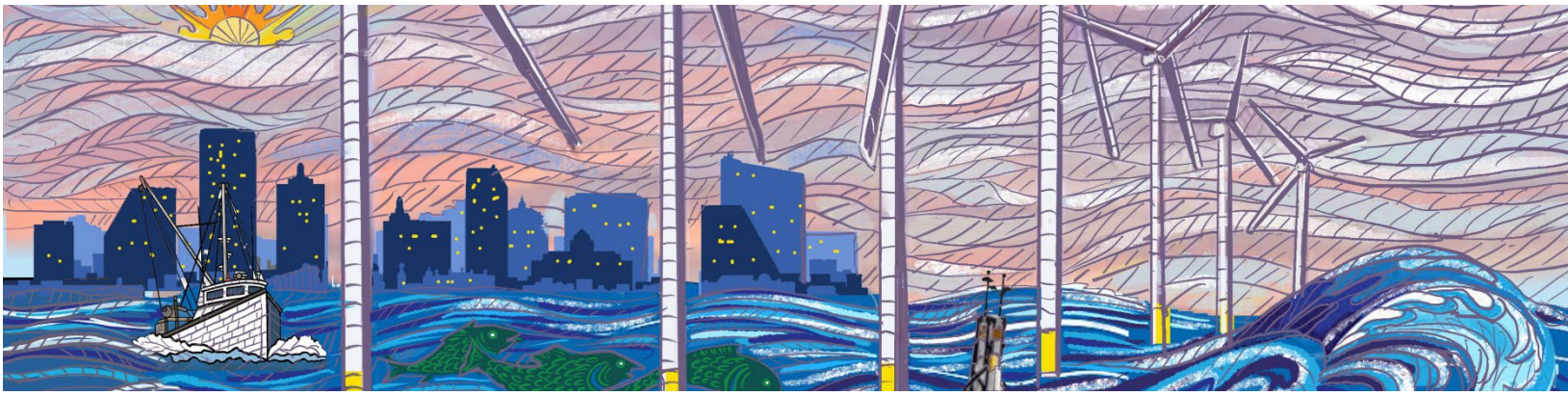

Appendix II-F4

Bat Survey Report

May 2024

Atlantic Shores Offshore Wind
Bat Survey Report

November 2021

Report to:
Environmental Design and Research
217 Montgomery Street
Syracuse, NY 13202

and

Atlantic Shores Offshore Wind, LLC
1 Beacon Street
Boston, MA 02108

Report from:
Biodiversity Research Institute
276 Canco Road
Portland, ME 04103

EXECUTIVE SUMMARY

- Atlantic Shores Offshore Wind, LLC (Atlantic Shores) conducted opportunistic pre-construction boat-based acoustic bat surveys throughout the Lease Area (OCS-A 0499) on survey vessels in 2020 and 2021. The survey plan was developed in consultation with the Bureau of Ocean Energy Management (BOEM), U.S. Fish and Wildlife Service (USFWS), and New Jersey Department of Environmental Protection (NJDEP)the.

- A single SM4Bat acoustic detector (Wildlife Acoustics, Maynard, Massachusetts) was deployed to record bat echolocation calls in full spectrum to identify bat species in the Lease Area. In 2020, the detector was deployed for 65, nights from 16 August–18 November; in 2021, the detector was deployed for 115 nights, from 30 June–01 November. Normandeau Associates, Inc. managed the surveys in 2020, and the Biodiversity Research Institute (BRI) managed the surveys in 2021. BRI analyzed the calls recorded in both years.

- Combining both years of data, detections included the eastern red bat (*n*=495), big brown/silver-haired bat group (*n*=478), silver-haired bat (*n*=80), hoary bat (*n*=37), big brown bat (*n*=26), and Myotis species (*n*=3). No federally listed northern long-eared bats or Indiana bats were detected.

- Bats were detected throughout the Lease area with no clear spatial trends. Surveys were focused on the southern portion of the OCS-A 0499 Lease Area in 2020, and in the central portion in 2021.

- Bats were detected from July to October, with spikes of detections in late August and early September. The last detection was on November 1st in 2020, and October 24th in 2021.

- Wind and temperature influences bat activity. The mean wind speed when bats were detected was 10.3 mph (4.6 m/s), ranging from 1–30 mph (0.5–12.5 m/s), but varied by species. The mean temperature when bats were detected was 74.6^{o} F (23.7^{o} C), ranging from 58.3–83.6^{o} F (14.6–28.7^{o} C); however, the temperature readings may have been influenced by heat generated by the survey vessel itself.

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ACRONYMS AND ABBREVIATIONS

BRI	Biodiversity Research Institute
EPTFUS	*Eptesicus fuscus* (big brown bat)
FE	Federally Endangered
FT	Federally Threatened
IBat Guidelines	2020 Range-wide Indiana Bat Summer Survey Guidelines
JV	Joint-venture
LASBOR	*Lasiurus borealis* (eastern red bat)
LASCIN	*Lasiurus cinereus* (hoary bat)
LASNOC	*Lasionycteris noctivagans* (silver-haired bat)
MLE	Maximum likelihood estimator
MYOLEI	*Myotis leibii* (eastern small-footed bat)
MYOLUC	*Myotis lucifugus* (little brown bat)
MYOSEP	*Myotis septentrionalis* (northern long-eared bat)
MYOSOD	*Myotis sodalis* (Indiana bat)
WEA	New Jersey Wind Energy Area
NYCHUM	*Nycticeius humeralis* (evening bat)
OCS	Outer Continental Shelf
OCS-A 0499	The Lease Area
PERSUB	*Perimyotis subflavus* (tri-colored bat)
USFWS	United States Fish and Wildlife Service
WGS84	World Geodetic System 1984
WNS	White-nose syndrome

1. INTRODUCTION

Atlantic Shores Offshore Wind, LLC (hereafter 'Atlantic Shores') is a 50/50 joint venture between EDF-RE Offshore Development, LLC (a wholly owned subsidiary of EDF Renewables, Inc. [EDF Renewables]) and Shell New Energies US, LLC (Shell). The joint venture was formed in December 2018 to co-develop a 183,353-acre Lease Area on the U.S. Outer Continental Shelf (OCS). The Lease Area (OCS-A 0499) is located within the New Jersey Wind Energy Area (WEA).

Atlantic Shores plans to develop the Lease Area in stages, with Project 1, Project 2, and an Overlap Area (that could be used by either Project 1 or Project 2) located within the southern portion of the Lease Area, known as the Wind Turbine Area (WTA). Although the Construction and Operation Plan (COP) focuses solely on the WTA, the opportunistic bat data are presented here for the entire Lease Area.

At its closest point, the WTA is located approximately 8.7 miles (14.0 kilometers [km]) offshore from the New Jersey coastline. Ten bat species are known to be present in New Jersey (Table 1), and bats can generally be detected offshore during the months of April through November. Considering all acoustic records, however, offshore bat activity peaks throughout the autumn migration period of August to early November, outside of which fewer detections are made.

Within the eastern U.S., long-distance migratory tree bats make up the majority of species observed offshore (Solick & Newman 2021, Hatch et al. 2013). The most common species identified offshore include eastern red bats (*Lasiurus borealis*), hoary bats (*Lasiurus cinereus*), and silver-haired bats (*Lasionycteris noctivagans*), with the eastern red bat being the most prevalent offshore (Solick & Newman 2021). Although less common, *Myotis* bats have also been detected offshore and on coastal islands.

Table 1. Bat species present in New Jersey, their species codes, phonic grouping, and federal conservation status.

Common Name	Latin Name	Species Code	Phonic Group	Federal Listing Status
Hoary bat	*Lasiurus cinereus*	LASCIN	LoF	
Big brown bat	*Eptesicus fuscus*	EPTFUS		
Silver-haired bat	*Lasionycteris noctivagans*	LASNOC		
Eastern red bat	*Lasiurus borealis*	LASBOR	HiF	
Evening bat	*Nycticeius humeralis*	NYCHUM		
Tri-colored bat	*Perimyotis subflavus*	PERSUB		Under Review
Little brown bat	*Myotis lucifugus*	MYOLUC		Under Review
Eastern small-footed bat	*Myotis leibii*	MYOLEI		
Indiana bat	*Myotis sodalis*	MYOSOD		Endangered
Northern long-eared bat	*Myotis septentrionalis*	MYOSEP		Threatened

To determine species composition and further understand the patterns of distribution as they relate to weather conditions, Atlantic Shores collected broad-spectrum bat acoustic data using an ultrasonic detector installed on vessels active throughout the Lease Area. All bat acoustic data was georeferenced with associated date and time information, and correlated with the research vessel's real-time weather station data. Normandeau Associates, Inc. managed the surveys in 2020 and BRI managed the surveys in 2021. BRI analyzed the calls for both years.

2. METHODS

Acoustic surveys were conducted in accordance with survey protocols established by USFWS in the 2020 Range-Wide Indiana Bat Summer Survey Guidelines (IBat Guidelines; USFWS 2020). The IBat Guidelines outline the current protocols to determine the presence or absence of Indiana bats and northern long-eared bats. While the title suggests that this protocol is only for Indiana bats, the USFWS also allows use of the IBat Guidelines for northern long-eared bats (USFWS 2020). BRI possesses a Federal Permit from USFWS (Appendix A) to conduct acoustic surveys in New Jersey.

1.1. Detectors and Set-up

A single SM4Bat acoustic detector (Wildlife Acoustics, Maynard, Massachusetts) with weatherproofed ultrasonic microphone designed for recording echolocation calls of bats was deployed. This type of monitoring device records bat calls in full spectrum; the resulting information can be used to identify bat species in a given area. The detectors recorded and stored data on internal Secure Digital (SD) cards. The microphone for the detector was placed at the highest position possible on the vessel, where it could be safely mounted and encounter minimal interference from the survey vessel's other equipment. The detector and microphone were placed on the "flying bridge" (Figure 1). The detector was programmed to record from 30 minutes before sunset to 30 minutes after sunrise. The memory cards and batteries for the detector were checked and changed once or twice per month, depending on call volume and battery life. Data files were randomly selected to ensure call quality and proper functioning of the detector. Weather and location data were obtained from equipment aboard the vessel.

Figure 1. Placement of the bat detector on the survey vessel in 2021.

1.2. Survey Effort

In 2020, the detector was deployed for 65 nights, from 16 August–18 November; in 2021 the detector was deployed for 115 nights, from 30 June–01 November. The surveys were focused on the southern portion of the OCS-A 0499 Lease Area in 2020, and in the central portion in 2021 (Figure 2). The dataset was then subset to only include calls within the Lease Area, plus a 1.6 mi (2.5 km) buffer, to capture detections of bats in the immediate vicinity of the Projects (hereafter, "study area").

Acoustic data was also recorded from 23 July–15 August, 2020. However, no location or weather data was available, thus these files have been excluded from analysis. This data was examined by a trained acoustic technician and no federally listed species, or species under review, were identified in the files (see Appendix E).

1.3. Software Analysis

Trained acoustic technicians conducted the analysis of data. All data recorded were filtered (or "scrubbed") to remove files that contained only noise or poor-quality recordings. The files that remained were processed with Kaleidoscope Pro. 5.4.6, using the autoclassifier for Bats of North America 5.4.0 region New Jersey (Wildlife Acoustics, Maynard, Massachusetts), to determine which files contained bat calls.

The autoclassification software uses a Maximum Likelihood Estimator (MLE) to produce probability values (*p*-value) of the likely presence or absence of a species. A presence *p*-value table is generated by the Kaleidoscope Pro software and is used to illustrate the statistical likelihood that a bat species is present, based on the number and quality of calls recorded. A *p*-value less than 0.05 indicates probable presence of that species with a high level of certainty, as described in the IBat Guidelines. *P*-values approaching zero (e.g., less than 0.05) suggest that the observed data cannot be explained by random chance if the null hypothesis is assumed to be true. This could mean that the null hypothesis is false (i.e., suggests presence). Alternatively, it could mean that the error rate observed under the study's specific field conditions differs from the measured error rate from collected data (likely). Larger *p*-values (approaching 1) do not necessarily mean that a species is not present; rather, they suggest that there is lack of statistical evidence to suggest presence. Conversely, low *p*-values (approaching zero) do not guarantee presence; rather, they suggest that the data statistically supports presence because the results cannot be explained by observations and known error rates. While this method is currently the best statistical tool available to aggregate data and look for possible presence or likely absence, the use of *p*-values to assess presence/absence has limitations, which should be recognized when assessing this data.

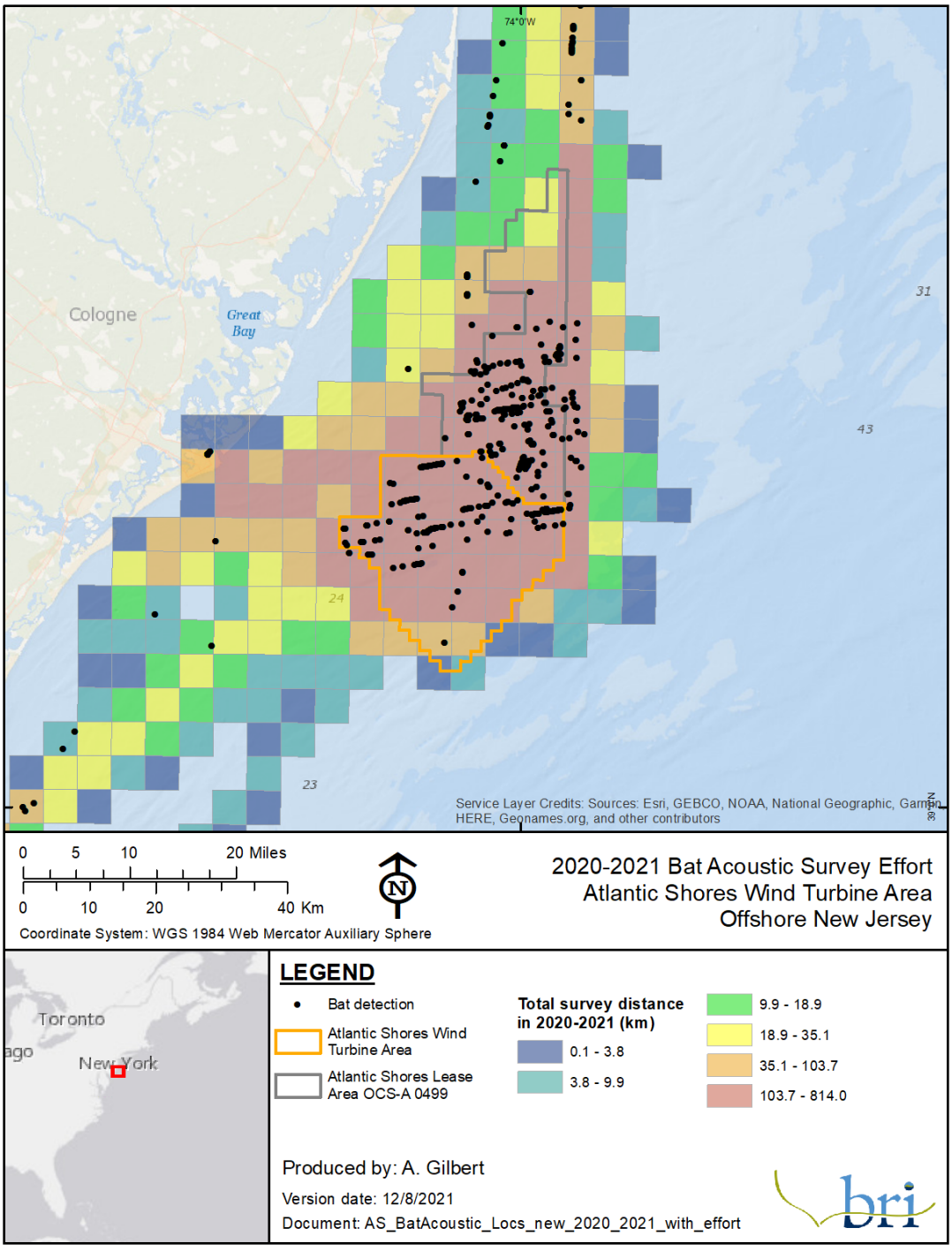

Figure 2. Combined survey effort for 2020 and 2021, and bat detections.

Following the autoclassification process, experienced acoustic technicians manually examined all bat call files with six pulses (individual notes of an echolocation call) or greater. All calls were manually vetted by an acoustician at BRI. Eastern bat calls fall into two phonic groups, including low frequency bats (LoF) and high frequency bats (HiF). The LoF phonic group includes the big brown bat, silver-haired bat, and hoary bat, While the HiF phonic group includes the eastern red bat, tri-color bot, little brown bat, Indiana bat, evening bat, northern long-eared bat, and eastern small-footed bat (Table 1). All HiF calls were examined for quality and species-specific characteristics (i.e., maximum and minimum frequency, duration, multiple pulses within a call, and call shape). If all these parameters were present, then a species-level identification was made. Where information was insufficient to make a species identification, calls were classified to one of the two phonic groups, or a species group. Species groups included the *Myotis* species and big brown/silver-haired groups. The *Myotis* species group includes all *Myotis* species and is used when there is enough information to indicate the acoustic recording is from a probable *Myotis* species call, but not enough information to make a species-level determination. The big brown/silver-haired group includes the big brown bat and silver-haired bat, these two species can be difficult to differentiate unless there is specific information provided in the parameters of the acoustic file. In instances where the call was poor quality, but a phonic group could be determined, then the identification of LoF and HiF were given, as appropriate. If the file contained a bat call, but there was a high level of ambient noise and the phonic group could not be determined, then the call was classified with no identification (NOID). If the file contained no bat calls, then the file was considered noise and given the identification of Noise.

3. RESULTS

1.4. Autoclassification

The MLE *p*-values from the autoclassification software (Table 2), indicate the likelihood of presence for each species at each detector location. Big brown, eastern red, silver-haired, hoary, and tricolored bats had significant *p*-values (<0.05). Threatened and endangered species had the following *p*-values; northern long-eared bat (1) and Indiana bat (1). Software autoclassification identification outputs for each year are provided in Appendix C.

Table 2. Autoclassification MLE *p*-value results for the study area.

Species	Year		Overall
	2020	2021	
Hoary bat	0	0	0
Big brown bat	0	0	0
Silver-haired bat	0	0	0
Eastern red bat	0	0	0
Evening bat	1	1	1
Tri-colored bat	>0.001	>0.001	>0.001
Little brown bat	>0.059	1	1
Eastern small-footed bat	1	1	1
Indiana bat	1	1	1
Northern long-eared bat	1	1	1

1.5. Manual Vetting

During the manual vetting process, described above, a trained acoustic technician manually inspected files to confirm or adjust the identification given by the autoclassification process. Manual vetting confirmed the probable presence of the hoary bat, big-browned bat, silver-haired bat, eastern red bat, tri-colored bat, and '*Myotis* species' (Table 3). No calls contained enough information to confirm the probable presence of the northern long-eared bat. The one file that was autoclassified as a northern long-eared bat was reclassified through manual vetting as noise (see the sonogram and waveform of the file in Appendix E). Overall, bats were detected throughout the study area with no clear spatial trends (Figure 3).

Table 3. Species level manually vetted file results for the study area*.

Species	Year		Total
	2020	2021	
Hoary bat	13	24	37
Big brown bat	17	9	26
Silver-haired bat	26	54	80
Big brown/ Silver-haired bat	163	315	478
Eastern red bat	148	347	495
Evening bat	0	0	0
Tri-colored bat	3	2	5
Little brown bat	0	0	0
Eastern small-footed bat	0	0	0
Indiana bat	0	0	0
Northern long-eared bat	0	0	0
Myotis species	1	2	3
Total	371	753	1124

*Results show the number of files vetted to each category, that were recorded in the study area

Through manual vetting, a total of 660 files were determined to contain HiF bat echolocation calls and 1,296 were LoF (Table 4). All files were placed into phonic groups, to show the total number of bat calls recorded within the study area. Bats were detected throughout the study area with no clear spatial trends (Figure 4).

Table 4. Phonic group level manually vetted file results for the study area*

Species	Year		Total
	2020	2021	
HiF	390	270	660
LoF	795	501	1296
Total	1185	771	1956

*Results show the number of files vetted to each category, that were recorded in the study area

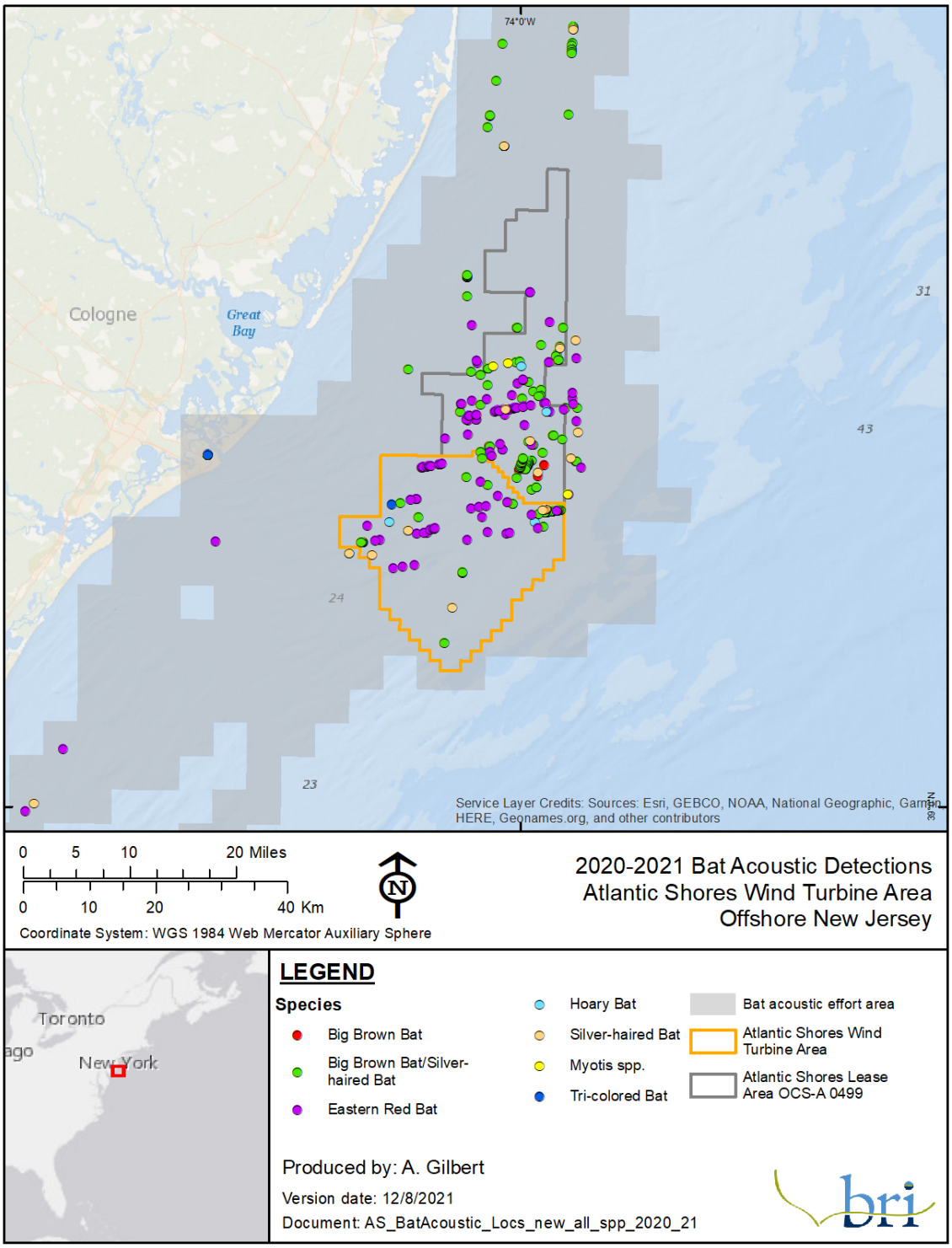

Figure 3. Species level bat acoustic detections in the study area in 2020.

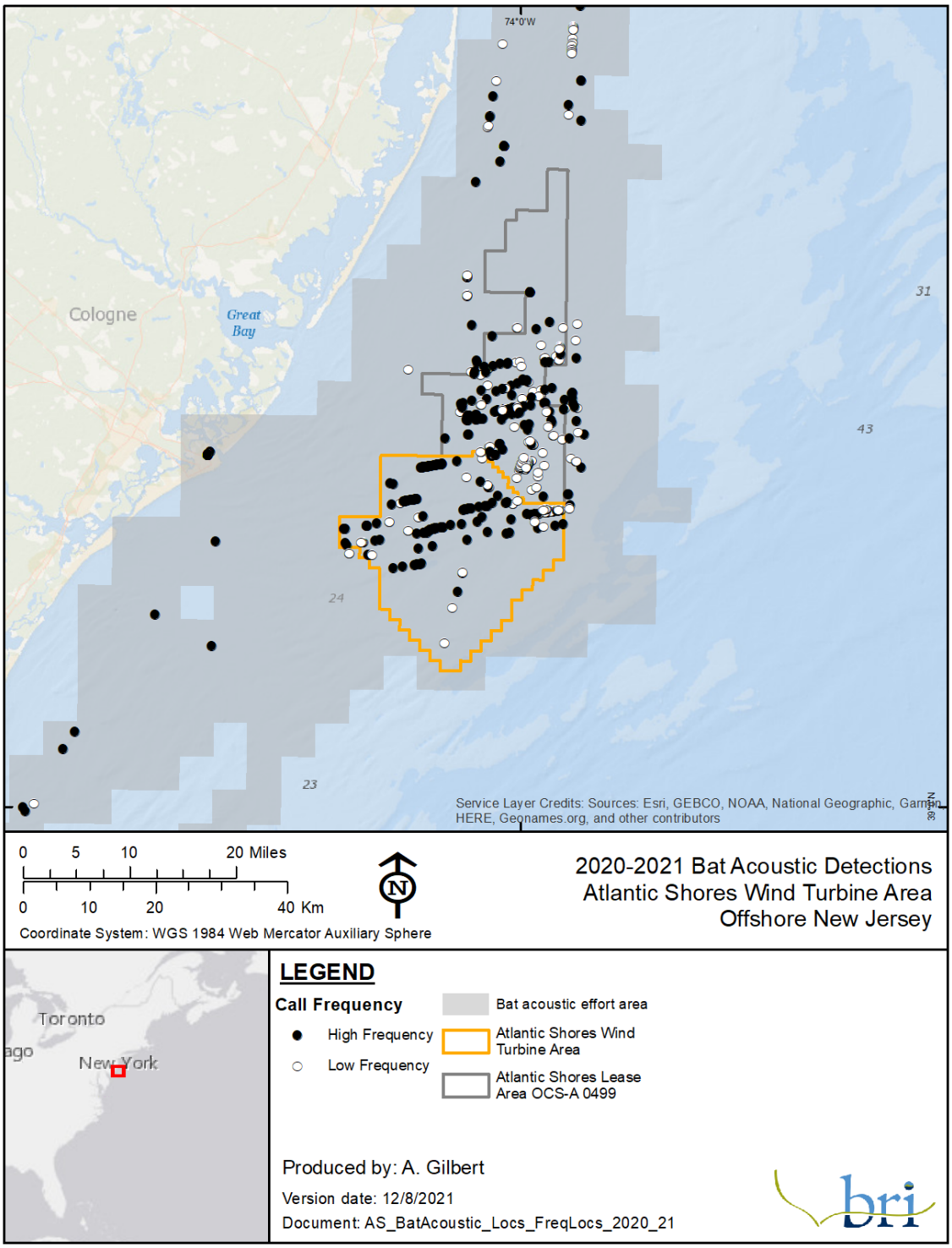

Figure 4. Phonic group level bat detections for study area in 2020 and 2021.

1.6. Temporal Results

Bats were detected from July to October, with spikes of detections in late Augusts and early September (Figures 5 and 6). The last detection was on November 1st in 2020, and on October 24th in 2021. Eastern red bats and the big brown/silver-haired bat group were detected throughout the survey period.

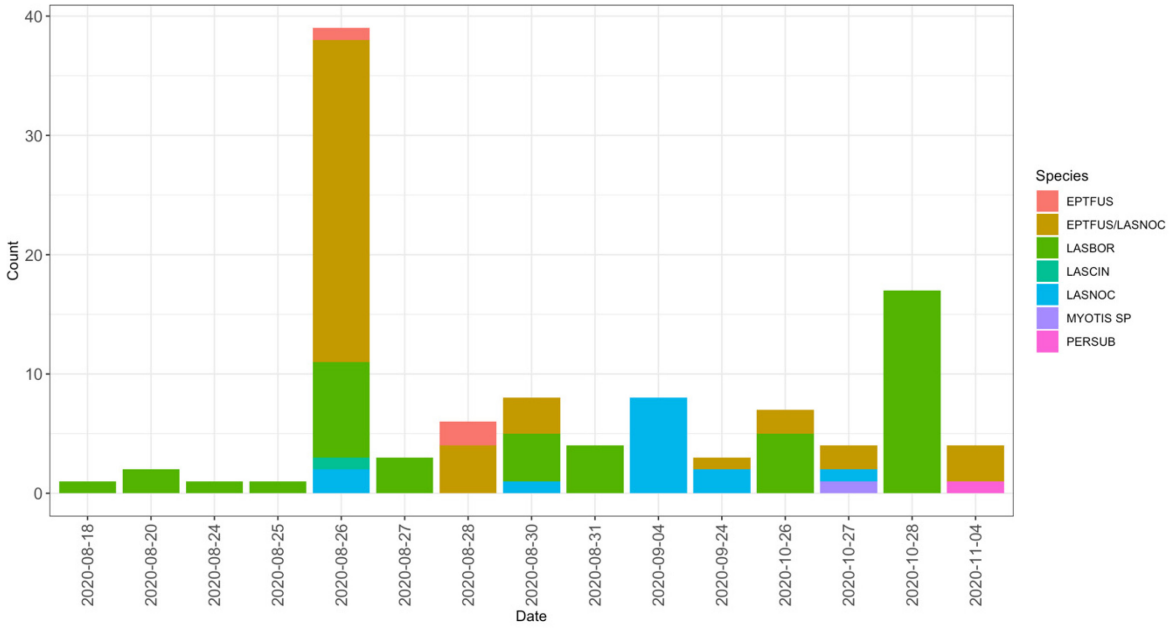

Figure 5. Number of acoustic detections identified to species over time for the study area in 2020 (EPTFUS = big brown bat; LASBOR = eastern red bat; LASCIN = hoary bat; LASNOC = silver-haired bat; PERSUB = tri-colored bat).

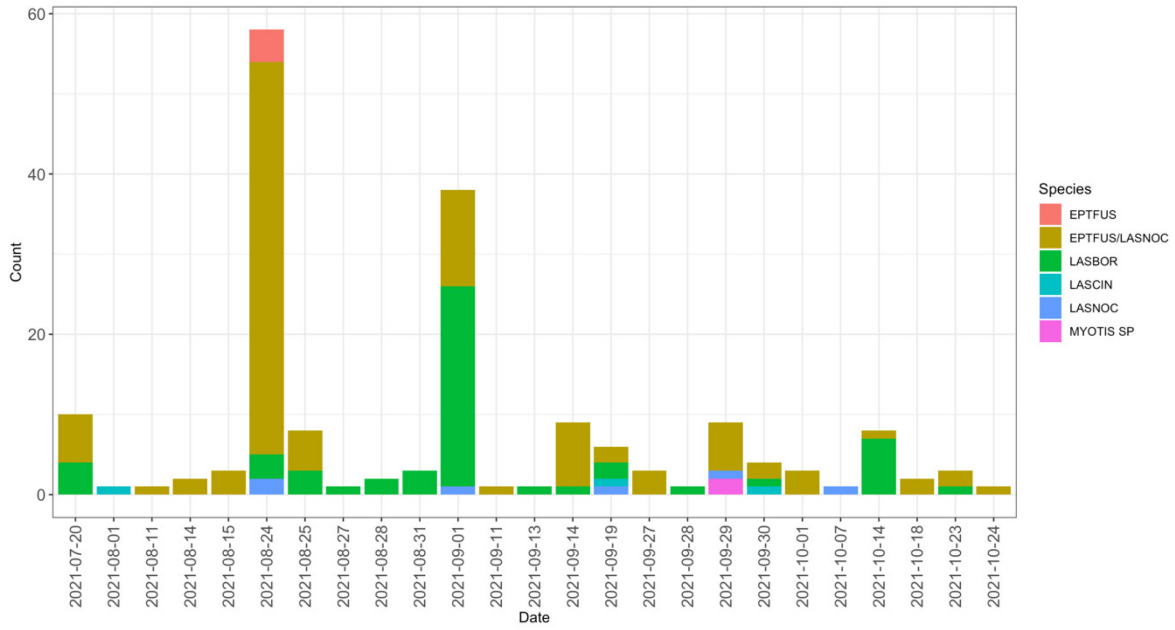

Figure 6. Number of acoustic detections identified to species over time for the study area in 2021 (EPTFUS = big brown bat; LASBOR = eastern red bat; LASCIN = hoary bat; LASNOC = silver-haired bat; PERSUB = tri-colored bat).

1.7. Weather

Since offshore bat activity is influenced by wind speed and temperature, the bat detections (at the species or species group level; *n*=1,124) were related to weather data collected on the vessel. Overall, wind speed varied substantially during both years, but wind speeds were lower in 2021 than 2020 (Figures 7 & 8; Table 5). For both years combined, the mean wind speed when bats were detected was 10.3 mph (4.6 m/s), ranging from 1–30 mph (0.5–12.5 m/s), but varied by species. Big brown bats, silvered-haired bats, and the big brown bat/silver-haired bat group were detected at greater wind speeds than the eastern red bat and hoary bat (Figure 9). There were only three records for the Myotis species group, and five records for tri-colored bats, so these should be considered unreliable due to small sample sizes.

Table 5. Temperature and wind speed when bats were detected by year

Year	Temperature C			Wind Speed		
	Mean	Min	Max	Mean	Min	Max
2020	22.68	14.60	28.10	5.69	0.49	12.47
2021	24.24	15.40	28.70	4.01	0.67	11.09

The mean temperature, for both years combined, when bats were detected was 74.6° F (23.7° C), ranging from 58.3–83.6° F (14.6–28.7° C). Bats were not detected at temperatures below 50° F (10°C; Table 5), although temperatures in 2021 remained relatively high during the survey (Figures 10 & 11). Most species were detected in warmer conditions (Figure 12); however, the temperature readings may have been influenced by heat generated by the survey vessel itself, thus the results should be interpreted with caution.

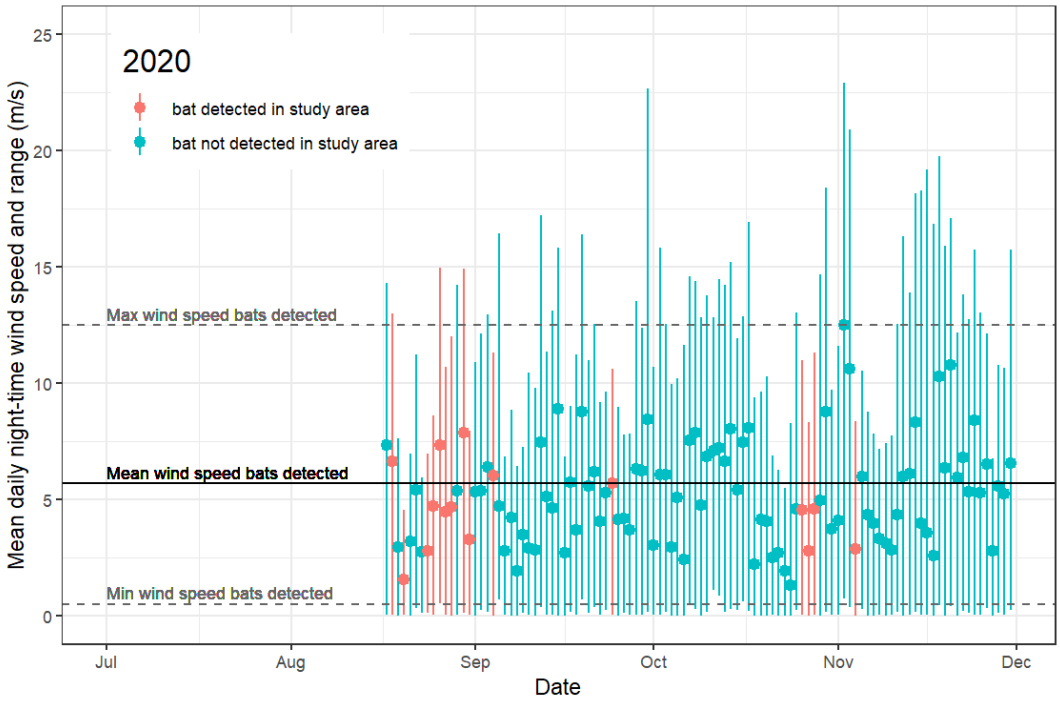

Figure 7. Bat detections in relation to nightly wind speed recorded during the survey in 2020.

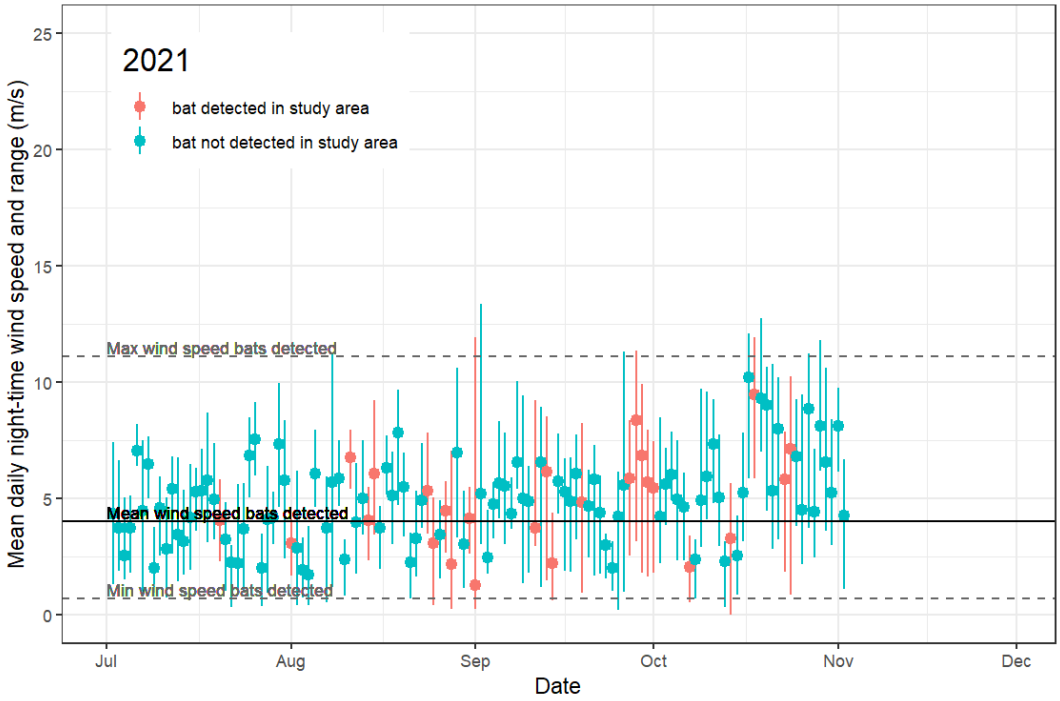

Figure 8. Bat detections in relation to nightly wind speed recorded during the survey in 2021

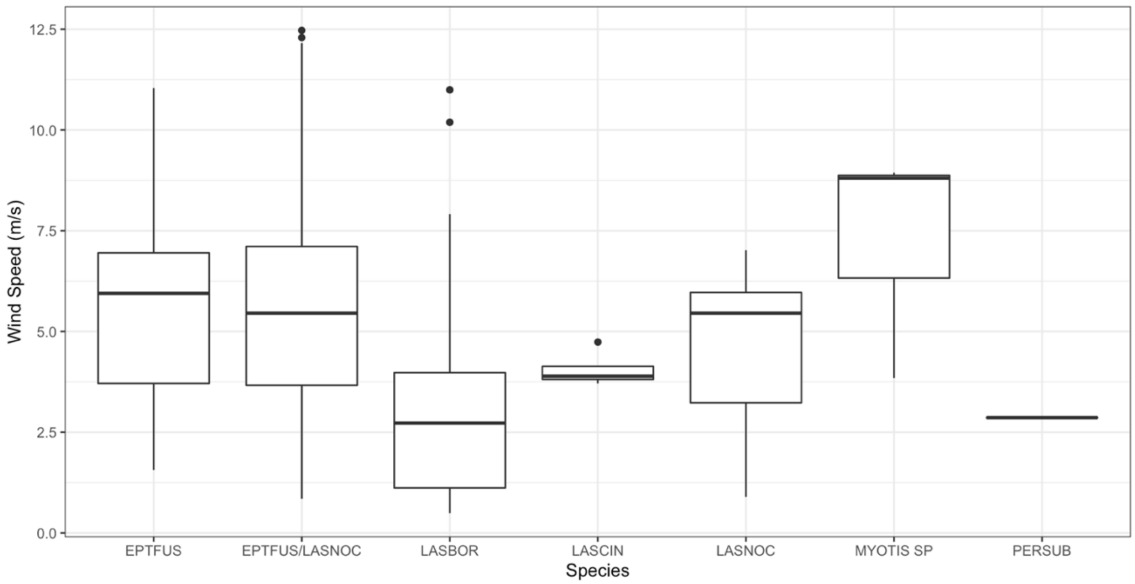

Figure 9. Number of acoustic detections identified to species vs. wind speed for the study area (EPTFUS = big brown bat; EPTFUS/LASNOC = big brown bat/silver-haired bat group; LASBOR = eastern red bat; LASCIN = hoary bat; LASNOC = silver-haired bat; PERSUB = tri-colored bat)

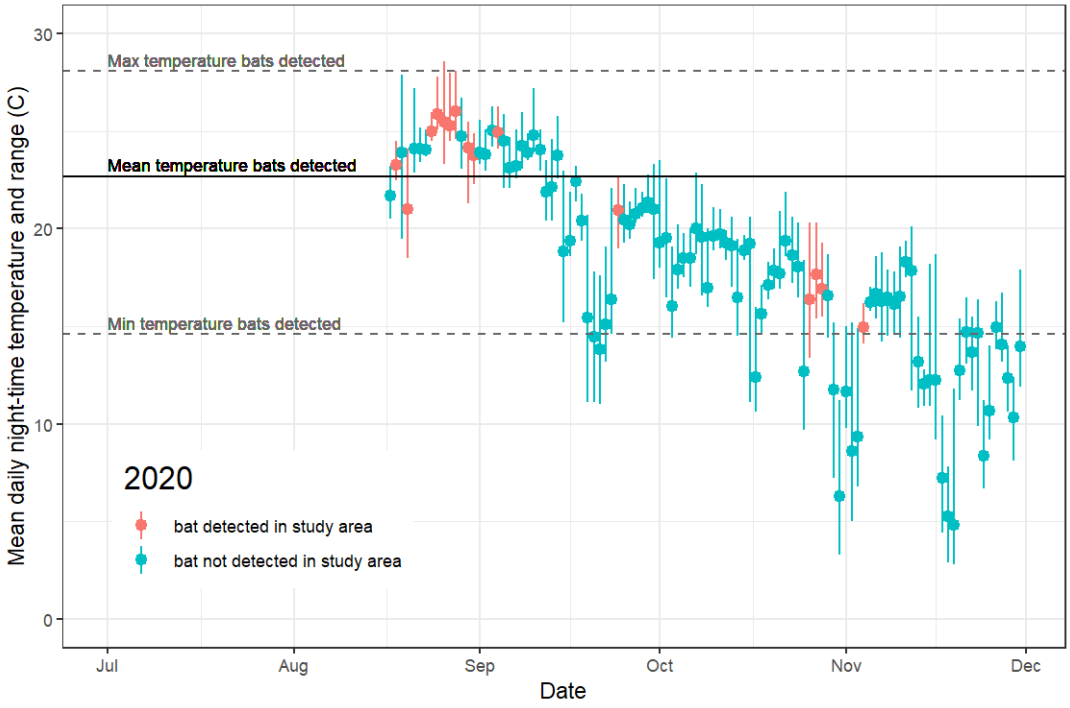

Figure 10. Bat detections in relation to nightly temperature recorded during the survey in 2020

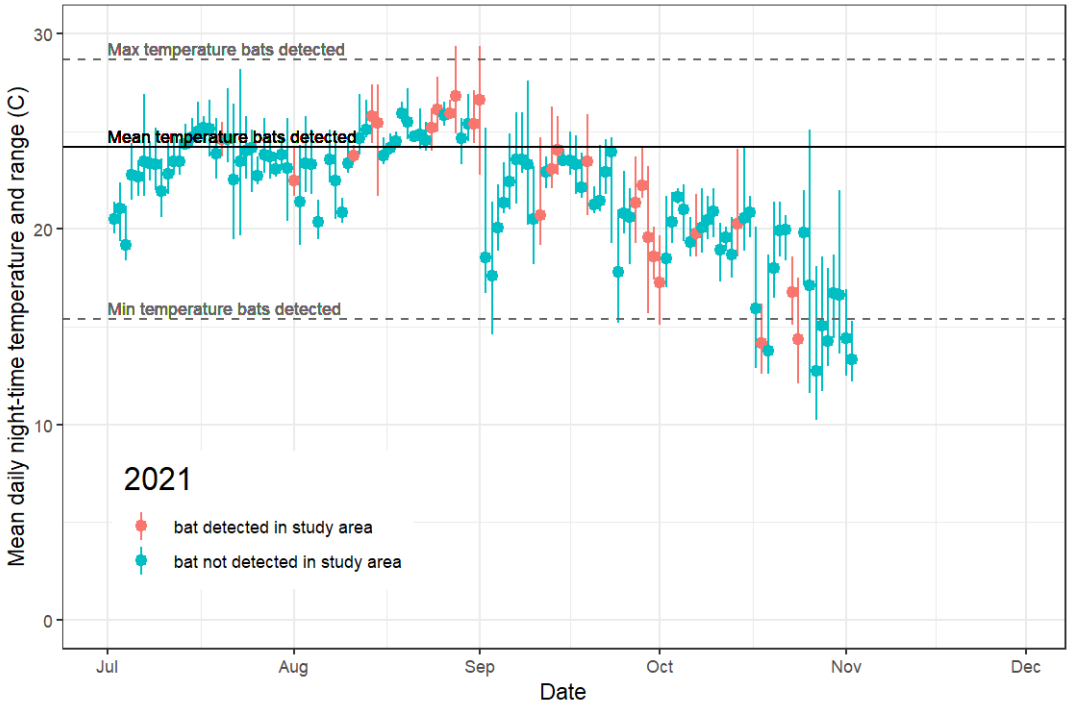

Figure 11. Bat detections in relation to nightly temperature recorded during the survey in 2021

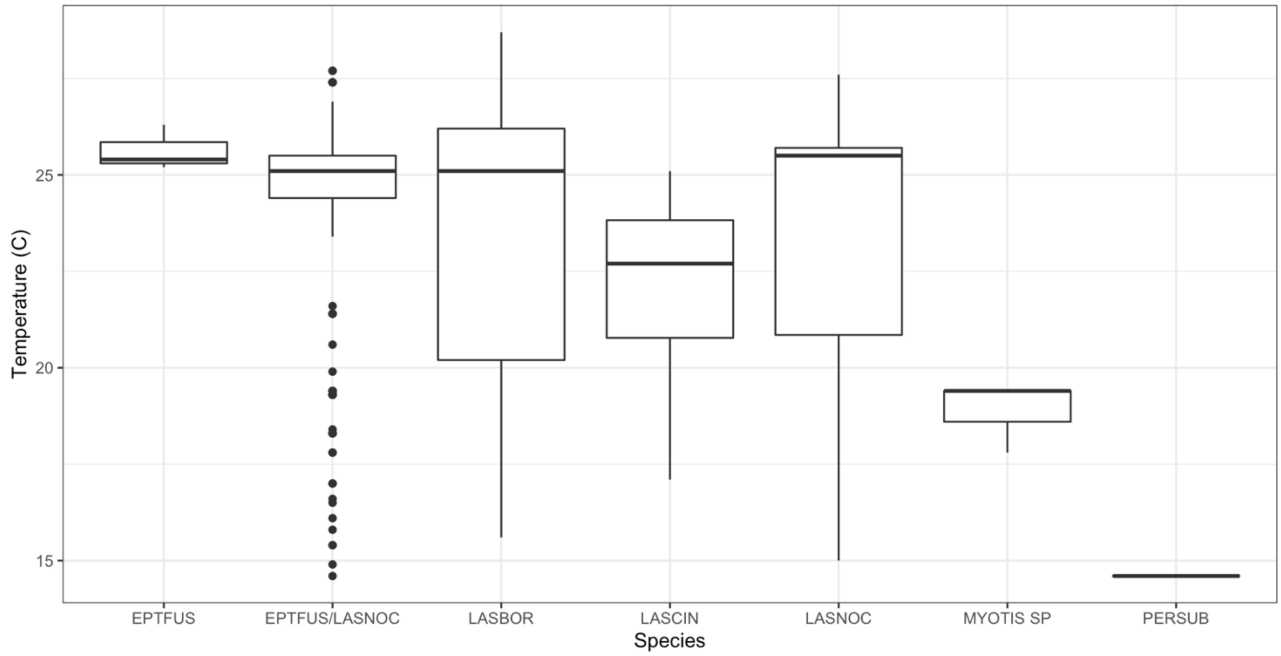

Figure 12. Number of acoustic detections identified to species vs. temperature for the study area (EPTFUS = big brown bat; EPTFUS/LASNOC = big brown bat/silver-haired bat group; LASBOR = eastern red bat; LASCIN = hoary bat; LASNOC = silver-haired bat; PERSUB = tri-colored bat). NOTE: temperature readings may have been influenced by heat on the vessel.

4. CONCLUSIONS

Atlantic Shores conducted opportunistic pre-construction boat-based acoustic bat surveys throughout the Lease Area (OCS-A 0499) on survey vessels in 2020 and 2021. The results indicate that eastern red bat and the big brown/silver-haired bat group were more common than other species offshore. No federally listed northern long-eared bats or Indiana bats were detected.

Bats were detected throughout the study area with no clear spatial trends and, as expected, the highest number of detections were in late August and early September, but bats were active into October and November. Wind did appear to influence bat activity, with 10.3 mph (4.6 m/s) being the mean wind speed when bats were detected. The mean temperature when bats were detected was 74.6° F (23.7° C), ranging from 58.3–83.6° F (14.6–28.7° C); however, the temperature readings may have been influenced by heat generated by the vessel.

5. REFERENCES

Hatch, S. K., E. E. Connelly, T. J. Divoll, I. J. Stenhouse, & K. A. Williams. 2013. Offshore observations of eastern red bats (*Lasiurus borealis*) in the Mid-Atlantic United States using multiple survey methods. PLoS One 8: e83803.

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APPENDIX A

FEDERAL BAT PERMIT

NATIVE ENDANGERED & THREATENED SP. RECOVERY
ENDANGERED & THREATENED WILDLIFE

Permit Number: TE63633A-5

Effective: 08/14/2018 Expires: 07/31/2023

Issuing Office:

Department of the Interior
U.S. FISH & WILDLIFE SERVICE
Ecological Services Permit Office
1875 Century Boulevard
Atlanta, GA 30345
permitsR4ES@fws.gov

ROBERT TAWES

Digitally signed by ROBERT TAWES
Date: 2018.08.15 10:22:07 -04'00'

CHIEF, DIVISION OF ENVIRONMENTAL REVIEW

Permittee:

BIODIVERSITY RESEARCH INSTITUTE
276 CANCO ROAD
PORTLAND, ME 04103
U.S.A.

Name and Title of Principal Officer:
DAVID C EVERS - EXECUTIVE DIRECTOR

Authority: Statutes and Regulations: 16 USC 1539(a), 16 USC 1533(d); 50 CFR 17.22, 50 CFR 17.32, 50 CFR 13.

Location where authorized activity may be conducted:

Alabama, Arkansas, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming.

Reporting requirements:

Annual reports are due by January 31 following each year that this permit is in effect.

Authorizations and Conditions:

A. General conditions set out in Subpart B of 50 CFR 13, and specific conditions contained in Federal regulations cited above, are hereby made a part of this permit. All activities authorized herein must be carried out in accordance with and for the purposes described in the application submitted. Continued validity, or renewal of this permit is subject to complete and timely compliance with all applicable conditions, including the filing of all required information and reports.

B. The validity of this permit is also conditioned upon strict observance of all applicable foreign, state, local tribal, or other federal law.

C. The following individuals are authorized to conduct activities as authorized by this permit: **ALL ACTIVITIES/ALL SPECIES**: Carl Anderson, Timothy Divoll, Shaylyn Hatch, Dustin Meattey, and David Yates.
ALL ACTIVITIES/INDIANA BATS ONLY: Jonathan Fiely.
ALL ACTIVITIES *EXCEPT* ENTERING HIBERNACULA AND HARP TRAPPING/INDIANA BAT AND NORTHERN LONG-EARED BATS ONLY: Caroline Byrne.
MIST-NET, HANDLE, IDENTIFY, BAND, AND RADIO-TAG/NORTHERN LONG-EARED BATS ONLY: Morgan Ingalls.

Trained assistants not named on this permit may work on permitted bat activities under the direct and on-site supervision of the individual named above. However, trained assistants may not work independently at a site.

Trained assistants are individuals who are considered qualified by the permitted biologist to select sampling sites, deploy sampling equipment and nets, and handle bats in the field.

Permittee must remain present at each mist-net and harp trap site while it is being operated.

D. Acceptance of this permit serves as evidence that the permittee understands and agrees to abide by the terms of this permit and all sections of title 50 Code of Federal Regulations, Parts 13 and 17, pertinent to issued permits. Section 11 of the endangered species act of 1973, as amended, provides for civil and criminal penalties for failure to comply with permit conditions. In addition, the permittee shall have all other applicable Federal, Tribal, State, and/or local government permits prior to the commencement of activities authorized in this permit.

E. Permittee is authorized to take (enter hibernacula or maternity roost caves, salvage dead bats, capture with mist nets or harp traps, handle, identify, collect hair samples, band, radio tag, and wing-punch) gray bats (*Myotis grisescens*), Indiana bats (*Myotis sodalis*), and northern long-eared bats (*Myotis septentrionalis)* for scientific research aimed at recovery of the species, such as presence/absence surveys, studies to document habitat use, population monitoring, and to evaluate potential impacts of white-nose syndrome or other threats, as described in permittee's June 27, 2011, September 18, 2012, May 7, 2013, March 3, 2014, February 29, 2016, and January 3, 2018, applications and as conditioned below.

F. The permitted activities described above require prior, site-specific approval from the USFWS Field Supervisor in the state(s) where the project will occur. Permittee shall notify the USFWS Field Supervisor for the state in which activities are proposed to occur at least 15 days prior to conducting any activities. Contact information is in Condition P., below. Your request for this site-specific approval must be in writing and must indicate:

F.1. The purpose and a description of the activities proposed (e.g., surveys, radio telemetry studies, etc.). If the purpose includes collection of hair samples or wing punches for genetic analyses or other research purposes, a copy of the specific study proposal must be included.

F.2. Location of proposed activities, including project site (legal description and lat/long), county, and state.

F.3. Dates when the project is proposed to take place.

F.4. You may proceed with activities only upon receipt of written concurrence from the applicable USFWS Field Supervisor. *Your concurrence letter/email must be carried with this permit to authorize site-specific activities.*

G. Permittee shall adhere to the following conditions involving capture and handling of bats:

G.1. Federally listed bats may be captured (e.g., mist-nets and harp traps) following the protocol(s) provided by the USFWS, when available. Permittees must contact the USFWS FO in the state(s) which activities are proposed to ensure correct protocol(s) are used. For example, the current Range-wide Indiana Bat Summer Survey Guidelines are available at: http://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html. The monitoring interval for mist nets is once every 10 minutes. Harp traps must be continually monitored.

G.2. Captured bats may be held for a maximum of 30 minutes, unless injured. If an exception is required to this prohibition, permittee must receive prior written approval from the USFWS Field Supervisor for the state in which the activities are proposed to occur.

G.3. Permittee shall carry out non-intrusive measurements on all captured bats. Data shall be recorded for all bats captured and include, but not be limited to, the data requested in any automated or species specific data form provided by the USFWS (e.g., USFWS Bat Reporting Form available at: http://www.fws.gov/midwest/Endangered/mammals/inba/inbasummersurveyguidance.html). Handling should be limited to the maximum extent practicable and should cease immediately at signs of undue stress (e.g., bat becoming unresponsive, etc.). Bats that appear stressed from handling should be placed in a dark, quiet location away from activity where it can safely fly away after recovery, and should be checked to ensure successful recovery before leaving the study site. Photographs of the identifying characteristics for each individual federally listed species captured are encouraged. The permittee may be requested to provide individual photographs after submittal of annual reporting data.

G.4. If bands are applied, these must be lipped metal bands having a unique identifier. Bands should be applied to the forearm of captured bats prior to release. No more than one band per bat may be used. Position the band on the wing so that when the bat is hanging upside down, the band numbers are right-side up. A single band should be placed on the right forearm of each male and the left forearm of each female bat.

G.5. Radio transmitters may be applied during spring, summer, and fall roosting and migration periods via nontoxic skin bond adhesive. The total weight of the transmitter may not exceed 5% of the bat's body weight and the total weight of the package (transmitter and adhesive) may not exceed 6% of the bat's body weight. The lightest package (both transmitter and adhesive) capable of accomplishing the required task should be used, especially with pregnant females and newly volant juveniles. Bats carrying transmitters must be monitored daily for at least five days, or until the transmitter falls off, whichever occurs first. **** Although not required as a condition of this permit, in order to gather needed information to promote the conservation of the northern long-eared bat, it is recommended that the permittee radio-track female and juvenile northern long-eared bats captured when conducting mist-netting and radio-tracking of Indiana bats within the white-nose syndrome (WNS) zone of the range of the northern long-eared bat. Specifics on the number of females and juvenile bats to be tracked will be determined in coordination with the appropriate Field Office, as specified in Condition F (above).***

G.6. No capture activities shall occur within 20 meters of a known or potential summer or winter roost site, either natural or artificial, of a federally listed bat. If an exception is required to this prohibition, permittee must receive prior written approval from the USFWS Field Supervisor for the State in which the activities are proposed to occur.

G.7. Permittee may collect dorsal hair samples from captured bats for scientific study. Hair samples shall be obtained via clipping fur from between scapula from females and juvenile males. The clipped area is the same area frequently clipped for radio transmitter attachment. Wing tissue samples may be taken using a new, sterile biopsy punch (2mm) for each endangered bat sampled. No more than two samples, one from each wing, may be obtained per individual. All boards and equipment used to obtain samples must be disinfected according to the protocol cited in Condition G.8.

G.8. Equipment used to capture and handle bats shall be cleaned and decontaminated, including personal gear such as boots and gloves, using products cited in decontamination guidelines and in compliance with label directions. The most recent decontamination guidance is found on the web at: http://whitenosesyndrome.org/.

G.9. Caves mines or other suitable hibernation sites may be quietly searched in a manner that minimizes disturbance by utilizing the minimum number of people and time required to complete the survey. Surveys of known hibernacula conducted during the winter hibernation season shall follow the guidelines established in the recovery plans for each federally listed bat species with regards to how often a site may be visited and other species-specific requirements

related to entering hibernaculum. Under no circumstances should multiple trips to the hibernation area occur within the same year without written approval of the USFWS Field Supervisor for the state in which activities are proposed.

Bats may be handled during winter surveys in order to collect band information and confirm the identification of listed species. When possible, bands should be read without touching the bat. Banded bats should only be handled if easily accessible and removal of the bat does not disturb a large number of additional bats and is unlikely to result in injury to the bat. Detailed photographs should be taken to document the presence of listed species in previously undocumented hibernaculum. Where hibernacula area and safety conditions allow, individuals entering hibernacula are recommended to utilize night vision goggles or red-filtered light and to remain in the site no more than 90 minutes to complete the work.

G.10. Surveys of gray bat maternity roosts and their other known summer roost sites shall be conducted by observing the bats with night vision equipment and/or infrared light sources (e.g., thermal infrared) as they emerge from their roosts to avoid any possible disturbance to these bats. At previously undocumented sites for these species, the accepted method to determine if they are present is to carefully and slowly enter the potential roost site to check for evidence of presence/use, such as visual observation of bats, significant quantities or a strong smell of guano, or the audible sounds produced by bats roosting at the site. As soon as any evidence is obtained that the roost site is being used by a federally-listed bat species, survey team members shall immediately exit the roost site and make further observations from outside the entrance to the roost. All further observations shall be made from the entrance during the evening emergence.

H. Upon determination that endangered bats are present, permittee shall notify the following offices immediately (not to exceed 1 business day): the USFWS Field Office within the geographic location of study areas (Condition P.).

I. Permittee must carry a copy of this permit at all times when conducting the authorized activities. Shipments of collected biological materials should also be accompanied by a copy of this permit. NOTE: This permit is limited to the above activities and identified species.

J. Issuance of this permit does not constitute permission to conduct these activities on National Wildlife Refuges or any other public or private lands; such permission must be obtained separately from the appropriate landowner or land manager before beginning these authorized activities. This permit, neither directly nor by implication, grants the right of trespass.

K. The USFWS anticipates that no federally listed bats will be injured or killed as a result of permitted activities. If any injury or mortality does occur, the permittee shall immediately notify the appropriate Species Recovery Lead(s) noted in Condition O., below. Notification shall also be made within 24 hours to the Southeast Regional Permit Coordinator and appropriate Field Office, at the addresses and telephone numbers noted in Conditions N.3. and P., below. Based on consultation between these offices, a decision will be made as to whether any of the authorized activities can continue. Decisions will also be made concerning the disposition of any dead or injured specimens. The permittee shall provide a written statement to the USFWS offices noted in Conditions N, O, and P, below, which documents the cause of the injury or mortality, and identifies the remedial measures employed by the permittee to eliminate future mortality or injury events. The final decision on remedial measures and disposition of specimens rests with the USFWS.

Upon locating a dead, injured, or sick listed species, under circumstances not addressed in this authorization, initial notification must be made immediately to the USFWS field office in the state in which the specimen is found, identified in Condition P., below. Notification should also be made by the next work day to the USFWS Southeast

Regional Office identified in Condition N.3., below. Care should be taken in handling sick, injured, or dead specimens to ensure effective treatment or to preserve biological materials for later analysis. In conjunction with the care of sick or injured endangered or threatened species, and the preservation of biological materials from a dead animal, the finder should take responsible steps to ensure that the site is not unnecessarily disturbed.

L. This permit is non-transferable.

M. An annual report summarizing authorized activities must be submitted by January 31 following each year this permit is valid to the offices identified in Conditions N, O, and P, below. When possible, electronic copies shall be submitted in lieu of hard copies in MS Word, Portable Document Format, Rich Text Format, or other file format that is compatible with the receiving office. Each report should include, at a minimum, the following information:

M.1. The date, time, geographic locations (including datum and projection information).

M.2. All locations surveyed (regardless of whether federally-listed bats were captured/observed).

M.3. Band numbers of all bats banded.

M.4. Information on any injuries and/or mortalities and disposition of specimens.

M.5. Location and characteristics of roost trees and bat colonies.

M.6. Copies of any separate reports and/or publications resulting from work conducted under the authority of this permit.

M.7. Data shall be submitted for all bats captured and include, but not be limited to, the data requested in any automated or species-specific data form provided by the USFWS (e.g., USFWS Bat Reporting Form available at: http://www.fws.gov/midwest/Endangered/mammals/inba/inbasummersurveyguidance.html). Photographs of the identifying characteristics for each individual federally-listed species captured are encouraged. The Permittee may be requested to provide individual photographs after submittal of annual reporting data.

M.8. Copies of all site specific authorization letters/emails required under Condition F.

IF NO ACTIVITIES OCCURRED OVER THE COURSE OF THE YEAR, INDICATION OF SUCH SHALL BE SUBMITTED AS AN ANNUAL REPORT.

N. Copies of your reports shall be sent to the offices listed below.

N.1.
Regional Recovery Permits Coordinator
U.S. Fish and Wildlife Service - Southwest Region (Region 2)
500 Gold Ave., SW
P.O. Box 1306
Albuquerque, New Mexico 87103-1306
(505/248-6665; fax 505/248-6788)
permitsR2ES@fws.gov

N.2.
Regional Recovery Permits Coordinator
U.S. Fish and Wildlife Service - Midwest Region (Region 3)
Ecological Services - Endangered Species
5600 American Blvd. W., Suite 990
Bloomington, Minnesota 55437-1458
(612/713-5343; fax 612/713-5292)
permitsR3ES@fws.gov

N.3.
Regional Recovery Permits Coordinator
U.S. Fish and Wildlife Service - Southeast Region (Region 4)
1875 Century Boulevard, Ecological Services
Atlanta, Georgia 30345-3301
(404/679-7097; fax 404/679-7081)
permitsR4ES@fws.gov

N.4.
Regional Recovery Permits Coordinator
U.S. Fish and Wildlife Service - Northeast Region (Region 5)
Endangered Species Division
300 Westgate Center Drive
Hadley, Massachusetts 01035-9589
(703/358-2402; fax 413/253-8482)
permitsR5ES@fws.gov

N.5.
Regional Recovery Permits Coordinator & Assistant Regional Recovery Coordinator
U.S. Fish and Wildlife Service - Mountain-Prairie Region (Region 6)
Endangered Species Permits Office
Denver Federal Center, P.O. Box 25486
Denver, Colorado 80225-0489
(303/236-4212; fax 303/236-0027)
permitsR6ES@fws.gov

O. Additionally, based on species, reports and publications shall be submitted to the following:

O.1. For studies involving gray bats:

Shauna Marquardt
U.S. Fish and Wildlife Service
Missouri Ecological Services Field Office
101 Park De Ville Drive, Suite A
Columbia, Missouri 65203
(573/234-2132 x174; fax 573/234-2181)
Shauna_Marquardt@fws.gov

O.2. For studies involving Indiana bats:

Lori Pruitt
U.S. Fish and Wildlife Service
Indiana Ecological Services Field Office
620 S. Walker Street
Bloomington, Indiana 47403-2121
(812/334-4261 x1213; fax 812/334-4273)
Lori_Pruitt@fws.gov

O.3. For studies involving northern long-eared bats:

Jill Utrup
U.S. Fish and Wildlife Service
Twin Cities Ecological Services Field Office
4104 American Blvd. E
Bloomington, Minnesota 55425
(612/725-3548 x207; fax 612/725-3609
Jill_Utrup@fws.gov

P. Additionally, based on geographic area, reports and publications shall be submitted to the following

P.1. For studies conducted in Alabama:

Field Supervisor
Alabama Ecological Services Field Office
1208-B Main Street
Daphne, Alabama 36526-4419
(251) 441-5181

P.2. For studies conducted in Arkansas:

Field Supervisor
Arkansas Field Office
110 South Amity Road
Suite 300
Conway, Arkansas 72032-8975
(501) 513-4470

P.3. For studies conducted in Connecticut:

Field Supervisor
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
(603) 223-2541

P.4. For studies conducted in Delaware:

Field Supervisor
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
(410) 573-4573

P.5. For studies conducted in the District of Columbia:

See P.4. (above).

P.6. For studies conducted in Florida:

P.6.a.
Field Supervisor
North Florida Ecological Services Office
7915 Baymeadows Way
Suite 200
Jacksonville, FL 32256-7517
(904) 731-3336

P.6.b.
Field Supervisor
Panama City Ecological Services Field Office
1601 Balboa Avenue
Panama City, FL 32405-3792
(850) 769-0552

P.7. For studies conducted in Georgia:

Field Supervisor
Georgia Field Office
RG Stephens, Jr. Federal Building
355 East Hancock Avenue, Room 320, Box 7
Athens, GA 30601
(706) 613-9493; fax 706/613-6059
Georgiaes@fws.gov

P.8. For studies conducted in Illinois:

P.8.a.
Kristen Lundh
Endangered Species Coordinator for Illinois/Iowa
U.S. Fish and Wildlife Service
Ecological Services Field Office
1511 47th Ave.

Moline, Illinois 61265
(309/757-5800, x215; fax 309/757-5807)

P.8.b.
Joe Kath
Endangered Species Coordinator
Illinois Department of Natural Resources
Division of Natural Heritage
One Natural Resource Way
Springfield, Illinois 62702-1271
(217/785-8764; fax 217/785-2438)

P.9. For studies conducted in Indiana:

P.9.a.
Lori Pruitt
Endangered Species Coordinator for Indiana
U.S. Fish and Wildlife Service
Ecological Services Field Office
620 S. Walker Street
Bloomington, Indiana 47403-2121
(812/334-4261 x1213; fax 812/334-4273)

P.9.b.
Scott Johnson
Indiana Department of Natural Resources
5596 East State Road 46
Bloomington, Indiana 47401
(812/334-1137, ext. 3400)

P.10. For studies conducted in Iowa:

P.10.a.
Kristen Lundh
Endangered Species Coordinator for Illinois/Iowa
U.S. Fish and Wildlife Service
Ecological Services Field Office
1511 47th Ave.
Moline, Illinois 61265
(309/757-5800, x215; fax 309/757-5807)

P.10.b.
Kelly Poole
Endangered Species Coordinator
Iowa Department of Natural Resources
Parks, Recreation, and Preserves
Wallace State Office Building

East 9th and Grand Avenue
Des Moines, Iowa 50319-0034
(515/281-8524)

P.11. For studies conducted in Kansas:

Field Supervisor
Kansas Field Office
2609 Anderson Avenue
Manhattan, Kansas 68502
785/539-3474; fax 785/539-8567

P.12. For studies conducted in Kentucky:

Field Supervisor
Frankfort Field Office
J C Watts Federal Bldg., Rm 265
330 West Broadway
Frankfort, KY 40601-8670
(502) 695-0468
Kentuckyes@fws.gov

P.13. For studies conducted in Louisiana:

Field Supervisor
Louisiana Ecological Services
646 Cajundome Blvd., Suite 400
Lafayette, La. 70506
Phone 337.291.3100
Fax 337.291.3139

P.14. For studies conducted in Maine:

Field Supervisor
Maine Field Office
U.S. Fish and Wildlife Service
17 Godfrey Drive, Suite 2
Orono, ME 04473
Phone: 207-866-3344

P.15. For studies conducted in Maryland:

See P.4. (above).

P.16. For studies conducted in Massachusetts:

Field Supervisor

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
(603) 223-2541

P.17. For studies conducted in Michigan:

P.17.a.
Barbara Hosler
Endangered Species Coordinator for Michigan
U.S. Fish and Wildlife Service
2651 Coolidge Road
East Lansing, Michigan 48823
(517/351-6326; fax 517/351-1443)

P.17.b.
Dan Kennedy
Endangered Species Coordinator
Michigan Department of Natural Resources
Wildlife Division
P.O. Box 30444
Lansing, Michigan 48909-7444
(517) 284-6194; fax 517/373-6705

P.18. For studies conducted in Minnesota:

P.18.a.
Endangered Species Coordinator for Minnesota and Wisconsin
U.S. Fish and Wildlife Service
Ecological Services Field Office
4101 American Blvd E.
Bloomington, Minnesota 55425
(612/725-3548 x2206; fax 612/725-3609)

P.18.b.
Richard Baker
Minnesota Endangered Species Coordinator
Division of Ecological and Water Resources
Minnesota Department of Natural Resources
500 Lafayette Rd., Box 25
St. Paul, MN 55155
Phone: 651/259-5073
richard.baker@state.mn.us

P.19. For studies conducted in Mississippi:

Field Supervisor

Mississippi Field Office
6578 Dogwood View Pkwy, Suite A
Jackson, MS 39213-7856
(601) 321-1122

P.20. For studies conducted in Missouri:

P.20.a.
Field Supervisor
U.S. Fish and Wildlife Service
Missouri Ecological Services Field Office
101 Park DeVille Drive, Suite A
Columbia, Missouri 65203-2132
(573/234-2132; fax 573/234-2181)

P.20.b.
Scientific Collecting Permit Coordinator
Missouri Department of Conservation
Endangered Species and Natural History Division
2901 W. Truman Blvd., P.O. Box 180
Jefferson City, Missouri 65102-0180
(573/522-4115 ext. 3322; fax 573/751-4864)

P.21. For studies conducted in Montana:

Project Leader
585 Shepard Way
Helena, Montana 59601
Telephone: 406-449-5225
Fax: 406-449-5339

P.22. For studies conducted in Nebraska:

Assistant Field Supervisor
9325 South Alda Road
Wood River, NE 68883
Fax:(308) 384-8835
Phone: (308) 382-6468

P.23. For studies conducted in New Hampshire:

Field Supervisor
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
(603) 223-2541

P.24. For studies conducted in New Jersey:

Field Supervisor
New Jersey Field Office
4 East Jimmie Leads Road
Galloway, NJ 08205
(609) 646-9310

P.25. For studies conducted in New York:

Field Supervisor
New York Field Office
3817 Luker Road
Cortland, NY 13045
(607) 753-9334

P.26. For studies conducted in North Carolina:

P.26.a. Field Supervisor
Asheville Field Office
160 Zillicoa Street
Asheville, NC 28801-1082
(828) 258-3939

P.26.b. Field Supervisor
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726
(919) 856-4520

P.27. For studies conducted in North Dakota:

North Dakota Field Office
3425 Miriam Avenue
Bismarck, North Dakota 58501-7926
Phone: (701) 250-4481
Fax: (701) 355-8513

P.28. For studies conducted in Ohio:

P.28.a.
Endangered Species Coordinator for Ohio
U.S. Fish and Wildlife Service
Ohio Ecological Services Field Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614/416-8993, x22; fax 614/416-8994)

P.28.b.
Endangered Species Coordinator
Ohio Department of Natural Resources
Division of Wildlife
2045 Morse Road, Building G
Columbus, Ohio 43229-6693
(614-265-6329; fax 614/262-1143)

P.29. For studies conducted in Oklahoma:

P.29.a.
Field Supervisor
Oklahoma Field Office
U.S. Fish and Wildlife Service
9014 E. 21st St.
Tulsa, Oklahoma 74129-1428
(918) 382-4501

P.29.b.
Todd Fagin
Oklahoma Natural Heritage Inventory
111 E. Chesapeake St.
Norman, OK 73019
405 325-4700 (Direct Line)
405 325-4042 (Oklahoma Biological Survey main office)
405 325-7702 (Fax)
tfagin@ou.edu

P.29.c.
Oklahoma Department of Wildlife Conservation
Wildlife Division
1801 N. Lincoln Blvd.
Oklahoma City, Oklahoma 73105
405/990-7259; fax 405/521-4706

P.30. For studies conducted in Pennsylvania:

Field Supervisor
Pennsylvania Field Office
315 So. Allen Street, Suite 322
State College, PA 16801-4850
(814) 234-4090

P.31. For studies conducted in Rhode Island:

Field Supervisor

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
(603) 223-2541

P.32. For studies conducted in South Carolina:

P.32.a.
Field Supervisor
South Carolina Field Office
176 Croghan Spur Road, Suite 200
Charleston, SC 29407-7558
(843) 727-4707 x227

P.32.b.
Biologist/Preserve Manager
South Carolina Department of Natural Resources
311 Natural Resources Drive
Clemson, SC 29631
(864) 654-6738 x15
Fax: (864) 654-9168

P.33. For studies conducted in South Dakota:

South Dakota Ecological Services Field Office
420 S. Garfield Avenue,
Suite 400
Pierre, SD 57501-5408
Phone (605) 224-8693
FAX 605-224-9974

P.34. For studies conducted in Tennessee:

P.34.a.
Field Supervisor
Cookeville Field Office
U.S. Fish and Wildlife Service
446 Neal Street
Cookeville, TN 38501-4027
(931) 528-6481

P.34.b.
Josh Campbell
Wildlife Diversity Coordinator, Region II
Tennessee Wildlife Resources Agency
P.O. Box 41489
Nashville, TN 37204

(615) 781-6626
Josh.Campbell@tn.gov

P.35. For studies conducted in Vermont:

Field Supervisor
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
(603) 223-2541

P.36. For studies conducted in Virginia:

Field Supervisor
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061
(804) 693-6694

P.37. For studies conducted in West Virginia:

Field Supervisor
West Virginia Field Office
694 Beverly Pike
Elkins, WV 26241
(304) 636-6586

P.38. For studies conducted in Wisconsin:

P.38.a.
Endangered Species Coordinator for Minnesota and Wisconsin
U.S. Fish and Wildlife Service
Ecological Services Field Office
4101 American Blvd E.
Bloomington, Minnesota 55425
(612/725-3548 x2206; fax 612/725-3609)

P.38.b.
Owen Boyle
Wisconsin Department of Natural Resources
101 S. Webster Street
Madison, Wisconsin 53707-7921
(608/266-5244)
Owen.Boyle@wisconsin.gov

P.39. For studies conducted in Wyoming:

Ecological Services Wyoming Field Office
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009
Tel: (307) 772-2374
Fax: (307)772-2358

END

APPENDIX B

ACOUSTIC SOFTWARE AND DETECTOR SETTINGS

Platform	Parameter	Setting
Bat Detector Hardware		
SM4BAT	Data Type	Full spectrum
	Trigger Window	3 seconds
	Sampling Rate	256 kHz
	Gain	12 decibels
	Max Length	15 seconds
	16kHz Filter	ON
	File Format	.WAV
Software		
Kaleidoscope Pro v5.4.6	Classifier	Bats of North America 5.4.0
	Region	New Jersey
	Sensitivity	0 Balanced (Neutral)
	Minimum pulses for manually vetting	6
	Minimum and Maximum Frequency Range	8 – 120 kHz
	Minimum and Maximum Length of Detected Pulses	2 – 500 ms
	Maximum Inter-syllable Gap	500 ms
	Minimum Number of Pulses	2

APPENDIX C

AUTOCLASSIFCATION IDENTIFICATION SOFTWARE OUTPUTS

Date	Autoclassification Identification											
	EPTFUS	LASBOR	LASCIN	LASNOC	MYOLEI	MYOLUC	MYOSEP	MYOSOD	NYCHUM	PERSUB	NOID	NOISE
2020-2021 Total	197	1009	499	574		102	1		290	202	1858	3906
2020 Total	66	335	53	230		61	1		79	70	841	2508
20200816											0	17
20200817			10	1							7	76
20200818		8	3	2					5	1	18	16
20200819		5	1	1					2		6	6
20200820		1									0	2
20200821											0	6
20200822											0	1
20200823		1									0	1
20200824		1								1	1	13
20200825	15	19		21					5	4	42	30
20200826		8	2	2					5		12	22
20200827				6							0	36
20200828			6	1					1		5	54
20200829	1	2	9	5					1	1	16	126
20200830		15	4	3		1			1		15	30
20200831			1								15	87
20200901				1							1	32
20200902											1	40
20200903			1								1	19
20200904		1	2	14		1			2		7	29
20200905											0	9
20200906											0	1
20200907											2	11
20200908										2	1	13
20200909											5	34
20200910											0	11
20200911											0	16
20200912											2	5

Date	Autoclassification Identification											
	EPTFUS	LASBOR	LASCIN	LASNOC	MYOLEI	MYOLUC	MYOSEP	MYOSOD	NYCHUM	PERSUB	NOID	NOISE
20200913											0	6
20200914	9	23		2		1			4	11	58	93
20200915		18		1					7	2	17	6
20200918	5	15	1	4		4				9	44	224
20200919	27	18	1	12		1			2	7	44	17
20200920	1	20	1	4					2	3	25	33
20200921	3	16		1					2		15	5
20200922	4	21	4	69		8			3	4	51	12
20200923											0	3
20200924		1		5					1	1	1	3
20200925											1	2
20200926											0	1
20200927											0	3
20200928		1									0	6
20201022											0	4
20201023		1	5							1	0	2
20201024	1	38	1	57		6			26	19	61	7
20201025		2		2							11	31
20201026		13		5		4			4	1	45	113
20201027		52		2		5			3	1	64	24
20201028		1		1							25	70
20201029											0	162
20201031		5	1			15					65	103
20201101		29		5		14	1			1	115	233
20201102											1	227
20201103				2						1	2	13
20201104				1							0	84
20201107											0	2
20201109											0	17
20201110											4	22

Date	Autoclassification Identification											
	EPTFUS	LASBOR	LASCIN	LASNOC	MYOLEI	MYOLUC	MYOSEP	MYOSOD	NYCHUM	PERSUB	NOID	NOISE
20201111											0	19
20201112											0	12
20201113											0	52
20201115						1			1		33	112
20201116									2		2	0
20201117											0	39
20201118											0	3
2021 Total	131	674	446	344		41			211	132	1017	1398
20210630			1								0	1
20210701											0	1
20210702											1	1
20210704											0	1
20210706											0	3
20210707											0	4
20210708											0	2
20210709											5	32
20210710		1									8	46
20210712											0	1
20210713											0	1
20210714											0	1
20210715											0	2
20210716											0	1
20210717											0	8
20210718											0	1
20210719											0	2
20210720	6	13	2	8					3	4	14	21
20210721		1		1							1	0
20210722		1									33	94
20210723											0	1
20210724											0	3

Date	Autoclassification Identification											
	EPTFUS	LASBOR	LASCIN	LASNOC	MYOLEI	MYOLUC	MYOSEP	MYOSOD	NYCHUM	PERSUB	NOID	NOISE
20210725											0	5
20210726											0	3
20210727											0	1
20210729											0	7
20210730											0	4
20210731			1								0	0
20210801		1									1	0
20210802											0	1
20210804											0	3
20210805											0	3
20210806		15	383						2		103	70
20210807		3	18						3	9	19	59
20210808		36		1		1			3	31	78	64
20210809										4	3	4
20210810	2										1	4
20210811	1	2	1						1		0	12
20210812											0	2
20210813											0	1
20210814	2										2	5
20210815				3							3	0
20210816											0	2
20210817											0	2
20210818											0	3
20210819											0	3
20210820	3	57	1	1		2			18	9	29	11
20210821	24	151	11	12		4			32	8	89	53
20210822									1		0	5
20210823	52	1		13					1		18	10
20210824	1	3		7		1			3	2	3	1
20210825										1	0	3

Date	Autoclassification Identification											
	EPTFUS	LASBOR	LASCIN	LASNOC	MYOLEI	MYOLUC	MYOSEP	MYOSOD	NYCHUM	PERSUB	NOID	NOISE
20210826											0	2
20210827	1	7							1	1	1	4
20210828											0	25
20210829											0	1
20210830										1	0	0
20210831	4	39		14		2			7	11	51	3
20210901			1						1	1	8	52
20210902		16	8	4					4		14	1
20210903	1	17	1	34		3			7	4	62	47
20210905											0	2
20210906											2	2
20210907											1	3
20210908											0	18
20210909	10	82	5	64		2			23	15	120	18
20210910	11	77	3	62		10			28	9	108	20
20210911				1							0	2
20210912									1		0	3
20210913		6		8					4		13	5
20210914				2					1		1	1
20210915											0	1
20210916									1		0	5
20210917		1									0	7
20210918	1	5	1			1					11	2
20210919				2							2	0
20210920											0	4
20210921											0	2
20210922		3									1	5
20210923		5							2		2	3
20210925	1										0	16
20210926				3							5	2

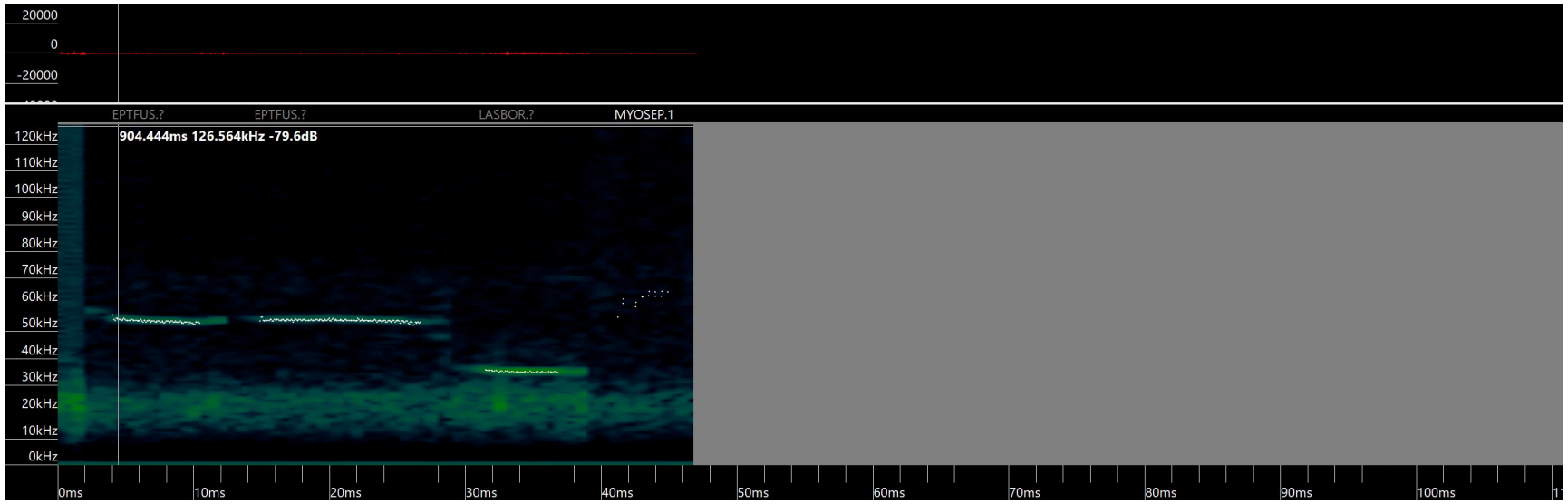
Date	Autoclassification Identification											
	EPTFUS	LASBOR	LASCIN	LASNOC	MYOLEI	MYOLUC	MYOSEP	MYOSOD	NYCHUM	PERSUB	NOID	NOISE
20210927											0	10
20210928	2			3		3			2		3	12
20210929	2			14					1		7	14
20210930	1	4	1	2						1	3	3
20211001											0	1
20211002			1								0	1
20211003											0	1
20211004	1					1			3	2	9	28
20211005											0	3
20211007			1	1							2	3
20211008											0	1
20211009		1									2	36
20211010			5							1	1	28
20211011										2	1	5
20211012				2					1		2	0
20211013		12		1		2			9	1	26	14
20211014	1	17		19					6	8	24	2
20211016		4				5				1	6	9
20211017				1							1	36
20211018				1							2	5
20211019				1							1	22
20211021											6	26
20211022		2		2		1			1	2	3	10
20211023				1							1	22
20211024											1	17
20211025											3	15
20211026						1					18	109
20211027	3	82		50		2			38	4	69	8
20211028	1	7	1	1					3		6	10
20211029											7	66

Date	Autoclassification Identification											
	EPTFUS	LASBOR	LASCIN	LASNOC	MYOLEI	MYOLUC	MYOSEP	MYOSOD	NYCHUM	PERSUB	NOID	NOISE
20211030											0	7
20211031											0	49
20211101		2		5							0	1

Software: Kaleidoscope 5.4.6
Classifier: Bats of North America 5.4.0, New Jersey Region

APPENDIX D

FILE CLASSIFIED AS NORTHERN LONG-EARED BAT (*MYOTIS SEPTENTRIONALIS)* DURING AUTOCLASSIFICATION



File Name: FUGROB_20201101_200218.wav
Date recorded: 01 November 2020
Time recorded: 20:02:18
Manual vetting: Noise

APPENDIX E

EXCLUDED DATA FROM 2020 SAMPLING

Date	Autoclassification Identification							
	EPTFUS	LASBOR	LASCIN	LASNOC	NOID	Noise	NYCHUM	Total
7/23/20		3	2	1	6	14		26
7/24/20					27	89		116
7/25/20						3		3
7/26/20					2	8		10
7/27/20			5		8	37		50
7/28/20			1		2	23		26
7/29/20					1	18		19
7/30/20				1	1	16		18
7/31/20					24	53		77
8/1/2020			1		11	34		46
8/2/2020				1	79	107		187
8/3/2020	1	1	3		48	122		175
8/4/2020		4	16	1	4	49		74
8/5/2020		4	1		6	17	1	29
8/6/2020			1			8		9
8/7/2020						9		9
8/8/2020					5	22		27
8/9/2020					31	43		74
8/10/2020					29	58		87
8/11/2020					1	19		20
8/13/2020						4		4
8/14/2020						8		8
8/15/2020				1	1	32		34
Total	**1**	**12**	**30**	**5**	**286**	**793**	**1**	**1128**

Date	Manual Vetting				
	LASBOR	HiF	LoF	Noise	Total
7/23/20	2			2	4
8/1/2020				1	1
8/3/2020		1	2		3
8/4/2020	1	2		2	5
8/5/2020	2	1			3
Total	**5**	**4**	**2**	**5**	**16**