WISCONSIN BAT PROGRAM- Driving Acoustic Bat Survey Report 2018

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In Brief

- ***There were 96 acoustic bat driving surveys conducted by 55 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 sixth in a row, has consistently had the highest average bat calls per detector hour (65.3) when compared to all other ecological landscapes.***
- ***Ongoing decline: The proportion of little brown bat detections on driving surveys in 2018 was the lowest ever percentage recorded for this species at 5.8%, which was down 85% from pre-WNS average (38.1%).***

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 2018 survey season marks the sixth year conducting driving surveys. This report summarizes the methods and results from the driving survey transects that were conducted in Wisconsin in 2018 and compares this year's data to the previous five 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 as bats forage and navigate across the landscape. These echolocation calls are saved on either 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 directly to a compact flash card in a ultrasonic detector.

Surveyed routes in 2018 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 is required between replicates of the same transect. Routes were surveyed on evenings with weather conditions suitable for bat activity which included low wind (<30 mph), no precipitation and a daytime temperature of 50F or above (USFWS 2016). Survey equipment included the roof-mounted microphone, an AnaBat SD1/2 bat detector (Titley Scientific, Brendale, Australia), 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 4.1t) (Corben 2011). Surveys were manually filtered to separate files containing bat encounters and ignore those 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 has an extensive call library from which to reference. Files with bat encounters were then categorized into one of the following species or species group categories: (1) hoary-LACI (*Lasiurus cinereus*), (2) big brown-EPFU (*Eptesicus fuscus*), (3) silver-haired-LANO (*Lasionycteris noctivagans*), (4) eastern red-LABO (*L. borealis*), (5) eastern pipistrelle-PESU (*Perimyotis subflavus*), (6) little brown-MYLU (*Myotis lucifugus),* (7) northern long-eared-MYSE (*M. septentrionalis*), (8) evening bat-NYHU (*Nycticeius humeralis*), (9) big brown/silver-haired, (10) eastern pipistrelle/eastern red/evening bat, (11) little brown/northern long-eared, (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 (fragmented), the bat pass did not contain search-phase calls, or general uncertainty. To compare our results year-to-year and to other state-wide acoustic inventories, results were evaluated using a bat encounters-per-detector-hour metric to mitigate for variations in driving speeds among surveyors.

Table 1. 16 Ecological Landscapes in Wisconsin and associated abbreviations.

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

Results

There were 96 surveys conducted by 55 individuals from Wisconsin Department of Natural Resources, Bad River Natural Resources Department (Tribal), U.S. Forest Service and citizen volunteers. The 96 completed surveys was the best effort of these driving transects (92-2017, 71- 2016, 77-2015, 77-2014, 92-2013). At the time of writing, five surveys from NWS1 (n=3) and NWL2 (n=2) were outstanding and not included in this summary. Of the 96 routes, 49.1 kilometers (30.5 mi) was the mean survey length, with the greatest distance being 73.1 km (45.4 mi) (NCF4) and the shortest distance being 31.4 km (19.5 mi) (SGP1). There was at least one route driven in each ecological landscape, except for the Northwest Lowlands, and valid data completed for 32 of the 38 routes. Routes without data included FT4, SCP1, NCF 4, NWS1, NWL1 and NWL2. Technical issues ranged from loss of GPS data to surveyor error when setting the record options. In total, 27,450 files were recorded on 96 surveys and 5,202 files (18.9%) were identified as bat encounters. Surveys had a mean of 32.2 bat calls per detector-hour, with a minimum bat calls per-detector hour of 5.4 (NWS2 on 14 June) and a maximum of 108.6 (FT5 on 10 July). For six consecutive years, Central Sand Hills region had the highest average bat calls per detector hour (2013: 81.2, 2014: 75.4, 2015: 100.81, 2016: 96.21, 2017: 76.1 and 2018: 65.4; see Fig. 1) and the Northwest Sands region had the lowest average bat calls per detector hour (2018: 14.4). The number of call files per completed survey had a mean of 54.2 and ranged from 9 (NWS2 on 14 June) to 181 (FT5 on 10 July). The number of mean bat calls per survey was the second lowest since the surveys began in 2013. Over half of the 2018 surveys (57.3%) had number of encounters ranging from 1-50, while the remaining encounters fell into the 51-100 (33.3%) or 101-175 category (9.4%) (Figure 4).

Of the 5,202 encounters, 2,113 (40.6%) were classified into species groups: high frequency group (456), low frequency group (976), big brown/silver-haired (387), eastern red/eastern pipistrelle/evening bat (248) and little brown/northern long-eared (46) because the bat passes have similar characteristics to two or more species. The remaining 3,089 (59.3%) files were classified as big brown (1,659), eastern red (591), hoary (601), little brown (180), silver-haired (57), eastern pipistrelle (1), evening (0) and the northern long-eared bat (0). Among the 15 ecological regions for which data was collected, big brown bats (n=11 regions) were the most commonly encountered species followed by the hoary bat (n=2 regions) and eastern red bat (n=2 regions) (Fig. 7; Table 2). Of note, the little brown bat was the most commonly encountered species in six ecological landscapes when the driving surveys began in 2013.

Mean Bat Calls Per Detector Hour

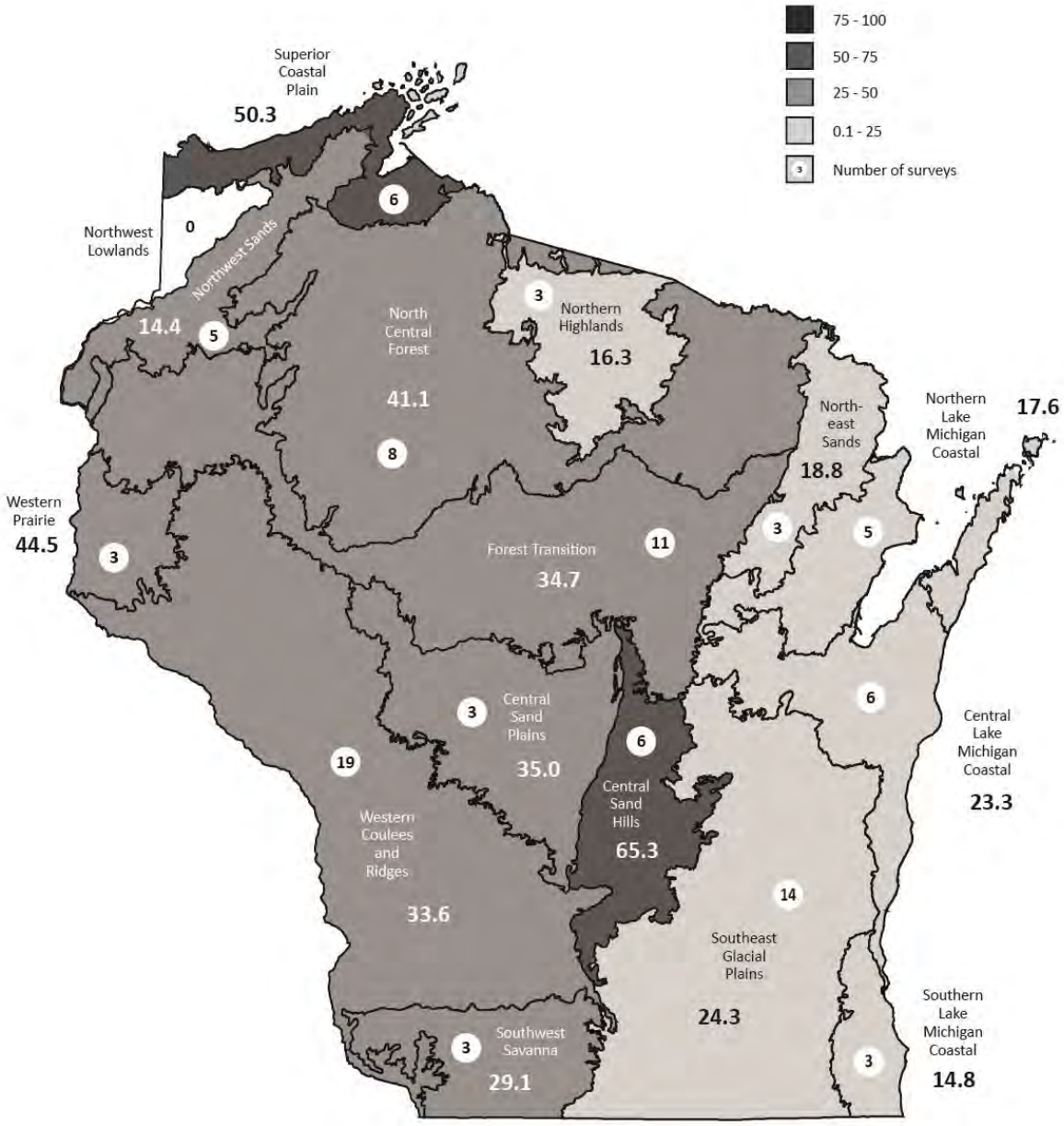


Figure 1. For the sixth year in a row, the highest mean bat calls per detector hour was the Central Sand Hills at 65.3 calls/detector/hour. Mean calls per detector hour across all landscapes was 32.2.

Figure 2. Total number of surveys by week and mean number of bat calls per survey by week, 2018.

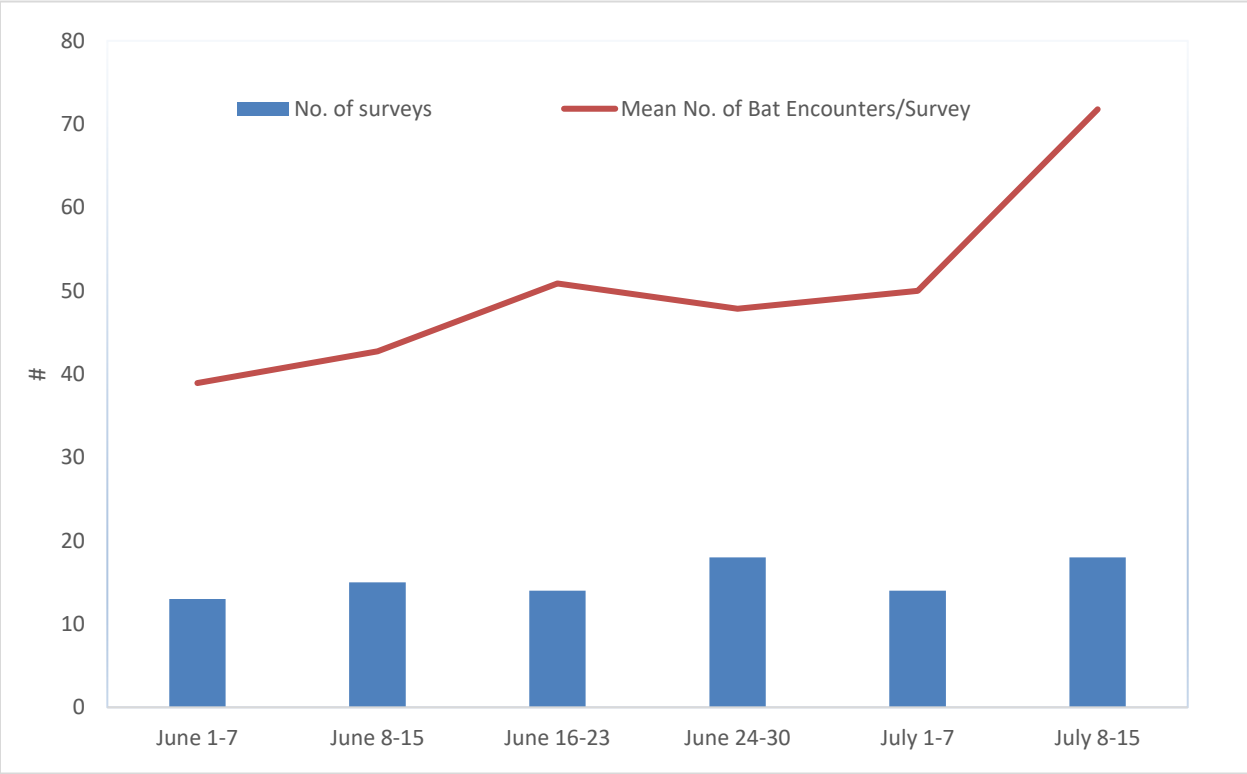


Figure 3. Comparison of mean bat calls per survey for each sampling period from 2013-2018 driving routes. Numbers in brackets indicate sample size. Boxes depict the 25th and 75th percentiles, lines within boxes mark the median, whiskers represent 95th and the 5th percentiles.

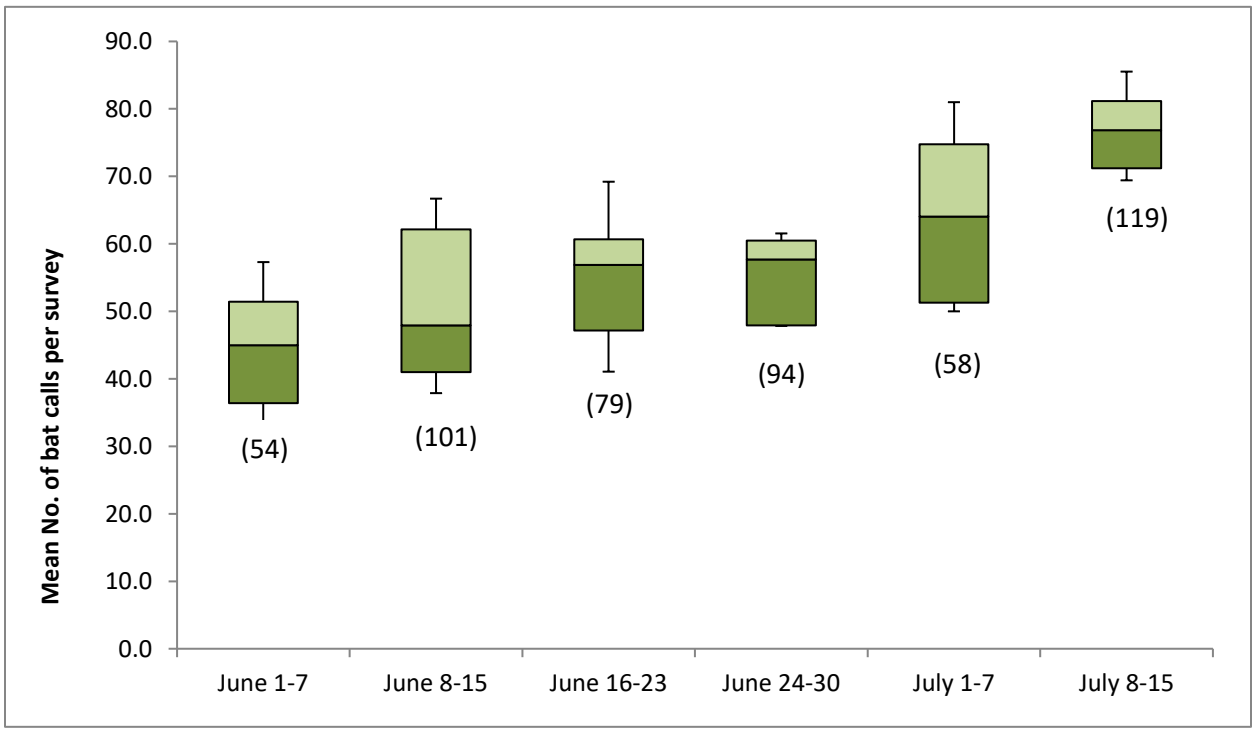


Figure 4. Proportion of driving surveys in each bat encounter category from 2013-2018.

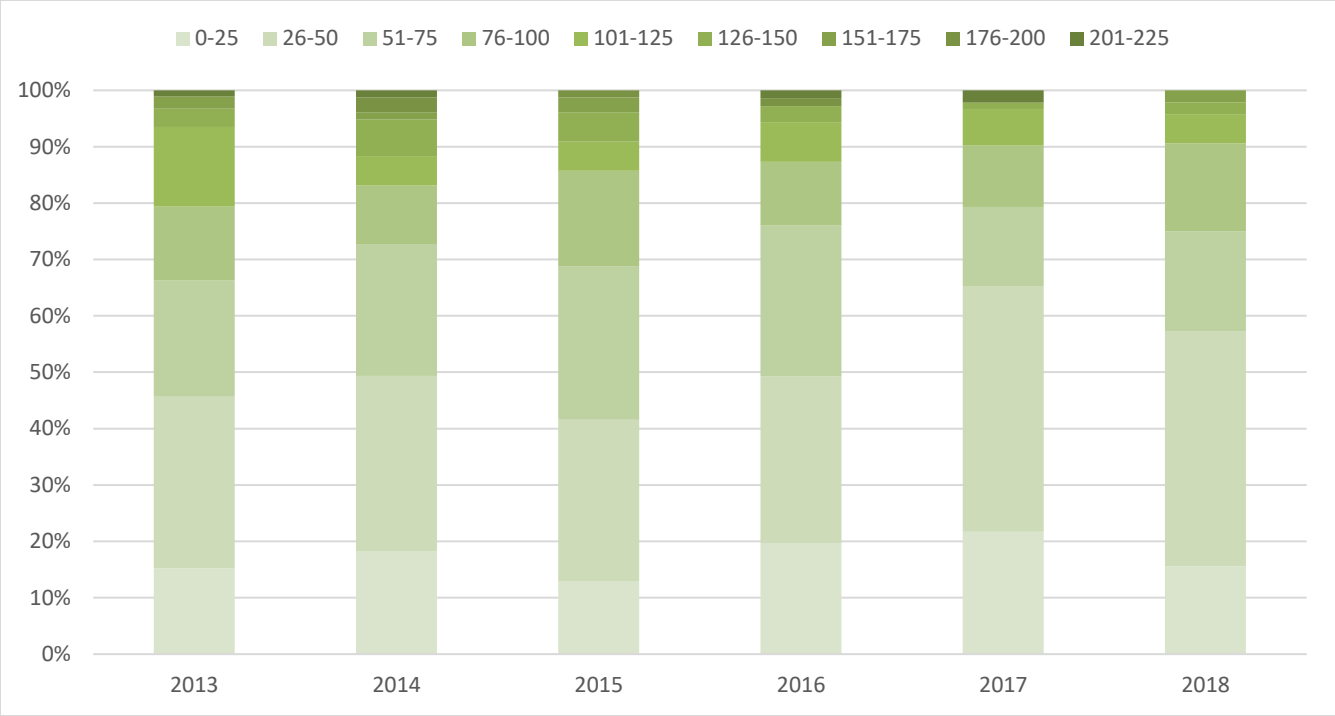


Figure 5. Relative abundance of bat species on driving transects from 2013-2018. Three infrequently detected species were omitted from chart (northern long-eared bat, eastern pipistrelle and evening bat); none of which ever registered a value higher than 0.5%.

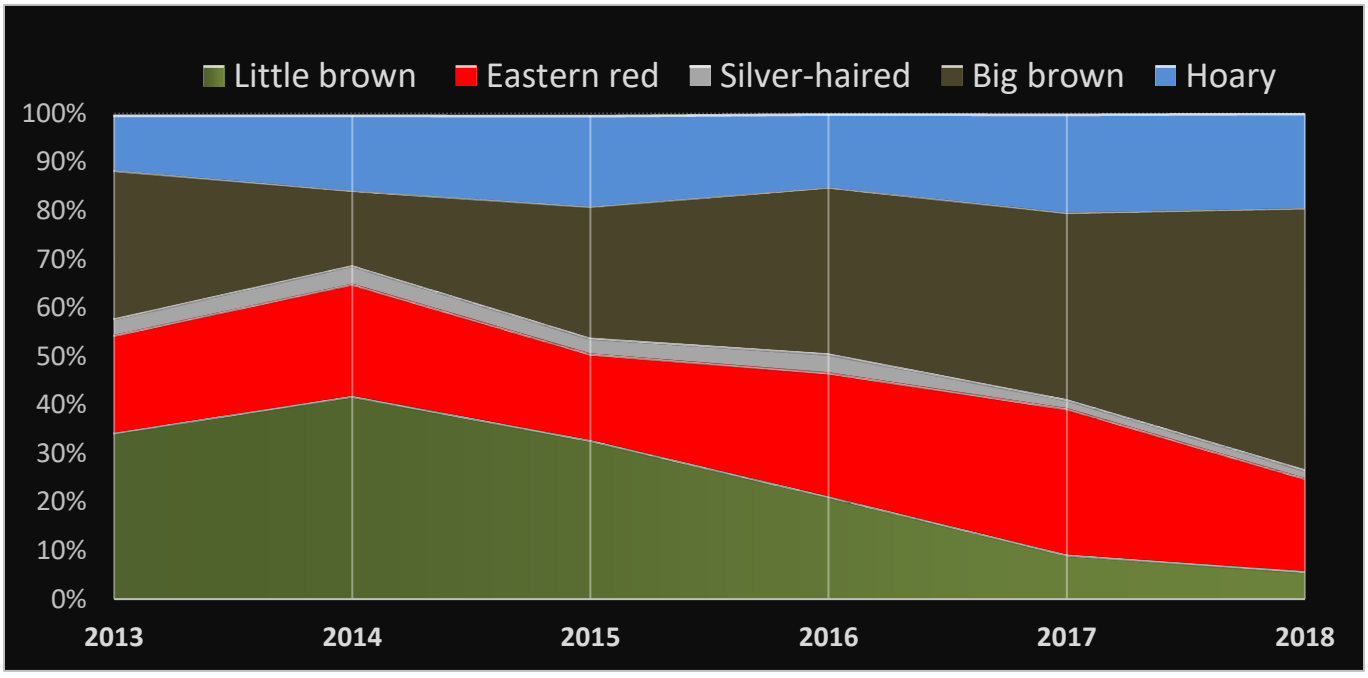
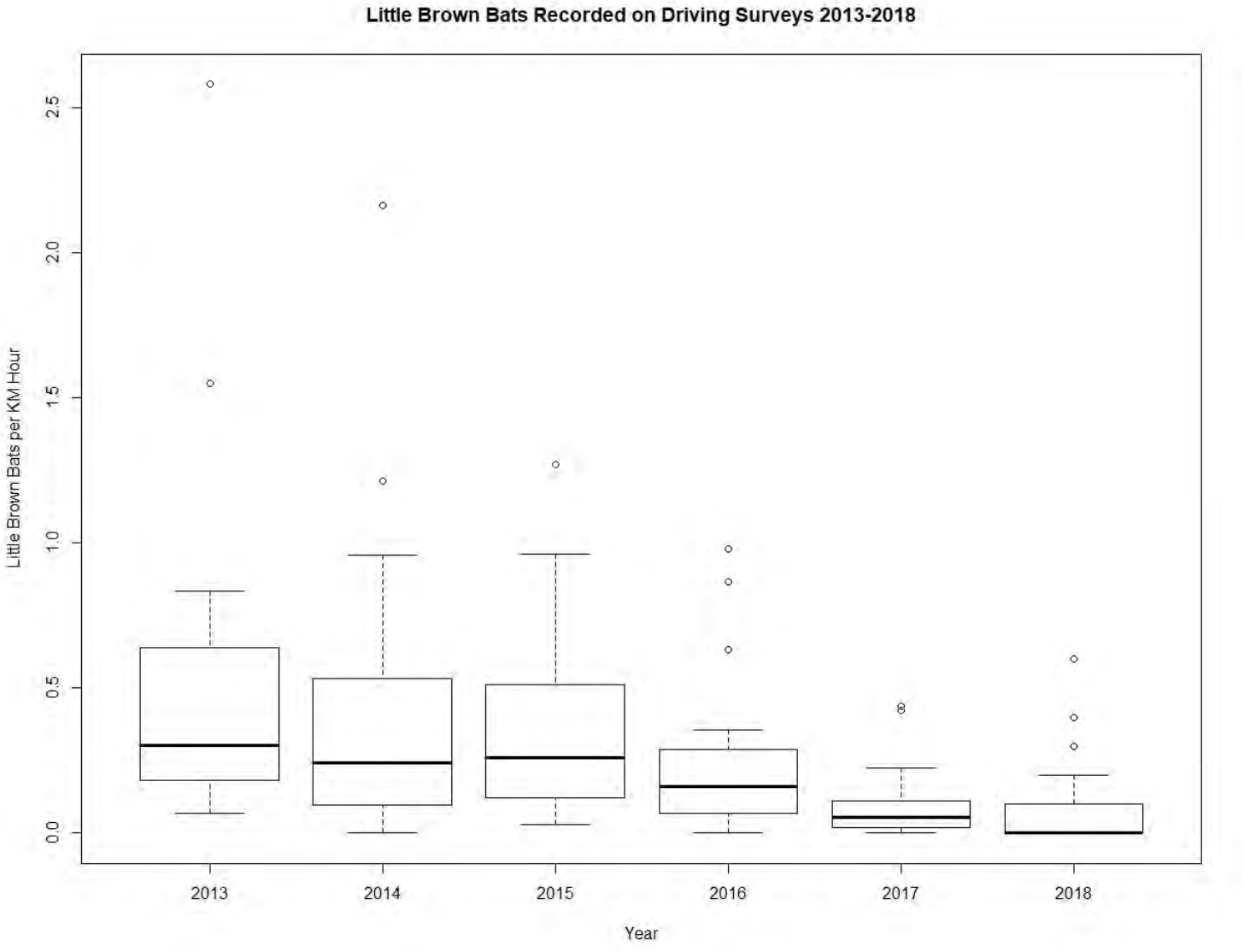


Figure 6. Little brown bat encounters per kilometer hour. The bar is median, the outside edges of the boxes are 1st and 3rd quartiles and the whiskers are, upper whisker = Q_3 + 1.5 * IQR, lower whisker = min. IQR is interquartile range.



Most Common Bat Species by Ecological Region

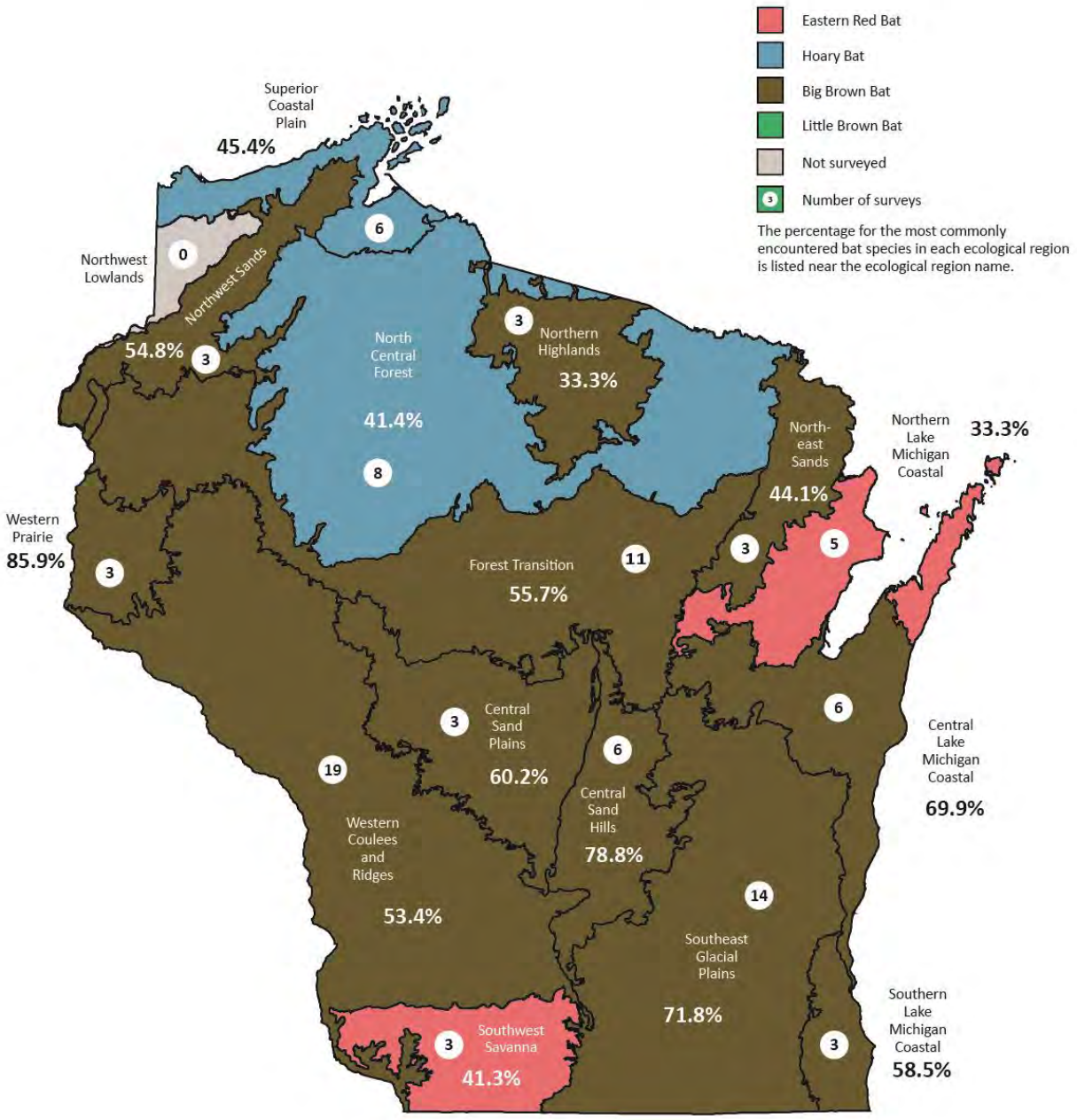


Figure 7. The most commonly encountered bat species by ecological region were the eastern red bat (2) hoary bat (2) and the big brown bat (11).

Figure 8. Mean bat calls per detector hour by ecological landscape (2013-2018). Numbers in brackets indicate number of surveys per ecological landscape. Boxes depict the 25th and 75th percentiles, lines within boxes mark the median, whiskers represent 95th and the 5th percentiles.

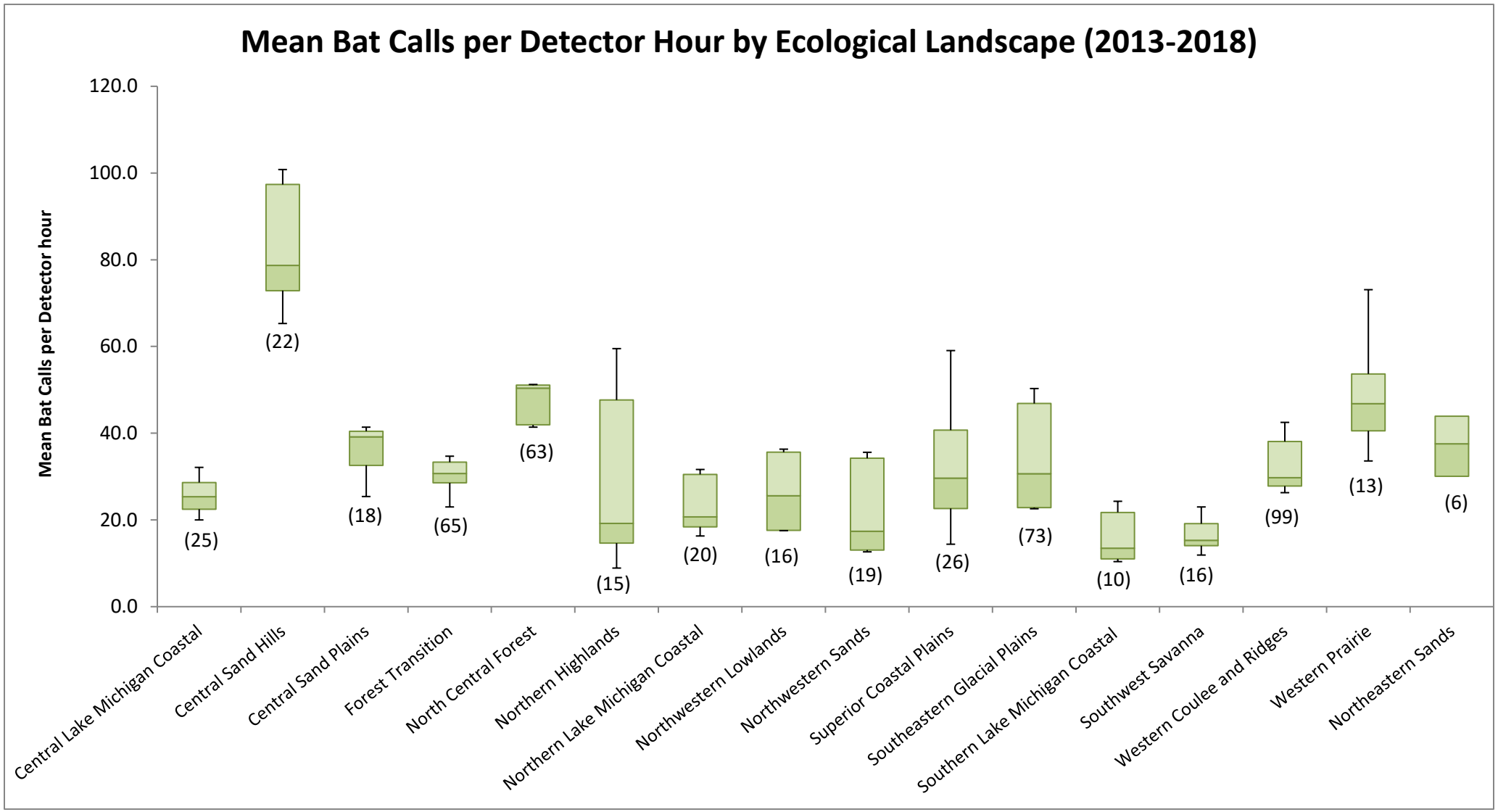


Table 2. Mean number of encounters by species or species group per route during driving acoustic surveys in Wisconsin, June-July 2018. The category "All bats" represents total mean encounters of all species and species groups per route. Data are listed in an approximated north-to-south direction by, and within, ecological region.

Location	No. Surveys	Big brown	Hoary	Eastern red	Silver-haired	Little brown	Eastern Pipistrelle	Northern long-eared	Evening	Little brown / Northern long-eared	Eastern red /Eastern pipistrelle / Evening	Big brown/ Silver-haired	Unclassified	All Bats
Central Lake Michigan Coastal														
CLMC1	3	18.3	5.3	4.3	0.0	0.3	0.0	0.0	0.0	0.0	0.7	2.3	8.2	**47.7**
CLMC2	3	15.0	2.0	1.7	0.0	0.7	0.0	0.0	0.0	0.0	1.0	1.0	3.3	**28.0**
Central Sand Hills														
CSH1	6	67.0	3.3	8.0	0.0	7.3	0.0	0.0	0.0	0.7	3.7	11.7	12.8	**110.8**
Central Sand Plains														
CSP1	3	21.7	6.7	6.3	0.0	1.3	0.0	0.0	0.0	0.7	2.3	4.0	7.7	**58.3**
Forest Transition														
FT1	3	4.0	14.0	19.7	0.0	4.7	0.0	0.0	0.0	1.7	9.7	1.3	13.2	**81.3**
FT2	2	31.0	2.0	7.5	0.0	0.5	0.0	0.0	0.0	0.5	6.5	9.5	5.5	**68.5**
FT3	3	6.7	3.7	2.3	0.7	0.3	0.0	0.0	0.0	0.0	0.7	1.7	3.8	**23.7**
FT5	3	46.7	2.7	4.7	1.3	1.3	0.0	0.0	0.0	0.0	2.7	9.3	10.8	**90.3**
North Central Forest														
NCF1	2	1.0	6.5	7.0	1.5	10.0	0.0	0.0	0.0	3.0	2.5	2.0	7.0	**47.5**
NCF3	3	12.0	13.7	13.3	0.7	1.7	0.0	0.0	0.0	0.3	7.0	6.3	14.8	**84.7**
NCF4	3	4.3	21.3	8.0	0.0	2.7	0.0	0.0	0.0	0.7	1.0	7.0	14.0	**73.0**
Northeastern Sands														
NES	3	8.7	6.0	4.0	0.0	1.0	0.0	0.0	0.0	0.7	2.0	0.3	4.0	**30.7**
Nothern Highlands														
NH1	3	5.3	5.0	2.0	0.7	3.0	0.0	0.0	0.0	1.3	0.7	1.0	3.7	**26.3**
Northern Lake Michigan Coastal Region														
NLMC1	2	11.0	1.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.0	3.0	**24.5**
NLMC2	3	0.3	2.0	5.3	0.0	4.7	0.0	0.0	0.0	1.3	2.3	0.3	8.2	**32.7**
Northwest Sands														
NWS2	3	5.7	1.0	3.7	0.0	0.0	0.0	0.0	0.0	0.3	0.0	4.0	2.7	**20.0**
Superior Coastal Plain														
SCP2	3	10.7	9.3	5.0	1.3	2.0	0.0	0.0	0.0	1.0	1.3	9.0	5.7	**51.0**
SCP3	3	9.0	33.0	7.3	11.0	4.7	0.0	0.0	0.0	0.0	4.0	6.3	12.0	**99.3**
Southeast Glacial Plains														
SGP1	3	22.0	1.7	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.3	3.3	6.5	**43.3**
SGP2	3	7.3	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	2.0	2.7	**22.3**
SGP3	2	18.5	2.5	2.5	0.0	0.5	0.0	0.0	0.0	0.5	0.0	2.0	5.3	**37.0**
SGP4	3	14.7	5.0	3.7	0.0	0.0	0.0	0.0	0.0	0.7	2.3	3.0	4.0	**37.3**
SGP5	3	21.7	3.7	5.7	0.0	1.3	0.0	0.0	0.0	0.0	2.7	5.3	7.2	**54.7**
Southern Lake Michigan Coastal														
SLMC1	3	8.0	2.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	4.8	**26.7**
Southwest Sands														
SWS1	3	14.7	6.3	15.0	0.0	0.3	0.0	0.0	0.0	0.0	2.7	3.0	6.8	**55.7**
Western Coulee and Ridges														
WCR1	3	34.7	5.3	8.0	0.0	2.0	0.0	0.0	0.0	0.0	4.3	2.3	7.8	**72.3**
WCR2	3	21.3	6.3	1.7	0.3	0.3	0.3	0.0	0.0	0.0	1.0	3.0	7.2	**48.7**
WCR3	3	16.7	4.7	4.3	1.3	0.3	0.0	0.0	0.0	0.0	1.0	4.7	5.3	**43.7**
WCR4	4	17.8	3.5	2.8	0.0	0.0	0.0	0.0	0.0	0.0	1.8	3.0	6.0	**40.8**
WCR5	3	10.0	6.3	5.0	0.0	0.7	0.0	0.0	0.0	0.0	1.3	1.7	5.0	**35.0**
WCR6	3	7.3	13.0	28.0	0.0	3.0	0.0	0.0	0.0	2.3	11.3	3.0	12.2	**92.3**
Western Prairie														
WP1	3	26.3	0.3	0.7	0.0	3.3	0.0	0.0	0.0	0.3	1.7	8.7	9.7	**60.7**

Discussion

Surveyors drove over 4,700 kilometers (2,900 miles) on Wisconsin roads while surveying acoustic bat driving transects. Species encounter rates varied by ecological region with the highest mean encounter rate of big brown bats (42.7) on Forest Transition route 1 (Table 2). The most commonly encountered species on driving transects when combining ecological regions were big brown bats (6.2/detector/hr), eastern red bats (4.9/detector/hr), hoary bats (3.3/detector/hr) and little brown bats (1.5/detector/hr). Although the percentage of encounters per species varied by ecological region as seen in Appendix 2 (Figures 9-15), in general the tree bat species (eastern red bat, silver-haired bat and hoary bat) were more commonly observed in the northern third of Wisconsin.

As stated in previous reports (WDNR 2013 -2017), the driving method in not an effective strategy to assess eastern pipistrelle and northern long-eared bat population trends. Both species accounted for only 0.03% or 1 of 3,089 labeled bat passes in the 2018 dataset. While these two bat species are extremely susceptible to white-nose syndrome (WNS; Frick et al. 2010), the fact remains that habitat preferences (for example aversion to roads) and call characteristics (Braun de Torrez 2017, Whitby 2013) also compounds detectability, thus there is a need to rely on other survey methods to monitor these species.

Table 3. A comparison of mean number of bat calls per detector by ecological landscape (2013-2018), including total number of surveys completed in each year. For regions that were not surveyed that year, data are not available (N/A).

Ecological Landscape	2013	2014	2015	2016	2017	2018	SD (S.E.)
CLMC	27.0 (4)	27.5 (3)	32.1 (3)	20.0 (4)	23.7 (5)	23.3 (6)	4.2 (1.7)
CSH	81.3 (3)	75.4 (3)	100.8 (3)	96.2 (3)	76.1 (3)	65.3 (6)	13.5 (5.5)
CSP	40.2 (3)	38.8 (3)	39.6 (3)	41.4 (3)	25.4 (3)	35.0 (3)	6.0 (2.4)
FT	30.4 (12)	32.9 (10)	30.7 (12)	23.0 (9)	30.7 (11)	34.7 (11)	4.0 (1.6)
NCF	51.0 (8)	49.8 (12)	51.2 (12)	51.0 (11)	42.1 (12)	41.4 (8)	4.7 (1.9)
NES	33.0 (1)	N/A	N/A	29.1 (1)	42.1 (1)	18.8 (3)	7.3 (3.6)
NH	59.5 (1)	43.7 (2)	16.6 (3)	19.6 (3)	8.9 (3)	16.3 (3)	19.4 (7.9)
NLMC	20.7 (4)	31.6 (4)	29.4 (3)	N/A	20.5 (4)	17.6 (5)	6.5 (2.9)
NWL	36.3 (4)	17.5 (3)	35.4 (3)	27.5 (3)	23.6 (3)	NA	8.3 (3.4)
NWS	32.8 (5)	17.4 (1)	12.6 (3)	13.5 (3)	35.6 (4)	14.4 (3)	11.0 (4.9)
SCP	27.2 (4)	59.1 (4)	32.1 (5)	34.6 (3)	25.4 (4)	50.3 (6)	14.9 (6.1)
SGP	29.7 (15)	22.6 (9)	45.7 (8)	31.6 (11)	22.9 (16)	24.3 (14)	11.6 (4.8)
SLMC	12.8 (3)	10.4 (3)	14.1 (1)	N/A	N/A	14.8 (3)	6.1 (3.1)
SWS	14.8 (3)	17.8 (3)	23.0 (2)	11.9 (2)	15.8 (3)	29.1 (3)	3.8 (1.5)
WCR	42.5 (19)	26.3 (16)	36.6 (15)	30.4 (14)	28.3 (16)	33.6 (19)	6.1 (2.5)
WP	46.7 (3)	46.9 (2)	42.9 (1)	73.1 (1)	47.2 (3)	44.5 (3)	13.1 (5.4)
Mean (Total #)	***36.9 (92)***	***34.5 (78)***	***38.5 (77)***	***34.3 (71)***	***30.6 (92)***	***31.7 (96)***	***8.6 (3.6)***

The relative abundance of bat species (Figure 5) observed on these driving surveys illustrates that little brown bats, which, at one time comprised of 41.9% of all bat activity in 2014 has plummeted to historic lows. Their echolocation calls now only represent 5.8% of all bat species recorded. Showing a similar trend but looking at a different metric of abundance in Figure 6, the median is now at zero, compared to slightly above in 2017. Of the other bat species detected, particularly the migratory tree bats (eastern red, silver-haired, Hoary) their detections levels have remained relatively constant since the onset of these surveys with low standard deviations of 0.04, 0.01 and 0.03, respectively.

Perhaps the best results noted in this analysis relates to big brown bat detections, showing an increase in relative abundance from the 38.3% in 2017 to 53.7% in 2018. The moderate increase in big brown bat detections is something the WBP will continue to monitor and may mirror similar trends found in other post-WNS landscapes. Pettit and O'Keefe (2017) described an 11.5% increase in capture rates for this species; an increase they suggest may be related to fewer WNS-affected bats using the airspace around mist-nets. Others hypothesized that increased capture rates for some bat species could be associated with a decrease in competition with the collapse of cave bat populations (Francl et al. 2012; Ford et al. 2011).

The acoustic driving surveys remain an important tool in which the Wisconsin Bat Program can use to assess bat species distribution and occupancy in Wisconsin. For some bat species, driving transects surveys are the only effective means by which to monitor inconspicuously-roosting animals. For example, our migratory bat species do not form summer *or* winter colonies, a behavior which can make animal populations easier to locate and monitor over time. These surveys provide the best available method to monitor their relative abundance from year to year. From these data, Hoary and eastern red bats are found throughout the state; Hoary bats are more prevalent in the northern third of the state as is the silver-haired bat. Their populations appear to be stable through this analysis but the WBP will continue to closely monitor this cohort as they are particularly susceptible to mortality at wind energy facilities (Frick et al. 2017).

Acknowledgements

The Wisconsin Bat Program would like to recognize and dedicate this report to Mr. Ray Jay for his commitment to the acoustic bat monitoring project. Ray and his wife, Terri surveyed route NCF 2 until 2018, when he passed away. His devotion to the citizen-science, particularly the acoustic bat project, was admirable and we can't thank Ray and his family enough for all their help on this project.

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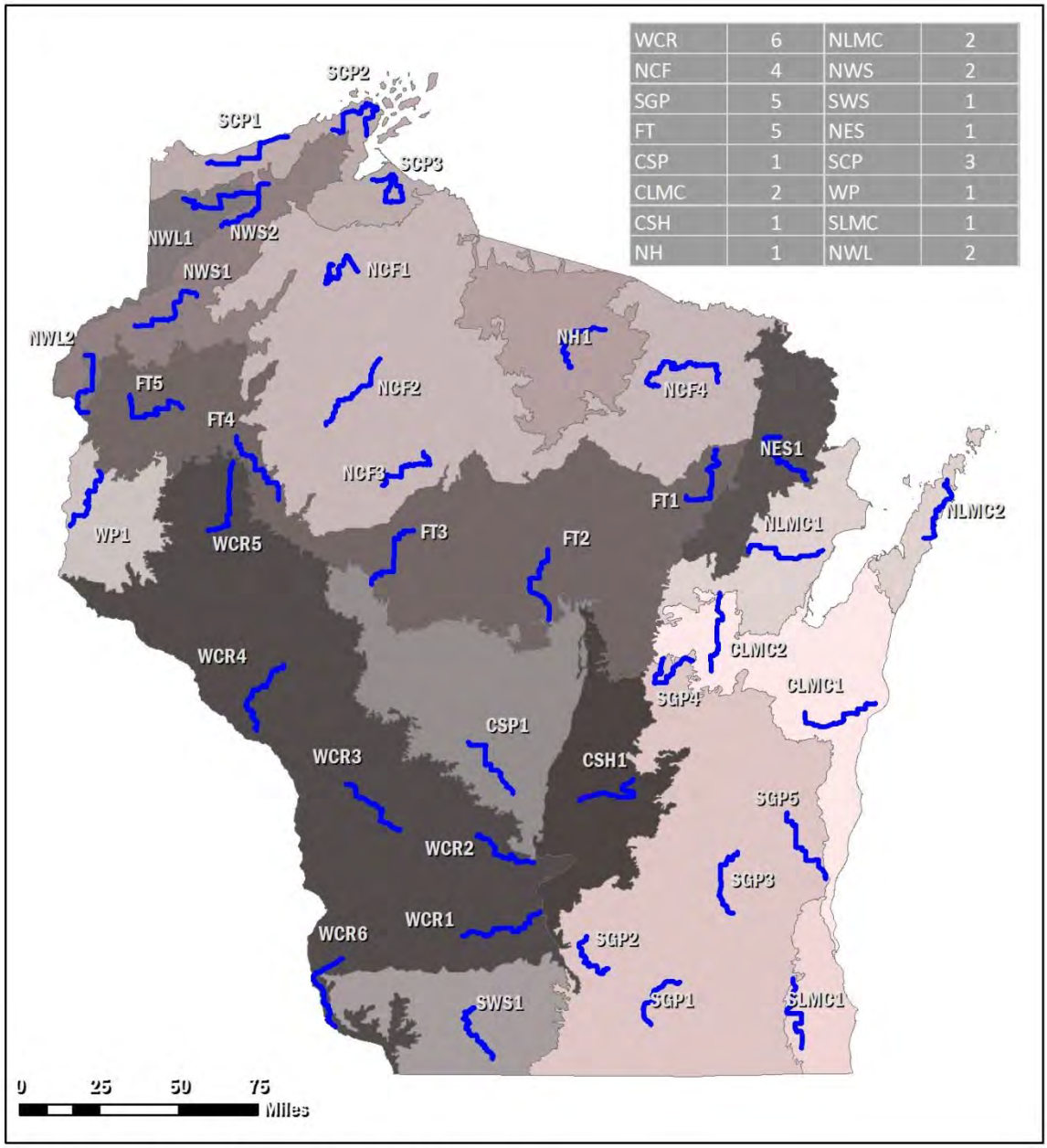
Appendix 1 Acoustic Bat Driving Transects by Ecological Landscape



Ecological Landscapes: Central Lake Michigan Coastal (CLMC), Central Sand Hills (CSH), Central Sand Plains (CSP), Forest Transition (FT), North Central Forest (NCT), Northeast Sands (NS), Northern Highland (NH), Northern Lake Michigan Coastal (NLMC), Northwest Lowlands (NL), Northwest Sands (NS), Southeast Glacial Plain (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 9-15) Bat species encounter by ecological landscape

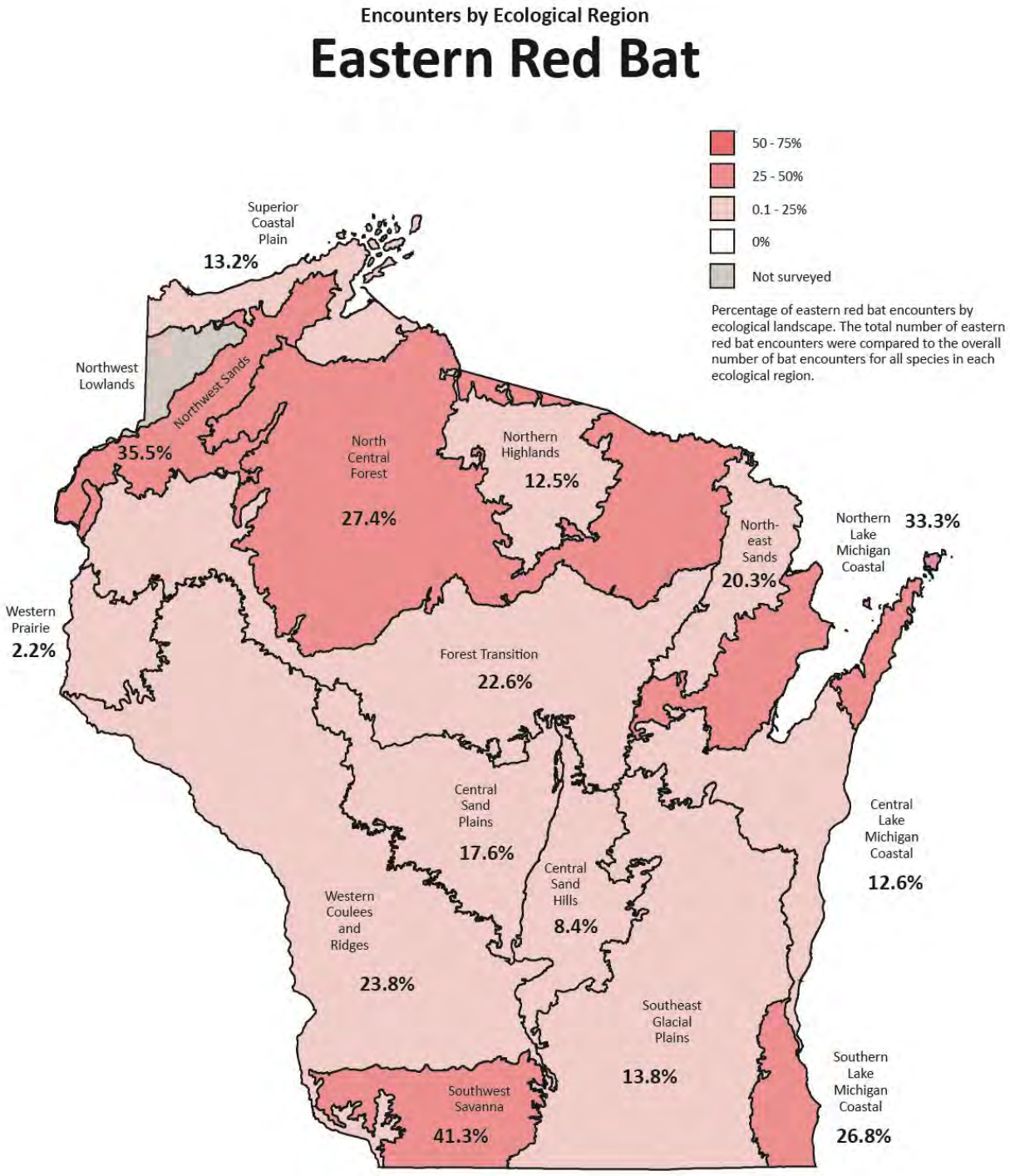


Figure 9. The eastern red bat encounters accounted for 19.1% of all recorded bat passes during driving surveys in 2018.

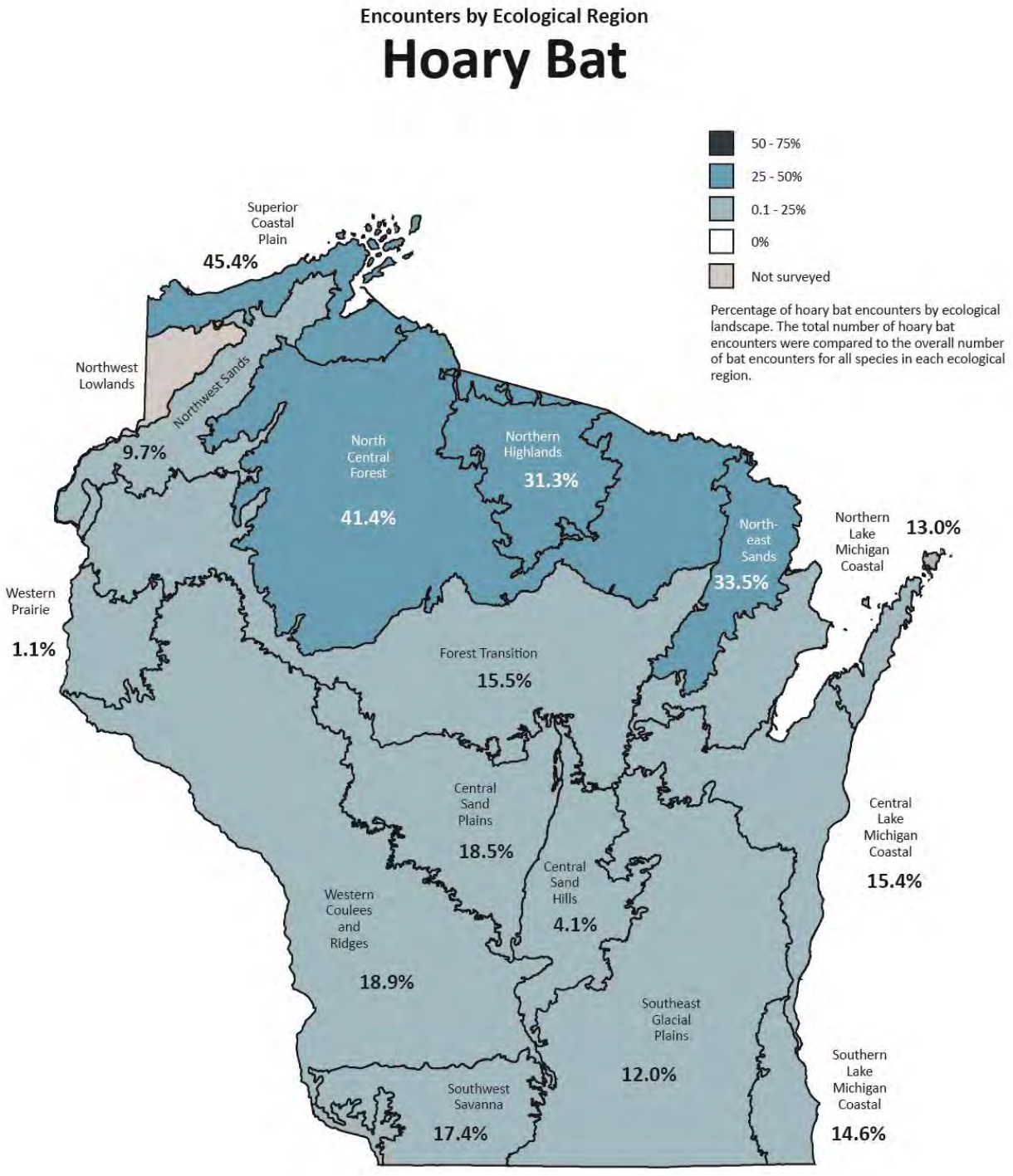


Figure 10. The hoary bat accounted for 19.5% of all bat encounters recorded during driving surveys in 2017.

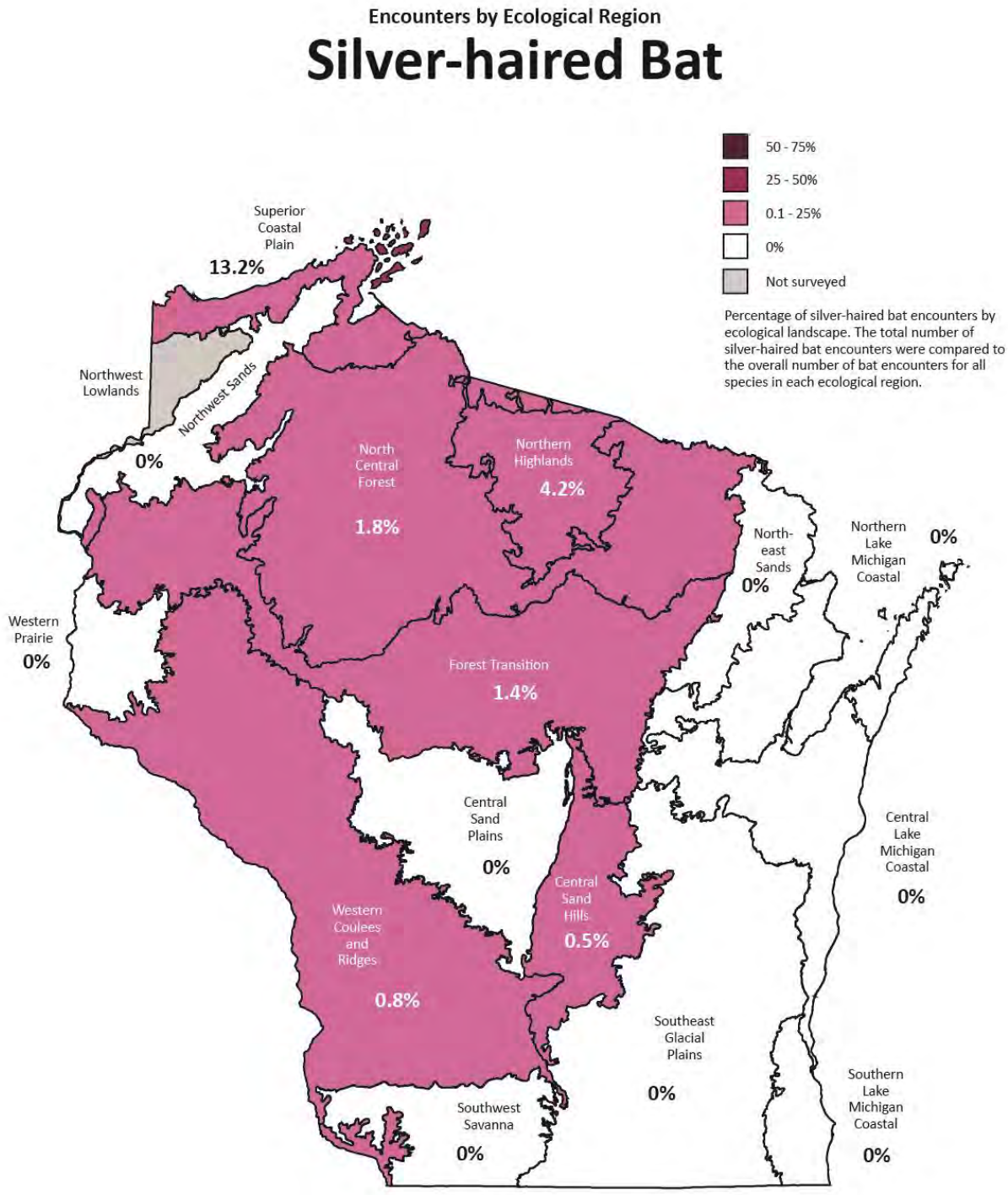


Figure 11. Silver-haired bat encounters accounted for 1.8% of all encounters recorded during driving surveys in 2018.

Figure 12. The little brown bat encounters accounted for 5.8% of all bat encounters recorded during driving surveys in 2018. Of note, little brown bat comprised 34.3% of all encounters in 2013 driving surveys.

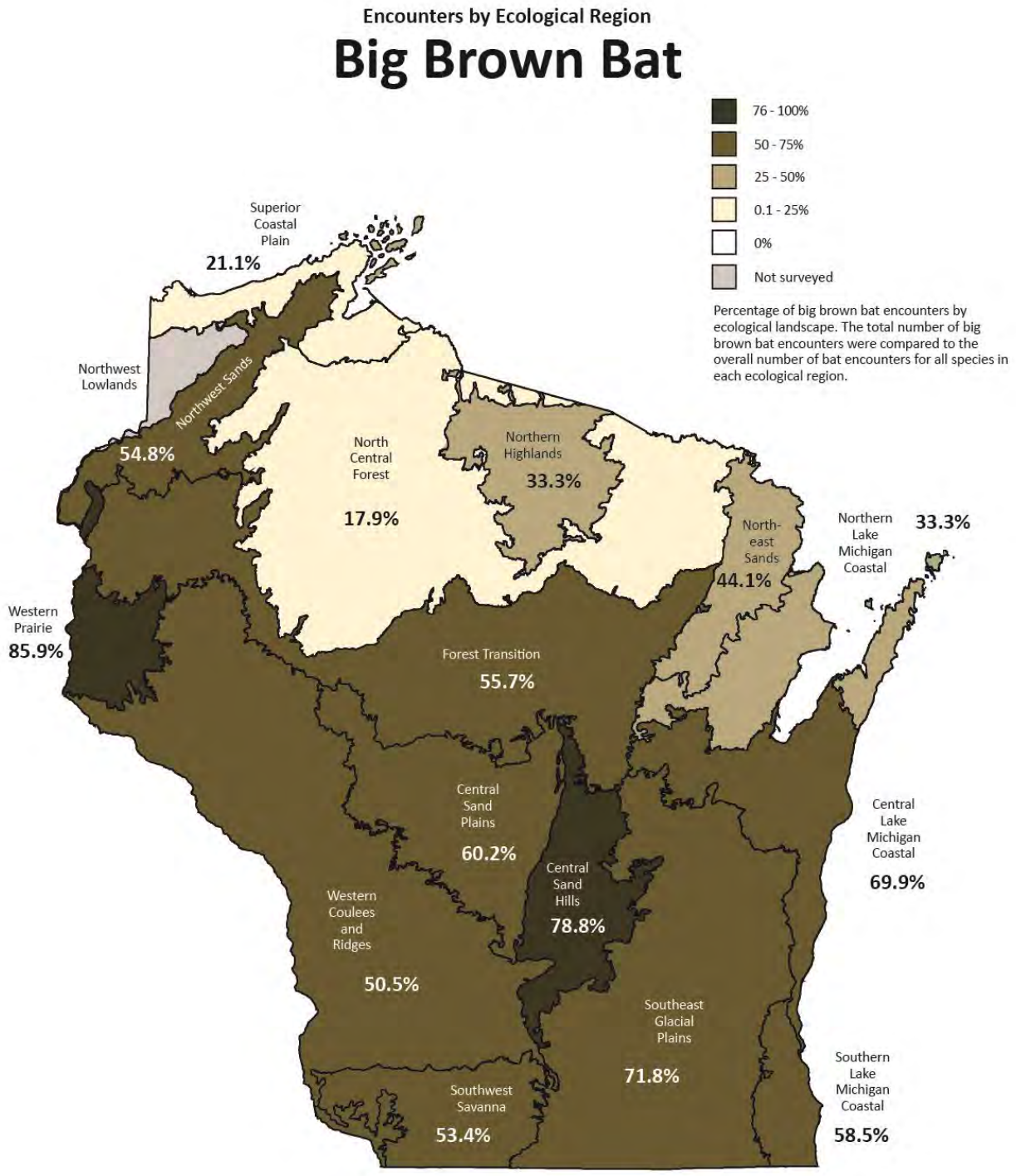


Figure 13. The big brown bat had the highest encounter rate (85.9%) in Western Prairie region, and comprised 53.7% of all bat encounters during driving surveys in 2018.

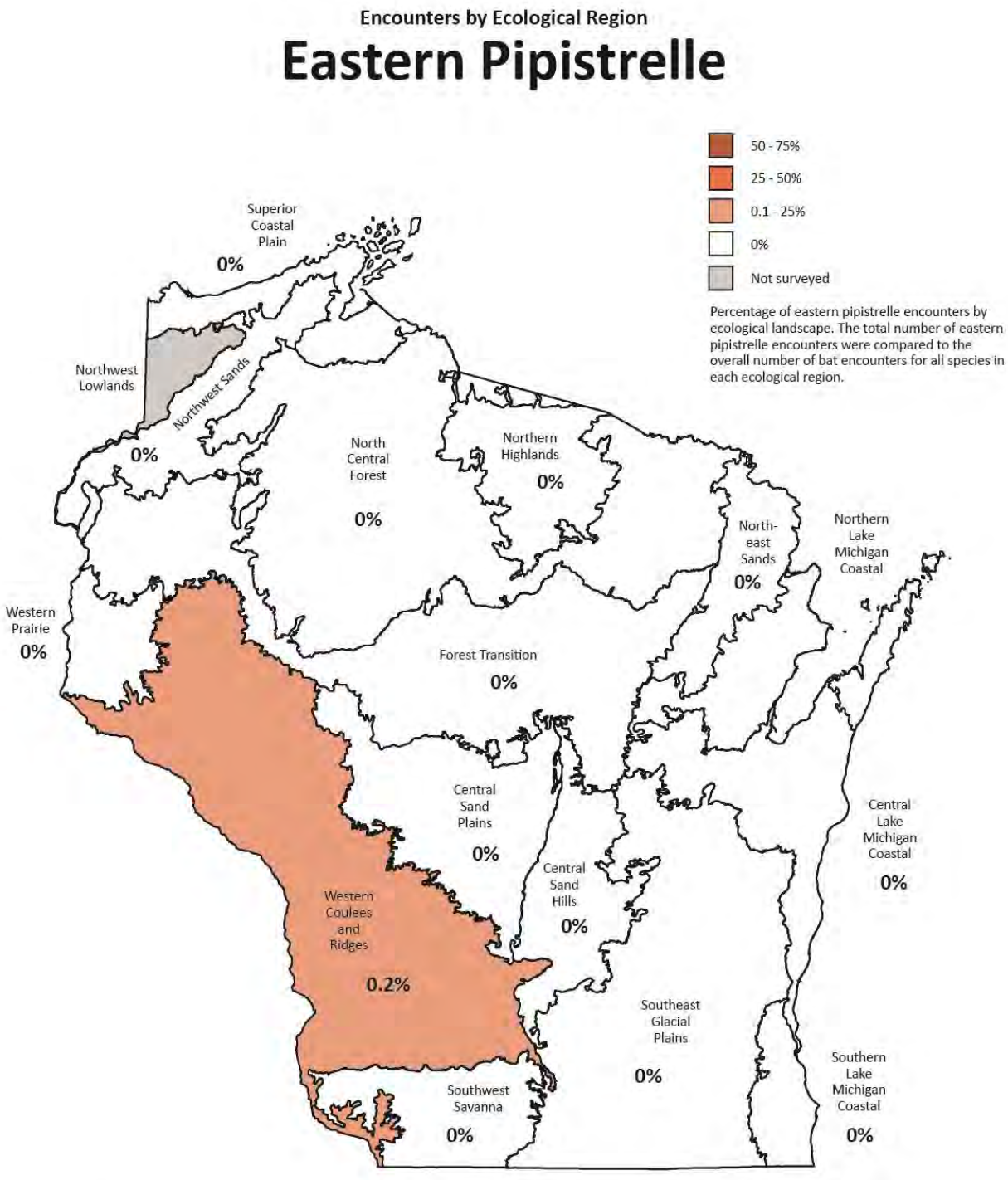


Figure 14. The eastern pipistrelle was recorded in only the Western Coulees and Ridges region. Eastern pipistrelle accounted for less than 0.1% of all recorded bat passes during driving surveys in 2018.

Encounters by Ecological Region

Northern Long-eared Bat

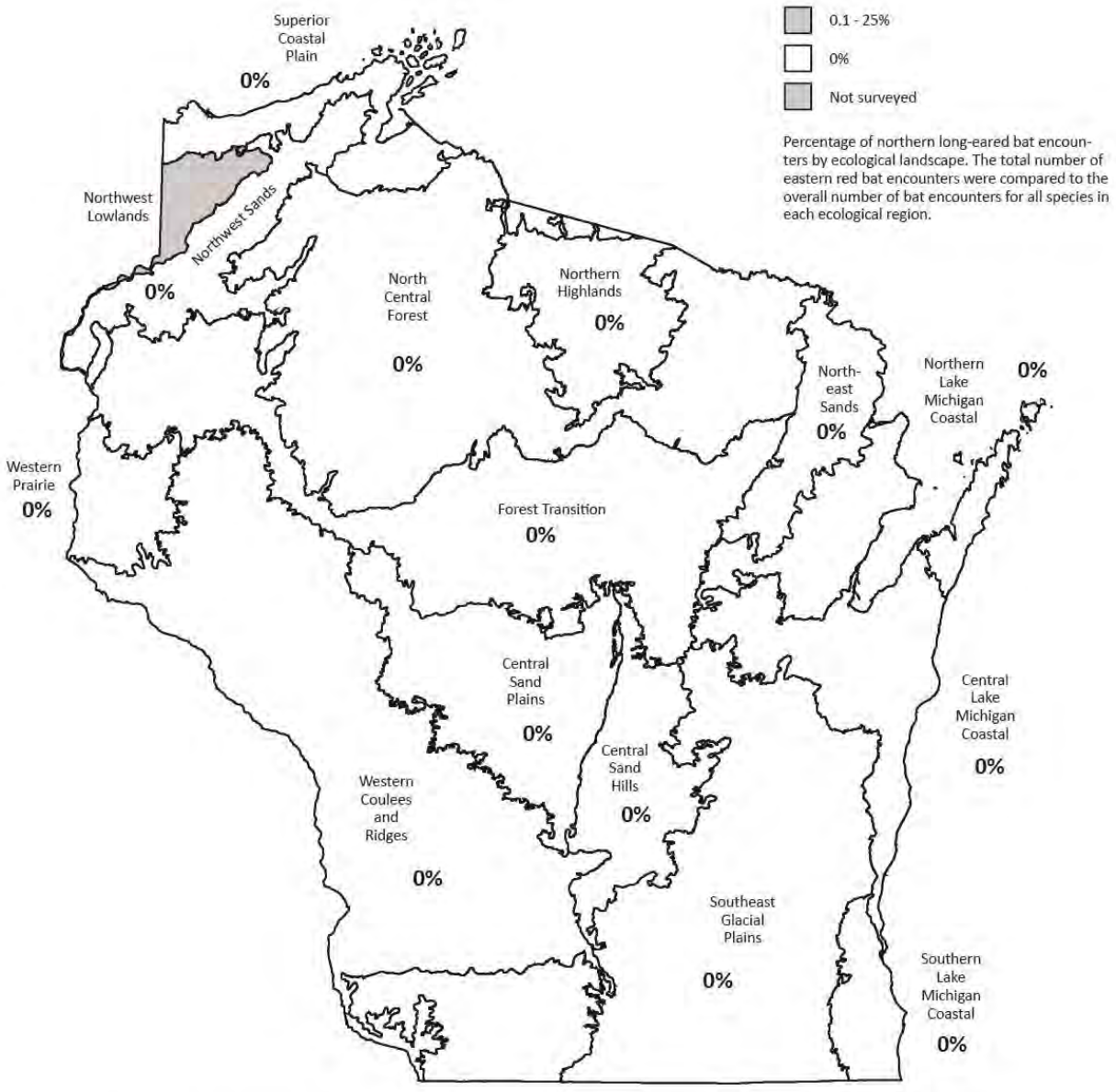


Figure 15. The northern long-eared bat was not observed during acoustic driving surveys in 2018.

Appendix 3 Table 4. Driving acoustic bat surveys (n=96) conducted in Wisconsin, June-July 2018.

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	154.6 (96.1)	4.9	1.6	31.4 (19.5)	143	51.5 (32.0)	29.4	1.5 (2.4)
CLMC 2	3	154.7 (96.1)	5.0	1.7	31.2 (19.4)	84	51.6 (32.0)	17.3	0.9 (1.4)
CSH 1	6	286.6 (178.1)	10.7	1.8	27.5 (17.1)	665	47.8 (27.9)	65.3	4.1 (6.6)
CSP 1	3	134.1 (83.3)	5.0	1.7	27.0 (16.8)	175	44.7 (27.8)	41.8	2.2 (3.5)
FT 1	3	149.1 (92.6)	4.9	1.6	30.4 (18.9)	244	49.7 (30.9)	50.2	2.7 (4.3)
FT 2	2	106.9 (66.4)	3.8	1.9	28.7 (17.8)	137	53.5 (33.2)	35.1	2.6 (4.2)
FT 3	3	145.3 (90.3)	5.6	1.9	26.5 (16.5)	71	48.4 (30.1)	12.7	0.9 (1.5)
FT 5	3	150.8 (93.7)	6.0	2.0	27.3 (17.0)	271	50.3 (31.2)	40.8	4.3 (6.9)
NCF 1	2	94.4 (58.6)	4.2	2.1	23.0 (14.3)	95	47.2 (29.3)	22.6	2.1 (3.4)
NCF 3	3	144.1 (89.6)	5.0	1.7	29.1 (18.1)	254	48.0 (29.9)	52.1	2.9 (4.7)
NCF 4	3	219.2 (136.2)	5.3	1.8	41.9 (26.0)	219	73.1 (45.4)	42.5	1.7 (2.8)
NES 1	3	13.5 (83.7)	5.0	1.7	27.4 (17.1)	92	44.9 (27.9)	18.8	1.1 (1.7)
NH 1	3	143.7 (89.3)	4.8	1.6	29.9 (18.6)	79	47.9 (29.8)	16.3	0.9 (1.4)
NLMC 1	2	97.7 (60.7)	3.4	1.7	29.0 (18.0)	49	48.9 (30.4)	15.5	0.8 (1.3)
NLMC 2	3	142.2 (88.3)	5.2	1.7	27.6 (17.1)	98	47.4 (29.4)	19.0	1.2 (1.9)
NWS 2	3	142.5 (88.6)	4.9	1.6	30.4 (18.9)	60	47.5 (29.5)	14.4	0.6 (1.0)
SCP 2	3	177.2 (110.1)	6.3	2.1	29.8 (18.5)	153	59.1 (36.7)	27.3	1.7 (2.7)
SCP 3	3	166.3 (103.3)	4.4	1.5	40.3 (25.0)	298	55.4 (34.4)	73.3	2.6 (4.1)
SGP 1	3	94.2 (58.5)	4.0	1.3	24.0 (14.9)	130	31.4 (19.5)	31.8	1.9 (3.1)
SGP 2	3	118.4 (73.6)	5.2	1.7	22.8 (14.2)	67	39.5 (24.5)	13.3	1.0 (1.5)
SGP 3	2	94.7 (58.9)	3.7	1.8	26.7 (16.6)	74	47.4 (29.4)	19.8	1.5 (2.4)
SGP 4	3	134.9 (83.8)	5.0	1.7	27.0 (16.8)	112	45.0 (27.9)	22.5	1.4 (2.2)
SGP 5	3	150.5 (93.5)	5.3	1.8	28.7 (17.8)	164	50.2 (31.2)	32.5	1.9 (3.0)
SLMC 1	3	151.8 (94.3)	5.3	1.8	28.8 (17.9)	80	50.6 (31.4)	14.8	1.0 (1.5)
SWS 1	3	164.2 (102.0)	5.7	1.9	29.4 (18.3)	167	54.7 (34.0)	29.1	2.1 (3.4)
WCR 1	3	146.3 (90.9)	4.3	1.4	34.3 (21.3)	217	48.8 (30.3)	50.9	2.0 (3.3)
WCR 2	3	160.3 (99.6)	5.2	1.7	34.0 (21.1)	146	53.4 (33.2)	32.2	1.5 (2.4)
WCR 3	3	146.6 (91.1)	5.5	1.8	27.3 (17.0)	131	48.9 (30.4)	25.0	1.6 (2.5)
WCR 4	4	194.8 (121.0)	7.2	1.8	28.1 (17.4)	163	48.7 (30.3)	23.1	1.5 (2.4)
WCR 5	3	143.4 (89.1)	5.7	1.9	25.1 (15.6)	105	47.8 (29.7)	18.4	1.4 (2.3)
WCR 6	3	160.7 (99.8)	4.9	1.6	33.3 (20.7)	277	53.6 (33.3)	55.4	2.9 (4.6)
WP 1	3	145.9 (90.6)	4.2	1.4	35.4 (22.0)	182	48.6 (30.2)	44.5	1.7 (2.8)
Total	**96**	**4751.0 (2952.1)**	**166**			**5202**			
Mean	**3.0**	**49.5 (30.8)**	**5.2**	**1.7**	**30.7 (19.1)**	**162.6**	**49.5 (30.8)**	**32.2**	**1.9 (3.0)**