

**Avian and Bat Acoustic Survey
Final Post-Construction Monitoring
Report, 2017–2020**

Block Island Wind Farm, Rhode Island



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November 25, 2020

**AVIAN AND BAT ACOUSTIC SURVEY FINAL POST-CONSTRUCTION MONITORING REPORT,
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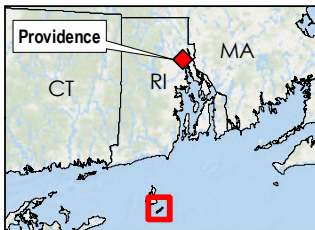
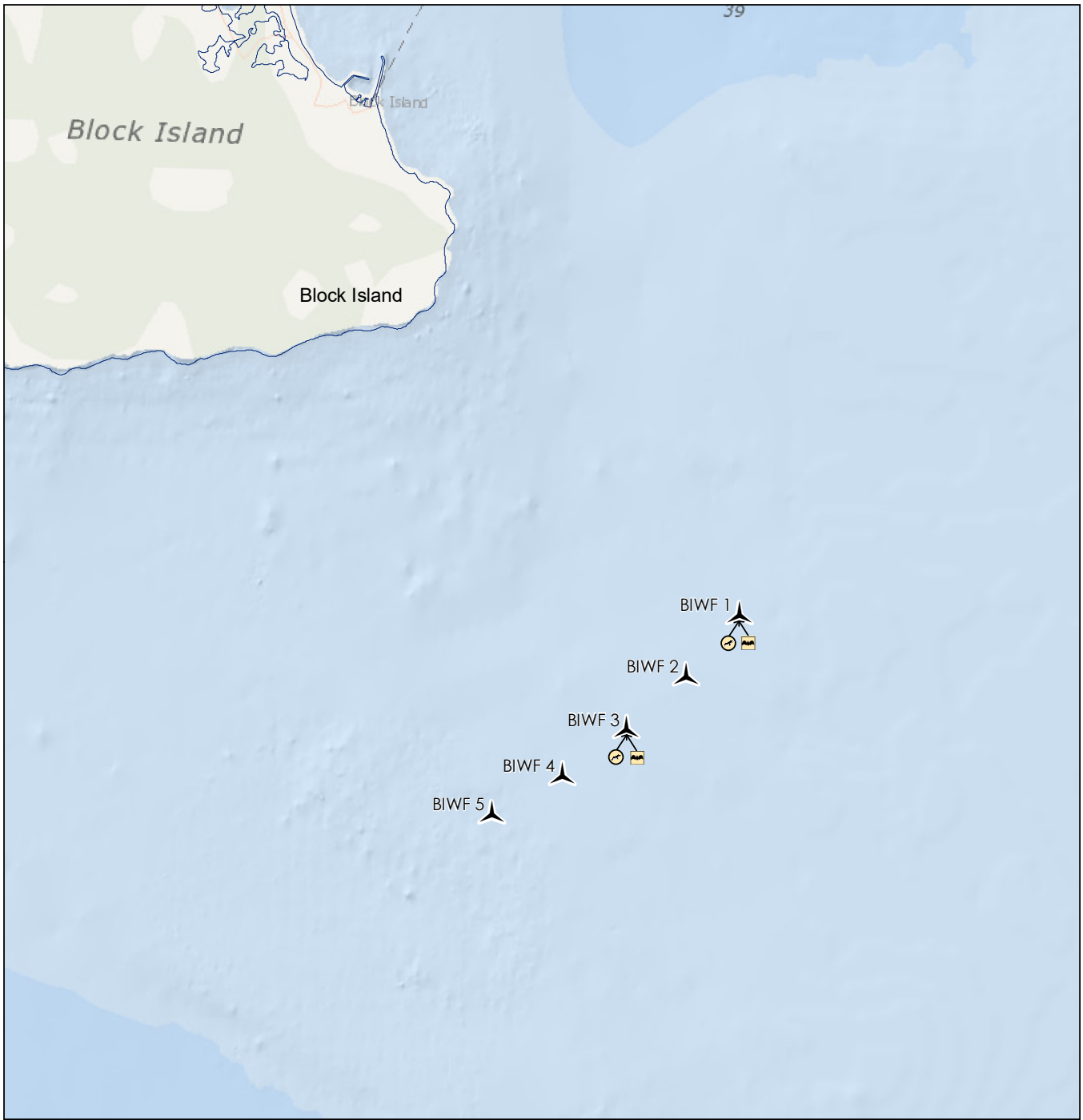
1.0 INTRODUCTION

The Block Island Wind Farm (BIWF; Project), owned by Deepwater Wind Block Island, LLC (Deepwater), is located approximately 4.8 kilometers (km; 3 miles [mi]) southeast of the coast of Block Island, Rhode Island (Figure 1). Block Island is an approximately 27.0 square km (10.4 square mi) island located approximately 14.9 km (9.3 mi) south of the Rhode Island mainland and 21.9 km (13.6 mi) northeast of the tip of Long Island, New York. The 30-megawatt (MW) BIWF consists of five Haliade 150 6-MW wind turbine generators (WTGs) and a submarine inter-array cable and export cable, which connects the BIWF to a substation on Block Island. The BIWF began commercial operations in December 2016. The maximum rotor-swept height of the BIWF WTGs is 180 meters (m; 591 feet [ft]) above water level.




Stantec Consulting Services Inc. (Stantec) conducted an approximately three-year, turbine-based acoustic bat and bird monitoring study for Deepwater at BIWF from August 3, 2017, to February 4, 2020. The objective of the survey was to document avian and bat species composition and seasonal activity within the operational offshore wind facility. Although results of the August 3, 2017, to January 9, 2018, survey period were reported previously in the *2017 Acoustic Bat Monitoring, Block Island Wind Farm, Rhode Island* (Stantec 2018), this report incorporates results from each survey year to provide a comprehensive summary and analysis of the three years of monitoring.

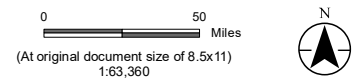


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Notes
1. Coordinate System: NAD 1983 UTM Zone 19N
2. Background: ESRI Oceans Base Map

- Legend**
-  BIWF Turbine Location
 -  Avian Acoustic Monitor
 -  Bat Acoustic Monitor



<i>Project Location</i> Block Island Rhode Island	Prepared by HCT on 2020-11-19 TR Review by KWH on 2020-11-19 IR Review by JC on 2020-11-24
<i>Client/Project</i> Deepwater Wind Block Island, LLC Block Island Wind Farm	195601190

Figure No.
1

Title
Study Location Map

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2.0 METHODS

2.1 FIELD SURVEY

Stantec deployed two ultrasonic acoustic bat detectors and two acoustic bird recorders on the south side of the platforms of Turbine 1 and Turbine 3 at BIWF, approximately 25 m (~80 ft) above mean sea level (msl; Figure 2). The microphones for the ultrasonic bat detectors were tethered to their respective recording units with 3-m (10-ft) microphone cables and oriented horizontally, facing into the open airspace adjacent each turbine. The acoustic bird recorders are designed with 2 integrated microphones: 1 microphone extending horizontally from each side of the recorder's waterproof enclosure (Figure 2). The effective range of acoustic detectors is a function of microphone sensitivity and the distance over which sound can travel. In the case of acoustic bat detectors, ultrasound attenuates quickly in the atmosphere, so the maximum distance a bat could be detected is approximately 30 m (~98 ft), and this range would be shorter for bats that echolocate at higher frequencies. Audible bird calls travel greater distances, so the effective range of the bird acoustic microphones could be greater, although ambient noise could also affect the range and ability to detect birds.

Each of the paired detectors/recorders were powered by 7 Amp-hour batteries with associated solar panels and charge controllers. The second bat detector and the second bird recorder were deployed as backup units for the purposes of providing supplemental data in the event the first detector stopped operating. The digital (SD) memory cards were retrieved from acoustic detectors on three occasions during the monitoring period (January 2018, June 2019, and February 2020). For bat monitoring, Stantec used full-spectrum acoustic bat detectors (Wildlife Acoustics™ SM4BAT), each equipped with a SMM-U1 ultrasonic omnidirectional microphone and programmed each detector to operate from 30 minutes before sunset until 30 minutes after sunrise in "triggered .wav" mode using default trigger threshold settings as recommended by the manufacturer. For bird monitoring, Stantec used dual-channel acoustic recorders (Wildlife Acoustics™ SM4). The acoustic bird recorders were programmed to operate and record 24 hours/day for the entire survey period.



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Figure 2. Two acoustic bat detectors (1 primary and 1 backup) and two acoustic bird recorders (1 primary and 1 backup), indicated by red arrow, deployed on the south-facing railing of the platform on Turbine 3 at BIWF.

2.2 DATA ANALYSIS

2.2.1 Bat Detectors

Deepwater retrieved data cards from each bat detector on three occasions during the monitoring period and transferred the cards to Stantec. Stantec downloaded data files from the cards and reviewed status log files to determine whether the detectors were operating properly for the duration of deployment. We converted all recorded files into zero-crossing format using Kaleidoscope Pro software (version 3.1.7), simultaneously processing all files through an automated identifier within the software (classifier 3.1.0, using the “-1 More Sensitive” setting and configured for the assemblage of bat species potentially occurring in Rhode Island). The bat detector at each turbine with the highest number of files identified as



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bat calls (bat passes) was selected as the primary detector for analysis and only results from the primary detectors at each turbine are presented in this report.

We visually inspected all files identified as a bat pass by Kaleidoscope to check accuracy of differentiation of bat activity from ultrasonic “static” or interference by the program, and also performed qualitative visual review of passes identified as *Myotis* species. If the program erroneously identified files containing only static as bats, we removed those files from the analysis. Similarly, we corrected any *Myotis* identifications that were determined to have been incorrectly assigned by Kaleidoscope software. The biologist also reviewed a subset of files classified as noise by the program to determine that substantial numbers of bat passes were not missed by the software.

We assigned species identified by Kaleidoscope to groups reflecting local species with similar acoustic characteristics as outlined below:

- BBSH = big brown (EPFU; *Eptesicus fuscus*) and silver-haired bat (LANO; *Lasionycteris noctivagans*)
- HB = hoary bat (LACI; *Lasiurus cinereus*)
- MYSP = little brown bat (MYLU), northern long-eared bat (MYSE; *Myotis septentrionalis*), eastern small-footed bat (MYLE; *M. leibii*)
- RBTB = eastern red bat (LABO) and tri-colored bat (PESU; *Perimyotis subflavus*)
- UNKN (Unknown) = passes labeled as “NoID” by Kaleidoscope software

We then calculated the overall bat passes per detector-night, the monthly number of bat passes per detector-night, overall species group composition, and timing of bat activity (relative to sunset) for each detector. We summarized seasonal patterns in bat activity and species composition on a monthly basis and also included plots of nightly patterns in bat activity.

We obtained wind speed data recorded by instrumentation on the nacelles of Turbines 1 and 3. We rounded timestamps of recorded bat passes and weather data to the nearest hour to allow timed comparisons between observed bat activity and weather data.

2.2.2 Bird Detectors

Deepwater retrieved data cards from each bird detector at the end of the monitoring period and transferred the cards to Stantec. We downloaded data files from the cards and reviewed status log files to determine whether the detectors were operating properly for the duration of deployment.

Stantec determined which recorder from each turbine had the greatest operational success and number of files recorded (‘primary recorders’). Only data from these primary recorders, one from each of the two turbines, were used in analysis and are presented in this report.

Files recorded by the primary recorders were sorted into two seasonal groupings. The first group included winter (November 15 to February 28) and summer (June 1 to July 15) recordings. The winter season covers the activity period of wintering seaducks, gannets, and alcids, and the summer season covers the activity period of breeding terns, shearwaters, and petrels. The second seasonal grouping targeted spring



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(March 1 to May 31) and late summer/fall (July 16 to November 14). These seasons covered activity periods of migrating shorebirds, terns, and passerines.

To locate and identify potential calls within these seasonal groupings, data were first processed with Kaleidoscope Pro software (version 4.5.4) to perform a basic “cluster analysis”. A cluster analysis uses an algorithm to detect individual vocalizations or other sounds in recordings and sorting them according to similarity. Manufacturer default signal parameters were used to perform the cluster analysis. Following the initial clustering routine, a Stantec biologist experienced in using audio recording to identify birds manually vetted the detected vocalizations by both viewing the spectral features of the file as well as listening to the audio playback of that recording. Once the detected vocalizations were identified as bird calls the dataset was reordered according to the date/time stamp and the periods immediately preceding and following the identified call were manually reviewed in an effort to identify calls that may have been missed during the cluster analysis.

Because the bird detectors constantly record all ambient sounds audible to the human ear (as opposed to the high-frequency sounds recorded by bat detectors), many “noise” files were recorded. These files likely included sounds from high winds passing the turbine platform, waves, passing boats, turbine platform machinery noises, and turbine blade sounds. These sounds, whether occurring during the day or the night, can mask the sounds of birds. For the 2018-2020 dataset, we sorted from all the data recorded by the primary recorders those files that were recorded during very low wind speeds (3 meters per second [m/s] or less), when many of those other frequently recorded sounds were less likely to occur. Kaleidoscope was again used to perform the cluster analysis on this low-wind speed dataset and the same methods described above were applied to review and assess the clustered files to identify potential bird call files.

2.3 DATA SUMMARY

2.3.1 Bat Detectors

Stantec generated nightly summaries of activity by species/species group for each turbine-based detector and analyzed overall species composition, nightly activity by species/species group, and nightly timing. Weather data were summarized nightly (sunset to sunrise). We calculated the mean wind speed for each night within the monitoring period; we summarized the relationship between nightly bat activity and nightly mean wind speed. We calculated the number of bat passes per detector-night per turbine to compare to those documented during construction phase vessel-based acoustic monitoring at BIWF (Stantec 2016) as well as the first year (August 2017 to January 2018) of turbine-based acoustic monitoring (Stantec 2018).

2.3.2 Bird Detectors

Due to the nature of the Kaleidoscope Pro software identification process (i.e., recorded bird calls often overlap within recorded files or become separated into multiple files), as well as the loud acoustic environment present at the BIWF, the number of individual recorded bird calls could not be quantified.



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Therefore, we summarized the number of files with potential bird calls, as well as the date and time when potential bird call files were recorded.

3.0 RESULTS

3.1 BAT DETECTORS

The bat detectors were deployed at BIWF for 1,808 calendar nights from August 3, 2017, to February 4, 2020. Collectively, the detectors operated successfully for 1,707 detector-nights; during which time 2,294 bat passes were detected (Table 1). The overall bat detection rate during the survey period (passes/detector-night) was 1.3 (Table 1).

At Turbine 1, monthly detection rates were highest in August 2017 (9.3 passes/detector-night) and September 2019 (9.1 passes/detector-night; Table 2; Figure 3). The night with the highest number of recorded bat passes at Turbine 1 was September 16, 2017 (n = 81 bat passes; Figure 4). At Turbine 3, monthly detection rates were highest in September 2017 (13.8 passes/detector-night) and September 2019 (8.6 passes/detector night; Table 2; Figure 3; Figure 5). The night with the highest number of recorded bat passes at Turbine 3 was also September 16, 2017 (n = 273 bat passes; Figure 5). No bat passes were recorded from December through April at either turbine (Table 1; Figure 3).

Table 1. Summary of survey effort and overall activity levels per turbine-based detector during acoustic bat surveys at Block Island Wind Farm, August 3, 2017, to February 4, 2020.

Detector	Year	Dates Deployed	Calendar Nights	Detector-Nights ¹	Recorded Sequences	Detection Rate ²	Maximum Sequences Recorded ³
Turbine 1	2017	Aug 3 – Dec 31	151	151	431	2.9	81
	2018	Jan 1 – Dec 31	365	365	16	<0.1	11
	2019	Jan 1 – Dec 31	365	365	480	1.3	78
	2020	Jan 1 – Jan 11	11	11	0	0.0	0
Turbine 3	2017	Aug 3 – Dec 31	151	151	680	4.5	273
	2018	Jan 1 – Dec 31	356	356	239	0.7	49
	2019	Jan 1 – Dec 31	365	299	448	1.5	86
	2020	Jan 1 – Feb 4	35	0	0	NA	0
Total		Aug 3, 2017 – Feb 4, 2020	1,808	1,707	2,294	1.3	273

¹ One detector-night is equal to one detector successfully operating throughout the night.

² Number of bat passes recorded per detector-night.

³ Maximum number of bat passes recorded from any single detector for a detector-night.



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Table 2. Summary of monthly activity levels per turbine-based detector during acoustic bat surveys at Block Island Wind Farm, August 3, 2017, to February 4, 2020.

Detector	Month	Dates Deployed	Calendar Nights	Detector-Nights ¹	Recorded Sequences	Detection Rate ²	Maximum Sequences Recorded ³
Turbine 1	August 2017	3–31	29	29	269	9.3	77
	September 2017	1–30	30	30	143	4.8	81
	October 2017	1–31	31	31	19	0.6	6
	November 2017	1–30	30	30	0	0.0	0
	December 2017	1–31	31	31	0	0.0	0
	January 2018	1–31	31	31	0	0.0	0
	February 2018	1–28	28	28	0	0.0	0
	March 2018	1–31	31	31	0	0.0	0
	April 2018	1–30	30	30	0	0.0	0
	May 2018	1–31	31	31	0	0.0	0
	June 2018	1–30	30	30	0	0.0	0
	July 2018	1–31	31	31	0	0.0	0
	August 2018	1–31	31	31	0	0.0	0
	September 2018	1–30	30	30	15	0.5	11
	October 2018	1–31	31	31	0	0.0	0
	November 2018	1–30	30	30	1	<0.1	1
	December 2018	1–31	31	31	0	0.0	0
	January 2019	1–31	31	31	0	0.0	0
	February 2019	1–28	28	28	0	0.0	0
	March 2019	1–31	31	31	0	0.0	0
	April 2019	1–30	30	30	0	0.0	0
	May 2019	1–31	31	31	0	0.0	0
	June 2019	1–30	30	30	0	0.0	0
	July 2019	1–31	31	31	7	0.2	2
	August 2019	1–31	31	31	192	6.2	78
September 2019	1–30	30	30	272	9.1	65	
October 2019	1–31	31	31	7	0.2	3	
November 2019	1–30	30	30	2	0.1	1	
December 2019	1–31	31	31	0	0.0	0	
January 2020	1–11	11	11	0	0.0	0	



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Detector	Month	Dates Deployed	Calendar Nights	Detector-Nights ¹	Recorded Sequences	Detection Rate ²	Maximum Sequences Recorded ³
Turbine 3	August 2017	3–31	29	29	207	7.1	48
	September 2017	1–30	30	30	415	13.8	273
	October 2017	1–31	31	31	57	1.8	36
	November 2017	1–30	30	30	1	0.0	1
	December 2017	1–31	31	31	0	0.0	0
	January 2018	1–31	31	31	0	0.0	0
	February 2018	1–28	28	28	0	0.0	0
	March 2018	1–31	31	31	0	0.0	0
	April 2018	1–30	30	30	0	0.0	0
	May 2018	1–31	31	31	1	<0.1	1
	June 2018	1–30	30	30	1	<0.1	1
	July 2018	1–31	31	31	0	0.0	0
	August 2018	1–31	31	31	75	2.4	49
	September 2018	1–30	30	30	127	4.2	47
	October 2018	1–31	31	31	33	1.1	19
	November 2018	1–30	30	30	2	0.1	2
	December 2018	1–31	31	31	0	0.0	0
	January 2019	1–31	31	31	0	0.0	0
	February 2019	1–28	28	28	0	0.0	0
	March 2019	1–31	31	31	0	0.0	0
	April 2019	1–30	30	30	0	0.0	0
	May 2019	1–31	31	31	2	0.1	1
	June 2019	1–30	30	30	2	0.1	2
	July 2019	1–31	31	31	4	0.1	1
	August 2019	1–31	31	31	175	5.6	86
	September 2019	1–30	30	30	259	8.6	49
	October 2019	1–31	31	26	6	0.2	4
	November 2019	1–30	30	0	0	NA	0
December 2019	1–31	31	0	0	NA	0	
January 2020	1–31	31	0	0	NA	0	
February 2020	1–4	4	0	0	NA	0	

¹ One detector-night is equal to one detector successfully operating throughout the night.

² Number of bat passes recorded per detector-night.

³ Maximum number of bat passes recorded from any single detector for a detector-night.



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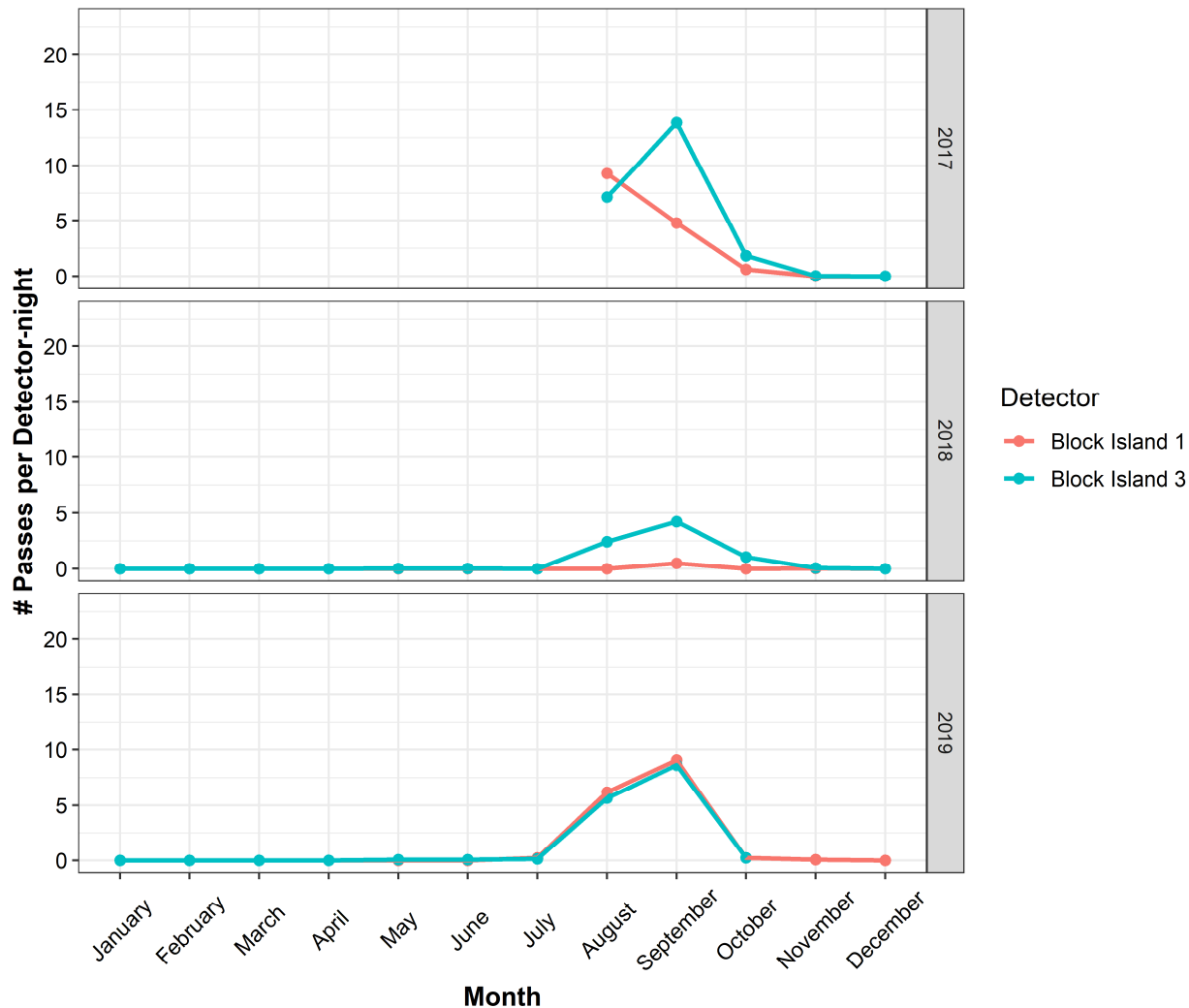


Figure 3. Monthly bat activity rates per year measured by turbine-based detectors during acoustic bat surveys at the Block Island Wind Farm, August 3, 2017, to February 4, 2020.



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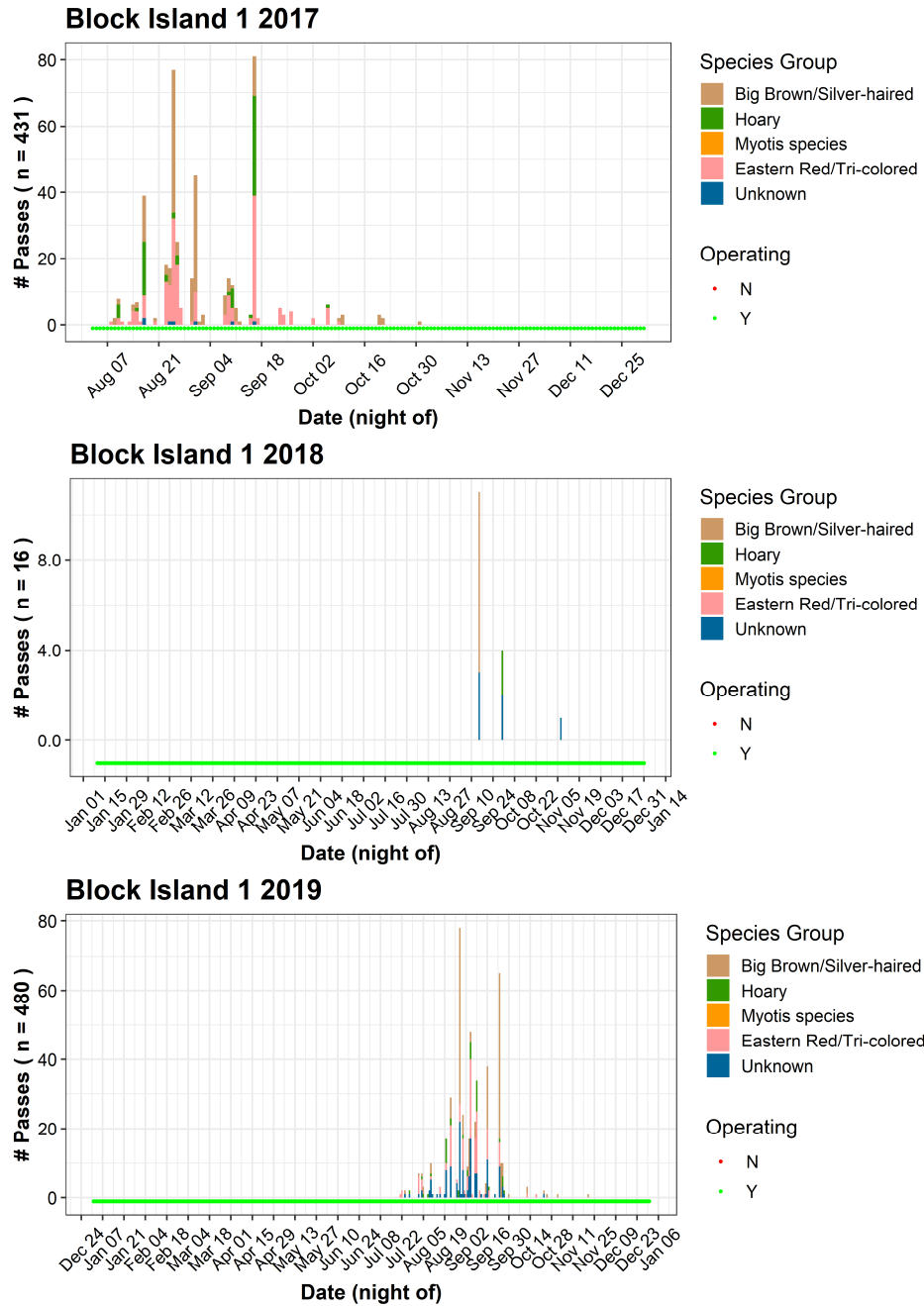


Figure 4. Nightly detector status and bat activity by species group detected at Turbine 1 during acoustic bat surveys at the Block Island Wind Farm, August 3, 2017, to February 4, 2020.



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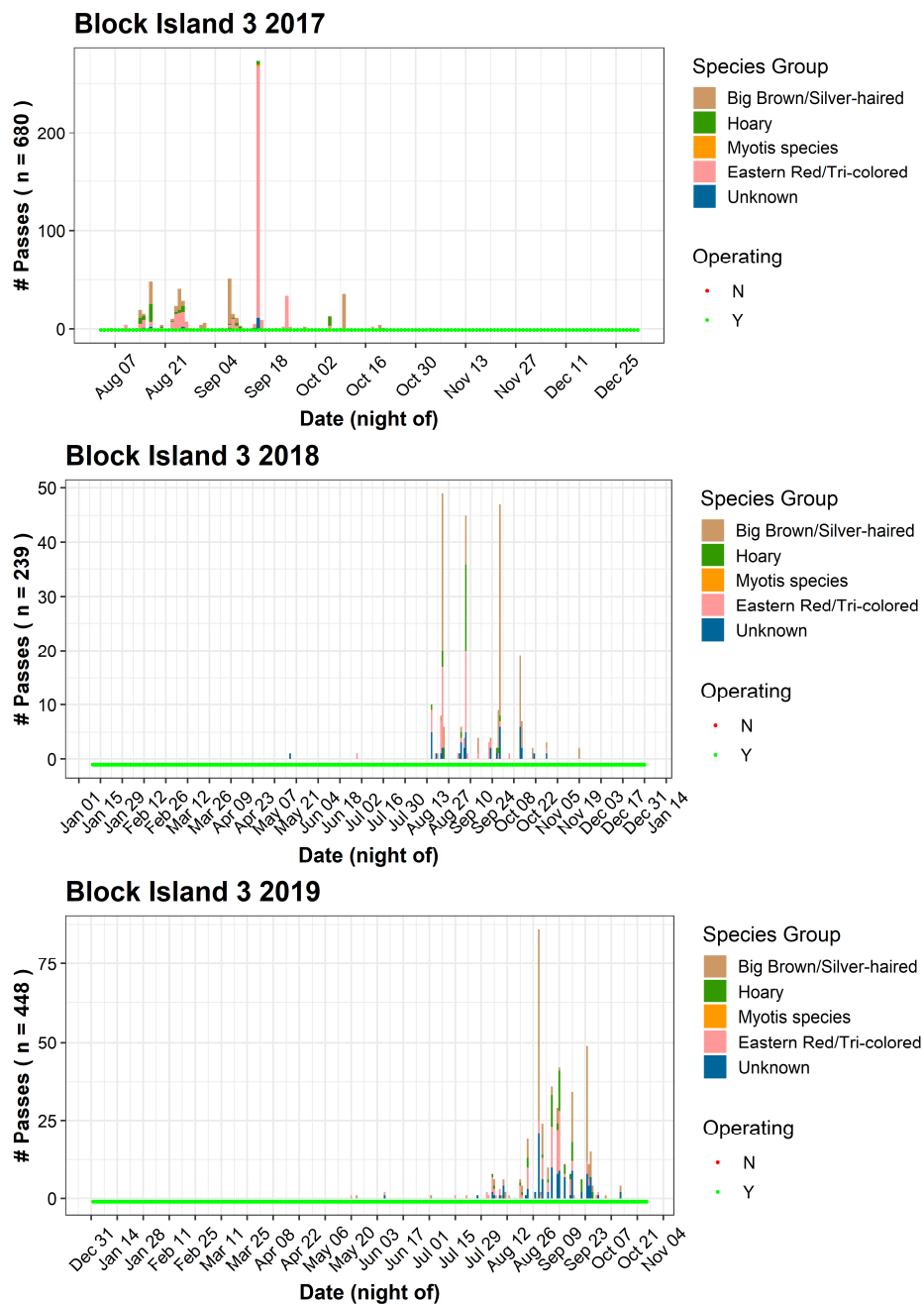


Figure 5. Nightly detector status bat activity by species group detected at Turbine 3 during acoustic bat surveys at the Block Island Wind Farm, August 3, 2017, to February 4, 2020.



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On a nightly basis, acoustic activity at Turbine 1 peaked during hour 4 after sunset in 2017, hour 7 after sunset in 2018, and hour 3 after sunset in 2019 (Figure 6). At Turbine 3, acoustic activity peaked during hour 9 after sunset in 2017 and 2019 and hours 3 and 11 after sunset in 2019 (

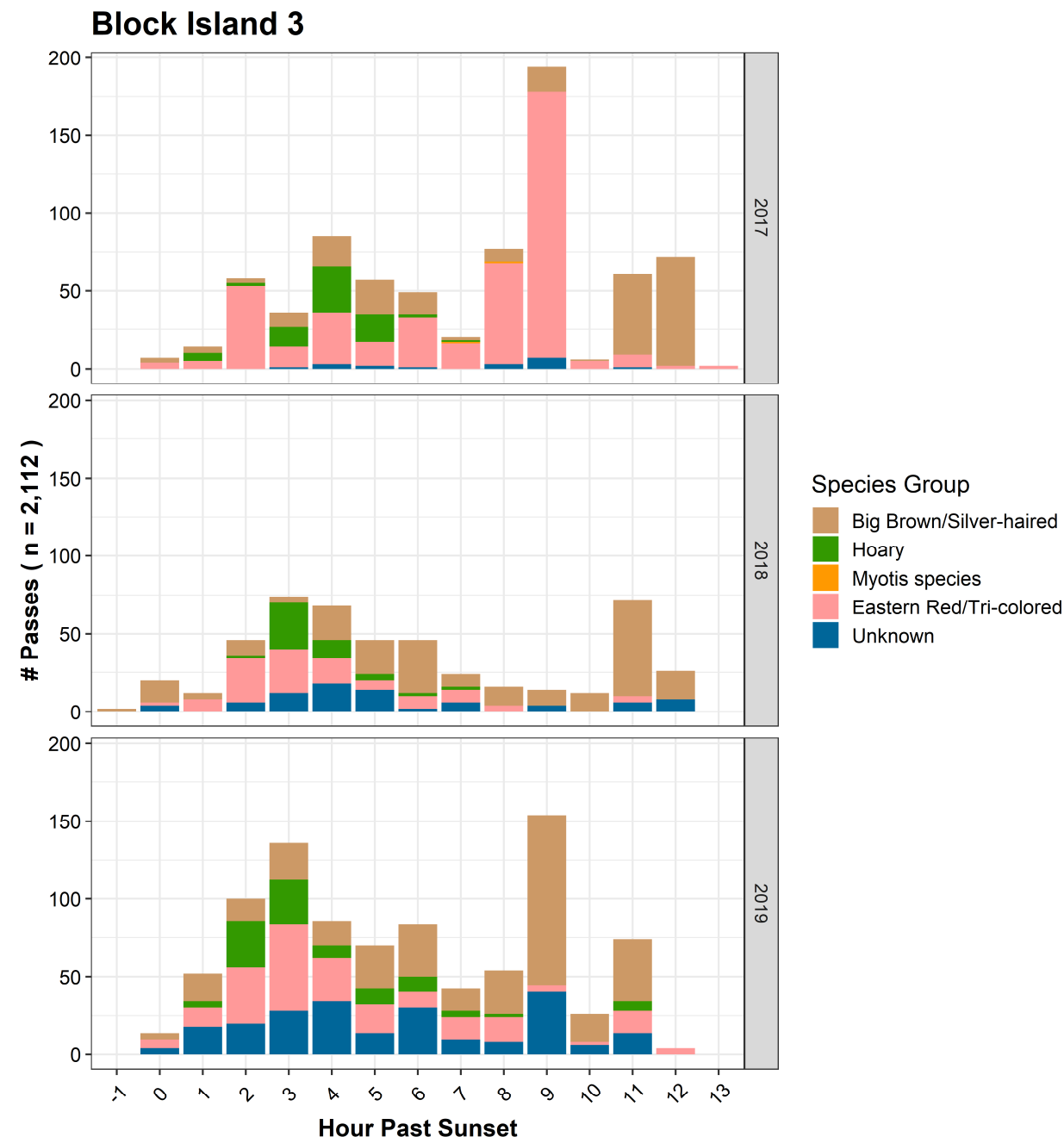


Figure 7). Timing of bat activity varied substantially among nights, with bat passes typically recorded during only a few hours per night. Bat activity was recorded during only a single hour on 80 out of 192 (42%) detector-nights nights during which bats were detected. Accordingly, Figures 6 and 7 reflect the



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accumulation of substantial inter-night variation in timing of bat activity as opposed to patterns that occurred consistently.

Of the 2,294 total recorded bat passes, 1,974 (86.1%) were assigned to a species and 320 (13.9%) were categorized as a bat of unknown species (NoID) by Kaleidoscope (Table 3). Of the 1,974 passes identified to species, eastern red bats accounted for 41.4% (n = 818) and silver-haired bats accounted for 35.1% (n = 692), and hoary bats accounted for 12.5% (n = 247). Kaleidoscope identified 135 files as big brown bats, although visual inspection of a subset of these files suggests that many were likely silver-haired bats (the two species share similar echolocation characteristics). Similarly, although 80 passes were labeled as tri-colored bats, none had characteristics that were diagnostic of the species, and these were more likely to be eastern red bats. Only 2 files identified as little brown bats were plausible, although we note that these could also have been fragments of eastern red bat call sequences. Species composition was similar between detectors and years (Figure 8; Figure 9). See Appendix A Table 1 and Appendix A Table 2 for nightly summaries of activity by species/species group per detector for January 2018 to February 2020; nightly summaries for August 2017 to January 2018 are available in the 2017 report (Stantec 2018).

Table 3. Bat activity by species group during turbine-based acoustic bat surveys at Block Island Wind Farm, August 3, 2017, to February 4, 2020.

Detector	Year	BBSH		HB	RBTB		MYSP			UNKN	Total
		EPFU	LANO	LACI	LABO	PESU*	MYLE	MYLU	MYSE	NoID	
Turbine 1	2017	20	148	67	183	6	0	0	0	7	431
	2018	1	7	2	0	0	0	0	0	6	16
	2019	52	127	39	99	27	0	0	0	136	480
	2020	0	0	0	0	0	0	0	0	0	0
Turbine 3	2017	13	168	62	390	27	0	2	0	18	680
	2018	14	103	26	55	1	0	0	0	40	239
	2019	35	139	51	91	19	0	0	0	113	448
	2020	0	0	0	0	0	0	0	0	0	0
Total		135	692	247	818	80	0	2	0	320	2,294
Species Group Composition %		6.8%	35.1%	12.5%	41.4%	4.1%	0.0%	0.1%	0.0%	-	-

Note: BBSH = big brown (EPFU; *Eptesicus fuscus*) and silver-haired bat (LANO; *Lasionycteris noctivagans*); HB = hoary bat (LACI; *Lasiurus cinereus*); MYSP = little brown bat (MYLU), northern long-eared bat (MYSE; *Myotis septentrionalis*), eastern small-footed bat (MYLE; *M. leibii*); RBTB = eastern red bat (LABO) and tri-colored bat (PESU; *Perimyotis subflavus*); UNKN (Unknown) = passes labeled as “NoID” by Kaleidoscope software.

*Although Stantec did not perform file-level species ID QAQC, none of the 80 files identified as PESU (tri-colored bat) had characteristics diagnostic of the species.



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Block Island 1

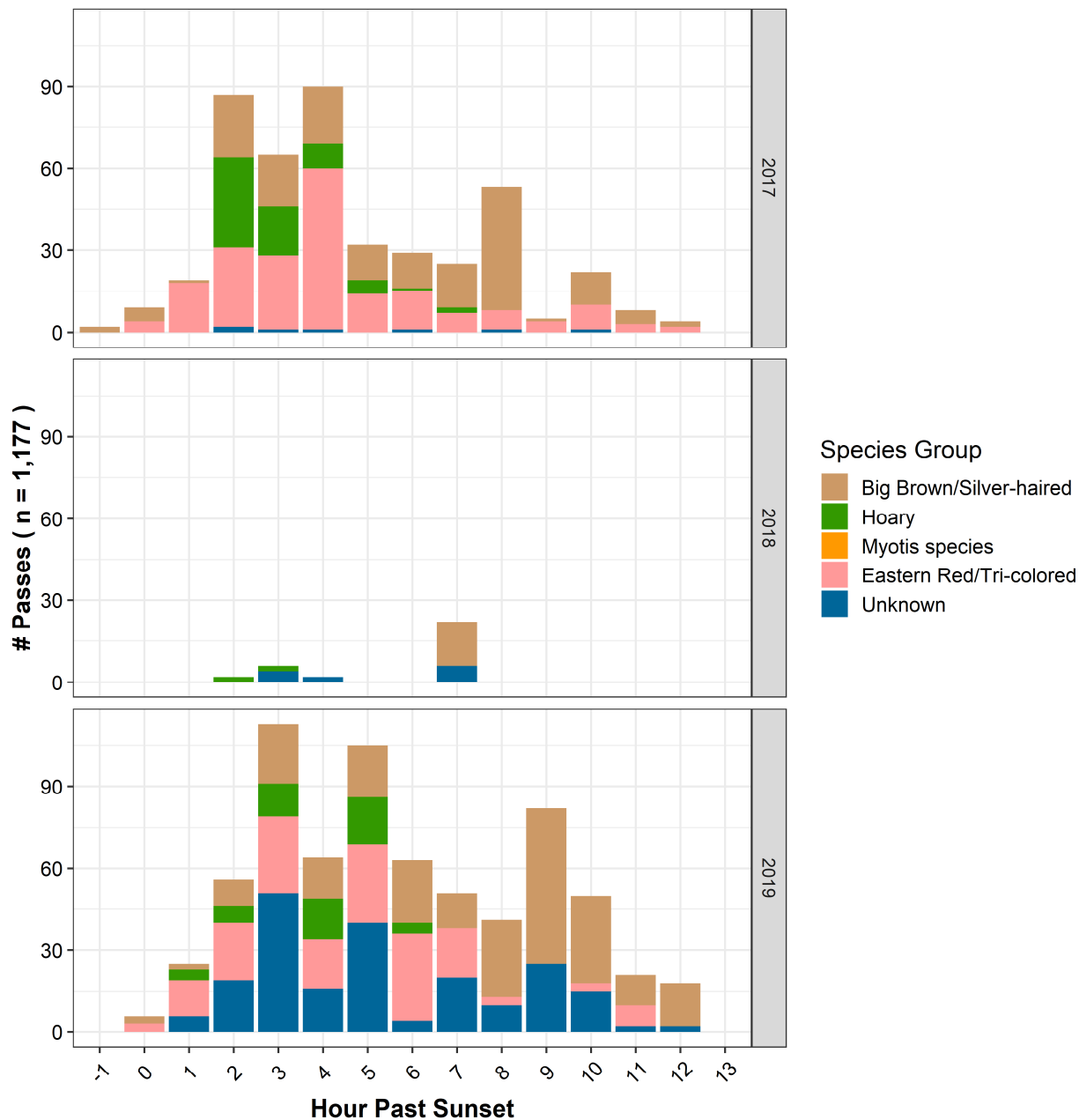


Figure 6. Overall timing of bat activity by species group detected at Turbine 1 during acoustic bat surveys at the Block Island Wind Farm, August 3, 2017, to February 4, 2020.



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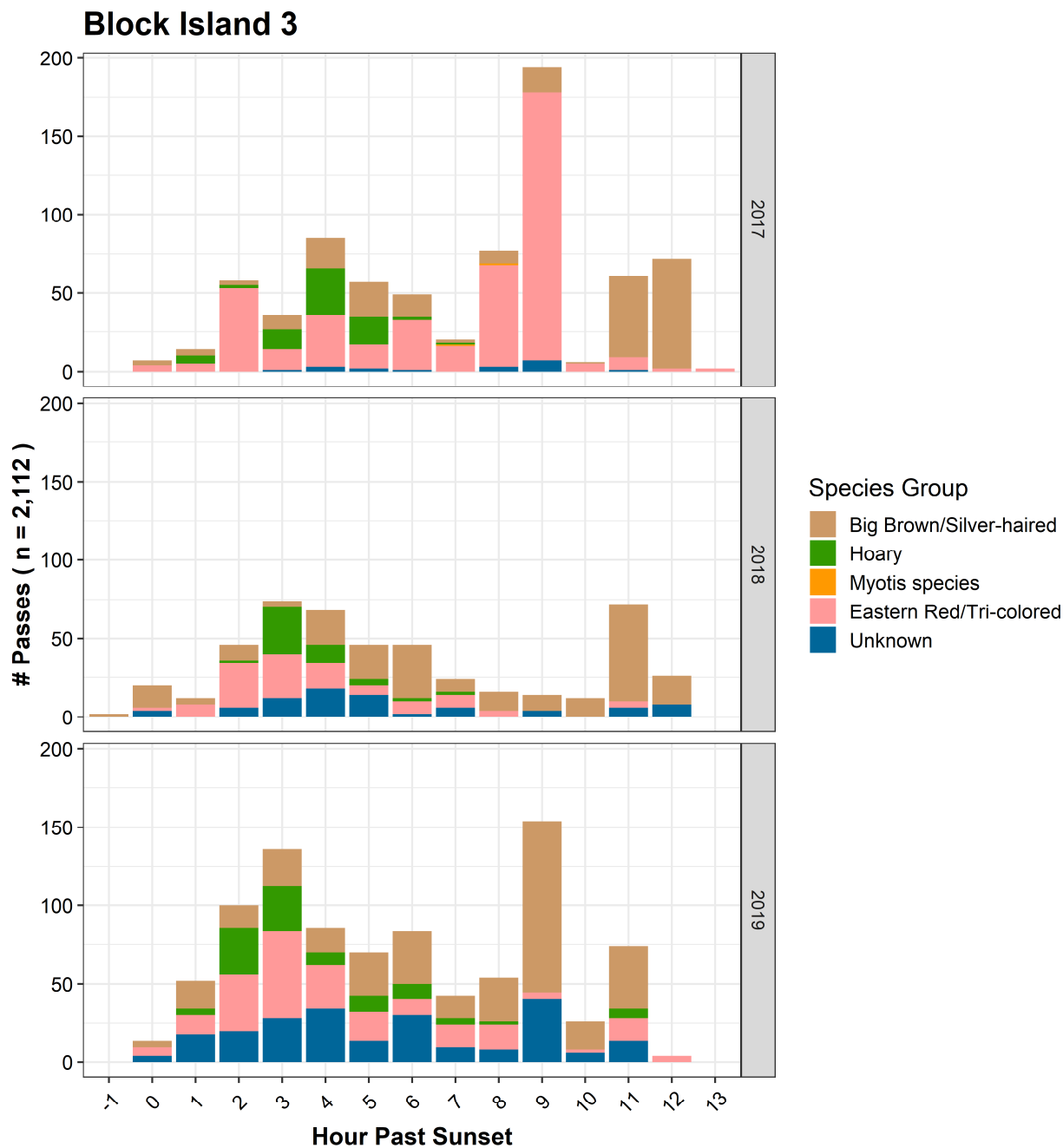


Figure 7. Overall timing of bat activity by species group detected at Turbine 3 during acoustic bat surveys at the Block Island Wind Farm, August 3, 2017, to February 4, 2020.



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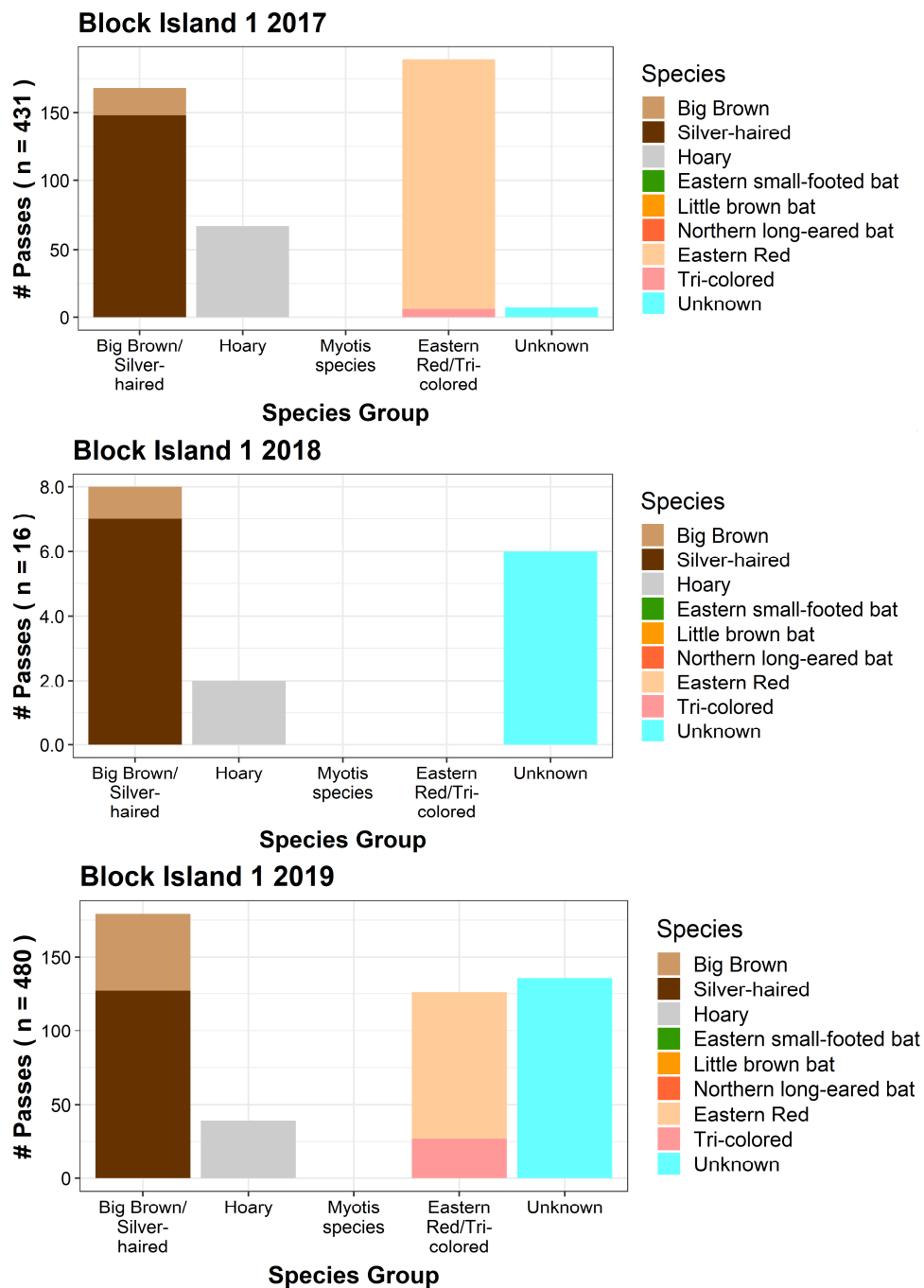


Figure 8. Species composition of bat activity detected at Turbine 1 during acoustic bat surveys at Block Island Wind Farm, August 3, 2017, to February 4, 2020.



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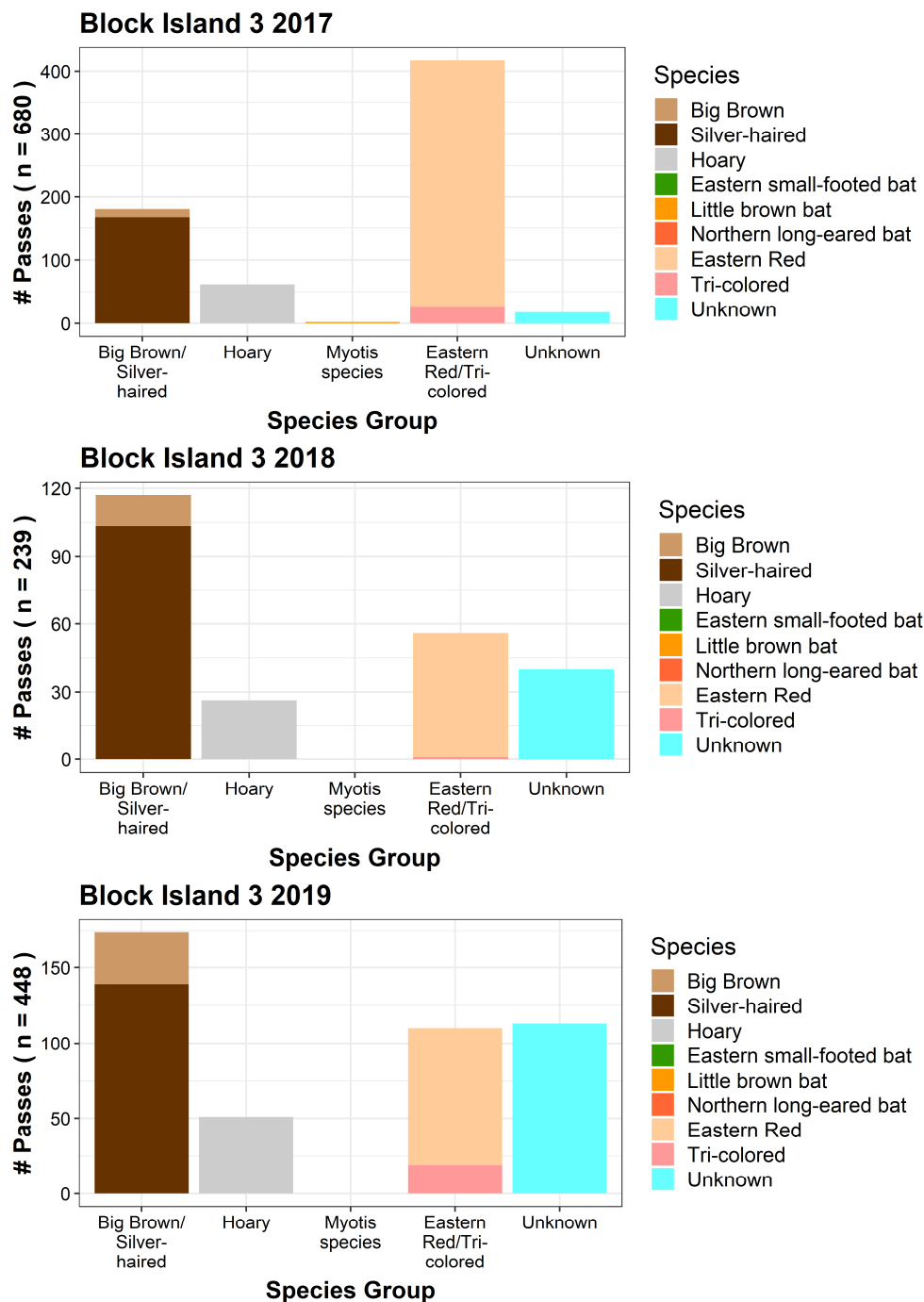


Figure 9. Species composition of bat activity detected at Turbine 3 during acoustic bat surveys at Block Island Wind Farm, August 3, 2017, to February 4, 2020.



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Nacelle-height wind speed readings were available for nights during which 764 (33.3%) bat passes were recorded. For both detectors combined, 63% (n = 484) of bat passes with corresponding weather data occurred when mean nightly wind speeds were < 7.0 m/s (Figure 10). Considerable numbers of bat passes were recorded at Turbine 3 during periods where wind speeds were between 7–8.5 m/s, many of which silver-haired bats recorded during the second half of September. Mean and median wind speeds during the subset of 106,221 10-minute periods surveyed by acoustic bat detectors in which wind speed data were available were 10.1 m/s and 9.6 m/s, respectively, pooling data from Turbines 1 and 3. Of the 764 bat passes with corresponding wind speed measurements, 749 (98%) occurred below the median, indicating that bat activity tended to occur during periods with lower wind speeds (Figure 11). Mean wind speed during the subset of 387 10-minute periods with bat activity was 5.9 m/s. Winds speed data were unavailable from Turbine 1 during many periods from which acoustic data were available. Species group composition was relatively consistent regardless of wind speed.

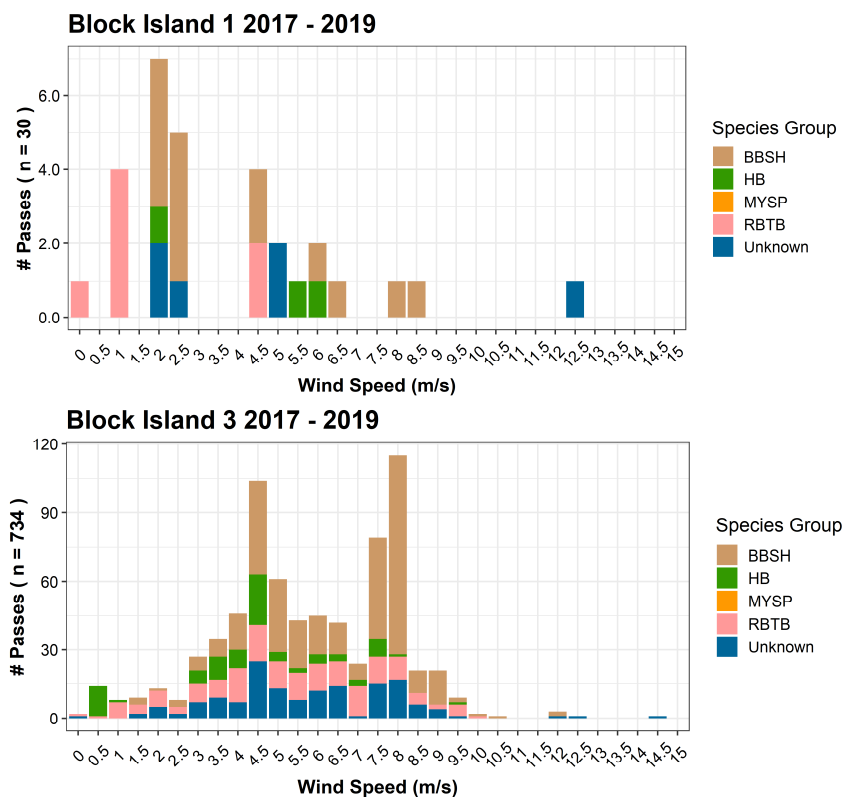


Figure 10. Number of recorded bat passes plotted with corresponding wind speed at Turbine 1 (top) and Turbine 3 (bottom), at Block Island Wind Farm, August 3, 2017, to February 4, 2020.



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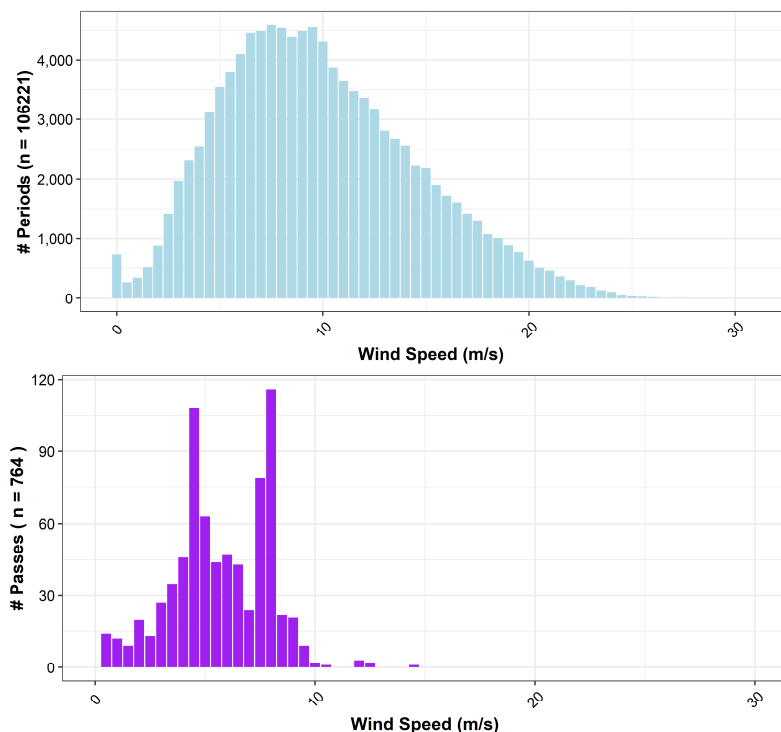


Figure 11. Distribution of 10-minute periods surveyed by bat detectors (top) and bat passes (bottom) as a function of nacelle-height wind speed during nights surveyed by acoustic bat detectors at Block Island Wind Farm, August 3, 2017, to February 4, 2020.

3.2 BIRD DETECTORS

The primary turbine-based bird detectors operated for the duration of the August 3, 2018, to February 4, 2020, survey period. There were over 2 million files recorded for all years and both turbines combined (Table 4); however, due to detector placement on the WTG platforms where there is consistent background noise, most if not all of these files included ambient sounds, which likely masked potential bird calls. Therefore, fragments of relatively very few potential bird calls were recorded (Table 4).



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Table 4. Number of files and potential bird calls recorded by turbine-based bird detectors at Block Island Wind Farm, August 3, 2017 – February 2020.

Survey Period	Season ¹	No. of Files ²	No. of Potential Bird Calls ³
2017-2018	Spring/Late-Summer and Fall	1234083	7
2017-2018	Summer/Winter	560698	2
2018-2020	Spring/Late-Summer and Fall	438007	0
2018-2020	Summer/Winter	33412	15
Total		2266200	24

¹ Winter (November 15 to February 28); spring (March 1 to May 31); summer (June 1 to July 15); late summer/fall (July 16 to November 14).

² Most if not all of these calls included background ambient sounds (i.e., operating WTG and wind/wave noise) which likely masked potential bird calls.

³ There were only two dates where potential bird call files were discernable through back-ground noise recordings.

During the first year of turbine-based acoustic bird monitoring from August 2017 to January 2018, there were nine bird calls recorded, two within the summer/winter periods and seven within the spring/late-summer and fall periods (Table 4). Seven of these calls occurred during daytime periods (morning or afternoon), one call was recorded in the evening, and another was recorded in the early morning a couple of hours prior to sunrise (Stantec 2018). Species or species group identifications during the first year of monitoring included American crow (*Corvus brachyrhynchos*), fish crow (*Corvus ossifragus*), great black-backed gull (*Larus marinus*), herring gull (*Larus argentatus*), house sparrow (*Passer domesticus*), unidentified sparrow, and unidentified bird (Stantec 2018).

Based on both the seasonal grouping and low-wind speed period analyses methods, there were only two dates (June 28 and July 4, 2019) during the 2018-2020 survey when 15 potential bird call files were discernable through background noise recordings. All potential bird calls were recorded during daytime periods during the summer season. These call files were too brief to discern species or species group identifications.

4.0 DISCUSSION

4.1 BAT DETECTORS

Acoustic bat surveys conducted at BIWF Turbines 1 and 3 between 2017 and 2020 documented presence of several bat species, particularly in late summer and early fall. Although acoustic detectors cannot distinguish individual bats or measure the number of bats in an area, acoustic data provided useful information on seasonal and temporal activity patterns and species composition at the first operational offshore wind facility in the United States. When corresponding wind speed data are available, acoustic data also provided insight on how conditions affect bat presence near wind turbines.



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Bat activity from summer 2017 through early 2020 occurred during 11.2% of surveyed detector-nights overall, indicating that bat activity was concentrated during a relatively small number of nights during the year. Bat activity occurred most consistently during August and September, with bats detected during 41% of 362 detector-nights surveyed during these months. The busiest individual detector-night at each detector/year occurred between August 15 and September 15 each year and accounted for 25% of total recorded bat passes. No bat activity was recorded at the turbine-based detectors from December through April at either turbine. Seasonal timing of bat activity at the BIWF and the concentration of bat activity during a relatively small number of nights were both consistent with patterns documented at remote islands and offshore structures during pre-construction surveys at BIWF and other proposed offshore wind farms (Stantec 2018; Stantec 2019a,b,c) and regional acoustic bat surveys conducted in the Gulf of Maine, mid-Atlantic and Great Lakes (Peterson et al. 2016). Similarly, incidental observations of bats offshore typically occur in late summer or fall (Hatch et al. 2013; Peterson et al. 2014).

Long-distance migratory bats (primarily eastern red bats and silver-haired bats) accounted for most recorded bat activity at BIWF, with hoary bats also detected often. Although big brown bats and tri-colored bats were identified by Kaleidoscope Pro software, echolocation characteristics of these species overlap with silver-haired bats and eastern red bats, respectively, and many of these files were likely misidentified by the software. Similarly, although two files had characteristics consistent with little brown bats, these could also have been fragments of eastern red bats. While all six species identified by Kaleidoscope could occur at BIWF, occurrence of eastern red bats, silver-haired bats, and hoary bats is most likely based on available acoustic data. Similar species composition occurred at numerous coastal and offshore sites monitored by Stantec during regional acoustic surveys from 2009 to 2014 (Peterson et al. 2016) and long-distance migratory species have also been found to be most at risk of collision at terrestrial wind projects in the United States (American Wind and Wildlife Institute 2018; Thompson et al. 2017). Eastern red bats also accounted for 76.8% of bat passes recorded at four vessels during construction of the BIWF in early August 2016 (Stantec 2018).

Although wind speeds measured at nacelle-height were 10 m/s or higher, on average, during periods surveyed by acoustic detectors, most bat activity occurred at lower wind speeds. This pattern aligns with data from previous acoustic surveys in terrestrial, coastal, and offshore areas in the northeast (Peterson et al. 2016; Reynolds 2006). Importantly, wind speed data available from BIWF were measured at nacelle height, or approximately 100 m (328 ft) above the height at which bat detectors were deployed. Wind data were unavailable at the height of the detectors mounted on the turbine platforms, but wind speeds increase with height above water, as demonstrated from observations from offshore wind farms in Europe (Pena Diaz et al. 2012). Accordingly, wind speeds actually experienced by the bats detected at the BIWF were lower than those measured at nacelle height.

The inability to distinguish multiple passes by a single bat prevents use of acoustic data to establish the number of bats present in an area. This may be particularly important when evaluating bat activity at offshore structures such as wind turbines. Similar to patterns documented by Peterson et al. (2014 and 2016), acoustic monitoring at BIWF demonstrated that most bat activity occurred during concentrated periods, separated by long intervals without bat activity. Although numerous bat passes were occasionally



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recorded during a single hour, these often involved a single species and could have theoretically been produced by a small number or even a single bat.

Acoustic monitoring at BIWF indicates that bats are routinely present in the vicinity of turbines during the late summer and fall, but that most bat activity occurred during a relatively small proportion of time during which bat detectors were operating. Bat activity tended to occur during calmer conditions relative to the overall distribution of wind speeds during the survey period, indicating that potential impacts to bats would be greater during calm conditions, as has been observed at terrestrial wind farms in North America (Kunz et al. 2007). Although bat detectors could not measure the number of individual bats present in the BIWF, the concentration of activity during relatively few intervals, coupled with relatively low diversity, suggest that the number of individual bats was likely low. Bats are thought to be attracted to terrestrial wind turbines (Cryan et al. 2014), and similar behavioral attraction could occur offshore, resulting in more bat activity occurring near turbines than in surrounding offshore habitat. Nevertheless, the number of individual bats present offshore at any given time is presumably small relative to terrestrial sites and the infrequency of bat activity at BIWF suggests the potential risk of turbine-related impacts to bats at the site would be similarly infrequent.

4.2 BIRD DETECTORS

It is important to note that these surveys were conducted at an elevation of approximately 25 m (80 ft) above msl and this location resulted in recording primarily background noise from operation of the WTGs and other ambient sounds like wind and waves. The interference of other ambient sounds may have masked potential bird calls. Acoustic detectors at this height cannot directly describe potential bird activity at nacelle height or within the full rotor-swept area of the turbines, where birds may be at risk of collision with moving blades. Similar to bat acoustic surveys, the number of individual birds cannot be determined by the number of calls recorded due to the potential for one individual to produce multiple calls. However, these surveys can potentially inform species composition and activity periods of birds within the BIWF.

There were very few potential bird calls recorded during both the 2017–2018, and 2018–2020 turbine-based acoustic bird surveys. While nine bird calls were recorded across the summer, fall, and winter periods during the first year, potential bird call fragments were discernable on only two days during the summer period during the second year of survey. Because acoustic bird surveys record all background noises, results were undoubtedly biased by interference recordings.



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APPENDIX A ACOUSTIC BAT NIGHTLY DATA



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Appendix A Table 1. Summary of acoustic bat data and weather during each survey night at Turbine 1 at Block Island Wind Farm, January 2018 – January 2020.

Night of	Operational? *	BBSH		HB	RBTB		MYPSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
1/10/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
1/11/2018	1	0	0	0	0	0	0	0	0	0	0	17.7
1/12/2018	1	0	0	0	0	0	0	0	0	0	0	17.4
1/13/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
1/14/2018	1	0	0	0	0	0	0	0	0	0	0	10.7
1/15/2018	1	0	0	0	0	0	0	0	0	0	0	11.5
1/16/2018	1	0	0	0	0	0	0	0	0	0	0	8.9
1/17/2018	1	0	0	0	0	0	0	0	0	0	0	7.0
1/18/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
1/19/2018	1	0	0	0	0	0	0	0	0	0	0	12.1
1/20/2018	1	0	0	0	0	0	0	0	0	0	0	12.2
1/21/2018	1	0	0	0	0	0	0	0	0	0	0	4.9
1/22/2018	1	0	0	0	0	0	0	0	0	0	0	14.5
1/23/2018	1	0	0	0	0	0	0	0	0	0	0	16.3
1/24/2018	1	0	0	0	0	0	0	0	0	0	0	10.3
1/25/2018	1	0	0	0	0	0	0	0	0	0	0	10.2
1/26/2018	1	0	0	0	0	0	0	0	0	0	0	8.3
1/27/2018	1	0	0	0	0	0	0	0	0	0	0	16.8
1/28/2018	1	0	0	0	0	0	0	0	0	0	0	8.3
1/29/2018	1	0	0	0	0	0	0	0	0	0	0	17.5
1/30/2018	1	0	0	0	0	0	0	0	0	0	0	10.5
1/31/2018	1	0	0	0	0	0	0	0	0	0	0	12.8
2/1/2018	1	0	0	0	0	0	0	0	0	0	0	8.1
2/2/2018	1	0	0	0	0	0	0	0	0	0	0	13.5
2/3/2018	1	0	0	0	0	0	0	0	0	0	0	11.1
2/4/2018	1	0	0	0	0	0	0	0	0	0	0	15.1
2/5/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
2/6/2018	1	0	0	0	0	0	0	0	0	0	0	5.5
2/7/2018	1	0	0	0	0	0	0	0	0	0	0	14.9
2/8/2018	1	0	0	0	0	0	0	0	0	0	0	7.2
2/9/2018	1	0	0	0	0	0	0	0	0	0	0	9.8
2/10/2018	1	0	0	0	0	0	0	0	0	0	0	13.4
2/11/2018	1	0	0	0	0	0	0	0	0	0	0	18.7
2/12/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
2/13/2018	1	0	0	0	0	0	0	0	0	0	0	6.2
2/14/2018	1	0	0	0	0	0	0	0	0	0	0	13.5
2/15/2018	1	0	0	0	0	0	0	0	0	0	0	10.0
2/16/2018	1	0	0	0	0	0	0	0	0	0	0	12.2
2/17/2018	1	0	0	0	0	0	0	0	0	0	0	9.0
2/18/2018	1	0	0	0	0	0	0	0	0	0	0	6.3
2/19/2018	1	0	0	0	0	0	0	0	0	0	0	14.0
2/20/2018	1	0	0	0	0	0	0	0	0	0	0	16.5
2/21/2018	1	0	0	0	0	0	0	0	0	0	0	11.8
2/22/2018	1	0	0	0	0	0	0	0	0	0	0	8.8
2/23/2018	1	0	0	0	0	0	0	0	0	0	0	9.5
2/24/2018	1	0	0	0	0	0	0	0	0	0	0	10.2
2/25/2018	1	0	0	0	0	0	0	0	0	0	0	7.2
2/26/2018	1	0	0	0	0	0	0	0	0	0	0	11.1
2/27/2018	1	0	0	0	0	0	0	0	0	0	0	14.5
2/28/2018	1	0	0	0	0	0	0	0	0	0	0	11.9
3/1/2018	1	0	0	0	0	0	0	0	0	0	0	18.0
3/2/2018	1	0	0	0	0	0	0	0	0	0	0	19.2
3/3/2018	1	0	0	0	0	0	0	0	0	0	0	16.9
3/4/2018	1	0	0	0	0	0	0	0	0	0	0	11.1
3/5/2018	1	0	0	0	0	0	0	0	0	0	0	10.3
3/6/2018	1	0	0	0	0	0	0	0	0	0	0	8.5
3/7/2018	1	0	0	0	0	0	0	0	0	0	0	16.7
3/8/2018	1	0	0	0	0	0	0	0	0	0	0	8.6
3/9/2018	1	0	0	0	0	0	0	0	0	0	0	15.1
3/10/2018	1	0	0	0	0	0	0	0	0	0	0	12.8
3/11/2018	1	0	0	0	0	0	0	0	0	0	0	8.5
3/12/2018	1	0	0	0	0	0	0	0	0	0	0	16.7
3/13/2018	1	0	0	0	0	0	0	0	0	0	0	14.9
3/14/2018	1	0	0	0	0	0	0	0	0	0	0	18.2
3/15/2018	1	0	0	0	0	0	0	0	0	0	0	11.2
3/16/2018	1	0	0	0	0	0	0	0	0	0	0	14.6
3/17/2018	1	0	0	0	0	0	0	0	0	0	0	9.0



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Night of	Operational? *	BBSH		HB	RBTB		MYSB			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
3/18/2018	1	0	0	0	0	0	0	0	0	0	0	8.2
3/19/2018	1	0	0	0	0	0	0	0	0	0	0	8.4
3/20/2018	1	0	0	0	0	0	0	0	0	0	0	14.7
3/21/2018	1	0	0	0	0	0	0	0	0	0	0	17.4
3/22/2018	1	0	0	0	0	0	0	0	0	0	0	6.4
3/23/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
3/24/2018	1	0	0	0	0	0	0	0	0	0	0	8.2
3/25/2018	1	0	0	0	0	0	0	0	0	0	0	11.3
3/26/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
3/27/2018	1	0	0	0	0	0	0	0	0	0	0	5.8
3/28/2018	1	0	0	0	0	0	0	0	0	0	0	6.3
3/29/2018	1	0	0	0	0	0	0	0	0	0	0	15.2
3/30/2018	1	0	0	0	0	0	0	0	0	0	0	10.7
3/31/2018	1	0	0	0	0	0	0	0	0	0	0	13.7
4/1/2018	1	0	0	0	0	0	0	0	0	0	0	9.5
4/2/2018	1	0	0	0	0	0	0	0	0	0	0	2.9
4/3/2018	1	0	0	0	0	0	0	0	0	0	0	7.3
4/4/2018	1	0	0	0	0	0	0	0	0	0	0	17.2
4/5/2018	1	0	0	0	0	0	0	0	0	0	0	5.6
4/6/2018	1	0	0	0	0	0	0	0	0	0	0	11.6
4/7/2018	1	0	0	0	0	0	0	0	0	0	0	9.3
4/8/2018	1	0	0	0	0	0	0	0	0	0	0	11.6
4/9/2018	1	0	0	0	0	0	0	0	0	0	0	5.7
4/10/2018	1	0	0	0	0	0	0	0	0	0	0	4.9
4/11/2018	1	0	0	0	0	0	0	0	0	0	0	7.4
4/12/2018	1	0	0	0	0	0	0	0	0	0	0	17.7
4/13/2018	1	0	0	0	0	0	0	0	0	0	0	14.4
4/14/2018	1	0	0	0	0	0	0	0	0	0	0	16.2
4/15/2018	1	0	0	0	0	0	0	0	0	0	0	17.2
4/16/2018	1	0	0	0	0	0	0	0	0	0	0	13.3
4/17/2018	1	0	0	0	0	0	0	0	0	0	0	13.6
4/18/2018	1	0	0	0	0	0	0	0	0	0	0	8.6
4/19/2018	1	0	0	0	0	0	0	0	0	0	0	12.3
4/20/2018	1	0	0	0	0	0	0	0	0	0	0	10.2
4/21/2018	1	0	0	0	0	0	0	0	0	0	0	10.6
4/22/2018	1	0	0	0	0	0	0	0	0	0	0	10.9
4/23/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
4/24/2018	1	0	0	0	0	0	0	0	0	0	0	14.5
4/25/2018	1	0	0	0	0	0	0	0	0	0	0	10.9
4/26/2018	1	0	0	0	0	0	0	0	0	0	0	7.3
4/27/2018	1	0	0	0	0	0	0	0	0	0	0	5.1
4/28/2018	1	0	0	0	0	0	0	0	0	0	0	5.7
4/29/2018	1	0	0	0	0	0	0	0	0	0	0	10.5
4/30/2018	1	0	0	0	0	0	0	0	0	0	0	10.1
5/1/2018	1	0	0	0	0	0	0	0	0	0	0	13.5
5/2/2018	1	0	0	0	0	0	0	0	0	0	0	19.5
5/3/2018	1	0	0	0	0	0	0	0	0	0	0	13.8
5/4/2018	1	0	0	0	0	0	0	0	0	0	0	16.5
5/5/2018	1	0	0	0	0	0	0	0	0	0	0	11.6
5/6/2018	1	0	0	0	0	0	0	0	0	0	0	8.8
5/7/2018	1	0	0	0	0	0	0	0	0	0	0	5.4
5/8/2018	1	0	0	0	0	0	0	0	0	0	0	2.6
5/9/2018	1	0	0	0	0	0	0	0	0	0	0	7.3
5/10/2018	1	0	0	0	0	0	0	0	0	0	0	10.0
5/11/2018	1	0	0	0	0	0	0	0	0	0	0	4.5
5/12/2018	1	0	0	0	0	0	0	0	0	0	0	7.9
5/13/2018	1	0	0	0	0	0	0	0	0	0	0	3.5
5/14/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
5/15/2018	1	0	0	0	0	0	0	0	0	0	0	7.5
5/16/2018	1	0	0	0	0	0	0	0	0	0	0	5.9
5/17/2018	1	0	0	0	0	0	0	0	0	0	0	6.1
5/18/2018	1	0	0	0	0	0	0	0	0	0	0	9.9
5/19/2018	1	0	0	0	0	0	0	0	0	0	0	15.1
5/20/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
5/21/2018	1	0	0	0	0	0	0	0	0	0	0	9.3
5/22/2018	1	0	0	0	0	0	0	0	0	0	0	3.7
5/23/2018	1	0	0	0	0	0	0	0	0	0	0	10.0
5/24/2018	1	0	0	0	0	0	0	0	0	0	0	0.3
5/25/2018	1	0	0	0	0	0	0	0	0	0	0	21.4



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Night of	Operational? *	BBSH		HB	RBTB		MYSB			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
5/26/2018	1	0	0	0	0	0	0	0	0	0	0	12.9
5/27/2018	1	0	0	0	0	0	0	0	0	0	0	12.8
5/28/2018	1	0	0	0	0	0	0	0	0	0	0	7.8
5/29/2018	1	0	0	0	0	0	0	0	0	0	0	2.5
5/30/2018	1	0	0	0	0	0	0	0	0	0	0	6.1
5/31/2018	1	0	0	0	0	0	0	0	0	0	0	12.8
6/1/2018	1	0	0	0	0	0	0	0	0	0	0	6.4
6/2/2018	1	0	0	0	0	0	0	0	0	0	0	11.6
6/3/2018	1	0	0	0	0	0	0	0	0	0	0	12.8
6/4/2018	1	0	0	0	0	0	0	0	0	0	0	8.1
6/5/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
6/6/2018	1	0	0	0	0	0	0	0	0	0	0	4.7
6/7/2018	1	0	0	0	0	0	0	0	0	0	0	6.1
6/8/2018	1	0	0	0	0	0	0	0	0	0	0	9.4
6/9/2018	1	0	0	0	0	0	0	0	0	0	0	9.0
6/10/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
6/11/2018	1	0	0	0	0	0	0	0	0	0	0	5.5
6/12/2018	1	0	0	0	0	0	0	0	0	0	0	13.8
6/13/2018	1	0	0	0	0	0	0	0	0	0	0	15.5
6/14/2018	1	0	0	0	0	0	0	0	0	0	0	11.1
6/15/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
6/16/2018	1	0	0	0	0	0	0	0	0	0	0	10.9
6/17/2018	1	0	0	0	0	0	0	0	0	0	0	10.6
6/18/2018	1	0	0	0	0	0	0	0	0	0	0	17.3
6/19/2018	1	0	0	0	0	0	0	0	0	0	0	8.1
6/20/2018	1	0	0	0	0	0	0	0	0	0	0	7.7
6/21/2018	1	0	0	0	0	0	0	0	0	0	0	4.2
6/22/2018	1	0	0	0	0	0	0	0	0	0	0	10.0
6/23/2018	1	0	0	0	0	0	0	0	0	0	0	4.5
6/24/2018	1	0	0	0	0	0	0	0	0	0	0	7.2
6/25/2018	1	0	0	0	0	0	0	0	0	0	0	3.8
6/26/2018	1	0	0	0	0	0	0	0	0	0	0	8.5
6/27/2018	1	0	0	0	0	0	0	0	0	0	0	14.8
6/28/2018	1	0	0	0	0	0	0	0	0	0	0	7.1
6/29/2018	1	0	0	0	0	0	0	0	0	0	0	6.1
6/30/2018	1	0	0	0	0	0	0	0	0	0	0	8.3
7/1/2018	1	0	0	0	0	0	0	0	0	0	0	3.8
7/2/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
7/3/2018	1	0	0	0	0	0	0	0	0	0	0	7.1
7/4/2018	1	0	0	0	0	0	0	0	0	0	0	6.6
7/5/2018	1	0	0	0	0	0	0	0	0	0	0	13.2
7/6/2018	1	0	0	0	0	0	0	0	0	0	0	12.6
7/7/2018	1	0	0	0	0	0	0	0	0	0	0	3.4
7/8/2018	1	0	0	0	0	0	0	0	0	0	0	3.9
7/9/2018	1	0	0	0	0	0	0	0	0	0	0	10.3
7/10/2018	1	0	0	0	0	0	0	0	0	0	0	8.5
7/11/2018	1	0	0	0	0	0	0	0	0	0	0	6.0
7/12/2018	1	0	0	0	0	0	0	0	0	0	0	2.8
7/13/2018	1	0	0	0	0	0	0	0	0	0	0	4.8
7/14/2018	1	0	0	0	0	0	0	0	0	0	0	6.4
7/15/2018	1	0	0	0	0	0	0	0	0	0	0	8.3
7/16/2018	1	0	0	0	0	0	0	0	0	0	0	8.8
7/17/2018	1	0	0	0	0	0	0	0	0	0	0	6.7
7/18/2018	1	0	0	0	0	0	0	0	0	0	0	5.0
7/19/2018	1	0	0	0	0	0	0	0	0	0	0	4.6
7/20/2018	1	0	0	0	0	0	0	0	0	0	0	5.1
7/21/2018	1	0	0	0	0	0	0	0	0	0	0	13.9
7/22/2018	1	0	0	0	0	0	0	0	0	0	0	15.4
7/23/2018	1	0	0	0	0	0	0	0	0	0	0	12.5
7/24/2018	1	0	0	0	0	0	0	0	0	0	0	12.5
7/25/2018	1	0	0	0	0	0	0	0	0	0	0	14.0
7/26/2018	1	0	0	0	0	0	0	0	0	0	0	9.9
7/27/2018	1	0	0	0	0	0	0	0	0	0	0	5.4
7/28/2018	1	0	0	0	0	0	0	0	0	0	0	6.7
7/29/2018	1	0	0	0	0	0	0	0	0	0	0	9.1
7/30/2018	1	0	0	0	0	0	0	0	0	0	0	3.5
7/31/2018	1	0	0	0	0	0	0	0	0	0	0	6.0
8/1/2018	1	0	0	0	0	0	0	0	0	0	0	12.8
8/2/2018	1	0	0	0	0	0	0	0	0	0	0	NA



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Night of	Operational? *	BBSH		HB	RBTB		MYSB			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
8/3/2018	1	0	0	0	0	0	0	0	0	0	0	9.8
8/4/2018	1	0	0	0	0	0	0	0	0	0	0	7.7
8/5/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
8/6/2018	1	0	0	0	0	0	0	0	0	0	0	12.9
8/7/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
8/8/2018	1	0	0	0	0	0	0	0	0	0	0	9.0
8/9/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
8/10/2018	1	0	0	0	0	0	0	0	0	0	0	6.0
8/11/2018	1	0	0	0	0	0	0	0	0	0	0	4.1
8/12/2018	1	0	0	0	0	0	0	0	0	0	0	7.9
8/13/2018	1	0	0	0	0	0	0	0	0	0	0	6.1
8/14/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
8/15/2018	1	0	0	0	0	0	0	0	0	0	0	0.0
8/16/2018	1	0	0	0	0	0	0	0	0	0	0	9.3
8/17/2018	1	0	0	0	0	0	0	0	0	0	0	8.4
8/18/2018	1	0	0	0	0	0	0	0	0	0	0	8.4
8/19/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
8/20/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
8/21/2018	1	0	0	0	0	0	0	0	0	0	0	6.7
8/22/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
8/23/2018	1	0	0	0	0	0	0	0	0	0	0	7.2
8/24/2018	1	0	0	0	0	0	0	0	0	0	0	5.6
8/25/2018	1	0	0	0	0	0	0	0	0	0	0	2.1
8/26/2018	1	0	0	0	0	0	0	0	0	0	0	9.5
8/27/2018	1	0	0	0	0	0	0	0	0	0	0	9.0
8/28/2018	1	0	0	0	0	0	0	0	0	0	0	13.8
8/29/2018	1	0	0	0	0	0	0	0	0	0	0	14.1
8/30/2018	1	0	0	0	0	0	0	0	0	0	0	11.6
8/31/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
9/1/2018	1	0	0	0	0	0	0	0	0	0	0	3.4
9/2/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
9/3/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
9/4/2018	1	0	0	0	0	0	0	0	0	0	0	4.8
9/5/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
9/6/2018	1	0	0	0	0	0	0	0	0	0	0	5.9
9/7/2018	1	0	0	0	0	0	0	0	0	0	0	4.5
9/8/2018	1	0	0	0	0	0	0	0	0	0	0	9.8
9/9/2018	1	0	0	0	0	0	0	0	0	0	0	12.7
9/10/2018	1	0	0	0	0	0	0	0	0	0	0	14.6
9/11/2018	1	0	0	0	0	0	0	0	0	0	0	1.9
9/12/2018	1	0	0	0	0	0	0	0	0	0	0	8.3
9/13/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
9/14/2018	1	0	0	0	0	0	0	0	0	0	0	4.0
9/15/2018	1	1	7	0	0	0	0	0	0	3	11	3.1
9/16/2018	1	0	0	0	0	0	0	0	0	0	0	5.0
9/17/2018	1	0	0	0	0	0	0	0	0	0	0	11.6
9/18/2018	1	0	0	0	0	0	0	0	0	0	0	5.9
9/19/2018	1	0	0	0	0	0	0	0	0	0	0	12.4
9/20/2018	1	0	0	0	0	0	0	0	0	0	0	6.6
9/21/2018	1	0	0	0	0	0	0	0	0	0	0	14.6
9/22/2018	1	0	0	0	0	0	0	0	0	0	0	7.0
9/23/2018	1	0	0	0	0	0	0	0	0	0	0	5.9
9/24/2018	1	0	0	0	0	0	0	0	0	0	0	13.8
9/25/2018	1	0	0	0	0	0	0	0	0	0	0	17.3
9/26/2018	1	0	0	0	0	0	0	0	0	0	0	12.7
9/27/2018	1	0	0	0	0	0	0	0	0	0	0	8.6
9/28/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
9/29/2018	1	0	0	0	0	0	0	0	0	0	0	7.5
9/30/2018	1	0	0	2	0	0	0	0	0	2	4	5.5
10/1/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
10/2/2018	1	0	0	0	0	0	0	0	0	0	0	10.1
10/3/2018	1	0	0	0	0	0	0	0	0	0	0	5.0
10/4/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
10/5/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
10/6/2018	1	0	0	0	0	0	0	0	0	0	0	8.4
10/7/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
10/8/2018	1	0	0	0	0	0	0	0	0	0	0	8.0
10/9/2018	1	0	0	0	0	0	0	0	0	0	0	10.0
10/10/2018	1	0	0	0	0	0	0	0	0	0	0	7.7



AVIAN AND BAT ACOUSTIC SURVEY FINAL POST-CONSTRUCTION MONITORING REPORT, 2017–2020

November 25, 2020

Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
10/11/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
10/12/2018	1	0	0	0	0	0	0	0	0	0	0	9.9
10/13/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
10/14/2018	1	0	0	0	0	0	0	0	0	0	0	6.4
10/15/2018	1	0	0	0	0	0	0	0	0	0	0	16.8
10/16/2018	1	0	0	0	0	0	0	0	0	0	0	10.5
10/17/2018	1	0	0	0	0	0	0	0	0	0	0	14.9
10/18/2018	1	0	0	0	0	0	0	0	0	0	0	8.3
10/19/2018	1	0	0	0	0	0	0	0	0	0	0	15.9
10/20/2018	1	0	0	0	0	0	0	0	0	0	0	7.0
10/21/2018	1	0	0	0	0	0	0	0	0	0	0	11.0
10/22/2018	1	0	0	0	0	0	0	0	0	0	0	5.2
10/23/2018	1	0	0	0	0	0	0	0	0	0	0	11.0
10/24/2018	1	0	0	0	0	0	0	0	0	0	0	11.6
10/25/2018	1	0	0	0	0	0	0	0	0	0	0	11.3
10/26/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
10/27/2018	1	0	0	0	0	0	0	0	0	0	0	11.8
10/28/2018	1	0	0	0	0	0	0	0	0	0	0	8.5
10/29/2018	1	0	0	0	0	0	0	0	0	0	0	12.4
10/30/2018	1	0	0	0	0	0	0	0	0	0	0	8.4
10/31/2018	1	0	0	0	0	0	0	0	0	0	0	11.6
11/1/2018	1	0	0	0	0	0	0	0	0	0	0	17.4
11/2/2018	1	0	0	0	0	0	0	0	0	0	0	22.4
11/3/2018	1	0	0	0	0	0	0	0	0	0	0	18.7
11/4/2018	1	0	0	0	0	0	0	0	0	0	0	7.8
11/5/2018	1	0	0	0	0	0	0	0	0	0	0	11.4
11/6/2018	1	0	0	0	0	0	0	0	0	0	0	13.5
11/7/2018	1	0	0	0	0	0	0	0	0	1	1	12.8
11/8/2018	1	0	0	0	0	0	0	0	0	0	0	7.3
11/9/2018	1	0	0	0	0	0	0	0	0	0	0	13.4
11/10/2018	1	0	0	0	0	0	0	0	0	0	0	18.8
11/11/2018	1	0	0	0	0	0	0	0	0	0	0	7.5
11/12/2018	1	0	0	0	0	0	0	0	0	0	0	10.3
11/13/2018	1	0	0	0	0	0	0	0	0	0	0	11.6
11/14/2018	1	0	0	0	0	0	0	0	0	0	0	10.2
11/15/2018	1	0	0	0	0	0	0	0	0	0	0	19.2
11/16/2018	1	0	0	0	0	0	0	0	0	0	0	14.6
11/17/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
11/18/2018	1	0	0	0	0	0	0	0	0	0	0	4.7
11/19/2018	1	0	0	0	0	0	0	0	0	0	0	6.1
11/20/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
11/21/2018	1	0	0	0	0	0	0	0	0	0	0	15.7
11/22/2018	1	0	0	0	0	0	0	0	0	0	0	14.0
11/23/2018	1	0	0	0	0	0	0	0	0	0	0	9.3
11/24/2018	1	0	0	0	0	0	0	0	0	0	0	16.8
11/25/2018	1	0	0	0	0	0	0	0	0	0	0	3.5
11/26/2018	1	0	0	0	0	0	0	0	0	0	0	16.1
11/27/2018	1	0	0	0	0	0	0	0	0	0	0	14.3
11/28/2018	1	0	0	0	0	0	0	0	0	0	0	16.7
11/29/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
11/30/2018	1	0	0	0	0	0	0	0	0	0	0	7.0
12/1/2018	1	0	0	0	0	0	0	0	0	0	0	8.0
12/2/2018	1	0	0	0	0	0	0	0	0	0	0	12.1
12/3/2018	1	0	0	0	0	0	0	0	0	0	0	12.7
12/4/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
12/5/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
12/6/2018	1	0	0	0	0	0	0	0	0	0	0	12.6
12/7/2018	1	0	0	0	0	0	0	0	0	0	0	10.8
12/8/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
12/9/2018	1	0	0	0	0	0	0	0	0	0	0	9.4
12/10/2018	1	0	0	0	0	0	0	0	0	0	0	5.8
12/11/2018	1	0	0	0	0	0	0	0	0	0	0	7.7
12/12/2018	1	0	0	0	0	0	0	0	0	0	0	8.6
12/13/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
12/14/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
12/15/2018	1	0	0	0	0	0	0	0	0	0	0	15.5
12/16/2018	1	0	0	0	0	0	0	0	0	0	0	17.2
12/17/2018	1	0	0	0	0	0	0	0	0	0	0	17.6
12/18/2018	1	0	0	0	0	0	0	0	0	0	0	10.0



AVIAN AND BAT ACOUSTIC SURVEY FINAL POST-CONSTRUCTION MONITORING REPORT, 2017–2020

November 25, 2020

Night of	Operational? *	BBSH		HB	RBTB		MYSB			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
12/19/2018	1	0	0	0	0	0	0	0	0	0	0	8.5
12/20/2018	1	0	0	0	0	0	0	0	0	0	0	15.1
12/21/2018	1	0	0	0	0	0	0	0	0	0	0	15.5
12/22/2018	1	0	0	0	0	0	0	0	0	0	0	15.0
12/23/2018	1	0	0	0	0	0	0	0	0	0	0	4.6
12/24/2018	1	0	0	0	0	0	0	0	0	0	0	11.1
12/25/2018	1	0	0	0	0	0	0	0	0	0	0	10.0
12/26/2018	1	0	0	0	0	0	0	0	0	0	0	9.0
12/27/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
12/28/2018	1	0	0	0	0	0	0	0	0	0	0	13.6
12/29/2018	1	0	0	0	0	0	0	0	0	0	0	9.4
12/30/2018	1	0	0	0	0	0	0	0	0	0	0	4.1
12/31/2018	1	0	0	0	0	0	0	0	0	0	0	17.0
1/1/2019	1	0	0	0	0	0	0	0	0	0	0	11.0
1/2/2019	1	0	0	0	0	0	0	0	0	0	0	7.4
1/3/2019	1	0	0	0	0	0	0	0	0	0	0	8.1
1/4/2019	1	0	0	0	0	0	0	0	0	0	0	9.3
1/5/2019	1	0	0	0	0	0	0	0	0	0	0	10.5
1/6/2019	1	0	0	0	0	0	0	0	0	0	0	15.2
1/7/2019	1	0	0	0	0	0	0	0	0	0	0	7.2
1/8/2019	1	0	0	0	0	0	0	0	0	0	0	8.1
1/9/2019	1	0	0	0	0	0	0	0	0	0	0	15.1
1/10/2019	1	0	0	0	0	0	0	0	0	0	0	16.0
1/11/2019	1	0	0	0	0	0	0	0	0	0	0	NA
1/12/2019	1	0	0	0	0	0	0	0	0	0	0	7.2
1/13/2019	1	0	0	0	0	0	0	0	0	0	0	13.0
1/14/2019	1	0	0	0	0	0	0	0	0	0	0	6.6
1/15/2019	1	0	0	0	0	0	0	0	0	0	0	5.6
1/16/2019	1	0	0	0	0	0	0	0	0	0	0	11.4
1/17/2019	1	0	0	0	0	0	0	0	0	0	0	6.5
1/18/2019	1	0	0	0	0	0	0	0	0	0	0	7.2
1/19/2019	1	0	0	0	0	0	0	0	0	0	0	13.2
1/20/2019	1	0	0	0	0	0	0	0	0	0	0	15.8
1/21/2019	1	0	0	0	0	0	0	0	0	0	0	16.4
1/22/2019	1	0	0	0	0	0	0	0	0	0	0	6.6
1/23/2019	1	0	0	0	0	0	0	0	0	0	0	20.0
1/24/2019	1	0	0	0	0	0	0	0	0	0	0	14.4
1/25/2019	1	0	0	0	0	0	0	0	0	0	0	11.2
1/26/2019	1	0	0	0	0	0	0	0	0	0	0	4.9
1/27/2019	1	0	0	0	0	0	0	0	0	0	0	11.6
1/28/2019	1	0	0	0	0	0	0	0	0	0	0	8.8
1/29/2019	1	0	0	0	0	0	0	0	0	0	0	12.6
1/30/2019	1	0	0	0	0	0	0	0	0	0	0	15.4
1/31/2019	1	0	0	0	0	0	0	0	0	0	0	11.4
2/1/2019	1	0	0	0	0	0	0	0	0	0	0	7.5
2/2/2019	1	0	0	0	0	0	0	0	0	0	0	12.6
2/3/2019	1	0	0	0	0	0	0	0	0	0	0	8.7
2/4/2019	1	0	0	0	0	0	0	0	0	0	0	5.2
2/5/2019	1	0	0	0	0	0	0	0	0	0	0	10.7
2/6/2019	1	0	0	0	0	0	0	0	0	0	0	10.8
2/7/2019	1	0	0	0	0	0	0	0	0	0	0	7.2
2/8/2019	1	0	0	0	0	0	0	0	0	0	0	16.5
2/9/2019	1	0	0	0	0	0	0	0	0	0	0	9.9
2/10/2019	1	0	0	0	0	0	0	0	0	0	0	6.6
2/11/2019	1	0	0	0	0	0	0	0	0	0	0	6.7
2/12/2019	1	0	0	0	0	0	0	0	0	0	0	14.8
2/13/2019	1	0	0	0	0	0	0	0	0	0	0	17.7
2/14/2019	1	0	0	0	0	0	0	0	0	0	0	9.8
2/15/2019	1	0	0	0	0	0	0	0	0	0	0	14.6
2/16/2019	1	0	0	0	0	0	0	0	0	0	0	10.6
2/17/2019	1	0	0	0	0	0	0	0	0	0	0	5.4
2/18/2019	1	0	0	0	0	0	0	0	0	0	0	13.7
2/19/2019	1	0	0	0	0	0	0	0	0	0	0	8.0
2/20/2019	1	0	0	0	0	0	0	0	0	0	0	11.5
2/21/2019	1	0	0	0	0	0	0	0	0	0	0	9.4
2/22/2019	1	0	0	0	0	0	0	0	0	0	0	8.4
2/23/2019	1	0	0	0	0	0	0	0	0	0	0	9.7
2/24/2019	1	0	0	0	0	0	0	0	0	0	0	19.5
2/25/2019	1	0	0	0	0	0	0	0	0	0	0	18.9



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Night of	Operational? *	BBSH		HB	RBTB		MYSB			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
2/26/2019	1	0	0	0	0	0	0	0	0	0	0	12.8
2/27/2019	1	0	0	0	0	0	0	0	0	0	0	5.1
2/28/2019	1	0	0	0	0	0	0	0	0	0	0	5.0
3/1/2019	1	0	0	0	0	0	0	0	0	0	0	10.2
3/2/2019	1	0	0	0	0	0	0	0	0	0	0	4.9
3/3/2019	1	0	0	0	0	0	0	0	0	0	0	11.0
3/4/2019	1	0	0	0	0	0	0	0	0	0	0	11.0
3/5/2019	1	0	0	0	0	0	0	0	0	0	0	11.6
3/6/2019	1	0	0	0	0	0	0	0	0	0	0	9.8
3/7/2019	1	0	0	0	0	0	0	0	0	0	0	9.0
3/8/2019	1	0	0	0	0	0	0	0	0	0	0	7.0
3/9/2019	1	0	0	0	0	0	0	0	0	0	0	10.6
3/10/2019	1	0	0	0	0	0	0	0	0	0	0	9.4
3/11/2019	1	0	0	0	0	0	0	0	0	0	0	11.8
3/12/2019	1	0	0	0	0	0	0	0	0	0	0	9.5
3/13/2019	1	0	0	0	0	0	0	0	0	0	0	5.6
3/14/2019	1	0	0	0	0	0	0	0	0	0	0	19.0
3/15/2019	1	0	0	0	0	0	0	0	0	0	0	15.2
3/16/2019	1	0	0	0	0	0	0	0	0	0	0	10.2
3/17/2019	1	0	0	0	0	0	0	0	0	0	0	6.8
3/18/2019	1	0	0	0	0	0	0	0	0	0	0	6.1
3/19/2019	1	0	0	0	0	0	0	0	0	0	0	5.9
3/20/2019	1	0	0	0	0	0	0	0	0	0	0	10.3
3/21/2019	1	0	0	0	0	0	0	0	0	0	0	15.7
3/22/2019	1	0	0	0	0	0	0	0	0	0	0	20.4
3/23/2019	1	0	0	0	0	0	0	0	0	0	0	13.7
3/24/2019	1	0	0	0	0	0	0	0	0	0	0	13.3
3/25/2019	1	0	0	0	0	0	0	0	0	0	0	7.0
3/26/2019	1	0	0	0	0	0	0	0	0	0	0	6.8
3/27/2019	1	0	0	0	0	0	0	0	0	0	0	5.1
3/28/2019	1	0	0	0	0	0	0	0	0	0	0	9.9
3/29/2019	1	0	0	0	0	0	0	0	0	0	0	5.3
3/30/2019	1	0	0	0	0	0	0	0	0	0	0	18.3
3/31/2019	1	0	0	0	0	0	0	0	0	0	0	13.1
4/1/2019	1	0	0	0	0	0	0	0	0	0	0	4.8
4/2/2019	1	0	0	0	0	0	0	0	0	0	0	13.5
4/3/2019	1	0	0	0	0	0	0	0	0	0	0	10.1
4/4/2019	1	0	0	0	0	0	0	0	0	0	0	9.1
4/5/2019	1	0	0	0	0	0	0	0	0	0	0	9.5
4/6/2019	1	0	0	0	0	0	0	0	0	0	0	7.5
4/7/2019	1	0	0	0	0	0	0	0	0	0	0	9.2
4/8/2019	1	0	0	0	0	0	0	0	0	0	0	6.2
4/9/2019	1	0	0	0	0	0	0	0	0	0	0	5.6
4/10/2019	1	0	0	0	0	0	0	0	0	0	0	8.2
4/11/2019	1	0	0	0	0	0	0	0	0	0	0	4.6
4/12/2019	1	0	0	0	0	0	0	0	0	0	0	18.7
4/13/2019	1	0	0	0	0	0	0	0	0	0	0	9.6
4/14/2019	1	0	0	0	0	0	0	0	0	0	0	18.2
4/15/2019	1	0	0	0	0	0	0	0	0	0	0	16.0
4/16/2019	1	0	0	0	0	0	0	0	0	0	0	8.3
4/17/2019	1	0	0	0	0	0	0	0	0	0	0	7.2
4/18/2019	1	0	0	0	0	0	0	0	0	0	0	17.9
4/19/2019	1	0	0	0	0	0	0	0	0	0	0	20.8
4/20/2019	1	0	0	0	0	0	0	0	0	0	0	10.1
4/21/2019	1	0	0	0	0	0	0	0	0	0	0	3.7
4/22/2019	1	0	0	0	0	0	0	0	0	0	0	9.2
4/23/2019	1	0	0	0	0	0	0	0	0	0	0	9.2
4/24/2019	1	0	0	0	0	0	0	0	0	0	0	8.5
4/25/2019	1	0	0	0	0	0	0	0	0	0	0	6.9
4/26/2019	1	0	0	0	0	0	0	0	0	0	0	13.4
4/27/2019	1	0	0	0	0	0	0	0	0	0	0	12.2
4/28/2019	1	0	0	0	0	0	0	0	0	0	0	7.4
4/29/2019	1	0	0	0	0	0	0	0	0	0	0	5.2
4/30/2019	1	0	0	0	0	0	0	0	0	0	0	2.6
5/1/2019	1	0	0	0	0	0	0	0	0	0	0	7.4
5/2/2019	1	0	0	0	0	0	0	0	0	0	0	7.4
5/3/2019	1	0	0	0	0	0	0	0	0	0	0	1.7
5/4/2019	1	0	0	0	0	0	0	0	0	0	0	7.2
5/5/2019	1	0	0	0	0	0	0	0	0	0	0	11.4



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Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
5/6/2019	1	0	0	0	0	0	0	0	0	0	0	5.7
5/7/2019	1	0	0	0	0	0	0	0	0	0	0	6.0
5/8/2019	1	0	0	0	0	0	0	0	0	0	0	4.7
5/9/2019	1	0	0	0	0	0	0	0	0	0	0	8.4
5/10/2019	1	0	0	0	0	0	0	0	0	0	0	10.9
5/11/2019	1	0	0	0	0	0	0	0	0	0	0	8.7
5/12/2019	1	0	0	0	0	0	0	0	0	0	0	11.5
5/13/2019	1	0	0	0	0	0	0	0	0	0	0	10.4
5/14/2019	1	0	0	0	0	0	0	0	0	0	0	3.7
5/15/2019	1	0	0	0	0	0	0	0	0	0	0	8.3
5/16/2019	1	0	0	0	0	0	0	0	0	0	0	9.3
5/17/2019	1	0	0	0	0	0	0	0	0	0	0	9.6
5/18/2019	1	0	0	0	0	0	0	0	0	0	0	7.3
5/19/2019	1	0	0	0	0	0	0	0	0	0	0	13.6
5/20/2019	1	0	0	0	0	0	0	0	0	0	0	11.9
5/21/2019	1	0	0	0	0	0	0	0	0	0	0	9.6
5/22/2019	1	0	0	0	0	0	0	0	0	0	0	9.7
5/23/2019	1	0	0	0	0	0	0	0	0	0	0	10.3
5/24/2019	1	0	0	0	0	0	0	0	0	0	0	6.9
5/25/2019	1	0	0	0	0	0	0	0	0	0	0	11.2
5/26/2019	1	0	0	0	0	0	0	0	0	0	0	11.6
5/27/2019	1	0	0	0	0	0	0	0	0	0	0	6.6
5/28/2019	1	0	0	0	0	0	0	0	0	0	0	8.9
5/29/2019	1	0	0	0	0	0	0	0	0	0	0	5.5
5/30/2019	1	0	0	0	0	0	0	0	0	0	0	5.7
5/31/2019	1	0	0	0	0	0	0	0	0	0	0	5.0
6/1/2019	1	0	0	0	0	0	0	0	0	0	0	3.9
6/2/2019	1	0	0	0	0	0	0	0	0	0	0	9.9
6/3/2019	1	0	0	0	0	0	0	0	0	0	0	9.9
6/4/2019	1	0	0	0	0	0	0	0	0	0	0	11.6
6/5/2019	1	0	0	0	0	0	0	0	0	0	0	13.5
6/6/2019	1	0	0	0	0	0	0	0	0	0	0	5.2
6/7/2019	1	0	0	0	0	0	0	0	0	0	0	4.2
6/8/2019	1	0	0	0	0	0	0	0	0	0	0	4.8
6/9/2019	1	0	0	0	0	0	0	0	0	0	0	6.3
6/10/2019	1	0	0	0	0	0	0	0	0	0	0	13.3
6/11/2019	1	0	0	0	0	0	0	0	0	0	0	NA
6/12/2019	1	0	0	0	0	0	0	0	0	0	0	NA
6/13/2019	1	0	0	0	0	0	0	0	0	0	0	6.1
6/14/2019	1	0	0	0	0	0	0	0	0	0	0	8.9
6/15/2019	1	0	0	0	0	0	0	0	0	0	0	14.8
6/16/2019	1	0	0	0	0	0	0	0	0	0	0	8.2
6/17/2019	1	0	0	0	0	0	0	0	0	0	0	4.6
6/18/2019	1	0	0	0	0	0	0	0	0	0	0	6.4
6/19/2019	1	0	0	0	0	0	0	0	0	0	0	6.1
6/20/2019	1	0	0	0	0	0	0	0	0	0	0	8.2
6/21/2019	1	0	0	0	0	0	0	0	0	0	0	10.9
6/22/2019	1	0	0	0	0	0	0	0	0	0	0	7.5
6/23/2019	1	0	0	0	0	0	0	0	0	0	0	12.0
6/24/2019	1	0	0	0	0	0	0	0	0	0	0	8.2
6/25/2019	1	0	0	0	0	0	0	0	0	0	0	6.7
6/26/2019	1	0	0	0	0	0	0	0	0	0	0	4.6
6/27/2019	1	0	0	0	0	0	0	0	0	0	0	6.4
6/28/2019	1	0	0	0	0	0	0	0	0	0	0	9.1
6/29/2019	1	0	0	0	0	0	0	0	0	0	0	10.0
6/30/2019	1	0	0	0	0	0	0	0	0	0	0	7.6
7/1/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/2/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/3/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/4/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/5/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/6/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/7/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/8/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/9/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/10/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/11/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/12/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/13/2019	1	0	0	0	0	0	0	0	0	0	0	NA



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Night of	Operational? *	BBSH		HB	RBTB		MYSB			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
7/14/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/15/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/16/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/17/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/18/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/19/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/20/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/21/2019	1	0	0	0	1	0	0	0	0	0	1	NA
7/22/2019	1	0	0	0	2	0	0	0	0	0	2	NA
7/23/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/24/2019	1	1	0	0	0	0	0	0	0	1	2	NA
7/25/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/26/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/27/2019	1	0	0	1	0	0	0	0	0	1	2	NA
7/28/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/29/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/30/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/31/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/1/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/2/2019	1	1	0	0	4	1	0	0	0	1	7	NA
8/3/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/4/2019	1	0	1	1	1	2	0	0	0	2	7	NA
8/5/2019	1	2	0	1	0	0	0	0	0	0	3	NA
8/6/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/7/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/8/2019	1	0	0	1	0	0	0	0	0	0	1	NA
8/9/2019	1	0	0	0	0	0	0	0	0	2	2	NA
8/10/2019	1	2	1	1	0	1	0	0	0	5	10	NA
8/11/2019	1	0	0	0	0	0	0	0	0	1	1	NA
8/12/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/13/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/14/2019	1	0	0	0	0	0	0	0	0	1	1	NA
8/15/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/16/2019	1	0	0	0	2	0	0	0	0	1	3	NA
8/17/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/18/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/19/2019	1	0	0	0	0	0	0	0	0	1	1	NA
8/20/2019	1	0	0	7	2	0	0	0	0	8	17	NA
8/21/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/22/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/23/2019	1	4	2	2	7	5	0	0	0	9	29	NA
8/24/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/25/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/26/2019	1	0	0	0	0	0	0	0	0	0	0	NA
8/27/2019	1	0	0	0	1	0	0	0	0	4	5	NA
8/28/2019	1	0	0	2	0	0	0	0	0	0	2	NA
8/29/2019	1	13	38	0	4	1	0	0	0	22	78	NA
8/30/2019	1	0	0	0	0	0	0	0	0	1	1	NA
8/31/2019	1	1	5	1	6	3	0	0	0	8	24	NA
9/1/2019	1	0	0	0	1	0	0	0	0	1	2	NA
9/2/2019	1	0	0	0	0	1	0	0	0	0	1	NA
9/3/2019	1	0	1	2	4	0	0	0	0	2	9	NA
9/4/2019	1	1	8	0	1	1	0	0	0	6	17	NA
9/5/2019	1	2	1	5	18	5	0	0	0	17	48	NA
9/6/2019	1	0	0	0	1	0	0	0	0	0	1	NA
9/7/2019	1	0	0	0	0	0	0	0	0	0	0	NA
9/8/2019	1	1	4	0	7	3	0	0	0	7	22	NA
9/9/2019	1	0	0	9	17	1	0	0	0	7	34	NA
9/10/2019	1	0	0	0	0	0	0	0	0	0	0	NA
9/11/2019	1	0	0	0	2	0	0	0	0	0	2	NA
9/12/2019	1	0	0	0	0	0	0	0	0	1	1	NA
9/13/2019	1	0	0	0	0	0	0	0	0	0	0	NA
9/14/2019	1	0	0	0	1	0	0	0	0	0	1	NA
9/15/2019	1	1	2	0	0	0	0	0	0	1	4	NA
9/16/2019	1	6	12	0	8	1	0	0	0	11	38	NA
9/17/2019	1	0	0	1	2	0	0	0	0	0	3	NA
9/18/2019	1	0	0	0	0	0	0	0	0	0	0	NA
9/19/2019	1	0	0	0	0	0	0	0	0	0	0	NA
9/20/2019	1	0	0	0	0	0	0	0	0	0	0	NA



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Night of	Operational? *	BBSH		HB	RBTB		MYSB			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
9/21/2019	1	0	0	0	0	0	0	0	0	1	1	NA
9/22/2019	1	0	0	0	0	0	0	0	0	0	0	NA
9/23/2019	1	0	0	0	0	0	0	0	0	0	0	NA
9/24/2019	1	15	33	1	6	1	0	0	0	9	65	NA
9/25/2019	1	0	10	0	0	0	0	0	0	0	10	NA
9/26/2019	1	0	4	3	0	0	0	0	0	3	10	NA
9/27/2019	1	0	0	1	0	0	0	0	0	1	2	NA
9/28/2019	1	0	0	0	0	0	0	0	0	0	0	NA
9/29/2019	1	0	0	0	0	0	0	0	0	0	0	NA
9/30/2019	1	1	0	0	0	0	0	0	0	0	1	NA
10/1/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/2/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/3/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/4/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/5/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/6/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/7/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/8/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/9/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/10/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/11/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/12/2019	1	0	2	0	1	0	0	0	0	0	3	NA
10/13/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/14/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/15/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/16/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/17/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/18/2019	1	0	0	0	0	1	0	0	0	0	1	NA
10/19/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/20/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/21/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/22/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/23/2019	1	0	1	0	0	0	0	0	0	1	2	NA
10/24/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/25/2019	1	1	0	0	0	0	0	0	0	0	1	NA
10/26/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/27/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/28/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/29/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/30/2019	1	0	0	0	0	0	0	0	0	0	0	NA
10/31/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/1/2019	1	0	1	0	0	0	0	0	0	0	1	NA
11/2/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/3/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/4/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/5/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/6/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/7/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/8/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/9/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/10/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/11/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/12/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/13/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/14/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/15/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/16/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/17/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/18/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/19/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/20/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/21/2019	1	0	1	0	0	0	0	0	0	0	1	NA
11/22/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/23/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/24/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/25/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/26/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/27/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/28/2019	1	0	0	0	0	0	0	0	0	0	0	NA



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Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
11/29/2019	1	0	0	0	0	0	0	0	0	0	0	NA
11/30/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/1/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/2/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/3/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/4/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/5/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/6/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/7/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/8/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/9/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/10/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/11/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/12/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/13/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/14/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/15/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/16/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/17/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/18/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/19/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/20/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/21/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/22/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/23/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/24/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/25/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/26/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/27/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/28/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/29/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/30/2019	1	0	0	0	0	0	0	0	0	0	0	NA
12/31/2019	1	0	0	0	0	0	0	0	0	0	0	NA
1/1/2020	1	0	0	0	0	0	0	0	0	0	0	NA
1/2/2020	1	0	0	0	0	0	0	0	0	0	0	NA
1/3/2020	1	0	0	0	0	0	0	0	0	0	0	NA
1/4/2020	1	0	0	0	0	0	0	0	0	0	0	NA
1/5/2020	1	0	0	0	0	0	0	0	0	0	0	NA
1/6/2020	1	0	0	0	0	0	0	0	0	0	0	NA
1/7/2020	1	0	0	0	0	0	0	0	0	0	0	NA
1/8/2020	1	0	0	0	0	0	0	0	0	0	0	NA
1/9/2020	1	0	0	0	0	0	0	0	0	0	0	NA
1/10/2020	1	0	0	0	0	0	0	0	0	0	0	NA
1/11/2020	1	0	0	0	0	0	0	0	0	0	0	NA
By Species		53	134	41	99	27	0	0	0	142	496	
By Species Group		187		41	126		0			142		Total

* 1 = Detector functioned for the entire night; 0 = Non-operational for all or part of the night.



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Appendix A Table 2. Summary of acoustic bat data and weather during each survey night at Turbine 3 at Block Island Wind Farm, January 2018 – February 2020.

Night of	Operational? *	BBSH		HB	RBTB		MYSB			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
1/10/2018	1	0	0	0	0	0	0	0	0	0	0	9.5
1/11/2018	1	0	0	0	0	0	0	0	0	0	0	17.5
1/12/2018	1	0	0	0	0	0	0	0	0	0	0	19.0
1/13/2018	1	0	0	0	0	0	0	0	0	0	0	10.2
1/14/2018	1	0	0	0	0	0	0	0	0	0	0	10.3
1/15/2018	1	0	0	0	0	0	0	0	0	0	0	11.7
1/16/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
1/17/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
1/18/2018	1	0	0	0	0	0	0	0	0	0	0	11.0
1/19/2018	1	0	0	0	0	0	0	0	0	0	0	11.7
1/20/2018	1	0	0	0	0	0	0	0	0	0	0	12.5
1/21/2018	1	0	0	0	0	0	0	0	0	0	0	4.9
1/22/2018	1	0	0	0	0	0	0	0	0	0	0	15.2
1/23/2018	1	0	0	0	0	0	0	0	0	0	0	16.9
1/24/2018	1	0	0	0	0	0	0	0	0	0	0	10.1
1/25/2018	1	0	0	0	0	0	0	0	0	0	0	9.9
1/26/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
1/27/2018	1	0	0	0	0	0	0	0	0	0	0	18.1
1/28/2018	1	0	0	0	0	0	0	0	0	0	0	7.8
1/29/2018	1	0	0	0	0	0	0	0	0	0	0	17.3
1/30/2018	1	0	0	0	0	0	0	0	0	0	0	10.0
1/31/2018	1	0	0	0	0	0	0	0	0	0	0	11.5
2/1/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
2/2/2018	1	0	0	0	0	0	0	0	0	0	0	13.8
2/3/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
2/4/2018	1	0	0	0	0	0	0	0	0	0	0	14.9
2/5/2018	1	0	0	0	0	0	0	0	0	0	0	6.6
2/6/2018	1	0	0	0	0	0	0	0	0	0	0	5.6
2/7/2018	1	0	0	0	0	0	0	0	0	0	0	13.7
2/8/2018	1	0	0	0	0	0	0	0	0	0	0	7.3
2/9/2018	1	0	0	0	0	0	0	0	0	0	0	NA
2/10/2018	1	0	0	0	0	0	0	0	0	0	0	13.1
2/11/2018	1	0	0	0	0	0	0	0	0	0	0	18.3
2/12/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
2/13/2018	1	0	0	0	0	0	0	0	0	0	0	6.0
2/14/2018	1	0	0	0	0	0	0	0	0	0	0	12.1
2/15/2018	1	0	0	0	0	0	0	0	0	0	0	9.6
2/16/2018	1	0	0	0	0	0	0	0	0	0	0	11.7
2/17/2018	1	0	0	0	0	0	0	0	0	0	0	8.8
2/18/2018	1	0	0	0	0	0	0	0	0	0	0	6.2
2/19/2018	1	0	0	0	0	0	0	0	0	0	0	14.7
2/20/2018	1	0	0	0	0	0	0	0	0	0	0	14.8
2/21/2018	1	0	0	0	0	0	0	0	0	0	0	11.7
2/22/2018	1	0	0	0	0	0	0	0	0	0	0	8.0
2/23/2018	1	0	0	0	0	0	0	0	0	0	0	9.0
2/24/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
2/25/2018	1	0	0	0	0	0	0	0	0	0	0	7.0
2/26/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
2/27/2018	1	0	0	0	0	0	0	0	0	0	0	12.5
2/28/2018	1	0	0	0	0	0	0	0	0	0	0	11.2
3/1/2018	1	0	0	0	0	0	0	0	0	0	0	17.4
3/2/2018	1	0	0	0	0	0	0	0	0	0	0	19.0
3/3/2018	1	0	0	0	0	0	0	0	0	0	0	15.8
3/4/2018	1	0	0	0	0	0	0	0	0	0	0	10.7
3/5/2018	1	0	0	0	0	0	0	0	0	0	0	10.0
3/6/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
3/7/2018	1	0	0	0	0	0	0	0	0	0	0	16.0
3/8/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
3/9/2018	1	0	0	0	0	0	0	0	0	0	0	15.4
3/10/2018	1	0	0	0	0	0	0	0	0	0	0	14.1
3/11/2018	1	0	0	0	0	0	0	0	0	0	0	7.5
3/12/2018	1	0	0	0	0	0	0	0	0	0	0	18.3
3/13/2018	1	0	0	0	0	0	0	0	0	0	0	15.0
3/14/2018	1	0	0	0	0	0	0	0	0	0	0	19.2
3/15/2018	1	0	0	0	0	0	0	0	0	0	0	12.0
3/16/2018	1	0	0	0	0	0	0	0	0	0	0	15.9
3/17/2018	1	0	0	0	0	0	0	0	0	0	0	9.1



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Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
3/18/2018	1	0	0	0	0	0	0	0	0	0	0	8.3
3/19/2018	1	0	0	0	0	0	0	0	0	0	0	8.6
3/20/2018	1	0	0	0	0	0	0	0	0	0	0	14.6
3/21/2018	1	0	0	0	0	0	0	0	0	0	0	17.4
3/22/2018	1	0	0	0	0	0	0	0	0	0	0	6.4
3/23/2018	1	0	0	0	0	0	0	0	0	0	0	6.3
3/24/2018	1	0	0	0	0	0	0	0	0	0	0	7.6
3/25/2018	1	0	0	0	0	0	0	0	0	0	0	10.7
3/26/2018	1	0	0	0	0	0	0	0	0	0	0	7.6
3/27/2018	1	0	0	0	0	0	0	0	0	0	0	5.7
3/28/2018	1	0	0	0	0	0	0	0	0	0	0	6.3
3/29/2018	1	0	0	0	0	0	0	0	0	0	0	15.3
3/30/2018	1	0	0	0	0	0	0	0	0	0	0	10.1
3/31/2018	1	0	0	0	0	0	0	0	0	0	0	14.0
4/1/2018	1	0	0	0	0	0	0	0	0	0	0	9.4
4/2/2018	1	0	0	0	0	0	0	0	0	0	0	2.9
4/3/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
4/4/2018	1	0	0	0	0	0	0	0	0	0	0	16.7
4/5/2018	1	0	0	0	0	0	0	0	0	0	0	5.7
4/6/2018	1	0	0	0	0	0	0	0	0	0	0	12.4
4/7/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
4/8/2018	1	0	0	0	0	0	0	0	0	0	0	12.0
4/9/2018	1	0	0	0	0	0	0	0	0	0	0	5.5
4/10/2018	1	0	0	0	0	0	0	0	0	0	0	4.9
4/11/2018	1	0	0	0	0	0	0	0	0	0	0	7.7
4/12/2018	1	0	0	0	0	0	0	0	0	0	0	17.5
4/13/2018	1	0	0	0	0	0	0	0	0	0	0	14.8
4/14/2018	1	0	0	0	0	0	0	0	0	0	0	16.0
4/15/2018	1	0	0	0	0	0	0	0	0	0	0	19.3
4/16/2018	1	0	0	0	0	0	0	0	0	0	0	13.3
4/17/2018	1	0	0	0	0	0	0	0	0	0	0	13.2
4/18/2018	1	0	0	0	0	0	0	0	0	0	0	8.6
4/19/2018	1	0	0	0	0	0	0	0	0	0	0	12.9
4/20/2018	1	0	0	0	0	0	0	0	0	0	0	10.1
4/21/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
4/22/2018	1	0	0	0	0	0	0	0	0	0	0	10.7
4/23/2018	1	0	0	0	0	0	0	0	0	0	0	7.0
4/24/2018	1	0	0	0	0	0	0	0	0	0	0	14.5
4/25/2018	1	0	0	0	0	0	0	0	0	0	0	11.0
4/26/2018	1	0	0	0	0	0	0	0	0	0	0	7.1
4/27/2018	1	0	0	0	0	0	0	0	0	0	0	4.9
4/28/2018	1	0	0	0	0	0	0	0	0	0	0	5.7
4/29/2018	1	0	0	0	0	0	0	0	0	0	0	10.9
4/30/2018	1	0	0	0	0	0	0	0	0	0	0	10.5
5/1/2018	1	0	0	0	0	0	0	0	0	0	0	13.6
5/2/2018	1	0	0	0	0	0	0	0	0	0	0	16.7
5/3/2018	1	0	0	0	0	0	0	0	0	0	0	12.0
5/4/2018	1	0	0	0	0	0	0	0	0	0	0	21.5
5/5/2018	1	0	0	0	0	0	0	0	0	0	0	9.0
5/6/2018	1	0	0	0	0	0	0	0	0	0	0	8.6
5/7/2018	1	0	0	0	0	0	0	0	0	0	0	5.2
5/8/2018	1	0	0	0	0	0	0	0	0	0	0	2.7
5/9/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
5/10/2018	1	0	0	0	0	0	0	0	0	0	0	10.0
5/11/2018	1	0	0	0	0	0	0	0	0	0	0	4.1
5/12/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
5/13/2018	1	0	0	0	0	0	0	0	0	0	0	3.5
5/14/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
5/15/2018	1	0	0	0	0	0	0	0	0	0	0	7.8
5/16/2018	1	0	0	0	0	0	0	0	0	0	0	5.0
5/17/2018	1	0	0	0	0	0	0	0	0	1	1	5.8
5/18/2018	1	0	0	0	0	0	0	0	0	0	0	9.9
5/19/2018	1	0	0	0	0	0	0	0	0	0	0	17.0
5/20/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
5/21/2018	1	0	0	0	0	0	0	0	0	0	0	8.6
5/22/2018	1	0	0	0	0	0	0	0	0	0	0	3.8
5/23/2018	1	0	0	0	0	0	0	0	0	0	0	10.3
5/24/2018	1	0	0	0	0	0	0	0	0	0	0	8.8
5/25/2018	1	0	0	0	0	0	0	0	0	0	0	18.4



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November 25, 2020

Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
5/26/2018	1	0	0	0	0	0	0	0	0	0	0	12.3
5/27/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
5/28/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
5/29/2018	1	0	0	0	0	0	0	0	0	0	0	2.6
5/30/2018	1	0	0	0	0	0	0	0	0	0	0	6.1
5/31/2018	1	0	0	0	0	0	0	0	0	0	0	12.2
6/1/2018	1	0	0	0	0	0	0	0	0	0	0	6.2
6/2/2018	1	0	0	0	0	0	0	0	0	0	0	11.2
6/3/2018	1	0	0	0	0	0	0	0	0	0	0	12.5
6/4/2018	1	0	0	0	0	0	0	0	0	0	0	7.8
6/5/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
6/6/2018	1	0	0	0	0	0	0	0	0	0	0	4.6
6/7/2018	1	0	0	0	0	0	0	0	0	0	0	6.1
6/8/2018	1	0	0	0	0	0	0	0	0	0	0	9.0
6/9/2018	1	0	0	0	0	0	0	0	0	0	0	8.6
6/10/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
6/11/2018	1	0	0	0	0	0	0	0	0	0	0	5.9
6/12/2018	1	0	0	0	0	0	0	0	0	0	0	14.2
6/13/2018	1	0	0	0	0	0	0	0	0	0	0	16.1
6/14/2018	1	0	0	0	0	0	0	0	0	0	0	11.7
6/15/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
6/16/2018	1	0	0	0	0	0	0	0	0	0	0	11.1
6/17/2018	1	0	0	0	0	0	0	0	0	0	0	10.7
6/18/2018	1	0	0	0	0	0	0	0	0	0	0	18.0
6/19/2018	1	0	0	0	0	0	0	0	0	0	0	8.2
6/20/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
6/21/2018	1	0	0	0	0	0	0	0	0	0	0	4.2
6/22/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
6/23/2018	1	0	0	0	0	0	0	0	0	0	0	4.8
6/24/2018	1	0	0	0	0	0	0	0	0	0	0	8.0
6/25/2018	1	0	0	0	0	0	0	0	0	0	0	4.2
6/26/2018	1	0	0	0	0	0	0	0	0	0	0	10.7
6/27/2018	1	0	0	0	0	0	0	0	0	0	0	15.4
6/28/2018	1	0	0	0	0	0	0	0	0	0	0	7.5
6/29/2018	1	0	0	0	1	0	0	0	0	0	1	6.1
6/30/2018	1	0	0	0	0	0	0	0	0	0	0	8.7
7/1/2018	1	0	0	0	0	0	0	0	0	0	0	3.7
7/2/2018	1	0	0	0	0	0	0	0	0	0	0	7.3
7/3/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
7/4/2018	1	0	0	0	0	0	0	0	0	0	0	5.8
7/5/2018	1	0	0	0	0	0	0	0	0	0	0	16.1
7/6/2018	1	0	0	0	0	0	0	0	0	0	0	13.2
7/7/2018	1	0	0	0	0	0	0	0	0	0	0	3.6
7/8/2018	1	0	0	0	0	0	0	0	0	0	0	4.1
7/9/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
7/10/2018	1	0	0	0	0	0	0	0	0	0	0	8.4
7/11/2018	1	0	0	0	0	0	0	0	0	0	0	5.8
7/12/2018	1	0	0	0	0	0	0	0	0	0	0	3.2
7/13/2018	1	0	0	0	0	0	0	0	0	0	0	4.9
7/14/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
7/15/2018	1	0	0	0	0	0	0	0	0	0	0	8.2
7/16/2018	1	0	0	0	0	0	0	0	0	0	0	12.1
7/17/2018	1	0	0	0	0	0	0	0	0	0	0	6.4
7/18/2018	1	0	0	0	0	0	0	0	0	0	0	5.1
7/19/2018	1	0	0	0	0	0	0	0	0	0	0	4.4
7/20/2018	1	0	0	0	0	0	0	0	0	0	0	4.9
7/21/2018	1	0	0	0	0	0	0	0	0	0	0	13.4
7/22/2018	1	0	0	0	0	0	0	0	0	0	0	16.0
7/23/2018	1	0	0	0	0	0	0	0	0	0	0	12.6
7/24/2018	1	0	0	0	0	0	0	0	0	0	0	12.5
7/25/2018	1	0	0	0	0	0	0	0	0	0	0	15.0
7/26/2018	1	0	0	0	0	0	0	0	0	0	0	10.7
7/27/2018	1	0	0	0	0	0	0	0	0	0	0	5.7
7/28/2018	1	0	0	0	0	0	0	0	0	0	0	6.4
7/29/2018	1	0	0	0	0	0	0	0	0	0	0	9.1
7/30/2018	1	0	0	0	0	0	0	0	0	0	0	3.0
7/31/2018	1	0	0	0	0	0	0	0	0	0	0	5.7
8/1/2018	1	0	0	0	0	0	0	0	0	0	0	14.3
8/2/2018	1	0	0	0	0	0	0	0	0	0	0	10.7



AVIAN AND BAT ACOUSTIC SURVEY FINAL POST-CONSTRUCTION MONITORING REPORT, 2017–2020

November 25, 2020

Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
8/3/2018	1	0	0	0	0	0	0	0	0	0	0	10.0
8/4/2018	1	0	0	0	0	0	0	0	0	0	0	7.0
8/5/2018	1	0	0	0	0	0	0	0	0	0	0	8.3
8/6/2018	1	0	0	0	0	0	0	0	0	0	0	11.0
8/7/2018	1	0	0	0	0	0	0	0	0	0	0	9.1
8/8/2018	1	0	0	0	0	0	0	0	0	0	0	8.8
8/9/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
8/10/2018	1	0	0	0	0	0	0	0	0	0	0	4.1
8/11/2018	1	0	0	0	0	0	0	0	0	0	0	2.3
8/12/2018	1	0	0	0	0	0	0	0	0	0	0	7.1
8/13/2018	1	0	0	0	0	0	0	0	0	0	0	5.6
8/14/2018	1	0	0	0	0	0	0	0	0	0	0	7.6
8/15/2018	1	0	0	0	0	0	0	0	0	0	0	9.5
8/16/2018	1	0	0	1	4	0	0	0	0	5	10	7.8
8/17/2018	1	0	0	0	0	0	0	0	0	0	0	9.7
8/18/2018	1	0	0	0	0	0	0	0	0	0	0	9.4
8/19/2018	1	0	0	0	0	0	0	0	0	1	1	9.7
8/20/2018	1	0	0	0	1	0	0	0	0	0	1	7.3
8/21/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
8/22/2018	1	0	1	0	6	0	0	0	0	1	8	NA
8/23/2018	1	2	27	3	15	0	0	0	0	2	49	7.3
8/24/2018	1	0	4	2	0	0	0	0	0	0	6	6.3
8/25/2018	1	0	0	0	0	0	0	0	0	0	0	2.1
8/26/2018	1	0	0	0	0	0	0	0	0	0	0	10.7
8/27/2018	1	0	0	0	0	0	0	0	0	0	0	9.6
8/28/2018	1	0	0	0	0	0	0	0	0	0	0	15.0
8/29/2018	1	0	0	0	0	0	0	0	0	0	0	14.9
8/30/2018	1	0	0	0	0	0	0	0	0	0	0	11.7
8/31/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
9/1/2018	1	0	0	0	0	0	0	0	0	0	0	3.6
9/2/2018	1	0	0	0	1	0	0	0	0	0	1	6.5
9/3/2018	1	0	0	0	0	0	0	0	0	1	1	10.5
9/4/2018	1	0	1	1	1	0	0	0	0	3	6	5.0
9/5/2018	1	0	0	0	0	0	0	0	0	0	0	8.1
9/6/2018	1	0	0	0	2	0	0	0	0	2	4	5.8
9/7/2018	1	4	5	16	15	0	0	0	0	5	45	4.6
9/8/2018	1	0	0	0	1	0	0	0	0	0	1	9.6
9/9/2018	1	0	0	0	0	0	0	0	0	0	0	12.9
9/10/2018	1	0	0	0	0	0	0	0	0	0	0	15.4
9/11/2018	1	0	0	0	0	0	0	0	0	0	0	2.0
9/12/2018	1	0	0	0	0	0	0	0	0	0	0	6.9
9/13/2018	1	0	0	0	0	0	0	0	0	0	0	7.1
9/14/2018	1	0	0	0	0	0	0	0	0	0	0	4.2
9/15/2018	1	0	3	0	1	0	0	0	0	0	4	3.2
9/16/2018	1	0	0	0	0	0	0	0	0	0	0	5.2
9/17/2018	1	0	0	0	0	0	0	0	0	0	0	12.0
9/18/2018	1	0	0	0	0	0	0	0	0	0	0	5.6
9/19/2018	1	0	0	0	0	0	0	0	0	0	0	11.7
9/20/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
9/21/2018	1	0	0	0	0	0	0	0	0	0	0	15.5
9/22/2018	1	0	0	0	3	0	0	0	0	0	3	6.4
9/23/2018	1	0	1	0	1	0	0	0	0	2	4	5.7
9/24/2018	1	0	0	0	0	0	0	0	0	0	0	14.3
9/25/2018	1	0	0	0	0	0	0	0	0	0	0	18.2
9/26/2018	1	0	0	0	0	0	0	0	0	0	0	13.1
9/27/2018	1	0	0	1	0	0	0	0	0	1	2	8.8
9/28/2018	1	0	7	1	1	0	0	0	0	0	9	7.1
9/29/2018	1	8	31	1	1	0	0	0	0	6	47	7.5
9/30/2018	1	0	0	0	0	0	0	0	0	0	0	5.6
10/1/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
10/2/2018	1	0	0	0	0	0	0	0	0	0	0	10.5
10/3/2018	1	0	0	0	0	0	0	0	0	0	0	5.3
10/4/2018	1	0	0	0	0	0	0	0	0	0	0	9.5
10/5/2018	1	0	0	0	1	0	0	0	0	0	1	6.9
10/6/2018	1	0	0	0	0	0	0	0	0	0	0	9.3
10/7/2018	1	0	0	0	0	0	0	0	0	0	0	8.3
10/8/2018	1	0	0	0	0	0	0	0	0	0	0	7.9
10/9/2018	1	0	0	0	0	0	0	0	0	0	0	9.9
10/10/2018	1	0	0	0	0	0	0	0	0	0	0	11.3



AVIAN AND BAT ACOUSTIC SURVEY FINAL POST-CONSTRUCTION MONITORING REPORT, 2017–2020

November 25, 2020

Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
10/11/2018	1	0	0	0	0	0	0	0	0	0	0	10.8
10/12/2018	1	0	13	0	0	0	0	0	0	6	19	10.2
10/13/2018	1	0	5	0	0	0	0	0	0	2	7	10.0
10/14/2018	1	0	0	0	0	0	0	0	0	0	0	6.5
10/15/2018	1	0	0	0	0	0	0	0	0	0	0	18.4
10/16/2018	1	0	0	0	0	0	0	0	0	0	0	11.0
10/17/2018	1	0	0	0	0	0	0	0	0	0	0	16.1
10/18/2018	1	0	0	0	0	0	0	0	0	0	0	8.9
10/19/2018	1	0	0	0	0	0	0	0	0	0	0	15.6
10/20/2018	1	0	2	0	0	0	0	0	0	0	2	7.1
10/21/2018	1	0	0	0	0	0	0	0	0	1	1	11.5
10/22/2018	1	0	0	0	0	0	0	0	0	0	0	5.2
10/23/2018	1	0	0	0	0	0	0	0	0	0	0	12.2
10/24/2018	1	0	0	0	0	0	0	0	0	0	0	11.9
10/25/2018	1	0	0	0	0	0	0	0	0	0	0	11.4
10/26/2018	1	0	0	0	0	0	0	0	0	0	0	11.0
10/27/2018	1	0	0	0	0	0	0	0	0	0	0	12.5
10/28/2018	1	0	0	0	0	0	0	0	0	0	0	9.0
10/29/2018	1	0	1	0	0	1	0	0	0	1	3	10.4
10/30/2018	1	0	0	0	0	0	0	0	0	0	0	7.5
10/31/2018	1	0	0	0	0	0	0	0	0	0	0	12.0
11/1/2018	1	0	0	0	0	0	0	0	0	0	0	17.4
11/2/2018	1	0	0	0	0	0	0	0	0	0	0	19.5
11/3/2018	1	0	0	0	0	0	0	0	0	0	0	15.7
11/4/2018	1	0	0	0	0	0	0	0	0	0	0	6.4
11/5/2018	1	0	0	0	0	0	0	0	0	0	0	9.6
11/6/2018	1	0	0	0	0	0	0	0	0	0	0	14.0
11/7/2018	1	0	0	0	0	0	0	0	0	0	0	14.4
11/8/2018	1	0	0	0	0	0	0	0	0	0	0	9.8
11/9/2018	1	0	0	0	0	0	0	0	0	0	0	13.6
11/10/2018	1	0	0	0	0	0	0	0	0	0	0	16.1
11/11/2018	1	0	0	0	0	0	0	0	0	0	0	7.7
11/12/2018	1	0	0	0	0	0	0	0	0	0	0	11.1
11/13/2018	1	0	0	0	0	0	0	0	0	0	0	14.9
11/14/2018	1	0	0	0	0	0	0	0	0	0	0	9.0
11/15/2018	1	0	0	0	0	0	0	0	0	0	0	19.9
11/16/2018	1	0	0	0	0	0	0	0	0	0	0	15.3
11/17/2018	1	0	0	0	0	0	0	0	0	0	0	9.3
11/18/2018	1	0	0	0	0	0	0	0	0	0	0	4.8
11/19/2018	1	0	2	0	0	0	0	0	0	0	2	5.8
11/20/2018	1	0	0	0	0	0	0	0	0	0	0	10.4
11/21/2018	1	0	0	0	0	0	0	0	0	0	0	16.5
11/22/2018	1	0	0	0	0	0	0	0	0	0	0	14.3
11/23/2018	1	0	0	0	0	0	0	0	0	0	0	9.4
11/24/2018	1	0	0	0	0	0	0	0	0	0	0	17.3
11/25/2018	1	0	0	0	0	0	0	0	0	0	0	3.6
11/26/2018	1	0	0	0	0	0	0	0	0	0	0	16.6
11/27/2018	1	0	0	0	0	0	0	0	0	0	0	14.8
11/28/2018	1	0	0	0	0	0	0	0	0	0	0	18.2
11/29/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
11/30/2018	1	0	0	0	0	0	0	0	0	0	0	7.2
12/1/2018	1	0	0	0	0	0	0	0	0	0	0	8.3
12/2/2018	1	0	0	0	0	0	0	0	0	0	0	14.5
12/3/2018	1	0	0	0	0	0	0	0	0	0	0	0.0
12/4/2018	1	0	0	0	0	0	0	0	0	0	0	0.0
12/5/2018	1	0	0	0	0	0	0	0	0	0	0	6.8
12/6/2018	1	0	0	0	0	0	0	0	0	0	0	11.8
12/7/2018	1	0	0	0	0	0	0	0	0	0	0	12.9
12/8/2018	1	0	0	0	0	0	0	0	0	0	0	9.2
12/9/2018	1	0	0	0	0	0	0	0	0	0	0	9.5
12/10/2018	1	0	0	0	0	0	0	0	0	0	0	5.7
12/11/2018	1	0	0	0	0	0	0	0	0	0	0	7.6
12/12/2018	1	0	0	0	0	0	0	0	0	0	0	8.5
12/13/2018	1	0	0	0	0	0	0	0	0	0	0	7.2
12/14/2018	1	0	0	0	0	0	0	0	0	0	0	7.4
12/15/2018	1	0	0	0	0	0	0	0	0	0	0	15.5
12/16/2018	1	0	0	0	0	0	0	0	0	0	0	17.5
12/17/2018	1	0	0	0	0	0	0	0	0	0	0	19.2
12/18/2018	1	0	0	0	0	0	0	0	0	0	0	10.5



AVIAN AND BAT ACOUSTIC SURVEY FINAL POST-CONSTRUCTION MONITORING REPORT, 2017–2020

November 25, 2020

Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
12/19/2018	1	0	0	0	0	0	0	0	0	0	0	8.8
12/20/2018	1	0	0	0	0	0	0	0	0	0	0	15.5
12/21/2018	1	0	0	0	0	0	0	0	0	0	0	16.2
12/22/2018	1	0	0	0	0	0	0	0	0	0	0	16.1
12/23/2018	1	0	0	0	0	0	0	0	0	0	0	4.7
12/24/2018	1	0	0	0	0	0	0	0	0	0	0	12.0
12/25/2018	1	0	0	0	0	0	0	0	0	0	0	9.8
12/26/2018	1	0	0	0	0	0	0	0	0	0	0	9.4
12/27/2018	1	0	0	0	0	0	0	0	0	0	0	10.3
12/28/2018	1	0	0	0	0	0	0	0	0	0	0	14.1
12/29/2018	1	0	0	0	0	0	0	0	0	0	0	9.8
12/30/2018	1	0	0	0	0	0	0	0	0	0	0	4.0
12/31/2018	1	0	0	0	0	0	0	0	0	0	0	17.4
1/1/2019	1	0	0	0	0	0	0	0	0	0	0	11.7
1/2/2019	1	0	0	0	0	0	0	0	0	0	0	7.6
1/3/2019	1	0	0	0	0	0	0	0	0	0	0	8.4
1/4/2019	1	0	0	0	0	0	0	0	0	0	0	8.9
1/5/2019	1	0	0	0	0	0	0	0	0	0	0	11.1
1/6/2019	1	0	0	0	0	0	0	0	0	0	0	15.6
1/7/2019	1	0	0	0	0	0	0	0	0	0	0	7.4
1/8/2019	1	0	0	0	0	0	0	0	0	0	0	8.0
1/9/2019	1	0	0	0	0	0	0	0	0	0	0	16.0
1/10/2019	1	0	0	0	0	0	0	0	0	0	0	17.2
1/11/2019	1	0	0	0	0	0	0	0	0	0	0	10.3
1/12/2019	1	0	0	0	0	0	0	0	0	0	0	7.4
1/13/2019	1	0	0	0	0	0	0	0	0	0	0	13.2
1/14/2019	1	0	0	0	0	0	0	0	0	0	0	6.6
1/15/2019	1	0	0	0	0	0	0	0	0	0	0	5.4
1/16/2019	1	0	0	0	0	0	0	0	0	0	0	11.4
1/17/2019	1	0	0	0	0	0	0	0	0	0	0	6.7
1/18/2019	1	0	0	0	0	0	0	0	0	0	0	7.4
1/19/2019	1	0	0	0	0	0	0	0	0	0	0	13.2
1/20/2019	1	0	0	0	0	0	0	0	0	0	0	17.3
1/21/2019	1	0	0	0	0	0	0	0	0	0	0	17.9
1/22/2019	1	0	0	0	0	0	0	0	0	0	0	7.4
1/23/2019	1	0	0	0	0	0	0	0	0	0	0	20.8
1/24/2019	1	0	0	0	0	0	0	0	0	0	0	15.5
1/25/2019	1	0	0	0	0	0	0	0	0	0	0	11.7
1/26/2019	1	0	0	0	0	0	0	0	0	0	0	4.8
1/27/2019	1	0	0	0	0	0	0	0	0	0	0	11.9
1/28/2019	1	0	0	0	0	0	0	0	0	0	0	8.6
1/29/2019	1	0	0	0	0	0	0	0	0	0	0	12.9
1/30/2019	1	0	0	0	0	0	0	0	0	0	0	16.1
1/31/2019	1	0	0	0	0	0	0	0	0	0	0	12.0
2/1/2019	1	0	0	0	0	0	0	0	0	0	0	8.0
2/2/2019	1	0	0	0	0	0	0	0	0	0	0	12.8
2/3/2019	1	0	0	0	0	0	0	0	0	0	0	8.4
2/4/2019	1	0	0	0	0	0	0	0	0	0	0	5.4
2/5/2019	1	0	0	0	0	0	0	0	0	0	0	10.6
2/6/2019	1	0	0	0	0	0	0	0	0	0	0	11.2
2/7/2019	1	0	0	0	0	0	0	0	0	0	0	7.2
2/8/2019	1	0	0	0	0	0	0	0	0	0	0	17.7
2/9/2019	1	0	0	0	0	0	0	0	0	0	0	10.5
2/10/2019	1	0	0	0	0	0	0	0	0	0	0	6.9
2/11/2019	1	0	0	0	0	0	0	0	0	0	0	6.5
2/12/2019	1	0	0	0	0	0	0	0	0	0	0	14.9
2/13/2019	1	0	0	0	0	0	0	0	0	0	0	18.2
2/14/2019	1	0	0	0	0	0	0	0	0	0	0	9.8
2/15/2019	1	0	0	0	0	0	0	0	0	0	0	14.9
2/16/2019	1	0	0	0	0	0	0	0	0	0	0	10.2
2/17/2019	1	0	0	0	0	0	0	0	0	0	0	6.6
2/18/2019	1	0	0	0	0	0	0	0	0	0	0	13.3
2/19/2019	1	0	0	0	0	0	0	0	0	0	0	8.1
2/20/2019	1	0	0	0	0	0	0	0	0	0	0	11.9
2/21/2019	1	0	0	0	0	0	0	0	0	0	0	9.8
2/22/2019	1	0	0	0	0	0	0	0	0	0	0	8.3
2/23/2019	1	0	0	0	0	0	0	0	0	0	0	10.0
2/24/2019	1	0	0	0	0	0	0	0	0	0	0	20.3
2/25/2019	1	0	0	0	0	0	0	0	0	0	0	19.8



AVIAN AND BAT ACOUSTIC SURVEY FINAL POST-CONSTRUCTION MONITORING REPORT, 2017–2020

November 25, 2020

Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
2/26/2019	1	0	0	0	0	0	0	0	0	0	0	13.6
2/27/2019	1	0	0	0	0	0	0	0	0	0	0	5.3
2/28/2019	1	0	0	0	0	0	0	0	0	0	0	4.9
3/1/2019	1	0	0	0	0	0	0	0	0	0	0	10.5
3/2/2019	1	0	0	0	0	0	0	0	0	0	0	4.8
3/3/2019	1	0	0	0	0	0	0	0	0	0	0	11.2
3/4/2019	1	0	0	0	0	0	0	0	0	0	0	9.9
3/5/2019	1	0	0	0	0	0	0	0	0	0	0	12.1
3/6/2019	1	0	0	0	0	0	0	0	0	0	0	10.2
3/7/2019	1	0	0	0	0	0	0	0	0	0	0	8.9
3/8/2019	1	0	0	0	0	0	0	0	0	0	0	7.0
3/9/2019	1	0	0	0	0	0	0	0	0	0	0	10.7
3/10/2019	1	0	0	0	0	0	0	0	0	0	0	9.4
3/11/2019	1	0	0	0	0	0	0	0	0	0	0	12.2
3/12/2019	1	0	0	0	0	0	0	0	0	0	0	9.8
3/13/2019	1	0	0	0	0	0	0	0	0	0	0	5.9
3/14/2019	1	0	0	0	0	0	0	0	0	0	0	20.0
3/15/2019	1	0	0	0	0	0	0	0	0	0	0	16.1
3/16/2019	1	0	0	0	0	0	0	0	0	0	0	11.0
3/17/2019	1	0	0	0	0	0	0	0	0	0	0	9.1
3/18/2019	1	0	0	0	0	0	0	0	0	0	0	6.1
3/19/2019	1	0	0	0	0	0	0	0	0	0	0	6.0
3/20/2019	1	0	0	0	0	0	0	0	0	0	0	10.6
3/21/2019	1	0	0	0	0	0	0	0	0	0	0	16.3
3/22/2019	1	0	0	0	0	0	0	0	0	0	0	21.1
3/23/2019	1	0	0	0	0	0	0	0	0	0	0	15.3
3/24/2019	1	0	0	0	0	0	0	0	0	0	0	13.6
3/25/2019	1	0	0	0	0	0	0	0	0	0	0	8.0
3/26/2019	1	0	0	0	0	0	0	0	0	0	0	2.8
3/27/2019	1	0	0	0	0	0	0	0	0	0	0	5.2
3/28/2019	1	0	0	0	0	0	0	0	0	0	0	11.4
3/29/2019	1	0	0	0	0	0	0	0	0	0	0	5.4
3/30/2019	1	0	0	0	0	0	0	0	0	0	0	19.3
3/31/2019	1	0	0	0	0	0	0	0	0	0	0	14.5
4/1/2019	1	0	0	0	0	0	0	0	0	0	0	4.8
4/2/2019	1	0	0	0	0	0	0	0	0	0	0	13.9
4/3/2019	1	0	0	0	0	0	0	0	0	0	0	10.6
4/4/2019	1	0	0	0	0	0	0	0	0	0	0	9.2
4/5/2019	1	0	0	0	0	0	0	0	0	0	0	9.9
4/6/2019	1	0	0	0	0	0	0	0	0	0	0	7.9
4/7/2019	1	0	0	0	0	0	0	0	0	0	0	11.2
4/8/2019	1	0	0	0	0	0	0	0	0	0	0	6.0
4/9/2019	1	0	0	0	0	0	0	0	0	0	0	5.8
4/10/2019	1	0	0	0	0	0	0	0	0	0	0	8.4
4/11/2019	1	0	0	0	0	0	0	0	0	0	0	5.0
4/12/2019	1	0	0	0	0	0	0	0	0	0	0	19.8
4/13/2019	1	0	0	0	0	0	0	0	0	0	0	8.2
4/14/2019	1	0	0	0	0	0	0	0	0	0	0	19.3
4/15/2019	1	0	0	0	0	0	0	0	0	0	0	17.4
4/16/2019	1	0	0	0	0	0	0	0	0	0	0	8.1
4/17/2019	1	0	0	0	0	0	0	0	0	0	0	7.3
4/18/2019	1	0	0	0	0	0	0	0	0	0	0	18.5
4/19/2019	1	0	0	0	0	0	0	0	0	0	0	22.1
4/20/2019	1	0	0	0	0	0	0	0	0	0	0	10.4
4/21/2019	1	0	0	0	0	0	0	0	0	0	0	3.4
4/22/2019	1	0	0	0	0	0	0	0	0	0	0	9.2
4/23/2019	1	0	0	0	0	0	0	0	0	0	0	9.7
4/24/2019	1	0	0	0	0	0	0	0	0	0	0	8.3
4/25/2019	1	0	0	0	0	0	0	0	0	0	0	6.9
4/26/2019	1	0	0	0	0	0	0	0	0	0	0	13.9
4/27/2019	1	0	0	0	0	0	0	0	0	0	0	12.7
4/28/2019	1	0	0	0	0	0	0	0	0	0	0	7.7
4/29/2019	1	0	0	0	0	0	0	0	0	0	0	5.6
4/30/2019	1	0	0	0	0	0	0	0	0	0	0	2.6
5/1/2019	1	0	0	0	0	0	0	0	0	0	0	7.7
5/2/2019	1	0	0	0	0	0	0	0	0	0	0	7.8
5/3/2019	1	0	0	0	0	0	0	0	0	0	0	2.1
5/4/2019	1	0	0	0	0	0	0	0	0	0	0	7.0
5/5/2019	1	0	0	0	0	0	0	0	0	0	0	11.5



AVIAN AND BAT ACOUSTIC SURVEY FINAL POST-CONSTRUCTION MONITORING REPORT, 2017–2020

November 25, 2020

Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
5/6/2019	1	0	0	0	0	0	0	0	0	0	0	5.9
5/7/2019	1	0	0	0	0	0	0	0	0	0	0	5.7
5/8/2019	1	0	0	0	0	0	0	0	0	0	0	4.6
5/9/2019	1	0	0	0	0	0	0	0	0	0	0	8.6
5/10/2019	1	0	0	0	0	0	0	0	0	0	0	11.4
5/11/2019	1	0	0	0	0	0	0	0	0	0	0	9.1
5/12/2019	1	0	0	0	0	0	0	0	0	0	0	12.1
5/13/2019	1	0	0	0	0	0	0	0	0	0	0	9.8
5/14/2019	1	0	0	0	0	0	0	0	0	0	0	3.4
5/15/2019	1	0	0	0	0	0	0	0	0	0	0	8.6
5/16/2019	1	0	0	0	0	0	0	0	0	0	0	9.7
5/17/2019	1	0	0	0	0	0	0	0	0	0	0	9.4
5/18/2019	1	0	0	0	0	0	0	0	0	0	0	8.7
5/19/2019	1	0	0	0	0	0	0	0	0	0	0	14.9
5/20/2019	1	0	0	0	1	0	0	0	0	0	1	11.7
5/21/2019	1	0	0	0	0	0	0	0	0	0	0	10.3
5/22/2019	1	0	0	0	0	0	0	0	0	0	0	10.2
5/23/2019	1	0	1	0	0	0	0	0	0	0	1	11.5
5/24/2019	1	0	0	0	0	0	0	0	0	0	0	6.5
5/25/2019	1	0	0	0	0	0	0	0	0	0	0	12.5
5/26/2019	1	0	0	0	0	0	0	0	0	0	0	12.2
5/27/2019	1	0	0	0	0	0	0	0	0	0	0	6.8
5/28/2019	1	0	0	0	0	0	0	0	0	0	0	9.2
5/29/2019	1	0	0	0	0	0	0	0	0	0	0	5.7
5/30/2019	1	0	0	0	0	0	0	0	0	0	0	5.8
5/31/2019	1	0	0	0	0	0	0	0	0	0	0	5.1
6/1/2019	1	0	0	0	0	0	0	0	0	0	0	4.0
6/2/2019	1	0	0	0	0	0	0	0	0	0	0	10.6
6/3/2019	1	0	0	0	0	0	0	0	0	0	0	10.5
6/4/2019	1	0	0	0	0	0	0	0	0	0	0	13.6
6/5/2019	1	0	0	0	0	0	0	0	0	0	0	16.6
6/6/2019	1	0	0	0	0	0	0	0	0	0	0	5.3
6/7/2019	1	0	0	0	1	0	0	0	0	1	2	4.3
6/8/2019	1	0	0	0	0	0	0	0	0	0	0	5.0
6/9/2019	1	0	0	0	0	0	0	0	0	0	0	6.4
6/10/2019	1	0	0	0	0	0	0	0	0	0	0	13.8
6/11/2019	1	0	0	0	0	0	0	0	0	0	0	NA
6/12/2019	1	0	0	0	0	0	0	0	0	0	0	NA
6/13/2019	1	0	0	0	0	0	0	0	0	0	0	4.6
6/14/2019	1	0	0	0	0	0	0	0	0	0	0	9.2
6/15/2019	1	0	0	0	0	0	0	0	0	0	0	15.9
6/16/2019	1	0	0	0	0	0	0	0	0	0	0	8.0
6/17/2019	1	0	0	0	0	0	0	0	0	0	0	5.0
6/18/2019	1	0	0	0	0	0	0	0	0	0	0	5.9
6/19/2019	1	0	0	0	0	0	0	0	0	0	0	6.4
6/20/2019	1	0	0	0	0	0	0	0	0	0	0	8.9
6/21/2019	1	0	0	0	0	0	0	0	0	0	0	11.4
6/22/2019	1	0	0	0	0	0	0	0	0	0	0	7.6
6/23/2019	1	0	0	0	0	0	0	0	0	0	0	12.8
6/24/2019	1	0	0	0	0	0	0	0	0	0	0	7.9
6/25/2019	1	0	0	0	0	0	0	0	0	0	0	7.1
6/26/2019	1	0	0	0	0	0	0	0	0	0	0	5.1
6/27/2019	1	0	0	0	0	0	0	0	0	0	0	6.8
6/28/2019	1	0	0	0	0	0	0	0	0	0	0	8.8
6/29/2019	1	0	0	0	0	0	0	0	0	0	0	10.0
6/30/2019	1	0	0	0	0	0	0	0	0	0	0	8.6
7/1/2019	1	0	0	0	0	0	0	0	0	0	0	9.3
7/2/2019	1	1	0	0	0	0	0	0	0	0	1	5.8
7/3/2019	1	0	0	0	0	0	0	0	0	0	0	3.3
7/4/2019	1	0	0	0	0	0	0	0	0	0	0	3.7
7/5/2019	1	0	0	0	0	0	0	0	0	0	0	6.7
7/6/2019	1	0	0	0	0	0	0	0	0	0	0	5.2
7/7/2019	1	0	0	0	0	0	0	0	0	0	0	2.0
7/8/2019	1	0	0	0	0	0	0	0	0	0	0	6.9
7/9/2019	1	0	0	0	0	0	0	0	0	0	0	8.4
7/10/2019	1	0	0	0	0	0	0	0	0	0	0	6.3
7/11/2019	1	0	0	0	0	0	0	0	0	0	0	12.0
7/12/2019	1	0	0	0	0	0	0	0	0	0	0	9.6
7/13/2019	1	0	0	0	0	0	0	0	0	0	0	8.8



AVIAN AND BAT ACOUSTIC SURVEY FINAL POST-CONSTRUCTION MONITORING REPORT, 2017–2020

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Night of	Operational? *	BBSH		HB	RBTB		MYSP			UNKN	Total	Wind Speed (m/s)
		Big brown	Silver-haired	Hoary	Eastern red	Tri-colored	Small-footed	Little brown	Northern long-eared	NoID		
7/14/2019	1	0	0	0	0	0	0	0	0	0	0	9.3
7/15/2019	1	0	0	0	1	0	0	0	0	0	1	6.0
7/16/2019	1	0	0	0	0	0	0	0	0	0	0	12.3
7/17/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/18/2019	1	0	0	0	0	0	0	0	0	0	0	NA
7/19/2019	1	0	0	0	0	0	0	0	0	0	0	11.3
7/20/2019	1	0	0	0	0	0	0	0	0	0	0	11.3
7/21/2019	1	0	0	0	1	0	0	0	0	0	1	8.3
7/22/2019	1	0	0	0	0	0	0	0	0	0	0	5.8
7/23/2019	1	0	0	0	0	0	0	0	0	0	0	5.3
7/24/2019	1	0	0	0	0	0	0	0	0	0	0	3.9
7/25/2019	1	0	0	0	0	0	0	0	0	0	0	4.6
7/26/2019	1	0	0	0	0	0	0	0	0	0	0	4.4
7/27/2019	1	0	0	0	0	0	0	0	0	1	1	5.1
7/28/2019	1	0	0	0	0	0	0	0	0	0	0	11.9
7/29/2019	1	0	0	0	0	0	0	0	0	0	0	9.4
7/30/2019	1	0	0	0	0	0	0	0	0	0	0	7.6
7/31/2019	1	0	0	0	0	0	0	0	0	0	0	5.2
8/1/2019	1	0	0	0	2	0	0	0	0	0	2	6.6
8/2/2019	1	0	0	0	0	1	0	0	0	0	1	5.2
8/3/2019	1	0	0	0	0	0	0	0	0	0	0	7.8
8/4/2019	1	0	0	1	5	0	0	0	0	2	8	6.4
8/5/2019	1	1	1	1	2	0	0	0	0	1	6	4.6
8/6/2019	1	0	0	0	1	0	0	0	0	0	1	4.6
8/7/2019	1	0	0	0	0	0	0	0	0	0	0	10.6
8/8/2019	1	0	0	0	2	0	0	0	0	1	3	8.8
8/9/2019	1	1	0	0	0	0	0	0	0	0	1	9.5
8/10/2019	1	2	0	0	0	0	0	0	0	4	6	9.0
8/11/2019	1	2	0	0	0	0	0	0	0	0	2	9.1
8/12/2019	1	0	0	0	0	0	0	0	0	0	0	11.1
8/13/2019	1	0	0	0	1	0	0	0	0	0	1	4.6
8/14/2019	1	0	0	0	0	0	0	0	0	0	0	5.6
8/15/2019	1	0	0	0	0	0	0	0	0	0	0	6.2
8/16/2019	1	0	0	0	0	0	0	0	0	0	0	4.9
8/17/2019	1	0	0	0	0	0	0	0	0	0	0	4.0
8/18/2019	1	0	0	0	0	0	0	0	0	0	0	8.4
8/19/2019	1	0	1	1	3	1	0	0	0	0	6	6.0
8/20/2019	1	0	2	1	1	0	0	0	0	0	4	6.5
8/21/2019	1	0	0	0	0	0	0	0	0	0	0	11.1
8/22/2019	1	0	0	0	0	0	0	0	0	1	1	9.5
8/23/2019	1	5	1	3	7	0	0	0	0	3	19	9.0
8/24/2019	1	0	0	0	0	0	0	0	0	0	0	9.0
8/25/2019	1	0	0	0	0	0	0	0	0	0	0	10.4
8/26/2019	1	0	0	0	0	0	0	0	0	0	0	5.4
8/27/2019	1	0	0	0	0	0	0	0	0	2	2	3.6
8/28/2019	1	0	0	0	0	0	0	0	0	0	0	7.3
8/29/2019	1	2	59	0	4	0	0	0	0	21	86	7.2
8/30/2019	1	0	1	0	0	1	0	0	0	0	2	9.7
8/31/2019	1	2	8	1	5	2	0	0	0	6	24	5.9
9/1/2019	1	0	0	0	0	0	0	0	0	0	0	5.9
9/2/2019	1	0	0	0	0	0	0	0	0	0	0	6.4
9/3/2019	1	4	0	1	2	1	0	0	0	2	10	5.1
9/4/2019	1	0	0	0	0	0	0	0	0	0	0	8.9
9/5/2019	1	3	0	10	12	1	0	0	0	10	36	5.3
9/6/2019	1	0	0	0	0	0	0	0	0	0	0	17.0
9/7/2019	1	0	0	0	0	0	0	0	0	0	0	9.5
9/8/2019	1	0	5	2	10	4	0	0	0	8	29	3.5
9/9/2019	1	1	0	13	17	2	0	0	0	9	42	3.1
9/10/2019	1	0	0	0	0	0	0	0	0	0	0	9.5
9/11/2019	1	0	0	0	0	0	0	0	0	0	0	7.0
9/12/2019	1	0	0	3	1	0	0	0	0	7	11	8.6
9/13/2019	1	0	0	0	0	0	0	0	0	0	0	8.4
9/14/2019	1	0	0	0	0	0	0	0	0	0	0	11.0
9/15/2019	1	0	0	2	3	2	0	0	0	1	8	7.2
9/16/2019	1	4	12	6	2	1	0	0	0	9	34	6.7
9/17/2019	1	0	0	0	0	1	0	0	0	0	1	7.9
9/18/2019	1	0	0	0	0	0	0	0	0	0	0	8.5
9/19/2019	1	0	0	0	0	0	0	0	0	0	0	4.5
9/20/2019	1	0	0	0	0	0	0	0	0	0	0	8.4

