WISCONSIN BAT PROGRAM- Driving Acoustic Bat Survey Report 2020

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In Brief

- ***There were 73 acoustic bat driving surveys in 45 counties conducted by 28 surveyors that included staff from Wisconsin Department of Natural Resources, Bad River Natural Resources Department (Tribal), U.S. Forest Service and private citizens.***
- ***Central Sand Hills region, for the eighth year running, has consistently had the highest average bat calls per detector hour (65.8) when compared to all other ecological landscapes.***
- ***Early season surveys (June 1-15) were delayed or cancelled when many Department-led projects were suspended.***

Introduction

In 2013, the Wisconsin Bat Program (WBP) expanded its offering of bat surveying opportunities by adding 38 predetermined driving bat surveys (transects) (Appendix 1). The 2020 survey season marks the eighth year conducting driving surveys. This report summarizes the methods and results from the driving survey transects that were conducted in Wisconsin in 2020 and compares this year's data to the previous seven years.

Methods

To better understand statewide changes in bat populations, emphasis was placed on repeating the 38 driving transects which were developed in 2013 by WBP in each of the 16 ecological landscapes (Table 1; Appendix 1). In coordination with national bat monitoring efforts, the following protocols were adopted to ensure standardization and quality-controlled data (Loeb et al. 2015). Each acoustic driving transect ranged from 20 to 30 miles per survey and used an acoustic detection system that passively records bat activity by detecting ultrasonic echolocation calls emitted by bats as they forage and navigate across the landscape. These echolocation calls were recorded and saved using an ultrasonic detector (Anabat SD1/2, AnaSwift, Titley Scientific LLC, Columbia, MO). The call files (bat encounters) and their geospatial information were collected through one of two methods: 1) using a hand-held computer (personal data assistant - PDA) (PDA, Hewlett-Packard Company iPAQ models) with a Global Positioning System (GPS; Global Sat, BC-337) or 2) data was directly saved to a compact flash card in the ultrasonic detector which is equipped with a mouse GPS (Global Sat, BC-355S4).

Surveyed routes in 2020 were driven one to three times across a six-week window, beginning June 1 and ending July 15**.** Surveys began approximately 30 minutes after local sunset time and were driven at a target speed of 20 miles per hour. Routes were to be completed at least once during the three primary survey periods: June 1 - June 15, June 16 - June 30 and July 1- July 15, and a minimum of five days was required between replicates of the same transect. Routes were surveyed on evenings with weather conditions suitable for bat activity which included low wind speed (<30 mph), no precipitation and a daytime temperature of 50^{O}F or above (USFWS 2016). Survey equipment included the roof-mounted microphone, an AnaBat SD1/2 bat detector, a hand-held computer to interface with the AnaBat SD1/2, a compact flash GPS unit to record the location of each acoustic file, and other appropriate items (instructions, route maps, datasheets, batteries and cables).

Acoustic files were analyzed using Titley Scientific AnalookW (Version 4.4a) (Corben 2018). Surveys were manually filtered to separate files containing bat encounters and ignore those files with only extraneous noise from insects, birds, wind, road noise, and other sources of static. All acoustic data were processed through manual examination by one staff member who has >10 years of experience in identifying Wisconsin bat species and had an extensive call library to use as reference. Files with bat encounters were categorized into one of the following species or species group categories: (1) hoary bat- LACI (*Lasiurus cinereus*), (2) big brown bat - EPFU (*Eptesicus fuscus*), (3) silver-haired bat - LANO (*Lasionycteris noctivagans*), (4) eastern red bat - LABO (*L. borealis*), (5) eastern pipistrelle (or tricolored bat) - PESU (*Perimyotis subflavus*), (6) little brown bat - MYLU (*Myotis lucifugus),* (7) northern long-eared bat- MYSE (*M. septentrionalis*), (8) evening bat - NYHU (*Nycticeius humeralis*), (9) big brown/silver-haired bat, (10) eastern pipistrelle/eastern red/evening bat, (11) little brown/northern long-eared bat, (12) low frequency and (13) high frequency. Low and high frequency bat passes were later grouped as unclassified encounters because one of the following scenarios: there were too few calls recorded to further separate, the calls were of low-quality recording (i.e. fragmented), the bat pass did not contain search-phase calls (calls used to identify species), or general uncertainty. To compare our results year-to-year and to other state-wide acoustic inventories, results were evaluated using metrics to mitigate for variations in driving speeds among surveyors: bat encounters-per-detector-hour [bat encounters divided by survey time (hours)] and bat encounters-per-kilometer-hour [bat encounters divided by kilometers traveled per hour].

Table 1: Ecological Landscapes in Wisconsin and associated abbreviations.

Ecological Landscape	Abbreviation
Central Lake Michigan Coastal	CLMC
Central Sand Hills	CSH
Central Sand Plains	CSP
Forest Transition	FT
North Central Forest	NCF
Northeast Sands	NES
Northern Highland	NH
Northern Lake Michigan Coastal	NLMC
Northwest Lowlands	NWL
Northwest Sands	NWS
Southeast Glacial Plains	SGP
Southern Lake Michigan Coastal	SLMC
Southwest Savanna	SWS
Superior Coastal Plain	SCP
Western Coulee and Ridges	WCR
Western Prairie	WP

Results

In 2020, 73 surveys were conducted in 45 counties by 28 individuals from Wisconsin Department of Natural Resources, Bad River Natural Resources Department (Tribal), U.S. Forest Service and citizen volunteers. These 73 completed surveys add to an impressive data set (Table 2) bringing the total completed driving surveys to 685 since 2013 (Figure 8). Of the 73 routes in 2020, 50.0 kilometers (31.1 miles) was the mean survey length, with the greatest distance being 73.1 km (45.4 miles NCF4), and the shortest survey of 38.3 km (24.1 miles) was completed on a survey of NWS2. Surveyors traveled over 3,600 kilometers (2,200 miles) resulting in 5,614.3 hectares (13,873.1 acres) surveyed (Appendix 3; Table 4).

Except for Northwest Lowlands, there was at least one route driven in each of the 16 ecological landscapes (EL), resulting in valid data for 28 routes. In total, 15,087 files were recorded and 4,060 files (26.9%) were identified as bat encounters. A mean of 32.5 bat calls per detector-hour, were recorded on each survey, with a minimum bat calls per-detector hour of 1.1 (WCR5 on 5 June) and a maximum of 97.3 (WCR6 on 10 July). For eight consecutive years, Central Sand Hills region had the highest average bat calls per detector hour (65.8, Figure 1) and the Southern Lake Michigan Coastal region had the lowest average bat calls per detector hour (10.8). The mean number of bat call files per completed survey was 55.6 and ranged from 2 (WCR5 on 5 June) to 267 (NCF4 on 15 July). This mean number of bat calls per survey was similar to 2019, which was the lowest since the surveys began in 2013 (Table 3). Most surveys in 2020 (55 of 73) were in the low encounter class (0-75 bat encounters per survey), while the remaining surveys fell into the mid- encounter class (76-150 bat encounters per survey). One survey was classified in the high encounter class (251-275 bats encountered per survey). The number of surveys varied by week (Figure 2) and bats were more likely to be detected toward the end of the third sampling period (Figure 3), which can likely be attributed to population recruitment by recently-volant (flying) juveniles.

Of the 4,060 bat encounters, 1,648 (33.8%) were classified into species groups: high frequency group (250), low frequency group (567), big brown/silver-haired (389), eastern red/eastern pipistrelle/evening bat (150) and little brown/northern long-eared (17) because the bat passes have similar characteristics to two or more species. The remaining 2,687 (66.2%) files were classified as big brown (972), hoary (948), eastern red (447), little brown (166), silver-haired bat (151) and eastern pipistrelle (3). The evening bat and the northern long-eared bat were not detected on acoustic driving transects in 2020. Among the 16 ecological regions, big brown bats (n=9) were the most commonly encountered species followed by the hoary bat (n=5) (Figure 7). Of note, the little brown bat, which is highly susceptible to WNS, was the most commonly encountered species in six ecological landscapes when the driving surveys began in 2013.

Table 2. Number of driving transects and surveyors by year.

Year	No. Driving Transects	No. Surveyors
2013	92	56
2014	77	45
2015	77	48
2016	71	50
2017	92	58
2018	96	55
2019	107	53
2020	73	28

Mean Bat Calls Per Detector Hour

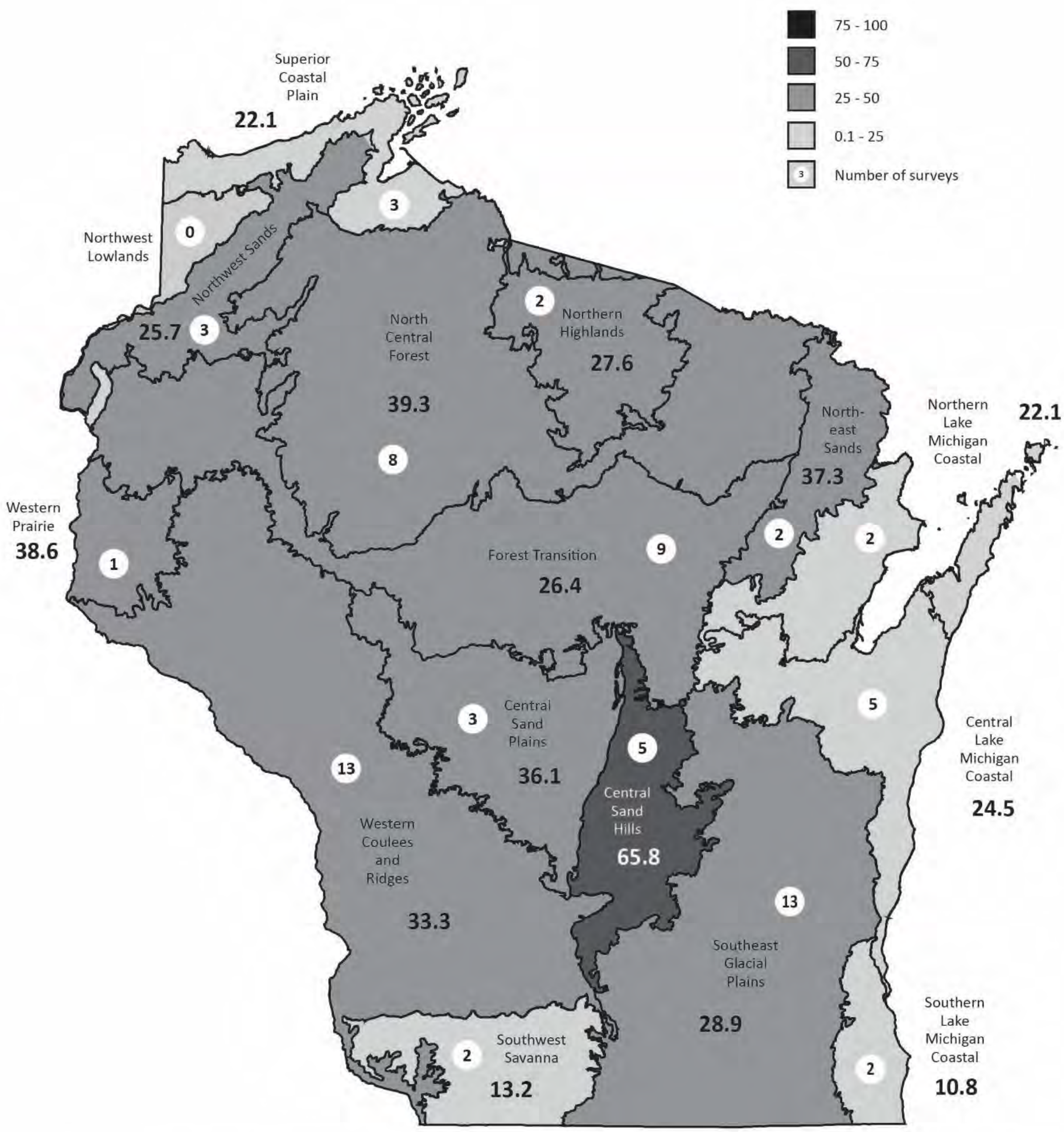


Figure 1. For the eighth year in a row, the highest mean bat calls per detector hour was the Central Sand Hills at 65.8 calls/detector/hour. Mean calls per detector hour across all landscapes was 32.5.

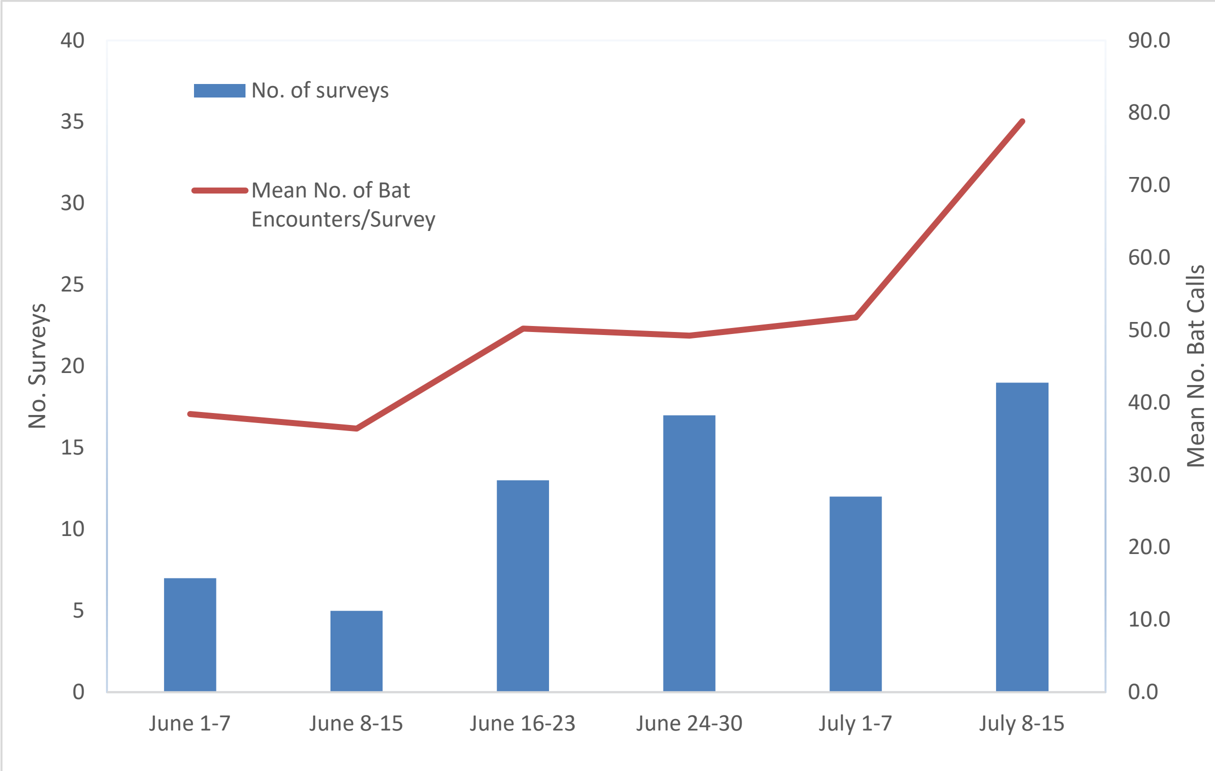


Figure 2. Total number of surveys by week and mean number of bat calls per survey by week (2020).

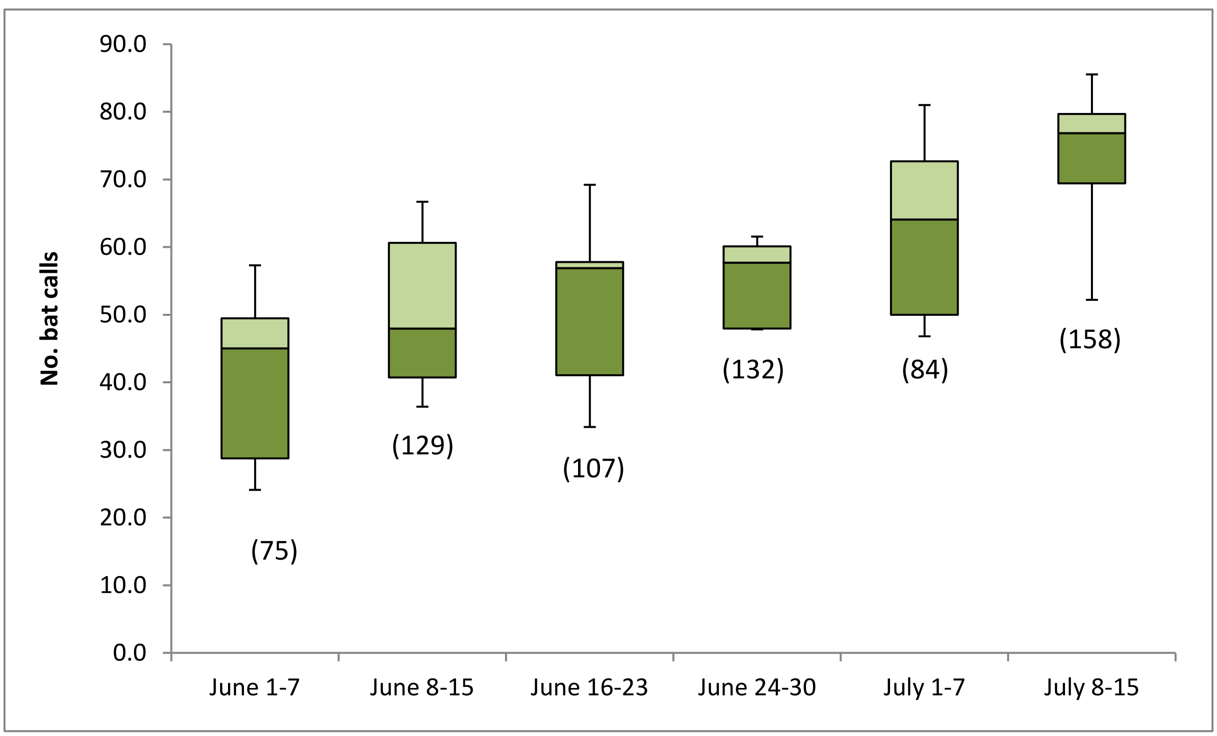


Figure 3. Comparison of mean bat calls per survey for 8-day period from 2013-2020 driving routes. Numbers in brackets indicate sample size. Boxes depict the 25th and 75th percentiles, lines within boxes mark the median, whiskers represent 95th and the 5th percentiles.

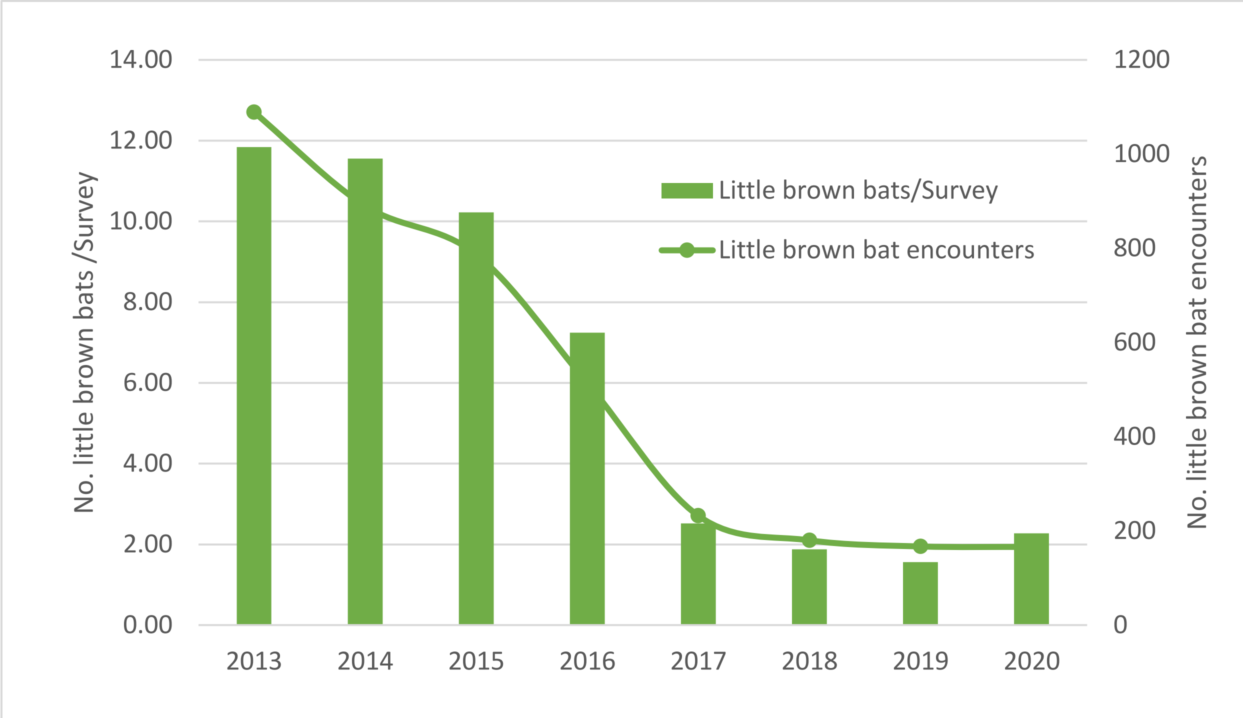


Figure 4. Yearly acoustic little brown encounters per survey (bats; right axis) and total little brown bat encounters (line; left axis). Regardless of the presentation, both indices show the same general trend – a larger population or detection rate followed by declines from 2015-2019.

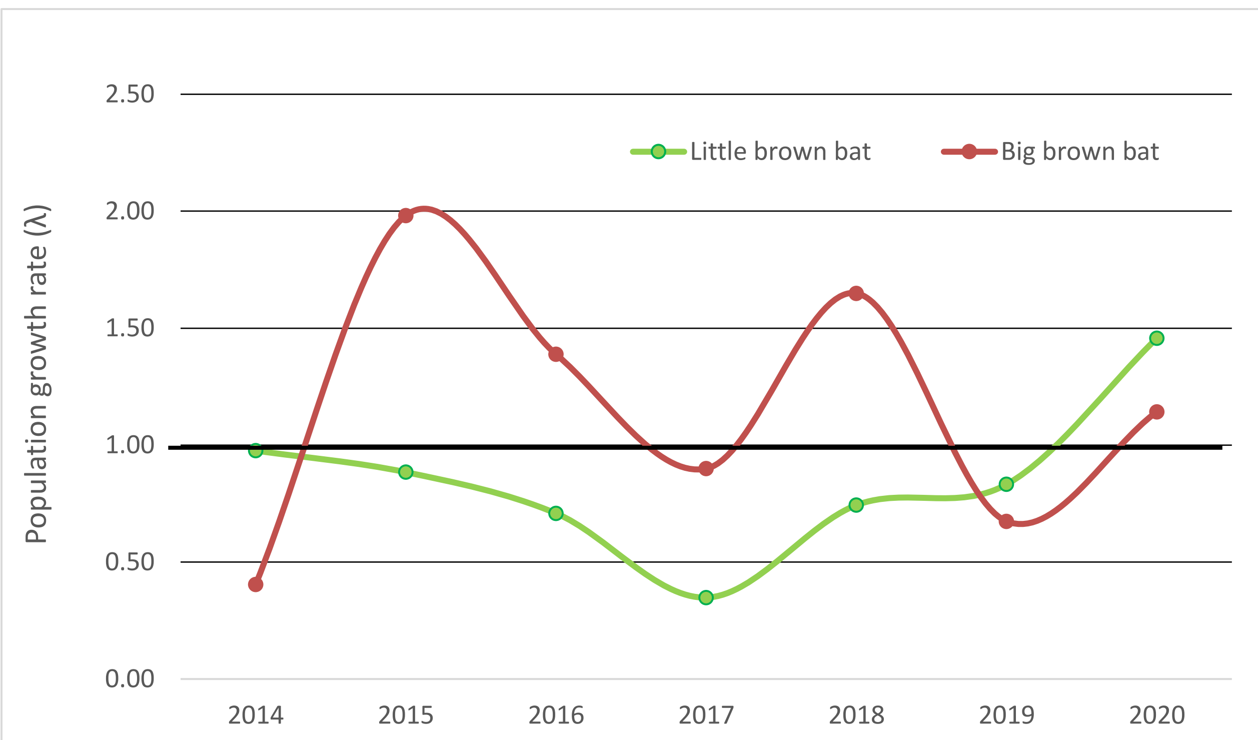


Figure 5. Yearly population growth rate (lambda λ) of little brown bat and big brown bat using acoustic detections per survey. Indicated by a bold line, a value of 1 is stable – (no growth or decline), <1 is declining and >1 is increasing/growing. Lines have been smoothed.

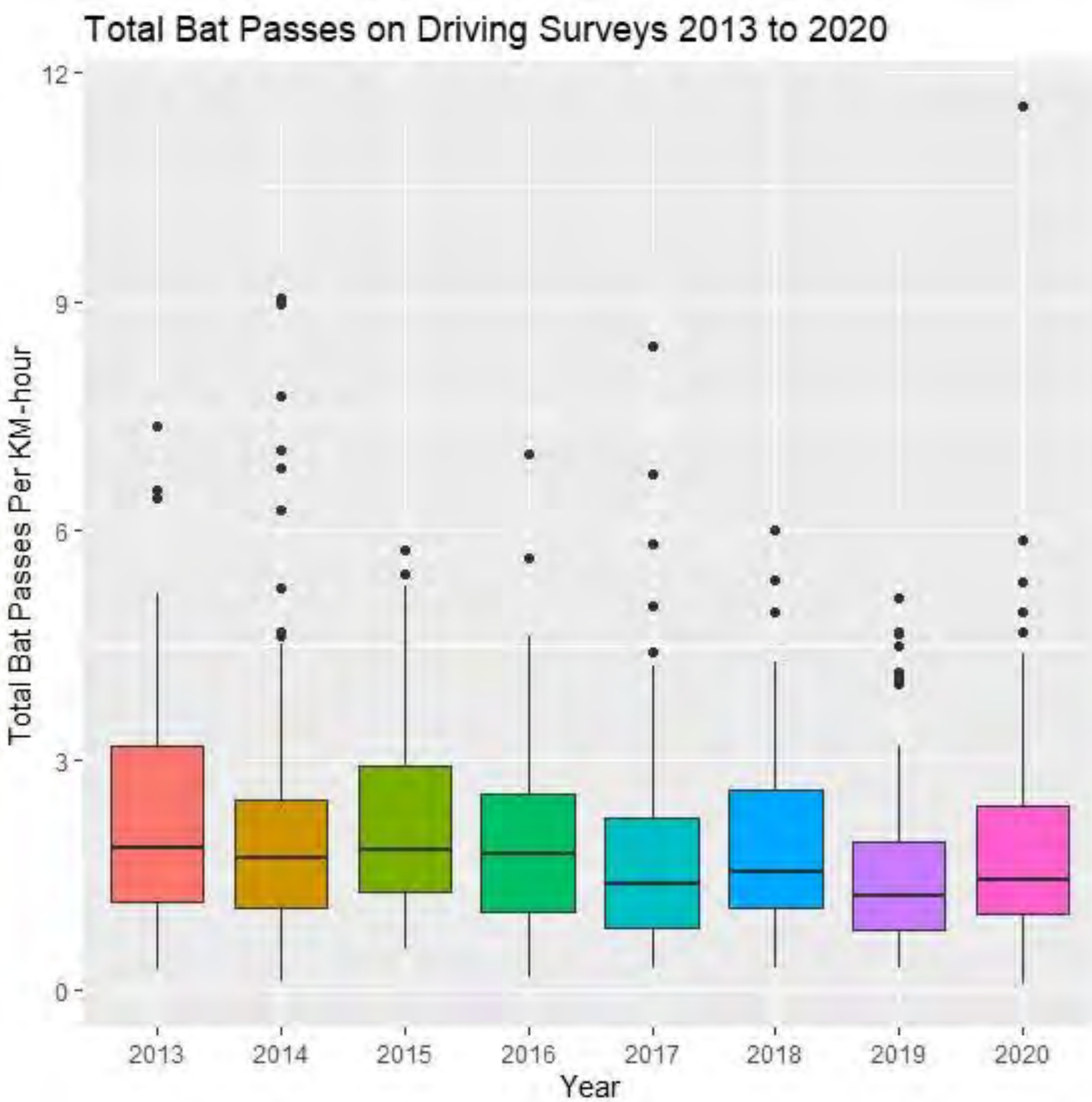


Figure 6. Total passes per kilometer hour by year. Total bat passes from driving transects in 2020 were not significantly different from previous years. The bar is median, the outside edges of the boxes are 1st and 3rd quartiles and the whiskers are, upper whisker = Q_3 + 1.5 * IQR, lower whisker = min. IQR is interquartile range.

Most Common Bat Species by Ecological Region

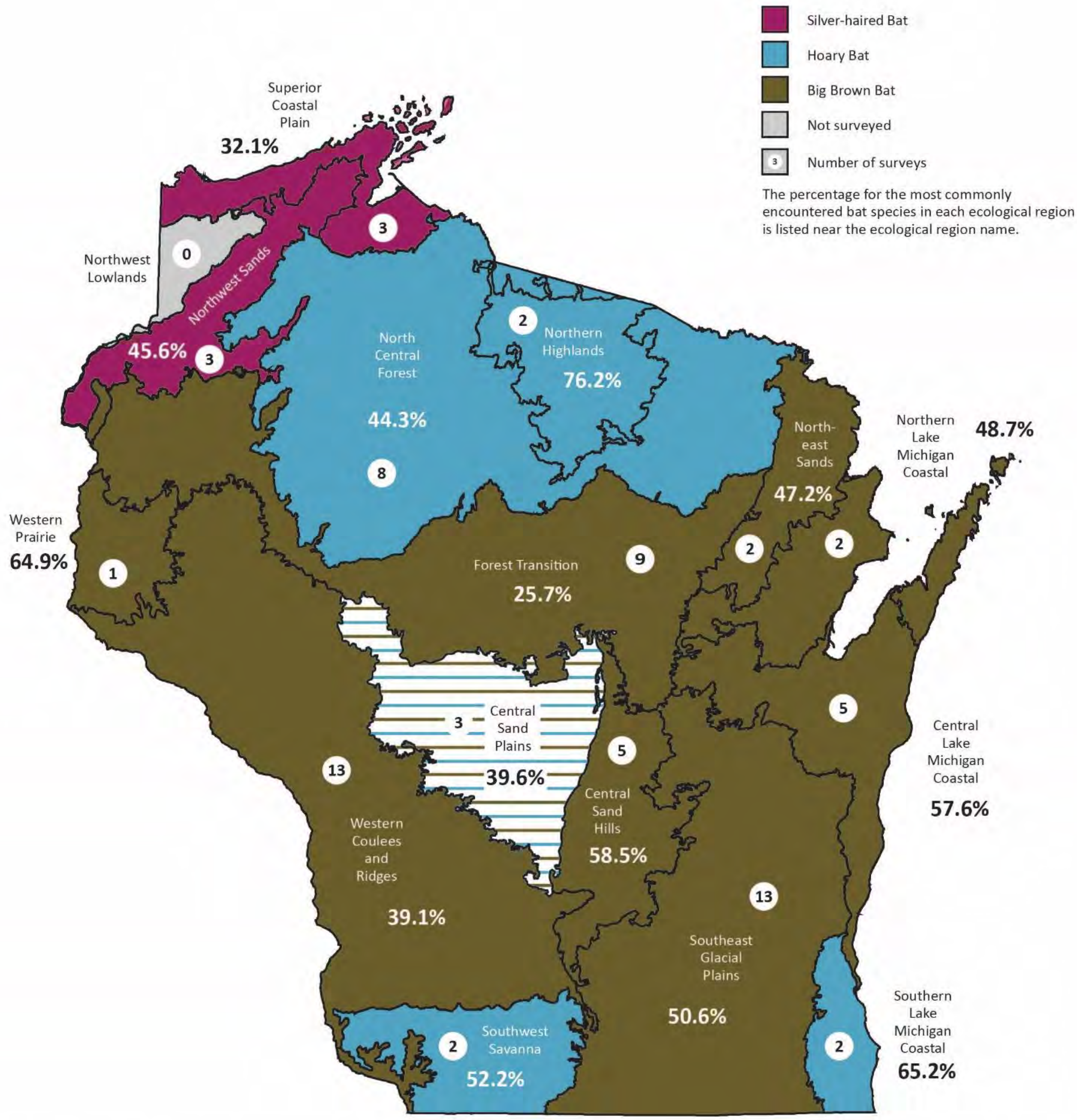
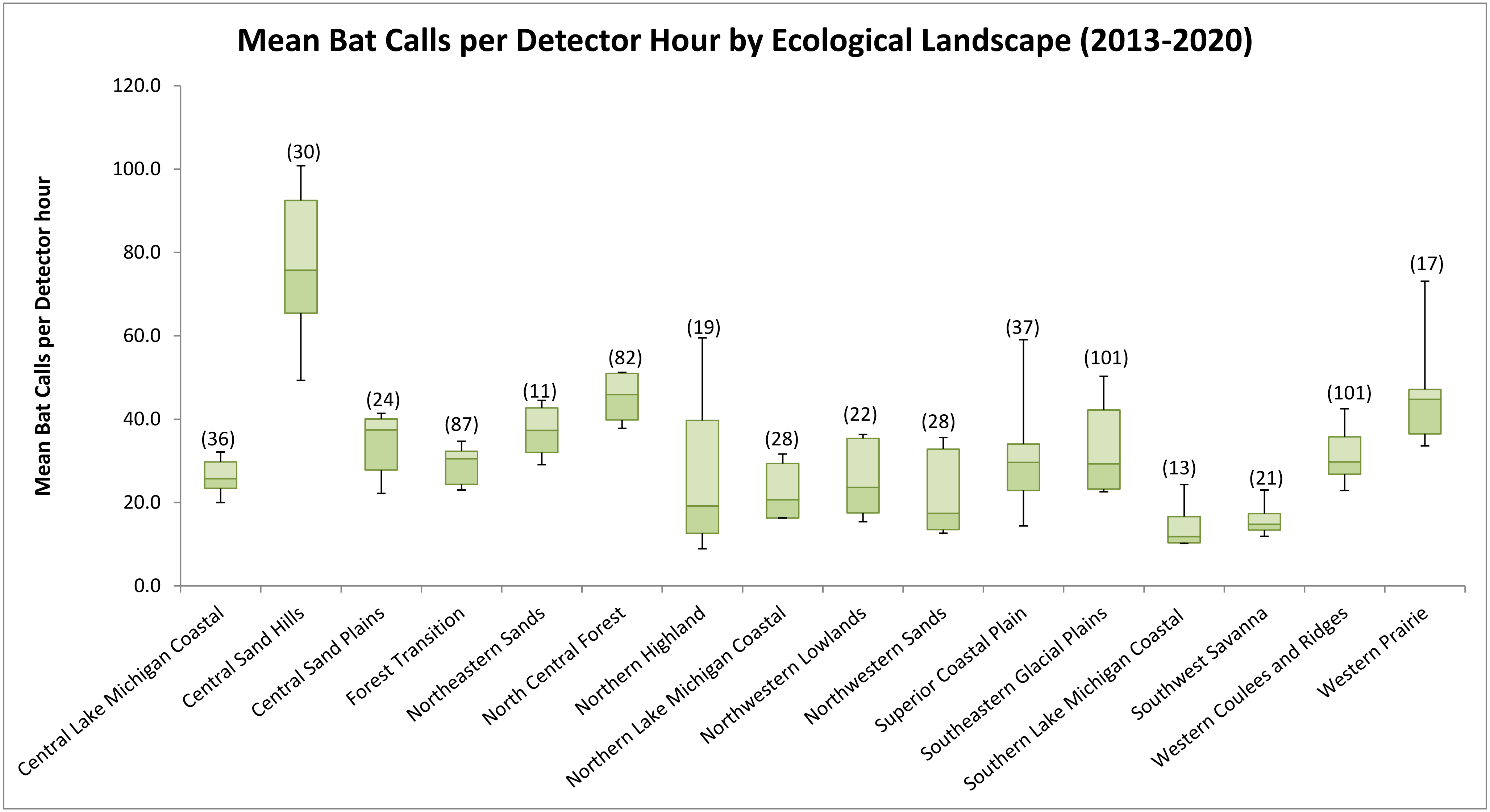


Figure 7. The most commonly encountered bat species by ecological region were hoary bat (6) and the big brown bat (8) in 2020. One landscape (Central Sand Plains) had equal hoary bat and big brown bat encounters.

Figure 8. Mean bat calls per detector hour by ecological landscape (2013-2020). Bracketed numbers are total number of surveys per ecological landscape. A total of 684 acoustic driving surveys have been completed since 2013. Boxes depict the 25th and 75th percentiles, lines within boxes mark the median, whiskers represent 95th and the 5th percentiles.



Discussion

Acoustic bat driving transects have been proven to be a cost-effective approach to describing summer bat activity on a landscape level for most of the bat species known to reside in Wisconsin (Whitby et al. 2014). For example, despite variability in the sampling effort, looking at yearly total passes per kilometer hour, we found no statistical significance from previous years (Figure 6). Unfortunately, detections of the northern long-eared bat and eastern pipistrelle –both highly susceptible to white-nose syndrome (WNS) (Ingersoll et al. 2016) - are not among those species that are easily tracked through this survey method. Detectability (i.e. intensity of calls) and habitat use (i.e. road averse) are key variables for determining bat species presence using driving transects (Whitby et al. 2014). Coupled with a reduced population related to white-nose syndrome mortality (Kilpatrick et al. 2020), this further compromises the ability to detect either cave bat species in Wisconsin using driving surveys. Of the two species, only the eastern pipistrelle was detected and where it was found, this species was observed in very low numbers (3 of 2,687 labeled bat passes) which are similar to other findings in the Eastern United States where populations have dramatically decreased (Pettit and O'Keefe 2017).

Of the remaining WNS susceptible species – big brown bat and little brown bat – each species presents a different pattern when using acoustic driving data to describe seasonal trends. Prior to the widespread WNS infection in Wisconsin, little brown bats were encountered at a rate of 11.7 passes per survey or

Table 3. A comparison of mean number of bat calls per detector hour by ecological landscape (2013-2020), including total number of surveys completed in each year. N/A signifies data are not available. Last column represents the standard deviation (SD) and standard error (SE) for each row.

Ecological Landscape	2013	2014	2015	2016	2017	2018	2019	2020	SD (SE)
CLMC	27.0 (4)	27.5 (3)	32.1 (3)	20.0 (4)	23.7 (5)	23.3 (6)	30.5 (6)	34.5 (5)	4.0 (1.4)
CSH	81.3 (3)	75.4 (3)	100.8 (3)	96.2 (3)	76.1 (3)	65.3 (6)	49.3 (3)	65.8 (5)	16.8 (6.0)
CSP	40.2 (3)	38.8 (3)	39.6 (3)	41.4 (3)	25.4 (3)	35.0 (3)	22.2 (3)	36.1 (3)	7.2 (2.5)
FT	30.4 (12)	32.9 (10)	30.7 (12)	23.0 (9)	30.7 (11)	34.7 (11)	23.7 (13)	26.4 (9)	4.2 (1.5)
NCF	51.0 (8)	49.8 (12)	51.2 (12)	51.0 (11)	42.1 (12)	41.4 (8)	37.8 (11)	39.3 (8)	5.7 (2.3)
NES	33.0 (1)	N/A	N/A	29.1 (1)	42.1 (1)	18.8 (3)	23.1 (3)	37.7 (2)	5.8 (2.1)
NH	59.5 (1)	43.7 (2)	16.6 (3)	19.6 (3)	8.9 (3)	16.3 (3)	11.3 (2)	27.6 (2)	17.4 (6.2)
NLMC	20.7 (4)	31.6 (4)	29.4 (3)	N/A	20.5 (4)	17.6 (5)	16.3 (6)	22.1 (2)	6.0 (2.3)
NWL	36.3 (4)	17.5 (3)	35.4 (3)	27.5 (3)	23.6 (3)	N/A	15.4 (6)	N/A	8.6 (3.3)
NWS	32.8 (5)	17.4 (1)	12.6 (3)	13.5 (3)	35.6 (4)	14.4 (3)	16.6 (6)	25.7 (3)	9.4 (3.5)
SCP	27.2 (4)	59.1 (4)	32.1 (5)	34.6 (3)	25.4 (4)	50.3 (6)	32.2 (8)	22.1 (3)	13.1 (4.6)
SGP	29.7 (15)	22.6 (9)	45.7 (8)	31.6 (11)	22.9 (16)	24.3 (14)	24.2 (15)	28.9 (13)	10.5 (3.7)
SLMC	12.8 (3)	10.4 (3)	14.1 (1)	N/A	N/A	14.8 (3)	10.2 (3)	10.8 (2)	5.4 (2.2)
SWS	14.8 (3)	17.8 (3)	23.0 (2)	11.9 (2)	15.8 (3)	29.1 (3)	14.0 (3)	13.2 (2)	3.4 (1.2)
WCR	42.5 (19)	26.3 (16)	36.6 (15)	30.4 (14)	28.3 (16)	33.6 (19)	22.9 (16)	33.3 (13)	6.2 (2.2)
WP	46.7 (3)	46.9 (2)	42.9 (1)	73.1 (1)	47.2 (3)	44.5 (3)	35.8 (3)	38.6 (1)	12.3 (4.3)
Mean (Total #)	***36.9 (92)***	***34.5 (78)***	***38.5 (77)***	***34.3 (71)***	***30.6 (92)***	***31.7 (96)***	**24.3 (107)**	**32.5 (73)**	8.5 (3.1)

989.5 passes per year. In the years following extensive WNS infection in Wisconsin, there was an average of 4.3 passes per survey or 341.0 passes per year (Figure 4). To confirm this trend, we used a yearly population growth rate (lambda λ) – where a value of 1 is stable – (no growth or decline), <1 is declining and >1 is increasing/growing. In Figure 5, the graph demonstrates that yearly population growth rate based on acoustic encounters for little brown bats began declining in 2015, but precipitously dropped in 2017, and was followed by a gradual trend toward stable (λ=1) in 2019 and eventually rising above the stable benchmark, representing an increase in activity in 2020. Similar changes to the little brown bat population have also been observed in Wisconsin's winter counts and summer colony monitoring data (WDNR 2020) and in studies in the Eastern US (Nocera et al. 2019). Using the same data for big brown bats, this species was encountered at a rate 7.4 passes per survey or 645.0 passes per year before WNS and the years following widespread WNS infection both the encounter rate per survey (12.1) and the detections per year (1,052.5) grew markedly. The yearly population growth rate based on big brown bat acoustic activity showed considerable variability (Figure 5), but in general, a growing population was most often observed. Given that big browns are less susceptible to WNS due to larger body size and hibernation preferences (Frank et al. 2014), the negative impacts of big brown bats across Wisconsin have not been observed as they have in little brown bats, rather, the opposite was seen.

A closer look at the remaining bat species - migratory tree bats – detected on driving surveys (Figures 15-20) indicate that activity has been relatively constant over time, or in one example in the case of the hoary bat, the detection rate that has increased over the past several years. Although these species are not known to be affected by WNS, they are highly susceptible to wind-energy related mortality (Arnett and Baerwald 2013). As more wind energy facilities begin operation in Wisconsin, trends using these data will be valuable for informing species status assessments. In the meantime, other studies have suggested that decreases in cave bat populations have benefited tree bat species because reduced competition for food or habitat resources (Ford et al. 2011, Jackowski et al. 2014).

Acoustic data collected through driving transects in Wisconsin have proven critical in understanding changes in bat communities at a landscape level. The term that best describes the project and results - as a whole - is *resiliency*. Both in terms of volunteer-engagement (during difficult times), to describing, for example, the population of little brown bats, which were once abundant throughout the state but are now found in far-reduced numbers and only in certain regions.

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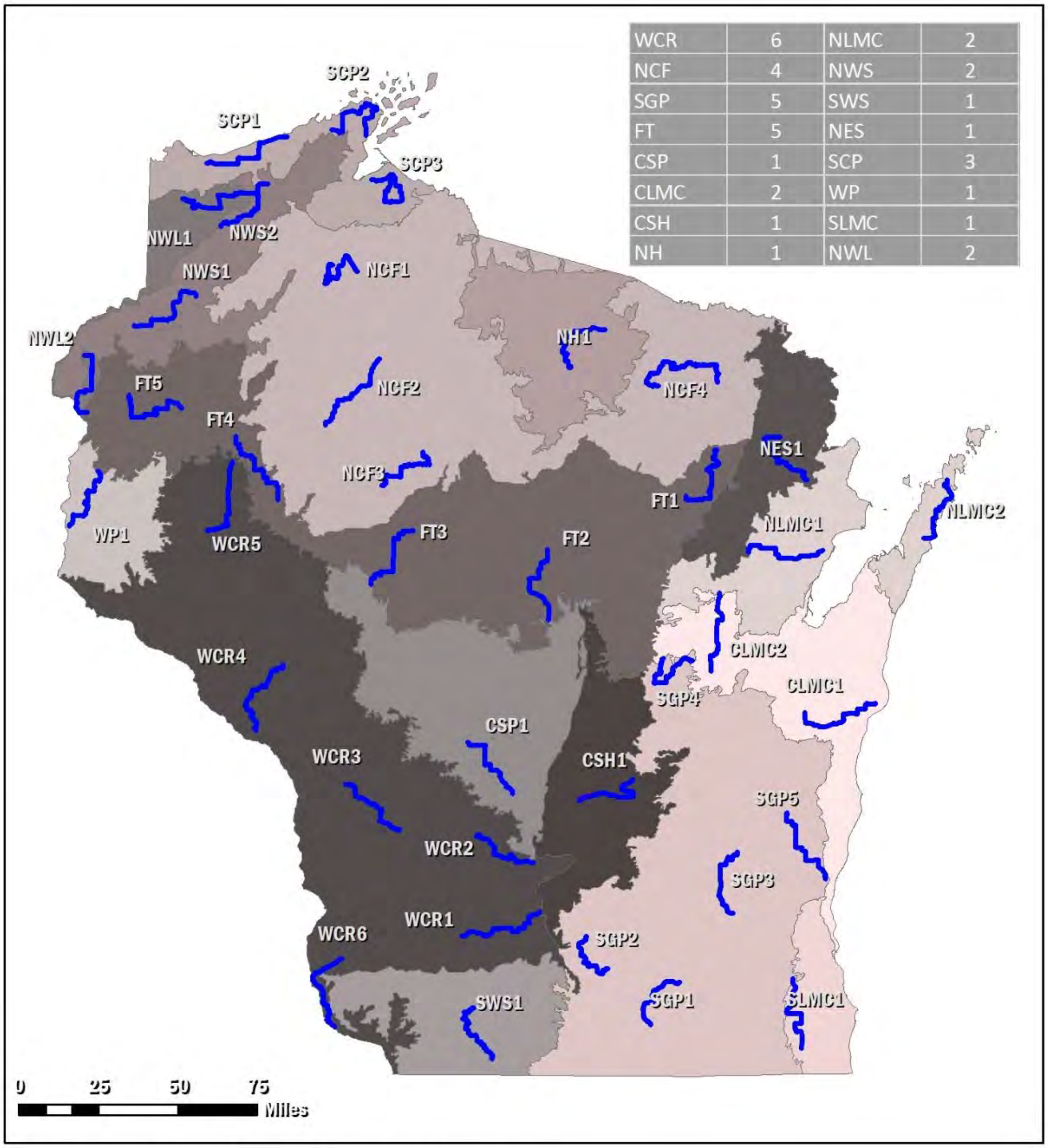
Appendix 1 Acoustic Bat Driving Transects by Ecological Landscape



WCR	6	NLMC	2
NCF	4	NWS	2
SGP	5	SWS	1
FT	5	NES	1
CSP	1	SCP	3
CLMC	2	WP	1
CSH	1	SLMC	1
NH	1	NWL	2

Wisconsin Bat Monitoring Program
Acoustic Bat Survey Driving Routes

Driving Route

Ecological Landscapes: Central Lake Michigan Coastal (CLMC), Central Sand Hills (CSH), Central Sand Plains (CSP), Forest Transition (FT), North Central Forest (NCF), Northeast Sands (NES), Northern Highland (NH), Northern Lake Michigan Coastal (NLMC), Northwest Lowlands (NWL), Northwest Sands (NWS), Southeast Glacial Plains (SGP), Southern Lake Michigan Coastal (SLMC), Southwest Savanna (SWS), Superior Coastal Plain (SCP), Western Coulees and Ridges (WCR) and Western Prairie (WP)

Appendix 2 (Figures 9-14) Bat species encounter by ecological landscape

Note: A map was not created for the northern long-eared bat because this species was not detected in 2020.

Figure 9. The eastern red bat encounters accounted for 11.0% of all recorded bat passes during driving surveys in 2020.

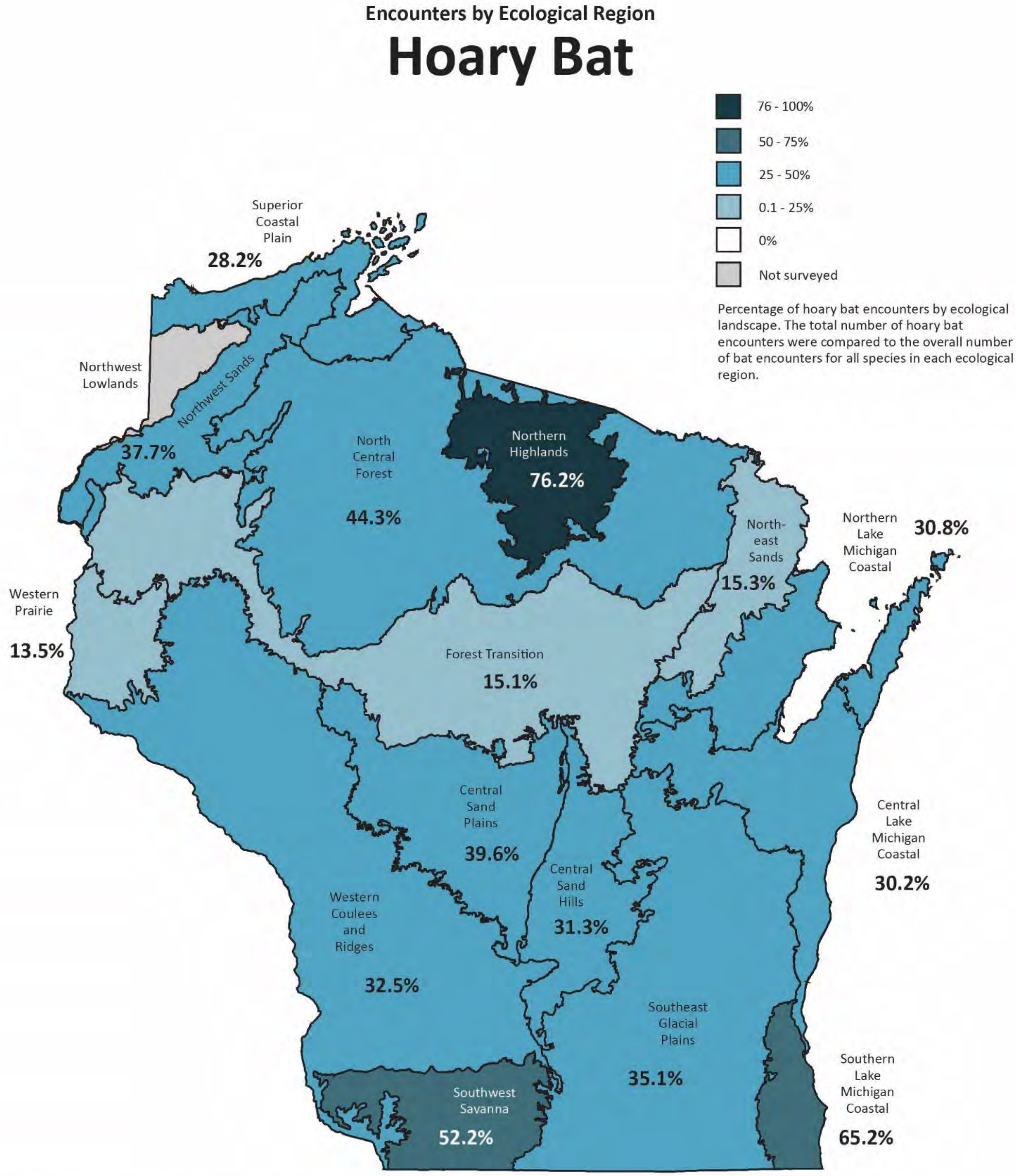


Figure 10. The hoary bat had the highest encounter rate (76.2%) in Northern Highlands region, and comprised 23.3% of all bat encounters during driving surveys in 2020.

Encounters by Ecological Region

Silver-haired Bat

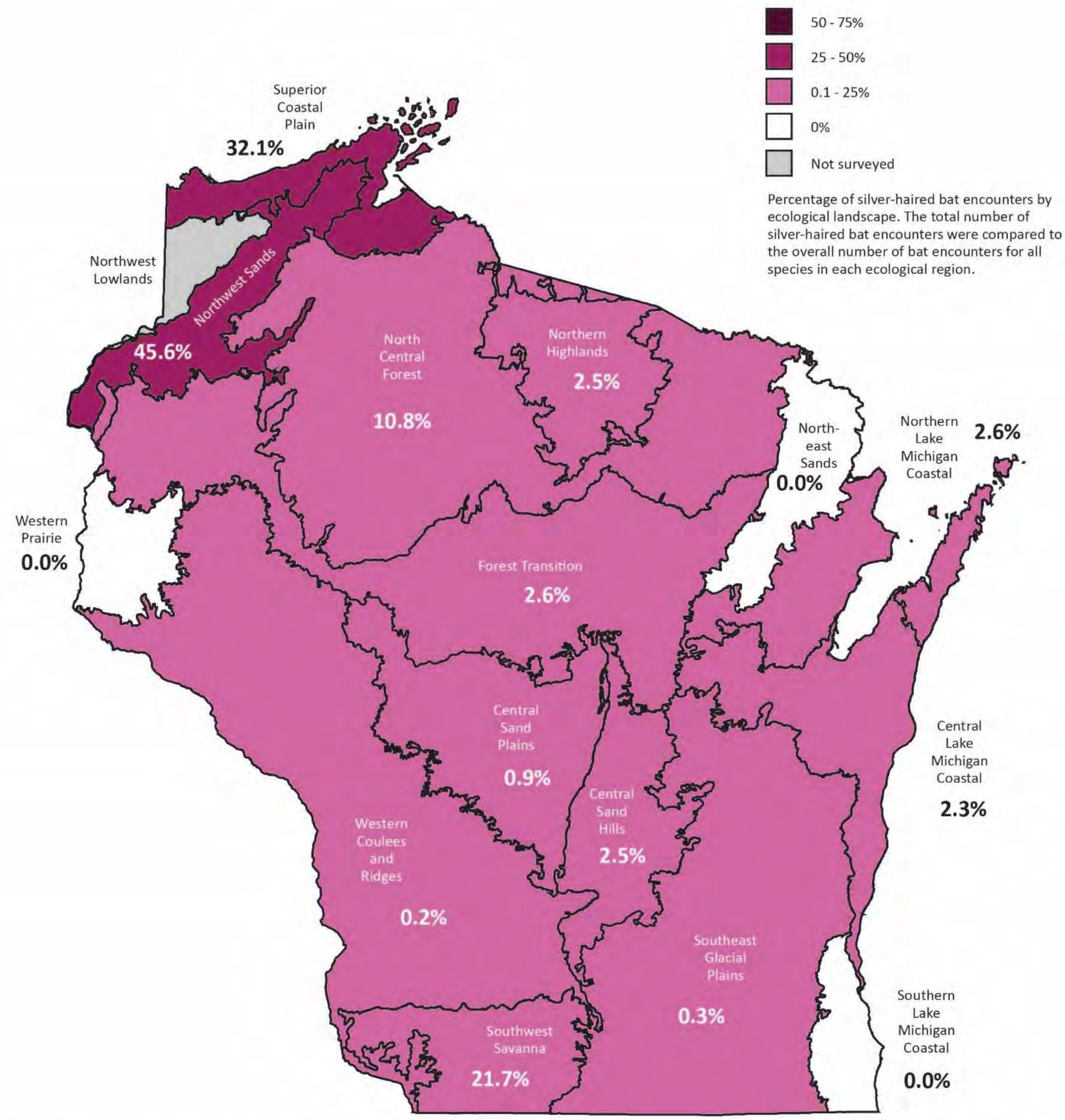


Figure 11. Silver-haired bat encounters accounted for 3.7% of all encounters recorded during driving surveys in 2020.

Figure 12. The little brown bat encounters accounted for 4.1% of all bat encounters recorded during driving surveys in 2020. Of note, little brown bat comprised 34.3% of all encounters in 2013 driving surveys.

Figure 13. The big brown bat had the highest encounter rate (64.9%) in Western Prairie region, and comprised 23.9% of all bat encounters during driving surveys in 2020.

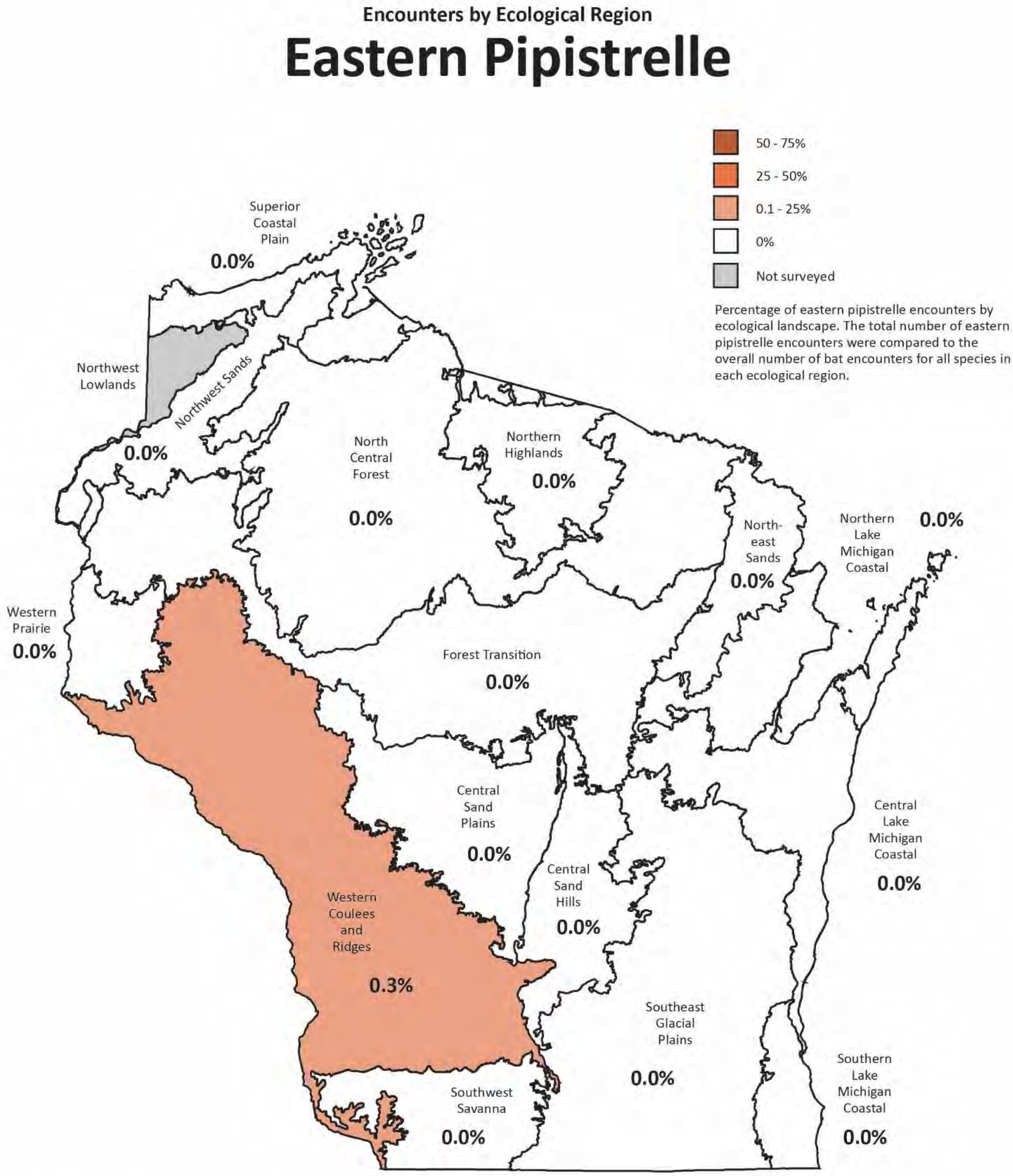


Figure 14. The eastern pipistrelle was only recorded in the Western Coulees and Ridges region and accounted for 0.1% of all encounters recorded during driving surveys in 2020.

Appendix 3 Table 4. Total area surveyed in June-July 2020

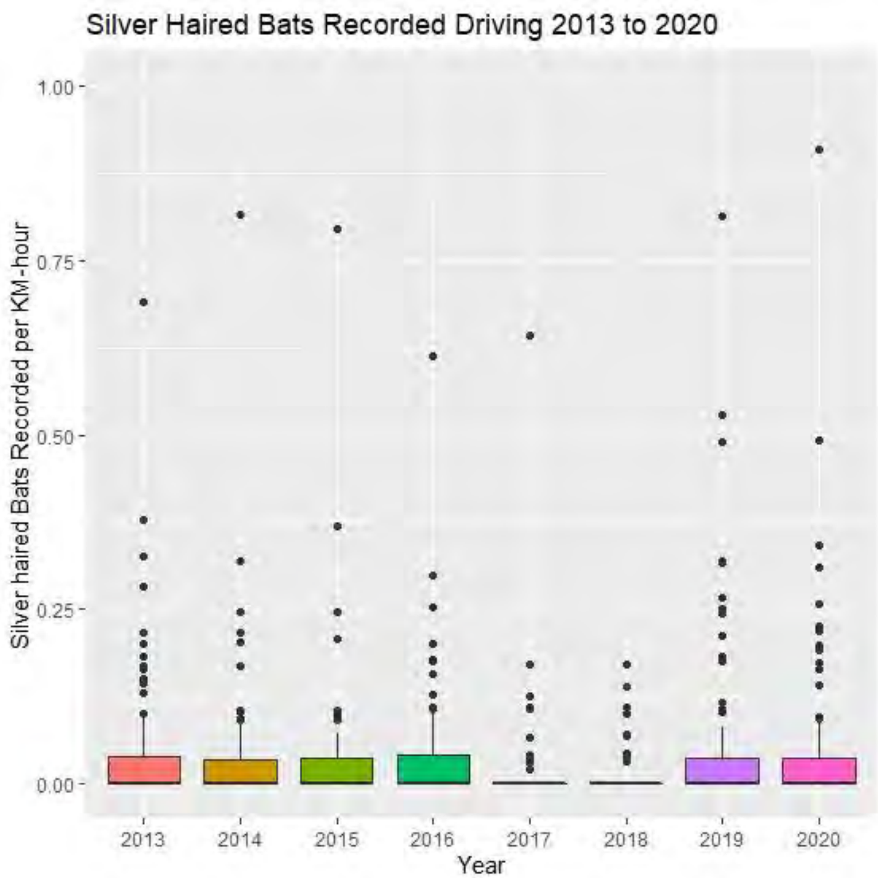
Ecological Landscape	No. Surveys	Total Kilometers	Total Miles	Acres surveyed	Hectares surveyed
CLMC 1	3	151.6	94.2	570.9	231.0
CLMC 2	2	104.2	64.7	392.4	158.8
CSH 1	5	238.9	148.4	899.7	364.1
CSP 1	3	133.9	83.2	504.3	204.1
FT 1	3	149.7	93.0	563.8	228.1
FT 2	3	153.7	95.5	578.8	234.2
FT 3	3	145.4	90.3	547.6	221.6
NCF 1	3	139.0	86.4	523.5	211.8
NCF 2	2	122.4	76.1	460.9	186.5
NCF 3	3	218.5	135.8	822.8	333.0
NCF 4	2	100.2	62.3	377.3	152.7
NES 1	2	95.7	59.5	360.4	145.8
NH 1	2	101.5	63.1	382.2	154.7
NLMC 1	3	133.8	83.1	503.9	203.9
NLMC 2	3	177.4	110.2	668.1	270.4
NWS 2	3	124.7	77.5	469.6	190.0
SCP 2	3	117.9	73.3	444.0	179.7
SGP 1	3	141.0	87.6	531.0	214.9
SGP 2	2	90.7	56.4	341.6	138.2
SGP 3	2	103.2	64.1	388.6	157.3
SGP 4	2	102.9	63.9	387.5	156.8
SGP 5	2	91.7	57.0	345.3	139.8
SLMC 1	3	161.8	100.5	609.3	246.6
SWS 1	2	106.3	66.1	400.3	162.0
WCR 1	2	95.7	59.5	360.4	145.8
WCR 2	4	190.3	118.2	716.6	290.0
WCR 4	2	140.3	87.2	528.4	213.8
WCR 5	1	51.5	32.0	193.9	78.5
WCR 6	3	151.6	94.2	570.9	231.0
WP 1	2	104.2	64.7	392.4	158.8
Total	**73**	**3,684**	**2,289**	**13,873.1**	**5,614.3**
Mean	**2.6**	**131.6**	**81.8**	**495.5**	**200.5**

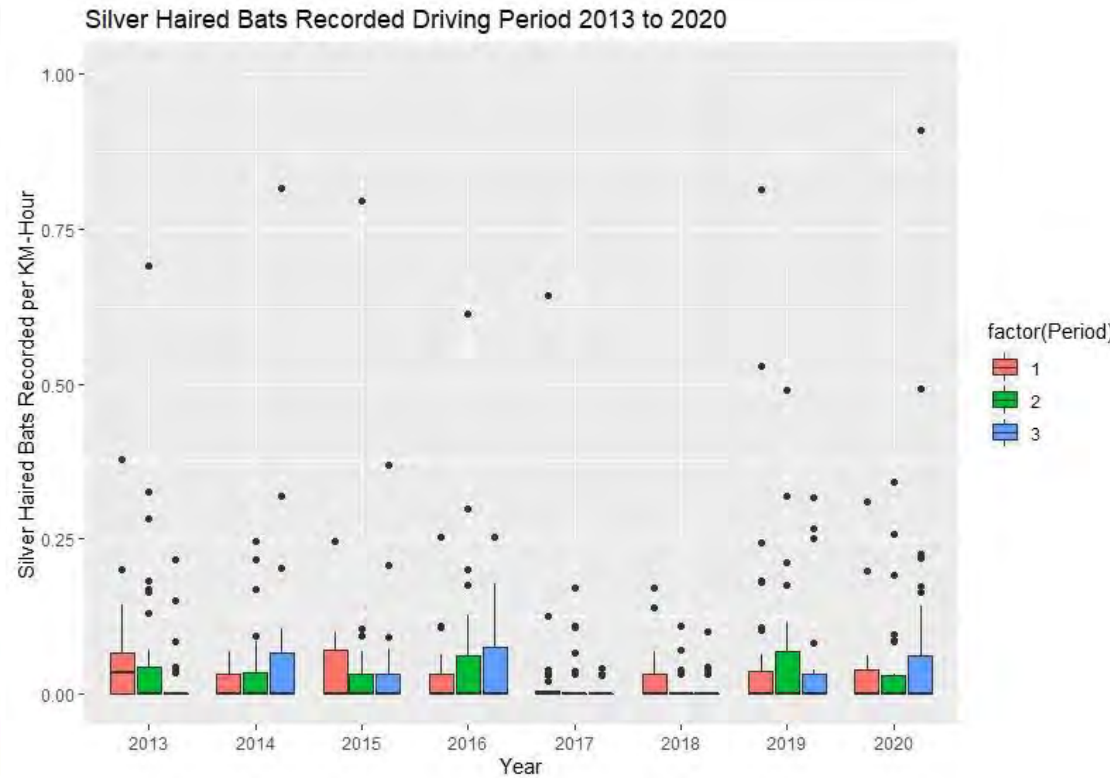
AnaBat Acoustic Transects (USFS Protocol 2012):[Transect length (miles) x 5280 feet/1 mile x Width of the AnaBat field of detection* (feet)] divided by 43,560 feet/acre = X acres

*Assuming a 50 foot field of detection

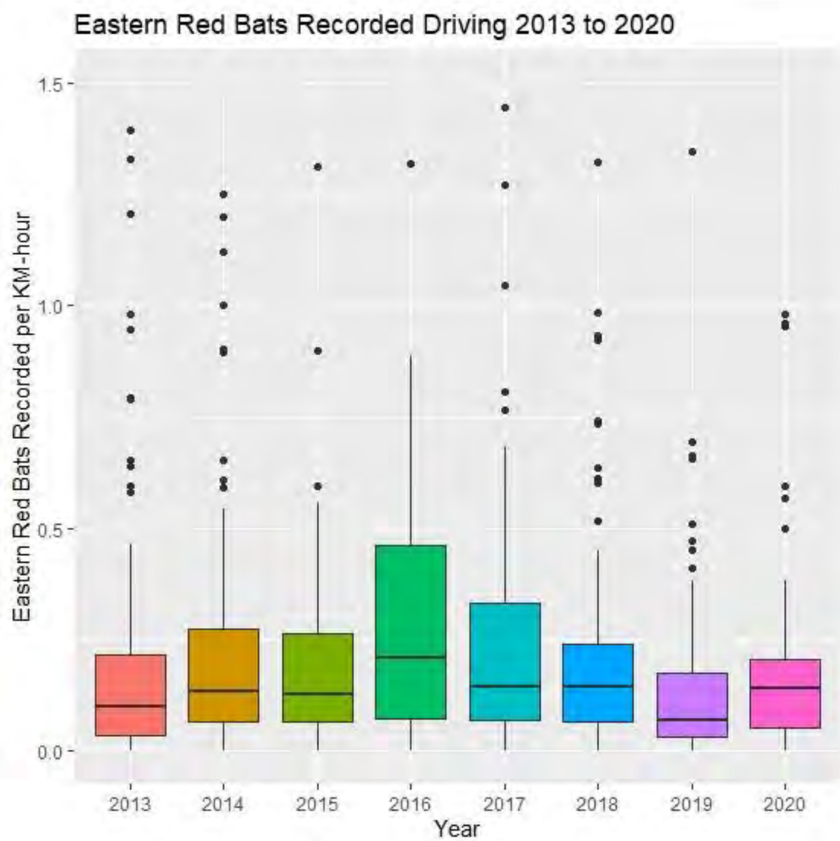
Appendix 4. The following Figures (15-20), which depicts Wisconsin's migratory tree bat species (excluding Evening bat), are mixed effects models with negative binomial distribution and year as a fixed effect and routes as a random effect.

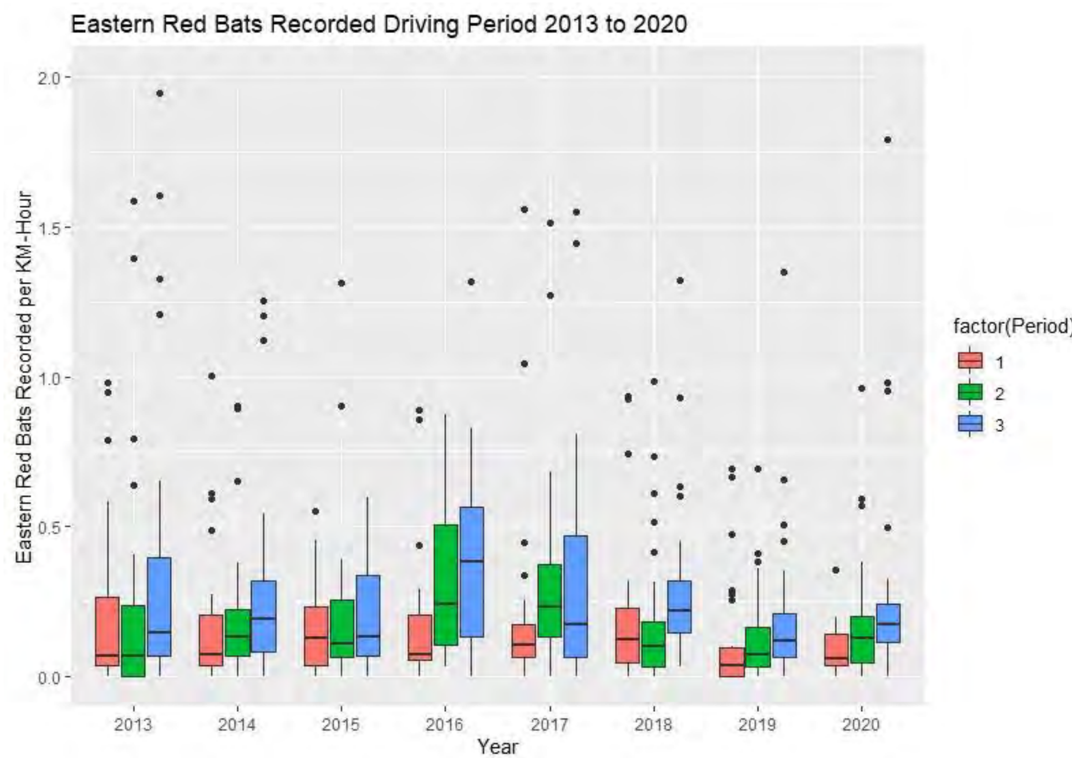
Silver-haired bat passes per kilometer hour by year (left – Figure 15) and by survey period within each year (right – Figure 16). The bar is median, the outside edges of the boxes are 1st and 3rd quartiles and the whiskers are, upper



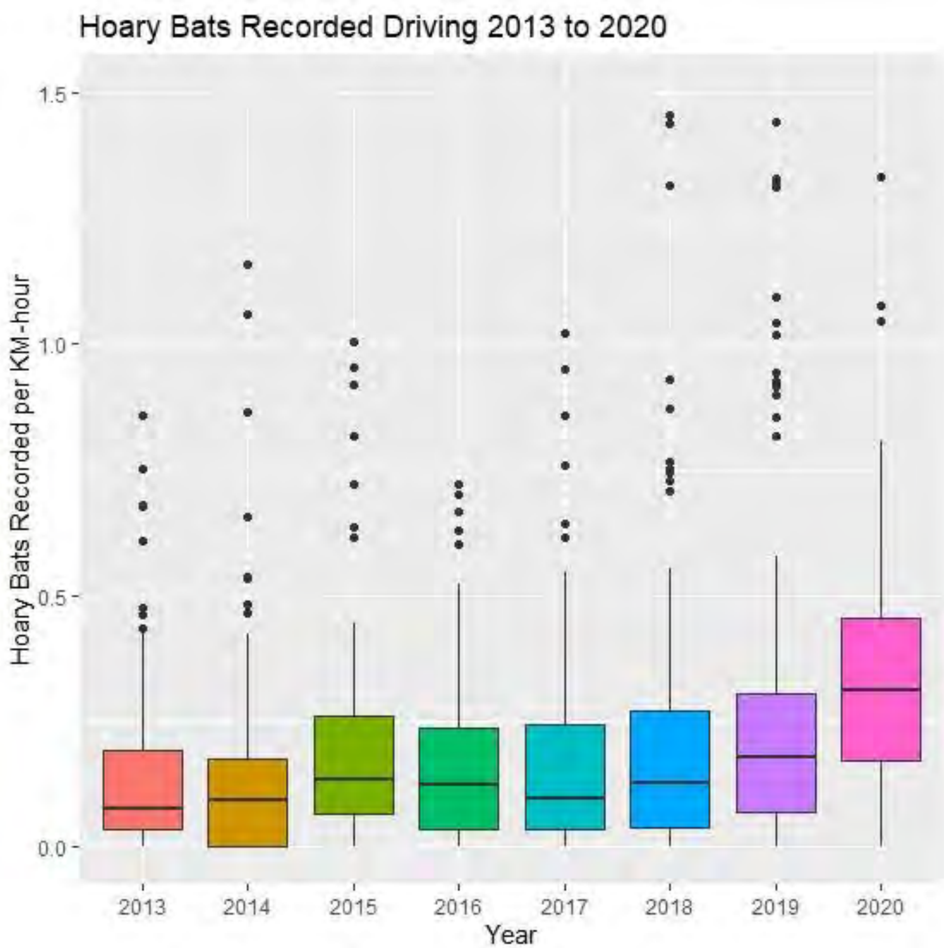


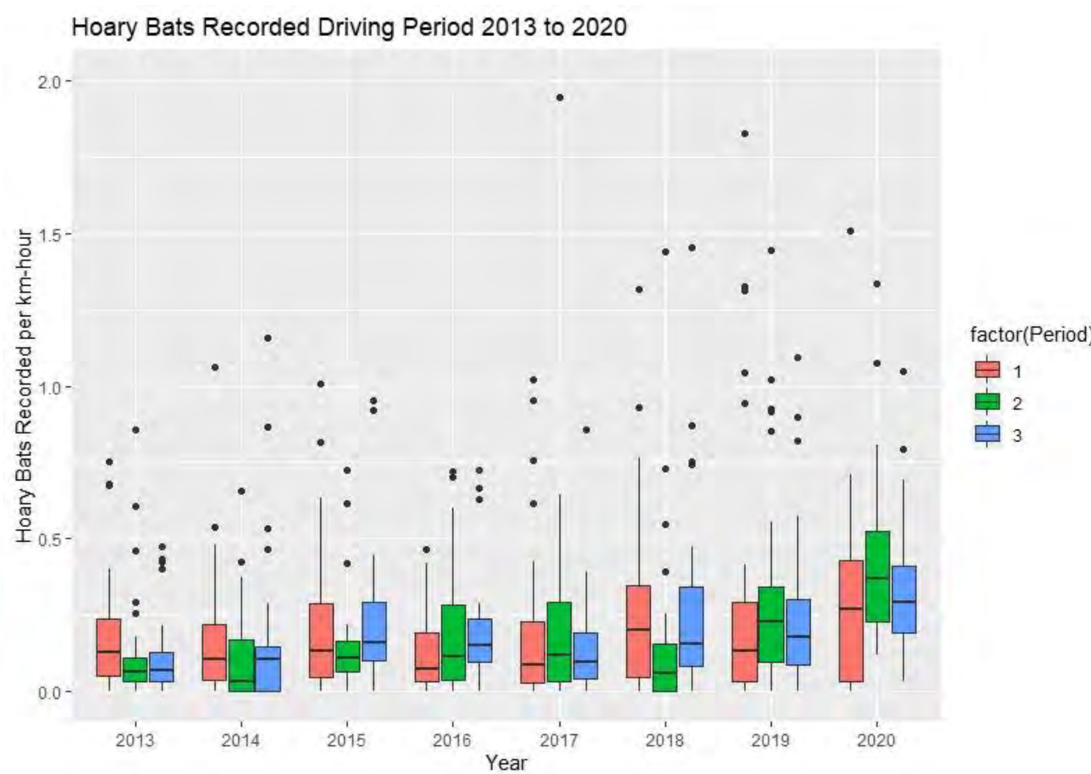
Eastern red bat passes per kilometer hour by year (left – Figure 17) and by survey period within each year (right – Figure 18). The bar is median, the outside edges of the boxes are 1st and 3rd quartiles and the whiskers are, upper whisker = Q_3 + 1.5 * IQR, lower whisker = min. IQR is interquartile range.





Hoary bat passes per kilometer hour by year (left – Figure 19) and by survey period within each year (right – Figure 20). The bar is median, the outside edges of the boxes are 1st and 3rd quartiles and the whiskers are, upper whisker = Q_3 + 1.5 * IQR, lower whisker = min. IQR is interquartile range.





Appendix 5 Table 5. Driving acoustic bat surveys (n=73) conducted in Wisconsin, June-July 2020

Ecological Landscape	No. Surveys	Total Kilometers (Miles)	Total Detector-Hours	Mean Detector-Hours	Mean Speed KMPH (MPH)	Total Calls Detected	Mean Distance KM/Route (MI)	Mean Calls/ Detector-Hour	Mean Passes/KMPH (Passes/MPH)
CLMC 1	3	151.6 (94.2)	4.3	1.4	35.4 (22.0)	203	50.5 (31.4)	46.0	2.0 (1.2)
CLMC 2	2	104.2 (64.7)	3.1	1.6	33.3 (20.7)	54	52.2 (32.4)	17.2	0.8 (0.5)
CSH 1	5	238.9 (148.4)	8.2	1.6	29.0 (18.0)	543	47.8 (29.7)	65.8	3.8 (2.4)
CSP 1	3	133.9 (83.2)	4.6	1.5	28.9 (18.0)	166	44.6 (27.7)	36.1	1.9 (1.2)
FT 1	3	149.7 (93.0)	5.8	1.9	26.0 (16.2)	192	49.9 (31.0)	33.5	2.5 (1.6)
FT 2	3	153.7 (95.5)	4.6	1.5	33.6 (20.9)	132	51.2 (31.8)	28.6	1.3 (0.8)
FT 3	3	145.4 (90.3)	5.2	1.7	28.6 (17.8)	93	48.5 (30.1)	17.2	1.2 (0.7)
NCF 1	3	139.0 (86.4)	5.0	1.7	27.8 (17.3)	153	46.3 (28.8)	30.0	1.9 (1.2)
NCF 2	2	122.4 (76.1)	3.3	1.7	37.5 (23.3)	120	61.2 (38.0)	36.9	1.6 (1.0)
NCF 4	3	218.5 (135.8)	9.0	3.0	24.4 (15.2)	455	72.8 (45.2)	50.0	6.3 (3.9)
NES 1	2	100.2 (62.3)	2.8	1.4	36.6 (22.7)	103	50.1 (31.1)	37.7	1.4 (0.9)
NH 1	2	95.7 (59.5)	5.2	2.6	18.3 (11.4)	144	47.8 (29.7)	27.6	3.9 (2.4)
NLMC 1	2	101.5 (63.1)	2.9	1.4	35.4 (22.0)	62	50.7 (31.5)	22.1	0.9 (0.6)
NWS 2	3	133.8 (93.1)	6.5	2.2	20.9 (13.0)	166	44.6 (27.7)	25.7	2.8 (1.7)
SCP 2	3	177.4 (110.2)	6.2	2.1	28.6 (17.8)	139	59.1 (36.7)	22.1	1.6 (1.0)
SGP 1	3	124.7 (77.5)	3.9	1.3	32.5 (20.2)	180	41.6 (25.8)	46.1	1.9 (1.2)
SGP 2	3	117.9 (73.3)	3.9	1.3	30.9 (19.2)	96	39.3 (24.4)	24.4	1.1 (0.7)
SGP 3	3	141.0 (87.6)	4.7	1.6	30.1 (18.7)	90	47.1 (29.3)	19.4	1.0 (0.6)
SGP 4	2	90.7 (56.4)	2.9	1.5	31.1 (19.3)	92	45.3 (28.1)	31.6	1.5 (0.9)
SGP 5	2	103.2 (64.1)	3.2	1.6	32.2 (20.0)	68	51.6 (32.1)	21.2	1.1 (0.7)
SLMC 1	2	102.9 (63.9)	2.8	1.4	37.0 (23.0)	30	51.4 (31.9)	10.8	0.4 (0.2)
SWS 1	2	91.7 (57.0)	3.0	1.5	31.1 (19.3)	39	45.9 (28.5)	13.2	0.6 (0.4)
WCR 1	3	161.8 (100.5)	4.8	1.6	34.5 (21.4)	190	53.9 (33.5)	41.6	1.8 (1.1)
WCR 2	2	106.3 (66.1)	3.3	1.7	31.9 (19.8)	110	53.2 (33.1)	33.3	1.7 (1.1)
WCR 4	2	95.7 (59.5)	2.9	1.5	33.0 (20.5)	80	47.8 (29.7)	28.3	1.2 (0.7)
WCR 5	4	190.3 (118.2)	6.7	1.7	28.4 (17.6)	96	47.6 (29.6)	14.7	0.8 (0.5)
WCR 6	2	140.3 (87.2)	3.2	1.7	32.4 (20.1)	201	52.2 (32.4)	63.0	3.1 (1.9)
WP 1	1	51.5 (32.0)	1.6	1.6	31.5 (19.6)	63	51.5 (32.0)	38.6	2.0 (1.2)
Total	**73**	**3486.2 (2266.9)**	**123.6**			**4060**			
Mean	**2.6**	**50.0 (31.1)**	**4.4**	**1.7**	30.4 (18.9)	**145.0**	**50.0 (31.1)**	**32.5**	**2.0 (1.2)**