Exhibit P
Bat Studies
Westwood
October 29, 2019

DICKINSON WRIGHT PLLC

BAT STUDIES FOR THE GROVER HILL WIND PROJECT AREA IN PAULDING COUNTY, OHIO USFWS #19-056

29 October 2019

Submitted to:

Ms. Angela Boyer &
Ms. Megan Seymour
U.S. Fish and Wildlife Service
4625 Morse Road, Suite 104
Columbus, OH 43230

Ms. Sarah Stankavich &
Ms. Erin Hazelton
ODNR, Division of Wildlife
2045 Morse Road, Building G
Columbus, OH 43229

Prepared for:

Westwood

Mr. Tim Baumann, CWB
Westwood Professional Services
10170 Church Ranch Way, Suite 100
Westminster, OH 80021

On behalf of:

Trishe Wind Ohio, LLC
5775 Wayzata Boulevard Suite 700
St. Louis Park, Minnesota 55416

Prepared by:

ESI
Environmental Solutions & Innovations, Inc.

4525 Este Avenue
Cincinnati, Ohio 45232
Phone: (513) 451-1777
Fax: (513) 451-3321
Ravenna, OH • Indianapolis, IN • Orlando, FL • Springfield, MO • Pittsburgh, PA • Teays Valley, WV

Executive Summary

The Grover Hill Wind Project Area (Grover Hill WPA) is a proposed wind energy site centered at coordinates Latitude 41.027343, Longitude -84.484655 (Project) and encompasses the Village of Grover Hill, in Paulding County, Ohio. Westwood Professional Services (Westwood); on behalf of their client Trishe Wind Ohio, LLC; retained Environmental Solutions & Innovations, Inc. (ESI) to complete pre-construction mist net surveys for summer bats and to assist in Endangered Species Act (ESA) compliance with the U.S. Fish and Wildlife Service (USFWS) and the Ohio Department of Natural Resources (ODNR).

The Project occurs within range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*). Mist netting was completed under the requirements under ODNR's *On-shore Bird and Bat Pre- and Post-construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio* (ODNR Wind Energy Guidelines) (ODNR 2009), and recommendations under the USFWS *Land-based Wind Energy Guidelines* (USFWS Wind Energy Guidelines) (USFWS 2012). Mist netting was completed to: 1) develop an understanding of bat species present on the WPA; 2) determine locations of colonies of the federally threatened northern long-eared bat and federally endangered Indiana bat within or adjacent the WPA; and 3) track any northern long-eared or Indiana bats to roosts.

On 15 July 2019, ESI submitted a study plan to USFWS Columbus Field Office and ODNR requesting approval and site-specific authorization to complete summer mist net surveys for the Project. Approval and site-specific authorization were granted on 17 July 2019. Mist netting was completed from 1 to 6 August 2019, and comprised **27 complete net nights** of effort, exceeding the ODNR Wind Energy Guidelines requirements. Netting yielded capture of 66 big brown bats (*Eptesicus fuscus*) and five eastern red bats (*Lasiurus borealis*). No listed bats were captured.

Based on the results of summer mist net surveys and winter habitat searches, northern long-eared bats are not likely present within the WPA during the summer maternity season or during the winter. Similarly, colonies of Indiana bats are likely absent outside the current area of known occupancy. Thus, tree clearing in the western portion of the WPA is unlikely to result in take of either species.

Summer netting surveys do not provide a complete assessment of bat communities. Multiple species of bats, including Indiana and northern long-eared bats, may pass through the WPA during migration. Each species is at some level of risk of mortality during migration.

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1.0 Project Description

The Grover Hill Wind Project Area (Grover Hill WPA, Westwood Project Number R0015695.00) is a proposed wind energy site centered at coordinates Latitude 41.027343, Longitude -84.484655 (Project, Figure 1) and encompasses the Village of Grover Hill, in Paulding County, Ohio. Westwood Professional Services (Westwood); on behalf of their client Trishe Wind Ohio, LLC; retained Environmental Solutions & Innovations, Inc. (ESI) to complete pre-construction mist net surveys for summer bats and to assist in Endangered Species Act (ESA) compliance with the U.S. Fish and Wildlife Service (USFWS) and the Ohio Department of Natural Resources (ODNR).

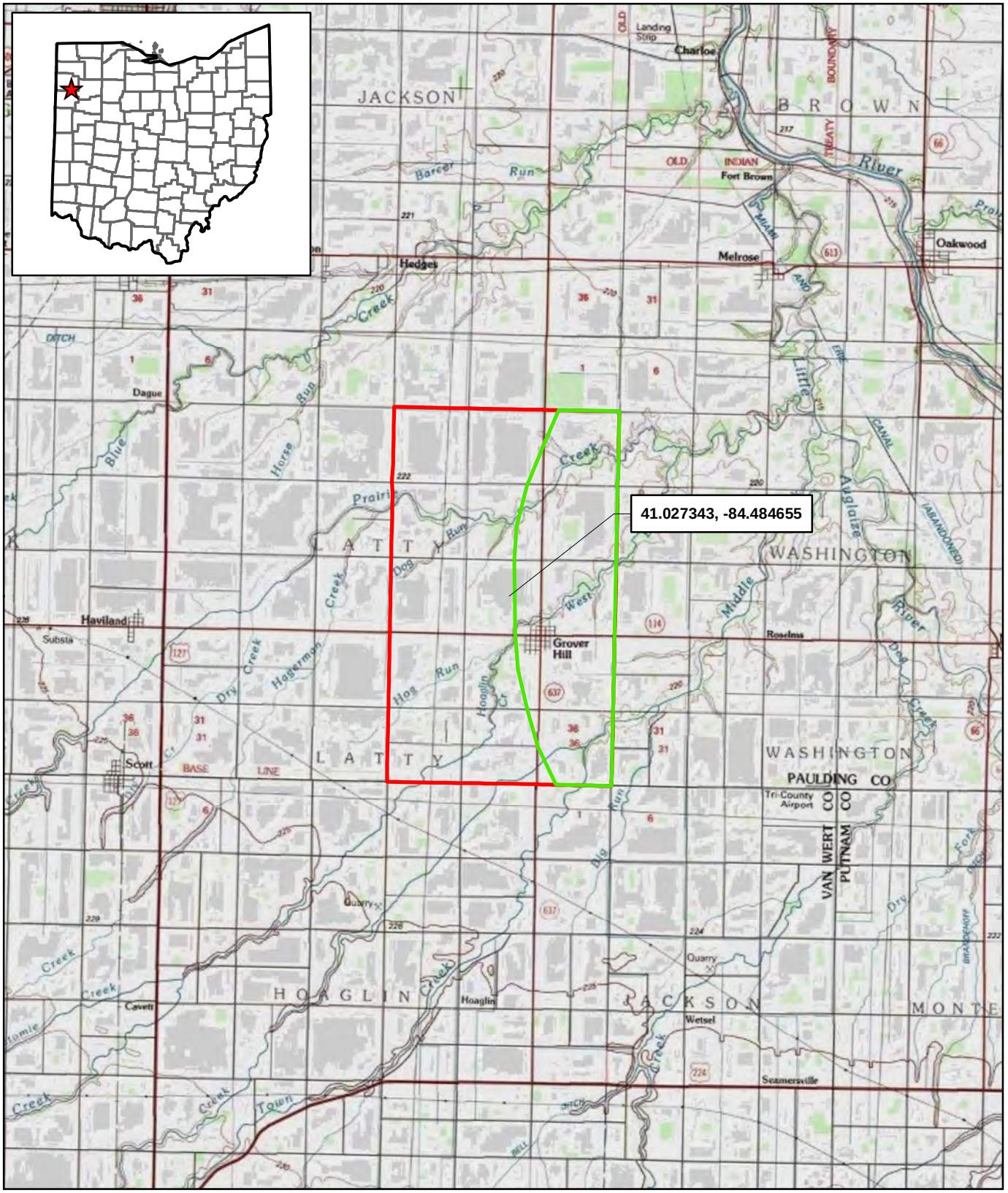
The Project occurs within range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*). Mist netting was completed under the requirements under ODNR's *On-shore Bird and Bat Pre- and Post-construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio* (ODNR Wind Energy Guidelines) (ODNR 2009), and recommendations under the USFWS *Land-based Wind Energy Guidelines* (USFWS Wind Energy Guidelines) (USFWS 2012). Mist netting was completed to: 1) develop an understanding of bat species present on the WPA; 2) determine northern long-eared and Indiana bat colony locations within or adjacent the WPA; and 3) track northern long-eared or Indiana bats to their roosts.

On 15 July 2019, ESI submitted a study plan to USFWS Columbus Field Office and ODNR requesting approval and site-specific authorization to complete summer mist net surveys for the Project. Approval and site-specific authorization were granted on 17 July 2019. Mist netting was completed from 1 to 6 August 2019, and comprised **27 complete net nights** of effort, exceeding the ODNR Wind Energy Guidelines protocol and meeting USFWS requirements for a presence/probable absence summer survey for the entire Project area. This report details methods and results of the survey.

2.0 Regulatory Compliance

The ESA [16 U.S.C. 1531 et seq.] provides for the listing, conservation, and recovery of endangered and threatened species of plants and wildlife. Under the ESA, USFWS is mandated to monitor and protect listed species.

Section 9 of the ESA prohibits take of listed species. Take is defined by the ESA as, "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" [16 U.S.C.



N W E S

Figure 1. Location of Grover Hill Wind Project Area relative to an area of known Indiana bat occupancy in Paulding County, Ohio.

Project No. 1240

0 1.5 3 Miles

Base Map: USGS Topographic Map

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1532(19)]. USFWS further defines harm to include significant habitat modification or degradation [50 CFR §17.3].

The USFWS listed the Indiana bat as endangered under the ESA on 11 March 1967. On 4 May 2015, the USFWS listed the northern long-eared bat as threatened with a 4(d) exemption.

Approval and site-specific authorization was received from USFWS Columbus Field Office and ODNR Division of Wildlife on 17 July 2019. ESI completed field efforts in accordance with USFWS Federal Fish and Wildlife Permit TE02373A-14 and ODNR Wild Animal Permit 20-075.

3.0 Initial Project Screening

3.1 Prior Records of Listed Bat Species

Pre-survey coordination with USFWS revealed the eastern portion of the Project lies within the outer tier (2.5 to 5.0 miles [4.0 to 8.0 km]) of the protective buffer surrounding the site where an Indiana bat was captured in 1976 (Figure 1). As such, the eastern portion of the Project is considered known occupied Indiana bat habitat. ESI is also aware of a tricolored bat (*Perimyotis subflavus*) killed in June 2019 at an adjacent wind energy site. In the study plan submitted to USFWS Columbus Field Office on 15 July 2019, ESI requested additional records of bats affecting future consultation and coordination for the Project and confirmation the western portion of the Project is not considered known, occupied habitat for the Indiana bat. Thus, data collected in the area of known occupancy are not used to determine Indiana bat presence/absence, but assessing the bat community. Only data collected outside the area of known occupancy are used to address presence/probable absence of Indiana and northern long-eared bats in the western portion of the WPA.

3.2 Desktop Habitat Assessment

A desktop analysis determined that the Project contains approximately 318.5 acres (128.9 ha) of forested habitat potentially suitable for use by Indiana and northern long-eared bats in the summer. The amount of forest present requires completion of three mist-net sites following the ODNR Wind Energy Guidelines protocol (ODNR 2009). Each site completed for ODNR requires four nets per night on two non-consecutive nights yielding 8 net nights per site and 24 net nights of total effort.

Approximately 143.7 acres (58.2 ha) of the western portion of the WPA are outside of known, occupied habitat for the Indiana bat. Thus, a presence/probable absence survey of this area requires at least 18 net nights of effort. ESI completed 27 net nights

of effort with all netting occurring in the center of the WPA and outside the area of known occupancy. Requirements were exceeded for each overlapping survey effort.

3.3 Assess Potential for Adverse Effect

Impacts to bats at wind energy sites are associated with both facility construction and operation. Thus, no wind energy project can avoid potential impacts to bats. Based on the assessment, the Project proceeded to Phase 2 of the USFWS summer survey protocol. Using mist nets to sample bats is also required under the ODNR Wind Energy Guidelines.

4.0 Ecological Setting

4.1 Indiana Bat (*Myotis sodalis*)

4.1.1 Status

Federal Register Documents

32 FR 4001; 11 March 1967: Final Listing, Endangered

40 FR 58308 58312; 16 December 1975: Proposed Critical Habitat, Critical habitat- mammals

41 FR 41914; 24 September 1976: Final Critical Habitat, Critical habitat-mammals

The USFWS listed the Indiana bat as endangered on 11 March 1967. The most current range-wide estimate of the population is 537,297 individuals, which represents about 60 percent of the estimated population of 1960 (USFWS 2019a). Long-term, detailed documentation of population changes are lacking across most of its range, with the exception of the state of Indiana (Brack et al. 1984, Johnson et al. 2002, Brack et al. 2003), although such information is now being acquired in most states. It is probable that habitat loss during summer (USFWS 2007) and winter disturbances during hibernation (Johnson et al. 1998) both contributed to the overall decline of the species that lead to listing. With the advent of White-nosed Syndrome (WNS), this species has undergone significant population declines.

4.1.2 Regional Species Occurrence

The Indiana bat is known to hibernate in only two mines in Ohio, in Lawrence and Preble counties (Brack et al. 2010). According to the USFWS *2019 Indiana Bat Population Status Update*, approximately 2,890 individuals winter within the state (0.5% of the species' total population) (USFWS 2019a). In summer, the species is unevenly distributed across the entire state, creating areas of both relative abundance and absence (Brack et al. 2010).

Both maternity and non-reproductive summer records exist in Paulding County. Non-reproductive summer records are also known from neighboring Putnam and Van Wert counties, Ohio, but no records of Indiana bats are known from Defiance County, Ohio

or from Adams, Allen, and DeKalb counties, Indiana (Figure 2). Additional information on life history and ecology of the species is provided in Appendix A.

4.2 Northern Long-Eared Bat (*Myotis septentrionalis*)

4.2.1 Status

On 2 October 2013, the northern long-eared bat was proposed for listing by USFWS as endangered due to rapid population declines from WNS. On 16 January 2015, USFWS proposed listing the northern long-eared bat as threatened with 4(d) rule. On 2 April 2015, USFWS published notice in the Federal Register of its final decision to list the species as threatened and issued an interim 4(d) rule exempting certain activities from the ESA's take prohibition. The listing decision and interim 4(d) rule took effect 4 May 2015. A final 4(d) rule was announced on 14 January 2016 and took effect on 16 February 2016. On 27 April 2016, USFWS determined that designation of critical habitat was not prudent. Reasons for listing include population declines attributed to WNS, impacts to hibernacula, and impacts to summer habitat.

Federal Register Documents

78 FR 61045 61080; 2 October 2013: Proposed Listing: Endangered
80 FR 2371 2378; 16 January 2015: Proposed Listing: Threatened; Proposed 4(d) Rule
80 FR 17973 18033; 2 April 2015: Final Rule: Threatened; Interim 4(d) Rule
81 FR 1900 1922; 14 January 2016: Final 4 (d) Rule
81 FR 24707 24714; 27 April 2016: Final Rule: Designation of Critical Habitat Not Prudent

4.2.2 Regional Species Occurrence

The northern long-eared bat is known to hibernate in 32 caves and mines throughout Ohio (USFWS 2016). In summer, the species occurs throughout the forested portions of the state (Brack et al. 2010). In January of 2016, USFWS estimated the northern long-eared bat population in Ohio consisted of approximately 240,240 adult individuals (USFWS 2016). Additional information on life history and ecology of the species is provided in Appendix A.

5.0 Methods

5.1 Mist Netting

Surveys for protected bats are difficult to standardize because of the large amount of variability that exists at individual survey sites and among survey sites in a project area, much less across the range of a species. Nevertheless, a number of practices used for mist net surveys, portal searches, and emergence counts for Indiana and northern long-eared bats provide structure for implementation of guidelines provided by the USFWS 2019 *Range-wide Indiana Bat Survey Guidelines* (USFWS 2019b). Summer mist netting was designed to meet these guidelines (Table 1).

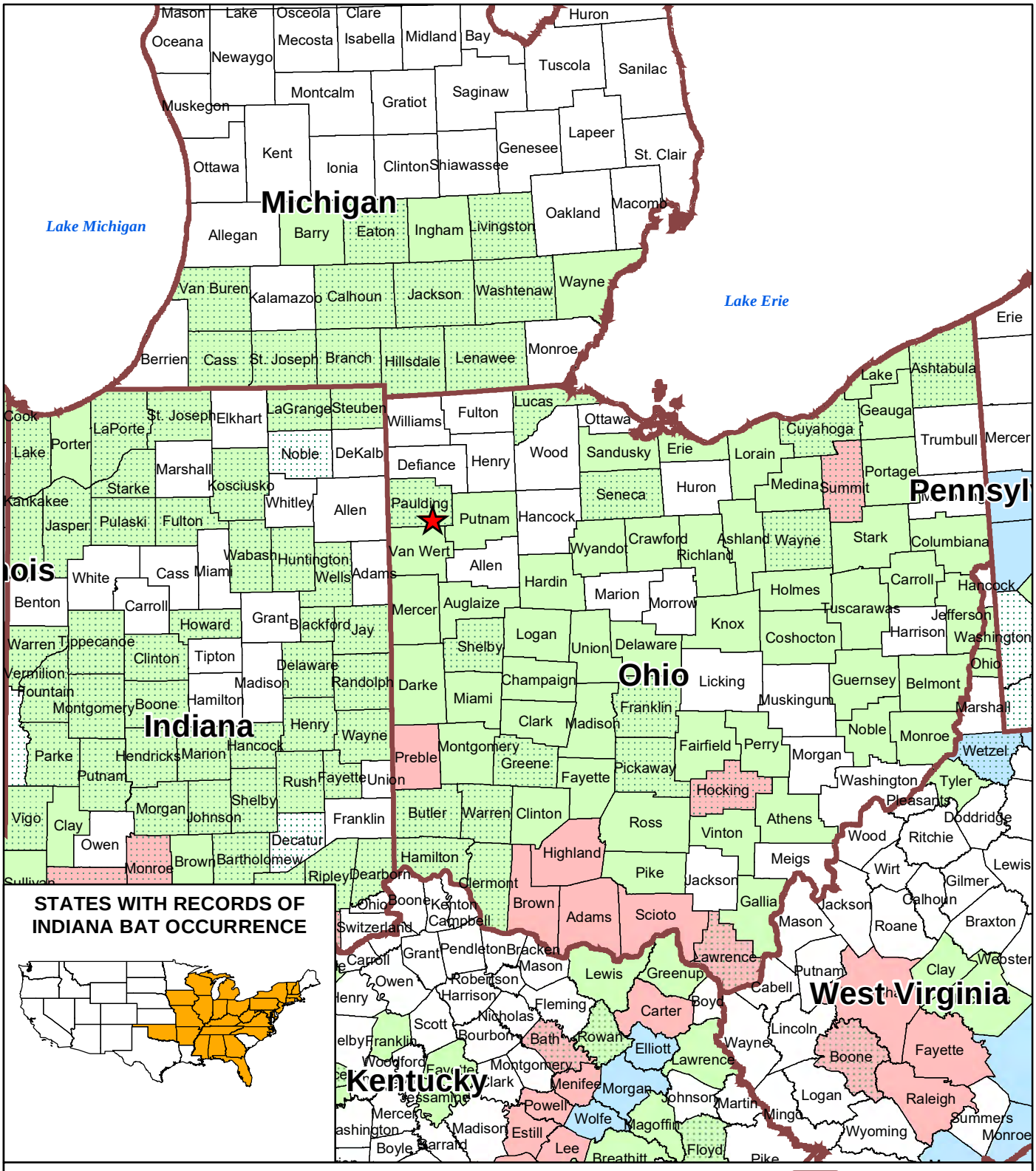


Figure 2. Surrounding states and counties with hibernacula, summer maternity, and other summer (nonreproductive) records for the Indiana bat.

Project No. 1240	Sources: USFWS, Indiana Bat Revised Recovery Plan, Agency Draft, 2007. Updated June 2017	ESI ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

Table 1. USFWS Mist Net Survey Guidelines.

2019 NETTING GUIDELINES

Midwest and Ozark-Central Recovery Units (AL, AR, IA, IL, IN, GA, KY, MI, MO, MS, OH, OK, central & western TN, and Lee County, VA)

1. Netting Season: 1 June to 15 August in Ohio.
2. Equipment (Mist Nets): constructed of the finest, lowest visibility mesh commercially available – monofilament or black nylon – with the mesh size approximately 1½ inch (1¼ –1¾) (38 mm).
3. Net Placement: mist nets extend approximately from water or ground level to tree canopy and are bounded by foliage on the sides. Net width and height are adjusted for the fullest coverage of the flight corridor at each site. A "typical" net set consists of two (or more) nets "stacked" on top of one another; width may vary up to 60 feet (20 m).
4. Net Site Spacing:
   - Linear Projects – minimum of 2 net nights per 0.6 mile (1 km); 1 net night = 1 net set deployed for 1 night.
   - Non-linear Projects – minimum of 9 net nights per 123 acres (49.8 ha).
   - Nets must be spread through the sampling area
5. Minimum Level of Effort Per Net Site:
   - At least 1 net location (sets) per net site.
   - At least 2 (calendar) nights of netting per net site.
   - Maximum of 3 nights of consecutive netting at any given location; must change net locations or wait at least 2 calendar nights before resuming netting at same location.
   - Sample Period: begin at dusk and net for 5 hours (approximately 0200h).
   - Nets are monitored at approximately 10-minute intervals.
   - No disturbance near the nets between checks.
6. Weather: Negative surveys combined with any of the following conditions throughout all or most of a sampling period are likely to require an additional night of mist-netting:
   - Precipitation (rain and/or heavy fog) lasting >30 minutes or continuing intermittently during the survey period.
   - Temperatures <10°C (50°F).
   - Sustained wind >9 mi/hr (4 m/sec) (3 on Beaufort scale).

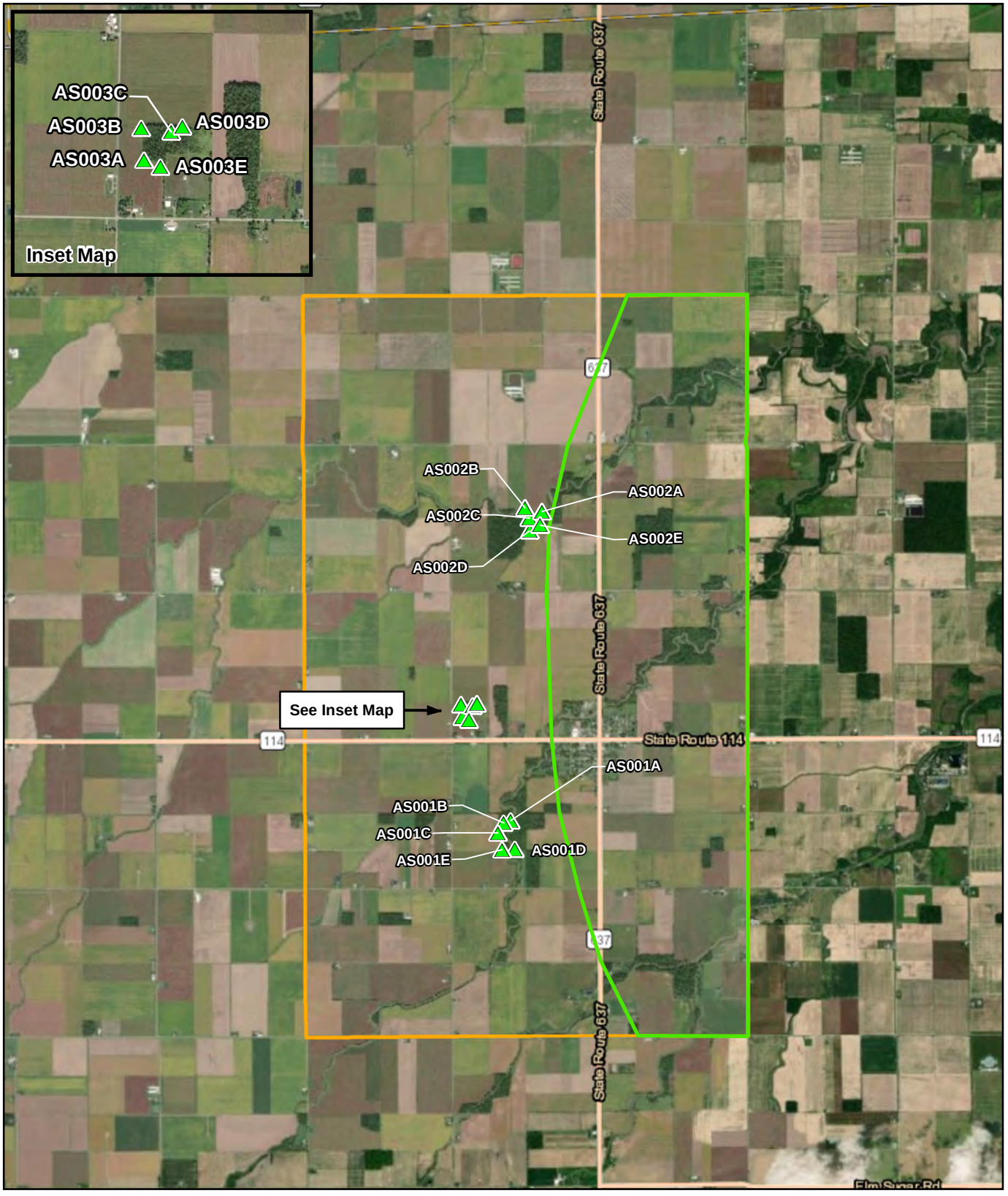
Source: U.S. Fish and Wildlife Service; 2019

In addition to meeting USFWS guidelines, the project was also designed to meet or exceed ODNR's On-shore bird and bat pre- and post-construction monitoring protocol for commercial wind energy facilities in Ohio (ODNR 2009), which are very similar except requiring at least one day between sampling events at a site and being more detailed in terms of the number and size of nets used each night.

5.1.1 Level of Effort

For non-linear Projects in Ohio, USFWS and ODNR summer survey guidelines (Table 1) indicate a sampling effort of 8 (ODNR) or 9 (USFWS) mist net nights for every 123 acres (0.5 km^2) of impacted potentially suitable habitat. Based on the amount of forest present within Grover Hill WPA, ESI completed **27 complete net nights** of mist netting in to exceed the required survey coverage within the WPA.

Net site locations are illustrated in Figure 3 and mist net site coordinates are provided in Table 2. Photographs of net site locations are provided in Appendix B.



▲ Mist Net Site Location Wind Resource Area (WRA) Known Indiana Bat Occupancy Area

N
W E
S

Figure 3. Mist net sites on the Grover Hill Wind Project Area in Paulding County, Ohio

Project No. 1240

0 1 2 Miles

Base Map: Esri World Imagery

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Table 2. Location of mist net sites on Grover Hill Wind Project Area in Paulding County, Ohio.

Net Site (Net)	Date Netted 2019	Latitude	Longitude
AS001A	1, 3 August	41° 0' 40.6044" N	84° 29' 17.1702" W
AS001B	1, 3 August	41° 0' 39.8232" N	84° 29' 20.475" W
AS001C	1, 3 August	41° 0' 36.3954" N	84° 29' 23.2866" W
AS001D	1, 3 August	41° 0' 30.6318" N	84° 29' 15.525" W
AS001E	3 August	41° 0' 30.4416" N	84° 29' 21.228" W
AS002A	2, 5 August	41° 2' 29.8746" N	84° 29' 2.5398" W
AS002B	2, 5 August	41° 2' 31.2288" N	84° 29' 10.2516" W
AS002C	2, 5 August	41° 2' 28.0242" N	84° 29' 8.2566" W
AS002D	2, 5 August	41° 2' 23.2326" N	84° 29' 8.4624" W
AS002E	5 August	41°02'25.1" N	84°29'03.5" W
AS003A	4, 6 August	41° 1' 17.1768" N	84° 29' 39.9258" W
AS003B	4, 6 August	41° 1' 21.6876" N	84° 29' 39.807" W
AS003C	4, 6 August	41° 1' 21.2412" N	84° 29' 34.9692" W
AS003D	4, 6 August	41° 1' 22.0296" N	84° 29' 32.928" W
AS003E	6 August	41° 1' 16.2942" N	84° 29' 36.927" W

5.1.2 Qualified Surveyors

Mist net surveys are completed by one or more biologists including an individual federally permitted to handle Indiana and northern long-eared bats and listed on ESI's ODNR Wild Permit 20-075.

5.1.3 Net Placement

Nets are set to maximize coverage of flight paths used by bats along suitable travel corridors, foraging areas, and/or drinking areas. Riparian corridors are often used for travel or foraging; however, upland corridors (e.g., trails or logging roads) also provide suitable sites. In upland areas, net sites in the vicinity of road ruts holding water have resulted in the capture of Indiana and northern long-eared bats. Similarly, when scattered woodlands are contained within a matrix of agriculture, nets are placed along extended from the woodland into the agricultural field to capture bats as they commute and forage. Site selection is based upon the extent of canopy cover, presence of an open flyway, and habitat conditions near the site. The actual location and orientation of each net set is determined in the field. Coordinates of each net set are recorded via a combination of available technology including GIS systems (ESRI ArcMap), handheld GPS units, tablet computers, and customized software to ensure a high quality, easily interpreted, and universal standard of mapping for field studies and reporting for all target species.

5.1.4 Bat Capture

The netting setup allows bats to be caught live and released unharmed near the point of capture. Bats are identified to species using a combination of morphological

characteristics (e.g., ear and tragus, calcar, pelage, size/weight, length of right forearm, and overall appearance of the animal).

The species, sex, reproductive condition, age, weight, length of right forearm, and time and location/net site of capture are recorded for all bats captured. Age (adult or juvenile) of bats is determined by examining epiphyseal-diaphyseal fusion (calcification) of long bones in the wing. Weight was measured to 0.003 ounce (0.1 g) using a Pesola spring scale. Length of the right forearm of each bat is measured to the nearest 0.04 inch (1.0 mm) using a metric ruler. The reproductive condition of captured bats is classified as descended male (reproductive), non-reproductive male, non-reproductive female, pregnant female (based on gentle abdominal palpation), lactating female, or post-lactating female.

Bat processing and data collection are completed within 30 minutes of the time that the bat is removed from the net. Bat capture data are recorded in the field on standardized data sheets (Appendix C).

5.1.5 Protocol for Addressing White-Nose Syndrome

In response to the current WNS issue, state and federal guidelines for WNS decontamination, containment, and avoidance are implemented in conjunction with the latest WNS protocols as provided on the USFWS-updated website whitenosesyndrome.org. Wing damage is categorized using the Wing-Damage Index Used for Characterizing Wing Condition of Bats Affected by White-nose Syndrome (Reichard 2008, Reichard and Kunz 2009), as applied, tested, and evaluated by ESI on similar projects (Francl et al. 2011).

5.1.6 Habitat Characterization of Net Sites

Wooded habitat near the net sites and the immediate surroundings are assessed for quality for both the Indiana and northern long-eared bat. The emphasis of this description is on habitat form and function: size and relative abundance of large trees and snags that potentially serve as roost trees, canopy closure, understory clutter/openness, distance to water, and flight corridors. Habitat form is emphasized because both bat species roost in a variety of tree species.

Habitat characterization identifies components of both the canopy and subcanopy layers. All trees that reach into the canopy are canopy trees, regardless of their diameter/size. As defined in the Indiana Bat Habitat Suitability Index Model (3D/Environmental 1995), dominant trees are the large trees in the canopy (16 inches [>40 cm] dbh). Current literature suggests these trees have the greatest likelihood of being used by bat maternity colonies. Many smaller trees are often also found in the canopy, and in some situations, the canopy can be entirely composed of small-diameter trees. ESI's habitat characterization identifies both dominant and subdominant elements of the canopy.

The subcanopy vegetation layer is well defined in classical ecological literature. It is that portion of the forest structure between the ground vegetation (to approximately 0.2 feet [0.6 m]) and the canopy layers, usually beginning at about 25 feet (7.6 m). The amount of vegetation in the understory is termed clutter, and may come from:

- Lower branches of overstory trees,
- Small trees that will grow into the overstory,
- Small trees and shrubs that are confined to the understory

Many species of bats, including the Indiana bat, tend to avoid areas of high clutter. Conversely, the northern long-eared bat is more tolerant of clutter. Habitat data are recorded on standardized data sheets (Appendix C).

5.1.7 **Weather and Temperature**

Weather conditions are monitored during mist netting to ensure compliance with USFWS summer survey guidelines (Table 1). Conditions recorded include temperature, wind speed and direction, precipitation, and percent cloud cover. A standard digital thermometer is used to record temperature, wind speed is determined by use of the Beaufort wind scale, and cloud cover is visually estimated.

5.2 Winter Habitat (Portal Searches)

The Project is in the Till Plains of northern Ohio, where caves and underground mines are rare. ESI completes portal searches in the vicinity of mist net sites and addresses all openings found following the guidelines in the USFWS 2019 *Range-wide Indiana Bat Survey Guidelines* (USFWS 2019b).

5.3 Property Access (All Techniques)

ESI's biologists may work only on properties where landowners or other competent authorities have granted access. If a listed bat is captured, ESI and the client will work to gain access to roost(s) and/or foraging areas. Studies are conducted only where landowners grant permission to do so. ESI uses radio-triangulation to estimate locations of bats roosting on inaccessible properties.

6.0 Results

Field surveys were completed within the Project LOD from 1 to 6 August 2019. Mist netting effort totaled **27 complete net nights** of effort. No federally-protected bats were captured.

6.1 Mist Netting

6.1.1 Bat Capture

Twenty-seven complete net nights yielded 71 bats, including 66 big brown bats (*Eptesicus fuscus*) and 5 eastern red bats (*Lasiurus borealis*) (Table 3, Appendix C). One big brown bat escaped before processing could be completed. No listed bats were captured.

Table 3. Bat capture data for the Grover Hill Wind Project Area in Paulding County, Ohio.

		Adult Female[1]		Juvenile			
Species	Adult Male	PL	NR	Male	Female	Escape[2]	Total
Big brown bat	6	11	8	23	17	1	66
Eastern red bat	2	-	1	-	2	-	5
Total	8	11	9	23	19	1	71

[1] PL = Post lactating; NR = non-reproductive
[2] Escape = escaped from net or hand before processing was complete

6.1.2 Species Diversity

A goal of the ODNR guidelines is to provide an understanding of the overall structure of the bat community. Of 11 bat species documented in Ohio, only two were captured. Big brown bats and eastern red bats are the most wide-spread species in Ohio, and the most abundant species in the post-WNS landscape.

These species were not evenly distributed (χ^2= 52.41; P <0.01). The MacArthur's Diversity Index was 1.2. This index is often described as being an estimate of the number of species that would be caught if all species were equally abundant, thus the current sample contained the equivalent of 1.2 evenly distributed species. The Simpson's Evenness Index (ED = 0.575, or 57.5%) further indicates that these two species are not evenly represented in this sample. Together these data suggest the community is relatively depauperate.

6.1.3 Occurrence by Sex and Age

Of 71 bats captured and processed, 28 bats (40%) were adults. Adult bats captured comprised 8 males (29%) and 20 females (71%), but this did not differ from a random sample with an even distribution of the sexes (χ^2= 0.47; P = 0.49). Forty-two juvenile bats were captured for both species – indicating both species are reproducing at the site.

6.1.4 White Nose Syndrome Scores

The majority of captured bats (*n* = 68) did not display any signs of wing damage (Wing Index Score = 0). Two big brown bats displayed signs of light damage (Wing Index Score = 1).

6.1.5 Habitat Characterization of the Net Site

Nets were placed at forest edges near agricultural fields, across interior forest corridors, and across Hoaglin Creek. Dominant canopy species include honey locust (*Gleditsia triacanthos*), black walnut (*Juglans nigra*), American sycamore (*Platanus occidentalis*), eastern cottonwood (*Populus deltoides*), swamp white oak (*Quercus bicolor*), pin oak (*Quercus palustris*), northern red oak (*Quercus rubra*), and American basswood (*Tilia americana*) (Table 4). Subdominant trees in the canopy included these same species as well as shagbark hickory (*Carya ovata*). The subcanopy ranged from moderately to completely cluttered with saplings, shrubs, and lower branches of canopy trees. In addition to the canopy trees listed above, the subcanopy also included silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), white ash (*Fraxinus americana*), Amur honeysuckle (*Lonicera maackii*), white mulberry (*Morus alba*), and American elm (*Ulmus americana*).

Roosting potential for Indiana bats was rated as moderate at Sites AS002 and AS003 and low at Site AS001 (Table 4). Roosting potential for northern long-eared bats was rated as moderate at all three sites. No high quality roosting habitat for either species was observed. Habitat data are summarized in Table 4. Photographs of mist-net sites are provided in Appendix B and habitat datasheets are provided in Appendix C.

6.1.6 Weather

Weather conditions for 27 complete net nights were within acceptable limits based on USFWS summer survey guidelines. Survey temperatures ranged from 82.2° to 55.6° Fahrenheit (27.9° to 13.1° C) (Figure 4, Appendix C).

Figure 4. Ambient temperatures during mist net surveys on the Grover Hill Wind Project Area in Paulding County, Ohio.

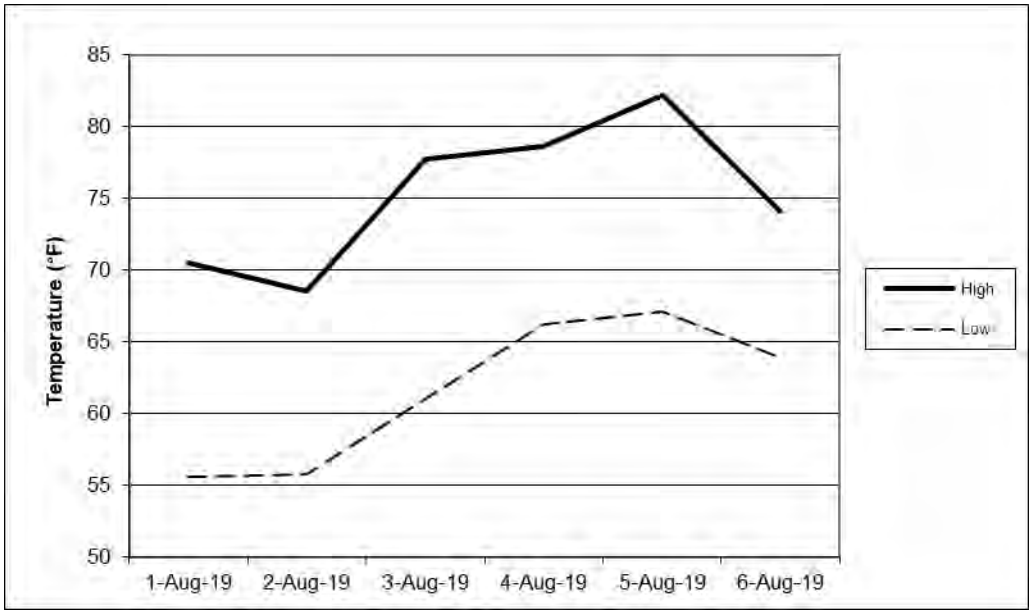

Table 4. Mist net habitat characteristics on the Grover Hill Wind Project Area in Paulding County, Ohio.

	Water Source		Tree Species				Clutter		**MYSO Roost Tree**		**MSYE Roost Tree**			
Site	Name	Distance (m)	Dominant Canopy	Subdominant Canopy	Subcanopy	Canopy Closure	Rating	Composition	Potential	Composition	Potential	Composition	Habitat Type	Herb. Cover
AS001	Hoaglin Creek	0	*Platanus occidentalis, Gleditsia triacanthos, Populus deltoides*	*Gleditsia triacanthos, Juglans nigra, Populus deltoides*	*Morus alba, Acer saccharinum, Quercus palustris*	M	M	Branches Shrubs & Saplings	L	Snags	M	Snags	YU, YL, FE, C/P, S/R	D
AS002	Prairie Creek	10	*Populus deltoides, Juglans nigra, Quercus bicolor*	*Carya ovata, Quercus palustris, Gleditsia triacanthos*	*Fraxinus americana, Acer saccharinum, Lonicera maackii*	M	C	Branches Shrubs & Saplings	M	Snags	M	Snags	YU, YL, FE, WL, OF, C/P, S/R	D
AS003	unnamed pond	525	*Quercus rubra, Quercus palustris, Tilia americana*	*Carya ovata, Quercus palustris, Acer rubrum*	*Ulmus americana, Acer saccharinum, Acer rubrum*	M	M	Branches Shrubs & Saplings	M	Lrg trees & snags	M	Lrg trees & snags	YU, YL, FE, WL, C/P, EW	D

Tree/Shrub Species: red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), shagbark hickory (*Carya ovata*), white ash (*Fraxinus americana*), honeylocust (*Gleditsia triacanthos*), black walnut (*Juglans nigra*), honeysuckle (*Lonicera maackii*), white mulberry (*Morus alba*), American sycamore (*Platanus occidentalis*), eastern cottonwood (*Populus deltoides*), swamp white oak (*Quercus bicolor*), pin oak (*Quercus palustris*), northern red oak (*Quercus rubra*), American basswood (*Tilia americana*), American elm (*Ulmus americana*)
Canopy Closure/Subcanopy Clutter: C = Closed; M = Moderate
Roost Potential Rating: L = Low; M = Moderate
Habitat Type: C/P = Crop/Pasture land; EW = Emergent Wetland; FE = Forest Edge; OF = Old Field; S/R = Stream/River; WL = Woodlot; YL = Young Lowland Forest; YU = Young Upland Forest
Herb (Herbaceous) Cover: D = Dense

6.2 Winter Habitat (Portal Searches)

Portal searches were completed in the vicinity of net sites mist netting efforts. No portals were observed, and no potentially suitable winter habitat for bats was identified.

7.0 Discussion/Conclusion

Field surveys for summer bats were completed from 1 to 6 August 2019. Surveys indicate the summer bat community within the WPA is dominated by eastern red and big brown bats. No underground habitat suitable for use by hibernating cave bats was discovered and, based on geology, none is likely present.

7.1 Tree Clearing and Validity of Surveys

ESI requests concurrence from USFWS that, based on the lack of captures, summer populations of Indiana bats are restricted to the area of known occupancy and maternity colonies of northern long-eared bats are likely absent from the WPA. Thus, trees may be cleared at any time through April 2025 for construction of the facility outside the area of known occupancy.

7.2 Other Species Potentially Present

As with all survey techniques, mist-net surveys provide only a partial understanding of bat species present within the WPA. The stated goal of USFWS summer survey guidelines is to detect the presence of Indiana bats, and the ODNR Wind Energy Guidelines are a direct derivative of USFWS techniques. Thus, these techniques are most effective at detecting bats that share behavioral patterns with Indiana bats, such as using edges and forested corridors for foraging and commuting. Species that forage in open air space (especially hoary bats, *Lasiurus cinereus*) are captured much less frequently. The current study was not designed to sample migrating bats.

Based on regional bat communities (Brack and Duffey 2006, Whitaker et al. 2007, Kurta 2008, Brack et al. 2010), other species likely to be present at least during migration include hoary, silver-haired (*Lasionycteris noctivagans*), tricolored, Seminole (*L. seminolus*), little brown (*M. lucifugus*), northern long-eared, and Indiana bats. Evening bats (*Nycticeius humeralis*) are rare in the region but have recently become established in Michigan (Kurta 2008) and may occasionally travel through the WPA. Any of the species may be killed during operation of the facility. Several of these species are now or have the potential to become regulated under the ESA.

7.3 Implications for ESA Compliance

Two ESA-listed species are likely to drive future coordination with USFWS. As noted above, USFWS considers eastern portions of the WPA as known and occupied habitat for Indiana bat. USFWS typically requests turbines are located away from wooded habitat to reduce potential for mortality, and recommends efforts to avoid impacts to both the endangered Indiana and threatened northern long-eared bat during migration.

Other bat species likely present within the Project area also have potential for listing under the ESA in the future. USFWS is currently reviewing the tricolored bat for protection under the ESA, and the little brown bat is on the USFWS list of species under review. Reviews for listing are related to concerns related to the impact of WNS on populations of little brown and tricolored bats. ESI is also aware of conservation groups actively considering petitioning USFWS to consider for listing the red, hoary, and silver-haired bat due to concerns associated with mortality at wind energy sites (Kunz et al. 2007, Arnett and Baerwald 2013, Arnett et al. 2016, Frick et al. 2017).

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APPENDIX A
LIFE HISTORY AND ECOLOGY OF LISTED BAT SPECIES

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1.0 Indiana Bat (*Myotis sodalis*)

1.1 Description

The Indiana bat is a medium-sized bat in the genus *Myotis*. The forearm length has a range of 35 to 41 millimeters (1.4 – 1.6 in). The head and body length range from 41 to 49 millimeters (1.6 – 1.9 in). Its appearance most closely resembles that of congeners little brown bat (*M. lucifugus*) and northern long-eared bat. Indiana bats differ from similar *Myotis* species in that they have a distinctly keeled calcar (cartilage that extends from the ankle to support the tail membrane). Other minor differences include smaller and more delicate hind feet, shorter hairs on the feet that do not extend past the toenails, and a pink nose. The fur lacks luster, and the wing and ear membranes have a dull, flat coloration that does not contrast with the fur (USFWS 2007). Fur on the chest and belly is lighter than fur on the back, but is not as strongly contrasting as that of similar *Myotis* species. Overall color is slightly grayer, while the little brown bat and northern bat are browner. The skull has a crest and tends to be smaller, flatter, and narrower than that of the little brown bat (USFWS 2007) .

1.2 Ecology

The Indiana bat is a "tree bat" in summer and a "cave bat" in winter. There are four ecologically distinct components of the annual life cycle: winter hibernation, spring staging and autumn swarming, spring and autumn migration, and the summer season of reproduction. The U.S. Fish & Wildlife Service Recovery Plan (2007) provides a description of the life history. Figure 1 provides an annual chronology of seasonal activities.

1.2.1 Summer Roosting Ecology

The summer range of the Indiana bat is large and includes much of the eastern deciduous forestlands between the Appalachian Mountains and Midwest prairies (Figure 2). Distribution throughout the range is not uniform and summer occurrences are more frequent in southern Iowa and Michigan, northern Missouri, Illinois, and Indiana. Greater tree densities do not equate to more bats (Brack et al. 2002). Cooler summer temperatures associated with latitude or altitude likely affect reproductive success and the summer distribution of the species (Brack et al. 2002).

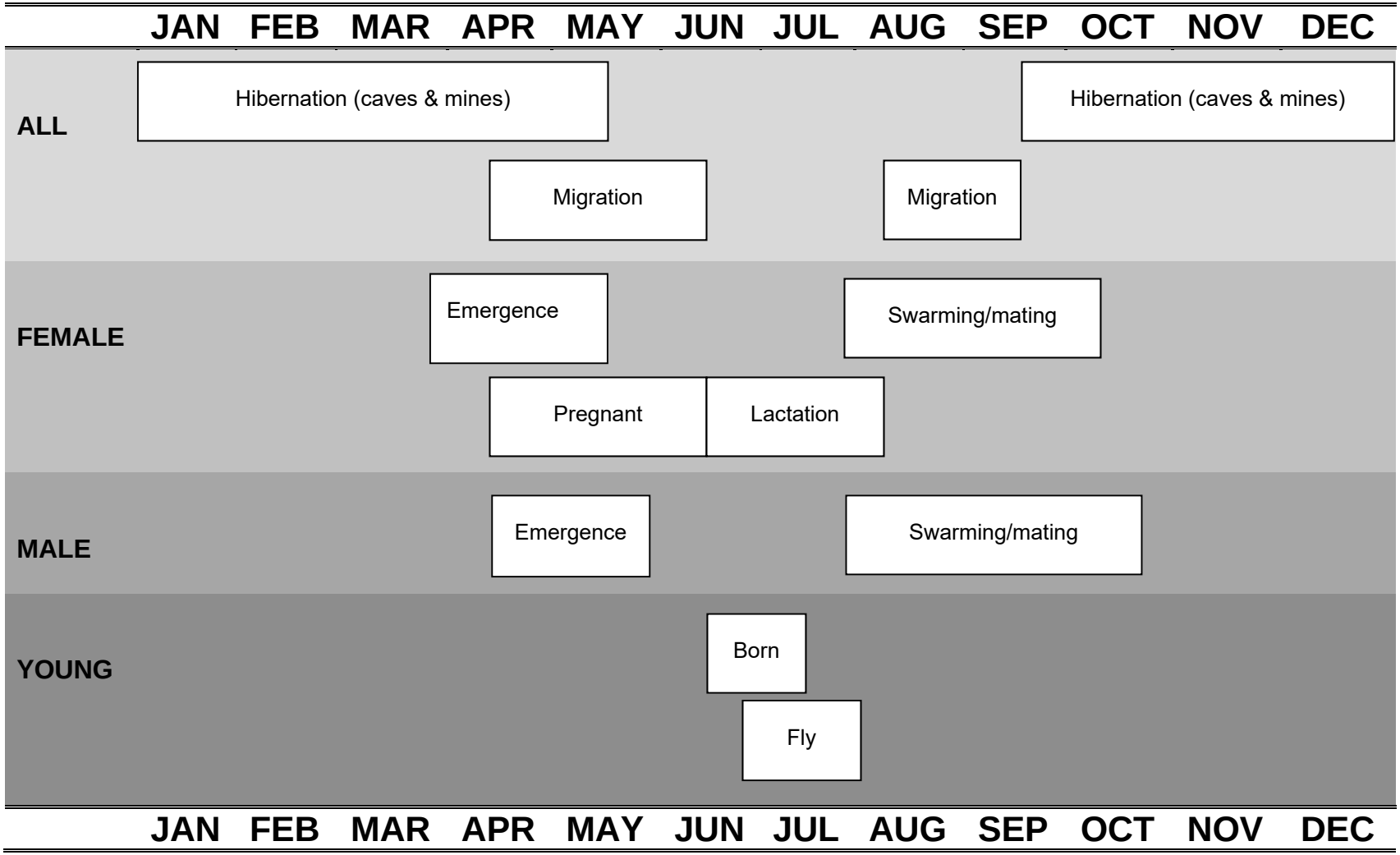

Figure 1. Seasonal chronology of Indiana bat activities.

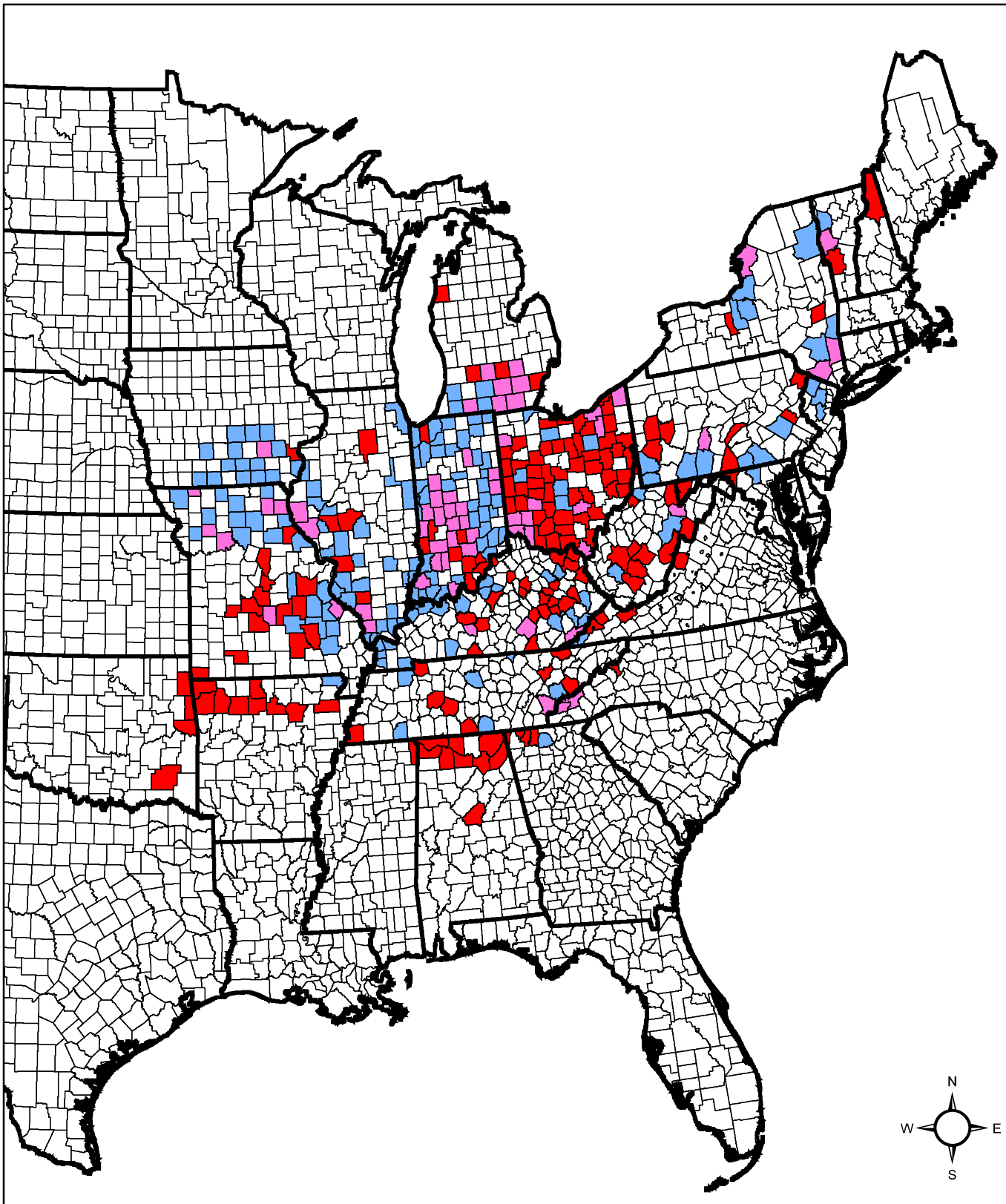

Figure 2. Rangewide distribution of the Indiana bat during summer, showing counties with reproductive (adult female and/or young-of-the-year) and non-reproductive records.

County with Record of Indiana Bat Reproductive Occurrence

County with Record of Indiana Bat Summer Non-Reproductive Occurrence

County with Record of Indiana Bat Reproductive and Summer Non-Reproductive Occurrence

Sources: USFWS, Indiana Bat Revised Recovery Plan, Agency Draft, 2007. Updated: June 2017

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1.2.1.1 Males

Some males remain near hibernacula throughout summer while others migrate varying distances (Whitaker and Brack 2002). Males can be caught at hibernacula on most nights during summer (Brack 1983, Brack and LaVal 1985), although there may be a large turnover of individuals between nights (Brack 1983). Woodland roosts appear similar to maternity roosts (Kiser and Elliott 1996, Schultes and Elliott 2002, Brack and Whitaker 2004, Brack et al. 2004), although smaller diameter trees may be used. Less space may be required for a single bat than a colony of bats, or thermal requirements may differ. Males appear somewhat nomadic; over time, the number of roosts and the size of an area used increases. Activity areas encompass roads of all sizes, from trails to interstate highways. Roosts have also been located near roads of all sizes (Kiser and Elliott 1996, Schultes and Elliott 2002, Brack et al. 2004), including adjacent to an interstate highway (Brack et al. 2004).

1.2.1.2 Females and Maternity Colonies

When female Indiana bats emerge from hibernation, they migrate to maternity colonies that may be located up to several hundred miles away (Kurta and Murray 2002). Females form nursery colonies under exfoliating bark of dead, dying, and living trees in a variety of habitat types, including uplands and riparian habitats. A wide variety of tree species, including occasional pines (Britzke et al. 2003) are used as nursery colonies indicating that it is tree form, not species that is important for roosts. Since many roosts are in dead or dying trees, they are often ephemeral. Roost trees may be habitable for one to several years, depending on the species and condition of the tree (Callahan et al. 1997) Indiana bats exhibit strong site fidelity to summer roosting and foraging areas (Kurta and Murray 2002, Kurta et al. 2002). Females are pregnant when they arrive at maternity roosts. Parturition typically occurs between late June and early July. A maternity colony typically consists of 25 to 325 adult females. Nursery colonies often use several roost trees (Kurta et al. 1993, Foster and Kurta 1999, Kurta and Murray 2002), moving among roosts within a season. Most members of a colony coalesce into a single roost tree about the time of parturition, which begins to break up again as soon as young are volant.

Roosts that contain large numbers of bats (more than 20 bats) are often called primary roosts, while secondary roosts hold fewer bats. Primary roost trees are often greater than 46 centimeters (18 in) diameter at breast height (dbh) and secondary roost trees are often greater than 23 centimeters (9 in) dbh (Gardner et al. 1991, Callahan et al. 1997, Kurta et al. 2002, Miller et al. 2002, Carter 2003). Numerous suitable roosts may be required to support a single nursery colony, possibly about 45 stems per hectare (20/acre) (Gardner et al. 1991, Miller et al. 2002, Carter 2003).

Roost trees are often located where they have solar exposure, with 20 to 80 percent canopy closure (Humphrey et al. 1977, Gardner et al. 1991, Kurta et al. 1993, Kurta et al. 1996, Kurta et al. 2002, Carter 2003).

They are often exposed to 10 or more hours of solar radiation per day (Kurta et al. 2002). The need for solar exposure may vary with latitude.

Indiana bats live on anthropogenic landscapes and recent research indicates females do include roads in their active area. Although bats do cross roads, the studies that document this behavior were not designed to gauge a graded response (Gardner et al. 1991, Brown et al. 2001, Kiser et al. 2002, Kurta et al. 2002, Brack and Whitaker 2006).

1.2.2 Food Habits and Foraging Ecology

Like many other species of microchiropterans, the Indiana bat often uses travel corridors that consist of open flyways such as streams, woodland trails, small infrequently used roads, and possibly utility corridors, regardless of suitability for foraging or roosting (Brown and Brack 2003). Members of maternity colonies forage in a variety of woodland settings, including upland and floodplain forest (Humphrey et al. 1977, Brack 1983, Gardner et al. 1991). Foraging activity is concentrated above and around foliage surfaces, such as over the canopy in upland and riparian woods, around crowns of individual or widely spaced trees, and along edges. They forage less frequently over old fields, and occasionally over bushes in open pastures. Forest edges, small openings, and woodlands with patchy trees provide more foraging opportunities than dense woodlands. Most species of woodland bats forage prominently along edges, less in openings, and least within forests (Grindal 1996). Openings also provide a better supply of insects than do wooded areas (Tibbels and Kurta 2003).

2.0 Northern Long-Eared Bat (*Myotis septentrionalis)*

2.1 Description

The northern long-eared bat ranges from the northern border of Florida north and west to Saskatchewan and east to Labrador. This bat is common to a variety of forest types ranging from intact to small remnants. Although primarily an eastern species, the northern long-eared bat can be found as far west as Montana, and onto the High Plains.

The northern long-eared bat weighs about 5-8 grams (0.17-0.28 oz) at maturity and its right forearm measures about 34-38 millimeters (1.3 – 1.5 in). The wing membrane connects to the foot at the base of the first toe. The northern long-eared bat is most easily characterized by the long ears (17 mm [0.7 in]), which extend past the muzzle when laid forward, as well as a long and thin tragus (9 mm [0.4 in]) (Whitaker and Mumford 2009). The northern long-eared bats' pelage is typically colored a light to dark

brown on the dorsal side and a light brown on the ventral side (Caceres and Barclay 2000, Whitaker and Mumford 2009). Ears and wing membranes are usually a dark brown.

2.2 Seasonal Ecology

The northern long-eared bat is a "tree bat" in summer and a "cave bat" in winter. During the summer, the species is forest dependent. As with the Indiana bat, there are four ecologically distinct components of the annual life cycle: winter hibernation, spring staging and autumn swarming, spring and autumn migration, and the summer season of reproduction (Figure 3).

2.3 Summer Roosting Ecology

The summer range of the northern long-eared bat is large and includes much of the eastern deciduous forestlands from the northern border of Florida north and west to Saskatchewan and east to Labrador (Caceres and Barclay 2000, Whitaker and Mumford 2009) (Figure 4). Distribution throughout the range is not uniform, and summer occurrences are more common in the northern and northeastern portions of the species' range than in southern and western portions (Caceres and Barclay 2000, Amelon and Burhans 2006). Historically, these areas were primarily forested. Through the southern portions of their range, they appear to be less abundant, and are thought of as rare in Alabama, South Carolina, and Georgia (Mumford and Cope 1964, Barbour and Davis 1969, Amelon and Burhans 2006, Whitaker and Mumford 2009, Timpone et al. 2010). Although occasionally captured/recorded in western portions of their range, they are uncommon when records are compared to eastern areas, and may now occupy this area as a result of range expansion following settlement (Sparks et al. 2011).

When female northern long-eared bats emerge from hibernation, they migrate to maternity colonies. The distance traveled from winter hibernacula to summer roosting areas is not known. Maternity colonies are typically found in hollow trees and under bark although they also use bat-houses, buildings, and other anthropogenic structures (Amelon and Burhans 2006). After parturition, pups usually achieve volancy by 21 days (Kunz 1971, Krochmal and Sparks 2007). As the offspring become volant, average number of bats using a maternity roost declines (Lacki and Schwierjohann 2001, Sparks 2003).

A wide variety of deciduous tree species, as well as occasional coniferous species, are used as nursery colonies indicating that it is tree form, not species that is important for roosts (Caceres and Barclay 2000, Carter and Feldhamer 2005). This species regularly uses both live and dead trees (Sasse and Pekins 1996, Foster and Kurta 1999, Lacki and Schwierjohann 2001, Sparks 2003, Timpone 2004, Whitaker et al. 2004, Carter and Feldhamer 2005, Ford et al. 2006, Timpone et al. 2010, Johnson et al. 2012, Silvis et al. 2012, Johnson et al. 2013, Silvis et al. 2014). The northern long-eared bat may choose either tree condition, depending on the presence or availability within an area,

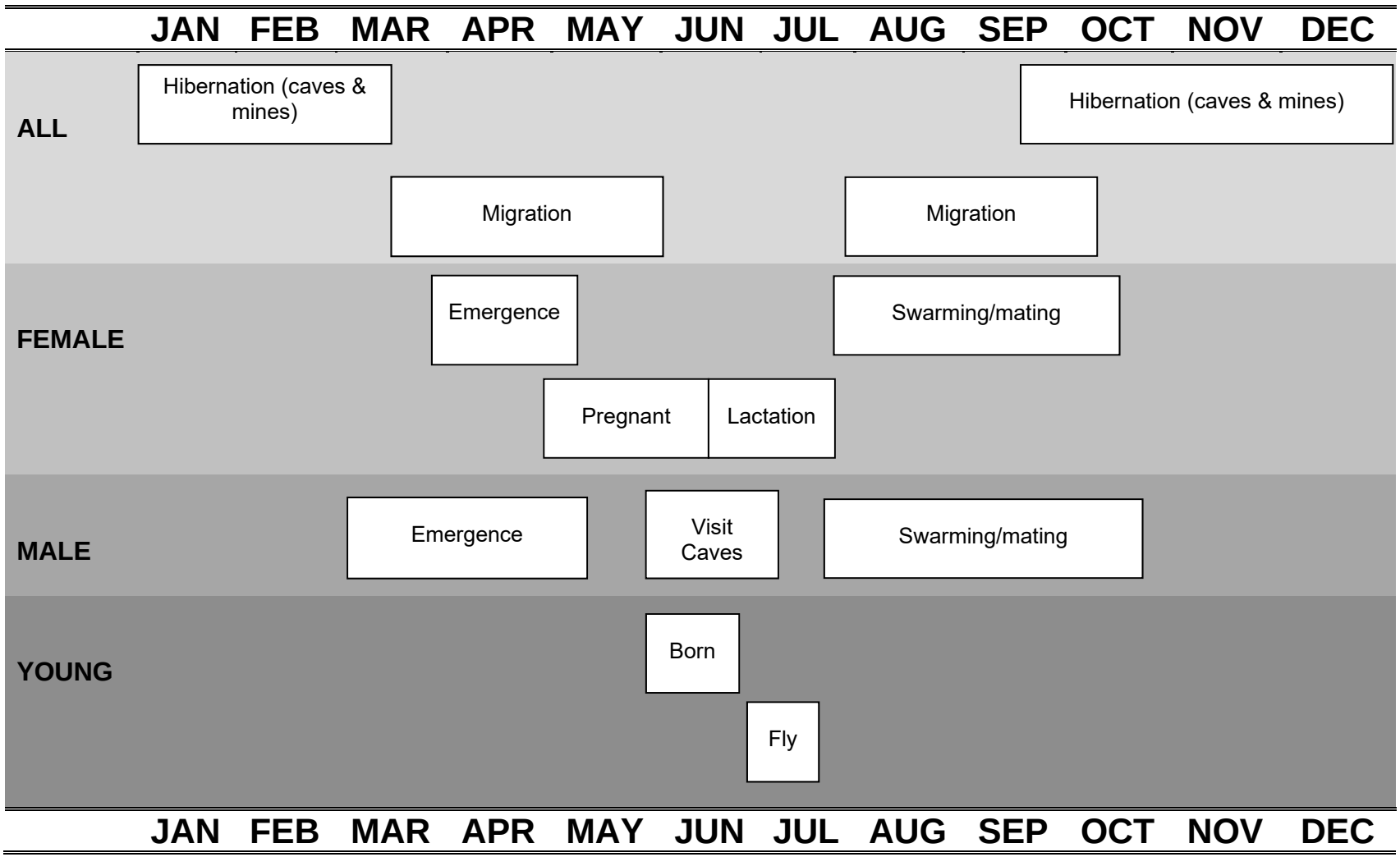

Figure 3. Seasonal chronology of northern long-eared bat activities

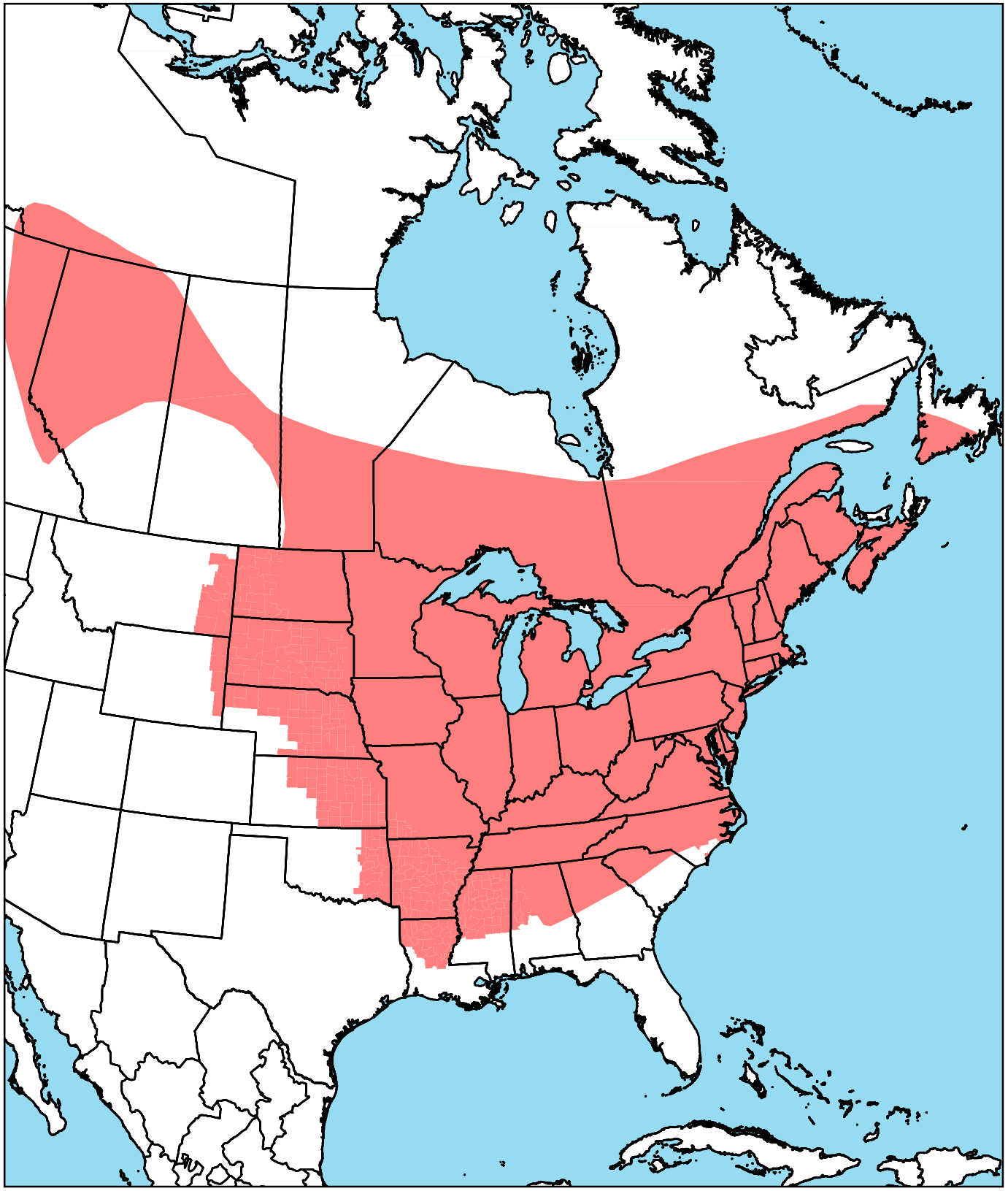

Figure 4. Rangewide distribution of the northern long-eared bat during summer.

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or possibly due to competition with or predation from other wildlife (Perry and Thill 2007, Perry et al. 2007). Roost trees may be habitable for one to several years, depending on the species and condition of the tree. The species may also use several other structures as summer roost sites. These can be natural or man-made (e.g. bridges, barns/homes, rocky cracks or crevices). Northern long-eared bats make extensive use of bat-houses when these structures are available (Whitaker et al. 2006).

Some males and non-reproductive females remain near their winter hibernacula throughout summer while others migrate varying distances. This may be due to a preference for cooler environments in the absence of pups (Barbour and Davis 1969, Amelon and Burhans 2006).

Males can be caught at hibernacula on most nights during summer, although there may be a large turnover of individuals between nights.

Structurally, summer roosts used by males are similar to those used by maternity colonies. Trees used by males of the species are often smaller than those used by maternity colonies, perhaps because males are often solitary or form small groups and thus need less space or they may have different thermal requirements than females.

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APPENDIX B
PHOTOGRAPHS

AS001 Net A

AS001 Net B

AS001 Net C

AS001 Net D

AS001 Net C

AS001 Net D

AS001 Net E

AS002 Net A

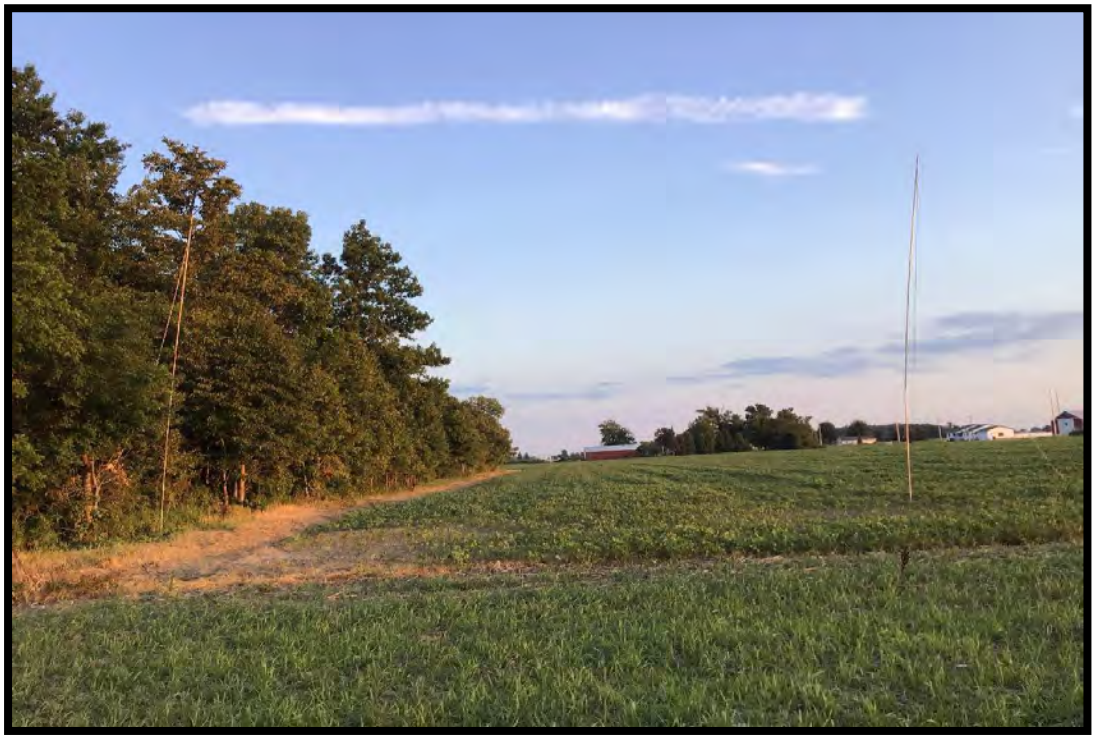
AS002 Net B

AS002 Net C

AS002 Net D

AS002 Net E

AS003 Net A



AS003 Net B

AS003 Net C

AS003 Net D

AS003 Net E

Big brown bat (*Eptesicus fuscus*) captured 2 August 2019

Eastern red bat (*Lasiurus borealis*) captured 3 August 2019

APPENDIX C
DATA SHEETS

ESI

2019

Property of: Environmental Solutions & Innovations, Inc.
4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)

HABITAT ASSESSMENT

Project #: 1240.04 **Date:** 03 Aug 2019 **State:** OH **County:** Paulding

Project Name: Grover Hill WRA **Site Name/#:** A5001 (Site D) **USGS Quad:**

Permitted Biologist: Jada Wilson (full name) Other Field Staff: Jared Kleinhenz (full name) State Permit #: 20-075

Federal Permit #: TE02373A-14

NET E 41.000456 -84.489230

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude		Longitude		Picture #	Waypoint #
NET	A	41.01279'	"N	-84.464610'	"W		
NET	B	41.01062'	"N	-84.464902'	"W		
NET	C	41.01011'	"N	-84.464902'	"W		
NET	D	41.00865'	"N	-84.464696'	"W		

Distance to closest water source (meters): 0 Type of water source: Stream/River

Water source name: Hoaglin Creek

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS OR DETECTOR):

Bank Height: 2.5 meters Channel Width: 10 meters Stream Width: 9 meters

Substratum: ___Bedrock ___Boulder ✓Cobble ___Gravel ✓Sand ___Silt/Clay

Still Water Present (Y/N): Y Average Water Depth: 0.3 m or cm Clarity (H,M,L): M

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)
Platanus occidentalis
Gleditsia triacanthos
Populus deltoides

Subdominant Canopy Species (< 40 cm/16" dbh)
Gleditsia occidentalis
Juglan nigra
Populus deltoides

Estimated dbh range: Lg: 46 Sm: 41

Estimated dbh range: Lg: 35 Sm: 26

Relative abundance of dominant vs. subdominant (ratio): 1:4

Estimated canopy closure: ___Closed ✓Moderate ___Open

Roost tree potential consists of: ___Hollow ___Large Trees ✓Snags ___Neither

M. sodalis roost tree potential is: ___High ___Moderate ✓Low

Roost potential comments: Snags on field edge and snags within forested area

M. septentrionalis roost tree potential is: ___High ✓Moderate ___Low

Roost potential comments: Snags on field edge and within the forested area and on stream corridor

Subcanopy clutter: ___Closed ✓Moderate ___Open

Subcanopy consists largely of: ✓Lower Branches of Canopy Trees ✓Saplings ✓Shrubs

Common Subcanopy Species: Morus alba Acer saccharinum Quercus spp.

Check all that apply:

___Mature Upland Forest	___Recently Logged Forest	✓Crop/Pasture Land	Other _____
✓Young Upland Forest	✓Forest Edge	✓Stream/River	_____
___Mature Lowland Forest	___Woodlot	___Vernal Pool	_____
✓Young Lowland Forest	___Old Field	___Deepwater Lake/Pond	_____

Herbaceous Cover: ___ Sparse ___Moderate ✓Dense

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HABITAT ASSESSMENT (continued)

Project #: 1240.04	State/County: OH / Paulding	Site Name/#: ASH07	Initials: JW / JK

SKETCH NETS and/or DETECTORS

N

See Digital Sketch.

LEGEND	DETAILED HABITAT DESCRIPTION & COMMENTS
Net: ●——● Detector: ▭◁	Large expanses of agricultural fields, mostly soybean and corn. Isolated woodlots, fragmented forests and stream corridors present with sample area. Large canopy trees are sparsely distributed within forested areas and on riparian corridors, high to moderate subcanopy clutter with forested areas.

2019

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BAT CAPTURE DATA

Project #: 1240.04 **Date:** 01 August 2019

Project Name: Grover Hill WRA **Site Name/#:** ASOOI (Site D)

State: OH **County:** Paulding

GPS Unit #: Iead **Camera #:** Iead

Permitted Biologist: Justin Wilson (full name) Other Field Staff: Jared Kleinhenz (full name)

State Permit #: 20-075 Federal Permit #: TE02373A-14

WEATHER DATA

Time (xxxx h)	Temp (°C)	Wind Speed (estimated – see chart)	% Cloud Cover (estimated)	Comments
~~1830~~ 2030	21.4	1-3	25%	—
~~1900~~ 2100	20.5	1-3	25%	—
~~1930~~ 2130	18.9	1-3	25%	—
~~2000~~ 2200	18.2	0	0%	—
~~2030~~ 2230	17.6	1-3	0%	—
~~2100~~ 2300	16.9	1-3	0%	—
~~2130~~ 2330	17.1	1-3	0%	—
2200 0000	16.2	1-3	0%	—
2230 0030	14.7	1-3	0%	—
2300 0100	13.9	1-3	0%	
2330	13.5	1-3	0%	
0000	13.1	0	0%	
0030				
0100				

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude		Longitude		Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
NET	A	41.0°11'27"	"N	-84.°56'01'03	"W	12	8	2016	0220		
NET	B	41.0°11'062'	"N	-84°8'102'	"W	4	6	2021	0209		
NET	C	41.0°10'11.0'	"N	-84.°48'802	"W	18	7	2042	0221		
NET	D	41.00°8'58.9	"N	-84.°57'5'46	"W	5	7	2031	0211		

Net Placement/Site Description: Net A over creek corridor, Net B over corridor in woodlot, Net C over field edge, Net D over corridor in woodlot

Capt #	Net/ Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro.[1]	Wt (g)	RFA (mm)	Belly[2] (F/M/E)	Wing Index* (0-3)	Comments Picture # /Guano/Hair Sample/Band #
1	C	EPFU	2124	JV	M	↑	13.5	44	M	0	IPAD
2	C	EPFU	2134	JV	m	↑	14.0	46	E	0	IPAD
3	C	EPFU	2210	JV	F	NR	11.0	43	M	0	IPAD
4	A	LABO	2221	Ad	m	↓	10.5	36	M	2	IPAD
5	A	EPFU	2220	JV	F	NR	11	47	E	0	—
6	C	EPFU	2243	JV	M	↑	11	42	F	0	Iead
7	C	EPFU	2306	JV	m	↑	11	41	M	0	IPAD
8	C	EPFU	2314	JV	F	NR	14.0	49	F	0	

[1] Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ (NR=Non-reproductive, PG=Pregnant, L=Lactating, PL=Post-Lactating; ↑=Ascended testes, ↓ Descende testes)
2 F=Full, M=Moderate, E=Empty
* Refer to table on the back

Revised June 2017

2019

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BAT CAPTURE DATA (continued)

Project #: 1240.04 Date: 01 Aug 2019

Project Name: Graver Hill WRA Site Name/#: AS001 (SRED) Initials: JW/JK

Capt #	Net/ Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro.[2]	Wt (g)	RFA (mm)	Belly (F/M/E)	Wing Index* (0-3)	Comments Picture # /Guano/Hair Sample/Band #
9	C	EPFU	2326	Ad	F	PL	19.5	46	F	0	IPAD

Wind Speed (mph)	Description	Visible Condition
0	Calm	Smoke rises vertically
1-3	Light Air	Direction of wind shown by smoke but not by wind vanes
4-7	Light Breeze	Wind felt on face; leaves rustle; ordinary wind vane moved by wind
8-12	Gentle Breeze	Leaves and small twigs in constant motion; wind extends light flag
13-18	Moderate Breeze	Raises dust and loose paper; small branches are moved
19-24	Fresh Breeze	Small trees in leaf begin to sway; crested wavelets on inland water
25-31	Strong Breeze	Large branches in motion; telephone wires whistle; umbrellas used with difficulty
32-38	Moderate Gale	Whole trees in motion; inconvenience in walking against wind
39-46	Fresh Gale	Breaks twigs off trees; generally impedes progress

Score	Description
0	**No damage.** Fewer than 5 small scar spots are present on the membranes.
1	**Light damage.** Less than 50% of flight membrane is depigmented (splotching), which is often visible only with translumination.
2	**Moderate damage.** Greater than 50% of wing membrane covered with scar tissue (splotching). Scarring is visible without translumination. Membrane exhibits some necrotic tissue and possibly few small holes (<0.5 cm diameter). Forearm skin may be flaking and discolored along the majority of the forearm.
3	**Heavy damage.** Deteriorated wing membrane and necrotic tissue. Isolated holes >0.5 cm are present in membranes. Necrotic or receding plagiopatagium and/or chiropatagium are evident.

2019

BAT CAPTURE DATA

Project #: 120.04
Project Name: Grover Hill WRA
State: OH
GPS Unit #: IPAD
Permitted Biologist: Justin Wilson (full name)
State Permit #: 20-075

Date: 03 Aug 2015
Site Name/#: AS101 (S6D)
County: Paulding
Camera #: IPAD
Other Field Staff: Jared Oeinhenz (full name)
Federal Permit #: TE02373A-14

WEATHER DATA

Time (xxxx h)	Temp (°C)	Wind Speed (estimated – see chart)	% Cloud Cover (estimated)	Comments
2030 ~~1930~~	25.4	1-3	0%	—
2100 ~~1900~~	23.5	1-3	0%	—
2130 ~~1930~~	20.4	1-3	0%	—
2200 ~~2000~~	19.1	1-3	0%	—
2236 ~~2030~~	19.2	1-3	0%	—
2259 ~~2100~~	18.2	1-3	0%	—
2330 ~~2130~~	17.2	1-3	0%	—
0000 ~~2200~~	17.1	1-3	0%	—
0030 ~~2230~~	16.8	1-3	0%	—
0059 ~~2300~~	16.4	1-3	0%	—
0130 ~~2330~~	16.3	1-3	0%	—
0200 ~~0000~~	16.1	1-3	0%	—
~~0030~~				
~~0100~~				

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	41.01279 °N	-84.488103 °W	12	8	2011	0203		
Net	B	41.01062 °N	-84.488021 °W	4	6	2014	0210		
Net	C	41.01010 °N	-84.488002 °W	18	9	2021	0219		
Net	D	41.008509 °N	-84.487616 °W	6	7	2024	0206		
Net	E	41.008456	-84.489230	12	8.5	2032	0223		

Net Placement/Site Description:

Capt #	Net/ Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro.[1]	Wt (g)	RFA (mm)	Belly[2] (F/M/E)	Wing Index* (0-3)	Comments Picture # /Guano/Hair Sample/Band #
1	C	EPFU	2125	JV	M	↑	12.5	46	M	0	IPAD
2	C	EPFU	2126	JV	M	↑	11.9	43	M	0	IPAD
3	C	EPFU	2126	Ad	F	PL	17.9	48	M	0	IPAD
4	C	EPFU	2148	Ad	F	NR	19.0	46	M	0	IPAD
5	C	EPFU	2216	JV	M	↑	15.5	43	E	0	IPAD
6	C	EPFU	2216	JV	F	NR	12	41	M	0	IPAD
7	C	EPFU	2217	JV	F	NR	16	45	F	0	IPAD
8	C	EPFU	2217	JV	M	↑	14.5	44	M	0	IPAD
9	D	EPFU	2217	JV	F	NR	12.5	45	M	0	IPAD

[1] Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ (NR=Non-reproductive, PG=Pregnant, L=Lactating, PL=Post-Lactating; ↑=Ascended testes, ↓ Descended testes)
2 F=Full, M=Moderate, E=Empty
* Refer to table on the back
Revised June 2017

				↓	↓	↓	mass	↓	↓	↓	Photo
10	E	EPFU	2243	JV	m	↑	13.0	44	m	∅	IPAD
11	C	LABO	2349	JV	F	NR	11.0	38	m	∅	IPAD
12	C	EPFU	2350	JV	F	NR	15.5	46	F	∅	IPAD
13	C	EPFU	2350	Ad	F	NR	19.6	46	m	ϕ	IPAD
14	C	EPFU	2351	Ad	m	↓	17.0	47	m	ϕ	IPAD
15	C	LABO*	0128	Ad	F	NR	11.25	41	F	ϕ	IPAD

2019

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HABITAT ASSESSMENT

Project #: 1240.04 **Date:** 05 Aug 2019 **State:** OH **County:** Paulding

Project Name: Grover Hill WRA **Site Name/#:** A5002 (Site C) **USGS Quad:**

Permitted Biologist: Justin Wilson (full name) Other Field Staff: Jared Kleinhenz (full name) State Permit #: 20-075

Federal Permit #: TE02373A-14

Net E

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude		Longitude		Picture #	Waypoint #
Net	A	41.041632°	"N	-84.484037°	"W		
Net	B	41.041208°	"N	-84.486181°	"W		
Net	C	41.041116°	"N	-84.485627°	"W		
Net	D	41.039787°	"N	-84.485684°	"W		

Distance to closest water source (meters): 10 Type of water source: Stream/River

Water source name: Prairie Creek

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS OR DETECTOR):

Bank Height: _____meters Channel Width: _____meters Stream Width: _____meters

Substratum: ___Bedrock ___Boulder ___Cobble ___Gravel ___Sand ___Silt/Clay

Still Water Present (Y/N): _____ Average Water Depth: ____m or cm Clarity (H,M,L):____

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)	Subdominant Canopy Species (< 40 cm/16" dbh)
Populus deltoides	Carya ovata
Juglans nigra	Quercus palustris
Quercus bicolor	Gleditsia triacanthos

Estimated dbh range: Lg: 45 Sm: 41 Estimated dbh range: Lg: 35 Sm: 25

Relative abundance of dominant vs. subdominant (ratio): 1:5

Estimated canopy closure: ___Closed ✓Moderate ___Open

Roost tree potential consists of: ___Hollow ___Large Trees ✓Snags ___Neither

M. sodalis roost tree potential is: ___High ✓Moderate ___Low

Roost potential comments: Minimal dominant canopy trees classified as PRT's

M. septentrionalis roost tree potential is: ___High ✓Moderate ___Low

Roost potential comments: Minimal dominant canopy trees classified as PRT's

Subcanopy clutter: ✓Closed ___Moderate ___Open

Subcanopy consists largely of: ✓Lower Branches of Canopy Trees ✓Saplings ✓Shrubs

Common Subcanopy Species: Fraxinus americana Acer saccharinum Lonicera maackii

Check all that apply:

___Mature Upland Forest	___Recently Logged Forest	✓Crop/Pasture Land	Other _____
✓Young Upland Forest	✓Forest Edge	✓Stream/River	_____
___Mature Lowland Forest	✓Woodlot	___Vernal Pool	_____
✓Young Lowland Forest	✓Old Field	___Deepwater Lake/Pond	_____

Herbaceous Cover: ___ Sparse ___Moderate ✓Dense

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ESI

HABITAT ASSESSMENT (continued)

Project #: 1240.04	State/County: OH / Paulding	Site Name/#: (site 0) AS007	Initials: JW/DK

SKETCH NETS and/or DETECTORS

N

See Digital Sketch

LEGEND	DETAILED HABITAT DESCRIPTION & COMMENTS
Net: ●——● Detector: ▭◁	Large expanses of agricultural fields with isolated woodlots and fragmented forest patches and corridors. Small streams/creeks draining through ag fields and along forest and field edges. Minimal large trees that could be classified as PRT's but snags present throughout forested interior and along field, forest, and stream edges.

2019

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ESI

BAT CAPTURE DATA

Project #: 1240.04 Date: 02 Aug 2019

Project Name: Grover Hill WRA Site Name/#: AS002 (Site 0)

State: Ohio County: Paulding

GPS Unit #: Ipad Camera #: Ipad

Permitted Biologist: Justin Wilson (full name) Other Field Staff: Jared Kreinbenz (full name)

State Permit #: 20-075 Federal Permit #: TE02373A-14

WEATHER DATA

Time (xxxx h)	Temp (°C)	Wind Speed (estimated – see chart)	% Cloud Cover (estimated)	Comments
2030 ~~1630~~	20.3	1-3	10%	—
2057 ~~1900~~	19.4	4-7	10%	—
2132 ~~1930~~	17.4	1-3	10%	—
2205 ~~2000~~	16.6	1-3	0	—
2230 ~~2030~~	15.5	1-3	0%	—
2300 ~~2100~~	15.3	1-3	0%	—
2330 ~~2130~~	15.2	1-3	0%	—
0000 ~~2200~~	14.1	1-3	0%	—
0030 ~~2230~~	13.8	1-3	0%	—
0100 ~~2300~~	13.4	1-3	0%	—
0130 2330	13.2	1-3	0%	—
0213 0000	13.2	1-3	0%	—
0030				
0100				

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	41.04163'2 "N	-84.4640'39 "W	18	9	2023	0217		
Net	B	41.042006 "N	-84.°4661#1 "W	12	8.5	2011	0215		
Net	C	41.041118 "N	-84.°46562-7 "W	4	6	2021	0211		
Net	D	41.03 97787 "N	-84.°465684 "W	12	8.5	2034	0214		

Net Placement/Site Description: Net A over field edge, Net B over field edge, Net C over forested corridor, Net D over field edge

Capt #	Net/ Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro.[1]	Wt (g)	RFA (mm)	Belly[2] (F/M/E)	Wing Index* (0-3)	Comments Picture # /Guano/Hair Sample/Band #
1	D	EPFU	2155	Ad	M	↓	16.0	43	M	0	IPad
2	B	EPFU	2206	Jv	F	NR	12.5	46	M	0	IPAD
3	D	EPFU	2220	Jv	M	↑	12.0	45	M	0	IPAD
4	D	EPFU	2247	Jv	F	NR	15.0	44	M	0	IPAD
5	D	EPFU	2248	Ad	F	PL	21.5	46	F	0	IPAD
6	D	LABO	2314	Jv	F	NR	14.0	40	F	0	IPAD
7	D	EPFU	2315	Jv	M	↑	15.0	46	F	0	IPAD
8	D	EPFU	2342	Ad	F	PL	20.5	44	F	0	IPAD

[1] Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ (NR=Non-reproductive, PG=Pregnant, L=Lactating, PL=Post-Lactating; ↑=Ascended testes, ↓ Descende testes)

2 F=Full, M=Moderate, E=Empty

* Refer to table on the back

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BAT CAPTURE DATA

Project #: 1240.04 Date: 05 Aug 2019

Project Name: Grover Hill WRA Site Name/#: AS002 (site 0)

State: Ohio County: Paulding

GPS Unit #: IPAD Camera #: IPAD

Permitted Biologist: Justin Wilson (full name) Other Field Staff: Jared Kleinhenz (full name)

State Permit #: 20-075 Federal Permit #: TE02373A-14

WEATHER DATA

Time (xxxx h)	Temp (°C)	Wind Speed (estimated – see chart)	% Cloud Cover (estimated)	Comments
2030 ~~1830~~	27.9	1-3	50%	—
2100 ~~1900~~	23.5	1-3	40%	—
2130 ~~1930~~	22.7	1-3	30%	—
2200 ~~2000~~	21.6	1-3	10%	—
2230 ~~2030~~	21.1	1-3	0%	—
2300 ~~2100~~	20.8	1-3	0%	—
2330 ~~2130~~	20.0	1-3	0%	—
0000 ~~2200~~	20.5	1-3	25%	—
0030 ~~2230~~	20.1	1-3	10%	—
0100 ~~2300~~	19.8	1-3	0%	—
0130 ~~2330~~	19.6	1-3	0%	—
0205 ~~0000~~	19.5	4-7	0%	—
~~0030~~				
~~0100~~				

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude		Longitude		Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
NET	A	41.044632	°N	-84.484039	°W	18	9	2029	0158	IPAD	
NET	B	41.042004	°N	-84.486181	°W	12	8.5	2017	0204	IPAD	
NET	C	41.041114	°N	-84.485627	°W	4	6	2024	0212	IPAD	
NET	D	41.039767	°N	-84.485684	°W	12	8.5	2031	0223	IPAD	
NET	E					12	8.0	2022	0229		

Net Placement/Site Description: Nets A, B, D, E stacked over field edge, Net C stacked over interior corridor

Capt #	Net/ Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro.[1]	Wt (g)	RFA (mm)	Belly[2] (F/M/E)	Wing Index* (0-3)	Comments Picture # /Guano/Hair Sample/Band #
1	D	EPFU	2203	Jv	M	↑	13.0	42	M	0	IPAD
2	A	EPFU	2217	Ad	M	↓	14.9	46	M	0	—
3	A	EPFU	2252	Jv	F	NR	18.5	47	F	0	IPAD
4	A	EPFU	2252	—	—	—	—	—	—	—	Escaped Net
5	E	EPFU	2339	Ad	F	PL	19.0	44	F	0	IPAD
6	D	EPFU	2342	Ad	F	PL	20.5	48	F	0	IPAD
7	B	EPFU	0039	Jv	M	↑	14.3	44	F	0	IPAD

[1] Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ (NR=Non-reproductive, PG=Pregnant, L=Lactating, PL=Post-Lactating, ↑=Ascended testes, ↓ Descende testes)
2 F=Full, M=Moderate, E=Empty
* Refer to table on the back

Revised June 2017

2019

Property of: Environmental Solutions & Innovations, Inc.
4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

HABITAT ASSESSMENT

Project #: 1240.40 **Date:** 06 August 2019 **State:** OH **County:** Paulding

Project Name: Grove Hill WRA **Site Name/#:** AS003 (Site M) **USGS Quad:** _____

Permitted Biologist: Justin Wilson (full name) Other Field Staff: Jared Kleinhenz (full name) State Permit #: 20-075

Federal Permit #: TE 02373A-14

Net E 41.021193 -84.493591

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Picture #	Waypoint #
Net	A	41.021438 "N	-84.494424 "W		
Net	B	41.022691 "N	-84.494391 "W		
Net	C	41.022567 "N	-84.493047 "W		
Net	D	41.022786 "N	-84.492480 "W		

Distance to closest water source (meters): 525 Type of water source: Pond

Water source name: unknown

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS OR DETECTOR):

Bank Height: _____meters Channel Width: _____meters Stream Width: _____meters

Substratum: ___Bedrock ___Boulder ___Cobble ___Gravel ___Sand ___Silt/Clay

Still Water Present (Y/N): _____ Average Water Depth: ____m or cm Clarity (H,M,L): ____

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)

Quercus rubra

Quercus palustris

Tilia americana

Subdominant Canopy Species (< 40 cm/16" dbh)

Carya ovata

Quercus palustris

Acer rubrum

Estimated dbh range: Lg: 43 Sm: 41

Estimated dbh range: Lg: 36 Sm: 25

Relative abundance of dominant vs. subdominant (ratio): 1:3

Estimated canopy closure: ___Closed ✓Moderate ___Open

Roost tree potential consists of: ___Hollow ✓Large Trees ✓Snags ___Neither

M. sodalis roost tree potential is: ___High ✓Moderate ___Low

Roost potential comments: Snags present on forest/field edges and within forest/woodlot interiors

M. septentrionalis roost tree potential is: ___High ✓Moderate ___Low

Roost potential comments: Snags present on forest/field edges and within forest/woodlot interiors

Subcanopy clutter: ___Closed ✓Moderate ___Open

Subcanopy consists largely of: ✓Lower Branches of Canopy Trees ✓Saplings ✓Shrubs

Common Subcanopy Species: Ulmus americana Acer saccharinum Acer rubrum

Check all that apply:

___Mature Upland Forest	___Recently Logged Forest	✓Crop/Pasture Land	Other Emergent Wetland
✓Young Upland Forest	✓Forest Edge	___Stream/River	
___Mature Lowland Forest	✓Woodlot	___Vernal Pool	
✓Young Lowland Forest	___Old Field	___Deepwater Lake/Pond	

Herbaceous Cover: ___ Sparse ___Moderate ✓Dense

Property of: Environmental Solutions & Innovations, Inc.
4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)

HABITAT ASSESSMENT (continued)

Project #: 1240.40	State/County: OH /	Site Name/#: AS003	Initials: JK

SKETCH NETS and/or DETECTORS

N

See Digital Sketch

LEGEND	DETAILED HABITAT DESCRIPTION & COMMENTS
Net: ●——●	Vast areas of agricultural fields with isolated woodlots and fragmented forests, small pond < 0.5 acres near net site, farm houses within 200m of site. Woodlots are fragmented forests comprised mostly of oak/hickory. Snags present on forest/field edges and within forest/woodlot interiors.
Detector: ▭	

2019

BAT CAPTURE DATA

Project #: 1240.46 Date: 04 August 2019

Project Name: Grover Hill WRA Site Name/#: AS003 (SITE M)

State: Ohio County: Paulding

GPS Unit #: Ipad Camera #: IPAD

Permitted Biologist: Justin Wilson (full name) Other Field Staff: Jared Kleinhenz (full name)

State Permit #: 20-075 Federal Permit #: TE 02373A-14

WEATHER DATA

Time (xxxx h)	Temp (°C)	Wind Speed (estimated – see chart)	% Cloud Cover (estimated)	Comments
2030 ~~1930~~	25.9	1-3	50%	
2100 ~~1900~~	25.1	1-3	30%	
2130 ~~1930~~	23.9	1-3	50%	
2200 ~~2000~~	22.1	1-3	25%	
2230 ~~2030~~	21.9	1-3	0%	
2350 ~~2100~~	20.8	1-3	0%	
2328 ~~2130~~	20.3	1-3	0%	
0000 ~~2200~~	19.2	1-3	0%	
0032 ~~2230~~	19.0	1-3	0%	
0100 ~~2300~~	19.7	1-3	0%	
0130 ~~2330~~	19.5	1-3	0%	
0159 ~~0000~~	19.1	1-3	0%	
~~0030~~				
~~0100~~				

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
NET	A	41.022438 °N	-84.944424 °W	12	8.5	2014	0214		
NET	B	41.022691 °N	-84.944591 °W	18	9	2018	0211		
NET	C	41.022567 °N	-84.943047 °W	6	10	2015	0201		
NET	D	41.022786 °N	-84.942490 °W	12	8	2021	0207		

Net Placement/Site Description: Nets A, B, D stacked over field edge, Net C stacked over interior wall of corridor

Capt #	Net/ Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro.[1]	Wt (g)	RFA (mm)	Belly[2] (F/M/E)	Wing Index* (0-3)	Comments Picture # /Guano/Hair Sample/Band #
1	A	EPFU	2108	Ad	F	PL	16	48	E	0	IPAD
2	B	EPFU	2119	JV	M	↑	11.9	46	E	0	IPAD
3	A	EPFU	2136	JV	F	NR	15.25	45	M	0	IPAD
4	A	EPFU	2137	JV	M	↑	13.5	44	E	0	IPAD
5	B	EPFU	2209	Ad	M	↓	15.5	43	M	0	IPAD
6	B	EPFU	2225	Ad	F	NR	20.3	48	F	0	IPAD
7	D	EPFU	2231	JV	M	↑	15.5	42	M	0	IPAD
8	B	EPFU	2246	Ad	F	PL	21.0	47	F	0	IPAD
9	B	EPFU	2246	Ad	F	NR	16.5	46	M	0	IPAD

[1] Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ (NR=Non-reproductive, PG=Pregnant, L=Lactating, PL=Post-Lactating, ↑=Ascended testes, ↓ Descende testes)
2 F=Full, M=Moderate, E=Empty
* Refer to table on the back
Revised June 2017

Capt	NET	species	Time	Age	Sex	Repro	Mass	RFA	Belly	Wing Index	comment & photo
10	A	EPFU	2258	Ad	F	PL	19.25	46	F	∅	IPad
11	B	EPFU	2301	Ad	F	PL	15.0	44	m	∅	IPad
12	D	EPFU	2324	JV	m	↑	13.2	45	m	∅	IPAD / NO photo
13	A	EPFU	2325	Ad	F	NR	16.25	46	m	∅	IPAD
14	B	EPFU	2334	JV	m	↑	15.0	44	m	∅	IPAD
15	B	EPFU	0147	Ad	F	NR	17.5	45	F	∅	IPAD
16	B	EPFU	0148	JV	m	↑	15.25	44	F	∅	IPAD
17	B	EPFU	0148	JV	F	NR	13.75	44	m	∅	IPAD

2019

BAT CAPTURE DATA

Project #: 1240.40 Date: 06 August 2019

Project Name: Grover Hill WRA Site Name/#: A5003 (SITE m)

State: Ohio County: Paulding

GPS Unit #: IPAD Camera #: IPAD

Permitted Biologist: Justin Wilson (full name) Other Field Staff: Jared Klemhenz (full name)

State Permit #: 20-075 Federal Permit #: TE02373A-14

WEATHER DATA

Time (xxxx h)	Temp (°C)	Wind Speed (estimated – see chart)	% Cloud Cover (estimated)	Comments
2030 ~~1830~~	23.4	1-3	30%	—
2100 ~~1900~~	22.9	1-3	30%	—
2130 ~~1930~~	22.0	1-3	20%	—
2200 ~~2000~~	20.9	4-7	10%	—
2228 ~~2030~~	19.9	4-7	0%	—
2300 ~~2100~~	19.5	1-3	0%	—
2330 ~~2130~~	17.5	4-7	0%	—
2354 ~~2200~~	18.8	1-3	0%	—
~~2230~~	18.4	1-3	0%	—
0100 ~~2300~~	18.1	1-3	0%	—
0130 ~~2330~~	17.8	1-3	0%	—
0254 ~~0000~~	17.7	1-3	0%	—
~~0030~~				
~~0100~~				

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude		Longitude		Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
NET	A	41.022439°	"N	-84.[illegible]°	"W	12	8.5	2013	0154		
NET	B	41.022291°	"N	-84.[illegible]°	"W	18	9	2024	0204		
NET	C	41.022567°	"N	-84.[illegible]°	"W	6	6	2011	0207		
NET	D	41.022706°	"N	-84.[illegible]°	"W	12	8	2028	0213		
NET	E	41.022[illegible]	"N	-84.[illegible]	"W	12	8	2032	0207		

Net Placement/Site Description: Net A, B, D, E stacked over field edge, Net C stacked over interior corridor

Capt #	Net/ Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro.[1]	Wt (g)	RFA (mm)	Belly[2] (F/M/E)	Wing Index* (0-3)	Comments Picture # /Guano/Hair Sample/Band #
1	D	EPFU	2143	Jv	F	NR	15.0	46	M	0	IPAD
2	D	EPFU	2143	Jv	M	↑	13.75	45	E	0	IPAD
3	D	EPFU	2143	Jv	M	↑	14.0	45	E	0	IPAD
4	D	EPFU	2143	Jv	M	↑	13.5	44	E	0	IPAD
5	B	EPFU	2210	Jv	F	NR	15.25	45	M	0	IPAD
6	B	EPFU	2210	Ad	F	NR	15.5	46	M	1	Holes in wing IPAD
7	B	EPFU	2214	Ad	F	PL	20.0	45	F	1	Splotching IPAD
8	D	EPFU	2305	Ad	M	↓	14.5	45	M	0	IPAD

[1] Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ (NR=Non-reproductive, PG=Pregnant, L=Lactating, PL=Post-Lactating, ↑=Ascended testes, ↓ Descende testes)
2 F=Full, M=Moderate, E=Empty
* Refer to table on the back

Revised June 2017

Cap	NET	Species	Time	Age	SEX	Repro	Mass	RFA	Belly	Wings	Comments
9	E	EPFU	2308	JV	F	NR	15.75	48	m	∅	IPAD
10	B	EPFU	2313	Ad	F	NR	20.25	50	F	∅	IPAD
11	B	EPFU	2313	Ad	m	↑	15.75	47	m	∅	IPAD
12	B	EPFU	2313	JV	F	NR	16.0	45	F	∅	IPAD
13	B	EPFU	2352	JV	m	↑	13.75	42	F	∅	IPAD
14	B	EPFU	0044	JV	F	NR	17.25	45	F	∅	IPAD
15	A	LABO	0052	Ad	M	↓	9	37	F	∅	IPAD

Summary: Application - 21 of 40 (Exhibit P - Bat Studies) electronically filed by Christine M.T. Pirik on behalf of Grover Hill Wind, LLC