hibernacula to conduct winter hibernating bat population census and examined bats for signs of white nose syndrome. Species identified 25 tricolored bats, and 1 Rafinesque big-eared bat (*Corynorhinus rafinesquii*).

KY F&W Winter Hibernacula Population Counts, Fog Cave, Lee County, Kentucky. 2025.

Working as a permitted biologist, entered winter hibernacula to conduct winter hibernating bat population census and examined bats for signs of white nose syndrome. Species identified 16 little brown bats (*Myotis lucifugus*), 1 Indiana bat (*Myotis sodalis*) and 1 tricolored bat.

KY F&W Winter Hibernacula Population Counts, String Cave, Jackson County, Kentucky. 2025.

Working as a permitted biologist, entered winter hibernacula to conduct winter hibernating bat population census and examined bats for signs of white nose syndrome. Species identified 22 tricolored bats, 3 Indiana bats, 1 little brown bat and 1 Rafinesque big-eared bat.

KY F&W Winter Hibernacula Population Counts, Lounge Cave, Lee County, Kentucky. 2025.

Working as a permitted biologist, entered winter hibernacula to conduct winter hibernating bat population census and examined bats for signs of white nose syndrome. Species identified 22 tricolored bats, 16 Indiana bats, 5 big brown bats, and 2 little brown bats.

KY F&W Winter Hibernacula Population Counts, Barefoot Pit Cave, Wayne County, Kentucky. 2025.

Working as a permitted biologist, entered winter hibernacula to conduct winter hibernating bat population census and examined bats for signs of white nose syndrome. Species identified 960 Indiana bats, 169 eastern small-footed bats (*Myotis leibii*), 76 tricolored bats, 8 Rafinesque big-eared bats, 4 big brown bats, 3 little brown bats, and 1 gray bat (*Myotis grisescens*).

KY F&W Winter Hibernacula Population Counts, Tar Kiln Cave, Elliott County, Kentucky. 2025.

Working as a permitted biologist, entered winter hibernacula to conduct winter hibernating bat population census and examined bats for signs of white nose syndrome. Species identified 708 Indiana bats, 107 tricolored bats, 92 little brown bats, 5 big brown bats and 1 northern long-eared bat (*Myotis septentrionalis*).

KY F&W Winter Hibernacula Population Counts, Humongous cavern, Rockcastle County, Kentucky.

2025. Working as a permitted biologist, entered winter hibernacula to conduct winter hibernating bat population census and examined bats for signs of white nose syndrome. Species identified 389 Rafinesque big eared bats, 85 little brown bats, 20 tricolored bats, 1 big brown bat.

NCDOT Tri-colored Bat Fall Migration study. Multiple Counties, North Carolina. 2024.

Working as a permitted biologist and site leader, selected mist net sites, deployed nets, removed bats from nets, and obtained morphometric measurements across 12 nights for a total of 48 net nights. Species identified 9 red bats, 4 southeastern myotis (*Myotis austroriparius*), 3 seminole bats (*Lasiurus seminolus*), 3 tricolored bats, 2 big brown bats and 2 evening bats (*Nycticeius humeralis*). Applied 3 transmitters to 3 tricolored bats. Bats were prepared for radio transmitter attachment by trimming a small patch of fur from the interscapular region of the back and applying a nontoxic surgical adhesive. Banded 20 bats, tracked PESU for 13 days and located 5 diurnal roosts for a total of 49 bat days.

MODOT Testing different survey techniques at bridges for bats. Various Counties across Kentucky, Ohio

and Tennessee. 2024.

Different techniques were used at bridges to test the best ways to detect bat presence. Techniques tested at bridges included thermal cameras, acoustics, human visual, lights, dog dazer, endoscope camera. Visited 35 bridges across three seasons.

Presence/probable Absence survey for Endangered Bats, Logan and Muhlenberg Counties, Kentucky. 2024.

Working as a permitted biologist and site leader, selected mist net sites, deployed nets, removed bats from nets, and obtained morphometric measurements across 7 nights for a total of 22 net nights. Species identified 33 red bats, 7 evening bats, 7 big brown bats, 2 gray bats and 2 tricolored bats. Applied 1 transmitter to 1 tricolored bat. Bat was prepared for radio transmitter attachment by trimming a small patch of fur from the interscapular region of the back and applying a nontoxic surgical adhesive.

Solar project: Presence/probable Absence survey for Endangered Bats, Charlotte County, Virginia. 2024.

Working as a permitted biologist and site leader, selected mist net sites, deployed nets, removed bats from nets, and obtained morphometric measurements across 5 nights for a total of 22 net nights. Species identified 28 red bats and 5 evening bats.

Indiana Bat Presence/Absence Survey for BrandenBark™ Structures, Summer Maternity Colony Monitoring at Fort Knox, Kentucky. 2024.

Working as a permitted biologist and with other permitted biologists, deployed nets around BrandenBark™ structures, removed bats from nets, identified all species, and obtained morphometric measurements and banded 19 bats. Total species identified 19 Indiana bats.

DOD: Presence/Probable Absence Acoustic Survey for Endangered Bats, Joe Foss Field, Minnehaha County, South Dakota. 2024.

Working as site lead selected detector locations and deployed 8 Anabat Swift acoustic detectors for a total of 16 detector nights and downloaded data.

Research Study: Presence/probable Absence survey for Endangered Bats, Fort Knox, Kentucky. 2024.

Working as a permitted biologist and site leader selected mist net sites, deployed nets, removed bats from nets, and obtained morphometric measurements across 3 nights for a total of 12 net nights. Species identified 5 Indiana bats and 1 big brown bats. Applied 5 transmitters to 5 Indiana bats. Bats were prepared for radio transmitter attachment by trimming a small patch of fur from the interscapular region of the back and applying a nontoxic surgical adhesive. Located two diurnal roosting locations.

DOD: Presence/Probable Absence Acoustic and Mist-net Survey for Endangered Bats, Forbes Field, Topeka County, Kansas. 2024.

Working as site lead selected detector locations and deployed 6 Anabat Swift acoustic detectors for a total of 12 detector nights and downloaded data. Working as a permitted biologist and site leader, selected mist net site, deployed net, removed bat from net, and obtained morphometric measurements across 2 nights for a total of 2 net nights. Species identified 1 big brown bat.

Solar: Presence/probable Absence survey for Endangered Bats, Miami County, Ohio. 2024.

Working as a permitted biologist and site leader, selected mist net sites, deployed nets, removed bats from nets, and obtained morphometric measurements across 4 nights for a total of 13 net nights. Species identified 7 big brown bats and 2 northern long eared bats. Attached a transmitter to one MYSE and radio tracked for two days and located one roost tree. Transmitter fell off on the third day.

Research Study: Little Brown Bat Spring Migration Project, Multiple Counties, Pennsylvania. 2024.

Working as a permitted biologist, day tracked little brown bats for two weeks to locate roosting locations and potential maternity colonies. Also, night tracked little brown bats for one night. Located 6 new unknown little brown bat maternity colonies across Pennsylvania.



Crystal Griffin, Professional Certified Wildlife Biologist ® Wildlife Biologist

Ms. Griffin is a wildlife biologist with a special emphasis on bats. Her professional expertise involves numerous field techniques including habitat assessments, acoustic monitoring, spatial movement, mist netting/harp trapping surveys, bat wing-punch sampling, aerial/ground telemetry, and hibernaculum counts. Additional to bat specialties, Ms. Griffin offers proficiencies with bird, mammal, amphibian, reptile, insect, and tree species identification, small mammal trapping, fish electroshocking, wildlife population estimates, spatial movement analysis, research design and implementation, and statistical analysis.

EXPERIENCE: 10 years' experience in wildlife science with a specialized focus on bats

EMAIL: crystal.griffin@erm.com

EDUCATION

- M.S. in biology, Arkansas State University, United States, 2020
- B.S. in wildlife science with a minor in biology, Arkansas Tech University, United States, 2017
- A.A. in general education with a biology emphasis, University of Arkansas Community College Morrilton, 2010

CERTIFICATIONS

- **USFWS section 10 recovery permit**, 2021 – Current
- **Certified Wildlife Biologist®**, 2025 – Current

PROFESSIONAL AFFILIATIONS AND REGISTRATIONS

- The Wildlife Society
- North American Society for Bat Research
- Southeastern Bat Diversity Network
- National Honor Society member of Phi Kappa Phi

LANGUAGES

- English

FIELDS OF COMPETENCE

- Presence/absence surveys of listed bat species
- Home range, core foraging, and habitat selection surveys and analysis
- Acoustic surveys including detector deployment, data processing, and manual identification of bat acoustic calls
- Ground and aerial telemetry
- Data management and analysis using programs such as LOAS, Biotas, Kaleidoscope Pro, analook W, R studio, GIS, and excel
- Habitat assessments
- Hibernaculum counts
- Technical writing

KEY INDUSTRY SECTORS

- Oil & Gas
- Renewables
- Transmissions
- 2020 Biological Sciences M.S. Student Award, 2020

PUBLICATIONS

- "Foraging behavior and habitat selection of Rafinesque's big-eared bats from a barn colony in rural Arkansas." 2020. ProQuest Database

KEY PROJECTS

Key Projects Prior to Joining ERM

Listed Bat Surveys for the Arkansas Department of Transportation

Lead biologist; conducted mist net and acoustic surveys for listed bats in Benton, Columbia, Lafayette, Logan, Madison, Pope, Sebastian, Washington, and Yell counties. Acoustic data was processed, analyzed, manually vetted, and reported to the client throughout the summer of 2025

Acoustic Detector Surveys for Listed Bats at Wappapello

Lead biologist; conducted acoustic surveys for listed bats at the Missouri National Guard Wappapello Training Center in 2025. Acoustic data was processed, analyzed, manually vetted, and reported to the client

USFWS Tricolored bat foraging study at the Deep Fork National Wildlife Refuge in Okmulgee County, Oklahoma

Technical lead; conducted mist netting, radio-tagging, and ground telemetry of tricolored bats in June of 2024. Analyzed foraging data through LOAS and Biotas software programs to estimate home range and core foraging areas

Rocky Comfort Aerial Telemetry

Lead biologist; conducted aerial telemetry on listed bats to determine home range and core foraging areas at proposed wind farm location in Missouri in June of 2025

Arkansas Game and Fish Commission bat surveys

Lead biologist/field supervisor; conducted presence/absence surveys employing a combination of acoustic and mist netting surveys on wildlife management areas in Arkansas

Department of Defense Presence/Absence Surveys for Listed Bat Species

Field Supervisor; conducted a combination of mist netting and acoustic surveys for threatened and endangered bat species (including tricolored bats) in Missouri; processed, analyzed, and manually vetted bat call data throughout summer of 2023 at Fort Leonard Wood, MO

Higden Transmission Line and Associated Substation

Lead biologist; conducted bat habitat assessment for the Indiana, gray, and northern long-eared bat along proposed transmission line in Cleburne County, Arkansas in 2022

Navigator, Heartland Greenway Pipeline System listed bat surveys

Lead biologist; Mist netting and radio telemetry for threatened and endangered bat species along the proposed CO2 sequestration pipeline in Illinois during the summer of 2022

Enercon, New Madrid to Tiptonville Bat Habitat Assessment

Lead biologist; conducted habitat assessments for Indiana, gray, and northern-long eared bats in New Madrid County, MO in 2022

USFWS Ozark big-eared bat Foraging and Habitat Selection Study

Field Supervisor; conducted harp trapping, radio-tagging, ground and aerial foraging/habitat use telemetry on Ozark big-eared bats in Franklin County, AR during summer of 2022

Ozark Plateau Bat surveys

Lead biologist; harp trapped the Ozark Plateau to determine presence of Ozark big-eared, gray, northern long-eared, and tricolored bats in fall of 2022

Listed Bat Hibernaculum Count at the Sodalis Nature Preserve

Team lead; conducted hibernaculum surveys for listed bats at the Sodalis Nature Preserve during winter of 2022 in Marion County, MO

Foraging Behavior and Habitat Selection of Rafinesque's big-eared bats from a Barn Colony in Rural AR

Arkansas State University graduate assistant/field project lead: 2017-2020; included mist netting, attaching radio transmitters, radio telemetry, foraging telemetry (triangulation), data management, analysis for home range, core foraging, and habitat selection for Rafinesque's big-eared bats.

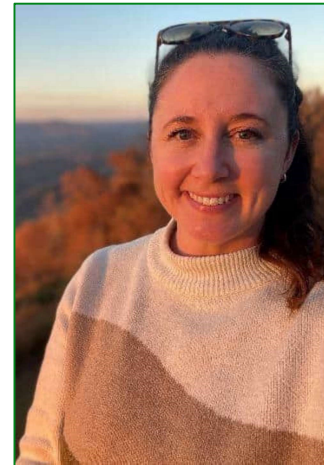
Inventory and Monitoring of Indiana Bats in the Ozark – St. Francis National Forests

Field Lead; conducted mist netting and acoustic surveys for Indiana bats in Arkansas. Tasks included mist netting, radio telemetry, detector deployment, data management and analysis, and manual call vetting

Theresa Wetzel

Managing Technical Consultant, Biologist

Ms. Wetzel is a biologist with extensive experience in terrestrial ecology and has completed many surveys for various animals throughout the eastern US, including bats, birds, aquatic macroinvertebrates, herptiles, and fish. She is proficient with various field techniques used to study terrestrial and aquatic organisms and their habitats. Along with field investigations, she is a skilled writer of documents that support USFWS Section 7 Consultation and NEPA compliance.



EXPERIENCE: Twelve years of experience in threatened and endangered species surveying and environmental compliance writing. Federally permitted bat surveyor since 2013. Nine years of experience managing projects and field crews for clients in transportation, renewable energy, and oil & gas.

CERTIFICATIONS:

- **Rabies Pre-Exposure Vaccination**, 2006. Titer checked in 2012 and every two years after. Booster received May 2022.
- **USFWS Federal Permit for Native Endangered and Threatened Species Recovery – E & T Wildlife –**
ESPER5971699. Permittee authorized to survey for gray bat, Indiana bat, northern long-eared bat, Ozark big-eared bat, and Virginia big-eared bat. August 2024.
ES91733B-2. Added as an Authorized Individual for all bat species and activities in 2024.
ES94849B-2. Added as an Authorized Individual for all species and activities except blood draw in 2013.
- **CPR/First Aid/Bloodborne Pathogens** – Heartsaver training every 2 years.

LINKEDIN: www.linkedin.com/in/theresa-wetzel

EMAIL: Theresa.wetzel@erm.com

EDUCATION

- Bachelor of Science in Biology, University of Tennessee at Martin, USA, 2009

PROFESSIONAL AFFILIATIONS AND REGISTRATIONS

- Southeastern Bat Diversity Network

LANGUAGES

- English, native speaker

FIELDS OF COMPETENCE

- Threatened and endangered species surveys
- USFWS section 7 consultation
- NEPA compliance
- Technical writing

KEY INDUSTRY SECTORS

- Renewables
- Oil & Gas
- Transportation

KEY PROJECTS

AEP Transmission Projects, Bat Survey Field Manager, Kentucky, 2025. Survey lead and bat crew manager for two transmission projects through eastern Kentucky.

Sedge Meadow Solar Project, Site Characterization Study (SCS), Indiana, 2025. Project manager and author/reviewer of SCS completed to identify regulated resources and assess potential development constraints for the Project.

Edwardsport Permitting Support, Indiana, 2024/2025. Served as threatened and endangered species lead/SME. Authored T&E desktop memo and supported the PM during client calls when T&E/bio resource questions surfaced.

Germanna Transmission and Substation Project, Protected Bat Presence/Absence Survey, Virginia, 2024. Served as Field Manager with responsibilities including client coordination, management of field crews, mist-netting, and report preparation.

Surry Nuclear Power Station, Protected Bat Presence/Absence Survey, Virginia, 2024. Task manager and field lead for the protected bat presence/absence survey. After notice to proceed was awarded, wrote the Survey Study Plan and coordinated with the client and US Fish and Wildlife Service to get the Study Plan approved. Scheduled and completed the fieldwork. Through the project she updated client on progress and at completion, wrote the report.

Roxanna Battery Energy Storage System, Site Characterization Study, Georgia. 2024. Co-author of the SCS analyzing properties within Georgia, for potential development as an energy storage facility. This included a desktop review of federal and state data about sensitive resources



such as listed species, wetlands or other surface waters, prime farmland, topography, and public and protected lands. Field verifications were performed to characterize vegetative communities, possible bat habitat, and the presence of jurisdictional waters. The SCS included potential environmental concerns and a permitting matrix delineated by issuing agency, trigger, and timeline.

Project Harbour, Tricolored Bat Presence/Absence Survey, North Carolina, 2024. Task manager for the tricolored bat survey portion of the project. After notice to proceed was awarded, wrote the Survey Study Plan and coordinated with the client and US Fish and Wildlife Service to get the Study Plan approved and then helped schedule a team to complete the work. Through the project she updated client on progress and at completion, wrote the report.

Rafinesque's Big-eared Bat Habitat Assessment and Report, Virginia. 2024. Field lead for the habitat assessment reviewing previously identified Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) roosting habitat along 49 miles of pipeline slated to be replaced. Additionally, identified new potential habitat within 150 feet of tree clearing activities. After field activities were completed, organized data and authored report submitted to the Virginia Department of Wildlife Resources and the Virginia Department of Conservation and Recreation.

1780 Solar Project, Critical Issues Analysis, Kentucky. 2024. Tasked with managing the team to gather information for the natural resources section of the CIA and writing/editing the natural resource sections. Performed the technical review of the overall document and managed the team to provide further information.

PRIOR TO JOINING ERM

Cherry Creek Project, Lolo National Forest, Special Use Permit, Montana. 2023. Author of the Biological Assessment reviewing the impacts of vegetation management in the Plains-Thompson Falls Ranger District on federally endangered and threatened species as well as Forest Sensitive species with potential to occur in the project area. Coordinated directly with the USFS and USFWS.

MODOT Bats in Bridges and Culverts Research, Missouri. 2023. Project manager tasked with creating a document/handbook that summarizes bats use of bridges and culverts along with providing information on how to effectively survey for bats, how to temporarily exclude bats for maintenance, and how to deter bats from using bridges.

Mountain Valley Pipeline Supplemental EIS. USDA Forest Service, West Virginia and Virginia, 2023. Main author of the Biological Evaluation for the Supplemental EIS's analyzing issuance of a permit for the proposed Mountain Valley Pipeline to cross National Forest System lands in the Jefferson National Forest. The Supplemental EIS responds to issues identified in a Fourth Circuit Court of Appeals ruling and changed circumstances in the proposed pipeline corridor. Additionally, authored sections on wildlife and threatened, endangered, and sensitive species in the supplemental EIS's as well as reviewed and coded public comment responses.

Special Use Permit BA/BE, Bankhead National Forest, Alabama. 2022. Author of the Biological Assessment and Biological Evaluation examining the effects of the special use action on federally endangered and threatened species as well as Forest Sensitive species.



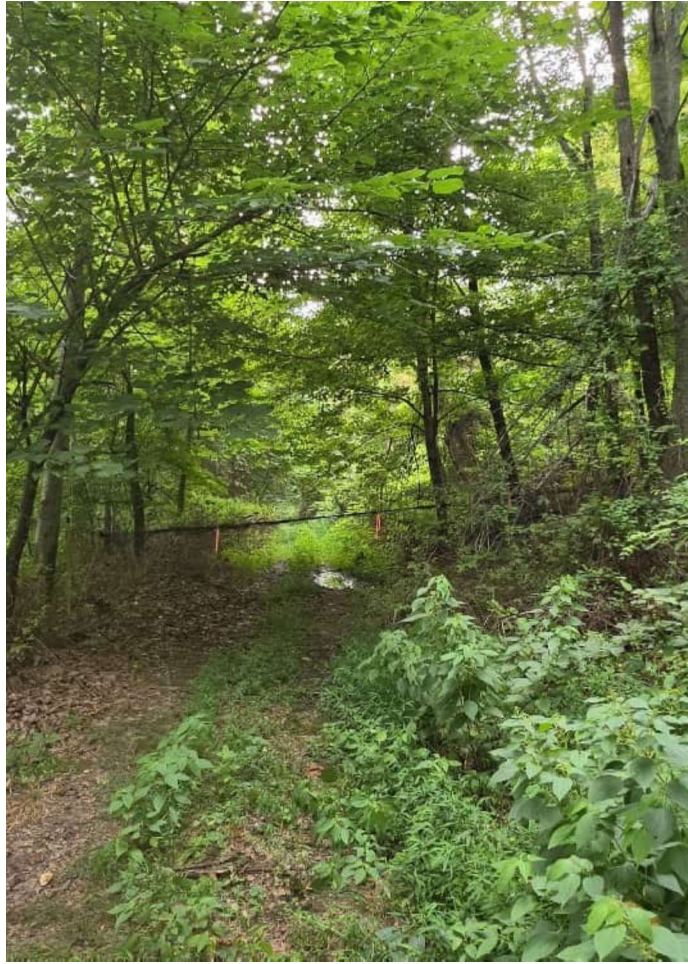


APPENDIX C MIST-NET SITE DATA

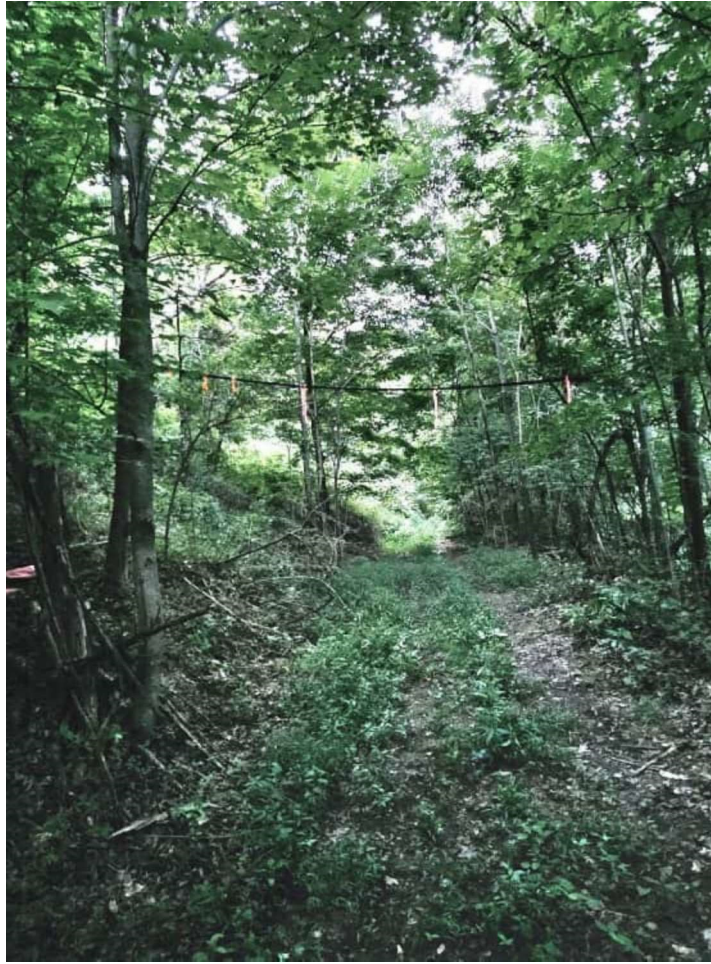
LBR-01alt

CONTAINS PRIVILEGED INFORMATION
DO NOT RELEASE

General Site Information			
Site Coordinates:	37.772935N, -82.525951W	Team Lead:	Crystal Griffin
County:	Martin	State:	KY
Night 1 Conditions (Valid Survey Night: Yes)			
Night 1 Date:	August 4, 2026	Start and End Time:	20:45 to 13:45
Temperature In (°F):	79.7	Temperature Out (°F):	74
Wind Direction:	W	Wind Speed:	Light wind (1-3 mph)
Precipitation:		Precipitation Duration:	
Sky Condition:	Partly Cloudy	Moon Phase:	Third Quarter
Comments: Nets placed along atv trail corridor. Dominant tree species include <i>Acer rubrum</i> , <i>Quercus alba</i> , and <i>Liriodendron tulipifera</i> . The canopy is closed with a dense subcanopy consisting of saplings of dominant tree species and smaller trees such as <i>Morus rubra</i> , for example. The trail is lined heavily with multiflora rose (<i>Rosa multiflora</i>) and other woody vines.			
Night 2 Conditions (Valid Survey Night: Yes)			
Night 2 Date:	August 5, 2026	Start and End Time:	20:40 to 01:40
Temperature In (°F):	75.8	Temperature Out (°F):	70.9
Wind Direction:	W	Wind Speed:	Light breeze (4-7 mph)
Precipitation:		Precipitation Duration:	
Sky Condition:	Partly Cloudy	Moon Phase:	Third Quarter
Comments:			
Net Setup			
	Net Width (m)	Net Count	Habitat Type
Net Set A	9	2	Road Corridor
Net Set B	6	2	Road Corridor



LBR-01alt Net Set A
GPS Location: 37.77291857, -82.52594496



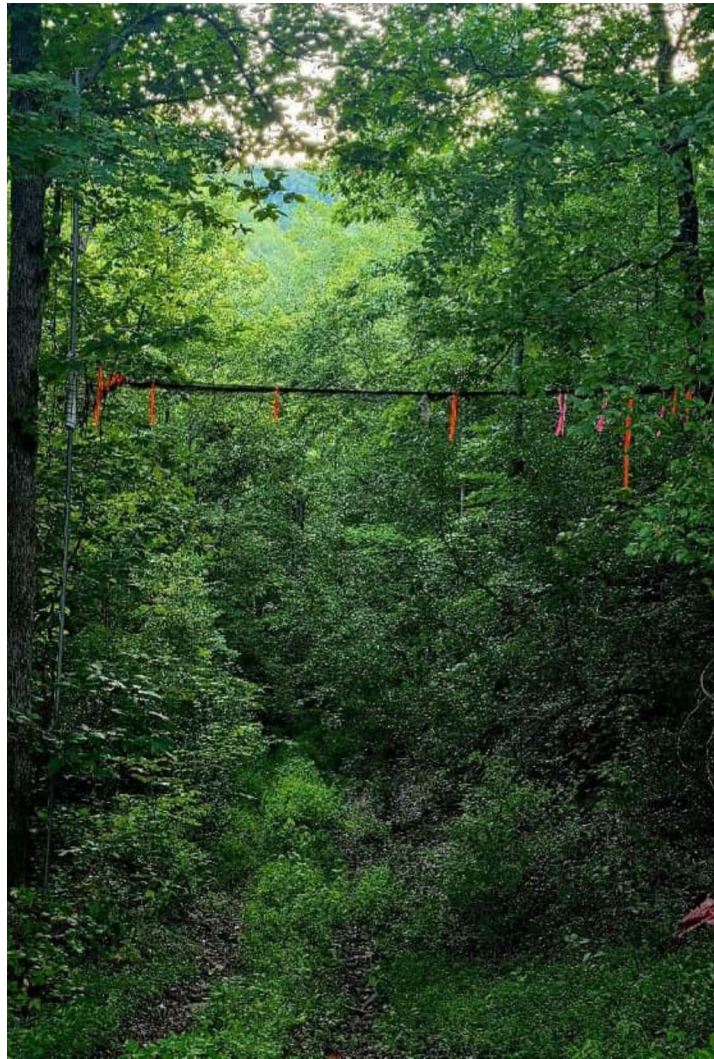
LBR-01alt Net Set B

GPS Location: 37.77292168, -82.52656644

LBR-02

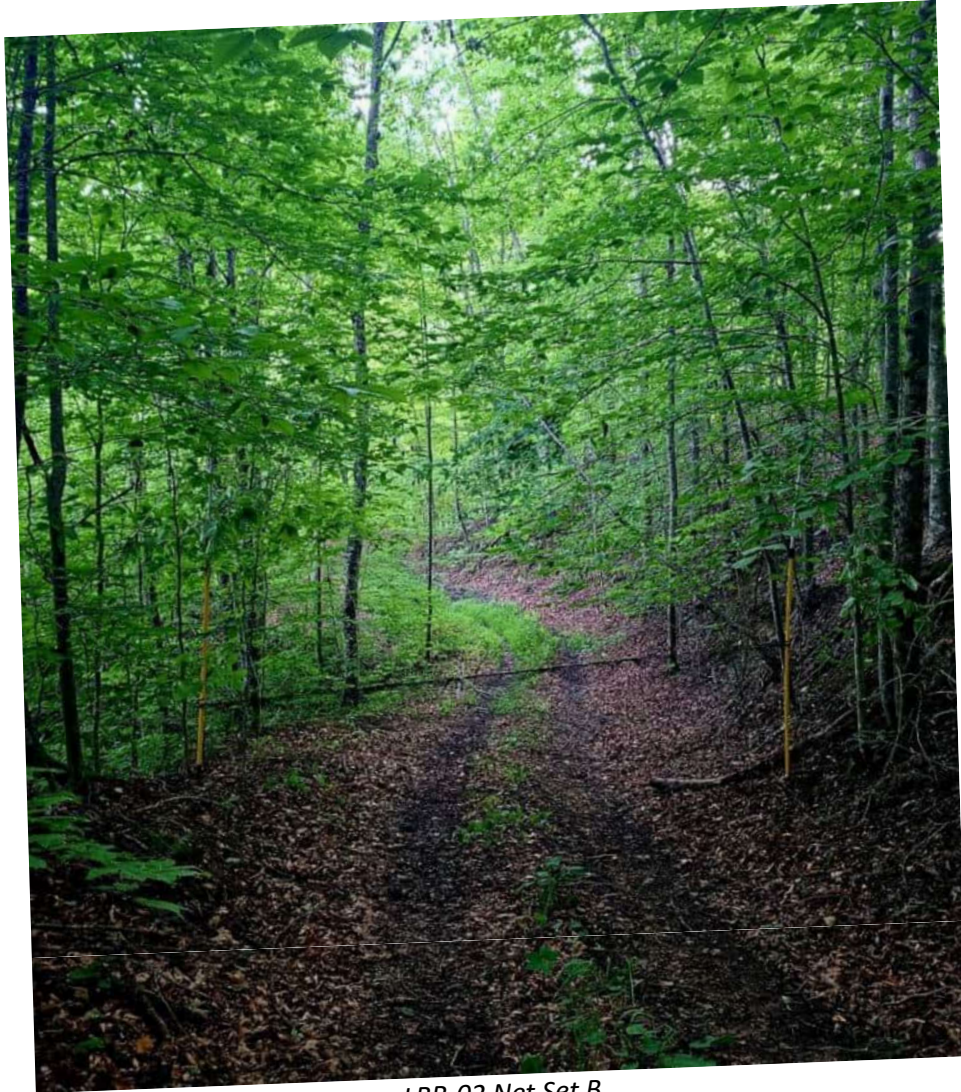
CONTAINS PRIVILEGED INFORMATION
DO NOT RELEASE

General Site Information			
Site Coordinates:	37.771281N, -82.514612W	Team Lead:	Crystal Griffin
County:	Martin	State:	KY
Night 1 Conditions (Valid Survey Night: Yes)			
Night 1 Date:	August 2, 2026	Start and End Time:	20:50 to 01:50
Temperature In (°F):	71.4	Temperature Out (°F):	70.9
Wind Direction:	SW	Wind Speed:	Light breeze (4-7 mph)
Precipitation:		Precipitation Duration:	
Sky Condition:	Cloudy or Overcast	Moon Phase:	Waning Gibbous
Comments: Nets placed along atv trail corridor. Dominant tree species include <i>Acer rubrum</i> , <i>Platanus occidentalis</i> , <i>Liriodendron tulipifera</i> , and <i>Fagus grandifolia</i> . Sub-dominant species include <i>Sassafras albidum</i> , <i>Ulmus americana</i> , and <i>Morus rubra</i> . The canopy is moderately closed. The mid-understory is dense with saplings of dominant and subdominant trees.			
Night 2 Conditions (Valid Survey Night: Yes)			
Night 2 Date:	August 3, 2026	Start and End Time:	20:45 to 01:45
Temperature In (°F):	72.2	Temperature Out (°F):	70.1
Wind Direction:	SW	Wind Speed:	Light wind (1-3 mph)
Precipitation:		Precipitation Duration:	
Sky Condition:	Clear	Moon Phase:	Waning Gibbous
Comments:			
Net Setup			
	Net Width (m)	Net Count	Habitat Type
Net Set A	6	3	Road Corridor
Net Set B	4	1	Road Corridor



LBR-02 Net Set A

GPS Location: 37.77138173, -82.51358316

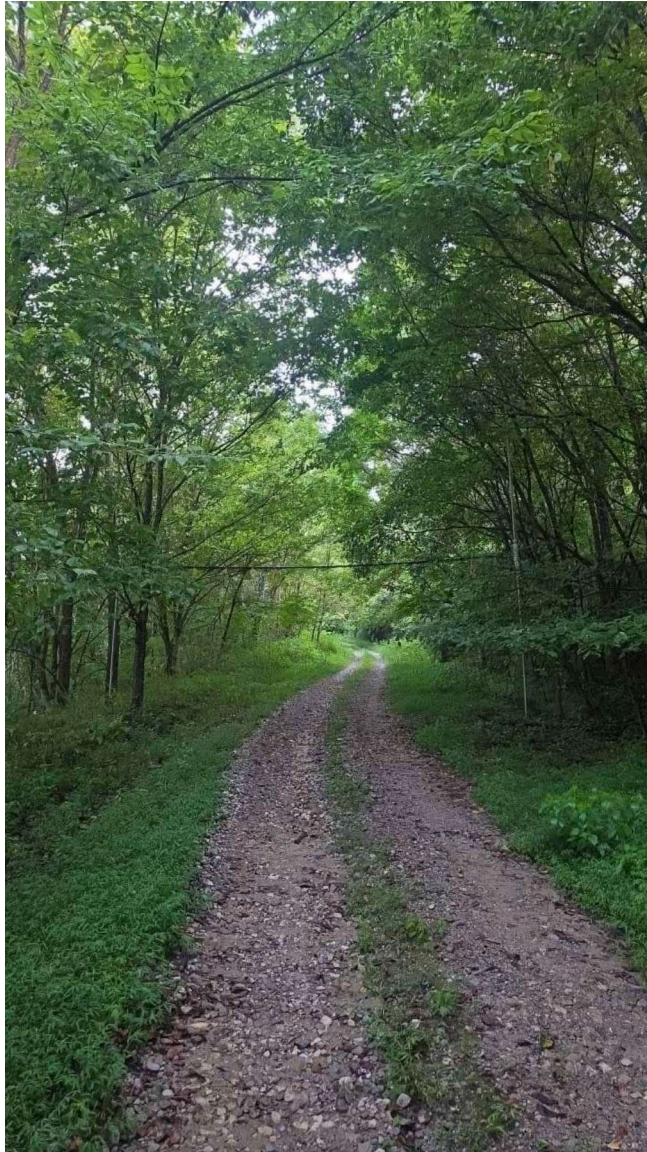


LBR-02 Net Set B
GPS Location: 37.77103647, -82.51512384

LBR-03

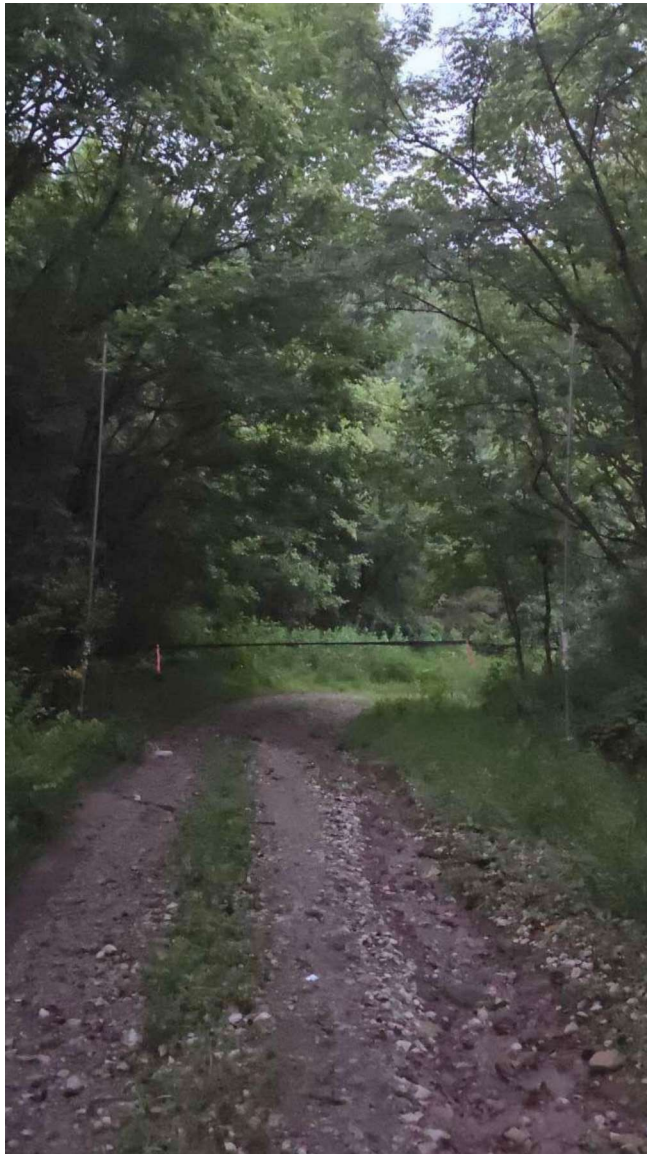
CONTAINS PRIVILEGED INFORMATION
DO NOT RELEASE

General Site Information			
Site Coordinates:	37.764342N, -82.510929W	Team Lead:	Crystal Griffin
County:	Martin	State:	KY
Night 1 Conditions (Valid Survey Night: Yes)			
Night 1 Date:	August 7, 2026	Start and End Time:	20:33 to 01:33
Temperature In (°F):	85	Temperature Out (°F):	79
Wind Direction:	SW	Wind Speed:	Light breeze (4-7 mph)
Precipitation:		Precipitation Duration:	
Sky Condition:	Cloudy or Overcast	Moon Phase:	Waxing Crescent
Comments: Nets placed along atv trail corridor leading to a large wildlife opening/foraging area. The canopy along the trail is closed where the nets are placed. The dominant tree species include <i>Ulmus americana</i> , <i>Acer negundo</i> , and <i>Gymnocladus dioicus</i> . The subdominant species include <i>Platanus occidentalis</i> , <i>Morus rubra</i> , and <i>Ailanthus altissima</i> . The mid-to-understory ranges from moderately dense to dense consisting of smaller trees and multiflora rose.			
Night 2 Conditions (Valid Survey Night: Yes)			
Night 2 Date:	August 12, 2026	Start and End Time:	20:26 to 01:26
Temperature In (°F):	74	Temperature Out (°F):	67.4
Wind Direction:		Wind Speed:	Calm (0 mph)
Precipitation:		Precipitation Duration:	
Sky Condition:	Cloudy or Overcast	Moon Phase:	New
Comments: Theresa Wetzel and Dayton Rowland netted night 2			
Net Setup			
	Net Width (m)	Net Count	Habitat Type
Net Set A	9	3	Road Corridor
Net Set B	6	2	Road Corridor



LBR-03 Net Set A

GPS Location: 37.76435967, -82.51097791



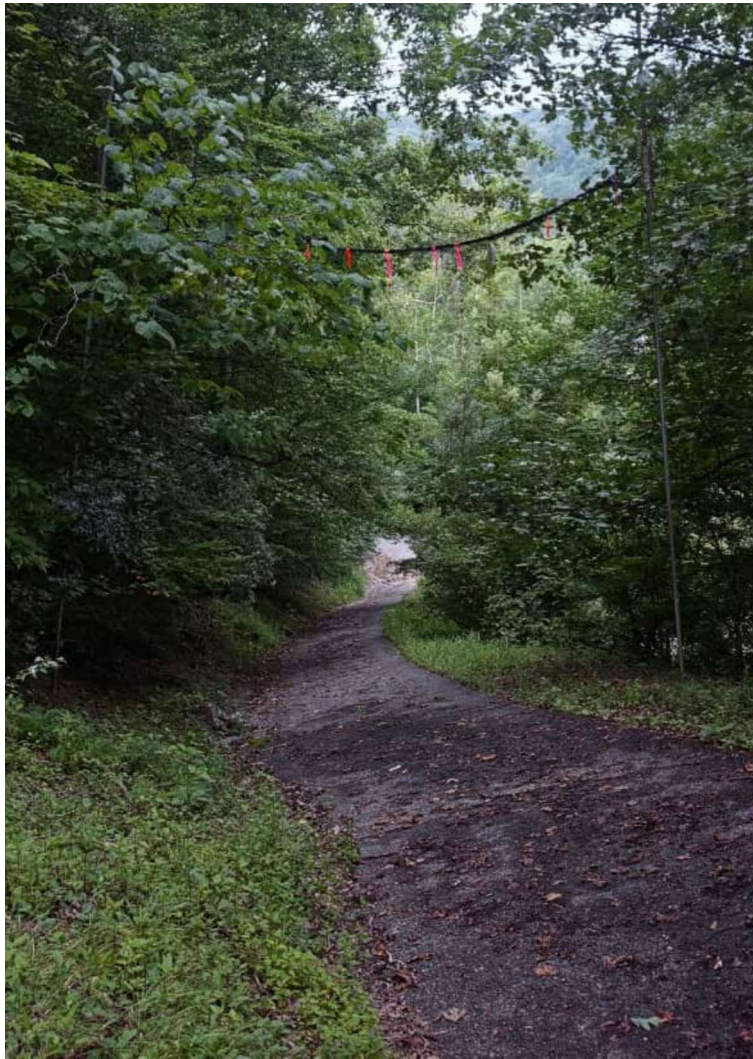
LBR-03 Net Set B

GPS Location: 37.76511262, -82.51073171

LBR-04

CONTAINS PRIVILEGED INFORMATION
DO NOT RELEASE

General Site Information			
Site Coordinates:	37.760871N, -82.493922W	Team Lead:	Crystal Griffin
County:	Martin	State:	KY
Night 1 Conditions (Valid Survey Night: Yes)			
Night 1 Date:	July 31, 2026	Start and End Time:	20:45 to 01:45
Temperature In (°F):	75.4	Temperature Out (°F):	71.4
Wind Direction:	W	Wind Speed:	Light wind (1-3 mph)
Precipitation:		Precipitation Duration:	
Sky Condition:	Partly Cloudy	Moon Phase:	Waning Gibbous
Comments: Nets placed along road corridor. Dominant tree species include <i>Fagus grandifolia</i> , <i>Quercus velutina</i> , and <i>Liriodendron tulipifera</i> . Canopy is closed with a dense mid-to-understory made up of subdominant trees such as <i>Sassafras albidum</i> , <i>Cercis canadensis</i> , and smaller <i>F. grandifolia</i> .			
Night 2 Conditions (Valid Survey Night: Yes)			
Night 2 Date:	August 1, 2026	Start and End Time:	20:35 to 01:35
Temperature In (°F):	75.1	Temperature Out (°F):	70.3
Wind Direction:	W	Wind Speed:	Light wind (1-3 mph)
Precipitation:		Precipitation Duration:	
Sky Condition:	Partly Cloudy	Moon Phase:	Waning Gibbous
Comments:			
Net Setup			
	Net Width (m)	Net Count	Habitat Type
Net Set A	6	3	Road Corridor
Net Set B	4	1	Road Corridor



LBR-04 Net Set A

GPS Location: 37.76078682, -82.49359019



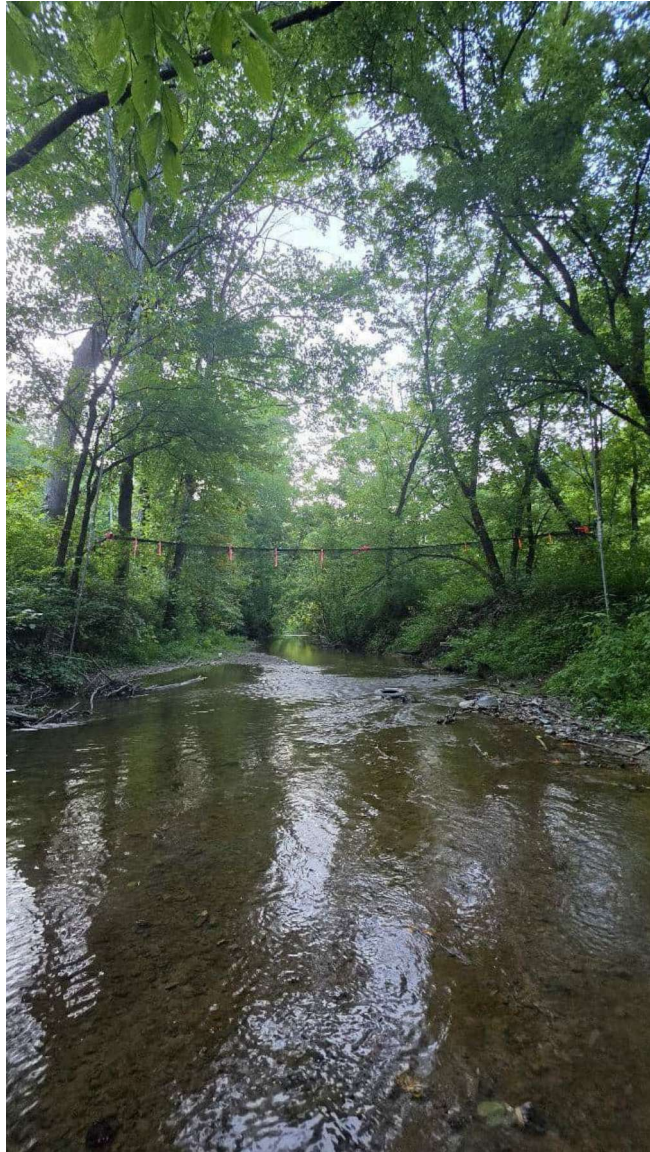
LBR-04 Net Set B

GPS Location: 37.76083691, -82.49414316

LBR-05

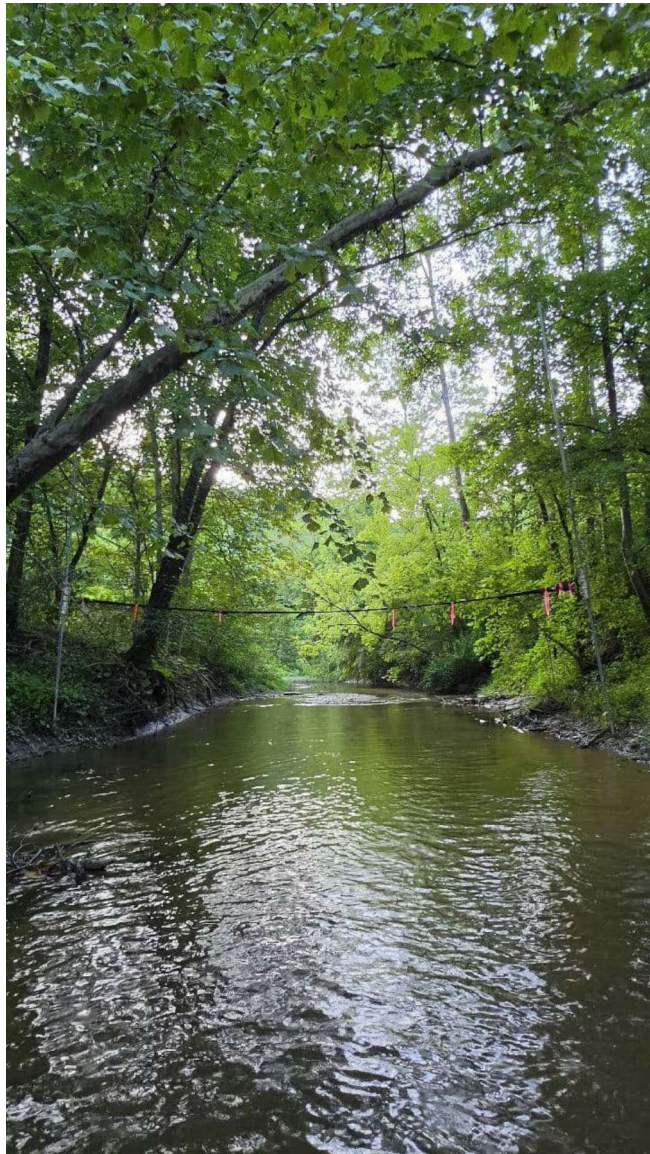
CONTAINS PRIVILEGED INFORMATION
DO NOT RELEASE

General Site Information			
Site Coordinates:	37.760402N, -82.48824W	Team Lead:	Crystal Griffin
County:	Marion	State:	KY
Night 1 Conditions (Valid Survey Night: Yes)			
Night 1 Date:	July 29, 2026	Start and End Time:	20:45 to 13:45
Temperature In (°F):	75	Temperature Out (°F):	66
Wind Direction:	W	Wind Speed:	Light wind (1-3 mph)
Precipitation:		Precipitation Duration:	
Sky Condition:	Clear	Moon Phase:	Full
Comments: Nets placed along the stream corridor of Wolf Creek. A thin riparian zone is on each side of the creek and the dominant tree species include <i>Aesculus flava</i> , <i>Platanus occidentalis</i> , and <i>Acer negundo</i> . Subdominant trees include <i>Juglans nigra</i> and <i>Acer rubrum</i> . Groundcover is thick with blackberries and herbaceous plants.			
Night 2 Conditions (Valid Survey Night: Yes)			
Night 2 Date:	July 30, 2026	Start and End Time:	20:45 to 01:45
Temperature In (°F):	75	Temperature Out (°F):	67
Wind Direction:	NW	Wind Speed:	Light wind (1-3 mph)
Precipitation:		Precipitation Duration:	
Sky Condition:	Clear	Moon Phase:	Full
Comments:			
Net Setup			
	Net Width (m)	Net Count	Habitat Type
Net Set A	12	3	Stream Corridor
Net Set B	9	3	Stream Corridor



LBR-05 Net Set A

GPS Location: 37.7603208, -82.48810864



LBR-05 Net Set B

GPS Location: 37.76076143, -82.48838474



APPENDIX D BAT CAPTURE DATA

LBR-01alt NET AND CAPTURE DATA

Demographics and Morphometric Data

Site ID	Net Night	Date	Capture Time	Net Set	Species	Sex	Age	Reproductive Status	Mass (g)	Right Forearm (mm)	Comment
LBR-01alt	1	August 4, 2026	00:30	Net Set A	EPFU	Male	Adult	Scrotal	15.5	44	

Mist Net Setup Details

Site Name	Net Set Code	Net Width (m)	Number of Nets in Set	Habitat Type	Latitude	Longitude
LBR-01alt	Net Set A	9	2	Road Corridor	37.77291857	-82.52594496
LBR-01alt	Net Set B	6	2	Road Corridor	37.77292168	-82.52656644

LBR-02 NET AND CAPTURE DATA

Demographics and Morphometric Data

Site ID	Net Night	Date	Capture Time	Net Set	Species	Sex	Age	Reproductive Status	Mass (g)	Right Forearm (mm)	Comment
LBR-02	1	August 2, 2026	22:40	Net Set A	EPFU	Female	Adult	Non-reproductive	15.5	42	
LBR-02	1	August 2, 2026	01:30	Net Set A	LABO	Female	Juvenile	Non-reproductive	9.5	43	

Mist Net Setup Details

Site Name	Net Set Code	Net Width (m)	Number of Nets in Set	Habitat Type	Latitude	Longitude
LBR-02	Net Set A	6	3	Road Corridor	37.77138173	-82.51358316
LBR-02	Net Set B	4	1	Road Corridor	37.77103647	-82.51512384

LBR-03 NET AND CAPTURE DATA

Demographics and Morphometric Data

Site ID	Net Night	Date	Capture Time	Net Set	Species	Sex	Age	Reproductive Status	Mass (g)	Right Forearm (mm)	Comment
LBR-03	2	August 12, 2026	22:00	Net Set B	LABO	Male	Juvenile	Scrotal	8.5	39	

Mist Net Setup Details

Site Name	Net Set Code	Net Width (m)	Number of Nets in Set	Habitat Type	Latitude	Longitude
LBR-03	Net Set A	9	3	Road Corridor	37.76435967	-82.51097791
LBR-03	Net Set B	6	2	Road Corridor	37.76511262	-82.51073171

LBR-04 NET AND CAPTURE DATA

Demographics and Morphometric Data

Site ID	Net Night	Date	Capture Time	Net Set	Species	Sex	Age	Reproductive Status	Mass (g)	Right Forearm (mm)	Comment
No Bats Captured											

Mist Net Setup Details						
Site Name	Net Set Code	Net Width (m)	Number of Nets in Set	Habitat Type	Latitude	Longitude
LBR-04	Net Set A	6	3	Road Corridor	37.76078682	-82.49359019
LBR-04	Net Set B	4	1	Road Corridor	37.76083691	-82.49414316

LBR-05 NET AND CAPTURE DATA

Demographics and Morphometric Data

Site ID	Net Night	Date	Capture Time	Net Set	Species	Sex	Age	Reproductive Status	Mass (g)	Right Forearm (mm)	Comment
LBR-05	1	July 29, 2026	22:20	Net Set B	LABO	Female	Juvenile	Non-reproductive	10	40	
LBR-05	1	July 29, 2026	23:07	Net Set A	PESU	Male	Juvenile	Non-reproductive	4.5	32	
LBR-05	1	July 29, 2026	23:30	Net Set B	EPFU	Female	Adult	Post-Lactating	20	45	
LBR-05	1	July 29, 2026	23:40	Net Set B	PESU	Male	Juvenile	Non-reproductive	5	33	
LBR-05	2	July 30, 2026	21:30	Net Set B	LABO	Male	Adult	Scrotal	10.5	41	
LBR-05	2	July 30, 2026	21:45	Net Set B	LABO	Male	Adult	Scrotal	11	42	
LBR-05	2	July 30, 2026	22:10	Net Set A	PESU	Female	Adult	Lactating	7	34	
LBR-05	2	July 30, 2026	22:54	Net Set B	PESU	Female	Adult	Lactating	6.5	34	

Mist Net Setup Details

Site Name	Net Set Code	Net Width (m)	Number of Nets in Set	Habitat Type	Latitude	Longitude
LBR-05	Net Set A	12	3	Stream Corridor	37.7603208	-82.48810864
LBR-05	Net Set B	9	3	Stream Corridor	37.76076143	-82.48838474



APPENDIX E PHOTO LOG

Photographic Log

CLIENT:
Lynn Bark Energy Center, LLC

SITE LOCATION:
LBR-05; Martin County, Kentucky

PROJECT NO.:
0787742

PHOTO NO. 1.	DATE 29 July 2026	
DIRECTION PHOTO TAKEN Frontside photo of EPFU		
DESCRIPTION Representative photo of a healthy big brown bat (<i>Eptesicus fuscus</i>).		

PHOTO NO. 2.	DATE 29 July 2026	
DIRECTION PHOTO TAKEN Frontside photo of LABO		
DESCRIPTION Representation photo of a healthy eastern red bat (<i>Lasiurus borealis</i>)		

Photographic Log

CLIENT:
Lynn Bark Energy Center, LLC

SITE LOCATION:
LBR-05; Martin County, Kentucky

PROJECT NO.:
0787742

PHOTO NO. 3.	DATE 29 July 2026	
DIRECTION PHOTO TAKEN Front profile photo of a TCB.		
DESCRIPTION Representative photo of a healthy juvenile tricolored bat (<i>Perimyotis subflavus</i>).		

PHOTO NO. 4.	DATE 29 July 2026	
DIRECTION PHOTO TAKEN Side profile photo of TCB.		
DESCRIPTION Representative photo of a healthy tricolored bat (<i>Perimyotis subflavus</i>).		

CLIENT: Lynn Bark Energy Center, LLC	SITE LOCATION: LBR-05; Martin County, Kentucky	PROJECT NO.: 0787742
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PHOTO NO. 5.	DATE 29 July 2026	
DIRECTION PHOTO TAKEN Dorsal side photo of TCB.		
DESCRIPTION Representative photo of the foot and uropatagium of a tricolored bat (<i>Perimyotis subflavus</i>).		