Appendix 8.4: Bat Survey Report

Car Duibh Wind Farm Limited

An Càrr Dubh Wind Farm EIA

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Final report
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Appendix 8.4 Bat Survey Report

Introduction

1.1 This Appendix details the full methods and results of the bat surveys undertaken to inform the Ecological Impact Assessment (EcIA) of the proposed An Càrr Dubh Wind Farm (hereafter referred to as the 'Proposed Development'). The Ecological Impact Assessment is provided in **Chapter 8: Ecology** of the Environmental Impact Assessment Report (EIA Report).

Supporting Documents

1.2 This Appendix supports the EcIA in addition to the following Appendices:

- **Appendix 8.1: Desk Study and Legal Context**;
- **Appendix 8.2: Habitats and Vegetation Survey Report**;
- **Appendix 8.3: Protected Species Survey Report**; and
- **Appendix 8.5: Outline Restoration and Enhancement Plan.**

1.3 This Appendix is supported by the following figures which can be found in **Volume 2** of the EIA Report:

- **Figure 8.1: Ecology Survey Area**;
- **Figure 8.7: Bat Survey Area**; and
- **Figure 8.8: Bat Survey Results**.

Terminology

1.4 The following terminology will be used throughout this appendix:

- **Site**
  - All land within the red line boundary (as shown in **Figure 8.1**).
- **Proposed Development**
  - The whole physical process involved in the development of the land at An Càrr Dubh Wind Farm including construction, operation, and decommissioning (not associated with a particular piece of land).
  - Encompasses the construction of an up to 13 turbine wind farm and associated infrastructure including access tracks, crane hardstandings, substation compound and underground cabling (described in detail in **Chapter 8** of the EIA Report).
- **Bat Survey Area (BSA)**
  - The area within which bat surveys were undertaken in line with good practice guidelines[1]. The Bat Survey Area was therefore defined as a 200m buffer plus rotor radius (77.5m) of proposed turbine locations and a 100m buffer along the proposed access route (as shown in **Figure 8.7**).
- **Desk Study Area**
  - The area within which the desk study was undertaken (10km of the Proposed Development)[1].

Methods

Background

1.5 NatureScot released survey guidance in January 2019, which was updated with minor revisions in August 2021[1], with a view to standardising windfarm-related bat survey best practice in the UK. This guidance has been followed as far as reasonably practicable.

Desk Study

1.6 A desk study was undertaken to provide information relating to the historical presence of bats within the Site and a 10km buffer. An account of the methods adopted, and findings, is provided in **Appendix 8.1: Desk Study and Legal Context**.

1.7 Where available, data was gathered from existing national surveys and incidental records, identified through publicly available records[2] within the Desk Study Area. Only records from the year 2000 onwards have been included in this study.

Field Surveys

Bat Roost Potential

1.8 An assessment for bat roost potential was undertaken on trees within the BSA following assessment criteria set out in standard guidance prepared by the Bat Conservation Trust (BCT)[3].

1.9 The criteria used to categorise bat roost potential are summarised in **Table 8.4.1**. The table also summarises what surveys, if any, are required for each category.

Table 8.4.1: Bat Roost Potential Categories

Category	Roosting Habitat Features	Commuting and Habitat Features	Survey Requirement
Negligible	Negligible habitat features likely to support roosting, commuting or foraging bats.		No surveys required.
Low	Structures in this category offer one or more potential roost sites for individual, opportunistically roosting bats. These sites do not offer the space, shelter or appropriate conditions to support large numbers of bats or maternity roosts. Trees in this category include those of sufficient size and age to support suitable roosting features, but none are visible from the ground.	Habitat on and around the Site could be used by a small number of commuting bats. This category includes densely urbanised landscapes or linear vegetation features poorly connected to the wider landscape (e.g., gappy hedges in an agricultural context).	One dusk or dawn survey required for structures. No surveys required for trees.
Moderate	Structures and trees in this category offer one or more roost site that, due to their space, shelter or conditions, offer roosting potential for a range of species. Roosts may be more permanent, rather than opportunistic. Small maternity roosts of common	Habitat on and around the Site is well-connected to wider continuous habitat and offers commuting and foraging habitat to a larger number of bats across a number of species (e.g., tree lines or linked gardens in the urban context, or continuous hedge/	One dusk and one dawn survey required for both structures and trees. Tree-climbing may be an appropriate alternative to dusk and dawn surveys.

[1] NatureScot (2021). Bats and onshore wind turbines - survey, assessment and mitigation. Available at: https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation [Accessed October 2022]

[2] The National Biodiversity Network (NBN) Online Database. Available at: https://records.nbnatlas.org/ [Accessed August 2022]

[3] Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). The Bat Conservation Trust, London.

Category	Roosting Habitat Features	Commuting and Habitat Features	Survey Requirement
	species may form in one of these roost sites.	tree lines and watercourses in an agricultural setting).	
High	Structures and trees in this category have one or more potential roost sites that are suitable for large number of bats. Roosts are likely to be permanent and include maternity roosts. Potential roost sites exist for a wide range of species or species of particular conservation interest.	Habitat on and around the Site is diverse, continuous and linked to extensive suitable habitat. This category includes well-vegetated rivers, streams, hedgerows and woodland edge. Habitat is sufficiently diverse to offer opportunities to a wide range of species or those of particular conservation interest.	Three surveys, including both dusk and dawn elements. Tree-climbing may be an appropriate alternative to dusk and dawn surveys.

Ground-level Static Surveys

1.10 In accordance with NatureScot bat guidance[1], 15 ground-level automated detectors were deployed across the BSA based on the turbine layout at the time of surveys which extended up to 26 turbines (the EIA Scoping layout). The survey was based on the footprint, oversail and anticipated land take of the 26 turbine layout.

1.11 The BSA consisted of undulating blanket bog and heathland, with numerous waterbodies and watercourses. Detectors were deployed evenly across the BSA where possible, while also being deployed as close as possible to a proposed turbine location (based on the Scoping turbine layout under consideration at the time of the surveys).

1.12 Fifteen Wildlife Acoustics full spectrum detectors were used, comprising a combination of detector types (Song Meter SM4 and SM Mini).

1.13 In line with best practice guidelines[1], detectors were deployed for a minimum of ten consecutive nights in each of the designated survey 'seasons' of Spring (April-May), Summer (June – mid-August) and Autumn (mid-August – October). Details of survey periods are provided in **Table 8.4.2**.

1.14 A Davis 'Vantage View' weather station (Model No: 6120UK) was deployed (NN 00752 11291) across all survey seasons at an approximate elevation of 330m. Data collected from the weather station was used to provide climatical information. Due to a technical fault, no precipitation data was available from the onsite weather for the Autumn survey period; precipitation data from the closest weather station (Oban/Connel weather station, ~26km)[4], was therefore used to supplement the onsite data.

Table 8.4.2: Ground-level Static Survey Deployment Dates

Season	Dates Deployed	Number of Consecutive Nights
Spring	19 May – 02 June 2021	14
Summer	29 June – 27 July 2021	28
Autumn	08 - 23 September 2021	15

1.15 Table 8.4.3 provides details of detector locations and their proximity to turbines, as well as the surrounding habitat. Detector locations are also shown in **Figure 8.7**.

Table 8.4.3: Detector Location Details

Detector Location	Grid Reference	Habitat Type	Elevation	Proximity to Nearest Turbine
1	NN 01528 11967	Blanket bog	348m	395m
2	NN 01966 12319	Blanket bog, adjacent to peat hag	352m	186m
3	NN 02112 12814	Blanket bog	331m	162m
4	NN 02251 11682	Blanket bog, adjacent to lochan	343m	452m
5	NN 02789 12193	Blanket bog, adjacent to peat hag	359m	239m
6	NN 02297 11260	Blanket bog	365m	628m
7	NN 03258 11885	Blanket bog	391m	224m
8	NN 03631 12470	Blanket bog, adjacent to peat hag	365m	267m
9	NN 02113 10764	Blanket bog	376m	757m
10	NN 02989 10985	Blanket bog	442m	508m
11	NN 03784 11306	Blanket bog	429m	367m
12	NN 04129 11871	Blanket bog	405m	332m
13	NN 04392 11365	Blanket bog, conifer plantation ~200m east.	399m	110m
14	NN 03438 10808	Wet heath/ blanket bog, close to Lochan Erralich (deployed closer to lochan during Autumn survey).	461m	290m
15	NN 03561 10478	Blanket bog	468m	621m

1.16 To allow for temporal comparison, where possible, detectors were deployed at the same locations during each season, however minor changes to the placement of the detector may have occurred as a result of different surveyors undertaking the deployment.

1.17 All detectors were programmed to start recording 30 minutes before sunset and stop recording 30 minutes after sunrise.

Analysis

1.18 Bat passes from SM4, SM mini and Anabat Express detectors were analysed using Kaleidoscope Pro software. Data was analysed using auto ID and manual verification by suitably experienced ecologists.

1.19 A two-stage analysis of bat species data was undertaken with the traditional Bat Activity Index (BAI) calculated, in addition to processing data using Ecobat software.

Bat Activity Index (BAI)

1.20 To allow for an accurate and reliable comparison of bat passes between detector locations and across all three survey seasons, a Bat Activity Index (BAI) was calculated. BAI is calculated by taking the number of bat passes (in this instance per genus, per detector location) and dividing it by the number of hours recorded, this will give the number of bat passes per hour[5].

[4] Meteostat (2022). Oban/Connel Weather station. Available at: https://meteostat.net/en/station/EGEO0?t=2022-09-02/2022-09-09 [Accessed April 2022]

[5] Hundt, L. (2012). Bat Surveys: Good Practice Guidelines (2nd Edition). Bat Conservation Trust, London.

1.21 Full-spectrum sound files are approximately 14 seconds long, so it is not always possible to distinguish if the file contains multiple calls from a single bat or single calls from multiple bats. For this reason, as a measure of standardisation, one individual was recorded for each species recorded in a single sound file and bat 'calls' are referred to as bat passes.

1.22 This calculation of BAI allows relative comparisons to allow exploration of patterns of usage within the BSA, as well as use of the BSA across different seasons. It also removes any bias created by the variation in the duration of the static detector deployment periods.

Ecobat

1.23 The calculation of BAI described above is limited to comparisons within the BSA, and does not take account of the wider context in the surrounding landscape. The second step therefore involves comparing the data collected within the BSA to a larger database of bat call data from a wider area.

1.24 Ecobat[6] is a web-based tool, run by The Mammal Society, which allows bat call data to be uploaded and compared with a database of other bat call data within a defined geographic region and similar time of year. In this case, the parameters selected to compare bat data collected in the BSA was bat call data within 100km[7] and during a similar time of year (+/- 30 days). Ecobat allows an objective activity level to be assigned to uploaded bat data, indicating the relative importance of the data when compared with other data in the database.

1.25 Ecobat returns a percentile for each species and genus. This percentile indicates the relative importance of the activity level, for example an 80th percentile would indicate that the activity is greater than 80% of comparison records levels. Percentile levels have been given definitions to easily identify important data sets. Percentiles are split as follows:

- Low activity: 0-20th percentile;
- Low to Moderate activity: 21st-40th percentile;
- Moderate activity: 41st-60th percentile;
- Moderate to High activity: 61st-80th percentile; and
- High activity: 81st-100th percentile.

Risk Assessment

1.26 To quantify the risk of the Proposed Development to bats, site-based risk factors are incorporated into the analysis. This consists of a two-stage process. Stage one consists of scoring the predominant habitat based on habitat suitability for bats from Low (1) to High (3)[1] based on the potential to support bats, by assessing the roosting, foraging and commuting opportunities present.

1.27 The second stage is to conduct a three-factor analysis utilising development-related features to score the project size from Low (1) to High (3)[1]. This involves assessing the number of proposed turbines, the height of proposed turbines, and wind developments within 5km or 10km (dependent on number of proposed turbines) of the Site, to provide an overall project size score.

1.28 An overall 'Site Risk Level' for the Proposed Development can then be determined using the risk assessment matrix from the NatureScot guidance[1] (see **Table 8.4.14**). This is used in conjunction with Ecobat data to provide an overall collision risk category to bat species and genus (see **Chapter 8**).

Constraints and Limitations

1.29 During the Summer deployment, Detector 11 failed to record data. This issue may have resulted in bat passes not being recorded. Given that the remaining 14 detectors were deployed in similar habitats and successfully recorded throughout all survey seasons, the failure is unlikely to have had a substantive effect on the validity of survey results.

1.30 During field surveys, it was not possible to fully survey all conifer plantation forestry for bat roost potential. This was largely due to the density of trees and health and safety issues encountered when surveying dense forest. Commercial forestry is generally considered to be an unsuitable habitat for roosting bats; it is often a dense monoculture lacking in potential roosting features. The majority of these habitats were located outwith the BSA, along the existing access track. Therefore, it is not considered this will have had a substantive effect on the results of the survey.

1.31 It should be noted that the weather station was deployed at an elevation of approximately 330m, therefore temperatures in general are likely to be lower than at sea level as temperature decreases by approximately 1-3°C with every 300m in elevation gain[8]. It is also important to consider that wind speed increases with elevation due to changes in the pressure gradient, surface friction and air density as elevation increases[9]. Therefore, wind speeds recorded at the BSA are likely to be higher than at sea level.

1.32 The onsite weather station failed to record precipitation data during the Autumn deployment. This is not considered to have had a substantive impact on analysis, as the onsite weather data was supplemented by data from Oban/Connel weather station.

1.33 Minor changes to the placement of each detector have occurred as a result of different surveyors undertaking the deployment and the accuracy of GPS equipment which varied by a maximum of 5m. These differences were minimal and therefore the data recorded during each season was considered suitable to undertake a reliable comparison.

1.34 The timeframe in which a survey is undertaken provides a snapshot of activity on the Bat Survey Area and will not necessarily detect all evidence of use by a species. Ecological surveys are limited by a variety of factors which affect the presence of flora and fauna such as season, migration patterns and species behaviour. Evidence of species is not always discovered during the survey. This does not mean that a species is absent.

Results

Desk Study

1.35 Historical records identified recordings (21 in total) of the following species within the 10km Desk Study Area:

- Common pipistrelle *Pipistrellus pipistrellus* (17);
- Soprano pipistrellus *Pipistrellus pygmaeus* (2);
- Unidentified pipistrelle *Pipistrellus* spp. (1); and
- Daubenton's bat *Myotis daubentonii* (1).

1.36 None of the records listed above were from within the BSA.

Field Survey

Bat Roost Potential Surveys

1.37 Six trees were recorded within the BSA to have Moderate or High bat roost potential (**Figure 8.8**). These trees were all located within the BSA, near a disused quarry along the existing access track near Inveraray. The trees are summarised in **Table 8.4.4**.

1.38 An old stone building (NN 08870 08544) recorded on the proposed access route was categorised as having Low bat roost potential (**Figure 8.8**).

1.39 As highlighted in **Survey Limitations**, areas of conifer plantation along the existing access track were not fully assessed for bat roost potential. However, conifer plantations within the BSA were typically dense and lacking in potential roosting features, therefore the highest category of bat roost potential noted in trees within surveyed plantations was 'Low'. No further survey work is required as per **Table 8.4.1** and survey guidance[3].

[6] The Mammal Society (2017). Ecobat. Available at: http://www.ecobat.org.uk/ [Accessed July 2022]
[7] 100km is the smallest search radius available in Ecobat.
[8] let'stalkscience (2020) Weather: Temperature. Available at: https://letstalkscience.ca/educational-resources/backgrounders/weather-temperature [Accessed February 2022]
[9] Haby. J. (n.d.). Wind Speed Increasing with Height. Available at: https://www.theweatherprediction.com/habyhints3/749/ [Accessed February 2022]

Table 8.4.4: Bat Roost Potential of Trees

Tree species	Age	Grid reference	Features	Category
Beech (*Fagus sylvatica*): two trees	Mature	NN 08849 08455	■ Limb wound ■ Fissures	High
Oak (*Quercus* sp.)	Mature	NN 08749 08286	■ Limb wound	High
Oak	Mature	NN 08739 08275	■ Limb wound ■ Knot holes ■ Rot holes	High
Beech	Mature	NN 08864 08466	■ Knot holes ■ Rot holes ■ Limb fractures	Moderate
Oak	Mature	NN 08822 08408	■ Fissure ■ Limb fracture points	Moderate

Ground-level Static Surveys

1.40 A total of 469.7 hours of recording were undertaken across the three survey seasons, as detailed in **Table 8.4.5** below. Due to individual variations between detector deployment duration survey seasons, only the total number of hours recorded, and numbers of days are presented.

1.41 There is also some variation in number of hours due to the changes in night length and number of nights deployment.

Table 8.4.5: Recording Hours During Each Survey Season

Season	Total Number of Hours Recorded	Number of Consecutive Nights Recorded
Spring	98.4	14
Summer	192.3	28
Autumn	179	16
Total	**469.7**	**58**

Weather Data Summary

1.42 Data from an onsite weather station, supplemented with Met Office data from the closest weather station (Oban/Connel weather station) was analysed according to NatureScot guidance[1]. Oban/Connel weather station data was used to provide an overview of rainfall conditions during the Autumn survey period.

1.43 **Table 8.4.6** provides a summary of the onsite weather station and precipitation data for Autumn obtained from Oban/Connel weather station.

Spring

1.44 The onsite weather station collected data for 14 days between 19 May - 2 June. A total of 13 days recorded temperatures above 8°C as recommended by guidance[1,3]. The average windspeed was 9.55m/s. Precipitation was generally low, with an average precipitation of 1.48mm per day.

Summer

1.45 The onsite weather station collected data for 23 days between 3 July - 23 July. All 23 days recorded temperatures above 8°C as recommended by guidance[1,3]. The average windspeed was 8.1m/s. Precipitation was generally low, with an average of 1.57mm per day.

Autumn

1.46 The onsite weather station collected data for 15 days between 7 - 21 September. All days recorded temperatures above 8°C as recommended by guidance[1,3]. The average windspeed was 10.3m/s. Precipitation was generally low, with an average precipitation of 1.87mm per day.

Table 8.4.6: Summary of Weather Station Data (Averages and Range provided)

Deployment Dates	Consecutive Nights Recorded	Temperature (°C)	Days Average Temperature Above 8°C	Wind Speed (m/s)	Precipitation (mm)	Days ≤1mm
Spring 2021						
19 May – 2 June	14	13.9 (9-22)	13	9.55 (4.9-16)	1.48 (0-13)	9
Summer 2021						
3 July – 27 July	23	19 (14-27)	23	8.1 (4.9-11.6)	1.57 (0-23.8)	17
Autumn 2021						
7 – 21 September	15	16.2 (14-24)	15	10.3 (0-17.4)	1.87 (0-9.2)	9

Bat Activity Index (BAI) Results

1.47 As stated in **Constraints and Limitations**, it is important to note when interpreting the results that Detector 11 (during Summer) did not record due to a technical fault. However, the volume and extent of data collected from all deployed detectors across all three survey periods provides confidence that the dataset is sufficiently robust.

Species variation

1.48 The following species were recorded during the static surveys:

- Common pipistrelle *Pipistrellus pipistrellus*;
- Soprano pipistrelle *Pipistrellus pygmaeus*;
- Brown long-eared bat *Plecotus auritus*; and
- *Myotis* spp.

1.49 To allow for a comprehensive assessment, all bats are referred to in terms of their genus (*Pipistrellus* spp., *Plecotus* spp. and *Myotis* spp.).

1.50 *Pipistrellus* spp. were dominant during the static surveys, accounting for a total of 92.9% of the total bat passes recorded across all three seasons. *Myotis* spp. and *Plecotus* spp. were occasionally recorded and accounted for 6.4% and 0.7% of bat activity, respectively.

1.51 BAI for each genus at each location, across each season, are presented in **Table 8.4.7** below.

Table 8.4.7: BAI (to two d.p) According to Genus per Detector Location Across Survey Seasons

Detector Location	BAI per Survey Season		
	Spring	Summer	Autumn
1			
Pipistrellus spp.	0.26	0.80	0.02
Myotis spp.	0.01	0.03	0.03
Plecotus spp.	0	0	0.02
2			
Pipistrellus spp.	0.53	0.44	0.04
Myotis spp.	0.18	0.03	0.02
Plecotus spp.	0	0.01	0
3			
Pipistrellus spp.	0.74	0.73	0.05
Myotis spp.	0.10	0.07	0.12
Plecotus spp.	0	0.01	0
4			
Pipistrellus spp.	19.0	16.2	0.16
Myotis spp.	0.22	0.15	0.28
Plecotus spp.	0	0.04	0.01
5			
Pipistrellus spp.	0.33	1.23	0.06
Myotis spp.	0.17	0.03	0.14
Plecotus spp.	0	0.02	0.01
6			
Pipistrellus spp.	0.13	1.30	0.06
Myotis spp.	0.01	0.03	0.16
Plecotus spp.	0	0.01	0
7			
Pipistrellus spp.	0.10	0.75	0.03
Myotis spp.	0.01	0.04	0.15
Plecotus spp.	0	0.01	0.02
8			
Pipistrellus spp.	0.17	0.99	0.04
Myotis spp.	0.03	0.06	0.25
Plecotus spp.	0	0	0.03
9			
Pipistrellus spp.	0.06	1.32	0.02
Myotis spp.	0	0.06	0.06
Plecotus spp.	0	0.01	0.05
10			
Pipistrellus spp.	0.05	0.44	0.01
Myotis spp.	0	0.02	0.06
Plecotus spp.	0	0.01	0
11			
Pipistrellus spp.	0.24	No data	0.02
Myotis spp.	0.01	No data	0.08
Plecotus spp.	0	No data	0.01
12			
Pipistrellus spp.	0.07	0.38	0.12
Myotis spp.	0.03	0.04	0.06
Plecotus spp.	0	0	0
13			
Pipistrellus spp.	0.06	0.04	0.01
Myotis spp.	0.01	0	0.08
Plecotus spp.	0	0	0.03
14			
Pipistrellus spp.	0.07	0.80	0.02
Myotis spp.	0.01	0.01	0.25
Plecotus spp.	0	0	0.02
15			

Detector Location	BAI per Survey Season		
	Spring	Summer	Autumn
Pipistrellus spp.	0.03	0.36	0.01
Myotis spp.	0.01	0.02	0.02
Plecotus spp.	0	0	0

Spatial Variation – Total BAI

1.52 The results from the 15 detectors are shown in **Figure 8.8**, **Table 8.4.7** and **Chart 8.4.1**. Detector 4, adjacent to a lochan in the west of the BSA, recorded the highest BAI (36.06). The remaining detectors recorded substantially lower BAI.

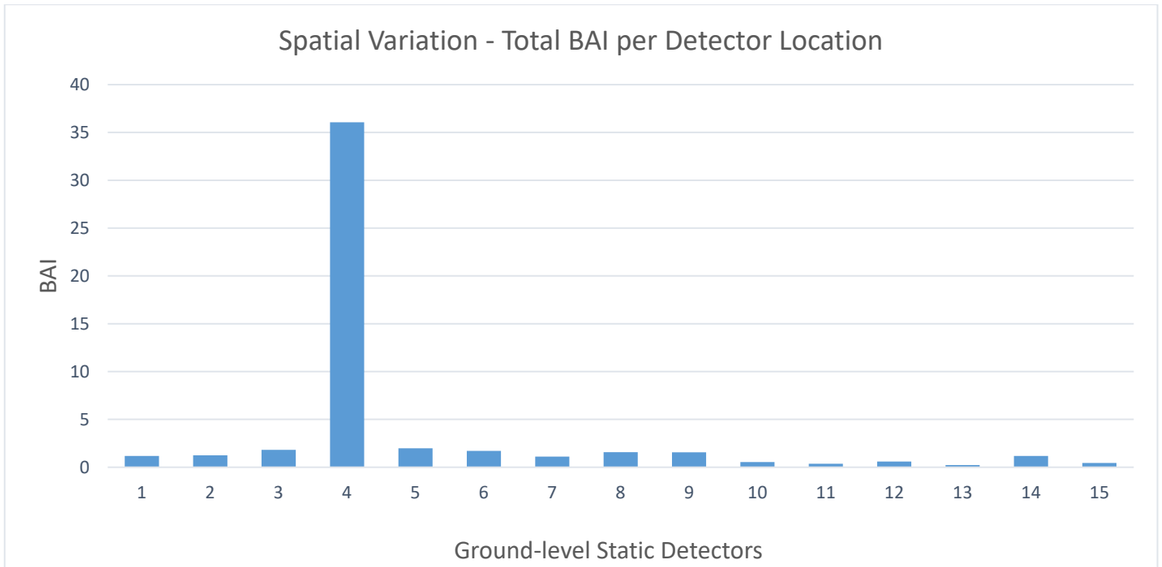
1.53 Detector 5 was located north of the centre of the BSA and recorded the second highest BAI (1.98). This detector was located between Loch an Eilein Duibh and Loch nan Car, adjacent to a peat hag.

1.54 Detectors 3, 6, 8, 9 recorded the third to sixth highest BAI. Detector 3 (BAI 1.82) was located within blanket bog 0.5km north-west of Loch an Eilein Duibh in the north-west of the BSA. Detector 6 (BAI 1.71) was located in blanket bog 0.6km south of Loch Sionnaich in the centre of the BSA. Detector 8 (BAI 1.57) was located adjacent to a peat hag 0.25km north-west of Loch nan Car in the north of the BSA. Detector 9 (BAI 1.56) was located in blanket bog 0.35km south-east of Lochan Dubh Mhuilinn in the south-west of the BSA.

1.55 Areas that recorded the lowest BAI included Detectors 13, 11, 15 ,10 and 12, with BAI ranging from 0.23-0.59. These detectors were located in the eastern section of the BSA, where elevation between detectors varied from 399-468m.

1.56 Within the BSA a higher BAI score was generally associated with waterbodies and watercourses, which were proportionally higher in the lower lying areas of the site (<399m). Conversely, open areas of blanket bog located >398m and lacking linear features and foraging opportunities, generally corresponded to lower BAI scores.

Chart 8.4.1: Spatial Variation - Total BAI per Detector Location

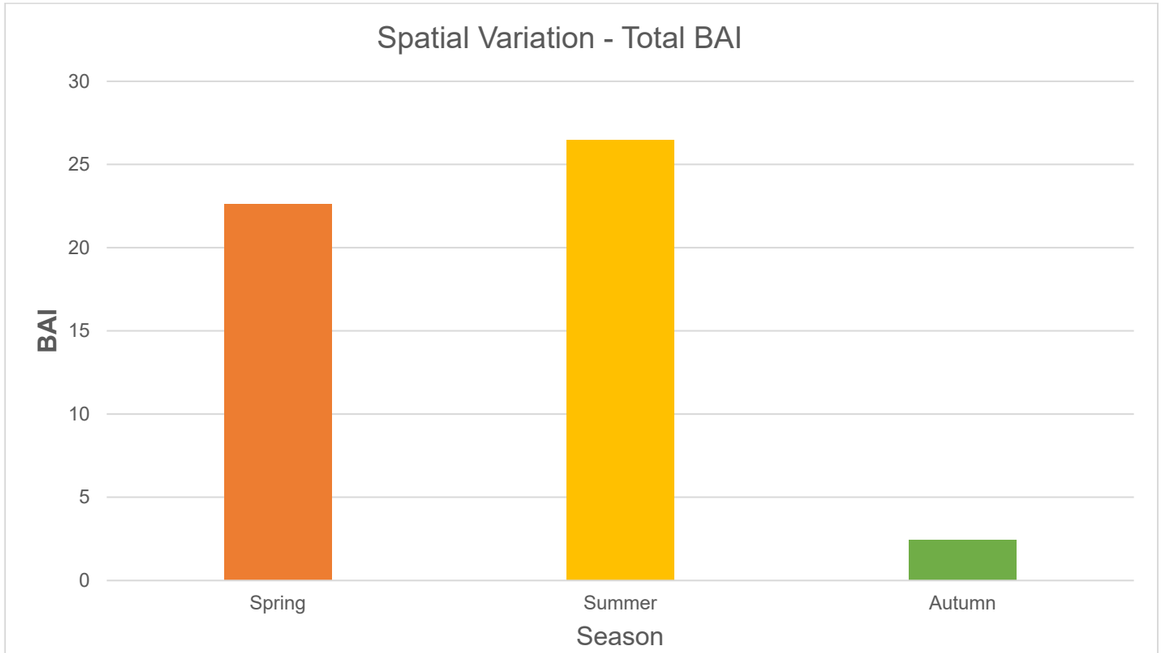


Seasonal Variation – Total BAI

1.57 Total BAI was calculated to allow comparison across the three survey seasons (**Chart 8.4.2**).

1.58 Activity levels were highest in Summer (BAI 26.5), although levels in Spring were similar (BAI 22.6). Autumn recorded the lowest activity (BAI 2.5), less than a tenth of activity levels recorded in Summer.

Chart 8.4.2: Seasonal Variation – Total BAI



Spatial and Seasonal Variation – BAI per Season per Detector Location

1.59 Seasonal variation across detector locations is shown in **Chart 8.4.3**.

1.60 Detector 4 recorded the highest BAI (BAI 19.2) in Spring and second highest (BAI 16.4) in Summer. The remaining detectors all recorded appreciably lower BAI scores, with Detectors 9 (BAI 1.38), 6 (BAI 1.34), 5 (BAI 1.27) and 8 (BAI 1.05) recording the third to sixth highest BAI respectively in Summer. Excluding Detector 4, activity levels across the BSA were very low.

1.61 Detectors 13, 11, 15, 10 and 12 had the lowest BAI scores (BAI <0.6), with all detectors recording ≤103 passes for the entire survey period. Detector 13 (BAI 0.23) recorded the lowest BAI, only recording 36 passes.

1.62 Summer recorded the highest BAI, with Detector 4 (BAI 36.07) accounting for 62% of all bat passes. Detectors 4, 5, 3, 6, and 8 accounted for 78.9% of all bat passes recorded across the BSA in Summer. A similar trend is also evident in Spring, where Detector 4 accounted for 84.7% of total bat passes, and Detectors 4, 3, 2 and 5 accounted for 93.8% of bat passes across the BSA.

1.63 Detector 4 also recorded the highest BAI (BAI 0.45) in Autumn, accounting for 18.2% of total bat passes. Low numbers of passes were recorded in Autumn (439), and BAI across the detectors ranged from 0.02-0.45; the low levels of activity make it difficult to infer trends in bat activity across the BSA for this period.

Chart 8.4.3: Spatial and Seasonal Variation - BAI per Season per Detector Location

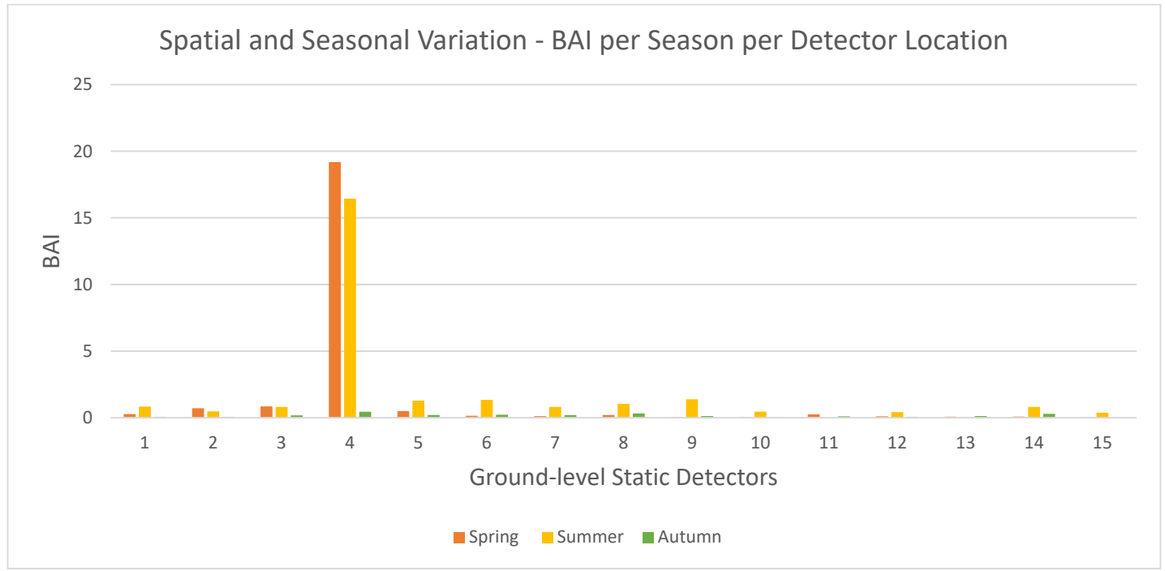
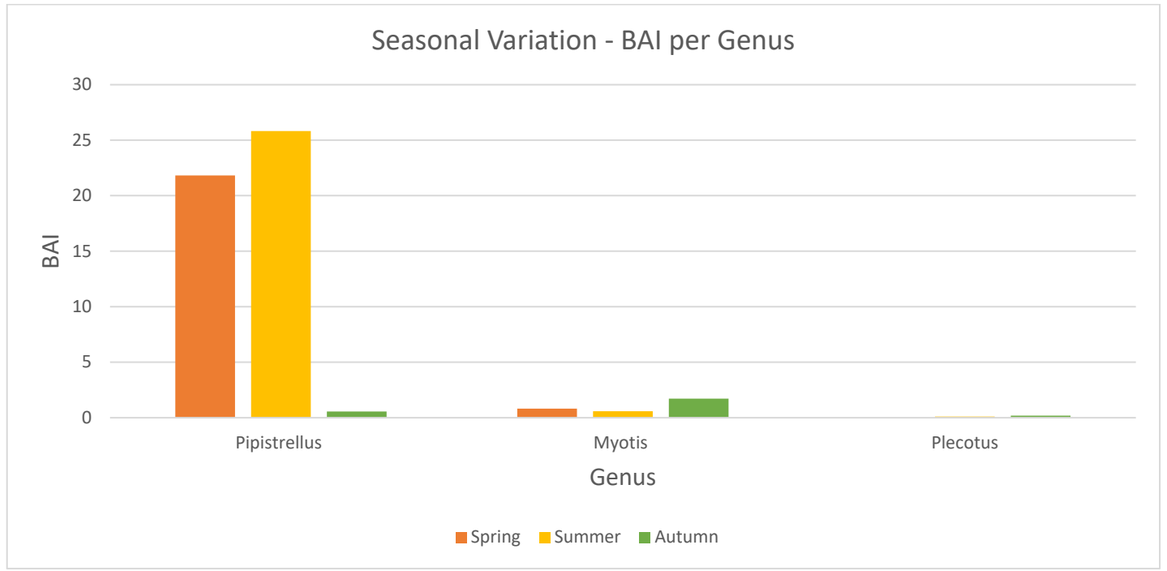


Chart 8.4.4: Seasonal Variation - BAI per Genus



Seasonal Variation – BAI per Genus

1.64 **Table 8.4.8** and **Chart 8.4.4** summarise BAI per genus, across all seasons.

1.65 *Pipistrellus* spp. activity levels follow the same pattern as the total bat activity, with the highest levels in Summer (BAI 25.8), slightly lower levels in Spring (BAI 21.8), and markedly low levels in Autumn (BAI 0.6).

1.66 In contrast, *Myotis* spp. activity levels were highest during the Autumn (BAI 1.7). Spring activity levels (BAI 0.8) were less than half of that recorded in Autumn. The lowest *Myotis* spp. activity levels were recorded in Summer (BAI 0.6).

1.67 *Plecotus* spp. activity levels were low throughout the survey period, with a total of 51 passes recorded across all seasons and detectors. Autumn recorded the highest activity levels (BAI 0.2). Summer activity levels (BAI 0.1) were half the level recorded in Autumn. No passes were recorded in Spring.

Table 8.4.8: Total BAI per Genus per Season

Season	*Pipistrellus* spp.	*Myotis* spp.	*Plecotus* spp.
Spring	21.8	0.8	0
Summer	25.8	0.6	0.1
Autumn	0.6	1.7	0.2

Ecobat Results

1.68 Full reports of Ecobat output for each survey season can be found in **Annex A**.

1.69 The following tables (**8.4.9 to 8.4.12**) display the percentiles and corresponding categories provided by Ecobat.

Table 8.4.9: Activity Categories per Species - Spring

Species/ Species Group	Median Percentile	Activity Level Category	95% CIs[10]	Max Percentile	Nights recorded (out of 210)
Pipistrellus pipistrellus	12	Low	52.5 - 99	100	36
Pipistrellus pygmaeus	60	Moderate	64 - 64	100	50
Pipistrelluss spp.	73	Moderate to High	79 - 100	100	36
Myotis spp.	12	Low	40 - 68	73	39

Table 8.4.10: Activity Categories per Species - Summer

Species/ Species Group	Median Percentile	Activity Level Category	95% Cis[12]	Max Percentile	Nights recorded (out of 420)
Pipistrellus pipistrellus	35	Low to Moderate	75 - 92.5	98	168

[10] Confidence Interval. Range of values within which the mean value for the data set lies

Species/ Species Group	Median Percentile	Activity Level Category	95% Cis[12]	Max Percentile	Nights recorded (out of 420)
Pipistrellus pygmaeus	59	Moderate	74.5 - 94.5	100	236
Pipistrellus spp.	78	Moderate to High	87.5 - 97.5	100	164
Myotis spp.	0	Low	35 - 59	59	85
Plecotus spp.	0	Low	0 - 0	0	19

Table 8.4.11: Activity Categories per Species - Autumn

Species/ Species Group	Median Percentile	Activity Level Category	95% Cis[12]	Max Percentile	Nights recorded (out of 240)
Pipistrellus pipistrellus	0	Low	0 - 0	39	7
Pipistrellus pygmaeus	0	Low	46.5 - 46.5	76	32
Pipistrellus	69	Moderate to High	69 - 85	85	15
Myotis spp.	54	Moderate	54 - 82	88	85
Plecotus spp.	0	Low	56 - 56	73	22

Table 8.4.12: Activity Categories per Species - All Seasons

Species/ Genus	Activity Levels Category		
	Spring	Summer	Autumn
Pipistrellus pipistrellus	Low	Low to Moderate	Low
Pipistrellus pygmaeus	Moderate	Moderate	Low
Pipistrellus spp.	Moderate to High	Moderate to High	Moderate to High
Myotis spp.	Low	Low	Moderate
Plecotus auritus	Nil	Low	Low

1.70 *Pipistrellus* spp. recorded Moderate to High activity levels throughout the entire survey period. *Pipistrellus pygmaeus* recorded Moderate activity levels in Spring and Summer. *Pipistrellus pipistrellus* activity levels were Low in Spring and Autumn, and Low to Moderate in Summer.

1.71 *Myotis* spp. were assigned a Low activity level in Spring and Summer, and Moderate activity level in Autumn.

1.72 *Plecotus auritus* recorded Low activity levels for Summer and Autumn, with no bat passes recorded in Spring.

1.73 Activity levels at the individual turbine scale may be higher than the average across the BSA (see **Table 8.4.13**).

[11] Reference range is the number of nights of data already held by Ecobat, against which the uploaded data is compared.

Detector Location

1.74 **Table 8.4.13** below presents the bat activity categories assigned to each species, at each detector location, across the three seasons.

1.75 Ecobat data is separated by species rather than genus, as grouped above; however in this report data is discussed according to genus to allow comparison with BAI calculations. Where it is relevant to activity levels, individual species will be discussed.

1.76 Activity levels at each detector location during each season were quantified and compared with data held by Ecobat in a national reference dataset. As at the species level per season above, this allows a percentile to be assigned to each species at each detector location and from this a category of bat activity.

1.77 *Pipistrellus pipistrellus* activity levels were generally similar across detectors and seasons, with High activity levels recorded at Detector 4 in Spring and Summer, and Detector 11 in Spring. Activity levels were generally low across the entire survey period, although it is notable that detectors across the north-west of the BSA (Detectors 1-9) recorded Low to Moderate levels to Moderate levels in Summer.

1.78 *Pipistrellus pygmaeus* activity levels were generally Moderate in Spring and Summer, with High activity levels recorded at Detector 4 in Spring and Summer, and at Detector 3 in Spring. Moderate to High activity levels were recorded at Detector 5 in Spring and Summer, Detectors 6, 11 and 14 in Spring, and Detectors 8, 9 and 13 in Summer. Activity levels in Autumn were generally Low.

1.79 *Pipistrellus* spp. activity levels were High at Detectors 4 and 5 in Spring and Autumn, Detectors 2 and 3 in Spring, and Detectors 6, 9 and 14 in Summer. Activity levels were most commonly Moderate to High across Spring and Summer, with Autumn showing greater variation across detectors, although relatively higher levels generally recorded at detectors in the north-west of the BSA.

1.80 *Myotis* spp. activity levels were generally Low across all seasons. The exceptions to this were Moderate to High activity levels recorded at Detector 4 in Spring and Detectors 4, 5, 8 and 14 in Autumn. Moderate activity levels were recorded at Detectors 2 and 5 in Spring, and Detectors 2, 3, 7 and 11 in Autumn, with the data demonstrating relatively higher activity at detectors in the north-west of the BSA.

1.81 *Plecotus* spp. were identified as having Nil to Low activity levels at all detector locations in Summer and Autumn, with the only exception being Detector 9 in Autumn, which recorded Low to Moderate activity. No passes of *Plecotus* spp. were recorded in Spring.

1.82 *Plecotus* spp. activity level recorded in Autumn was below the recommended 200 reference range[11] as specified in Ecobat, to ensure a high level of confidence in the relative activity level. The number of similar nights of data within the Ecobat database was not sufficient to give a comparison with field data. This limitation is balanced by the BAI analysis as this still allows for the comparison of activity levels between genera. The date range and geographic region were not expanded to increase the searchable data in Ecobat as this would include nights from different seasons and areas with few geographic (and hence climactic) similarities to the BSA.

Table 8.4.13: Ecobat Activity Categories for Species/Genus at all Locations Across all Seasons[12]

	Spring				Summer					Autumn				
Detector	*Pipistrellus pipistrellus*	*Pipistrellus pygmaeus*	*Pipistrellus* spp.	*Myotis* spp.	*Pipistrellus pipistrellus*	*Pipistrellus pygmaeus*	*Pipistrellus* spp.	*Myotis* spp.	*Plecotus auritus*	*Pipistrellus pipistrellus*	*Pipistrellus pygmaeus*	*Pipistrellus* spp.	*Myotis* spp.	*Plecotus auritus*
1	Low	Moderate	Moderate to High	Low	Low to Moderate	Moderate	Moderate to High	Low	Nil	Low	Low	Nil	Low	Low
2	Low	Moderate to High	High	Moderate	Moderate	Low to Moderate	Moderate to High	Low	Low	Low to Moderate	Low to Moderate	Moderate to High	Moderate	Nil
3	Low	High	High	Low	Low to Moderate	Moderate	Moderate to High	Low	Low	Nil	Low	Moderate to High	Moderate	Nil
4	High	High	High	Moderate to High	High	High	High	Low	Low	Nil	Low to Moderate	Moderate to High	Moderate to High	Low
5	Low	Moderate to High	High	Moderate	Low to Moderate	Moderate to High	High	Low	Low	Low	Low to Moderate	Moderate to High	Moderate to High	Low
6	Nil	Moderate to High	Moderate to High	Low	Moderate	Moderate	High	Low	Low	Low to Moderate	Low	Moderate to High	Low to Moderate	Nil
7	Low	Moderate	Moderate	Low	Low to Moderate	Moderate	Moderate to High	Low	Low	Nil	Low to Moderate	Low	Moderate	Low
8	Low	Low to Moderate	Moderate to High	Low	Low to Moderate	Moderate to High	Moderate to High	Low	Nil	Nil	Moderate	Moderate to High	Moderate to High	Low
9	Low	Low to Moderate	Moderate	Nil	Moderate	Moderate to High	High	Low	Low	Nil	Low	Low to Moderate	Low to Moderate	Low to Moderate
10	Nil	Moderate	Moderate to High	Nil	Low	Low to Moderate	Moderate	Low	Low	Nil	Low	Nil	Low	Nil
11	High	Moderate to High	Moderate	Low	No data	No data	No data	No data	No data	Nil	Low	Nil	Moderate	Low
12	Low	Low	Moderate	Low	Low	Moderate	Moderate to High	Low	Nil	Nil	Low	Low to Moderate	Low	Nil
13	Nil	Low to Moderate	Low	Low	Low	Moderate to High	Low to Moderate	Nil	Nil	Nil	Low	Nil	Low to Moderate	Low
14	Nil	Moderate to High	Nil	Low	Moderate	Moderate	High	Nil	Nil	Low	Nil	Low to Moderate	Moderate to High	Low
15	Nil	Moderate	Moderate to High	Nil	Low	Low to Moderate	Moderate to High	Low	Nil	Nil	Low	Nil	Low	Nil

[12] Cells that are defined as 'Nil' indicate working detectors from which either no data or insufficient data (no bat passes or a low number of bat passes) were available to quantify activity levels. Cells that are defined as 'No data' refers to where a technical fault occurred and the detector was not recording during the survey period.

Discussion and Interpretation

Desk Study

1.83 Of the 21 records noted within 10km of the Site, 20 were of common and widespread pipistrelle species. One record was of Daubenton's bat, which is also fairly widespread.

1.84 The closest record was of a common pipistrelle located approximately 5km west near Dalavich. However, similar species would be expected to be present in and around the village of Inveraray.

Bat Roost Potential

1.85 No structures or trees were identified within the BSA around the turbines as having sufficient suitability to support roosting bats.

1.86 Six trees were recorded along the existing access track within the BSA as having from Moderate to High bat roost potential, and an old stone building (NN 08870 08544) recorded nearby was categorised as having Low bat roost potential (**Figure 8.8**).

1.87 Considering the results of the surveys, and in the context that the majority of woodland within the BSA consists of conifer plantation, bat roost potential across the BSA is considered to be limited.

Ground-level static surveys

Interpretation Method

1.88 This section applies the data collection, and the Ecobat analysis, in identifying a series of risk types, according to the NatureScot guidance[1]. The data is interpreted below in a sequential manner, to arrive at a conclusion of risk analysis.

Species Variation

1.89 **Figure 8.8** provides an overview of the genus variation across the BSA.

1.90 *Pipistrellus* spp. dominated the bat activity recorded within the BSA, accounting for 92.9% of all passes recorded. Detector 4, adjacent to a lochan, accounted for 69.6% of *Pipistrellus* spp. passes. The remaining detectors were located in relatively similar habitats (blanket bog and wet heath), although none were directly adjacent to a waterbody or watercourse.

1.91 In comparison with levels of *Pipistrellus* spp., all other species recorded during the surveys were found to be present in very low numbers. *Myotis* spp. accounted for 6.4% of total passes across all seasons, and *Plecotus* spp. 0.7%.

Spatial Variation

1.92 There was a noticeable difference in overall bat activity across the BSA, with 92.6% of bat passes recorded in the west and centre of the BSA, compared to 7.4% of bat passes recorded in the east of the BSA. It is important to note that nine detectors were deployed in the west and centre of the BSA, compared to the six deployed in the east of the BSA. However, excluding Detector 4, Detectors 1-3 and 5-9 in the west and centre of the BSA account for 26.6% of bat passes.

1.93 With the exception of Detector 4, which was located in wet heath immediately adjacent to a lochan, and Detector 14, which was located in a mosaic of blanket bog and heath habitats within 130m of two lochans, all other detectors were located in expanses of blanket bog.

1.94 The highest number of passes was recorded at Detector 4, which was located adjacent to a lochan. Most of these passes (97.9%) were attributed to high *Pipistrellus* spp. activity in Summer and Spring. Across all seasons, Detectors 5 and 6 recorded the second (332 passes) and third (312 passes) highest number of total bat passes respectively, although this was considerably lower than the total number of passes (5128) recorded at Detector 4.

1.95 *Myotis* spp. activity was low in comparison with *Pipistrellus* spp. activity. However, *Myotis* spp. was categorised as having Moderate or Moderate to High activity levels at Detectors 2, 4 and 5 in Spring and Autumn. Detector 4 accounted for 20.4% of *Myotis* spp. passes. Detectors 2, 3, 5, 6, 7 and 8 accounted for 50.0% of *Myotis* spp. passes across the entire survey period, and all were located in the north-western half of the BSA.

1.96 It Is likely that *Pipistrellus* spp. and *Myotis* spp. are commuting to the BSA using a combination of the various conifer plantation edges that surround the BSA and numerous small watercourses within the BSA. Foraging opportunities are concentrated around the numerous lochans (e.g. Loch Sionnaich, Loch an Eilein Duibh and Loch nan Car), which occur in greater density in the north-western half of the BSA. BAI scores and bat activity levels were comparatively lower in the south-eastern half of the BSA.

1.97 Due to the low number of *Plecotus auritus* passes identified (51 passes), it is difficult to extrapolate any conclusions from the dataset. However, 78.4% of all *Plecotus auritus* passes were recorded in the west and centre of the BSA at Detectors 1-9.

Site Risk Assessment

1.98 As per the guidance developed by NatureScot[1], a site risk assessment was conducted to quantify the risk posed to bat habitat by the Proposed Development (see **Methods** for details).

8.4.14: Initial Site Risk Assessment Matrix

	Project Size			
Habitat Risk		Small	Medium	Large
	Low	1	2	3
	Medium	2	3	4
	High	3	4	5

Habitat Risk

1.99 The BSA generally lacks favourable roosting, foraging and commuting opportunities for bats. There is an absence of structures and woodland with potential to support roosting bats in the BSA. Regarding foraging opportunities, numerous waterbodies and watercourses (e.g. Eas an Amair) are present throughout the BSA. However, the absence of woodland limits the variety of foraging opportunities for bats in the BSA. Furthermore, the lack of extensive, prominent linear features (such as hedgerows, extensive connected woodland, and anthropogenic linear features) results in limited commuting opportunities for bats. The habitat risk is therefore considered to be **Low**.

Project Size

1.100 The Proposed Development comprises up to 13 wind turbines. This number of turbines would equate to a Medium project size[1]. However, the turbine blade tips are up to 180m height, which is considered to indicate a Large project size[1].

1.101 As of October 2022[13], there are two operational wind farms and one wind farm in the design/scoping stage within 5km of the BSA. Blarghour Farm, comprising two turbines, is operational and is located 3.2km west of the BSA. An Suidhe, comprising 23 turbines, is operation and located 4.1km south of the BSA. Blarghour wind farm, comprising 17 turbines, is in the design/scoping phase (having been previously consented) and would be located 2.9km north of the BSA. As there are other wind energy developments within 5km, this is considered to be indicative of a Large project size[1].

1.102 The project size is therefore arguably either Medium or Large. A conservative approach is preferred, and therefore a **Large** project size is applied in the following assessment.

Risk Assessment

1.103 Having evaluated the habitat risk as **Low** and the project size as **Large**, the BSA is assessed as having a Site Risk Level of 3 as per **Table 8.4.14**, which equates to a **Medium** site risk for collision effects on bats.

[13] LUC (2022) Windfarm database. [Accessed October 2022]

Collision Risk Assessment

1.104 Following the steps outlined in the NatureScot guidance[1] the Site Risk Level, determined using **Table 8.4.14**, was used to determine the overall risk to each species categorised as 'high collision risk'.

1.105 High collision risk species in Scotland include the following species:

- Common pipistrelle *Pipistrellus pipistrellus*;
- Soprano pipistrelle *Pipistrellus pygmaeus*;
- Nathusius' pipistrelle *Pipistrellus nathusii*;
- Noctule *Nyctalus noctula*; and
- Leisler's bat *Nyctalus leisleri*.

1.106 High collision risk species recorded within the BSA were common and soprano pipistrelle, which accounted for the majority of activity recorded, with total passes of 4,154 for soprano pipistrelle, 1,580 for common pipistrelle, and 1,477 passes assigned to *Pipistrellus* spp. where recording could only be verified to genus.

1.107 For each high collision risk species, the guidance was followed to determine the 'Typical' and 'Peak' risks posed to these species by the Proposed Development.

- **Typical Risk:** The risk posed to a species by the Proposed Development based on the mean activity levels of that species. Used to determine the likely general effect of the Proposed Development on each species.
- **Peak Risk**: The risk posed by the Proposed Development based on the highest recorded activity level of that species. Used to identify the highest risk posed by the Proposed Development to account for peaks in bat activity.

1.108 To calculate the Typical Risk, the most common activity category provided by Ecobat was used. This was the most common category assigned to each species at all locations over all survey seasons (**Table 8.4.13**).

1.109 To calculate the Peak Risk, the highest activity level assigned to a species was used (as per **Table 8.4.13**).

1.110Table 8.4.15 was used in accordance with NatureScot guidance[1] to return a numerical value for the Typical and Peak Risk for each species.

1.111 Results of Typical and Peak Risks posed by the Proposed Development, to each high-risk species are presented in **Table 8.4.16**.

Table 8.4.15: Overall Risk Assessment Matrix

Site Level Risk	Ecobat Activity Category					
	Nil (0)	Low (1)	Low-moderate (2)	Moderate (3)	Moderate-high (4)	High (5)
Lowest (1)	0	1	2	3	4	5
Low (2)	0	2	4	6	8	10
Medium (3)	0	3	6	9	12	15
High (4)	0	4	8	12	16	20
Highest (5)	0	5	10	15	20	25

Table 8.4.16: Overall Risk Outcomes per Species Using Table 8.4.13

Species	'Typical' Risk	'Peak' Risk
Pipistrellus pipistrellus	3*	15
Pipistrellus pygmaeus	9	15
Pipistrellus spp.	12	15
* See following paragraphs for additional context and assessment regarding Typical risk to *Pipistrellus pipistrellus*.		

1.112 From this overall assessment, risks posed by the Proposed Development to high collision risk species were grouped according to the NatureScot guidance[1]:

- Low risk to species (green): 0–4;
- Medium risk to species (amber): 5–12; and
- High risk to species (red): 15–25.

1.113 The results indicate that across the BSA, there is a Medium Typical Risk to soprano pipistrelle and *Pipistrellus* spp., and a Low Typical Risk to common pipistrelle. At times of peak activity, the Peak Risk to both species and the genus is High.

1.114 It is important to highlight that 1,477 passes were recorded as *Pipistrellus* spp., and 1,580 passes were recorded as *Pipistrellus pipistrellus*. It is likely that the Typical Risk assigned to *Pipistrellus pipistrellus* by Ecobat is affected by the high number of *Pipistrellus* spp. passes assigned to genus level only. The true Typical Risk to *Pipistrellus pipistrellus* is likely to be Medium.

1.115 Although the number of passes of pipistrelle bats is very heavily skewed towards a single detector (Detector 4), this does not influence the levels of activity assigned to the remaining detectors, several of which recorded activity levels between Moderate and High. As such, Detector 4 does not skew the overall conclusions of either Typical or Peak Risk, both of which are therefore considered to be representative of the BSA as a whole.

Population Level Risk Assessment

1.116 Ecobat provides an objective analysis of activity levels of bat species within the BSA. Using the Ecobat data allows for the determination of the risks posed to each species recorded at the BSA.

1.117 As specified in the NatureScot guidance[1], the risk to each species is then considered at the population level, specifically those which have a high population vulnerability. However, no bat species identified during the surveys are classified as species of high population vulnerability.

1.118 Whilst the analysis of the bat activity data for the BSA calculates a Medium Typical Risk to pipistrelle bats, these are not considered species of high population vulnerability and so no further assessment of collision risk is required.

Annex A Ecobat Outputs

This report was produced free of charge by the Mammal Society to support evidence-based conservation of bats.

The following analyses are based on data supplied by the user to the Mammal Society's Ecobat website. The outputs are designed to assist decision-making, but do not replace expert interpretation by the user. The creation of the Ecobat tool was supported by the Natural Environment Research Council (NERC).

Bat Activity Analysis

Site Name: Ann Carr Dubh

Author: LUC

07/06/2022

Summary

Bats were detected on **12** nights between **2021-09-07** and **2021-09-20**, using **15** static bat detectors. Throughout this period **5** species were recorded. **Table 1.** Detectors were placed at the following locations:

Detector ID	Latitude	Longitude
4	56.25635	-5.193980
6	56.25259	-5.192923
9	56.24806	-5.195517
10	56.25041	-5.181567
11	56.25362	-5.168995
12	56.25883	-5.163854
13	56.25440	-5.159241
14	56.24900	-5.174201
15	56.24609	-5.171974
5	56.26116	-5.185691
7	56.25859	-5.177902
8	56.26399	-5.172325
1	56.25861	-5.205845

2	56.26195	-5.199050
3	56.26645	-5.197067

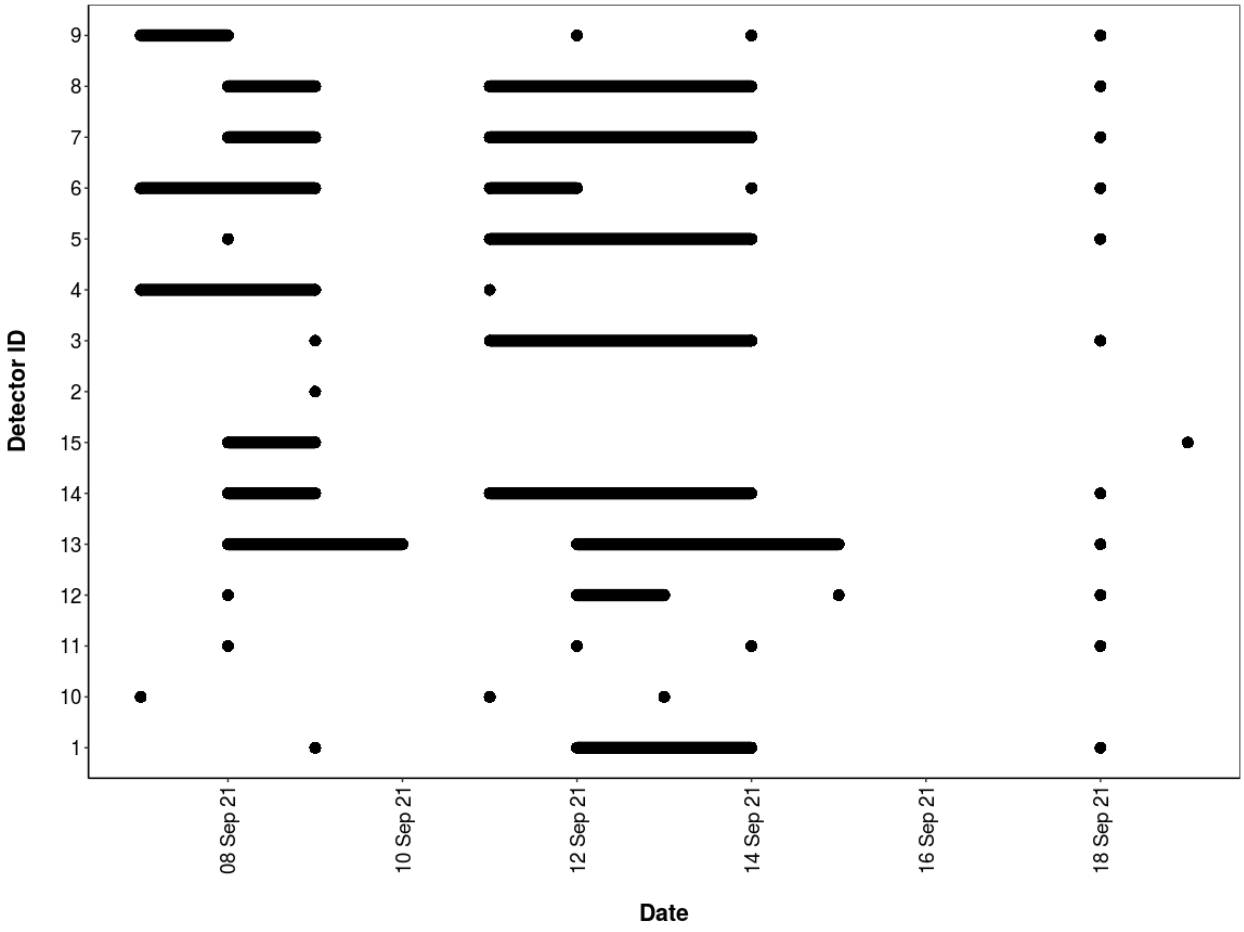
Survey Nights

Table 2. The number of nights that bats were detected on each recorder. This is not the same as the number of nights that detectors were active if there were nights when no bats were detected.

Detector ID	No. of nights
1	6
2	1
3	7
4	7
5	7
6	9
7	8
8	8
9	6
10	3
11	5
12	6
13	9
14	9
15	3

Survey Nights

Figure 1. Horizontal bars show nights when acoustic detectors recorded bats.



PART 1: Percentiles Analysis

This first part of the analysis looks at the relative activity levels of the bats you recorded. We take your value for the total bat passes each night for each species, and compare this to the values in our reference database. We tell you what percentile your data falls at, and therefore what the relative activity level is. For example, if the reference database has values of 5, 10, 15, 20 and you submit a value of 18, this will be the 80th percentile, and be classed as high activity.

The reference range dataset was stratified to include:

- Only records from within 30 days of the survey date.
- Only records from within 100km radius of the survey location.
- Records using any make of bat detector.

PER DETECTOR

Table 3. Summary table showing the number of nights recorded bat activity fell into each activity band for each species.

Detector ID	Species/Species Group	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
1	*Myotis*	0	0	0	1	4
1	*Pipistrellus pipistrellus*	0	0	0	0	1
1	*Pipistrellus pygmaeus*	0	0	0	0	2
1	*Plecotus auritus*	0	0	0	0	3
10	*Myotis*	0	0	0	1	1
10	*Pipistrellus pygmaeus*	0	0	0	0	2
11	*Myotis*	0	1	3	0	1
11	*Pipistrellus pygmaeus*	0	0	0	1	1
11	*Plecotus auritus*	0	0	0	0	1
12	*Myotis*	0	0	1	2	3
12	*Pipistrellus*	0	0	0	1	0
12	*Pipistrellus pygmaeus*	0	0	0	0	1
13	*Myotis*	0	0	2	3	3
13	*Pipistrellus pygmaeus*	0	0	0	0	2
13	*Plecotus auritus*	0	0	0	1	3
14	*Myotis*	2	3	1	1	2
14	*Pipistrellus*	0	0	0	1	0
14	*Pipistrellus pipistrellus*	0	0	0	0	2
14	*Plecotus auritus*	0	0	0	1	2
15	*Myotis*	0	0	0	1	1
15	*Pipistrellus pygmaeus*	0	0	0	0	1
2	*Myotis*	0	0	1	0	0

2	*Pipistrellus*	0	1	0	0	0
2	*Pipistrellus pipistrellus*	0	0	0	1	0
2	*Pipistrellus pygmaeus*	0	0	0	1	0
3	*Myotis*	0	3	1	1	2
3	*Pipistrellus*	0	1	0	0	0
3	*Pipistrellus pygmaeus*	0	1	0	0	2
4	*Myotis*	2	2	3	0	0
4	*Pipistrellus*	1	2	0	0	0
4	*Pipistrellus pygmaeus*	0	2	0	2	2
4	*Plecotus auritus*	0	0	0	0	1
5	*Myotis*	0	4	0	2	0
5	*Pipistrellus*	0	2	0	0	1
5	*Pipistrellus pipistrellus*	0	0	0	0	2
5	*Pipistrellus pygmaeus*	0	0	1	1	1
5	*Plecotus auritus*	0	0	0	0	1
6	*Myotis*	0	3	0	3	2
6	*Pipistrellus*	0	2	0	0	0
6	*Pipistrellus pipistrellus*	0	0	0	1	0
6	*Pipistrellus pygmaeus*	0	0	1	0	2
7	*Myotis*	1	2	1	1	1
7	*Pipistrellus*	0	0	0	0	1
7	*Pipistrellus pygmaeus*	0	0	0	2	0
7	*Plecotus auritus*	0	0	0	1	1
8	*Myotis*	1	5	1	1	0
8	*Pipistrellus*	0	1	0	0	0
8	*Pipistrellus pygmaeus*	0	0	1	1	0
8	*Plecotus auritus*	0	0	0	1	3
9	*Myotis*	0	0	2	1	2

9	*Pipistrellus*	0	0	0	1	0
9	*Pipistrellus pygmaeus*	0	0	0	0	2
9	*Plecotus auritus*	0	1	0	1	1

Table 4. Summary table showing key metrics for each species recorded. The reference range is the number of nights for each species that your data were compared to. We recommend a Reference Range of 200+ to be confident in the relative activity level.

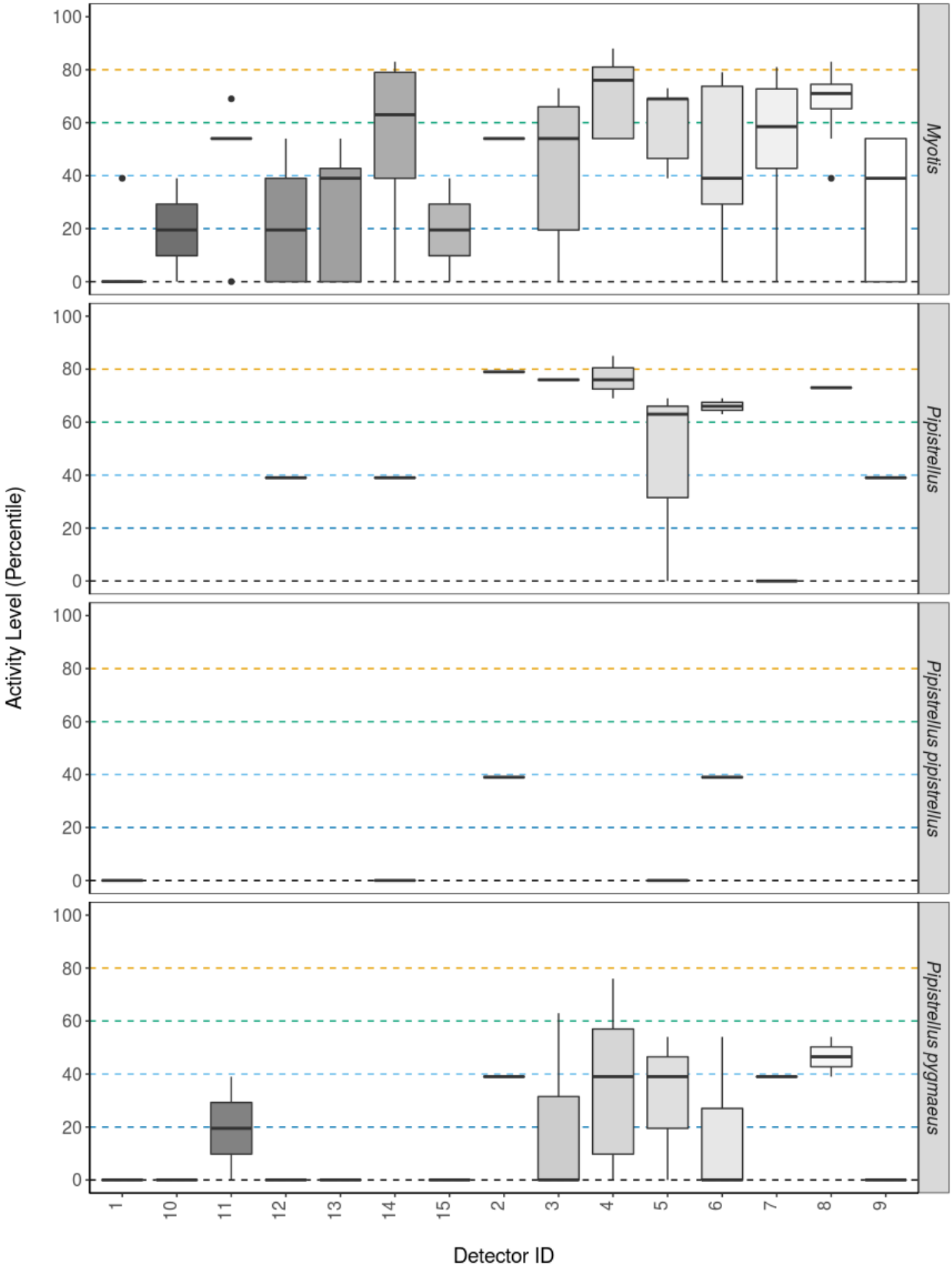
Detector ID	Species/Species Group	Median Percentile	95% CIs	Max Percentile	Nights Recorded	Reference Range
1	*Myotis*	0	0 - 0	39	5	561
1	*Pipistrellus pipistrellus*	0	0	0	1	1366
1	*Pipistrellus pygmaeus*	0	0 - 0	0	2	2132
1	*Plecotus auritus*	0	0 - 0	0	3	170
10	*Myotis*	20	19.5 - 19.5	39	2	561
10	*Pipistrellus pygmaeus*	0	0 - 0	0	2	2132
11	*Myotis*	54	54 - 54	69	5	561
11	*Pipistrellus pygmaeus*	20	19.5 - 19.5	39	2	2132
11	*Plecotus auritus*	0	0	0	1	170
12	*Myotis*	20	39 - 39	54	6	561
12	*Pipistrellus*	39	0	39	1	2600
12	*Pipistrellus pygmaeus*	0	0	0	1	2132
13	*Myotis*	39	39 - 46.5	54	8	561
13	*Pipistrellus pygmaeus*	0	0 - 0	0	2	2132
13	*Plecotus auritus*	0	0 - 0	39	4	170
14	*Myotis*	63	54 - 81	83	9	561
14	*Pipistrellus*	39	0	39	1	2600
14	*Pipistrellus pipistrellus*	0	0 - 0	0	2	1366
14	*Plecotus auritus*	0	0 - 0	39	3	170
15	*Myotis*	20	19.5 - 19.5	39	2	561

15	*Pipistrellus pygmaeus*	0	0	0	1	2132
2	*Myotis*	54	0	54	1	561
2	*Pipistrellus*	79	0	79	1	2600
2	*Pipistrellus pipistrellus*	39	0	39	1	1366
2	*Pipistrellus pygmaeus*	39	0	39	1	2132
3	*Myotis*	54	51 - 69	73	7	561
3	*Pipistrellus*	76	0	76	1	2600
3	*Pipistrellus pygmaeus*	0	0 - 0	63	3	2132
4	*Myotis*	76	54 - 82	88	7	561
4	*Pipistrellus*	76	69 - 85	85	3	2600
4	*Pipistrellus pygmaeus*	39	39 - 63	76	6	2132
4	*Plecotus auritus*	0	0	0	1	170
5	*Myotis*	69	39 - 71	73	6	561
5	*Pipistrellus*	63	66 - 66	69	3	2600
5	*Pipistrellus pipistrellus*	0	0 - 0	0	2	1366
5	*Pipistrellus pygmaeus*	39	46.5 - 46.5	54	3	2132
5	*Plecotus auritus*	0	0	0	1	170
6	*Myotis*	39	39 - 76	79	8	561
6	*Pipistrellus*	66	66 - 66	69	2	2600
6	*Pipistrellus pipistrellus*	39	0	39	1	1366
6	*Pipistrellus pygmaeus*	0	0 - 0	54	3	2132
7	*Myotis*	59	51 - 76	81	6	561
7	*Pipistrellus*	0	0	0	1	2600

7	*Pipistrellus pygmaeus*	39	39 - 39	39	2	2132
7	*Plecotus auritus*	20	19.5 - 19.5	39	2	170
8	*Myotis*	71	54 - 78	83	8	561
8	*Pipistrellus*	73	0	73	1	2600
8	*Pipistrellus pygmaeus*	47	46.5 - 46.5	54	2	2132
8	*Plecotus auritus*	0	0 - 0	39	4	170
9	*Myotis*	39	54 - 54	54	5	561
9	*Pipistrellus*	39	0	39	1	2600
9	*Pipistrellus pygmaeus*	0	0 - 0	0	2	2132
9	*Plecotus auritus*	39	56 - 56	73	3	170

###Figures

Figure 2. The recorded activity of bats during the survey. The centre line indicates the median activity level whereas the box represents the interquartile range (the spread of the middle 50% of nights of activity)


Activity Level (Percentile)
100
80
60
40
20
0
Myotis
Pipistrellus
Pipistrellus pipistrellus
Pipistrellus pygmaeus
1
10
11
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID

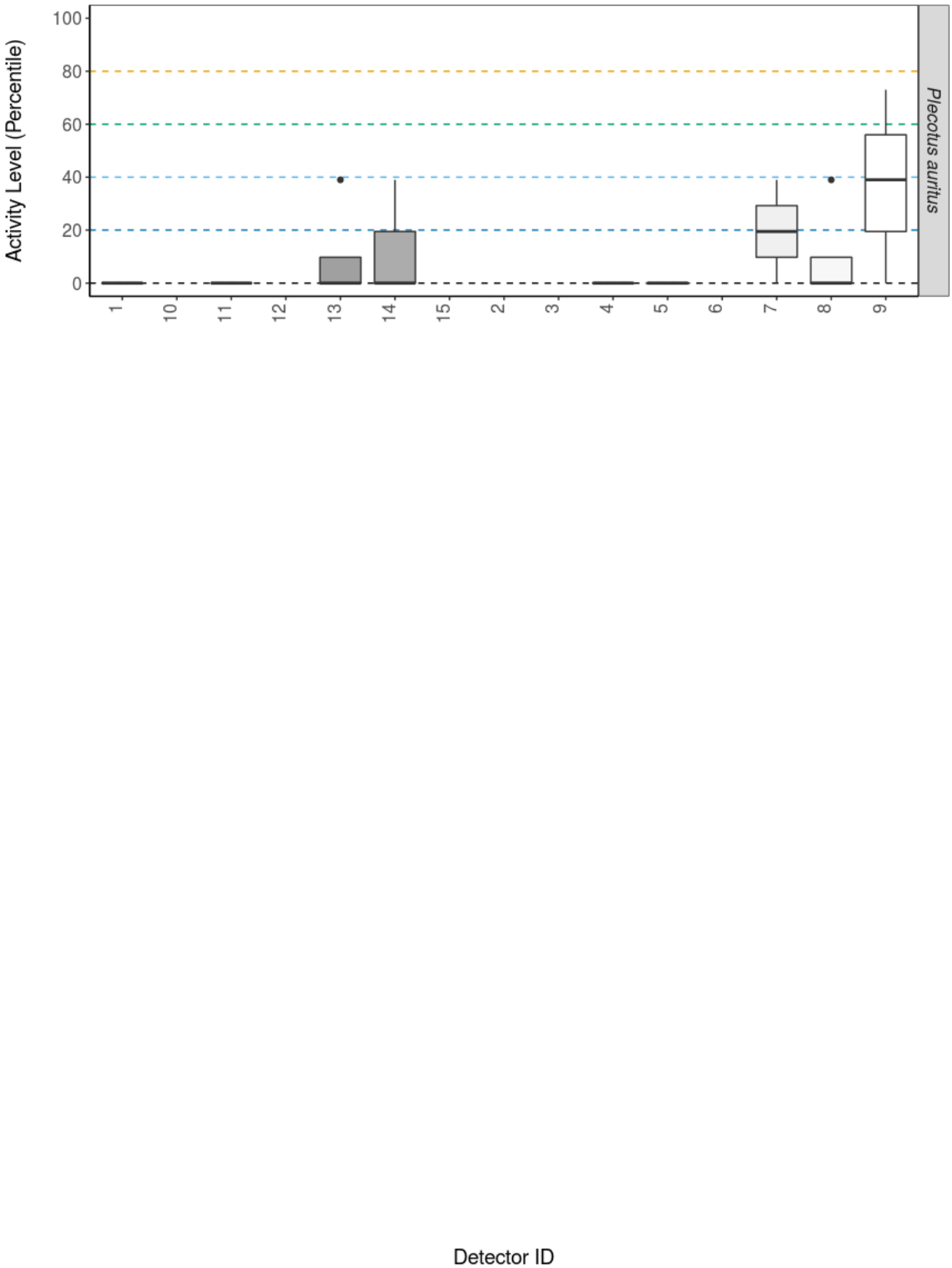
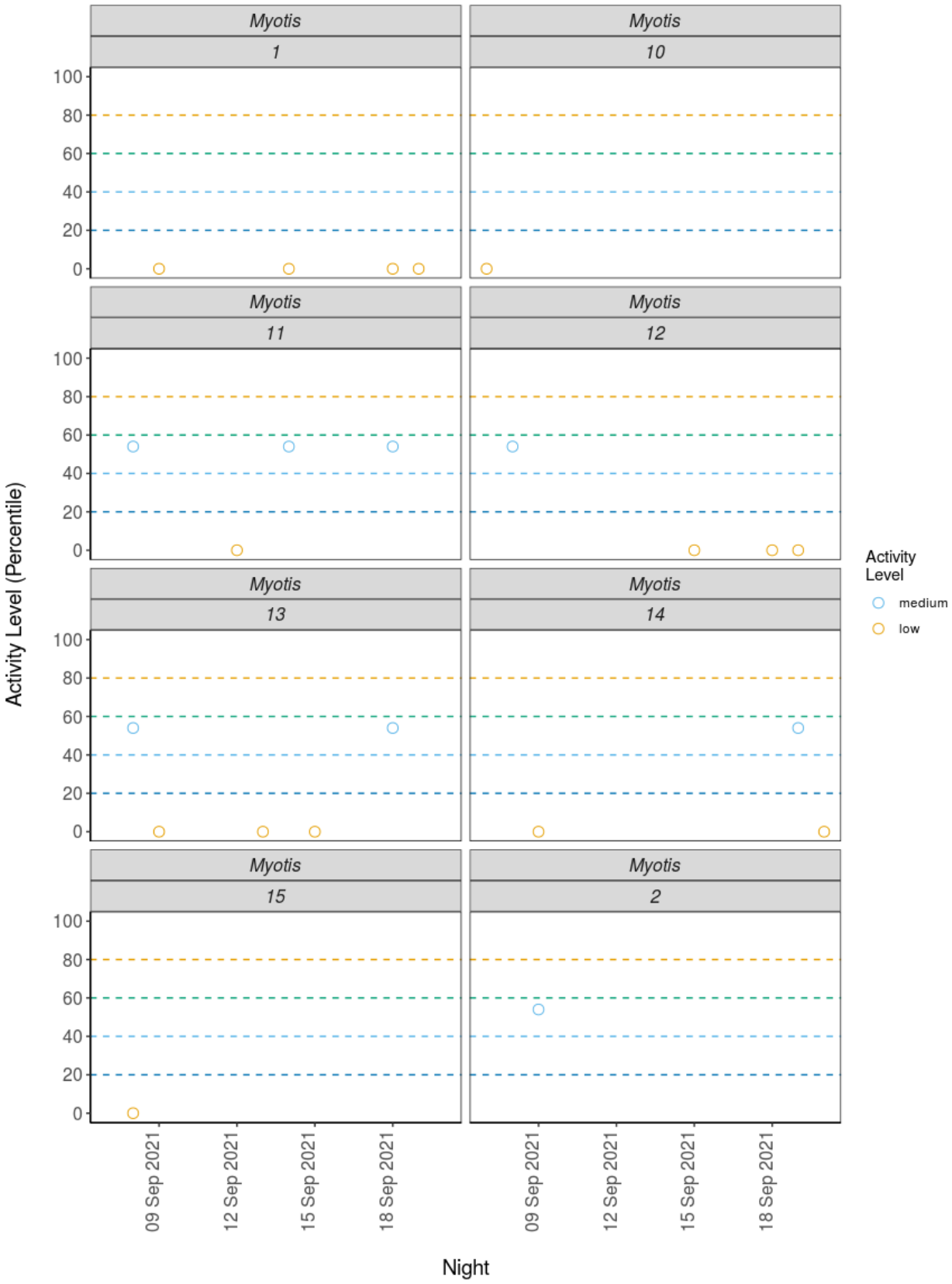
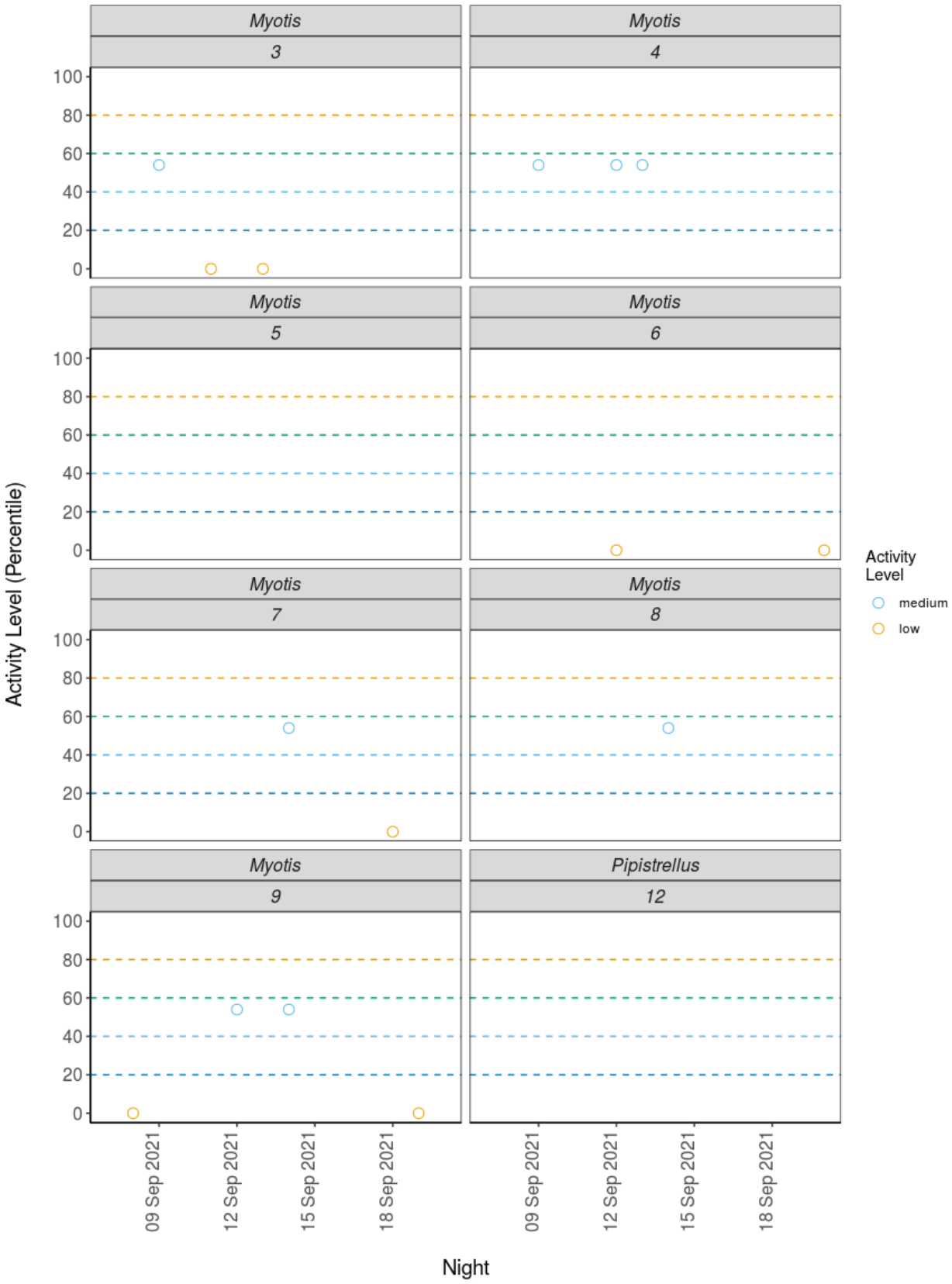
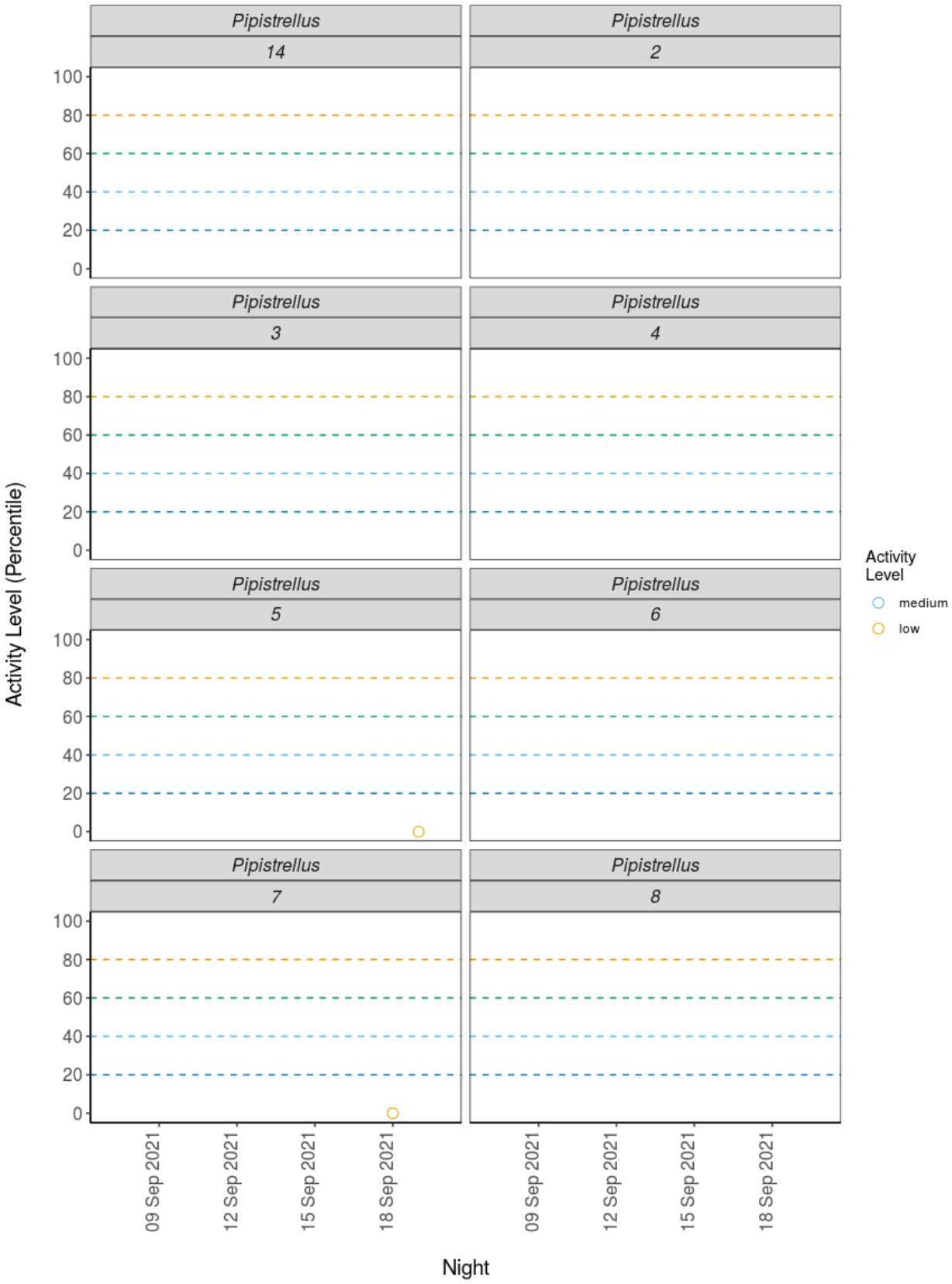
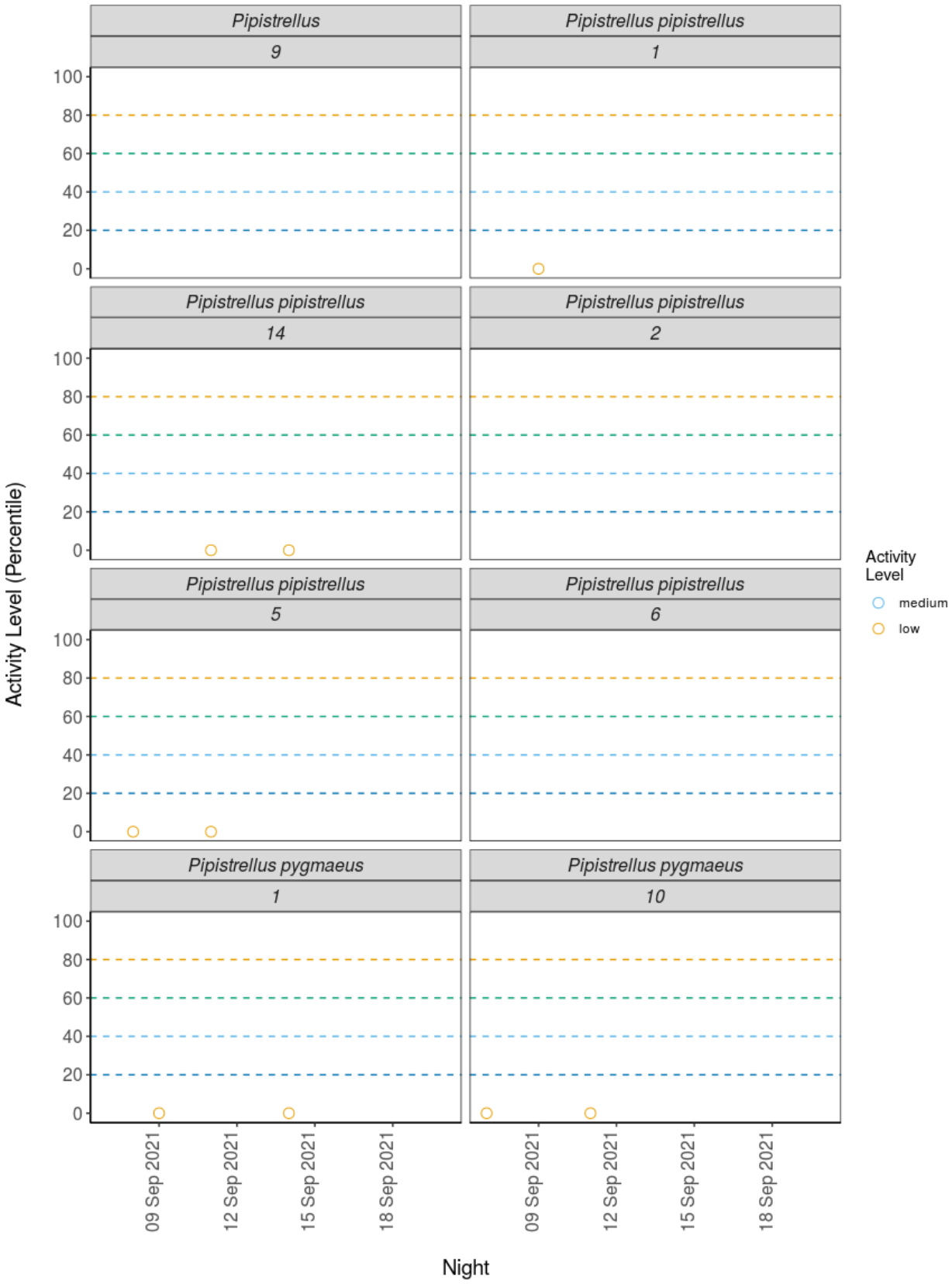

Activity Level (Percentile)
100
80
60
40
20
0
1
10
11
12
13
14
15
2
3
4
5
6
7
8
9
Plecotus auritus
Detector ID

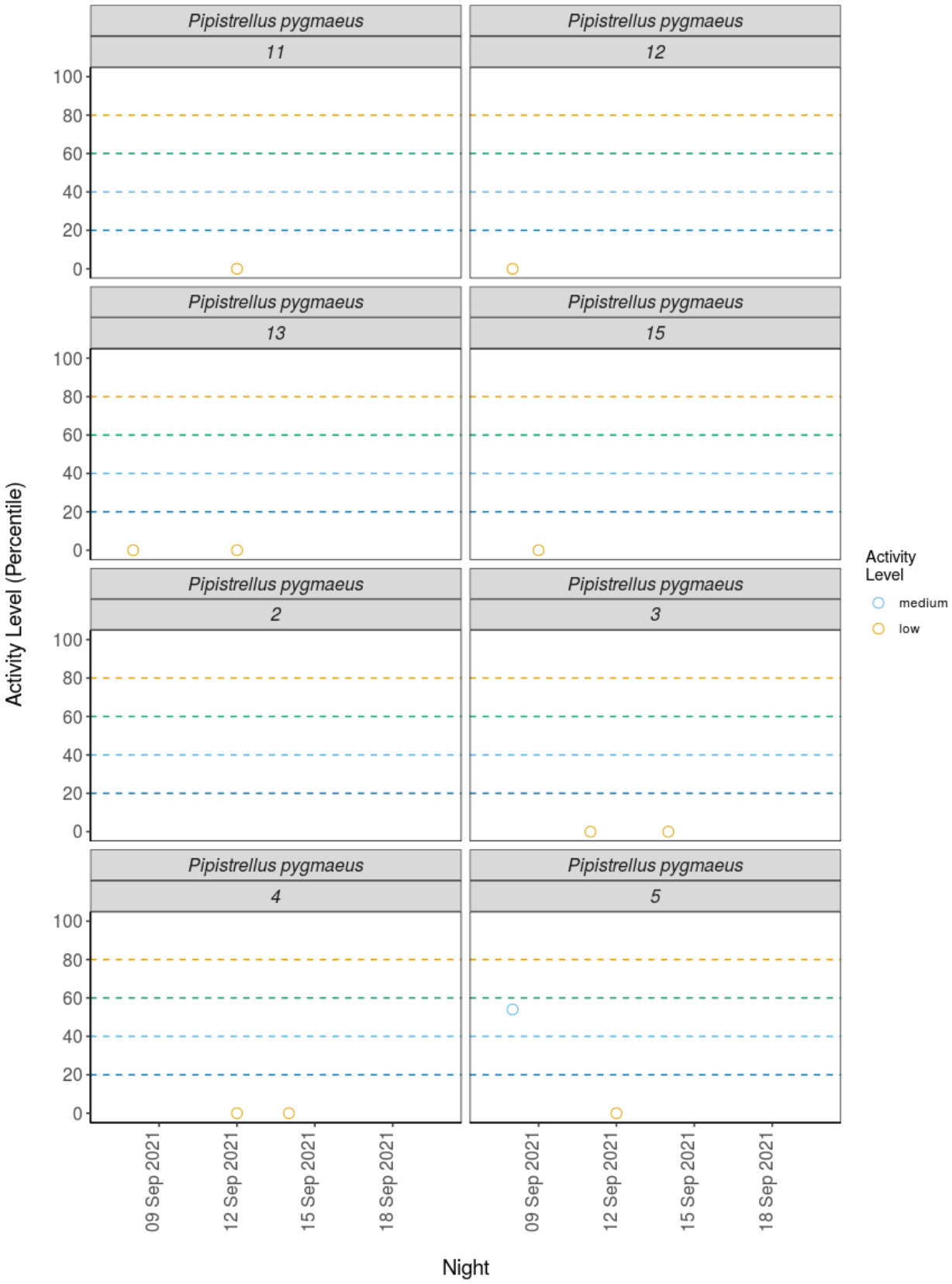
Figure 3. The activity level (percentile) of bats recorded across each night of the bat survey.

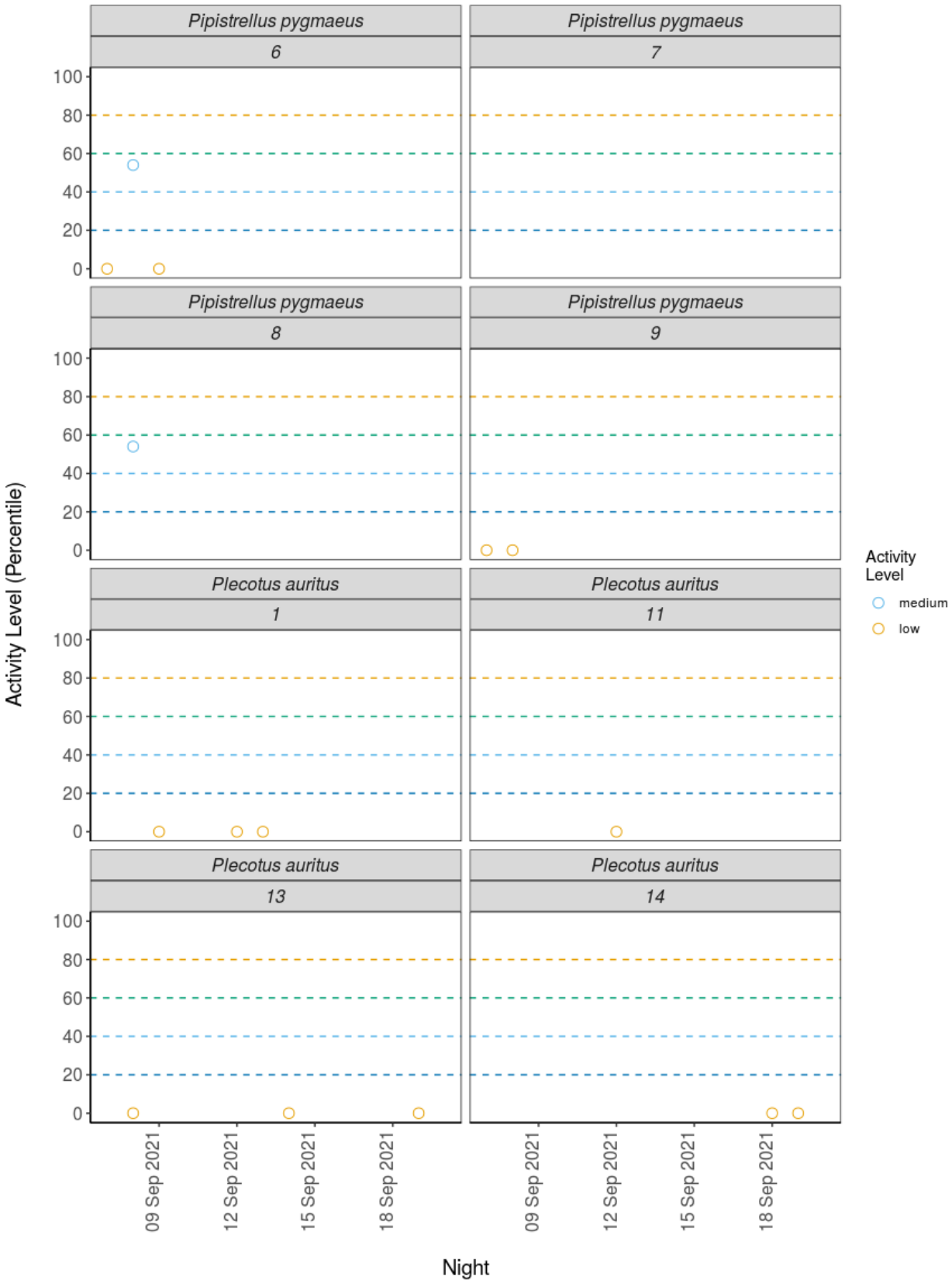

Myotis
1
Myotis
10
Myotis
11
Myotis
12
Myotis
13
Myotis
14
Myotis
15
Myotis
2
100
80
60
40
20
0
Activity Level (Percentile)
09 Sep 2021
12 Sep 2021
15 Sep 2021
18 Sep 2021
Night
Activity Level
medium
low

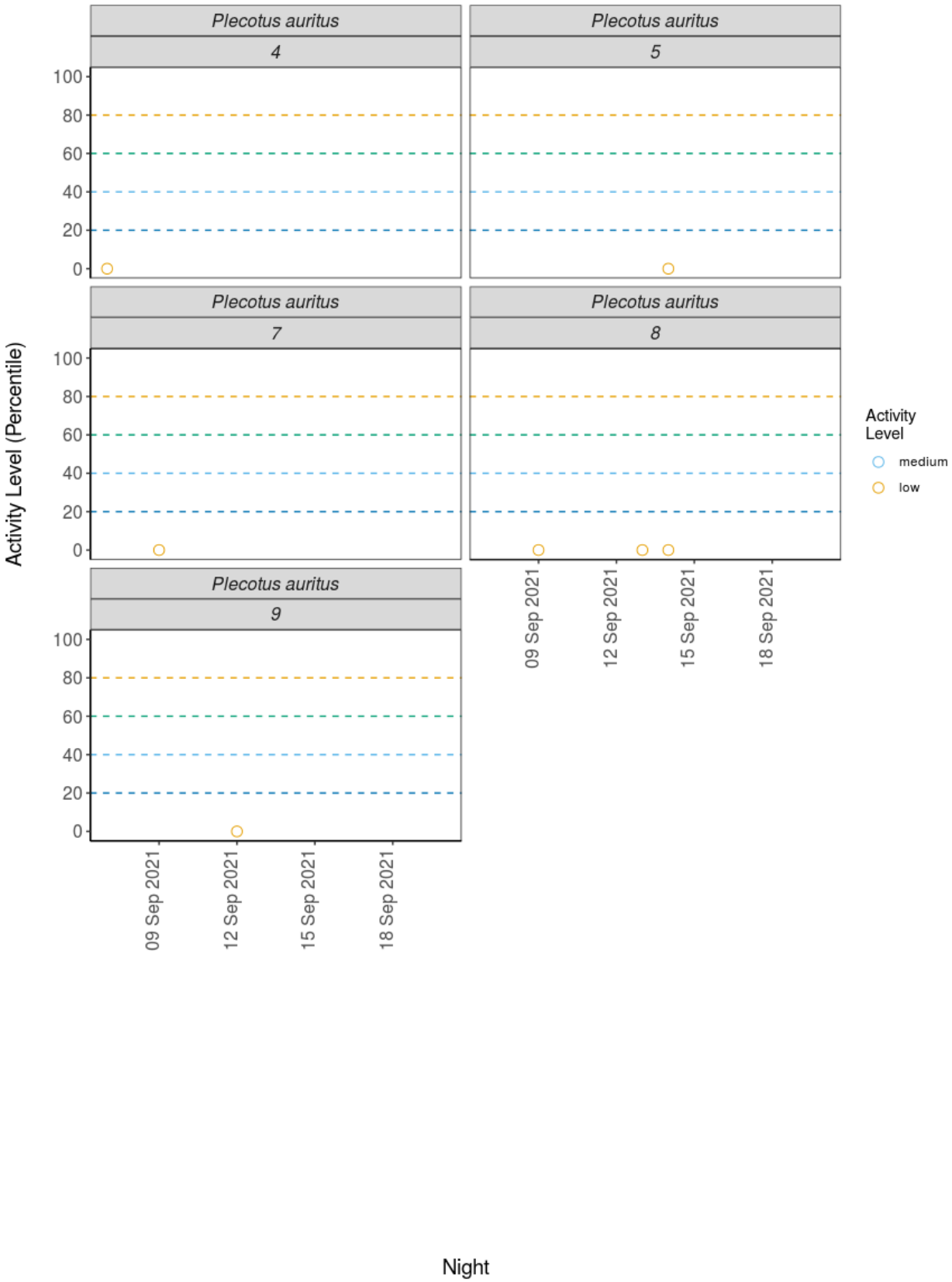

Myotis
3
Myotis
4
Myotis
5
Myotis
6
Myotis
7
Myotis
8
Myotis
9
Pipistrellus
12
100
80
60
40
20
0
Activity Level (Percentile)
09 Sep 2021
12 Sep 2021
15 Sep 2021
18 Sep 2021
Night
Activity Level
medium
low


Pipistrellus
14
2
3
4
5
6
7
8
100
80
60
40
20
0
Activity Level (Percentile)
09 Sep 2021
12 Sep 2021
15 Sep 2021
18 Sep 2021
Night
Activity Level
medium
low


Pipistrellus
9
Pipistrellus pipistrellus
1
Pipistrellus pipistrellus
14
Pipistrellus pipistrellus
2
Pipistrellus pipistrellus
5
Pipistrellus pipistrellus
6
Pipistrellus pygmaeus
1
Pipistrellus pygmaeus
10
Activity Level (Percentile)
100
80
60
40
20
0
09 Sep 2021
12 Sep 2021
15 Sep 2021
18 Sep 2021
Night
Activity Level
medium
low


Pipistrellus pygmaeus
11
12
13
15
2
3
4
5
Activity Level (Percentile)
100
80
60
40
20
0
09 Sep 2021
12 Sep 2021
15 Sep 2021
18 Sep 2021
Night
Activity Level
medium
low


Pipistrellus pygmaeus
6
Pipistrellus pygmaeus
7
Pipistrellus pygmaeus
8
Pipistrellus pygmaeus
9
Plecotus auritus
1
Plecotus auritus
11
Plecotus auritus
13
Plecotus auritus
14
Activity Level (Percentile)
100
80
60
40
20
0
09 Sep 2021
12 Sep 2021
15 Sep 2021
18 Sep 2021
Night
Activity Level
medium
low


Plecotus auritus
4
Plecotus auritus
5
Plecotus auritus
7
Plecotus auritus
8
Plecotus auritus
9
Activity Level (Percentile)
100
80
60
40
20
0
09 Sep 2021
12 Sep 2021
15 Sep 2021
18 Sep 2021
Activity Level
medium
low
Night

PER DETECTOR, PER MONTH

Table 5. Summary table showing the number of nights recorded bat activity fell into each activity band for each species at each detector during each month.

Detector ID	Species/Species Group	Month	Nights of High Activity	Nights of Moderate / High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
1	*Myotis*	Sep	0	0	0	1	4
1	*Pipistrellus pipistrellus*	Sep	0	0	0	0	1
1	*Pipistrellus pygmaeus*	Sep	0	0	0	0	2
1	*Plecotus auritus*	Sep	0	0	0	0	3
10	*Myotis*	Sep	0	0	0	1	1
10	*Pipistrellus pygmaeus*	Sep	0	0	0	0	2
11	*Myotis*	Sep	0	1	3	0	1
11	*Pipistrellus pygmaeus*	Sep	0	0	0	1	1
11	*Plecotus auritus*	Sep	0	0	0	0	1
12	*Myotis*	Sep	0	0	1	2	3
12	*Pipistrellus*	Sep	0	0	0	1	0
12	*Pipistrellus pygmaeus*	Sep	0	0	0	0	1
13	*Myotis*	Sep	0	0	2	3	3
13	*Pipistrellus pygmaeus*	Sep	0	0	0	0	2
13	*Plecotus auritus*	Sep	0	0	0	1	3
14	*Myotis*	Sep	2	3	1	1	2
14	*Pipistrellus*	Sep	0	0	0	1	0
14	*Pipistrellus pipistrellus*	Sep	0	0	0	0	2
14	*Plecotus auritus*	Sep	0	0	0	1	2

15	*Myotis*	Sep	0	0	0	1	1
15	*Pipistrellus pygmaeus*	Sep	0	0	0	0	1
2	*Myotis*	Sep	0	0	1	0	0
2	*Pipistrellus*	Sep	0	1	0	0	0
2	*Pipistrellus pipistrellus*	Sep	0	0	0	1	0
2	*Pipistrellus pygmaeus*	Sep	0	0	0	1	0
3	*Myotis*	Sep	0	3	1	1	2
3	*Pipistrellus*	Sep	0	1	0	0	0
3	*Pipistrellus pygmaeus*	Sep	0	1	0	0	2
4	*Myotis*	Sep	2	2	3	0	0
4	*Pipistrellus*	Sep	1	2	0	0	0
4	*Pipistrellus pygmaeus*	Sep	0	2	0	2	2
4	*Plecotus auritus*	Sep	0	0	0	0	1
5	*Myotis*	Sep	0	4	0	2	0
5	*Pipistrellus*	Sep	0	2	0	0	1
5	*Pipistrellus pipistrellus*	Sep	0	0	0	0	2
5	*Pipistrellus pygmaeus*	Sep	0	0	1	1	1
5	*Plecotus auritus*	Sep	0	0	0	0	1
6	*Myotis*	Sep	0	3	0	3	2
6	*Pipistrellus*	Sep	0	2	0	0	0
6	*Pipistrellus pipistrellus*	Sep	0	0	0	1	0
6	*Pipistrellus pygmaeus*	Sep	0	0	1	0	2
7	*Myotis*	Sep	1	2	1	1	1
7	*Pipistrellus*	Sep	0	0	0	0	1
7	*Pipistrellus pygmaeus*	Sep	0	0	0	2	0
7	*Plecotus auritus*	Sep	0	0	0	1	1

8	*Myotis*	Sep	1	5	1	1	0
8	*Pipistrellus*	Sep	0	1	0	0	0
8	*Pipistrellus pygmaeus*	Sep	0	0	1	1	0
8	*Plecotus auritus*	Sep	0	0	0	1	3
9	*Myotis*	Sep	0	0	2	1	2
9	*Pipistrellus*	Sep	0	0	0	1	0
9	*Pipistrellus pygmaeus*	Sep	0	0	0	0	2
9	*Plecotus auritus*	Sep	0	1	0	1	1

Table 6. Summary table showing key metrics for each species recorded per month. Please note that we cannot split the reference range by month, hence this column is not shown in this table.

Detector ID	Species/Species Group	Month	Median Percentile	95% CIs	Max Percentile	Nights Recorded
1	*Myotis*	Sep	0	0 - 0	39	5
1	*Pipistrellus pipistrellus*	Sep	0	0	0	1
1	*Pipistrellus pygmaeus*	Sep	0	0 - 0	0	2
1	*Plecotus auritus*	Sep	0	0 - 0	0	3
10	*Myotis*	Sep	20	19.5 - 19.5	39	2
10	*Pipistrellus pygmaeus*	Sep	0	0 - 0	0	2
11	*Myotis*	Sep	54	54 - 54	69	5
11	*Pipistrellus pygmaeus*	Sep	20	19.5 - 19.5	39	2
11	*Plecotus auritus*	Sep	0	0	0	1
12	*Myotis*	Sep	20	39 - 39	54	6
12	*Pipistrellus*	Sep	39	0	39	1
12	*Pipistrellus pygmaeus*	Sep	0	0	0	1
13	*Myotis*	Sep	39	39 - 46.5	54	8
13	*Pipistrellus pygmaeus*	Sep	0	0 - 0	0	2
13	*Plecotus auritus*	Sep	0	0 - 0	39	4
14	*Myotis*	Sep	63	54 - 81	83	9
14	*Pipistrellus*	Sep	39	0	39	1
14	*Pipistrellus pipistrellus*	Sep	0	0 - 0	0	2
14	*Plecotus auritus*	Sep	0	0 - 0	39	3
15	*Myotis*	Sep	20	19.5 - 19.5	39	2

15	*Pipistrellus pygmaeus*	Sep	0	0	0	1
2	*Myotis*	Sep	54	0	54	1
2	*Pipistrellus*	Sep	79	0	79	1
2	*Pipistrellus pipistrellus*	Sep	39	0	39	1
2	*Pipistrellus pygmaeus*	Sep	39	0	39	1
3	*Myotis*	Sep	54	51 - 69	73	7
3	*Pipistrellus*	Sep	76	0	76	1
3	*Pipistrellus pygmaeus*	Sep	0	0 - 0	63	3
4	*Myotis*	Sep	76	54 - 82	88	7
4	*Pipistrellus*	Sep	76	69 - 85	85	3
4	*Pipistrellus pygmaeus*	Sep	39	39 - 63	76	6
4	*Plecotus auritus*	Sep	0	0	0	1
5	*Myotis*	Sep	69	39 - 71	73	6
5	*Pipistrellus*	Sep	63	66 - 66	69	3
5	*Pipistrellus pipistrellus*	Sep	0	0 - 0	0	2
5	*Pipistrellus pygmaeus*	Sep	39	46.5 - 46.5	54	3
5	*Plecotus auritus*	Sep	0	0	0	1
6	*Myotis*	Sep	39	39 - 76	79	8
6	*Pipistrellus*	Sep	66	66 - 66	69	2
6	*Pipistrellus pipistrellus*	Sep	39	0	39	1
6	*Pipistrellus pygmaeus*	Sep	0	0 - 0	54	3
7	*Myotis*	Sep	59	51 - 76	81	6
7	*Pipistrellus*	Sep	0	0	0	1

7	*Pipistrellus pygmaeus*	Sep	39	39 - 39	39	2
7	*Plecotus auritus*	Sep	20	19.5 - 19.5	39	2
8	*Myotis*	Sep	71	54 - 78	83	8
8	*Pipistrellus*	Sep	73	0	73	1
8	*Pipistrellus pygmaeus*	Sep	47	46.5 - 46.5	54	2
8	*Plecotus auritus*	Sep	0	0 - 0	39	4
9	*Myotis*	Sep	39	54 - 54	54	5
9	*Pipistrellus*	Sep	39	0	39	1
9	*Pipistrellus pygmaeus*	Sep	0	0 - 0	0	2
9	*Plecotus auritus*	Sep	39	56 - 56	73	3

PER SITE

In this 'Per Site' section of the analysis, all values are taken from across all of the detectors to provide site-wide averages/medians.

Table 7. Summary table showing the number of nights recorded bat activity fell into each activity band for each species.

Species/Species Group	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
Myotis	6	23	16	18	22
Pipistrellus	1	9	0	3	2
Pipistrellus pipistrellus	0	0	0	2	5
Pipistrellus pygmaeus	0	3	3	8	18
Plecotus auritus	0	1	0	5	16

Table 8. Summary table showing key metrics for each species recorded.

Species/Species Group	Median Percentile	95% CIs	Max Percentile	Nights Recorded
Myotis	54	54 - 82	88	85
Pipistrellus	69	69 - 85	85	15
Pipistrellus pipistrellus	0	0 - 0	39	7
Pipistrellus pygmaeus	0	46.5 - 46.5	76	32
Plecotus auritus	0	56 - 56	73	22

###Figures

Figure 4. The activity level (percentile) of bats recorded across each night of the bat survey for the **entire site**.

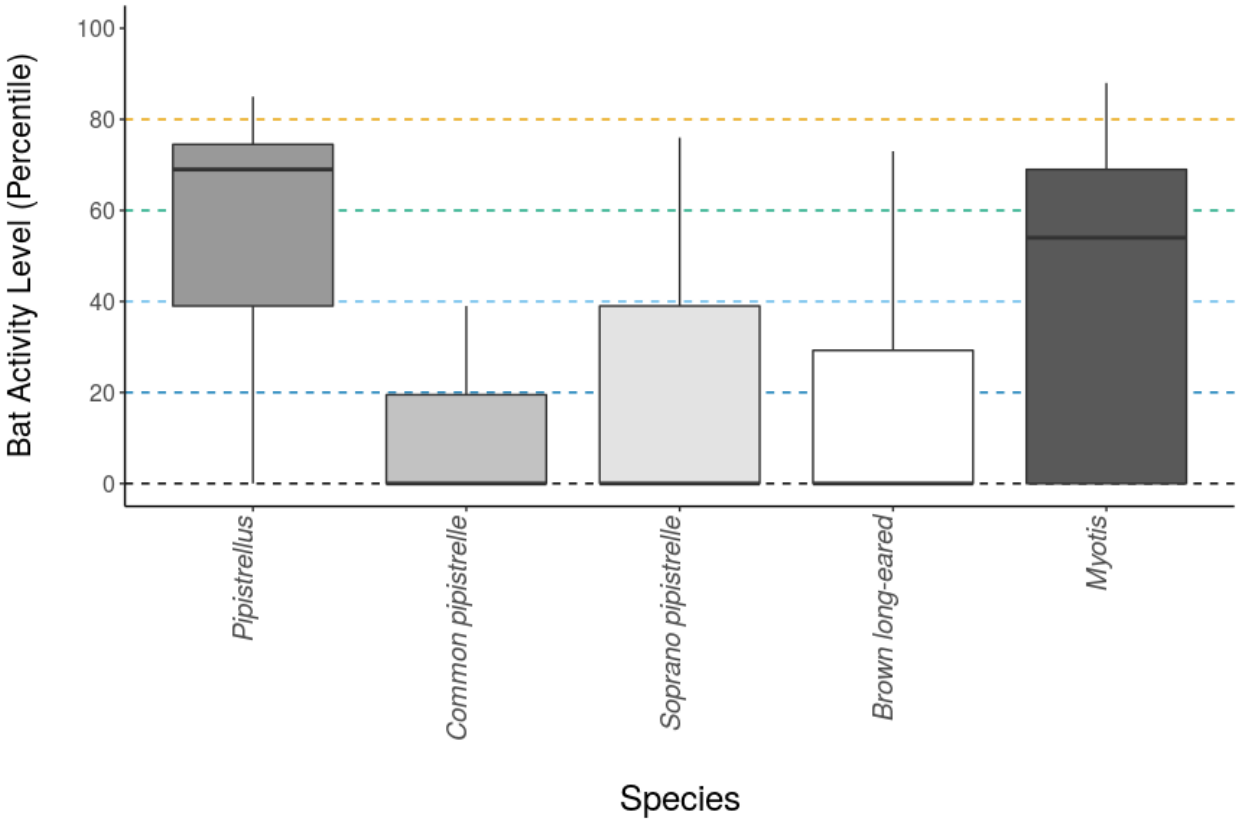
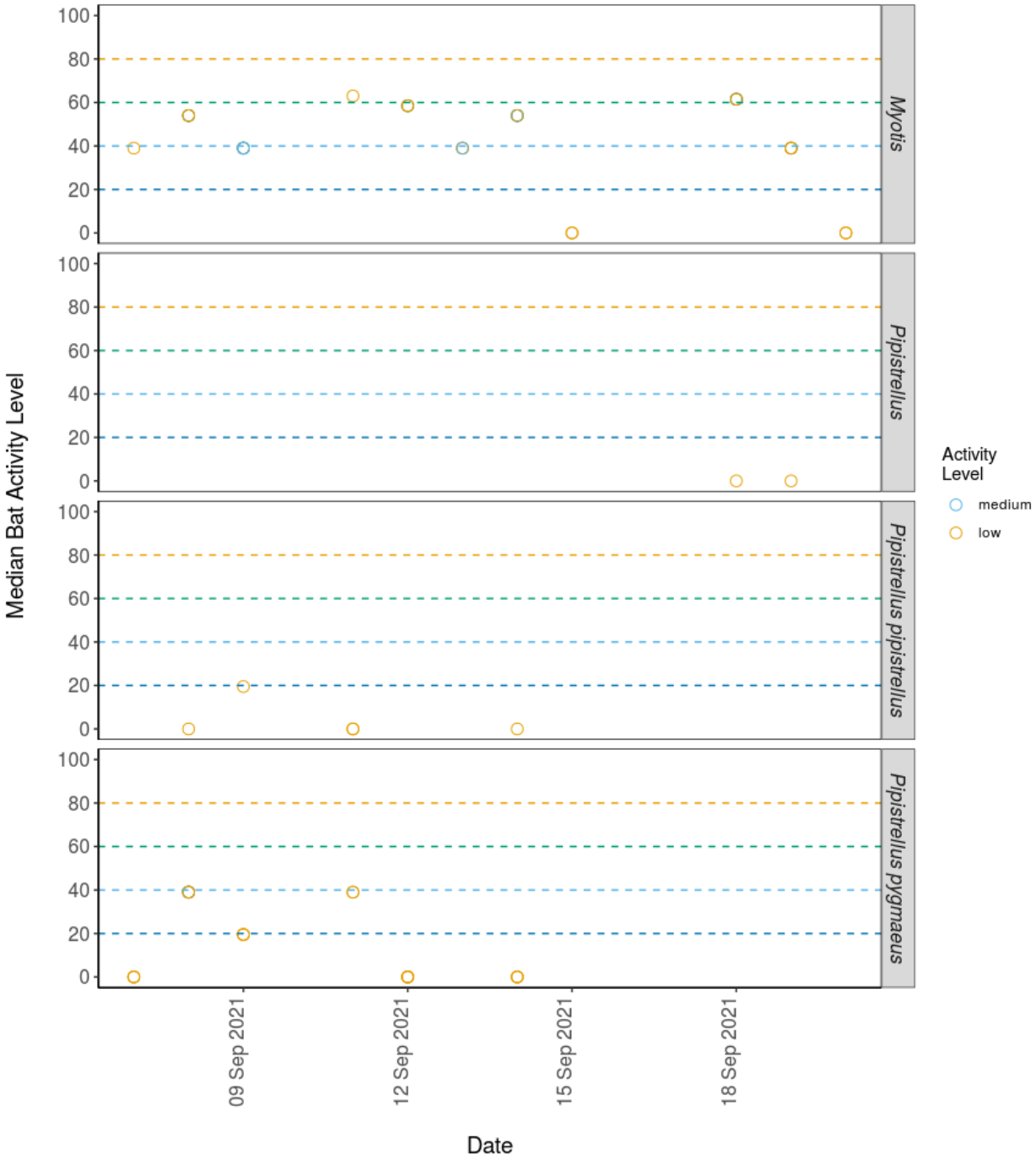
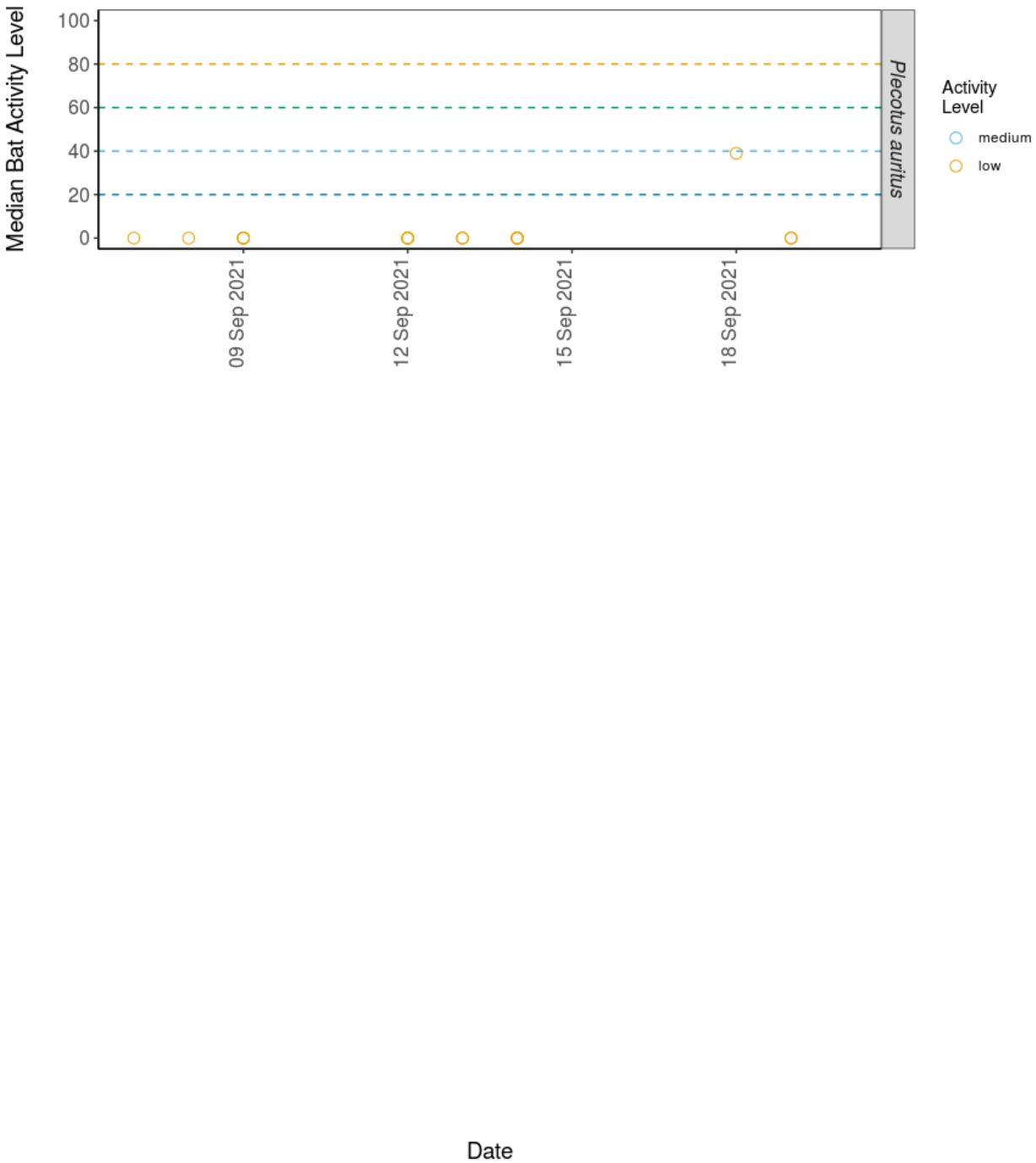


Figure 5. The median activity levels of bats recorded across all detectors each night.


Median Bat Activity Level
100
80
60
40
20
0
Myotis
Pipistrellus
Pipistrellus pipistrellus
Pipistrellus pygmaeus
09 Sep 2021
12 Sep 2021
15 Sep 2021
18 Sep 2021
Date
Activity Level
medium
low


Median Bat Activity Level
100
80
60
40
20
0
09 Sep 2021
12 Sep 2021
15 Sep 2021
18 Sep 2021
Plecotus auritus
Activity Level
medium
low
Date

PER SITE, PER MONTH

Table 9. Summary table showing the number of nights recorded bat activity fell into each activity band for each species during each month.

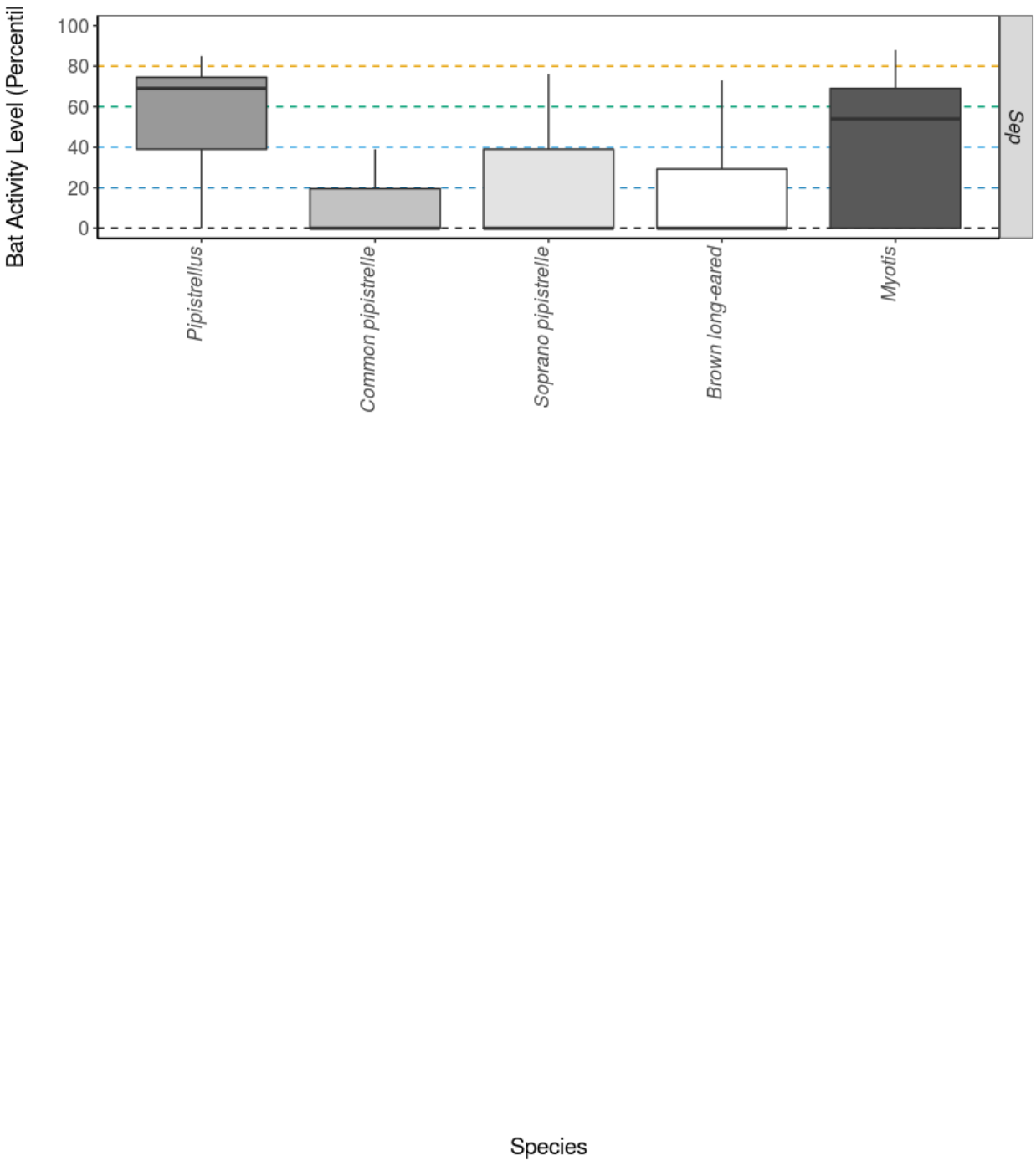
Species/Species Group	Month	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
Myotis	Sep	6	23	16	18	22
Pipistrellus	Sep	1	9	0	3	2
Pipistrellus pipistrellus	Sep	0	0	0	2	5
Pipistrellus pygmaeus	Sep	0	3	3	8	18
Plecotus auritus	Sep	0	1	0	5	16

Table 10. Summary table showing key metrics for each species recorded per month.

Species/Species Group	Month	Median Percentile	95% CIs	Max Percentile	Nights Recorded
Myotis	Sep	54	54 - 82	88	85
Pipistrellus	Sep	69	69 - 85	85	15
Pipistrellus pipistrellus	Sep	0	0 - 0	39	7
Pipistrellus pygmaeus	Sep	0	46.5 - 46.5	76	32
Plecotus auritus	Sep	0	56 - 56	73	22

###Figures

Figure 6. The activity level (percentile) of bats recorded across each night of the bat survey for the entire site, split between months.



PART 2: Nightly Analysis

ENTIRE SURVEY PERIOD

Sunrise and Sunset Times

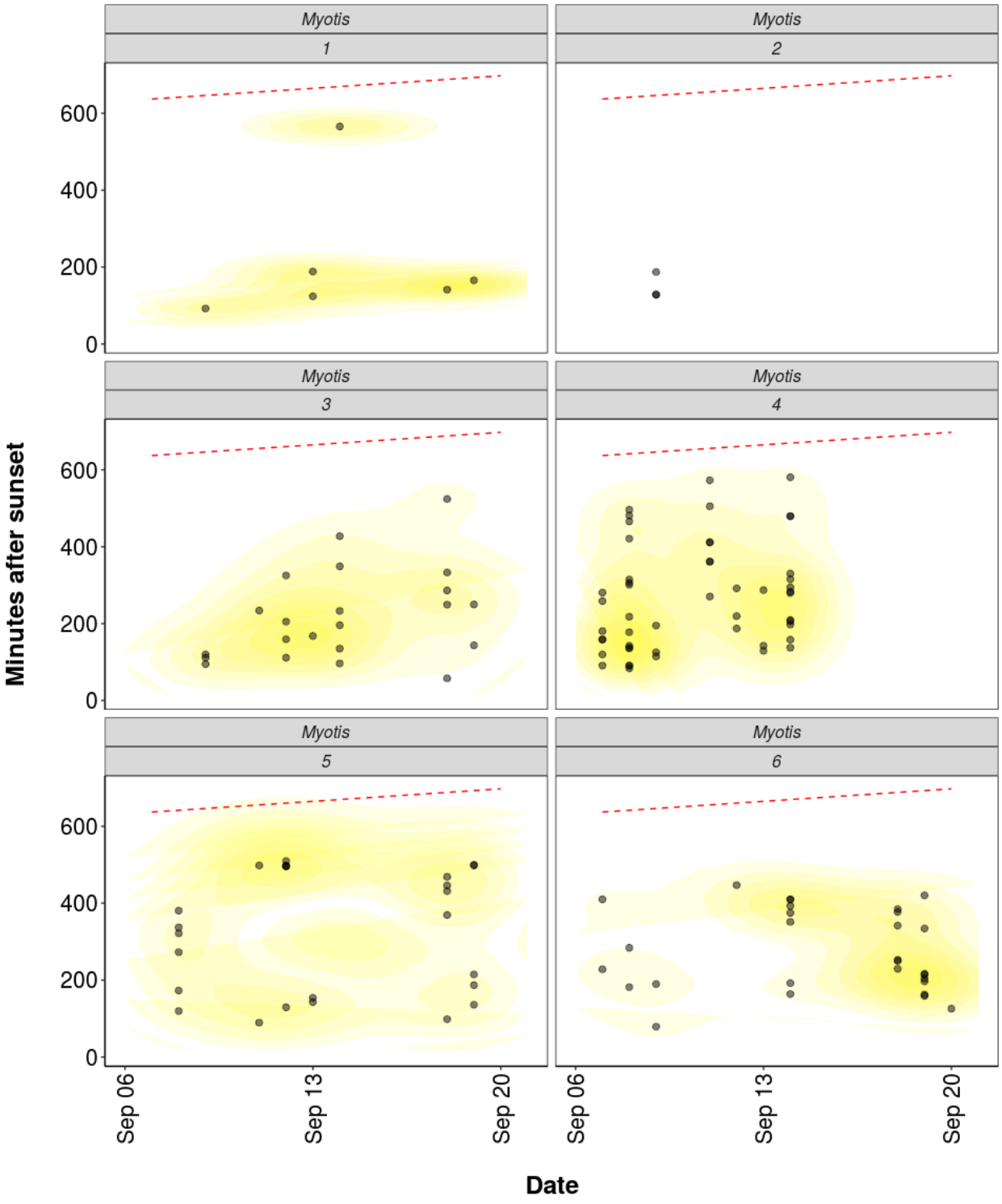
Table 11. The times of sunset and sunrise the following morning for surveys beginning on the date shown.

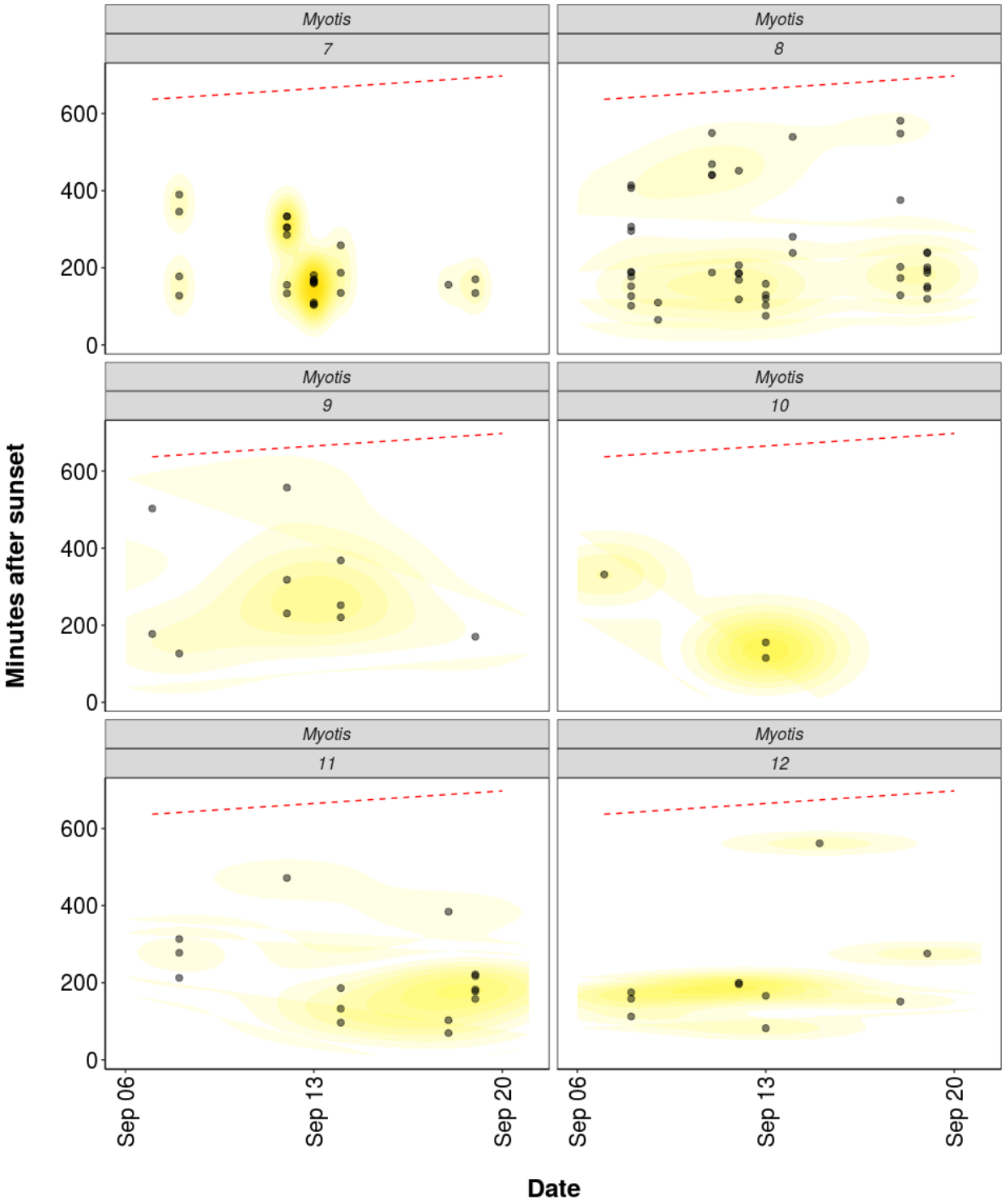
Night (y-m-d)	Sunset (hh:mm)	Sunrise (hh:mm)	Night Length (hours)
2021-09-07	20:02	06:39	10.6
2021-09-08	19:59	06:41	10.7
2021-09-09	19:57	06:43	10.8
2021-09-10	19:54	06:45	10.9
2021-09-11	19:51	06:47	10.9
2021-09-12	19:49	06:49	11.0
2021-09-13	19:46	06:51	11.1
2021-09-14	19:43	06:53	11.2
2021-09-15	19:41	06:55	11.2
2021-09-18	19:33	07:01	11.5
2021-09-19	19:30	07:03	11.5
2021-09-20	19:27	07:05	11.6

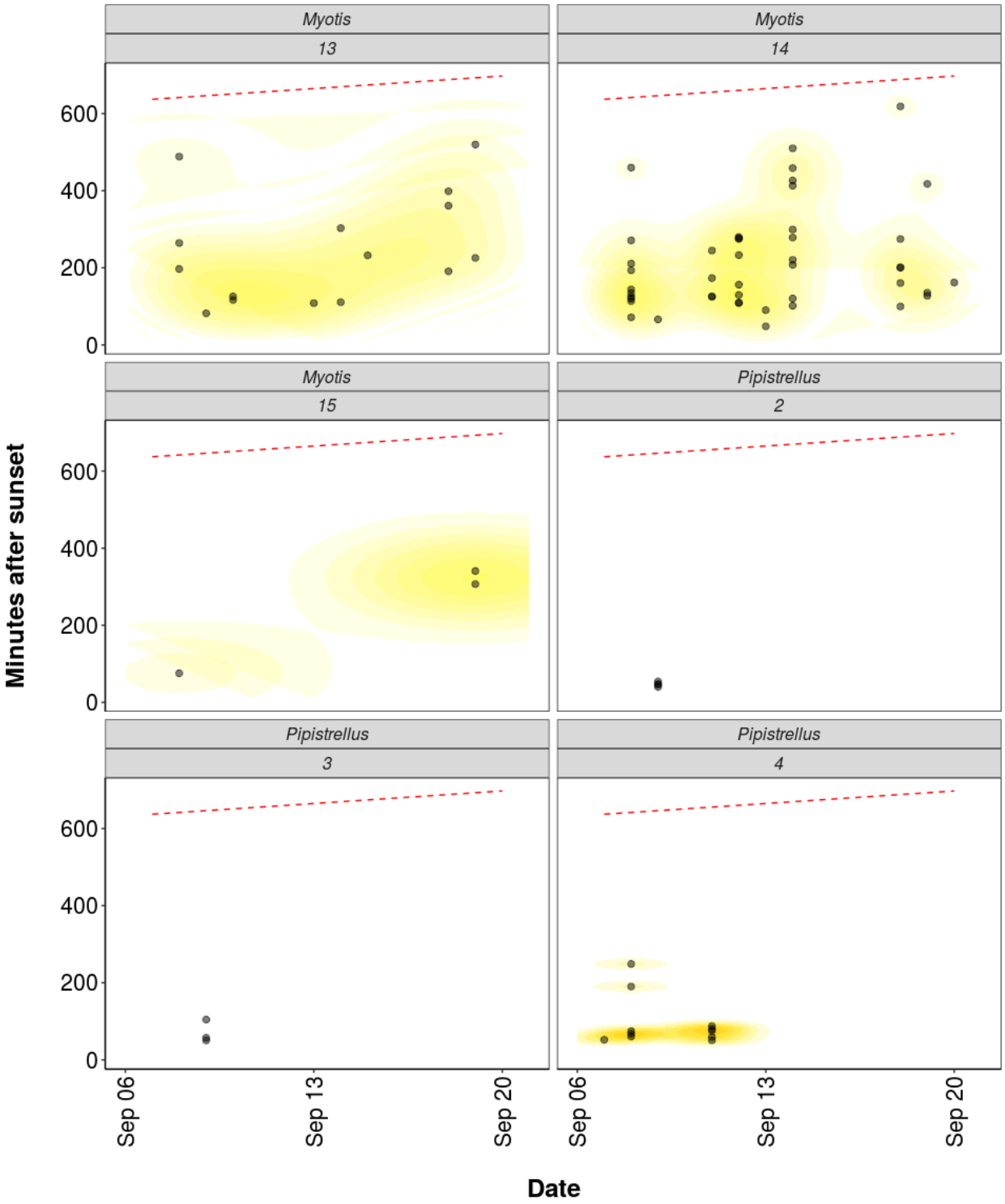
Distribution of Bat Activity Across the Night through Time

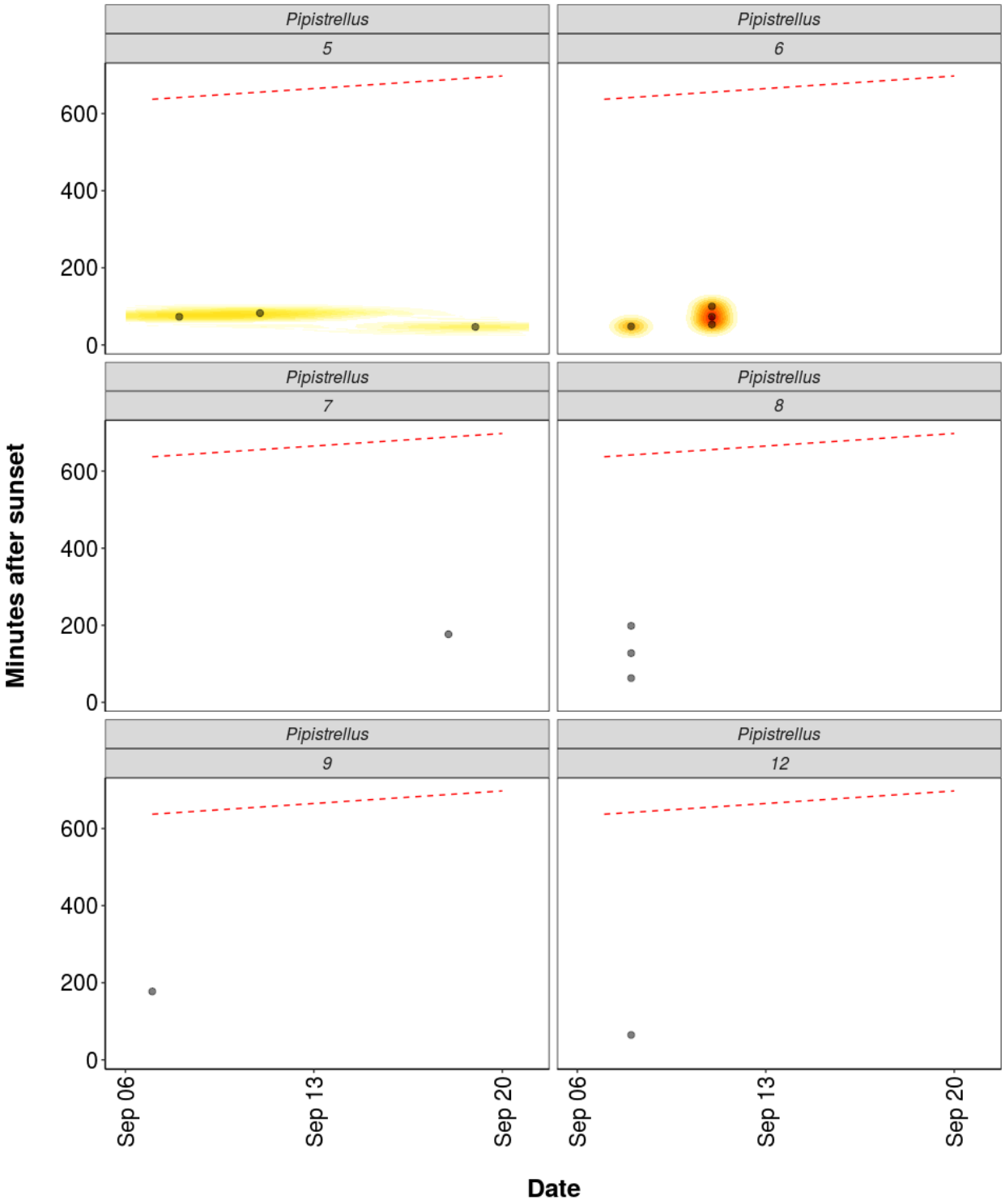
Per Detector

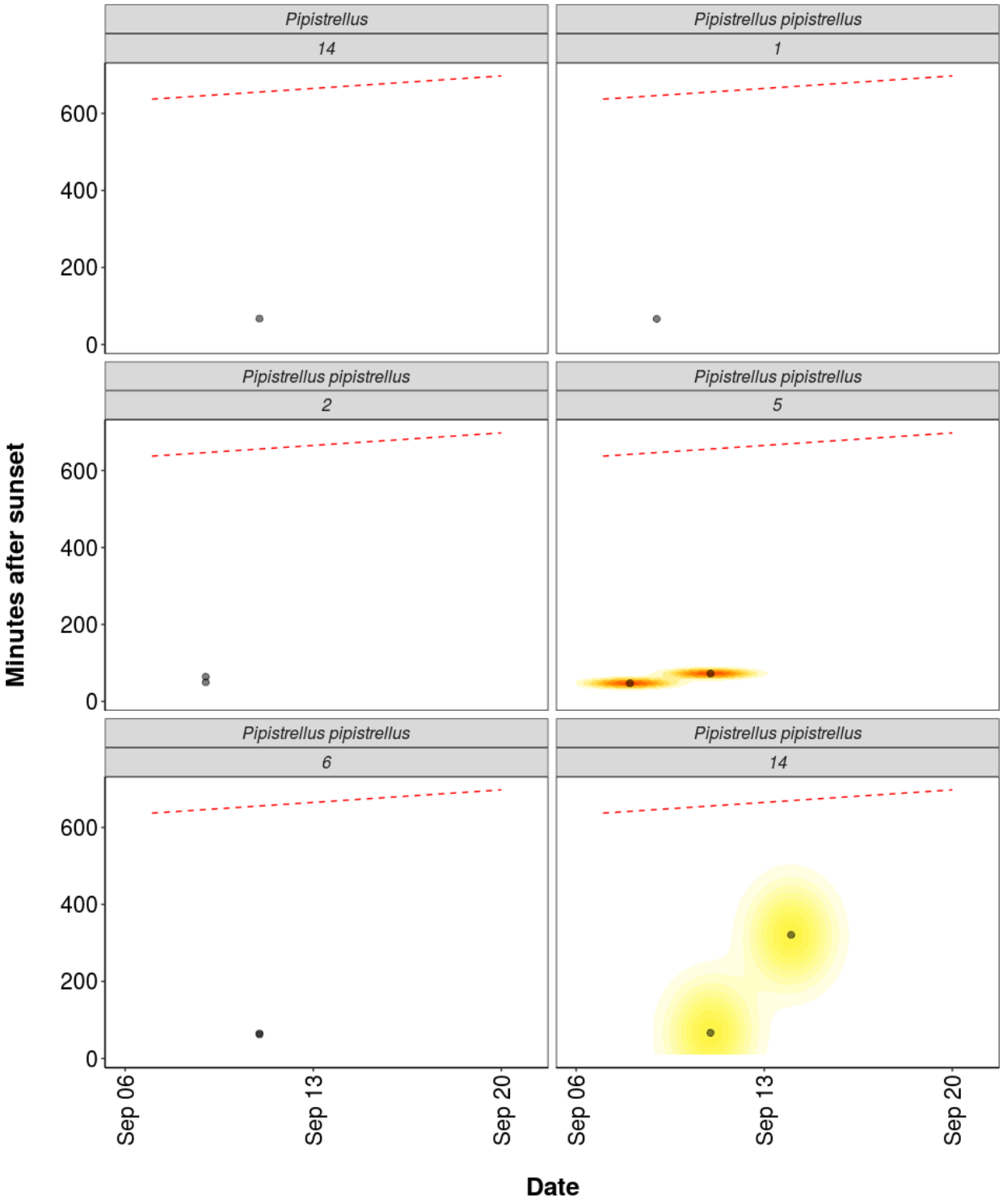
Figure 7. Timing of bat calls plotted as minutes before/after sunset, whereby 0 on the y axis represents sunset. Sunrise throughout the survey period is depicted as the red dashed line. Colours indicate kernel densities, with darkest colours showing peaks of activity. These colours are comparative only within each plot, and do not account for overall activity.

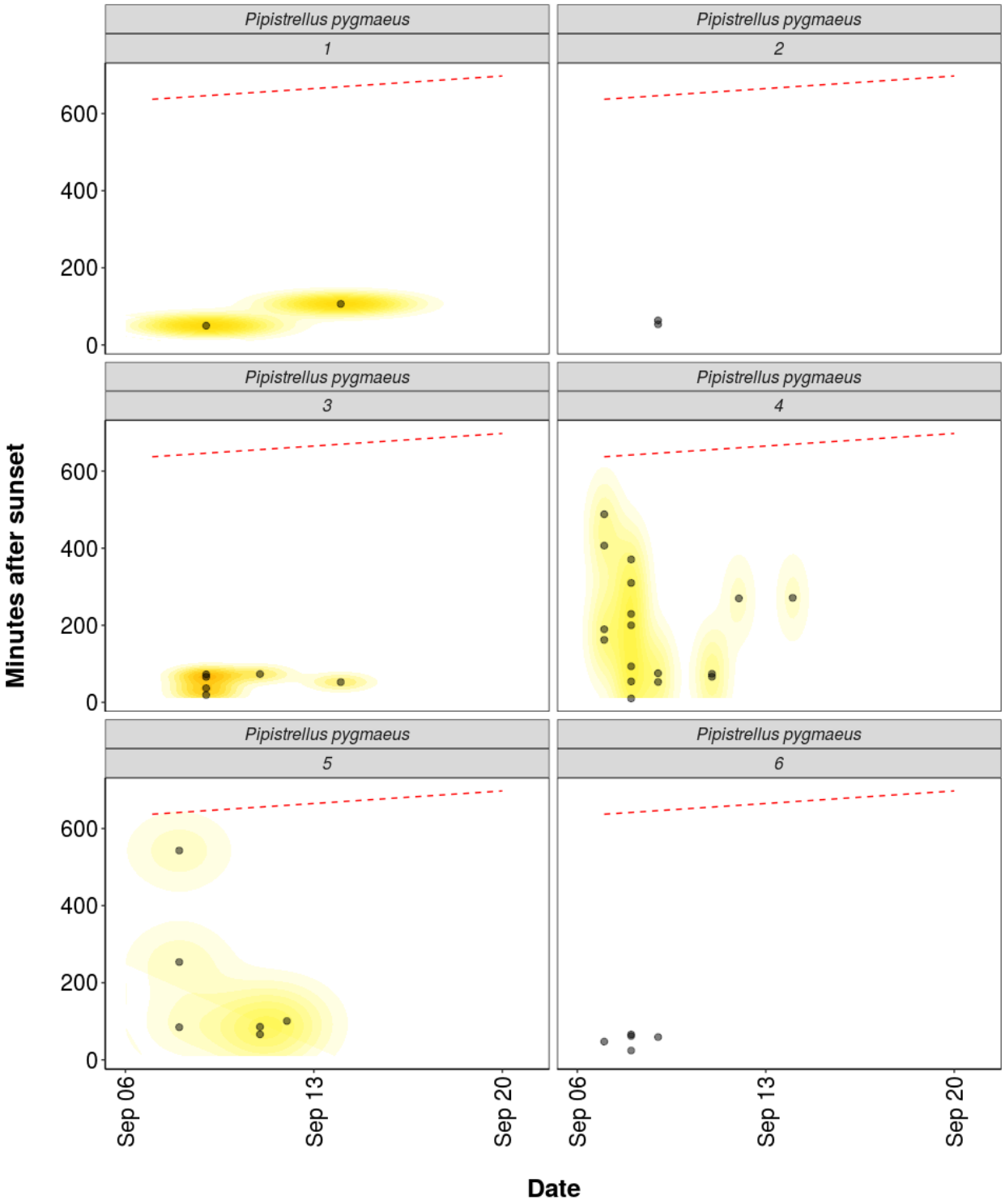

Myotis
1
Myotis
2
Myotis
3
Myotis
4
Myotis
5
Myotis
6
Minutes after sunset
0
200
400
600
Sep 06
Sep 13
Sep 20
Date

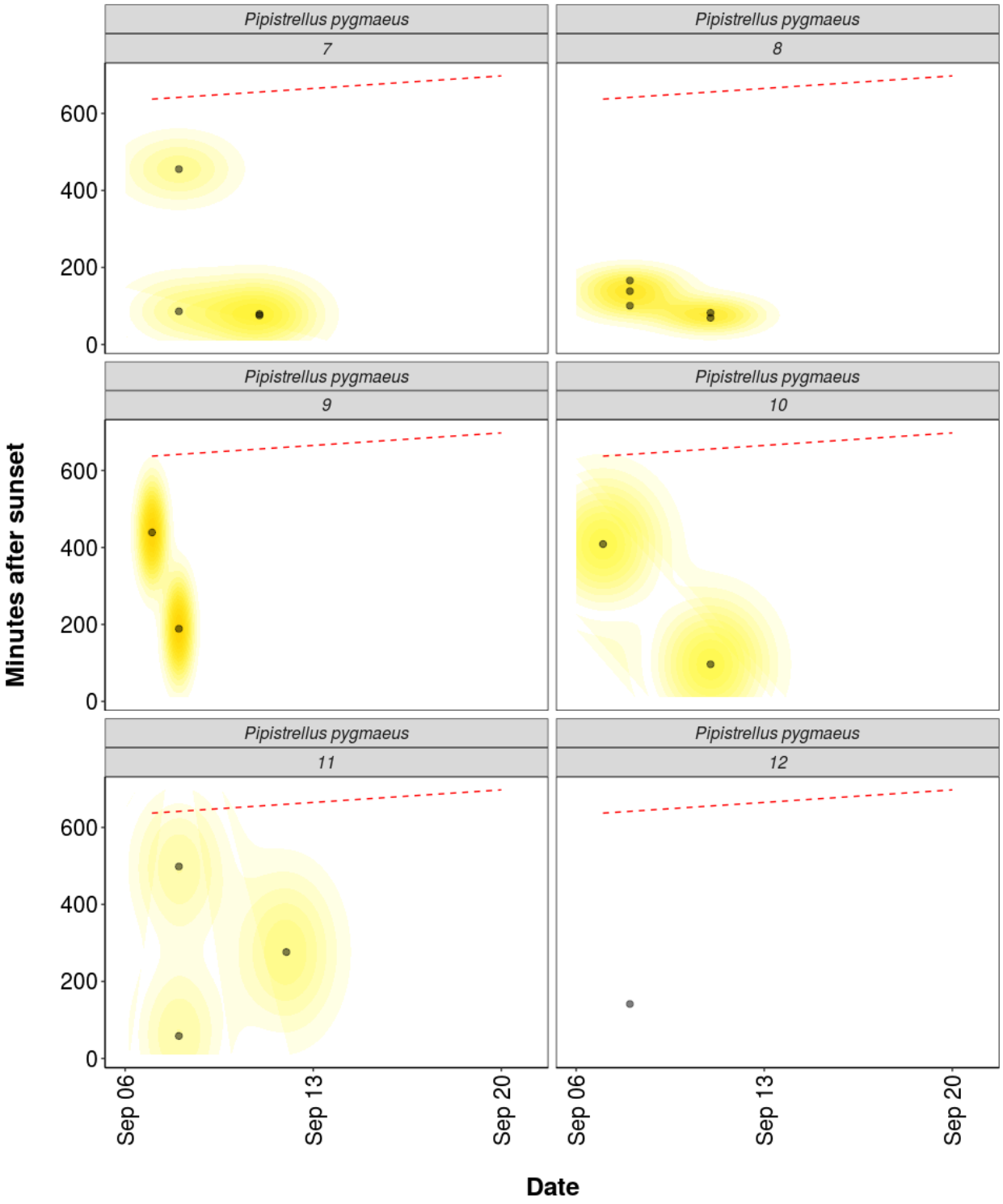

Myotis
7
Myotis
8
Myotis
9
Myotis
10
Myotis
11
Myotis
12
Minutes after sunset
0
200
400
600
Sep 06
Sep 13
Sep 20
Date

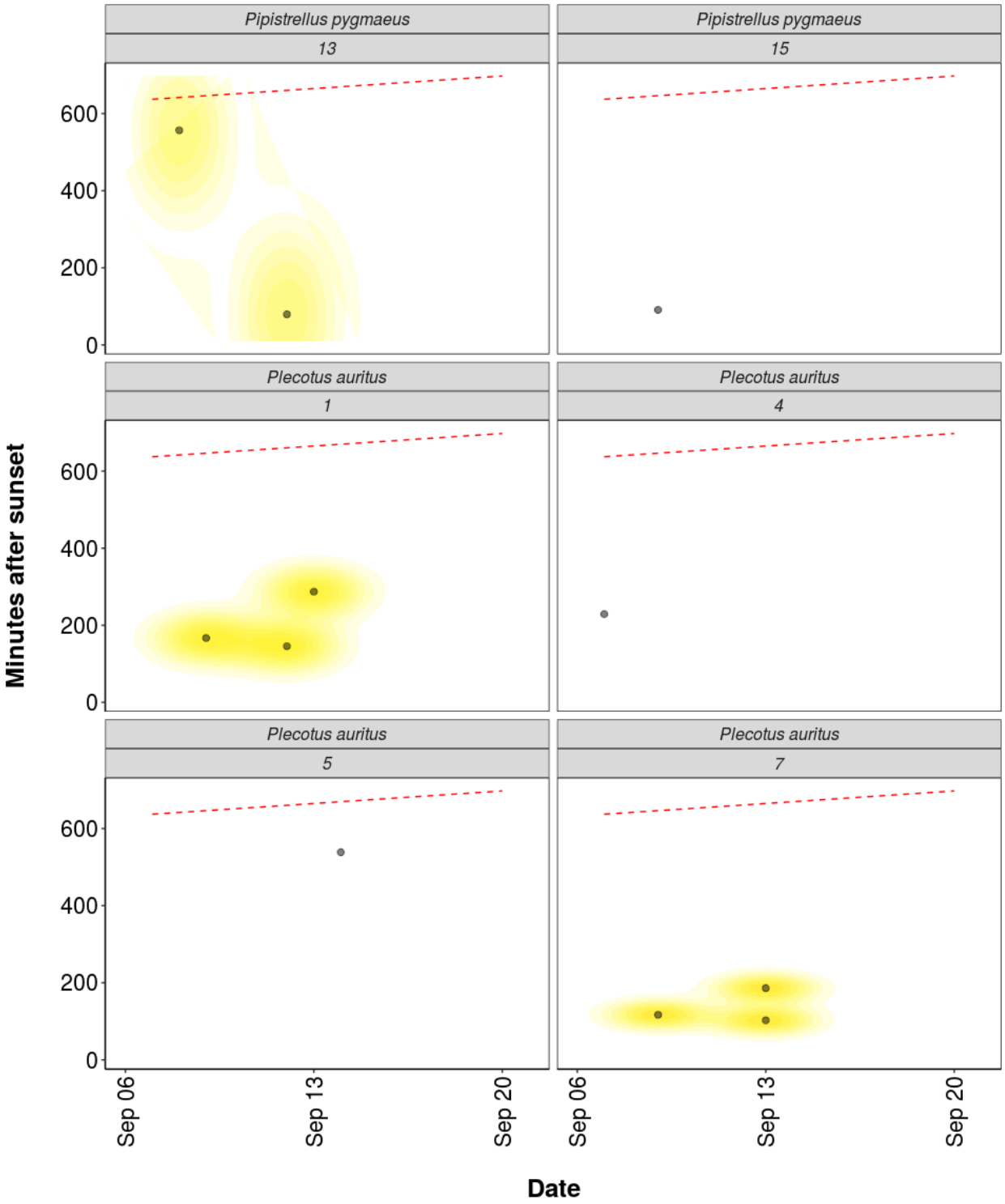

Myotis
13
Myotis
14
Myotis
15
Pipistrellus
2
Pipistrellus
3
Pipistrellus
4
Minutes after sunset
0
200
400
600
Sep 06
Sep 13
Sep 20
Date

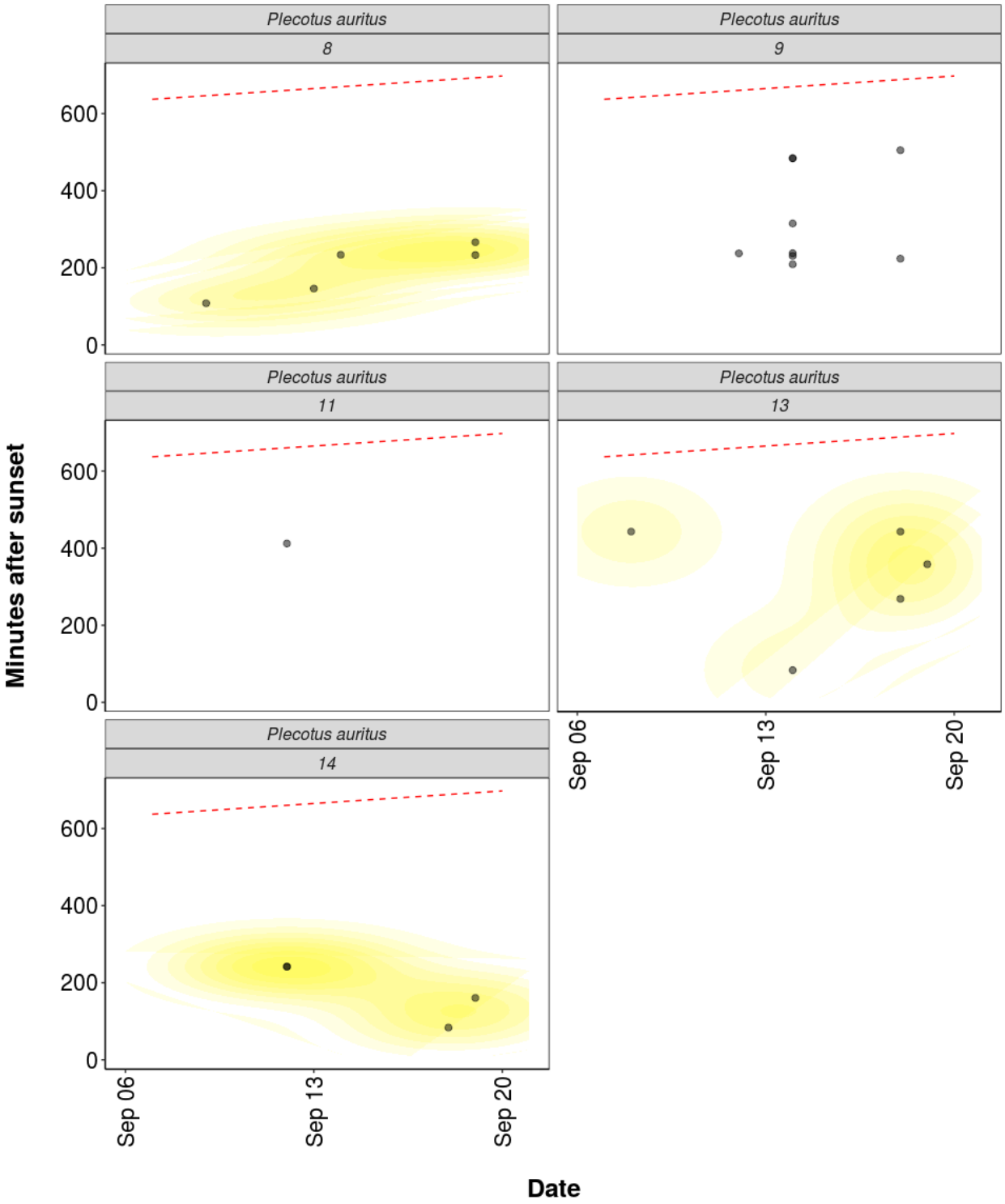

Pipistrellus
5
6
7
8
9
12
600
400
200
0
Minutes after sunset
Sep 06
Sep 13
Sep 20
Date


Pipistrellus
14
Pipistrellus pipistrellus
1
Pipistrellus pipistrellus
2
Pipistrellus pipistrellus
5
Pipistrellus pipistrellus
6
Pipistrellus pipistrellus
14
Minutes after sunset
0
200
400
600
Sep 06
Sep 13
Sep 20
Date


Pipistrellus pygmaeus
1
2
3
4
5
6
Minutes after sunset
0
200
400
600
Sep 06
Sep 13
Sep 20
Date


Pipistrellus pygmaeus
7
8
9
10
11
12
Minutes after sunset
0
200
400
600
Sep 06
Sep 13
Sep 20
Date


Pipistrellus pygmaeus
13
Pipistrellus pygmaeus
15
Plecotus auritus
1
Plecotus auritus
4
Plecotus auritus
5
Plecotus auritus
7
Minutes after sunset
0
200
400
600
Sep 06
Sep 13
Sep 20
Date


Plecotus auritus
8
9
11
13
14
Minutes after sunset
0
200
400
600
Sep 06
Sep 13
Sep 20
Date

Roost Emergence Time and Bat Observation

Based on: *Russ, Jon. 2012. British Bat Calls a Guide to species Identification. Pelagic Publishing.*

For more information see https://rbats-blog.updog.co/2018/05/29/bat-emergence/

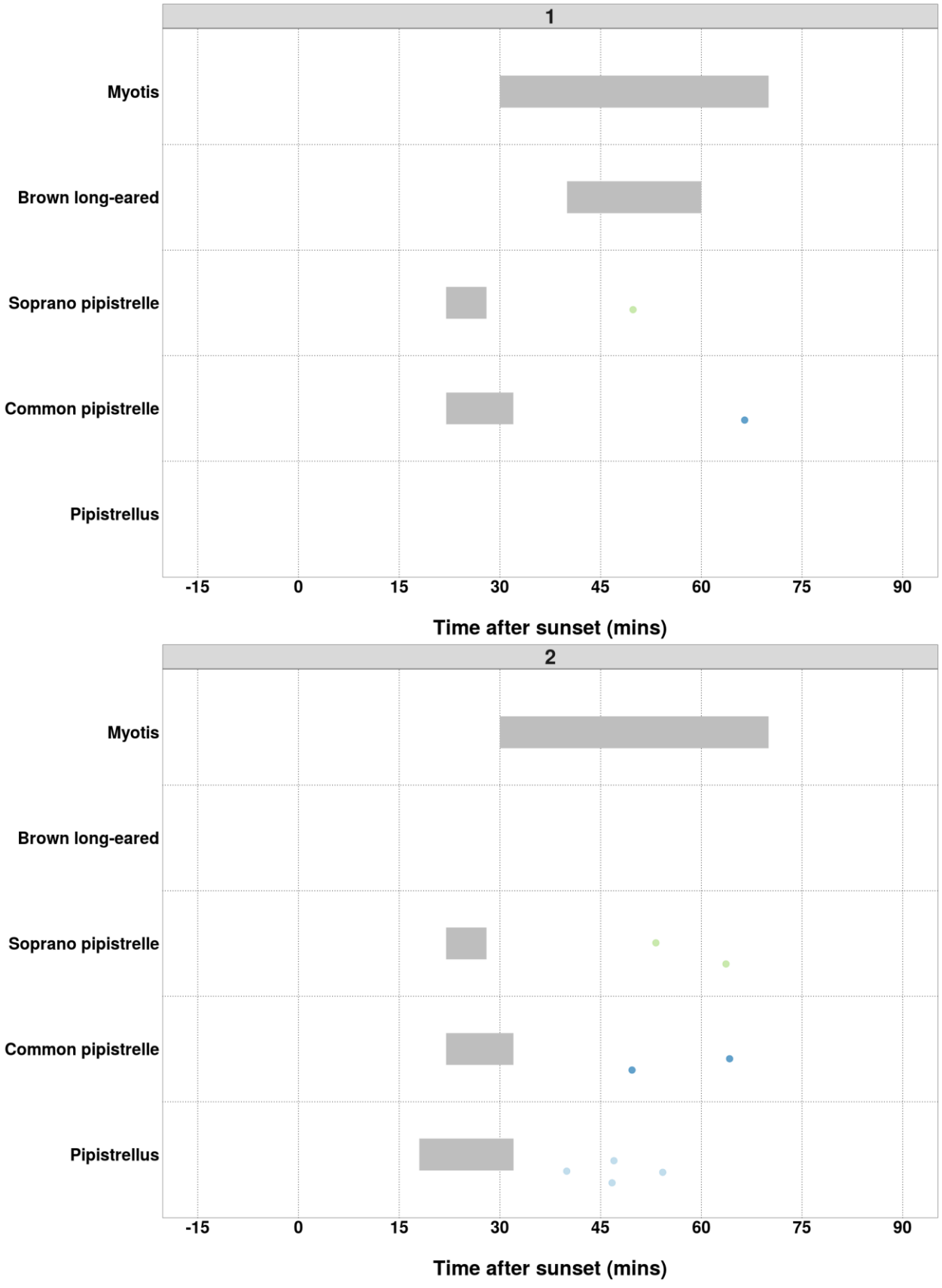
Bat Passes Potentially Indicating Close Proximity to a Roost (Russ 2012) - Table

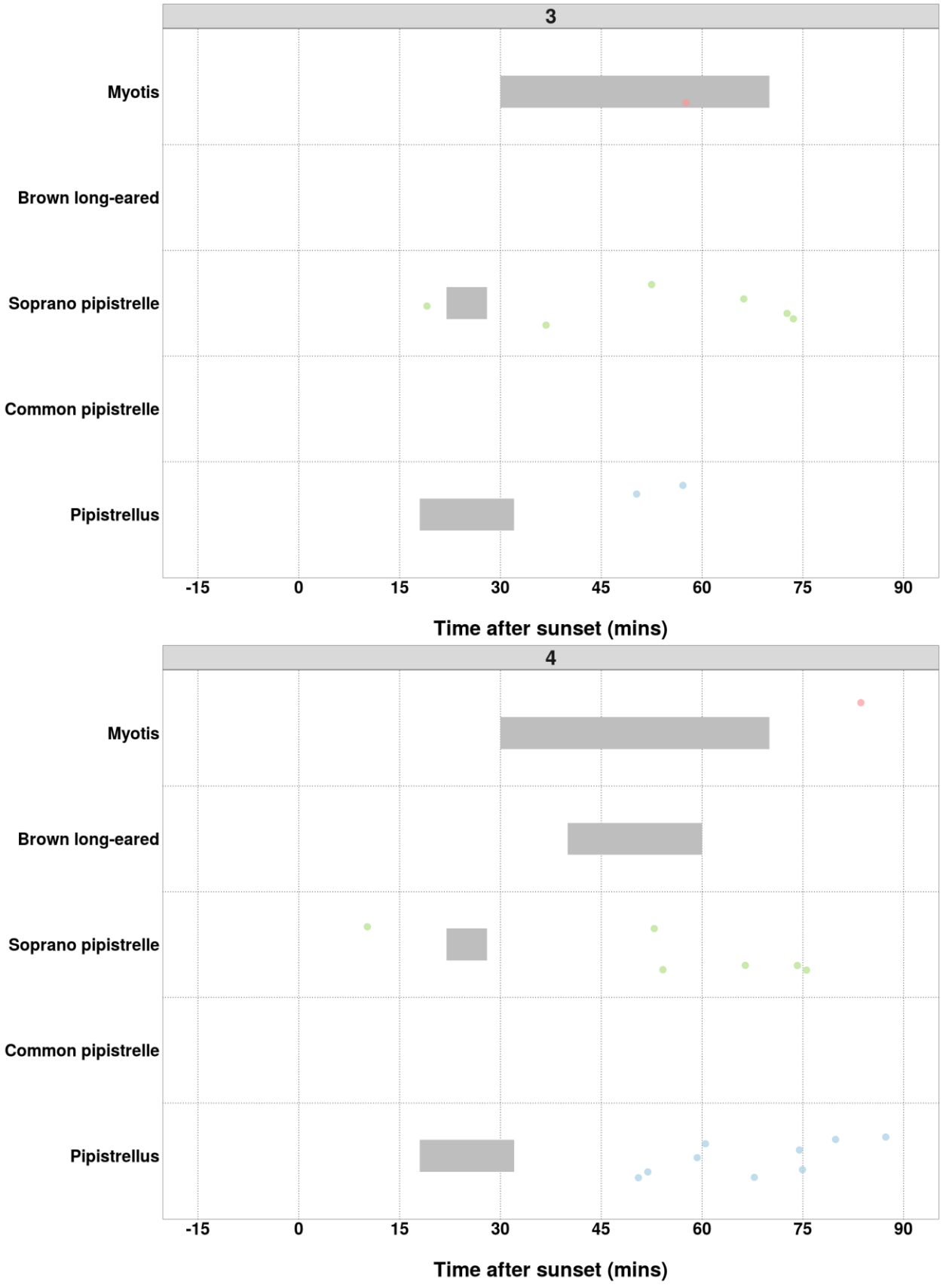
Table 12. Number of bat calls recorded before the upper time of the species-specific emergence time range, and which therefore may potentially indicate the presence of a nearby roost.

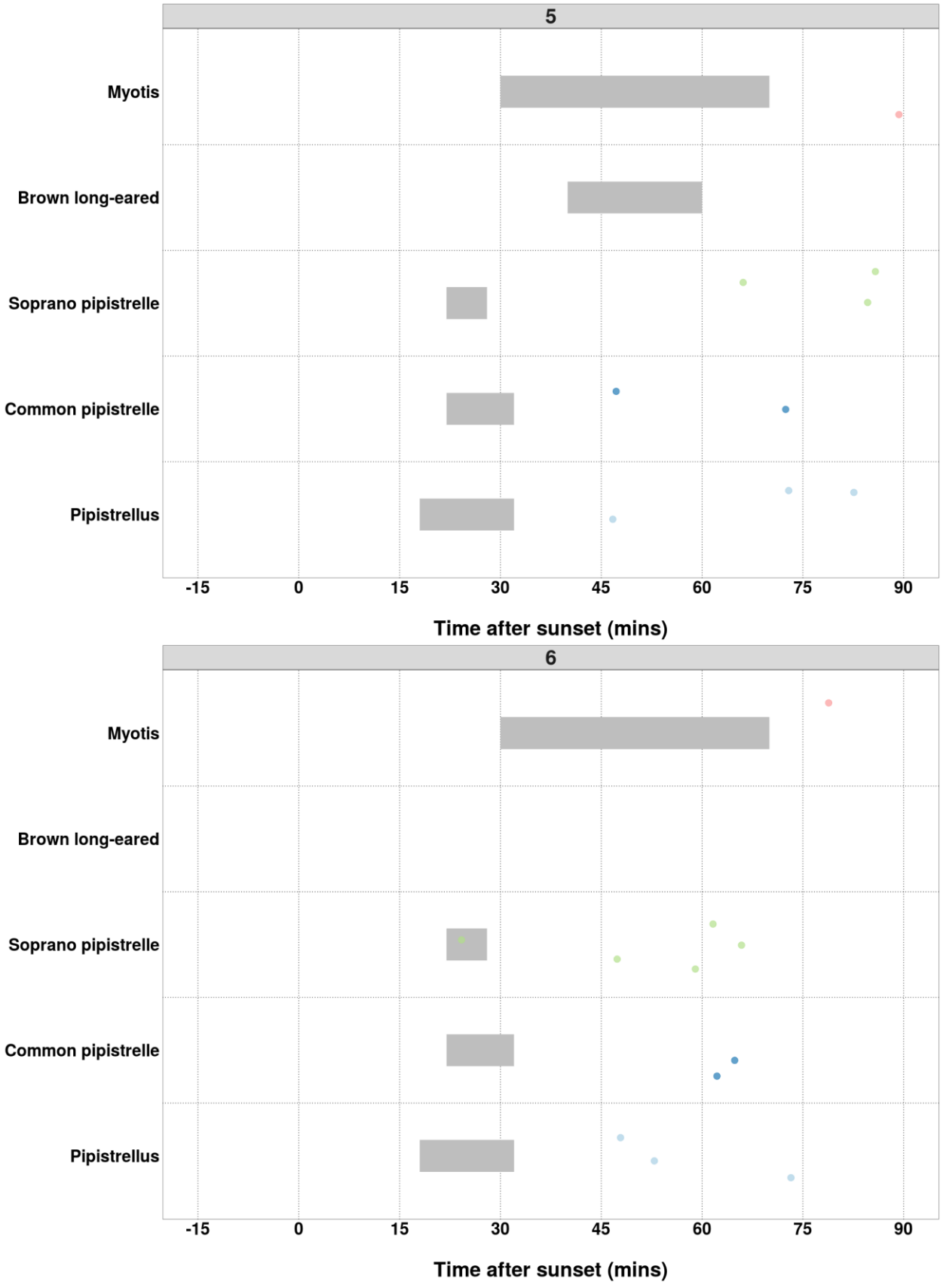
Species	Detector ID	2021-09-08	2021-09-09	2021-09-13	2021-09-18
Soprano pipistrelle	3	0	1	0	0
Soprano pipistrelle	4	1	0	0	0
Soprano pipistrelle	6	1	0	0	0
Myotis	3	0	0	0	1
Myotis	8	0	1	0	0
Myotis	11	0	0	0	1
Myotis	14	0	1	1	0

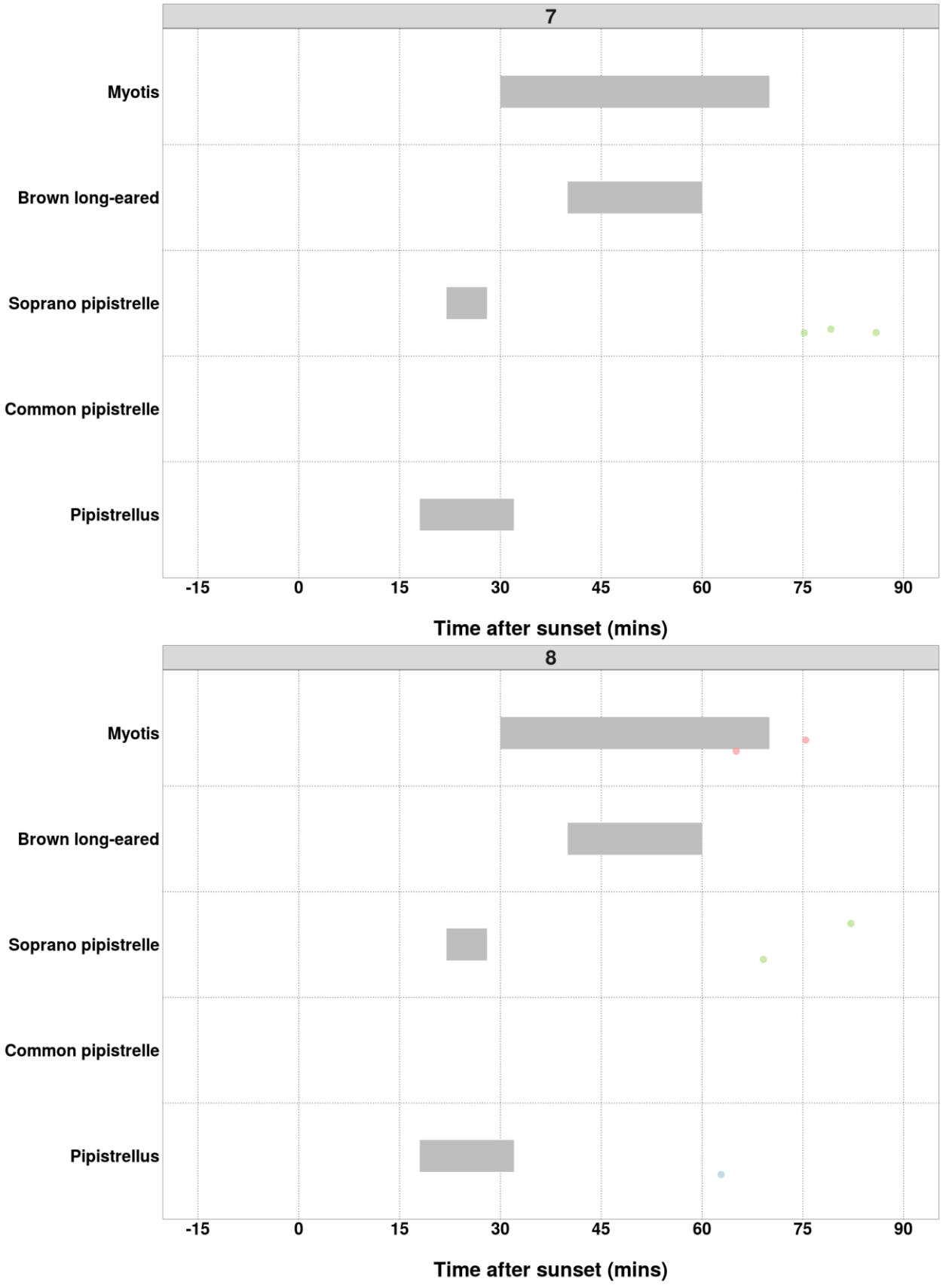
Bat Passes Potentially Indicating Close Proximity to a Roost (Russ 2012) - Figures

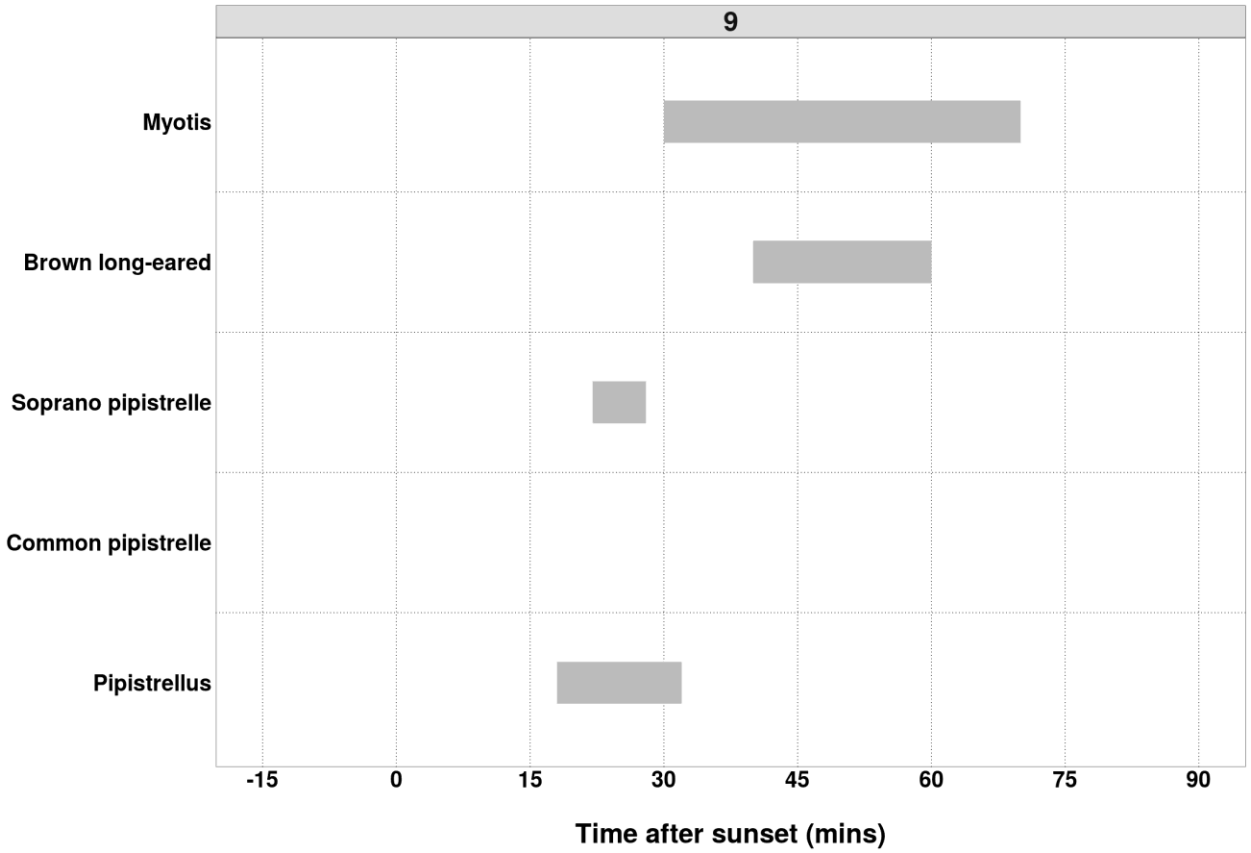
Figure 8. Time from 15 minutes before to 90 minutes after sunset. Species-specific emergence time ranges are shown as grey bars. Bat passes overlapping species-specific grey bars, or occuring earlier than this time range, may potentially indicate the presence of a nearby roost.

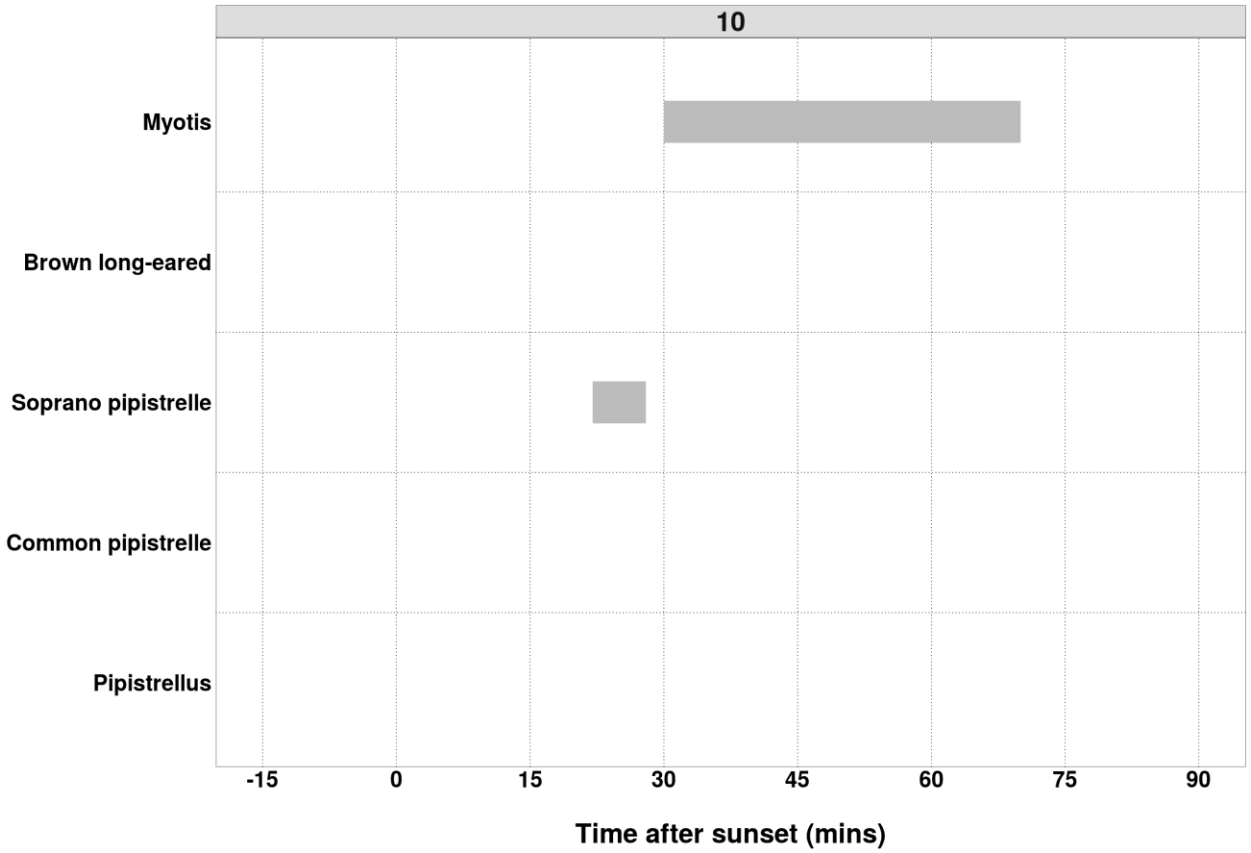

1
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
2
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

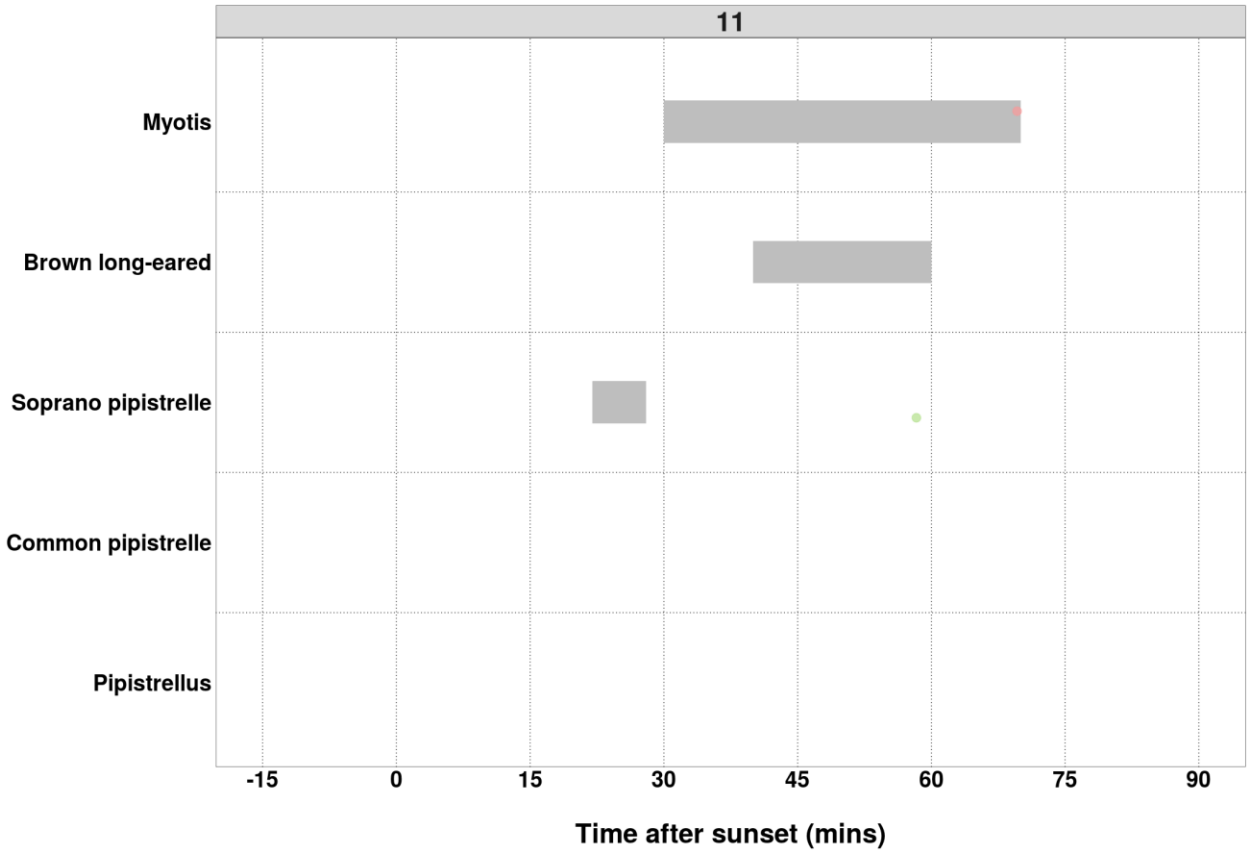

3
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
4
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

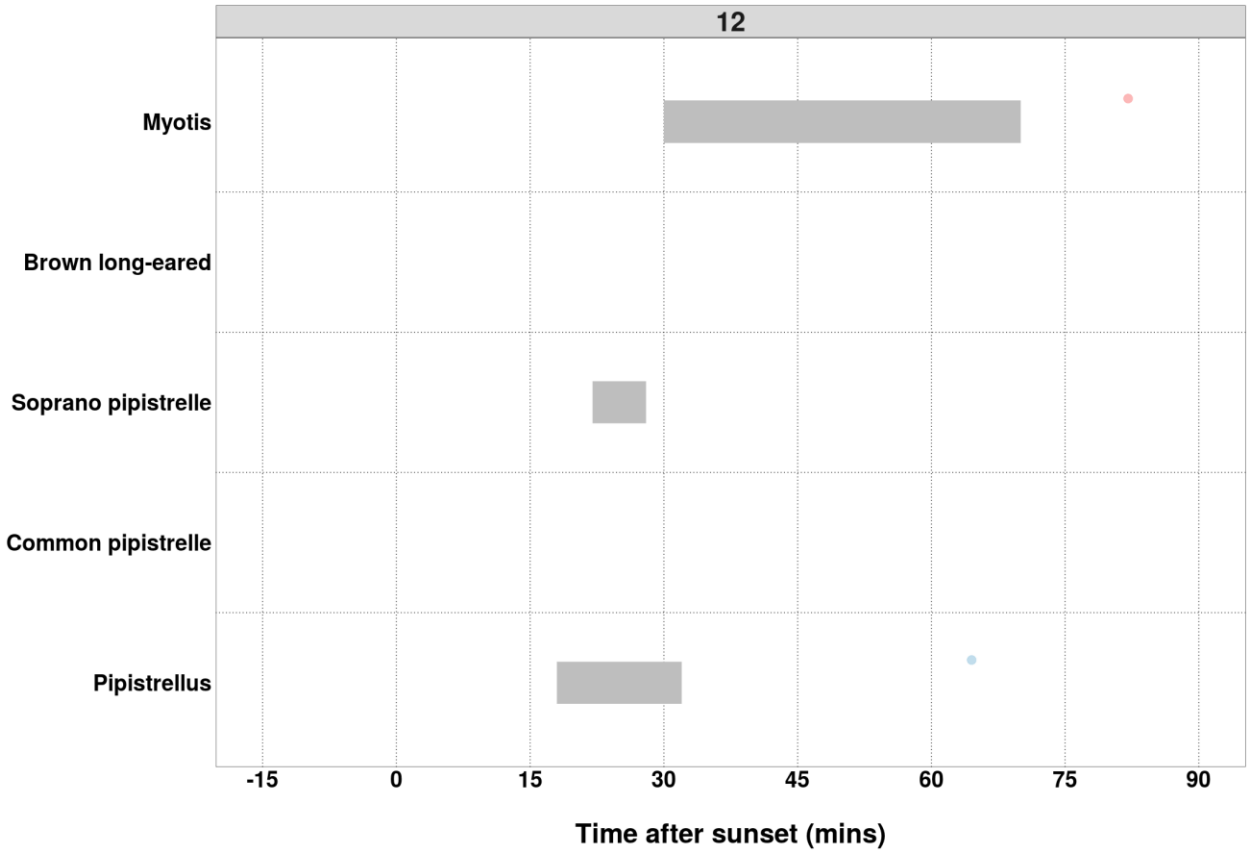

5
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
6
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

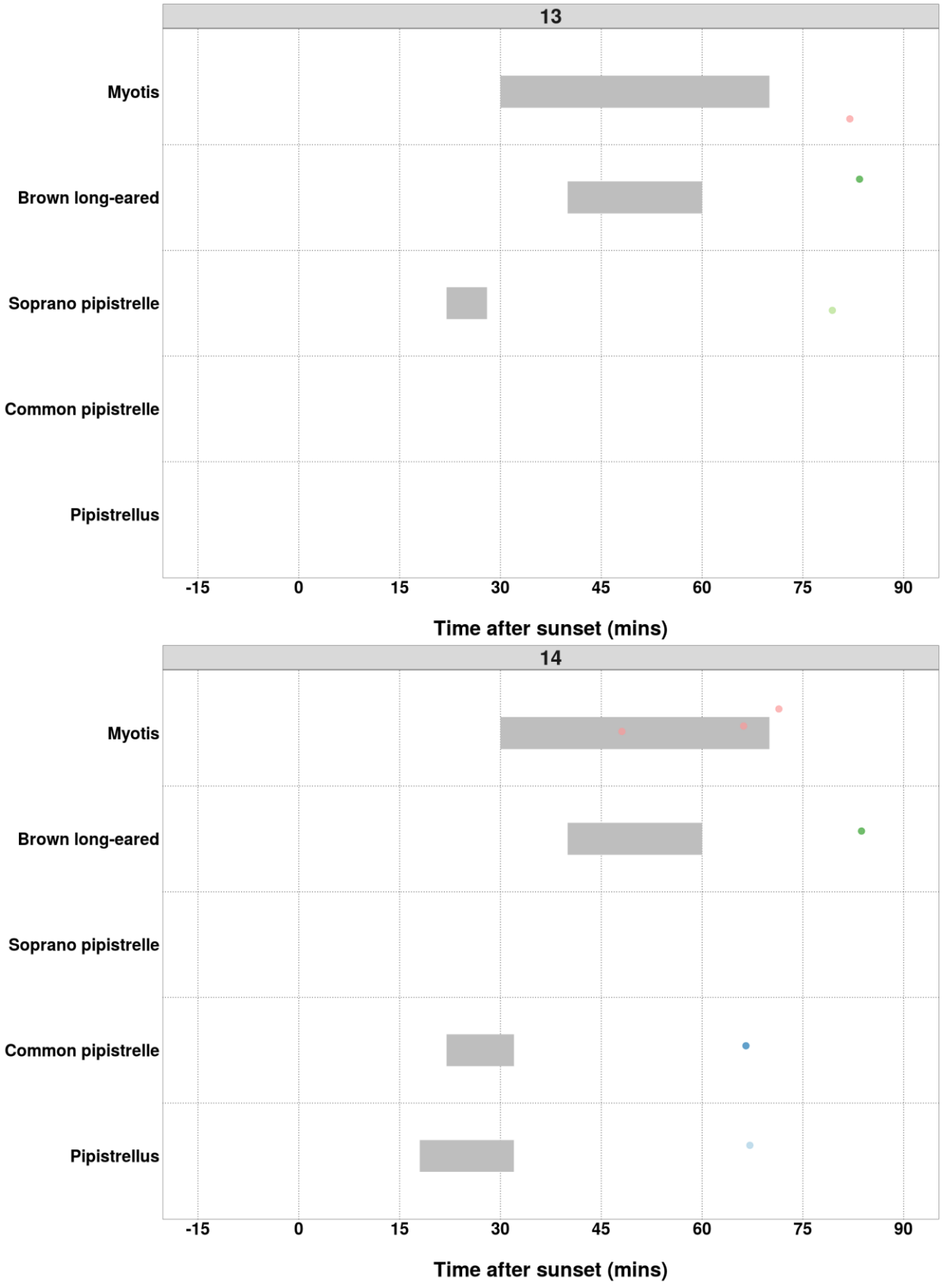

7
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
8
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

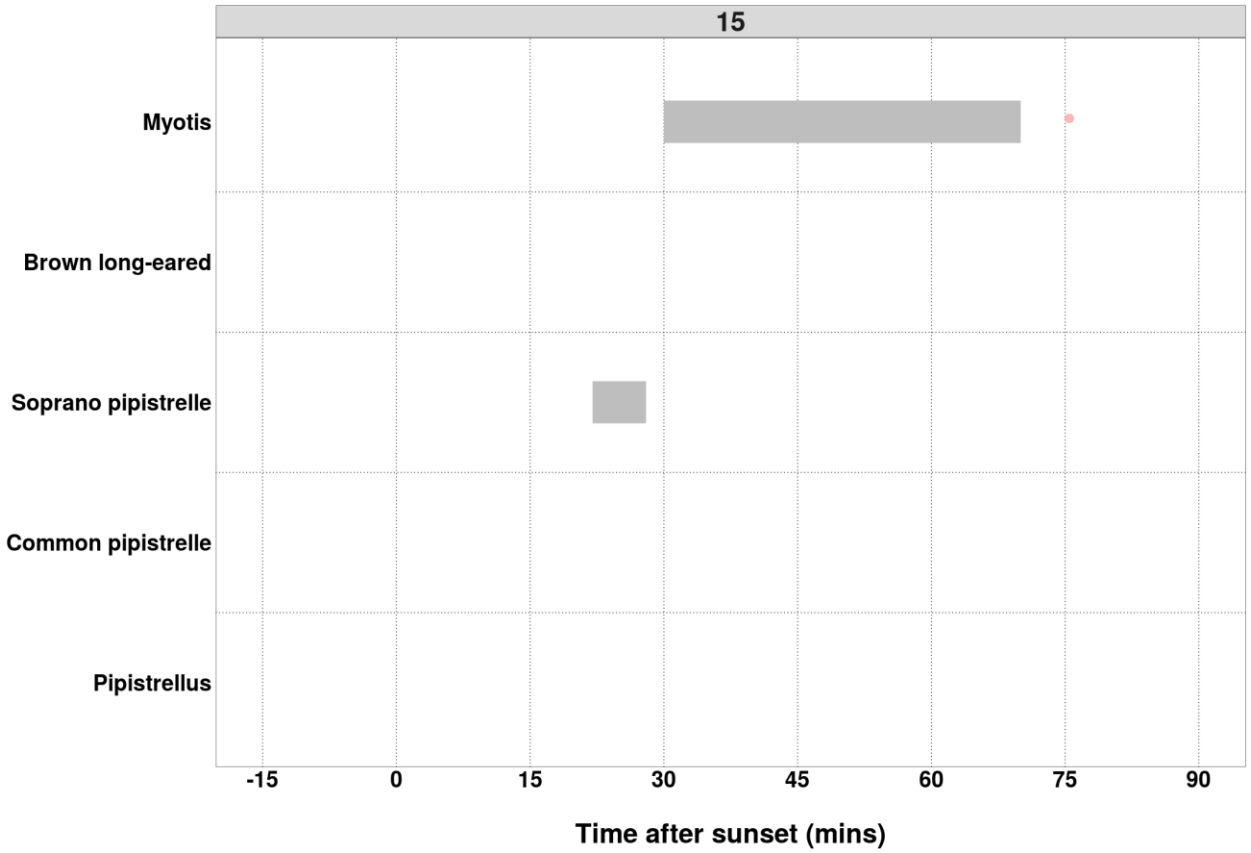

9
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


10
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


11
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


12
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


13
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
14
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


15
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

Counts of Bat Passes

All detectors

Table 14. The total number of passes recorded for each species across all of the detectors. The 'Total' percentage may not be exactly 100% due to rounding of the percentages per species.

Species	Passes (No.)	Percentage of total (%)
Pipistrellus	71	14.9
Common pipistrelle	9	1.9
Soprano pipistrelle	58	12.1
Brown long-eared	32	6.7
Myotis	308	64.4
Total	478	100.0

Counts of Bat Passes

Per Detector

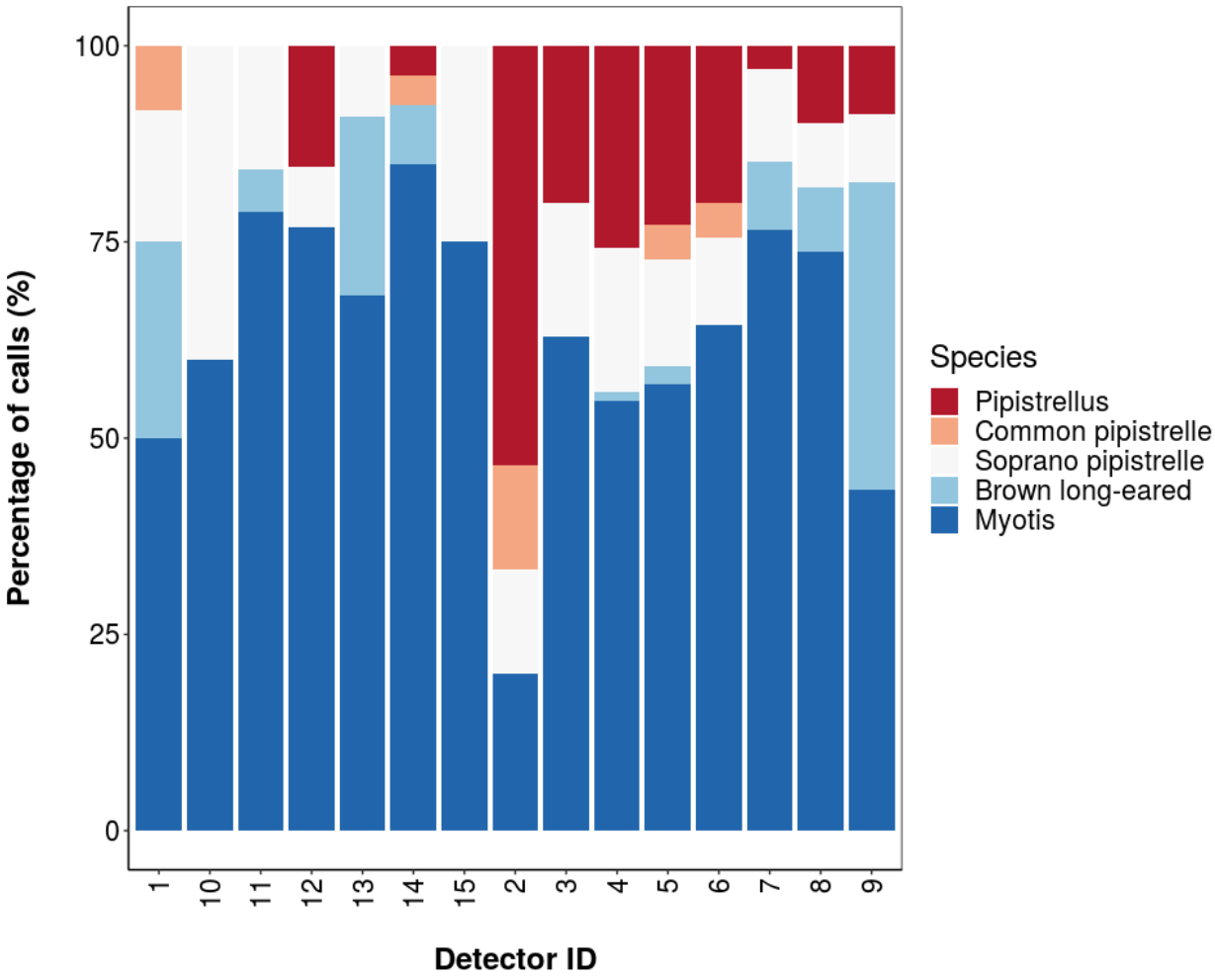
Table 15. The number of passes recorded for each species at each detector.

Species	Detector ID	Count (No)	Percentage by Detector (%)
Pipistrellus	12	2	15.4
Pipistrellus	14	2	3.8
Pipistrellus	2	8	53.3
Pipistrellus	3	7	20.0
Pipistrellus	4	24	25.8
Pipistrellus	5	10	22.7
Pipistrellus	6	9	20.0
Pipistrellus	7	1	2.9
Pipistrellus	8	6	9.8
Pipistrellus	9	2	8.7
Common pipistrelle	1	1	8.3
Common pipistrelle	14	2	3.8
Common pipistrelle	2	2	13.3
Common pipistrelle	5	2	4.5
Common pipistrelle	6	2	4.4
Soprano pipistrelle	1	2	16.7
Soprano pipistrelle	10	2	40.0
Soprano pipistrelle	11	3	15.8
Soprano pipistrelle	12	1	7.7
Soprano pipistrelle	13	2	9.1
Soprano pipistrelle	15	1	25.0
Soprano pipistrelle	2	2	13.3
Soprano pipistrelle	3	6	17.1
Soprano pipistrelle	4	17	18.3
Soprano pipistrelle	5	6	13.6
Soprano pipistrelle	6	5	11.1
Soprano pipistrelle	7	4	11.8
Soprano pipistrelle	8	5	8.2
Soprano pipistrelle	9	2	8.7

Brown long-eared	1	3	25.0
Brown long-eared	11	1	5.3
Brown long-eared	13	5	22.7
Brown long-eared	14	4	7.5
Brown long-eared	4	1	1.1
Brown long-eared	5	1	2.3
Brown long-eared	7	3	8.8
Brown long-eared	8	5	8.2
Brown long-eared	9	9	39.1
Myotis	1	6	50.0
Myotis	10	3	60.0
Myotis	11	15	78.9
Myotis	12	10	76.9
Myotis	13	15	68.2
Myotis	14	45	84.9
Myotis	15	3	75.0
Myotis	2	3	20.0
Myotis	3	22	62.9
Myotis	4	51	54.8
Myotis	5	25	56.8
Myotis	6	29	64.4
Myotis	7	26	76.5
Myotis	8	45	73.8
Myotis	9	10	43.5

Species Composition

Figure 10. Percentage species composition of passes at each detector.



PART 2a: Presence Only

THE NEXT SECTION OF THE REPORT FEATURES THE RAW DATA SUPPLIED TO ECOBAT AND ONLY TAKES INTO ACCOUNT THE PRESENCE, AND NOT THE ABSENCE, OF EACH BAT SPECIES. FOR EACH NIGHT, THERE IS NO 'ZERO DATA' FOR WHEN SPECIES WERE NOT DETECTED.

Nightly Bat Pass Rate (Bat passes per hour)

Median Per Detector

Table 16. The median Nightly Pass Rate (bat passes per hour, per night) of each species. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Median Pass Rate
Pipistrellus	12	0.2
Pipistrellus	14	0.2
Pipistrellus	2	0.7
Pipistrellus	3	0.6
Pipistrellus	4	0.6
Pipistrellus	5	0.4
Pipistrellus	6	0.4
Pipistrellus	7	0.1
Pipistrellus	8	0.6
Pipistrellus	9	0.2
Common pipistrelle	1	0.1
Common pipistrelle	14	0.1
Common pipistrelle	2	0.2
Common pipistrelle	5	0.1
Common pipistrelle	6	0.2
Soprano pipistrelle	1	0.1
Soprano pipistrelle	10	0.1
Soprano pipistrelle	11	0.1
Soprano pipistrelle	12	0.1
Soprano pipistrelle	13	0.1
Soprano pipistrelle	15	0.1
Soprano pipistrelle	2	0.2
Soprano pipistrelle	3	0.1

Soprano pipistrelle	4	0.2
Soprano pipistrelle	5	0.2
Soprano pipistrelle	6	0.1
Soprano pipistrelle	7	0.2
Soprano pipistrelle	8	0.2
Soprano pipistrelle	9	0.1
Brown long-eared	1	0.1
Brown long-eared	11	0.1
Brown long-eared	13	0.1
Brown long-eared	14	0.1
Brown long-eared	4	0.1
Brown long-eared	5	0.1
Brown long-eared	7	0.1
Brown long-eared	8	0.1
Brown long-eared	9	0.2
Myotis	1	0.1
Myotis	10	0.1
Myotis	11	0.3
Myotis	12	0.1
Myotis	13	0.2
Myotis	14	0.4
Myotis	15	0.1
Myotis	2	0.3
Myotis	3	0.3
Myotis	4	0.6
Myotis	5	0.4
Myotis	6	0.2
Myotis	7	0.3
Myotis	8	0.5
Myotis	9	0.2

Nightly Bat Pass Rate (Bat passes per hour)

Mean per Detector

Table 17. The mean Nightly Pass Rate (bat passes per hour, per night) of each species at each detector. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

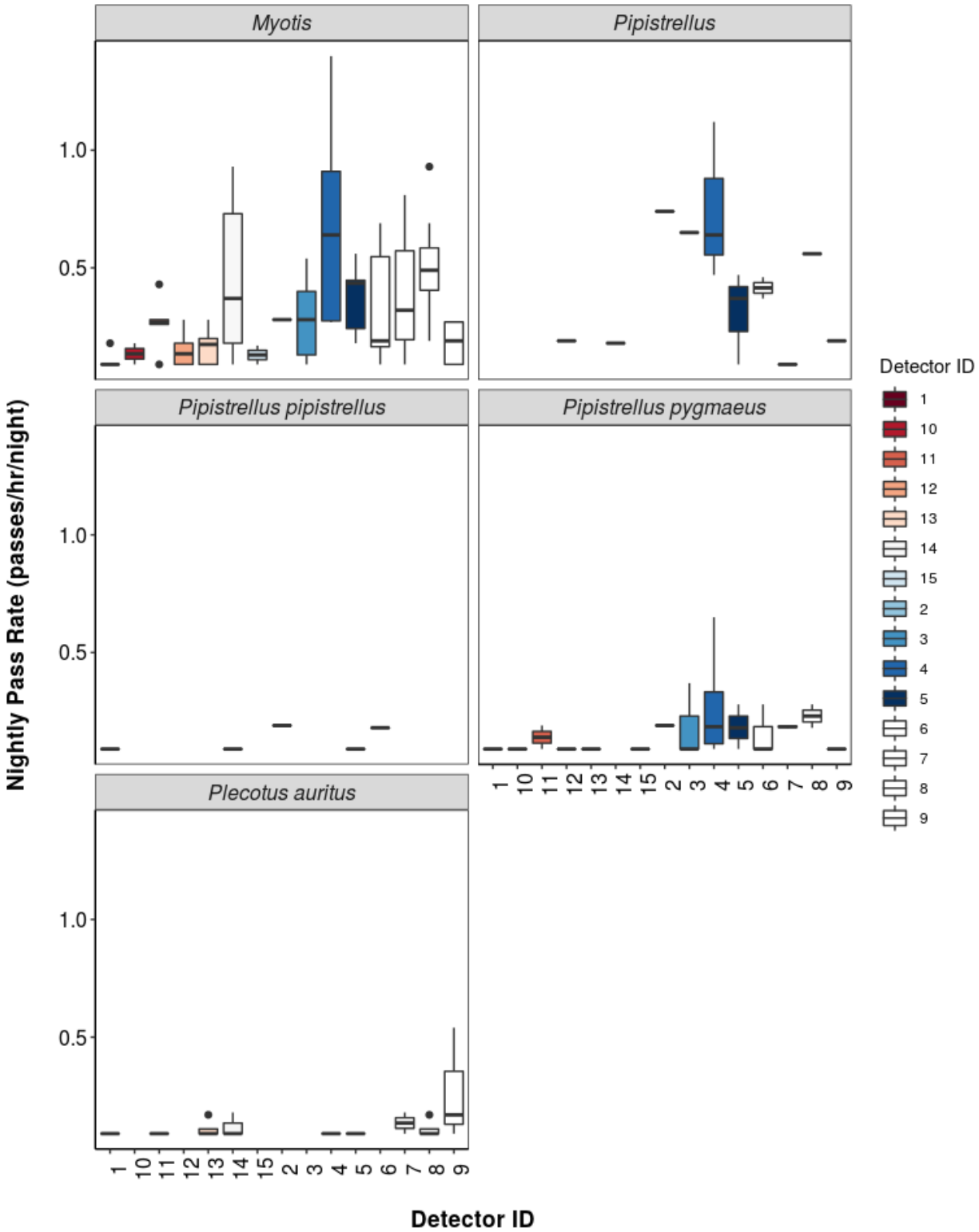
Species	Detector ID	Mean Pass Rate
Pipistrellus	12	0.2
Pipistrellus	14	0.2
Pipistrellus	2	0.7
Pipistrellus	3	0.6
Pipistrellus	4	0.7
Pipistrellus	5	0.3
Pipistrellus	6	0.4
Pipistrellus	7	0.1
Pipistrellus	8	0.6
Pipistrellus	9	0.2
Common pipistrelle	1	0.1
Common pipistrelle	14	0.1
Common pipistrelle	2	0.2
Common pipistrelle	5	0.1
Common pipistrelle	6	0.2
Soprano pipistrelle	1	0.1
Soprano pipistrelle	10	0.1
Soprano pipistrelle	11	0.1
Soprano pipistrelle	12	0.1
Soprano pipistrelle	13	0.1
Soprano pipistrelle	15	0.1
Soprano pipistrelle	2	0.2
Soprano pipistrelle	3	0.2
Soprano pipistrelle	4	0.3
Soprano pipistrelle	5	0.2
Soprano pipistrelle	6	0.2

Soprano pipistrelle	7	0.2
Soprano pipistrelle	8	0.2
Soprano pipistrelle	9	0.1
Brown long-eared	1	0.1
Brown long-eared	11	0.1
Brown long-eared	13	0.1
Brown long-eared	14	0.1
Brown long-eared	4	0.1
Brown long-eared	5	0.1
Brown long-eared	7	0.1
Brown long-eared	8	0.1
Brown long-eared	9	0.3
Myotis	1	0.1
Myotis	10	0.1
Myotis	11	0.3
Myotis	12	0.2
Myotis	13	0.2
Myotis	14	0.5
Myotis	15	0.1
Myotis	2	0.3
Myotis	3	0.3
Myotis	4	0.7
Myotis	5	0.4
Myotis	6	0.3
Myotis	7	0.4
Myotis	8	0.5
Myotis	9	0.2

Nightly Bat Passes (Bat passes per hour)

Per Detector - Figures

Figure 11. Boxplots for the number of bat passes per hour each night, for each detector. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.


Myotis
Pipistrellus
Pipistrellus pipistrellus
Pipistrellus pygmaeus
Plecotus auritus
Nightly Pass Rate (passes/hr/night)
1.0
0.5
Detector ID
1 10 11 12 13 14 15 2 3 4 5 6 7 8 9

SPLIT BY MONTH

Total Bat Passes per Detector, each Month

Per Detector

Table 18. The total number of bat passes of each species in each month at each detector. This table simply tells you how many bats of each species were recorded passing each detector during each month. These numbers are not standardised by the night length, or how many nights each detector was active for during each month.

Species	Detector ID	Sep
Pipistrellus	12	2
Pipistrellus	14	2
Pipistrellus	2	8
Pipistrellus	3	7
Pipistrellus	4	24
Pipistrellus	5	10
Pipistrellus	6	9
Pipistrellus	7	1
Pipistrellus	8	6
Pipistrellus	9	2
Common pipistrelle	1	1
Common pipistrelle	14	2
Common pipistrelle	2	2
Common pipistrelle	5	2
Common pipistrelle	6	2
Soprano pipistrelle	1	2
Soprano pipistrelle	10	2
Soprano pipistrelle	11	3
Soprano pipistrelle	12	1
Soprano pipistrelle	13	2
Soprano pipistrelle	15	1
Soprano pipistrelle	2	2
Soprano pipistrelle	3	6
Soprano pipistrelle	4	17

Soprano pipistrelle	5	6
Soprano pipistrelle	6	5
Soprano pipistrelle	7	4
Soprano pipistrelle	8	5
Soprano pipistrelle	9	2
Brown long-eared	1	3
Brown long-eared	11	1
Brown long-eared	13	5
Brown long-eared	14	4
Brown long-eared	4	1
Brown long-eared	5	1
Brown long-eared	7	3
Brown long-eared	8	5
Brown long-eared	9	9
Myotis	1	6
Myotis	10	3
Myotis	11	15
Myotis	12	10
Myotis	13	15
Myotis	14	45
Myotis	15	3
Myotis	2	3
Myotis	3	22
Myotis	4	51
Myotis	5	25
Myotis	6	29
Myotis	7	26
Myotis	8	45
Myotis	9	10

Survey Effort

Table 19. The number of survey nights per month per detector.

Month	Detector ID	No. of Survey Nights
Sep	1	6
Sep	2	1
Sep	3	7
Sep	4	7
Sep	5	7
Sep	6	9
Sep	7	8
Sep	8	8
Sep	9	6
Sep	10	3
Sep	11	5
Sep	12	6
Sep	13	9
Sep	14	9
Sep	15	3

Nightly Bat Pass Rate for each Month

Median Per Detector

Table 20. The median Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Sep
Pipistrellus	12	0.2
Pipistrellus	14	0.2
Pipistrellus	2	0.7
Pipistrellus	3	0.6
Pipistrellus	4	0.6
Pipistrellus	5	0.4
Pipistrellus	6	0.4
Pipistrellus	7	0.1
Pipistrellus	8	0.6
Pipistrellus	9	0.2
Common pipistrelle	1	0.1
Common pipistrelle	14	0.1
Common pipistrelle	2	0.2
Common pipistrelle	5	0.1
Common pipistrelle	6	0.2
Soprano pipistrelle	1	0.1
Soprano pipistrelle	10	0.1
Soprano pipistrelle	11	0.1
Soprano pipistrelle	12	0.1
Soprano pipistrelle	13	0.1
Soprano pipistrelle	15	0.1
Soprano pipistrelle	2	0.2
Soprano pipistrelle	3	0.1

Soprano pipistrelle	4	0.2
Soprano pipistrelle	5	0.2
Soprano pipistrelle	6	0.1
Soprano pipistrelle	7	0.2
Soprano pipistrelle	8	0.2
Soprano pipistrelle	9	0.1
Brown long-eared	1	0.1
Brown long-eared	11	0.1
Brown long-eared	13	0.1
Brown long-eared	14	0.1
Brown long-eared	4	0.1
Brown long-eared	5	0.1
Brown long-eared	7	0.1
Brown long-eared	8	0.1
Brown long-eared	9	0.2
Myotis	1	0.1
Myotis	10	0.1
Myotis	11	0.3
Myotis	12	0.1
Myotis	13	0.2
Myotis	14	0.4
Myotis	15	0.1
Myotis	2	0.3
Myotis	3	0.3
Myotis	4	0.6
Myotis	5	0.4
Myotis	6	0.2
Myotis	7	0.3
Myotis	8	0.5
Myotis	9	0.2

Nightly Bat Pass Rate for each Month

Mean per Detector

Table 21: The mean Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

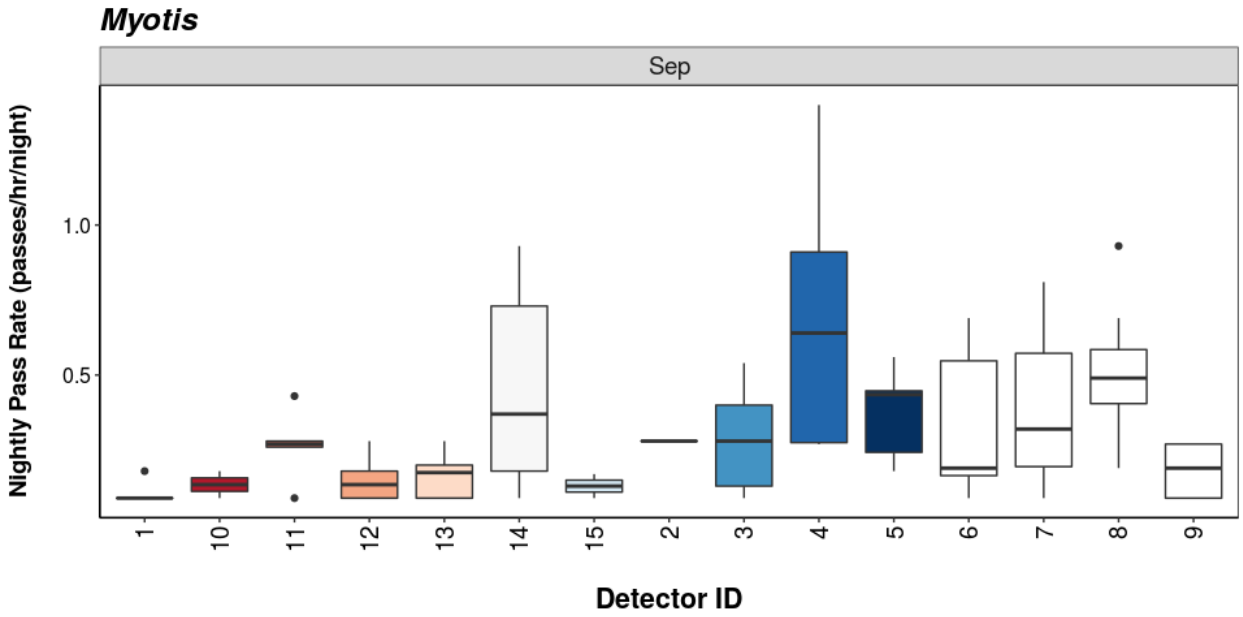
Species	Detector ID	Sep
Pipistrellus	12	0.2
Pipistrellus	14	0.2
Pipistrellus	2	0.7
Pipistrellus	3	0.6
Pipistrellus	4	0.7
Pipistrellus	5	0.3
Pipistrellus	6	0.4
Pipistrellus	7	0.1
Pipistrellus	8	0.6
Pipistrellus	9	0.2
Common pipistrelle	1	0.1
Common pipistrelle	14	0.1
Common pipistrelle	2	0.2
Common pipistrelle	5	0.1
Common pipistrelle	6	0.2
Soprano pipistrelle	1	0.1
Soprano pipistrelle	10	0.1
Soprano pipistrelle	11	0.1
Soprano pipistrelle	12	0.1
Soprano pipistrelle	13	0.1
Soprano pipistrelle	15	0.1
Soprano pipistrelle	2	0.2
Soprano pipistrelle	3	0.2
Soprano pipistrelle	4	0.3
Soprano pipistrelle	5	0.2
Soprano pipistrelle	6	0.2

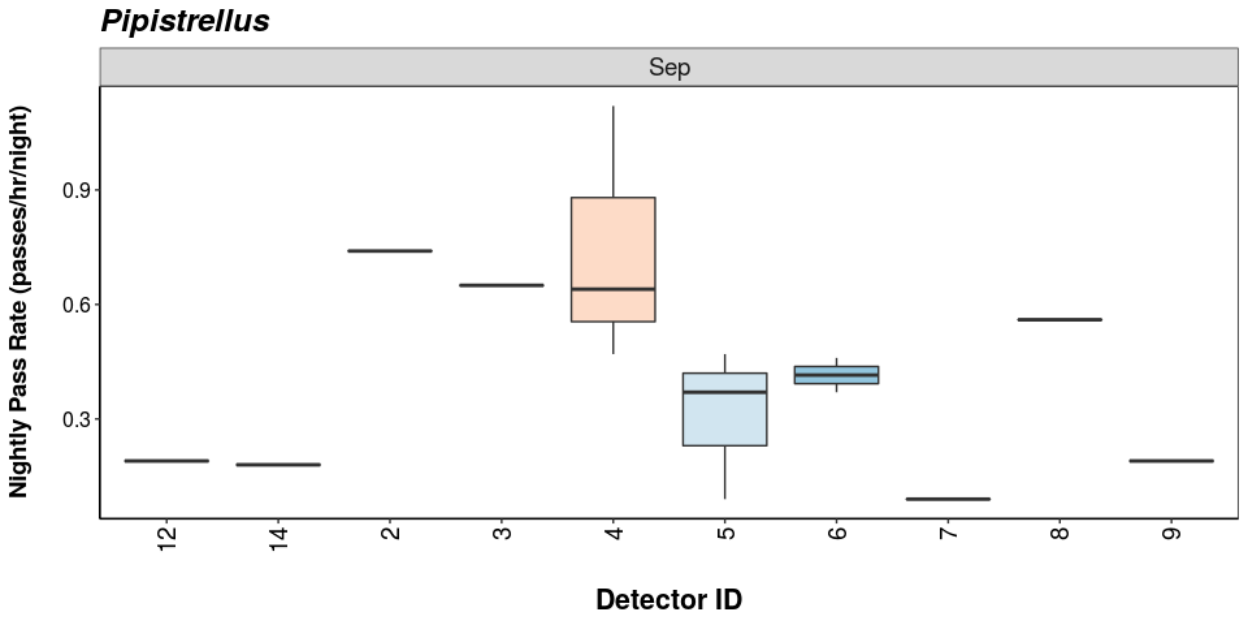
Soprano pipistrelle	7	0.2
Soprano pipistrelle	8	0.2
Soprano pipistrelle	9	0.1
Brown long-eared	1	0.1
Brown long-eared	11	0.1
Brown long-eared	13	0.1
Brown long-eared	14	0.1
Brown long-eared	4	0.1
Brown long-eared	5	0.1
Brown long-eared	7	0.1
Brown long-eared	8	0.1
Brown long-eared	9	0.3
Myotis	1	0.1
Myotis	10	0.1
Myotis	11	0.3
Myotis	12	0.2
Myotis	13	0.2
Myotis	14	0.5
Myotis	15	0.1
Myotis	2	0.3
Myotis	3	0.3
Myotis	4	0.7
Myotis	5	0.4
Myotis	6	0.3
Myotis	7	0.4
Myotis	8	0.5
Myotis	9	0.2

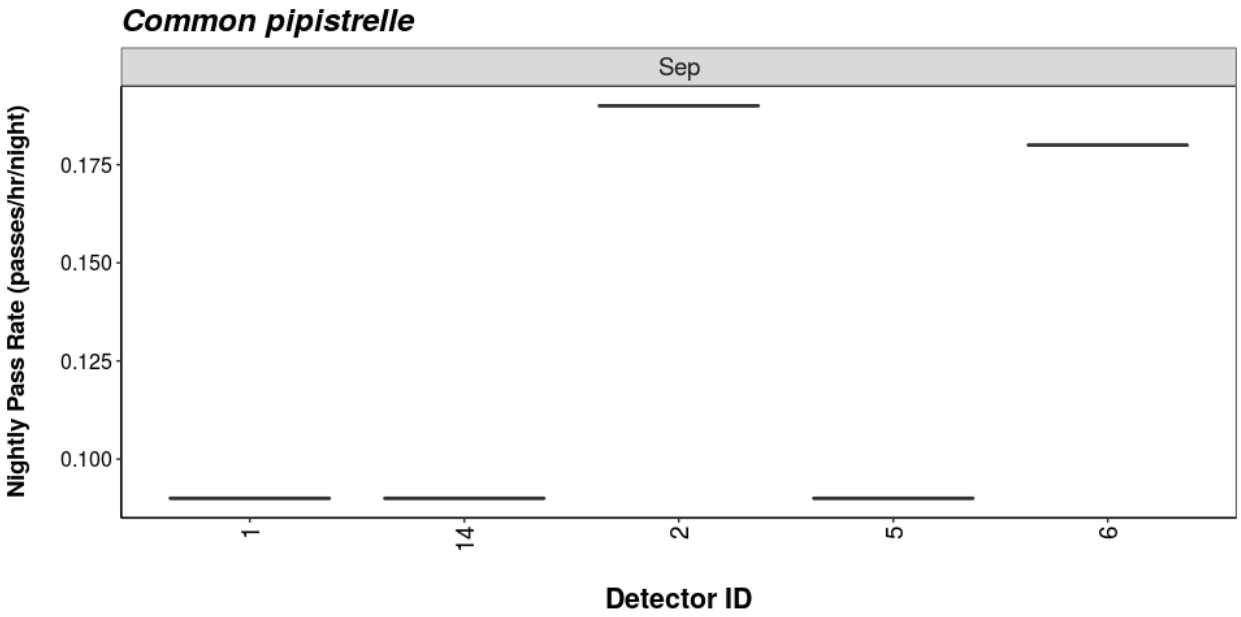
Nightly Bat Pass Rate for each Month

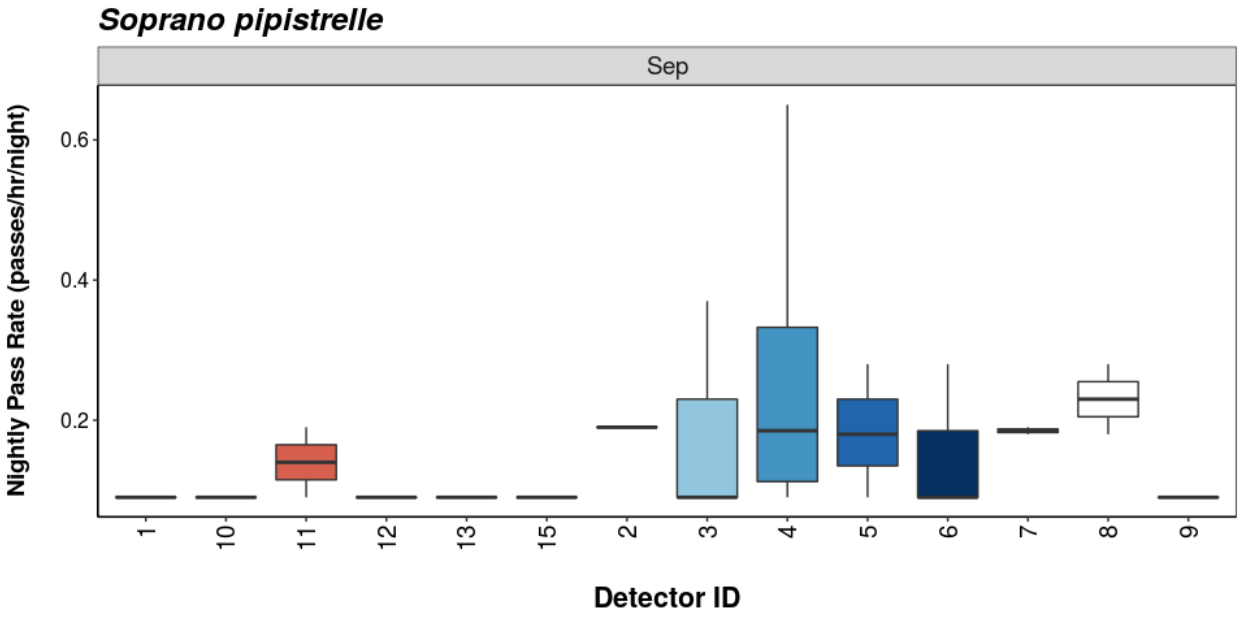
Per Detector - Figures

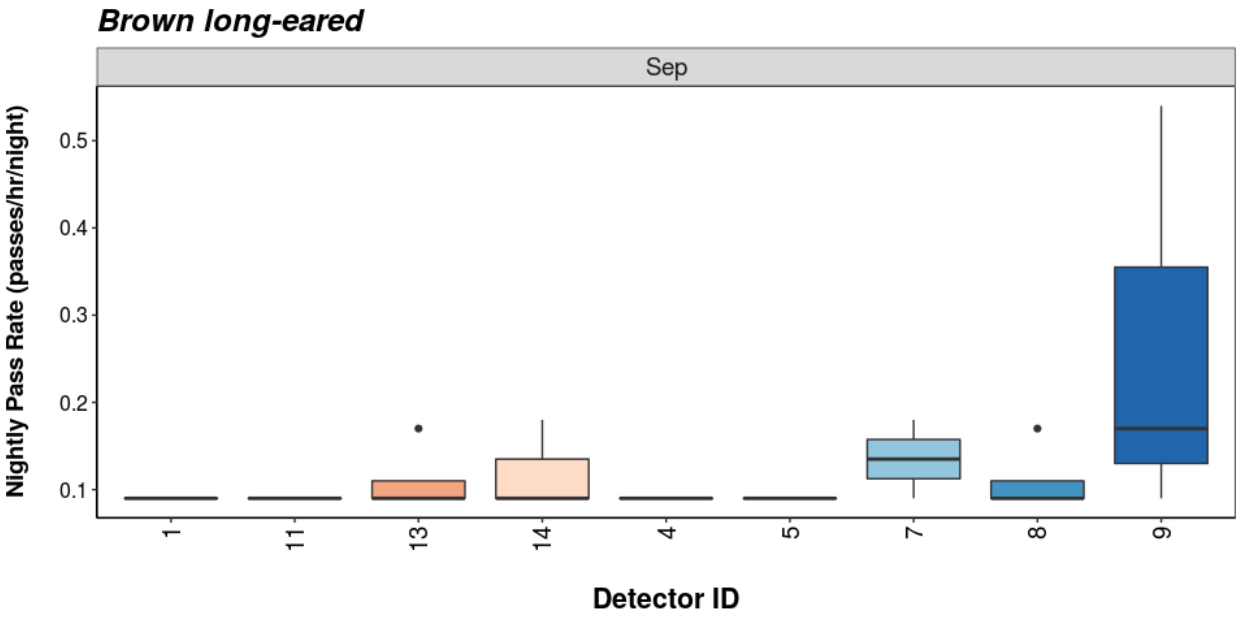
Figure 12. Figures show boxplots for the number of bat passes per hour by detector, for each month. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.






Common pipistrelle
Sep
Nightly Pass Rate (passes/hr/night)
0.175
0.150
0.125
0.100
1
14
2
5
6
Detector ID


Soprano pipistrelle
Sep
Nightly Pass Rate (passes/hr/night)
0.6
0.4
0.2
1
10
11
12
13
15
2
3
4
5
6
7
8
9
Detector ID


Brown long-eared
Sep
Nightly Pass Rate (passes/hr/night)
0.5
0.4
0.3
0.2
0.1
1
11
13
14
4
5
7
8
9
Detector ID

Bat Activity per Detector Location

Figure 13. Detector ID reference:

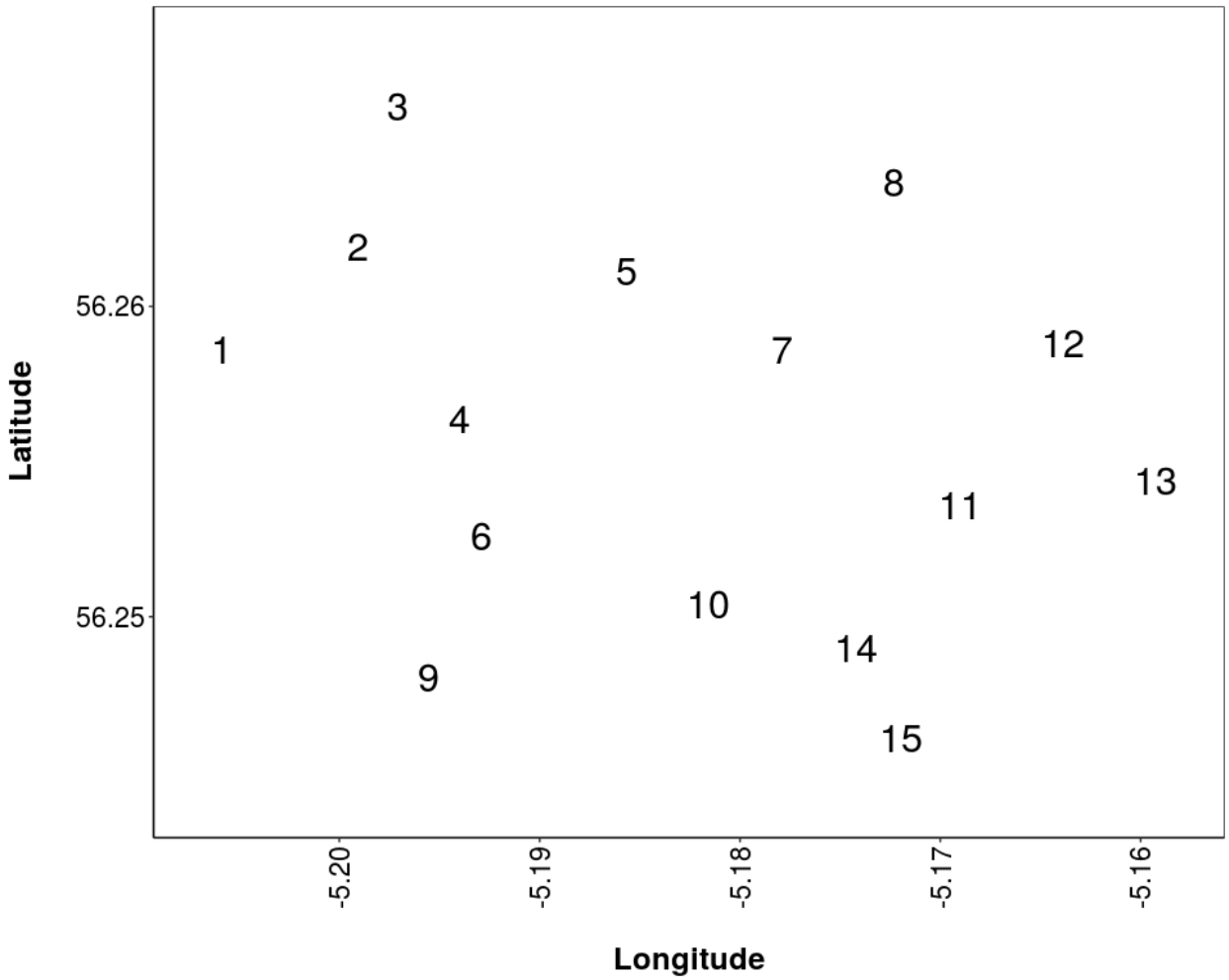


Figure 14. Median Nightly Pass Rate (bat passes/hr/night) throughout the survey period - represented by the size and colour of the point at each detector location.

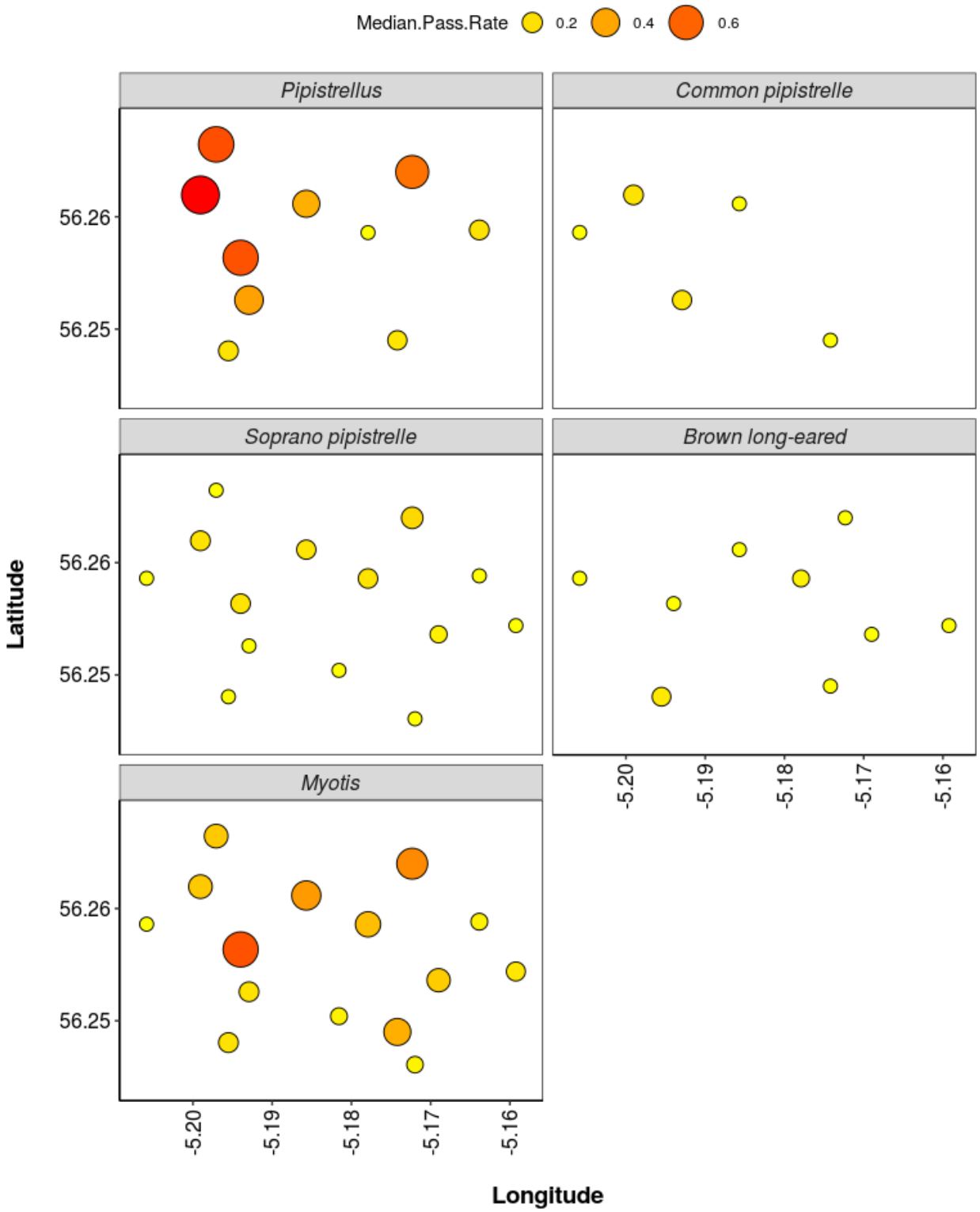
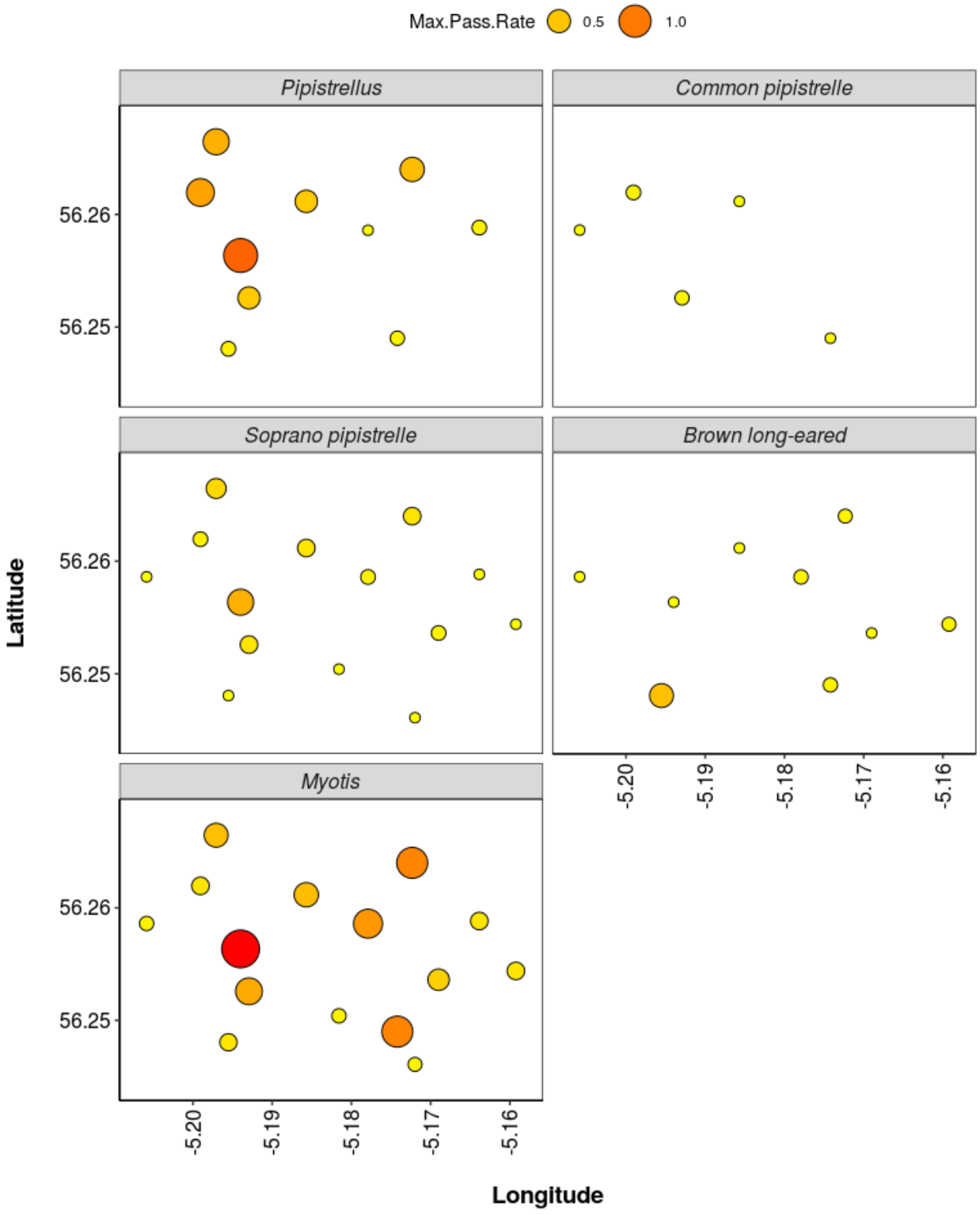


Figure 15. Maximum Nightly Pass Rate (bat passes/hr/night) recorded in a single night throughout the survey period - represented by the size and colour of the point at each detector location.



PART 2B: Includes absences

THE NEXT SECTION OF THE REPORT FEATURES THE DATA SUPPLIED TO ECOBAT BUT TAKES INTO ACCOUNT SPECIES ABSENCES, AND THEREFORE INCLUDES 'ZERO DATA' FOR WHEN SPECIES WERE NOT DETECTED AT EACH DETECTOR ON A NIGHT. THIS DRAMATICALLY LOWERS THE MEANS AND MEDIANS OF THE DATA PRESENTED.

Nightly Bat Pass Rate (Bat passes per hour)

Median Per Detector

Table 22. The median Nightly Pass Rate (bat passes per hour, per night) of each species. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Median Pass Rate
Brown long-eared	1	0.0
Brown long-eared	10	0.0
Brown long-eared	11	0.0
Brown long-eared	12	0.0
Brown long-eared	13	0.0
Brown long-eared	14	0.0
Brown long-eared	15	0.0
Brown long-eared	2	0.0
Brown long-eared	3	0.0
Brown long-eared	4	0.0
Brown long-eared	5	0.0
Brown long-eared	6	0.0
Brown long-eared	7	0.0
Brown long-eared	8	0.0
Brown long-eared	9	0.0
Common pipistrelle	1	0.0
Common pipistrelle	10	0.0
Common pipistrelle	11	0.0
Common pipistrelle	12	0.0
Common pipistrelle	13	0.0
Common pipistrelle	14	0.0
Common pipistrelle	15	0.0
Common pipistrelle	2	0.2

Common pipistrelle	3	0.0
Common pipistrelle	4	0.0
Common pipistrelle	5	0.0
Common pipistrelle	6	0.0
Common pipistrelle	7	0.0
Common pipistrelle	8	0.0
Common pipistrelle	9	0.0
Myotis	1	0.1
Myotis	10	0.1
Myotis	11	0.3
Myotis	12	0.1
Myotis	13	0.2
Myotis	14	0.4
Myotis	15	0.1
Myotis	2	0.3
Myotis	3	0.3
Myotis	4	0.6
Myotis	5	0.4
Myotis	6	0.2
Myotis	7	0.2
Myotis	8	0.5
Myotis	9	0.1
Pipistrellus	1	0.0
Pipistrellus	10	0.0
Pipistrellus	11	0.0
Pipistrellus	12	0.0
Pipistrellus	13	0.0
Pipistrellus	14	0.0
Pipistrellus	15	0.0
Pipistrellus	2	0.7
Pipistrellus	3	0.0
Pipistrellus	4	0.0
Pipistrellus	5	0.0
Pipistrellus	6	0.0
Pipistrellus	7	0.0
Pipistrellus	8	0.0

Pipistrellus	9	0.0
Soprano pipistrelle	1	0.0
Soprano pipistrelle	10	0.1
Soprano pipistrelle	11	0.0
Soprano pipistrelle	12	0.0
Soprano pipistrelle	13	0.0
Soprano pipistrelle	14	0.0
Soprano pipistrelle	15	0.0
Soprano pipistrelle	2	0.2
Soprano pipistrelle	3	0.0
Soprano pipistrelle	4	0.2
Soprano pipistrelle	5	0.0
Soprano pipistrelle	6	0.0
Soprano pipistrelle	7	0.0
Soprano pipistrelle	8	0.0
Soprano pipistrelle	9	0.0

Nightly Bat Pass Rate (Bat passes per hour)

Mean per Detector

Table 23. The mean Nightly Pass Rate (bat passes per hour, per night) of each species at each detector. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

Species	Detector ID	Mean Pass Rate
Brown long-eared	1	0.0
Brown long-eared	10	0.0
Brown long-eared	11	0.0
Brown long-eared	12	0.0
Brown long-eared	13	0.0
Brown long-eared	14	0.0
Brown long-eared	15	0.0
Brown long-eared	2	0.0
Brown long-eared	3	0.0
Brown long-eared	4	0.0
Brown long-eared	5	0.0
Brown long-eared	6	0.0
Brown long-eared	7	0.0
Brown long-eared	8	0.1
Brown long-eared	9	0.1
Common pipistrelle	1	0.0
Common pipistrelle	10	0.0
Common pipistrelle	11	0.0
Common pipistrelle	12	0.0
Common pipistrelle	13	0.0
Common pipistrelle	14	0.0
Common pipistrelle	15	0.0
Common pipistrelle	2	0.2
Common pipistrelle	3	0.0
Common pipistrelle	4	0.0
Common pipistrelle	5	0.0

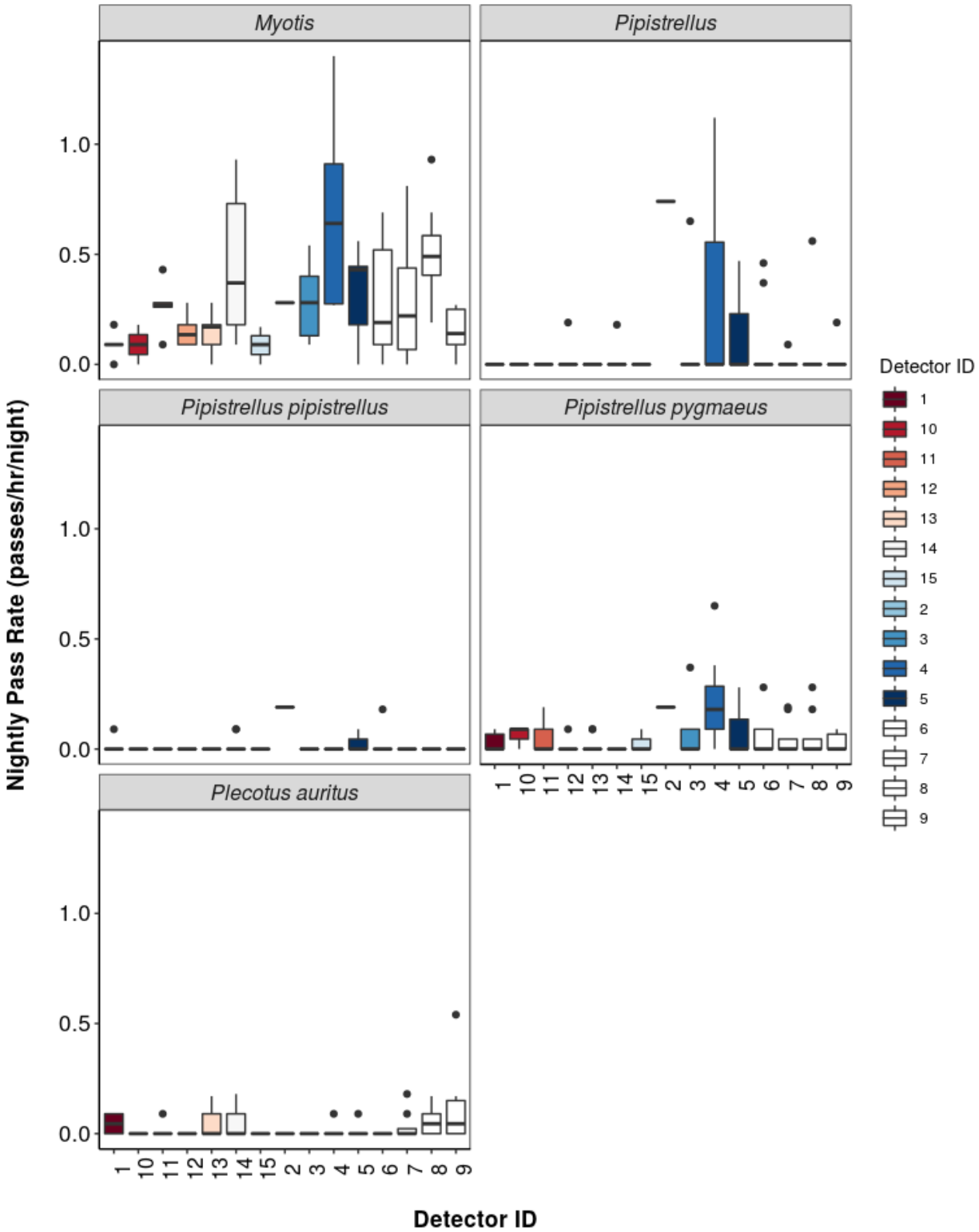
Common pipistrelle	6	0.0
Common pipistrelle	7	0.0
Common pipistrelle	8	0.0
Common pipistrelle	9	0.0
Myotis	1	0.1
Myotis	10	0.1
Myotis	11	0.3
Myotis	12	0.2
Myotis	13	0.1
Myotis	14	0.5
Myotis	15	0.1
Myotis	2	0.3
Myotis	3	0.3
Myotis	4	0.7
Myotis	5	0.3
Myotis	6	0.3
Myotis	7	0.3
Myotis	8	0.5
Myotis	9	0.2
Pipistrellus	1	0.0
Pipistrellus	10	0.0
Pipistrellus	11	0.0
Pipistrellus	12	0.0
Pipistrellus	13	0.0
Pipistrellus	14	0.0
Pipistrellus	15	0.0
Pipistrellus	2	0.7
Pipistrellus	3	0.1
Pipistrellus	4	0.3
Pipistrellus	5	0.1
Pipistrellus	6	0.1
Pipistrellus	7	0.0
Pipistrellus	8	0.1
Pipistrellus	9	0.0
Soprano pipistrelle	1	0.0
Soprano pipistrelle	10	0.1

Soprano pipistrelle	11	0.1
Soprano pipistrelle	12	0.0
Soprano pipistrelle	13	0.0
Soprano pipistrelle	14	0.0
Soprano pipistrelle	15	0.0
Soprano pipistrelle	2	0.2
Soprano pipistrelle	3	0.1
Soprano pipistrelle	4	0.2
Soprano pipistrelle	5	0.1
Soprano pipistrelle	6	0.1
Soprano pipistrelle	7	0.0
Soprano pipistrelle	8	0.1
Soprano pipistrelle	9	0.0

Nightly Bat Passes (Bat passes per hour)

Per Detector - Figures

Figure 16. Figures show boxplots for the number of bat passes per hour each night, for each detector. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.


Myotis
Pipistrellus
Pipistrellus pipistrellus
Pipistrellus pygmaeus
Plecotus auritus
Nightly Pass Rate (passes/hr/night)
0.0
0.5
1.0
1 10 11 12 13 14 15 2 3 4 5 6 7 8 9
Detector ID
Detector ID
1
10
11
12
13
14
15
2
3
4
5
6
7
8
9

Survey Effort

Table 24. The number of nights bats were detected per month per detector.

Month	Detector ID	No of Survey Nights
Sep	1	6
Sep	2	1
Sep	3	7
Sep	4	7
Sep	5	7
Sep	6	9
Sep	7	8
Sep	8	8
Sep	9	6
Sep	10	3
Sep	11	5
Sep	12	6
Sep	13	9
Sep	14	9
Sep	15	3

Nightly Bat Pass Rate for each Month

Median Per Detector

Table 25. The median Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Sep
Brown long-eared	1	0.0
Brown long-eared	10	0.0
Brown long-eared	11	0.0
Brown long-eared	12	0.0
Brown long-eared	13	0.0
Brown long-eared	14	0.0
Brown long-eared	15	0.0
Brown long-eared	2	0.0
Brown long-eared	3	0.0
Brown long-eared	4	0.0
Brown long-eared	5	0.0
Brown long-eared	6	0.0
Brown long-eared	7	0.0
Brown long-eared	8	0.0
Brown long-eared	9	0.0
Common pipistrelle	1	0.0
Common pipistrelle	10	0.0
Common pipistrelle	11	0.0
Common pipistrelle	12	0.0
Common pipistrelle	13	0.0
Common pipistrelle	14	0.0
Common pipistrelle	15	0.0
Common pipistrelle	2	0.2

Common pipistrelle	3	0.0
Common pipistrelle	4	0.0
Common pipistrelle	5	0.0
Common pipistrelle	6	0.0
Common pipistrelle	7	0.0
Common pipistrelle	8	0.0
Common pipistrelle	9	0.0
Myotis	1	0.1
Myotis	10	0.1
Myotis	11	0.3
Myotis	12	0.1
Myotis	13	0.2
Myotis	14	0.4
Myotis	15	0.1
Myotis	2	0.3
Myotis	3	0.3
Myotis	4	0.6
Myotis	5	0.4
Myotis	6	0.2
Myotis	7	0.2
Myotis	8	0.5
Myotis	9	0.1
Pipistrellus	1	0.0
Pipistrellus	10	0.0
Pipistrellus	11	0.0
Pipistrellus	12	0.0
Pipistrellus	13	0.0
Pipistrellus	14	0.0
Pipistrellus	15	0.0
Pipistrellus	2	0.7
Pipistrellus	3	0.0
Pipistrellus	4	0.0
Pipistrellus	5	0.0
Pipistrellus	6	0.0
Pipistrellus	7	0.0
Pipistrellus	8	0.0

Pipistrellus	9	0.0
Soprano pipistrelle	1	0.0
Soprano pipistrelle	10	0.1
Soprano pipistrelle	11	0.0
Soprano pipistrelle	12	0.0
Soprano pipistrelle	13	0.0
Soprano pipistrelle	14	0.0
Soprano pipistrelle	15	0.0
Soprano pipistrelle	2	0.2
Soprano pipistrelle	3	0.0
Soprano pipistrelle	4	0.2
Soprano pipistrelle	5	0.0
Soprano pipistrelle	6	0.0
Soprano pipistrelle	7	0.0
Soprano pipistrelle	8	0.0
Soprano pipistrelle	9	0.0

Nightly Bat Pass Rate for each Month

Mean per Detector

Table 26. The mean Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

Species	Detector ID	Sep
Brown long-eared	1	0.0
Brown long-eared	10	0.0
Brown long-eared	11	0.0
Brown long-eared	12	0.0
Brown long-eared	13	0.0
Brown long-eared	14	0.0
Brown long-eared	15	0.0
Brown long-eared	2	0.0
Brown long-eared	3	0.0
Brown long-eared	4	0.0
Brown long-eared	5	0.0
Brown long-eared	6	0.0
Brown long-eared	7	0.0
Brown long-eared	8	0.1
Brown long-eared	9	0.1
Common pipistrelle	1	0.0
Common pipistrelle	10	0.0
Common pipistrelle	11	0.0
Common pipistrelle	12	0.0
Common pipistrelle	13	0.0
Common pipistrelle	14	0.0
Common pipistrelle	15	0.0
Common pipistrelle	2	0.2
Common pipistrelle	3	0.0
Common pipistrelle	4	0.0
Common pipistrelle	5	0.0

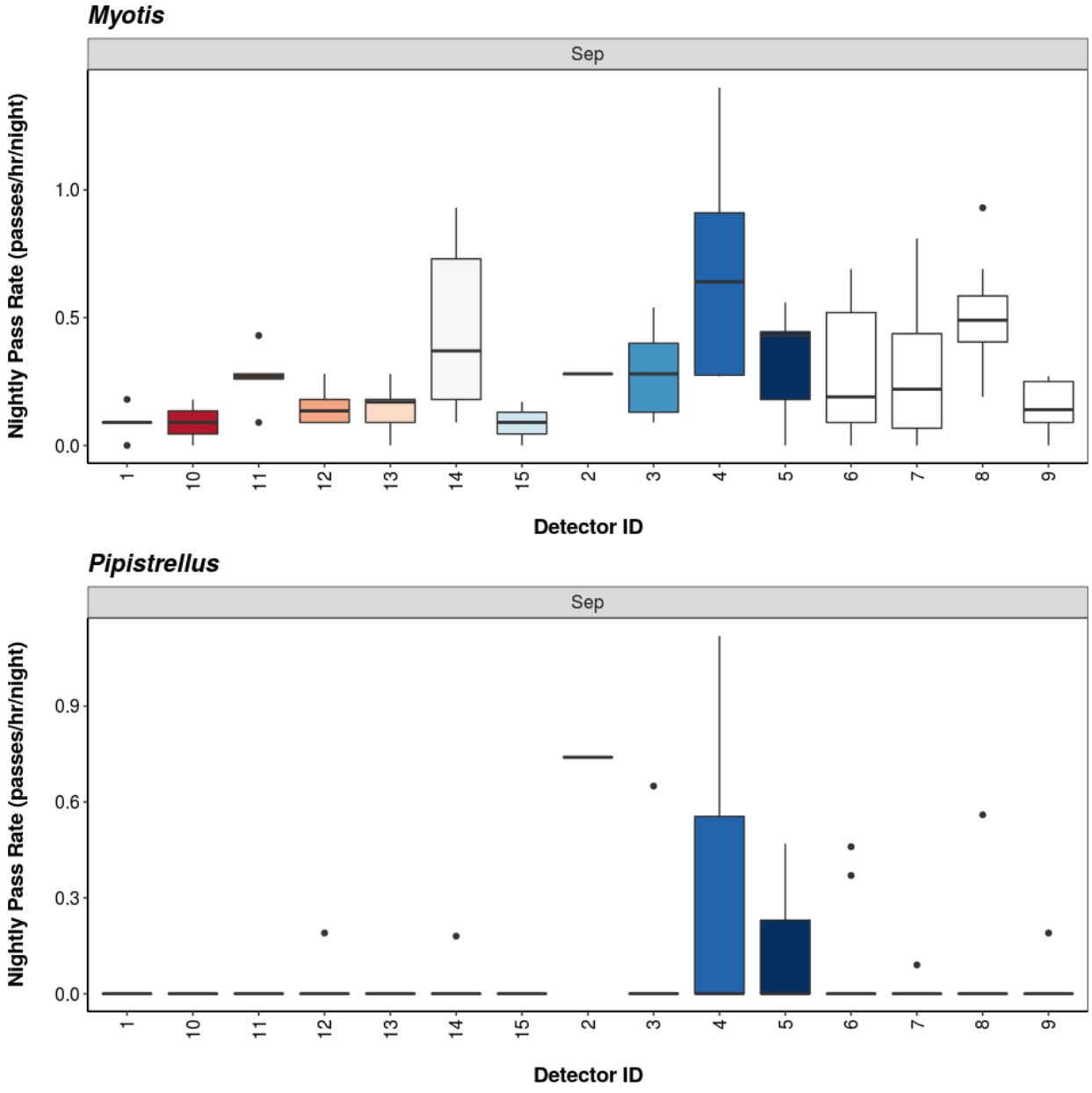
Common pipistrelle	6	0.0
Common pipistrelle	7	0.0
Common pipistrelle	8	0.0
Common pipistrelle	9	0.0
Myotis	1	0.1
Myotis	10	0.1
Myotis	11	0.3
Myotis	12	0.2
Myotis	13	0.1
Myotis	14	0.5
Myotis	15	0.1
Myotis	2	0.3
Myotis	3	0.3
Myotis	4	0.7
Myotis	5	0.3
Myotis	6	0.3
Myotis	7	0.3
Myotis	8	0.5
Myotis	9	0.2
Pipistrellus	1	0.0
Pipistrellus	10	0.0
Pipistrellus	11	0.0
Pipistrellus	12	0.0
Pipistrellus	13	0.0
Pipistrellus	14	0.0
Pipistrellus	15	0.0
Pipistrellus	2	0.7
Pipistrellus	3	0.1
Pipistrellus	4	0.3
Pipistrellus	5	0.1
Pipistrellus	6	0.1
Pipistrellus	7	0.0
Pipistrellus	8	0.1
Pipistrellus	9	0.0
Soprano pipistrelle	1	0.0
Soprano pipistrelle	10	0.1

Soprano pipistrelle	11	0.1
Soprano pipistrelle	12	0.0
Soprano pipistrelle	13	0.0
Soprano pipistrelle	14	0.0
Soprano pipistrelle	15	0.0
Soprano pipistrelle	2	0.2
Soprano pipistrelle	3	0.1
Soprano pipistrelle	4	0.2
Soprano pipistrelle	5	0.1
Soprano pipistrelle	6	0.1
Soprano pipistrelle	7	0.0
Soprano pipistrelle	8	0.1
Soprano pipistrelle	9	0.0

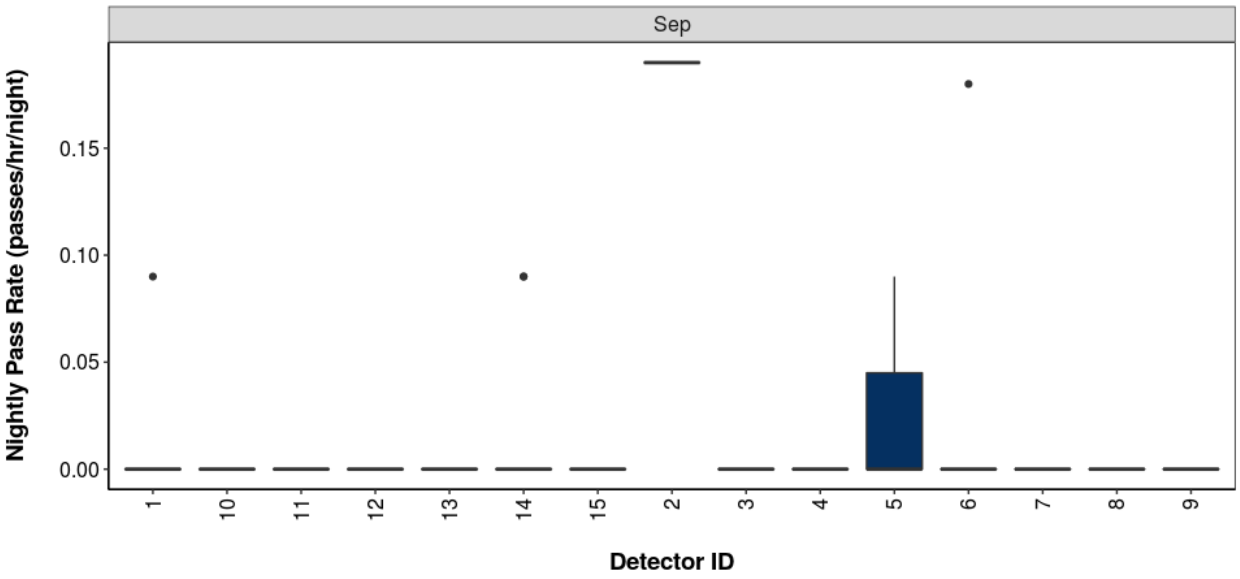
Nightly Bat Pass Rate for each Month

Per Detector - Figures

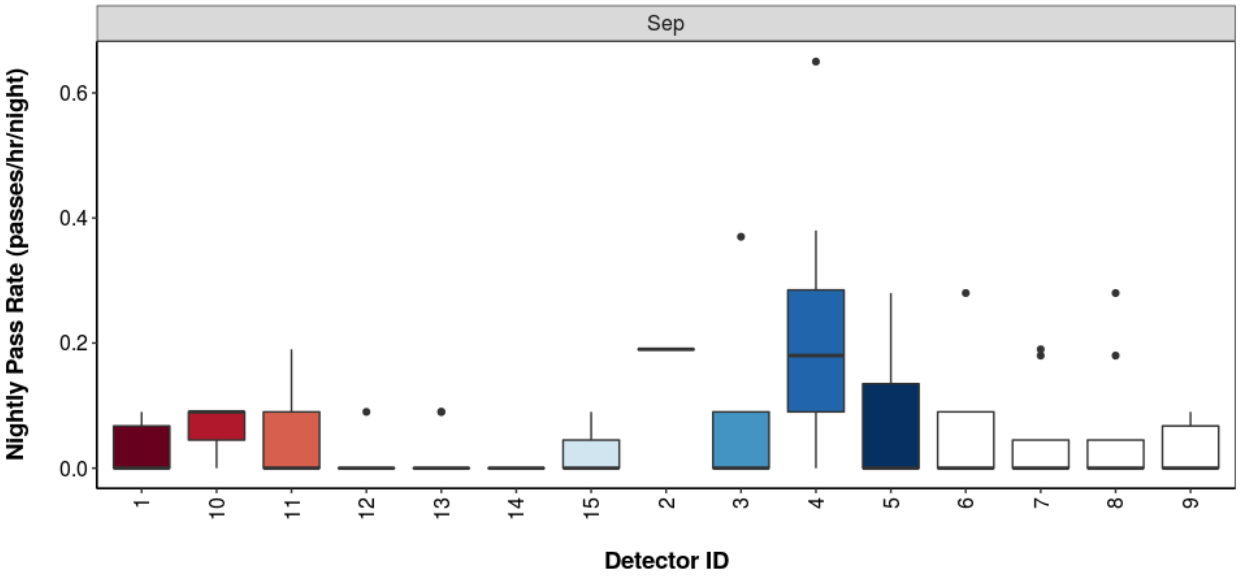
Figure 17. Figures show boxplots for the number of bat passes per hour by detector, for each month. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.

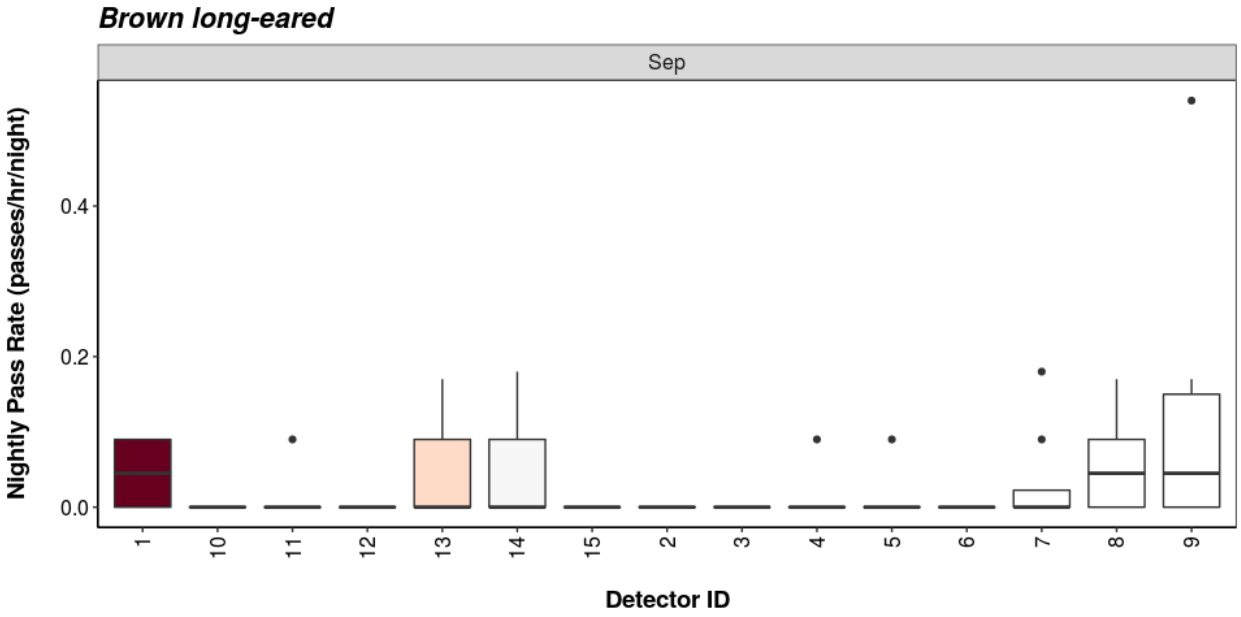


Common pipistrelle



Soprano pipistrelle




Brown long-eared
Sep
Nightly Pass Rate (passes/hr/night)
0.0
0.2
0.4
1
10
11
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID

Bat Activity per Detector Location

Figure 18. Detector ID reference:

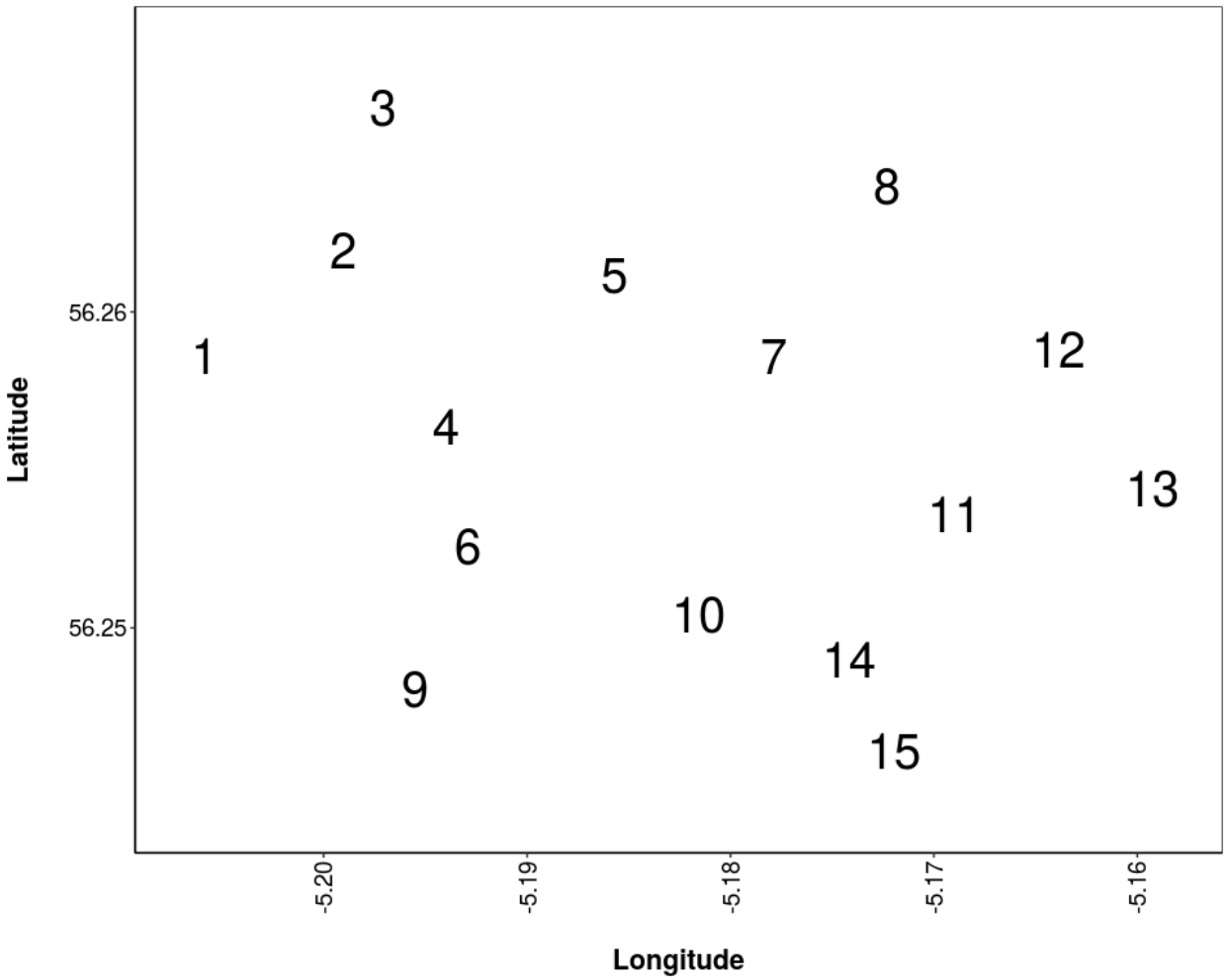


Figure 19. Median Nightly Pass Rate (bat passes/hr/night) throughout the survey period - represented by the size and colour of the point at each detector location.

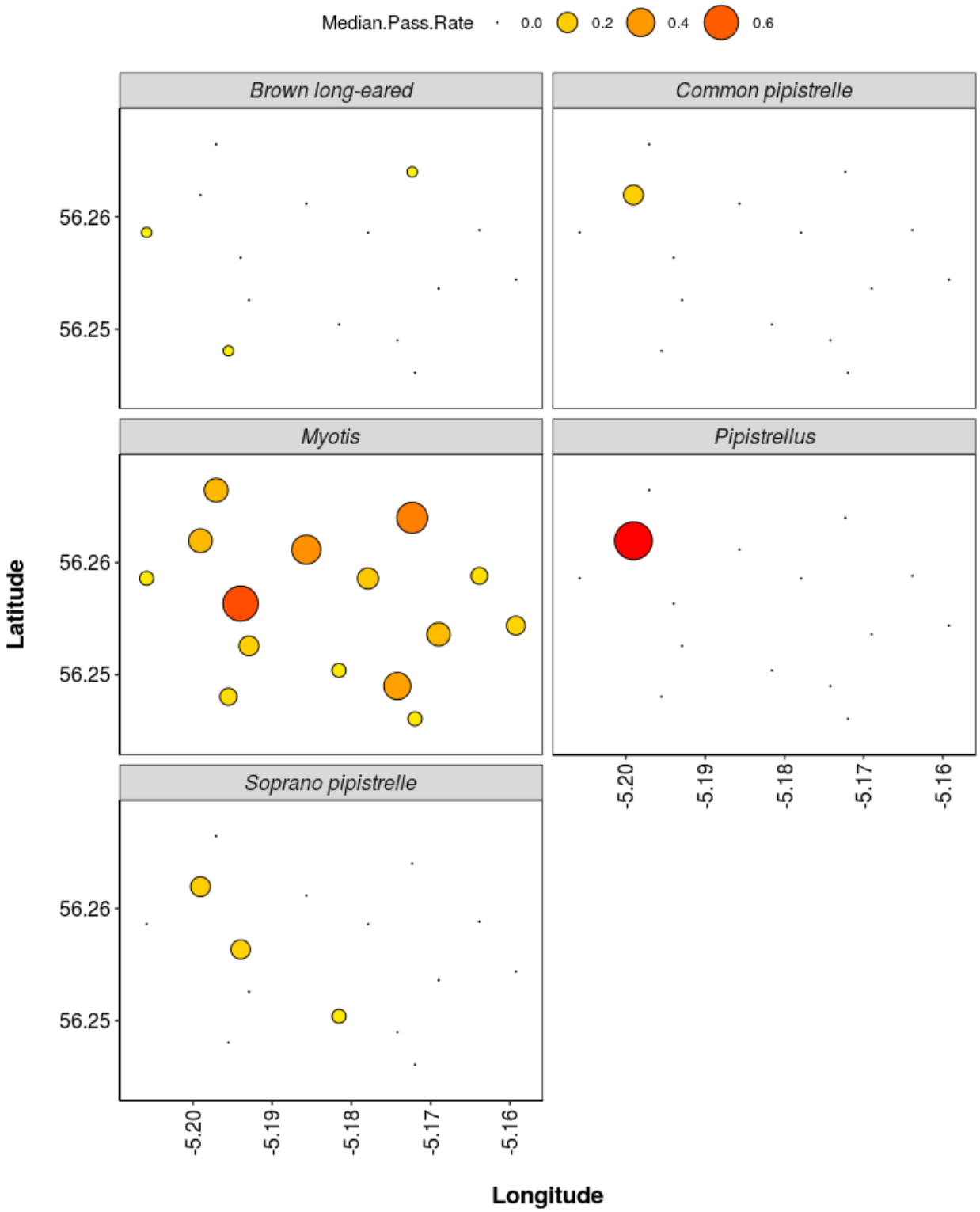
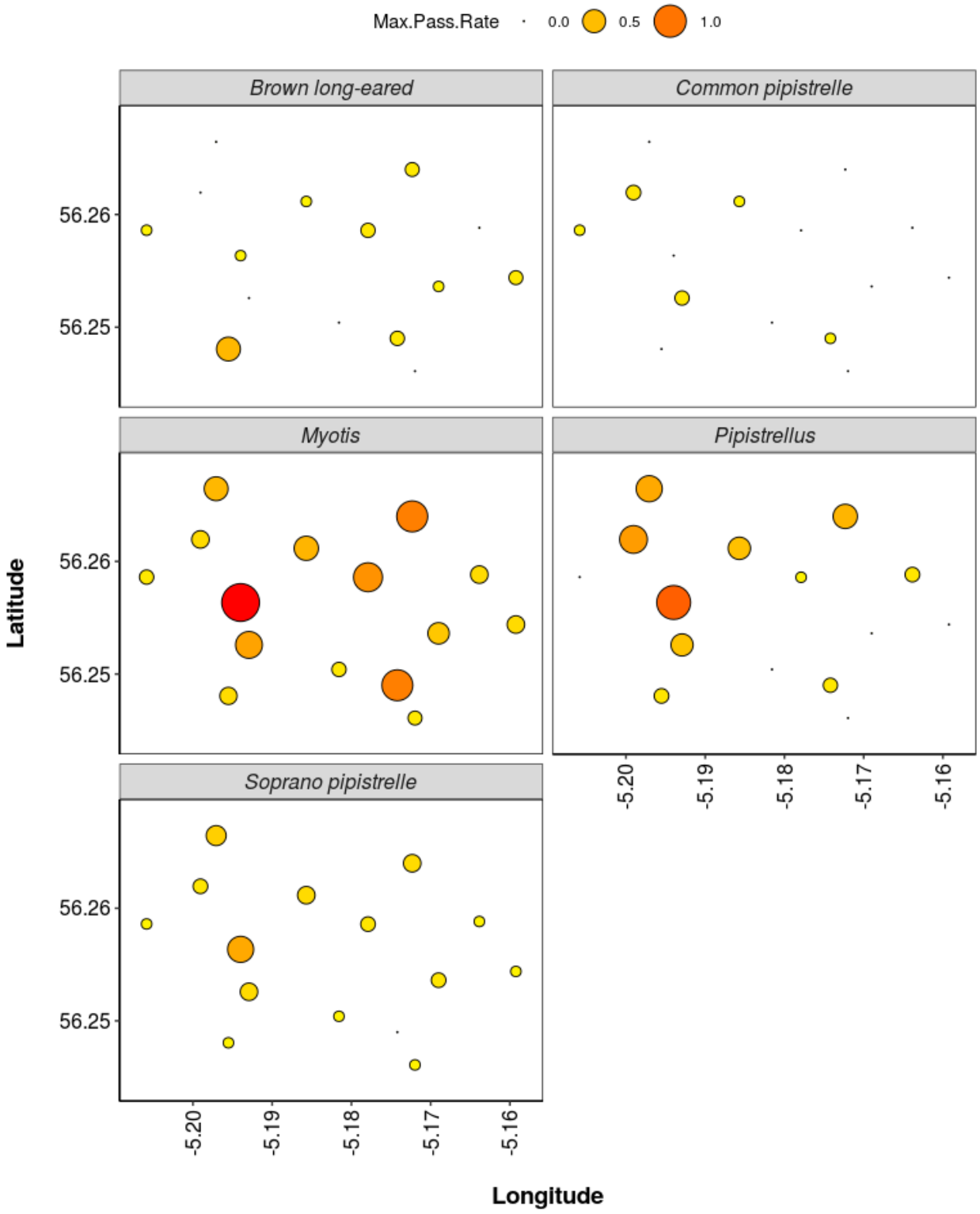


Figure 20. Maximum Nightly Pass Rate (bat passes/hr/night) recorded in a single night throughout the survey period - represented by the size and colour of the point at each detector location.



Thank you for using Ecobat! If you have any questions please email info@themammalsociety.org.uk

This report was produced free of charge by the Mammal Society to support evidence-based conservation of bats.

The following analyses are based on data supplied by the user to the Mammal Society's Ecobat website. The outputs are designed to assist decision-making, but do not replace expert interpretation by the user. The creation of the Ecobat tool was supported by the Natural Environment Research Council (NERC).

Bat Activity Analysis

Site Name: Ann Carr Dubh

Author: LUC - Arthur, M.

28/03/2022

Summary

Bats were detected on **11** nights between **2021-05-19** and **2021-06-01**, using **15** static bat detectors. Throughout this period **4** species were recorded. **Table 1.** Detectors were placed at the following locations:

Detector ID	Latitude	Longitude
14	56.24900	-5.174201
2	56.26195	-5.199050
4	56.25635	-5.193980
5	56.26116	-5.185691
12	56.25883	-5.163854
3	56.26645	-5.197067
6	56.25259	-5.192923
11	56.25362	-5.168995
13	56.25440	-5.159241
1	56.25861	-5.205845
8	56.26399	-5.172325
7	56.25859	-5.177902
10	56.25041	-5.181567

9	56.24806	-5.195517
15	56.24609	-5.171974

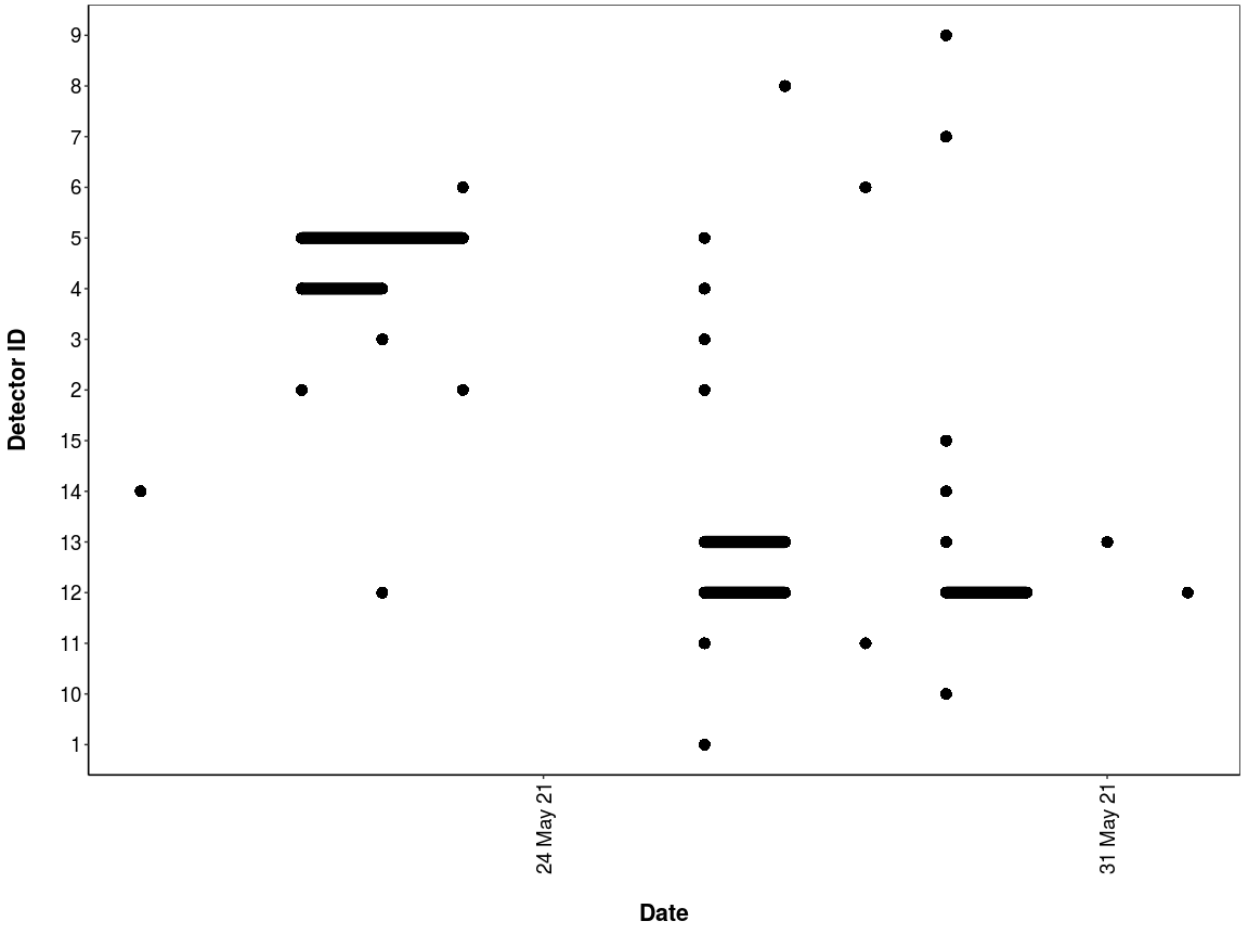
Survey Nights

Table 2. The number of nights that bats were detected on each recorder. This is not the same as the number of nights that detectors were active if there were nights when no bats were detected.

Detector ID	No. of nights
1	6
2	8
3	7
4	8
5	9
6	4
7	4
8	6
9	3
10	1
11	3
12	6
13	4
14	3
15	1

Survey Nights

Figure 1. Horizontal bars show nights when acoustic detectors recorded bats.



PART 1: Percentiles Analysis

This first part of the analysis looks at the relative activity levels of the bats you recorded. We take your value for the total bat passes each night for each species, and compare this to the values in our reference database. We tell you what percentile your data falls at, and therefore what the relative activity level is. For example, if the reference database has values of 5, 10, 15, 20 and you submit a value of 18, this will be the 80th percentile, and be classed as high activity.

The reference range dataset was stratified to include:

- Only records from within 30 days of the survey date.
- Only records from within 100km radius of the survey location.
- Records using any make of bat detector.

PER DETECTOR

Table 3. Summary table showing the number of nights recorded bat activity fell into each activity band for each species.

Detector ID	Species/Species Group	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
1	*Myotis*	0	0	0	0	1
1	*Pipistrellus*	1	2	1	0	0
1	*Pipistrellus pipistrellus*	0	0	0	0	3
1	*Pipistrellus pygmaeus*	0	2	2	0	2
10	*Pipistrellus*	0	1	0	0	0
10	*Pipistrellus pygmaeus*	0	0	1	0	0
11	*Myotis*	0	0	0	0	1
11	*Pipistrellus*	1	0	0	0	1
11	*Pipistrellus pipistrellus*	1	0	0	0	0
11	*Pipistrellus pygmaeus*	0	1	0	0	0
12	*Myotis*	0	0	0	0	3
12	*Pipistrellus*	0	0	1	0	0
12	*Pipistrellus pipistrellus*	0	0	0	0	1
12	*Pipistrellus pygmaeus*	0	0	1	0	3
13	*Myotis*	0	0	0	0	1
13	*Pipistrellus*	0	0	0	0	2
13	*Pipistrellus pygmaeus*	0	0	1	0	1
14	*Myotis*	0	0	0	0	1
14	*Pipistrellus pygmaeus*	0	1	1	0	0
15	*Pipistrellus*	0	1	0	0	0

15	*Pipistrellus pygmaeus*	0	0	1	0	0
2	*Myotis*	0	1	4	0	3
2	*Pipistrellus*	3	1	0	0	0
2	*Pipistrellus pipistrellus*	0	0	1	0	2
2	*Pipistrellus pygmaeus*	2	1	2	0	1
3	*Myotis*	0	1	1	0	3
3	*Pipistrellus*	4	1	0	0	0
3	*Pipistrellus pipistrellus*	1	1	0	0	3
3	*Pipistrellus pygmaeus*	3	1	0	0	1
4	*Myotis*	0	4	2	0	1
4	*Pipistrellus*	4	0	1	0	0
4	*Pipistrellus pipistrellus*	4	0	0	0	1
4	*Pipistrellus pygmaeus*	4	0	0	0	2
5	*Myotis*	0	1	5	0	1
5	*Pipistrellus*	2	0	1	0	0
5	*Pipistrellus pipistrellus*	0	0	0	0	1
5	*Pipistrellus pygmaeus*	1	3	0	0	1
6	*Myotis*	0	0	0	0	1
6	*Pipistrellus*	0	1	1	0	0
6	*Pipistrellus pygmaeus*	0	2	0	0	1
7	*Myotis*	0	0	0	0	1
7	*Pipistrellus*	0	1	1	0	0
7	*Pipistrellus pipistrellus*	0	0	0	0	3
7	*Pipistrellus pygmaeus*	0	0	2	0	0
8	*Myotis*	0	0	0	0	3
8	*Pipistrellus*	1	1	0	0	1

8	*Pipistrellus pipistrellus*	0	0	0	0	1
8	*Pipistrellus pygmaeus*	0	1	1	0	2
9	*Pipistrellus*	0	0	1	0	0
9	*Pipistrellus pipistrellus*	0	0	0	0	1
9	*Pipistrellus pygmaeus*	0	0	1	0	1

Table 4. Summary table showing key metrics for each species recorded. The reference range is the number of nights for each species that your data were compared to. We recommend a Reference Range of 200+ to be confident in the relative activity level.

Detector ID	Species/Species Group	Median Percentile	95% CIs	Max Percentile	Nights Recorded	Reference Range
1	*Myotis*	12	0	12	1	662
1	*Pipistrellus*	73	59 - 78	83	4	1710
1	*Pipistrellus pipistrellus*	12	12 - 12	12	3	1120
1	*Pipistrellus pygmaeus*	45	12 - 68	76	6	1217
10	*Pipistrellus*	73	0	73	1	1710
10	*Pipistrellus pygmaeus*	60	0	60	1	1217
11	*Myotis*	12	0	12	1	662
11	*Pipistrellus*	52	51.5 - 51.5	91	2	1710
11	*Pipistrellus pipistrellus*	81	0	81	1	1120
11	*Pipistrellus pygmaeus*	68	0	68	1	1217
12	*Myotis*	12	12 - 12	12	3	662
12	*Pipistrellus*	60	0	60	1	1710
12	*Pipistrellus pipistrellus*	12	0	12	1	1120
12	*Pipistrellus pygmaeus*	12	12 - 12	45	4	1217
13	*Myotis*	12	0	12	1	662
13	*Pipistrellus*	12	12 - 12	12	2	1710
13	*Pipistrellus pygmaeus*	36	36 - 36	60	2	1217
14	*Myotis*	12	0	12	1	662
14	*Pipistrellus pygmaeus*	64	64 - 64	68	2	1217
15	*Pipistrellus*	68	0	68	1	1710

15	*Pipistrellus pygmaeus*	60	0	60	1	1217
2	*Myotis*	45	12 - 60	73	8	662
2	*Pipistrellus*	86	68 - 89	89	4	1710
2	*Pipistrellus pipistrellus*	12	12 - 12	45	3	1120
2	*Pipistrellus pygmaeus*	61	28.5 - 83	83	6	1217
3	*Myotis*	12	12 - 40	68	5	662
3	*Pipistrellus*	88	68 - 92	92	5	1710
3	*Pipistrellus pipistrellus*	12	12 - 47	82	5	1120
3	*Pipistrellus pygmaeus*	81	12 - 86	86	5	1217
4	*Myotis*	68	40 - 68	68	7	662
4	*Pipistrellus*	98	79 - 100	100	5	1710
4	*Pipistrellus pipistrellus*	93	52.5 - 99	99	5	1120
4	*Pipistrellus pygmaeus*	94	12 - 100	100	6	1217
5	*Myotis*	45	28.5 - 60	73	7	662
5	*Pipistrellus*	82	45 - 84	84	3	1710
5	*Pipistrellus pipistrellus*	12	0	12	1	1120
5	*Pipistrellus pygmaeus*	73	42.5 - 79	82	5	1217
6	*Myotis*	12	0	12	1	662
6	*Pipistrellus*	62	62 - 62	79	2	1710
6	*Pipistrellus pygmaeus*	68	12 - 76	76	3	1217
7	*Myotis*	12	0	12	1	662

7	*Pipistrellus*	59	59 - 59	73	2	1710
7	*Pipistrellus pipistrellus*	12	12 - 12	12	3	1120
7	*Pipistrellus pygmaeus*	53	52.5 - 52.5	60	2	1217
8	*Myotis*	12	12 - 12	12	3	662
8	*Pipistrellus*	73	12 - 82	82	3	1710
8	*Pipistrellus pipistrellus*	12	0	12	1	1120
8	*Pipistrellus pygmaeus*	36	12 - 60	79	4	1217
9	*Pipistrellus*	45	0	45	1	1710
9	*Pipistrellus pipistrellus*	12	0	12	1	1120
9	*Pipistrellus pygmaeus*	29	28.5 - 28.5	45	2	1217

###Figures

Figure 2. The recorded activity of bats during the survey. The centre line indicates the median activity level whereas the box represents the interquartile range (the spread of the middle 50% of nights of activity)

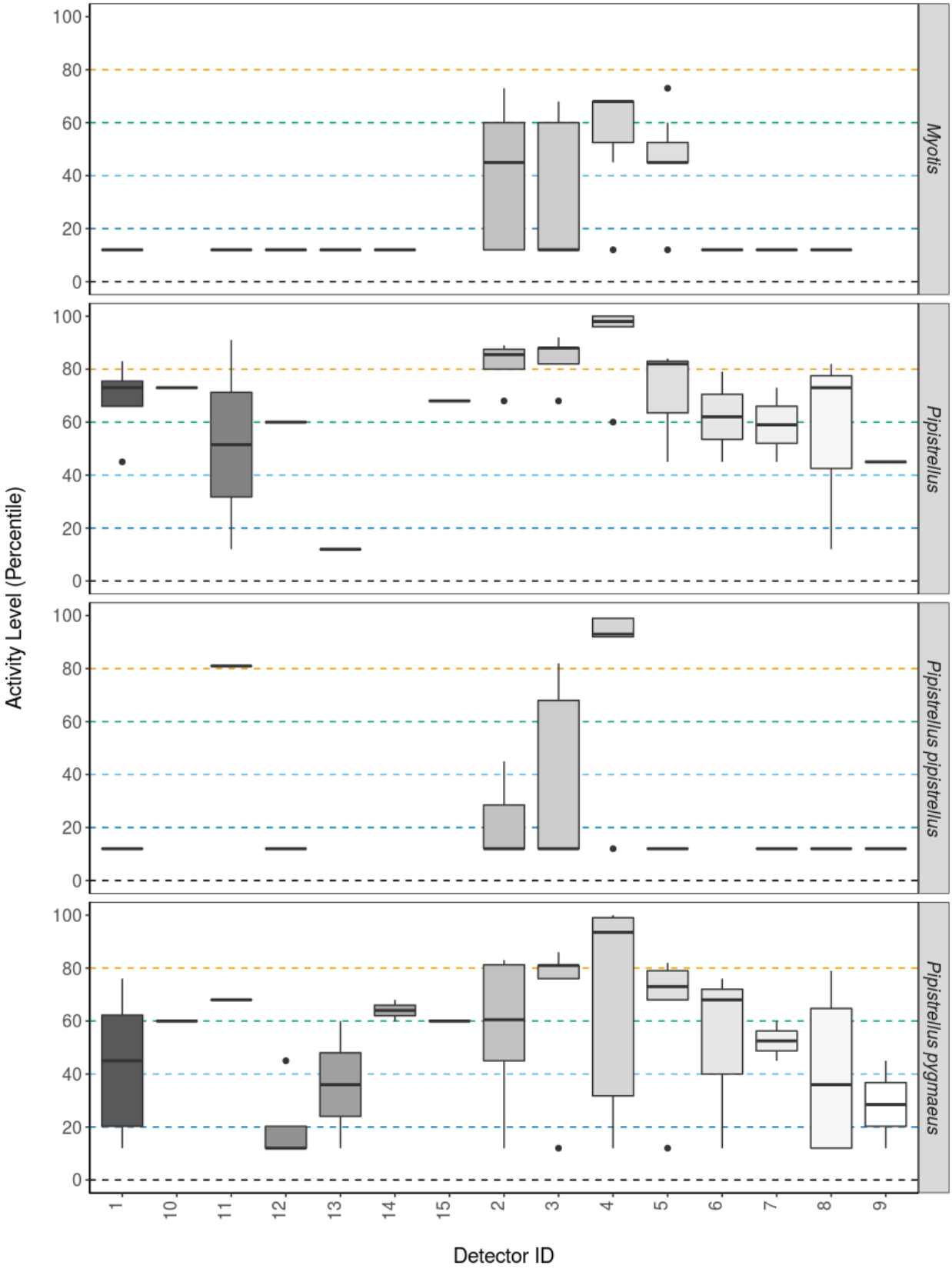
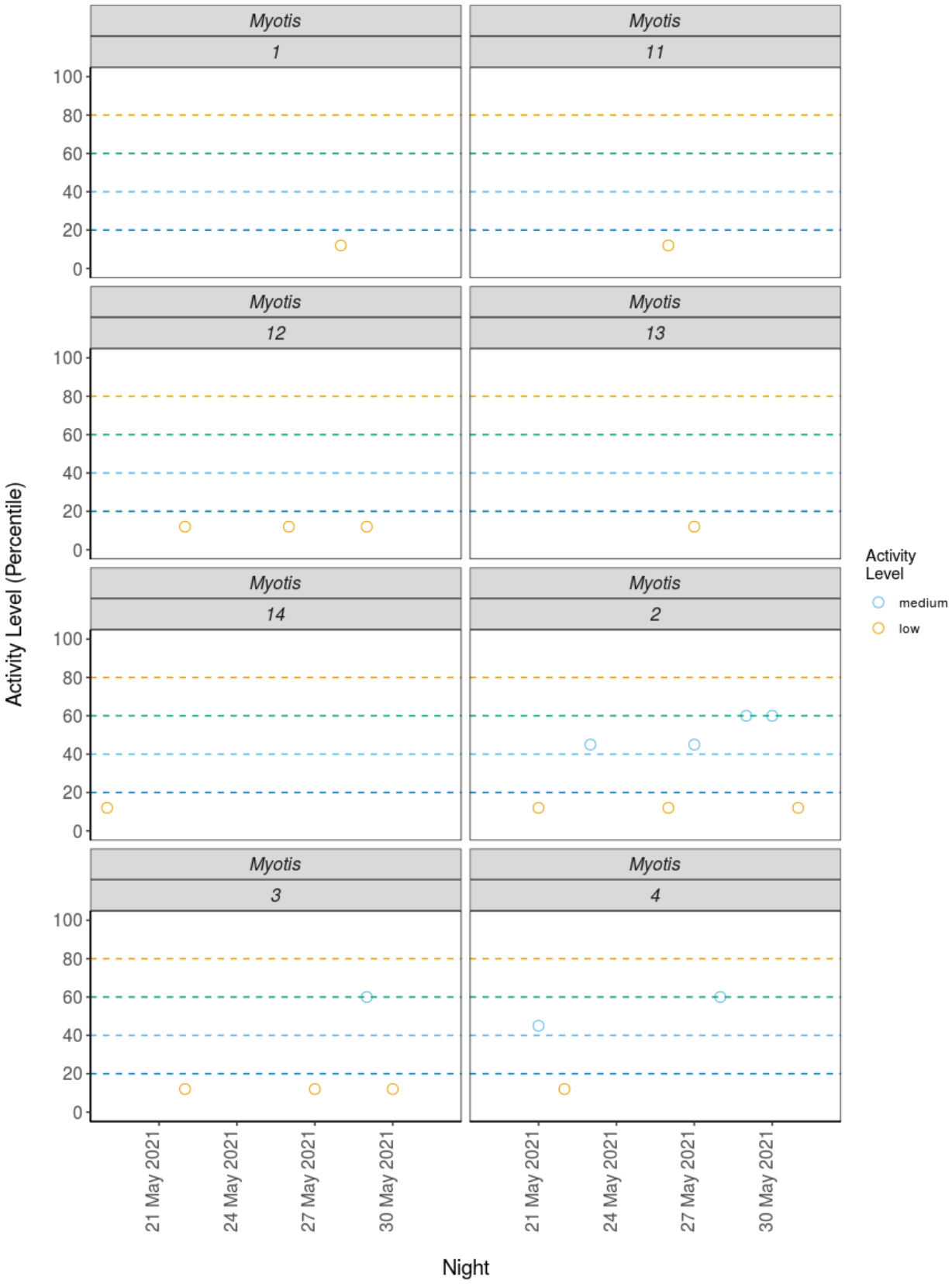
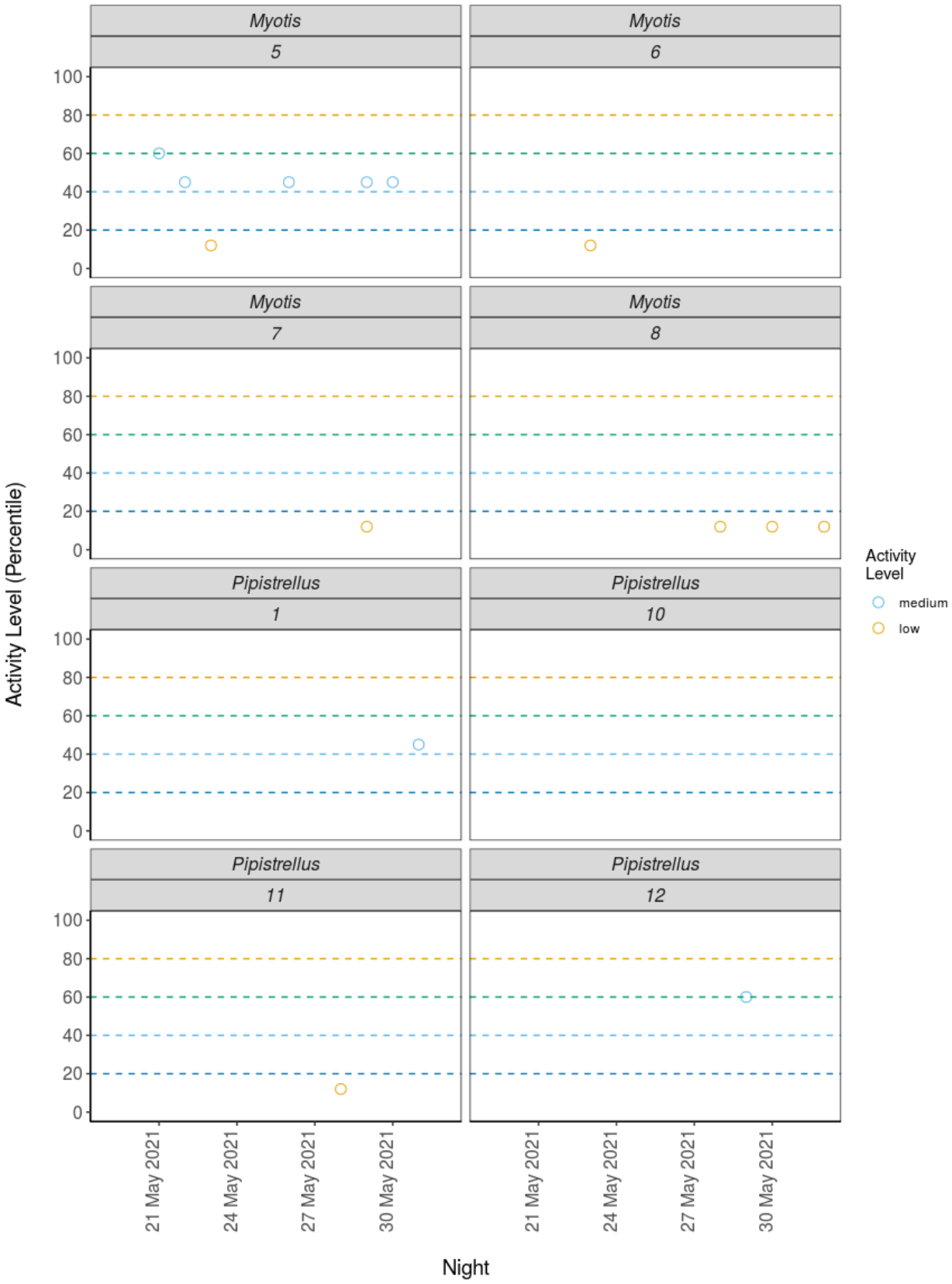
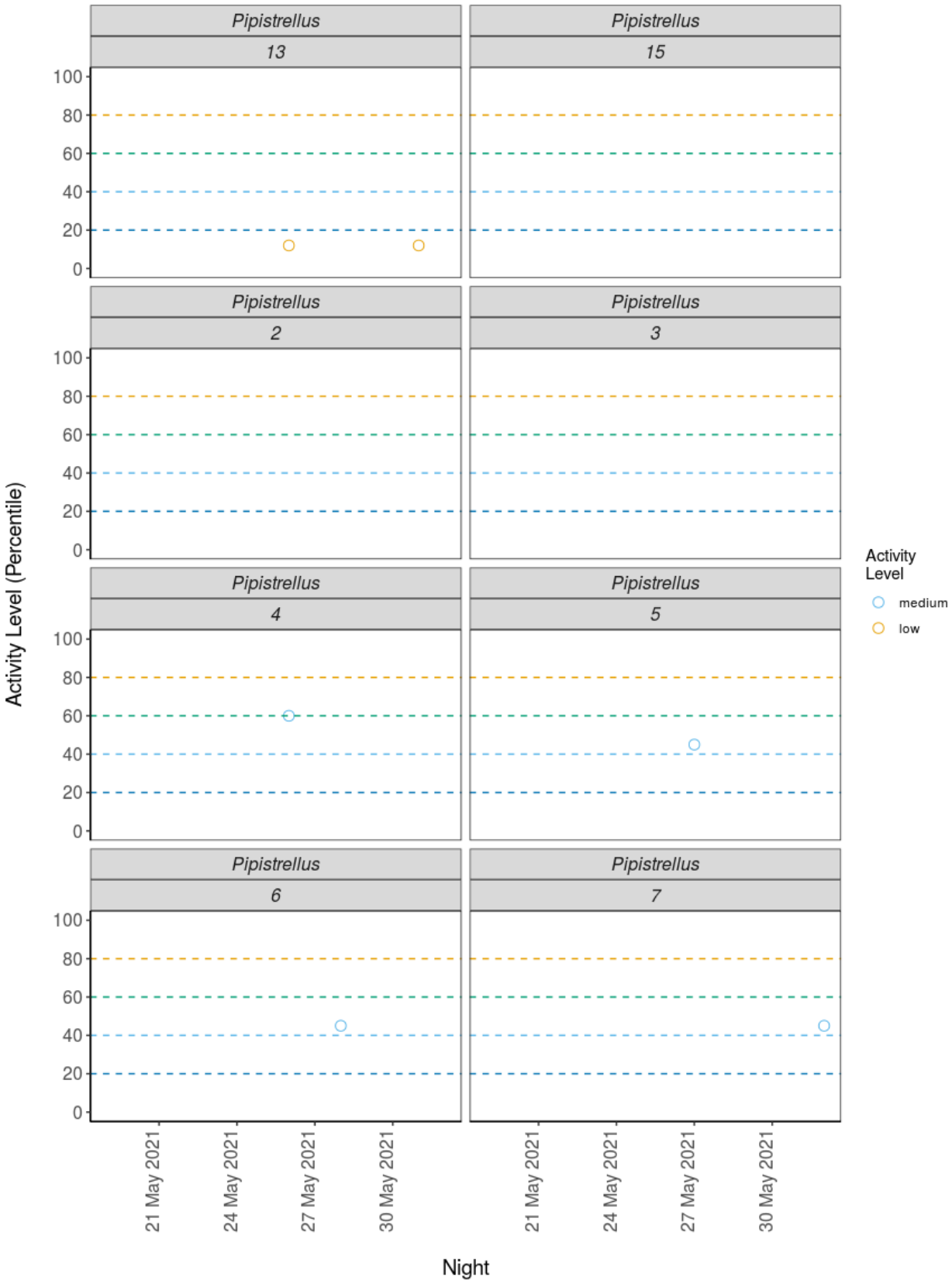
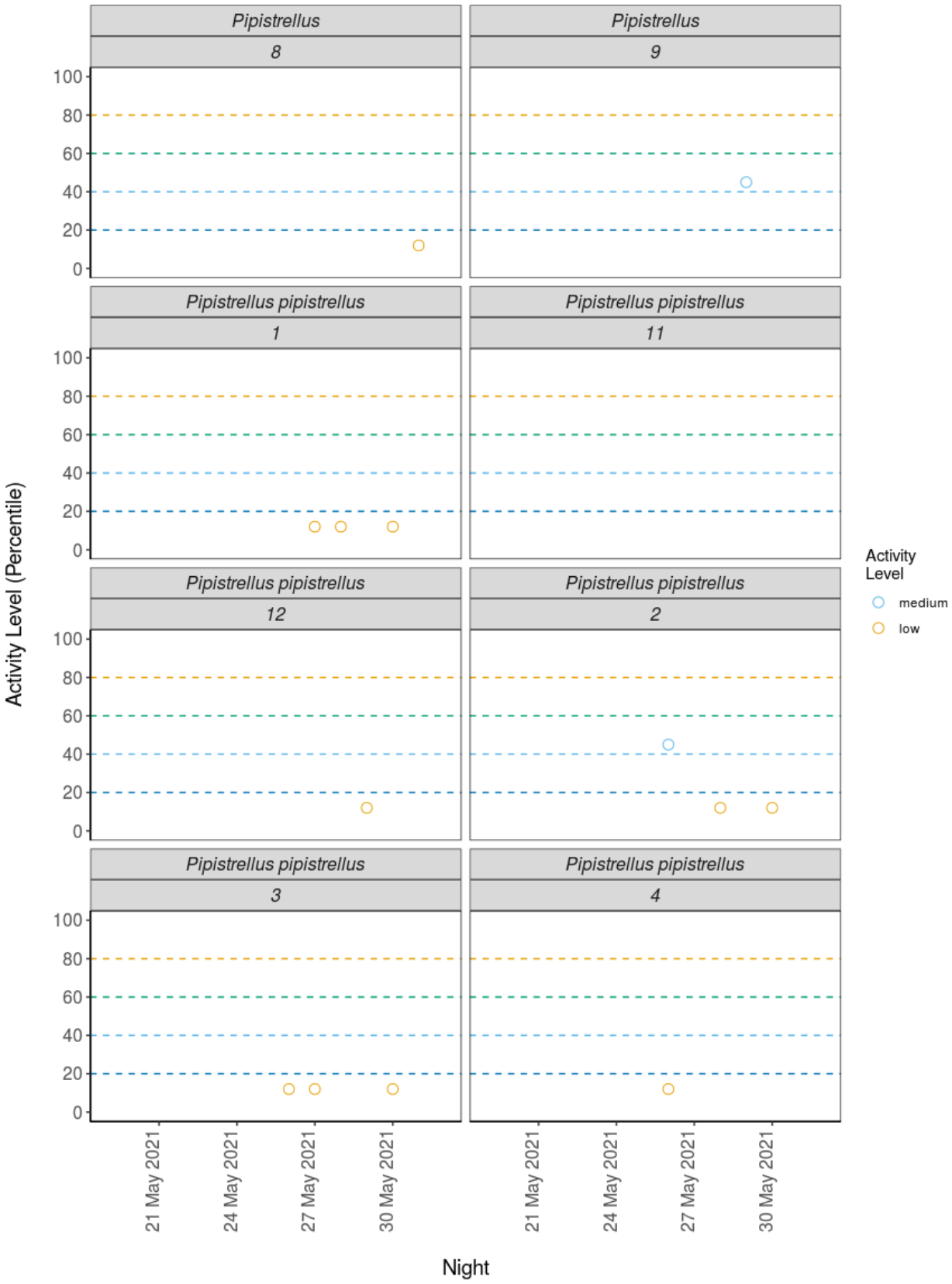

Activity Level (Percentile)
100
80
60
40
20
0
Myotis
Pipistrellus
Pipistrellus pipistrellus
Pipistrellus pygmaeus
1
10
11
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID

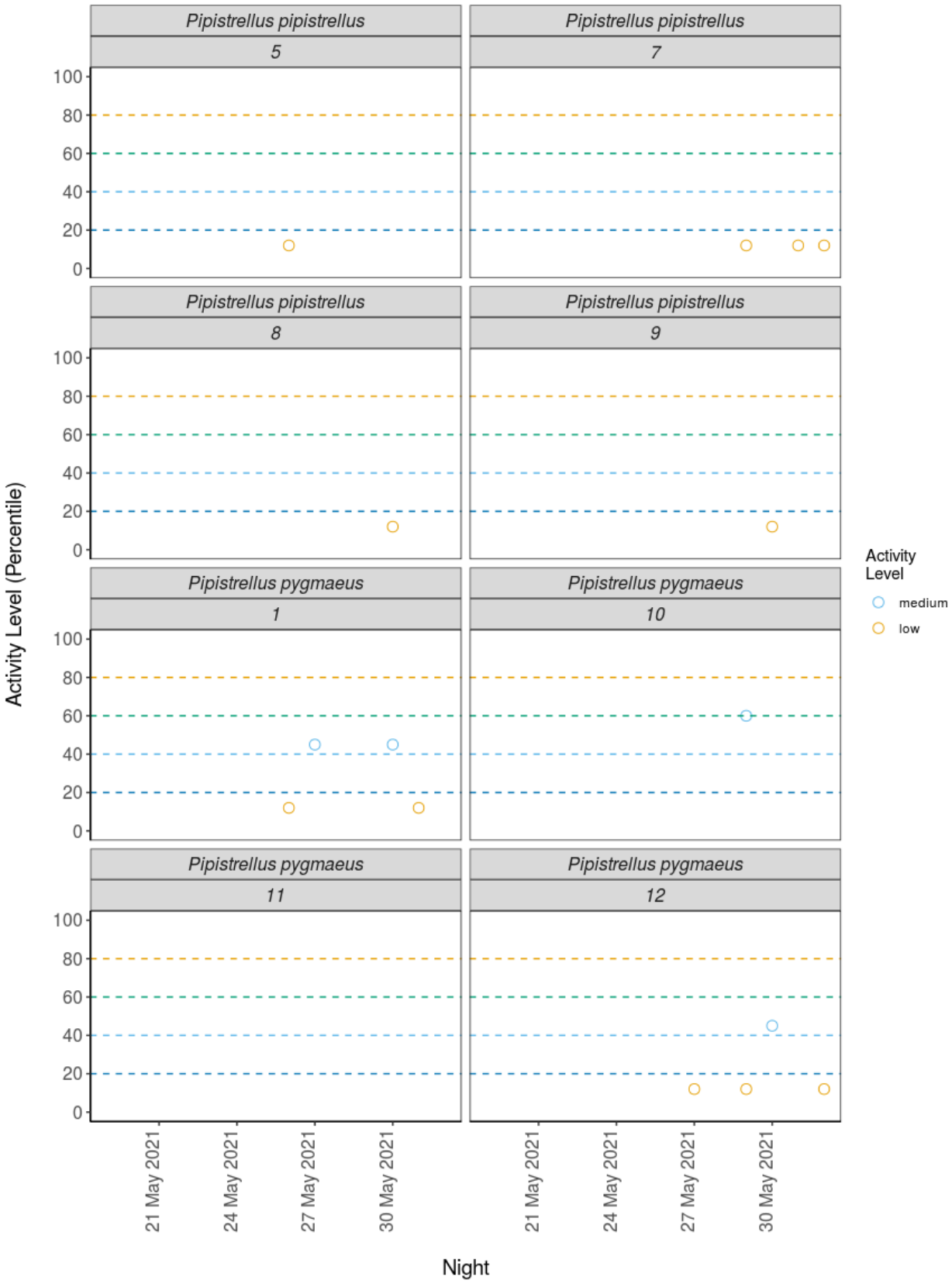
Figure 3. The activity level (percentile) of bats recorded across each night of the bat survey.

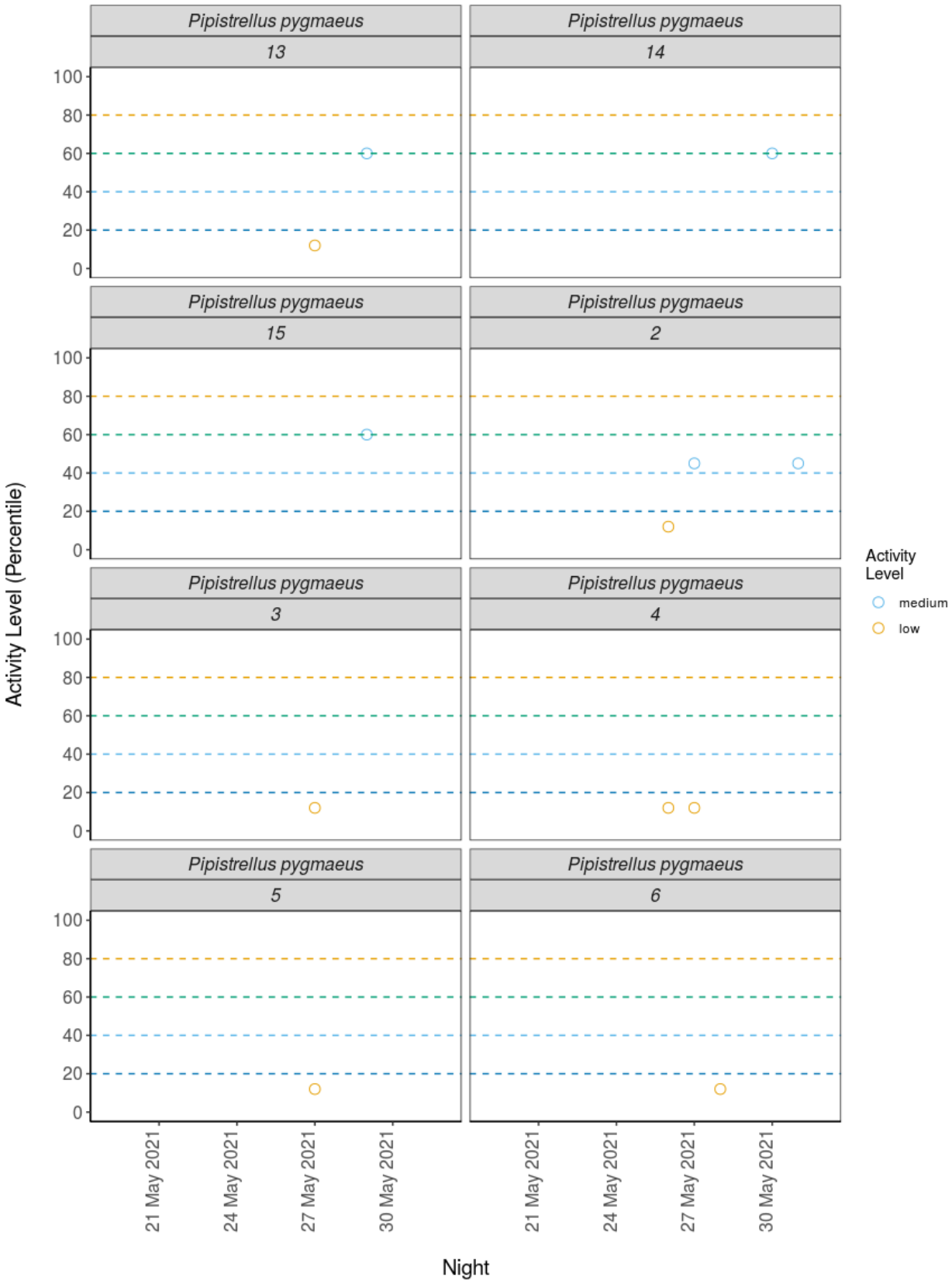

Myotis
1
Myotis
11
Myotis
12
Myotis
13
Myotis
14
Myotis
2
Myotis
3
Myotis
4
Activity Level (Percentile)
100
80
60
40
20
0
21 May 2021
24 May 2021
27 May 2021
30 May 2021
Night
Activity Level
medium
low

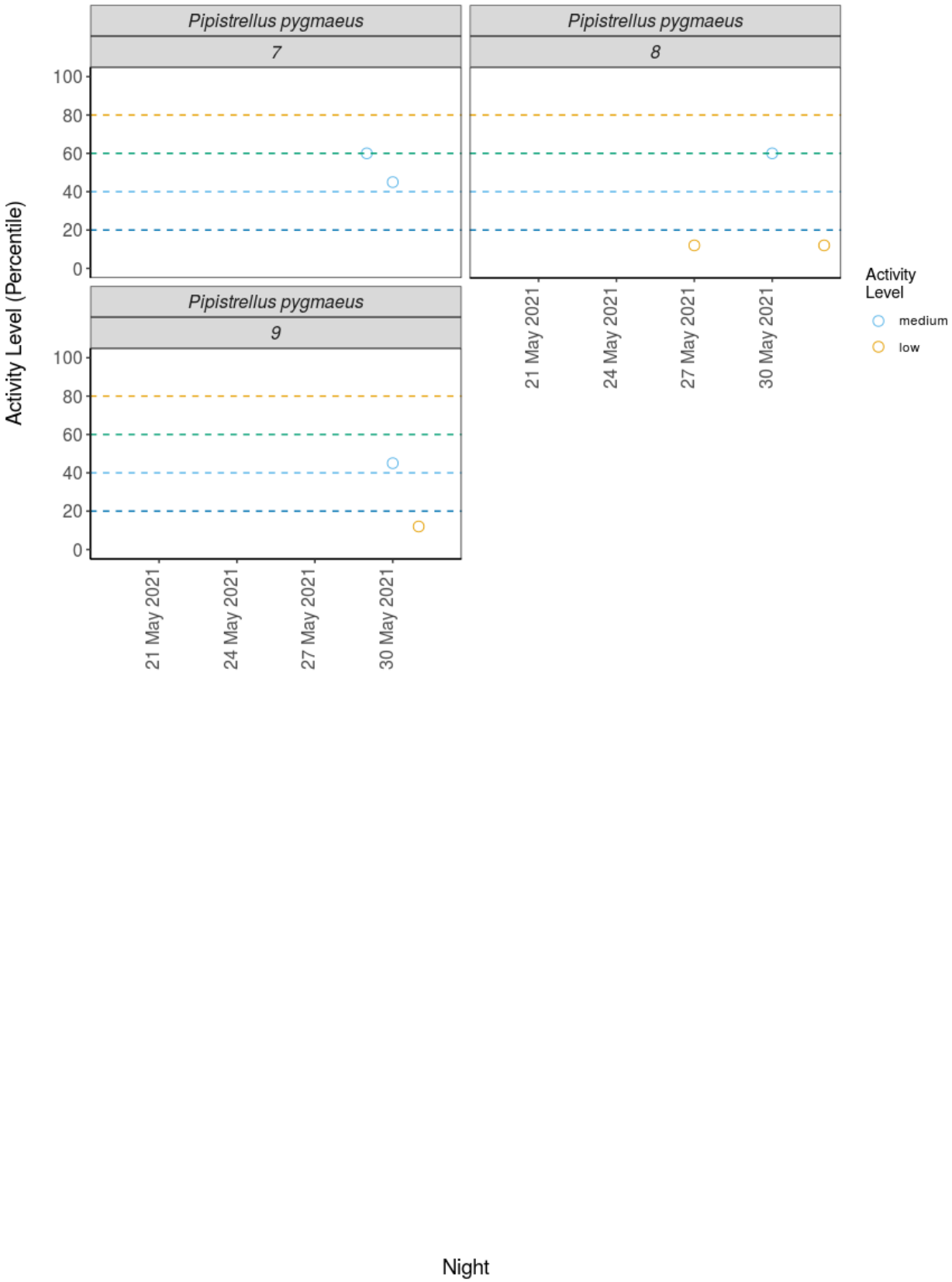

Myotis
5
Myotis
6
Myotis
7
Myotis
8
Pipistrellus
1
Pipistrellus
10
Pipistrellus
11
Pipistrellus
12
Activity Level (Percentile)
100
80
60
40
20
0
21 May 2021
24 May 2021
27 May 2021
30 May 2021
Night
Activity Level
medium
low


Pipistrellus
13
15
2
3
4
5
6
7
100
80
60
40
20
0
Activity Level (Percentile)
21 May 2021
24 May 2021
27 May 2021
30 May 2021
Night
Activity Level
medium
low


Pipistrellus
8
Pipistrellus
9
Pipistrellus pipistrellus
1
Pipistrellus pipistrellus
11
Pipistrellus pipistrellus
12
Pipistrellus pipistrellus
2
Pipistrellus pipistrellus
3
Pipistrellus pipistrellus
4
Activity Level (Percentile)
100
80
60
40
20
0
21 May 2021
24 May 2021
27 May 2021
30 May 2021
Night
Activity Level
medium
low


Pipistrellus pipistrellus
5
Pipistrellus pipistrellus
7
Pipistrellus pipistrellus
8
Pipistrellus pipistrellus
9
Pipistrellus pygmaeus
1
Pipistrellus pygmaeus
10
Pipistrellus pygmaeus
11
Pipistrellus pygmaeus
12
Activity Level (Percentile)
100
80
60
40
20
0
21 May 2021
24 May 2021
27 May 2021
30 May 2021
Night
Activity Level
medium
low


Pipistrellus pygmaeus
13
14
15
2
3
4
5
6
Activity Level (Percentile)
100
80
60
40
20
0
21 May 2021
24 May 2021
27 May 2021
30 May 2021
Night
Activity Level
medium
low


Pipistrellus pygmaeus
7
Pipistrellus pygmaeus
8
Pipistrellus pygmaeus
9
Activity Level (Percentile)
100
80
60
40
20
0
21 May 2021
24 May 2021
27 May 2021
30 May 2021
Activity Level
medium
low
Night

PER DETECTOR, PER MONTH

Table 5. Summary table showing the number of nights recorded bat activity fell into each activity band for each species at each detector during each month.

Detector ID	Species/Species Group	Month	Nights of High Activity	Nights of Moderate / High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
1	*Myotis*	May	0	0	0	0	1
1	*Pipistrellus*	May	1	2	1	0	0
1	*Pipistrellus pipistrellus*	May	0	0	0	0	3
1	*Pipistrellus pygmaeus*	May	0	2	2	0	2
10	*Pipistrellus*	May	0	1	0	0	0
10	*Pipistrellus pygmaeus*	May	0	0	1	0	0
11	*Myotis*	May	0	0	0	0	1
11	*Pipistrellus*	May	1	0	0	0	1
11	*Pipistrellus pipistrellus*	May	1	0	0	0	0
11	*Pipistrellus pygmaeus*	May	0	1	0	0	0
12	*Myotis*	May	0	0	0	0	3
12	*Pipistrellus*	May	0	0	1	0	0
12	*Pipistrellus pipistrellus*	May	0	0	0	0	1
12	*Pipistrellus pygmaeus*	May	0	0	1	0	2
12	*Pipistrellus pygmaeus*	Jun	0	0	0	0	1
13	*Myotis*	May	0	0	0	0	1
13	*Pipistrellus*	May	0	0	0	0	2
13	*Pipistrellus pygmaeus*	May	0	0	1	0	1
14	*Myotis*	May	0	0	0	0	1
14	*Pipistrellus pygmaeus*	May	0	1	1	0	0

15	*Pipistrellus*	May	0	1	0	0	0
15	*Pipistrellus pygmaeus*	May	0	0	1	0	0
2	*Myotis*	May	0	1	4	0	3
2	*Pipistrellus*	May	3	1	0	0	0
2	*Pipistrellus pipistrellus*	May	0	0	1	0	2
2	*Pipistrellus pygmaeus*	May	2	1	2	0	1
3	*Myotis*	May	0	1	1	0	3
3	*Pipistrellus*	May	4	1	0	0	0
3	*Pipistrellus pipistrellus*	May	1	1	0	0	3
3	*Pipistrellus pygmaeus*	May	3	1	0	0	1
4	*Myotis*	May	0	4	2	0	1
4	*Pipistrellus*	May	4	0	1	0	0
4	*Pipistrellus pipistrellus*	May	4	0	0	0	1
4	*Pipistrellus pygmaeus*	May	4	0	0	0	2
5	*Myotis*	May	0	1	5	0	1
5	*Pipistrellus*	May	2	0	1	0	0
5	*Pipistrellus pipistrellus*	May	0	0	0	0	1
5	*Pipistrellus pygmaeus*	May	1	3	0	0	1
6	*Myotis*	May	0	0	0	0	1
6	*Pipistrellus*	May	0	1	1	0	0
6	*Pipistrellus pygmaeus*	May	0	2	0	0	1
7	*Myotis*	May	0	0	0	0	1
7	*Pipistrellus*	May	0	1	0	0	0
7	*Pipistrellus*	Jun	0	0	1	0	0
7	*Pipistrellus pipistrellus*	May	0	0	0	0	2
7	*Pipistrellus pipistrellus*	Jun	0	0	0	0	1

7	*Pipistrellus pygmaeus*	May	0	0	2	0	0
8	*Myotis*	May	0	0	0	0	2
8	*Myotis*	Jun	0	0	0	0	1
8	*Pipistrellus*	May	1	1	0	0	1
8	*Pipistrellus pipistrellus*	May	0	0	0	0	1
8	*Pipistrellus pygmaeus*	May	0	1	1	0	1
8	*Pipistrellus pygmaeus*	Jun	0	0	0	0	1
9	*Pipistrellus*	May	0	0	1	0	0
9	*Pipistrellus pipistrellus*	May	0	0	0	0	1
9	*Pipistrellus pygmaeus*	May	0	0	1	0	1

Table 6. Summary table showing key metrics for each species recorded per month. Please note that we cannot split the reference range by month, hence this column is not shown in this table.

Detector ID	Species/Species Group	Month	Median Percentile	95% CIs	Max Percentile	Nights Recorded
1	*Myotis*	May	12	0	12	1
1	*Pipistrellus*	May	73	59 - 78	83	4
1	*Pipistrellus pipistrellus*	May	12	12 - 12	12	3
1	*Pipistrellus pygmaeus*	May	45	12 - 68	76	6
10	*Pipistrellus*	May	73	0	73	1
10	*Pipistrellus pygmaeus*	May	60	0	60	1
11	*Myotis*	May	12	0	12	1
11	*Pipistrellus*	May	52	51.5 - 51.5	91	2
11	*Pipistrellus pipistrellus*	May	81	0	81	1
11	*Pipistrellus pygmaeus*	May	68	0	68	1
12	*Myotis*	May	12	12 - 12	12	3
12	*Pipistrellus*	May	60	0	60	1
12	*Pipistrellus pipistrellus*	May	12	0	12	1
12	*Pipistrellus pygmaeus*	May	12	12 - 12	45	3
12	*Pipistrellus pygmaeus*	Jun	12	12 - 12	12	1
13	*Myotis*	May	12	0	12	1
13	*Pipistrellus*	May	12	12 - 12	12	2
13	*Pipistrellus pygmaeus*	May	36	36 - 36	60	2
14	*Myotis*	May	12	0	12	1
14	*Pipistrellus pygmaeus*	May	64	64 - 64	68	2

15	*Pipistrellus*	May	68	0	68	1
15	*Pipistrellus pygmaeus*	May	60	0	60	1
2	*Myotis*	May	45	12 - 60	73	8
2	*Pipistrellus*	May	86	68 - 89	89	4
2	*Pipistrellus pipistrellus*	May	12	12 - 12	45	3
2	*Pipistrellus pygmaeus*	May	61	28.5 - 83	83	6
3	*Myotis*	May	12	12 - 40	68	5
3	*Pipistrellus*	May	88	68 - 92	92	5
3	*Pipistrellus pipistrellus*	May	12	12 - 47	82	5
3	*Pipistrellus pygmaeus*	May	81	12 - 86	86	5
4	*Myotis*	May	68	40 - 68	68	7
4	*Pipistrellus*	May	98	79 - 100	100	5
4	*Pipistrellus pipistrellus*	May	93	52.5 - 99	99	5
4	*Pipistrellus pygmaeus*	May	94	12 - 100	100	6
5	*Myotis*	May	45	28.5 - 60	73	7
5	*Pipistrellus*	May	82	45 - 84	84	3
5	*Pipistrellus pipistrellus*	May	12	0	12	1
5	*Pipistrellus pygmaeus*	May	73	42.5 - 79	82	5
6	*Myotis*	May	12	0	12	1
6	*Pipistrellus*	May	62	62 - 62	79	2
6	*Pipistrellus pygmaeus*	May	68	12 - 76	76	3

7	*Myotis*	May	12	0	12	1
7	*Pipistrellus*	May	73	59 - 59	73	1
7	*Pipistrellus*	Jun	45	59 - 59	45	1
7	*Pipistrellus pipistrellus*	May	12	12 - 12	12	2
7	*Pipistrellus pipistrellus*	Jun	12	12 - 12	12	1
7	*Pipistrellus pygmaeus*	May	53	52.5 - 52.5	60	2
8	*Myotis*	May	12	12 - 12	12	2
8	*Myotis*	Jun	12	12 - 12	12	1
8	*Pipistrellus*	May	73	12 - 82	82	3
8	*Pipistrellus pipistrellus*	May	12	0	12	1
8	*Pipistrellus pygmaeus*	May	60	12 - 60	79	3
8	*Pipistrellus pygmaeus*	Jun	12	12 - 60	12	1
9	*Pipistrellus*	May	45	0	45	1
9	*Pipistrellus pipistrellus*	May	12	0	12	1
9	*Pipistrellus pygmaeus*	May	29	28.5 - 28.5	45	2

PER SITE

In this 'Per Site' section of the analysis, all values are taken from across all of the detectors to provide site-wide averages/medians.

Table 7. Summary table showing the number of nights recorded bat activity fell into each activity band for each species.

Species/Species Group	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
Myotis	0	7	12	0	20
Pipistrellus	16	9	7	0	4
Pipistrellus pipistrellus	6	1	1	0	16
Pipistrellus pygmaeus	10	12	13	0	15

Table 8. Summary table showing key metrics for each species recorded.

Species/Species Group	Median Percentile	95% CIs	Max Percentile	Nights Recorded
Myotis	12	40 - 68	73	39
Pipistrellus	73	79 - 100	100	36
Pipistrellus pipistrellus	12	52.5 - 99	99	24
Pipistrellus pygmaeus	60	64 - 64	100	50

###Figures

Figure 4. The activity level (percentile) of bats recorded across each night of the bat survey for the **entire site**.

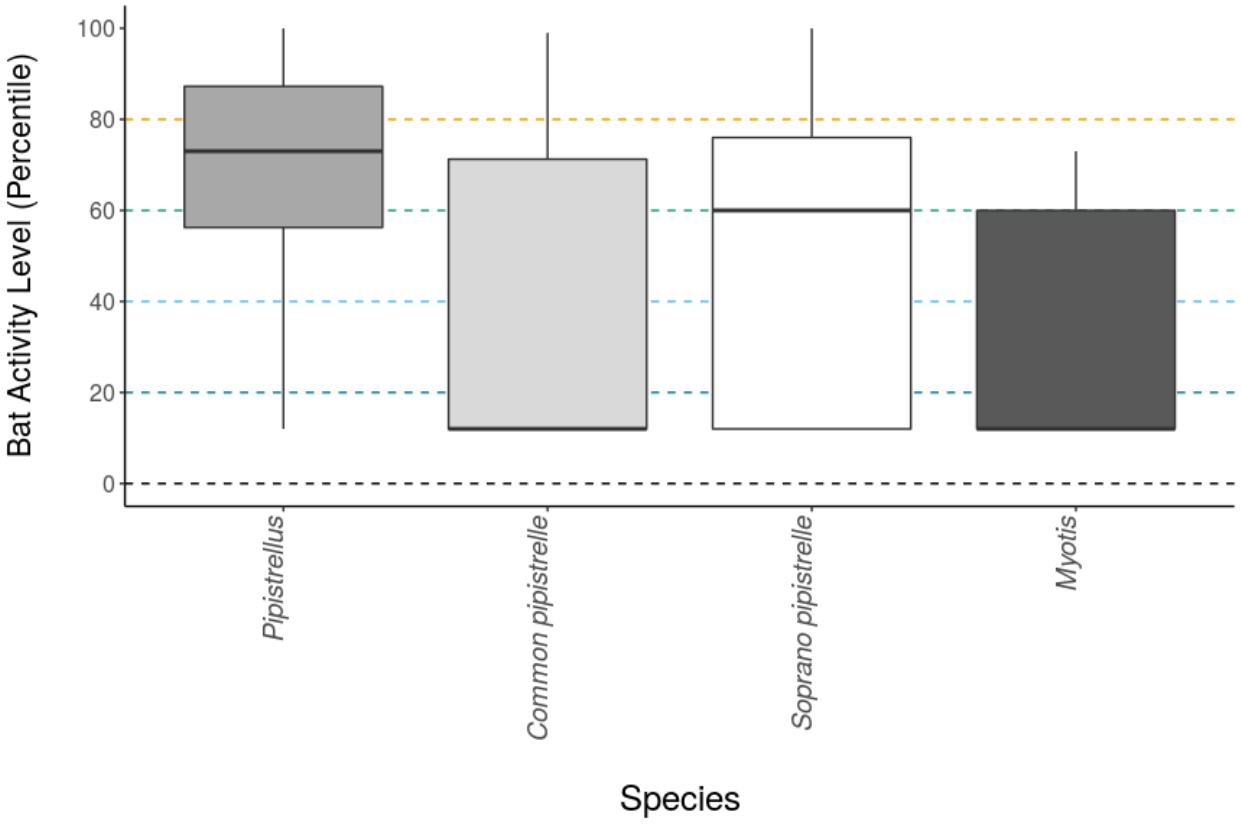


Figure 5. The median activity levels of bats recorded across all detectors each night.

PER SITE, PER MONTH

Table 9. Summary table showing the number of nights recorded bat activity fell into each activity band for each species during each month.

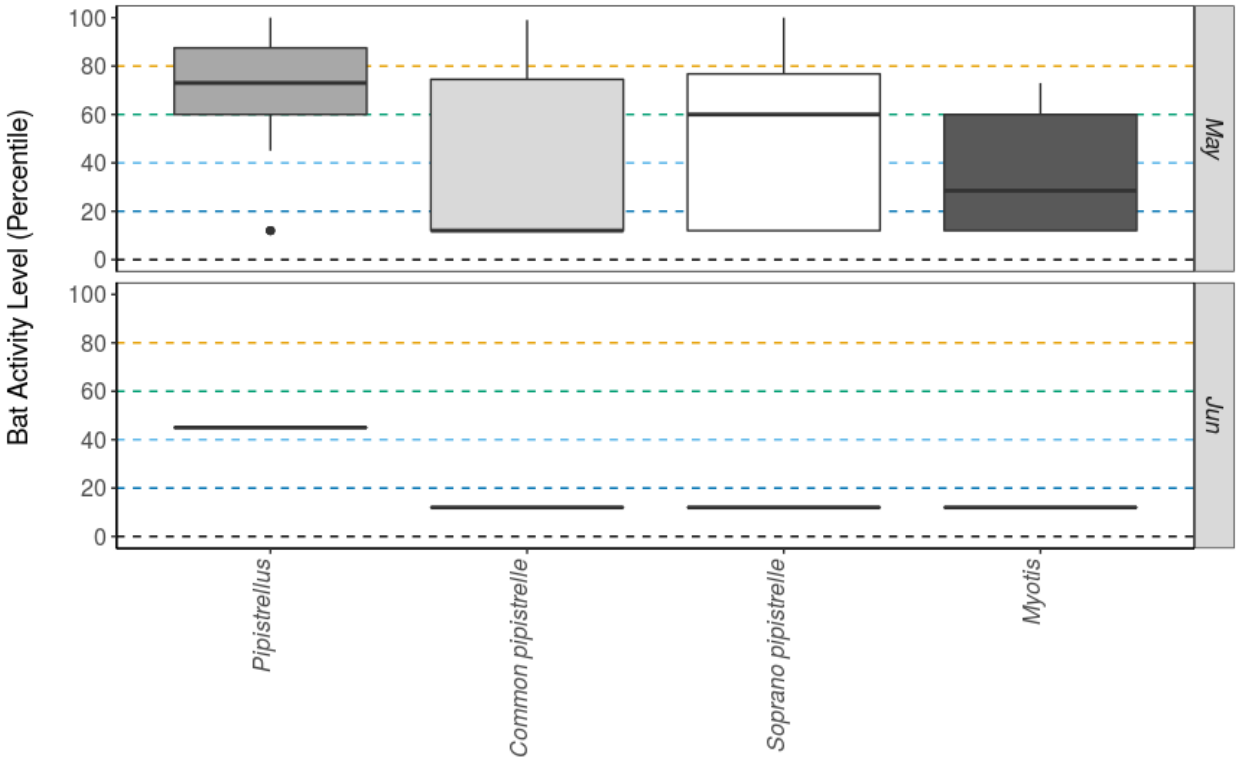
Species/Species Group	Month	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
Myotis	May	0	7	12	0	19
Myotis	Jun	0	0	0	0	1
Pipistrellus	May	16	9	6	0	4
Pipistrellus	Jun	0	0	1	0	0
Pipistrellus pipistrellus	May	6	1	1	0	15
Pipistrellus pipistrellus	Jun	0	0	0	0	1
Pipistrellus pygmaeus	May	10	12	13	0	13
Pipistrellus pygmaeus	Jun	0	0	0	0	2

Table 10. Summary table showing key metrics for each species recorded per month.

Species/Species Group	Month	Median Percentile	95% CIs	Max Percentile	Nights Recorded
Myotis	May	29	40 - 68	73	38
Myotis	Jun	12	12 - 12	12	1
Pipistrellus	May	73	79 - 100	100	35
Pipistrellus	Jun	45	59 - 59	45	1
Pipistrellus pipistrellus	May	12	52.5 - 99	99	23
Pipistrellus pipistrellus	Jun	12	12 - 12	12	1
Pipistrellus pygmaeus	May	60	64 - 64	100	48
Pipistrellus pygmaeus	Jun	12	12 - 60	12	2

###Figures

Figure 6. The activity level (percentile) of bats recorded across each night of the bat survey for the entire site, split between months.



PART 2: Nightly Analysis

ENTIRE SURVEY PERIOD

Sunrise and Sunset Times

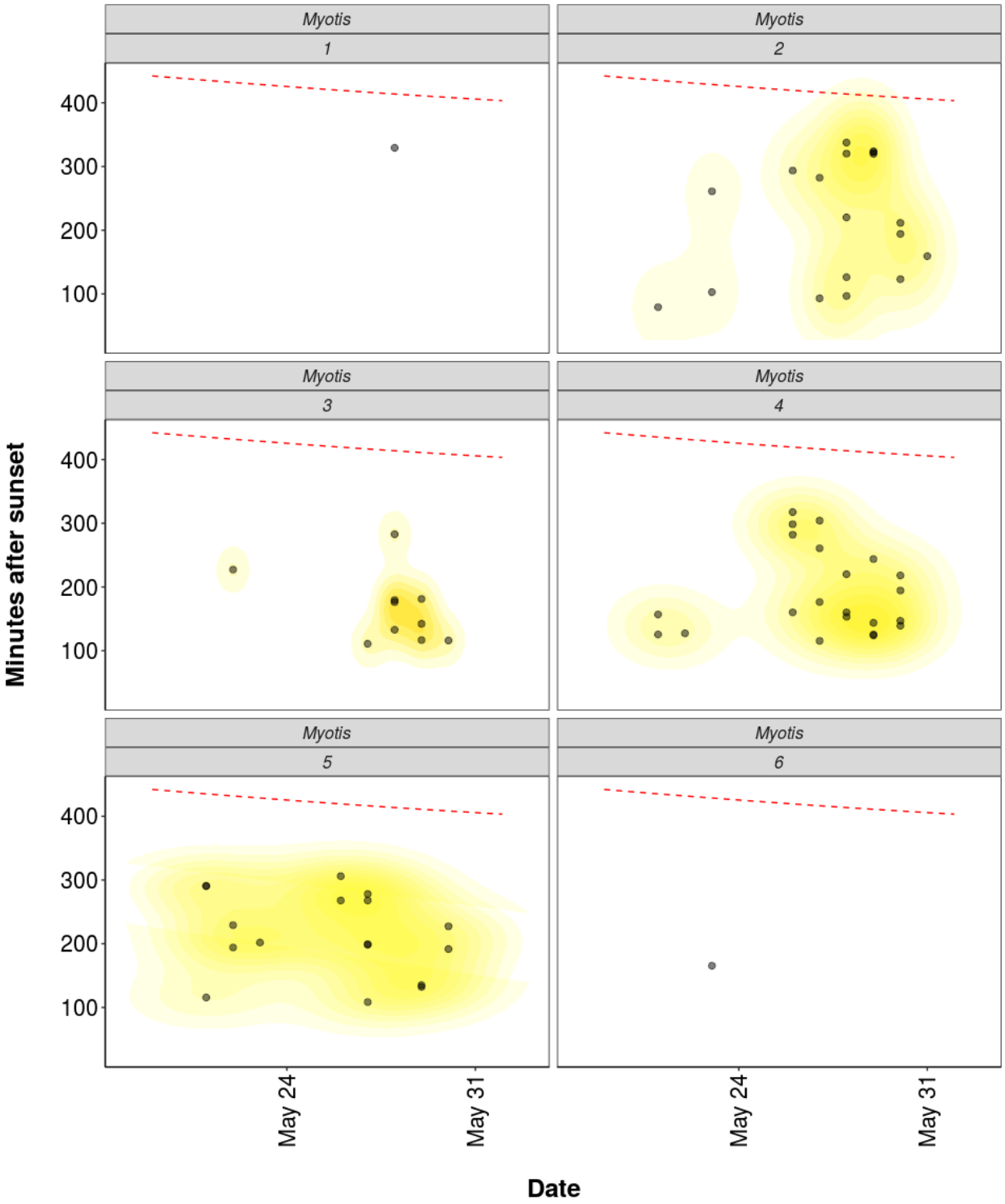
Table 11. The times of sunset and sunrise the following morning for surveys beginning on the date shown.

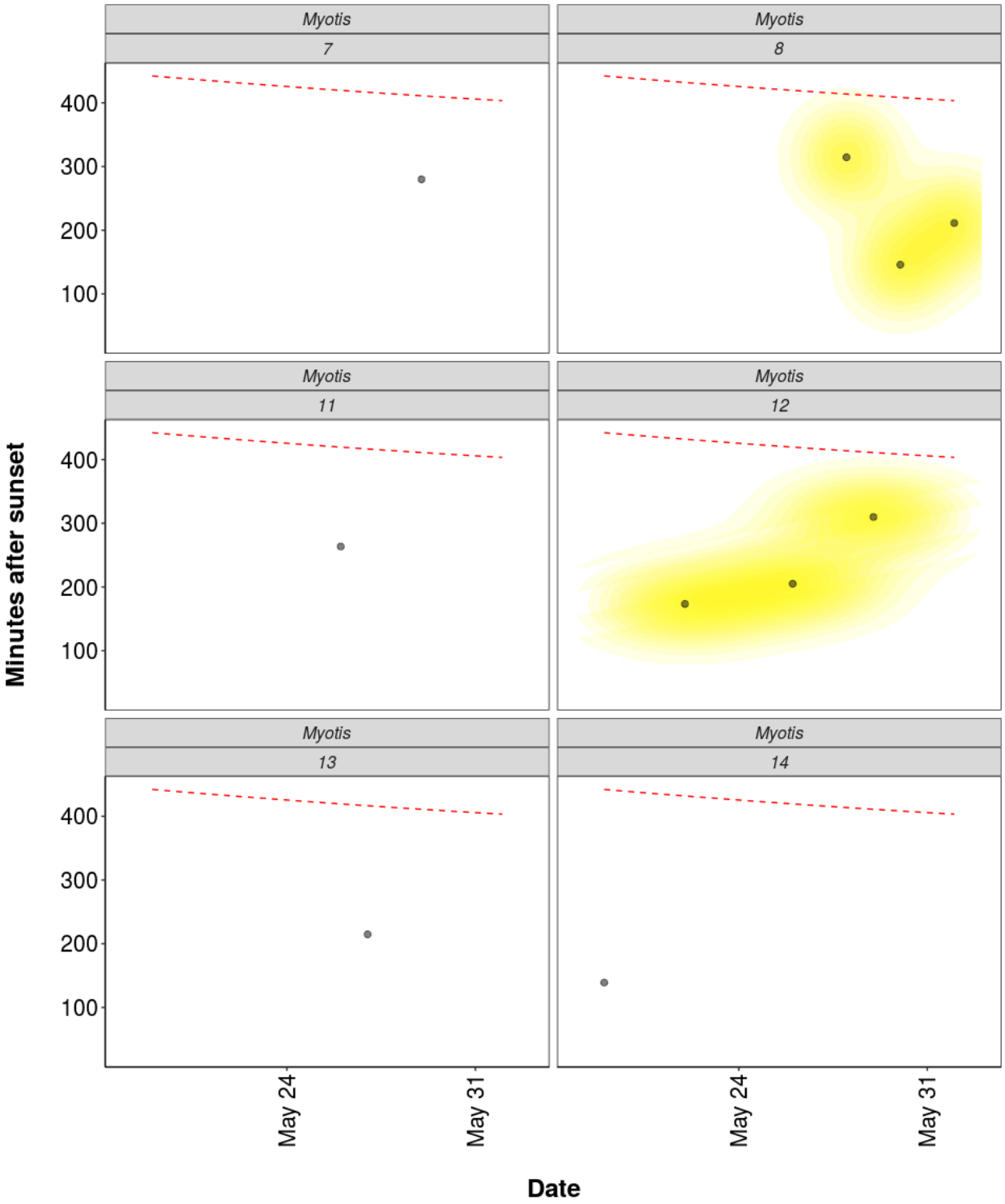
Night (y-m-d)	Sunset (hh:mm)	Sunrise (hh:mm)	Night Length (hours)
2021-05-19	21:36	04:58	7.4
2021-05-21	21:40	04:55	7.3
2021-05-22	21:42	04:54	7.2
2021-05-23	21:43	04:52	7.1
2021-05-26	21:48	04:48	7.0
2021-05-27	21:50	04:47	6.9
2021-05-28	21:52	04:45	6.9
2021-05-29	21:53	04:44	6.9
2021-05-30	21:55	04:43	6.8
2021-05-31	21:56	04:42	6.8
2021-06-01	21:57	04:41	6.7

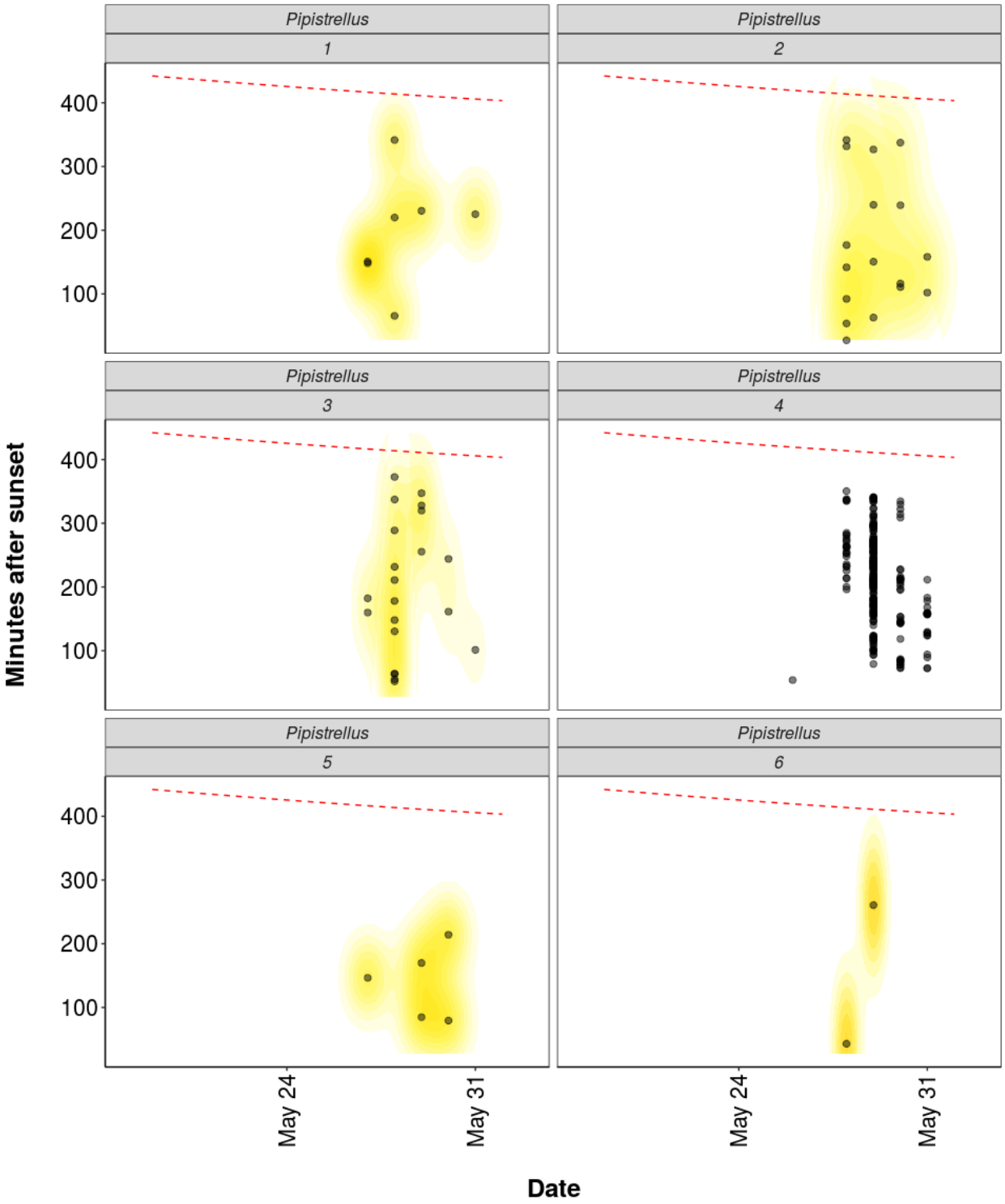
Distribution of Bat Activity Across the Night through Time

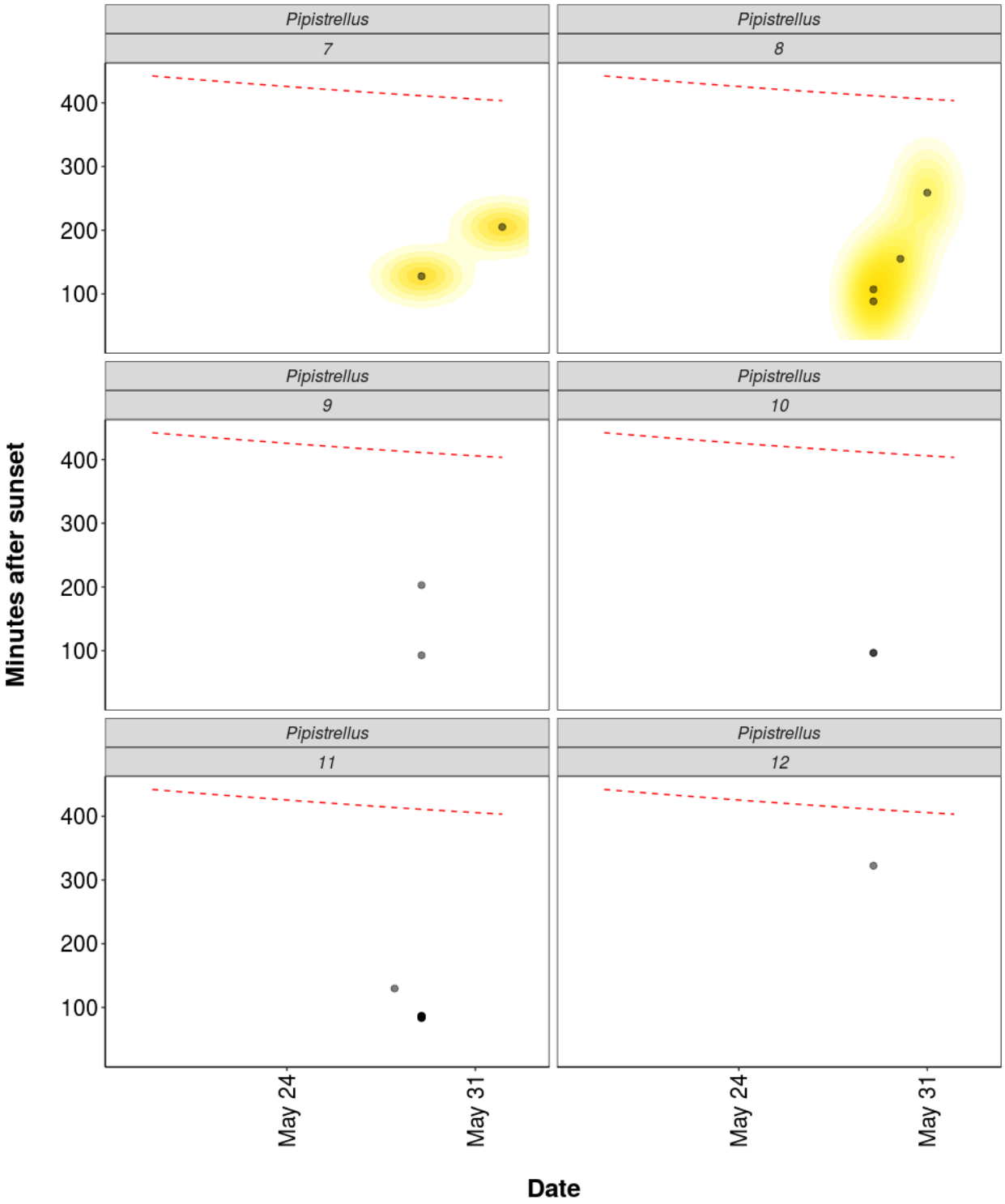
Per Detector

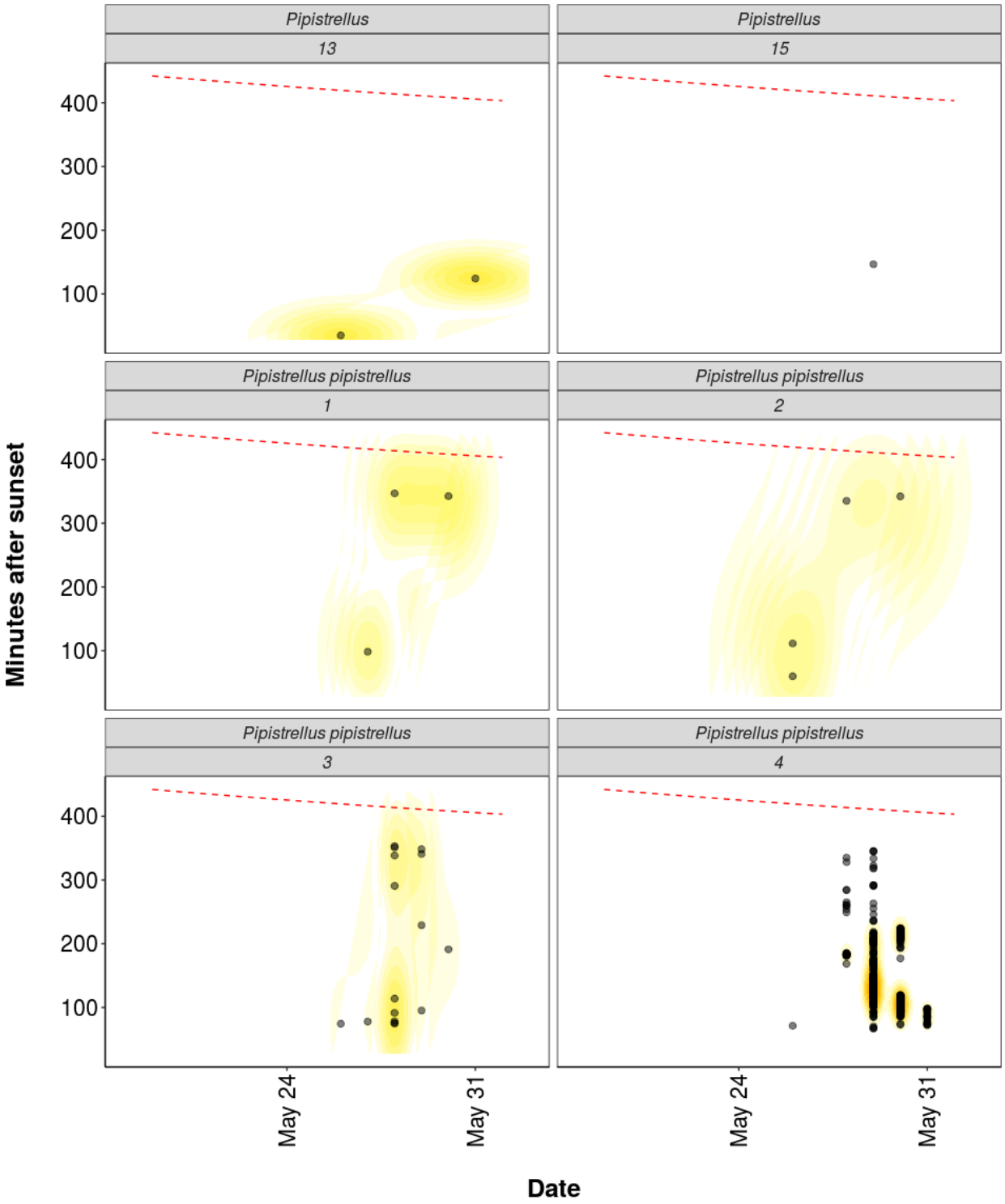
Figure 7. Timing of bat calls plotted as minutes before/after sunset, whereby 0 on the y axis represents sunset. Sunrise throughout the survey period is depicted as the red dashed line. Colours indicate kernel densities, with darkest colours showing peaks of activity. These colours are comparative only within each plot, and do not account for overall activity.

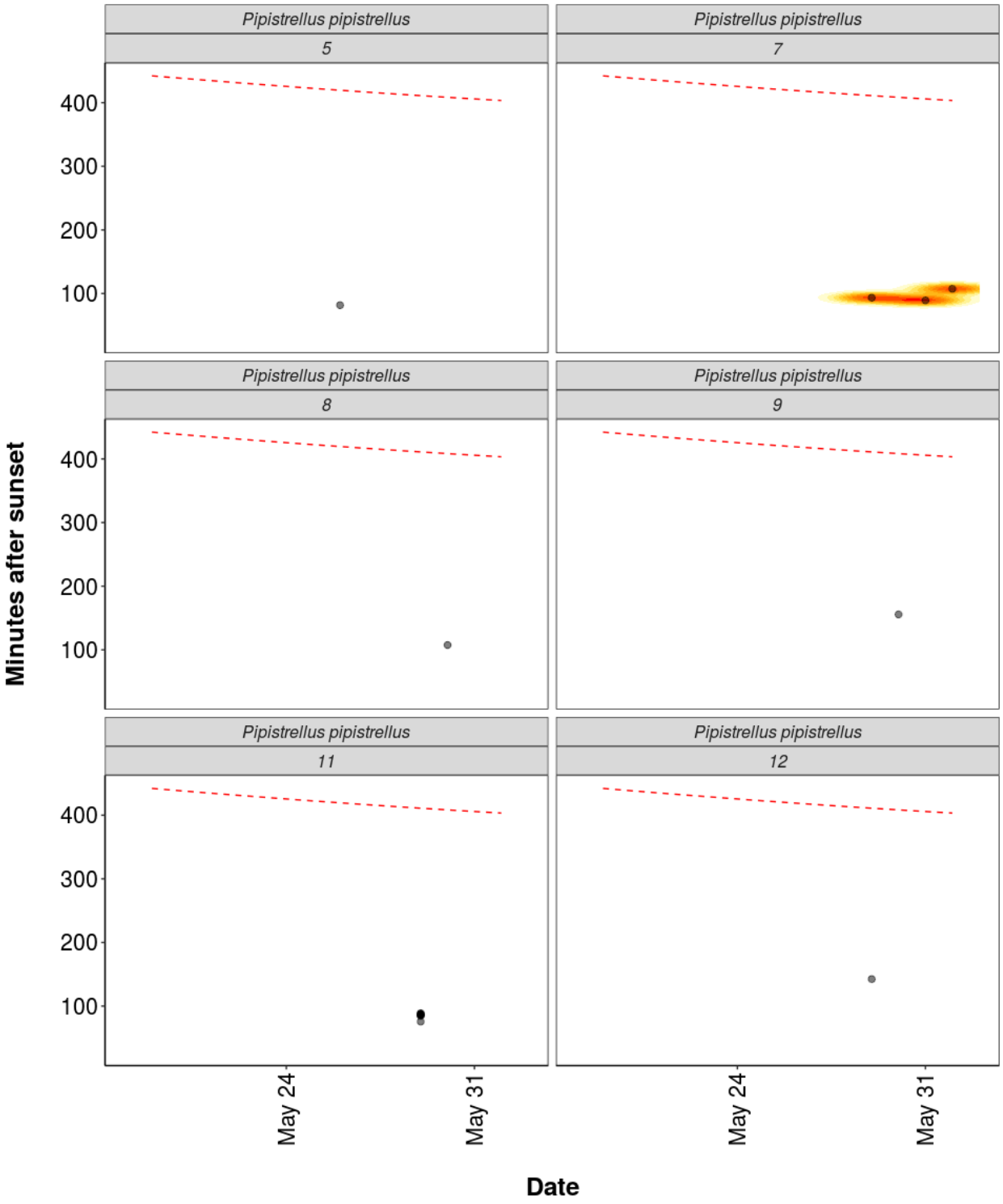

Myotis
1
Myotis
2
Myotis
3
Myotis
4
Myotis
5
Myotis
6
400
300
200
100
Minutes after sunset
May 24
May 31
Date

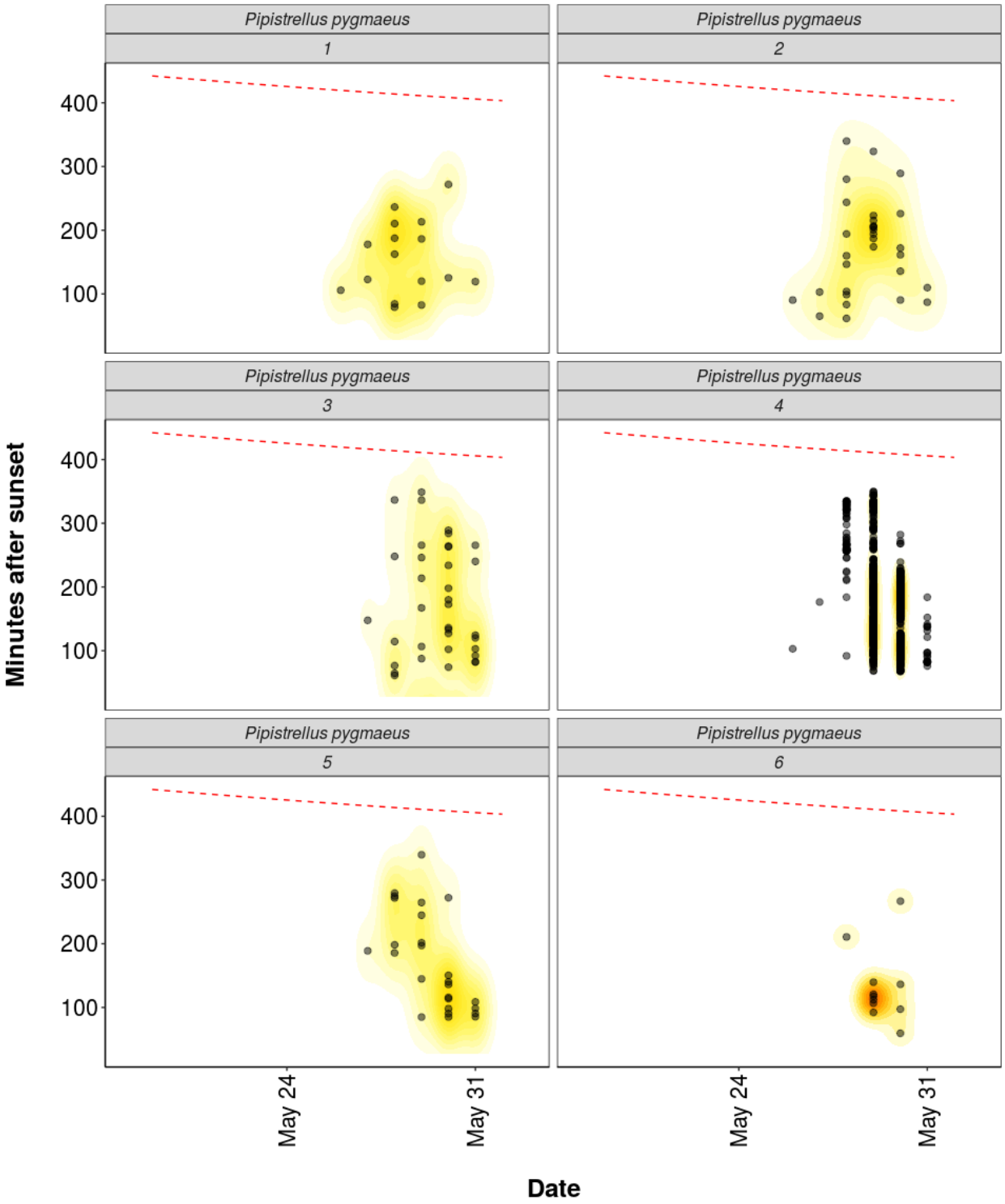

Myotis
7
Myotis
8
Myotis
11
Myotis
12
Myotis
13
Myotis
14
400
300
200
100
Minutes after sunset
May 24
May 31
Date

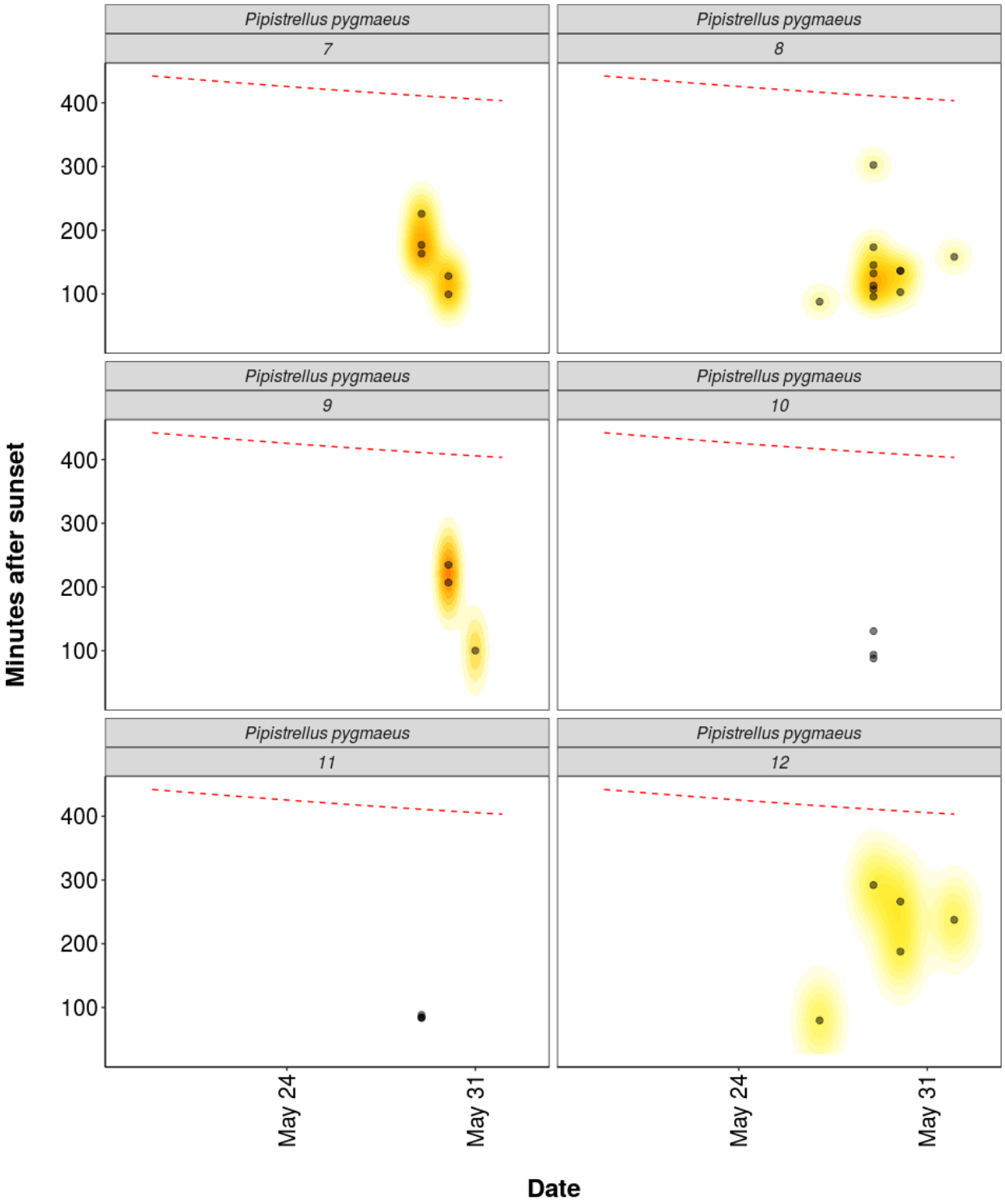

Pipistrellus
1
2
3
4
5
6
Minutes after sunset
400
300
200
100
May 24
May 31
Date

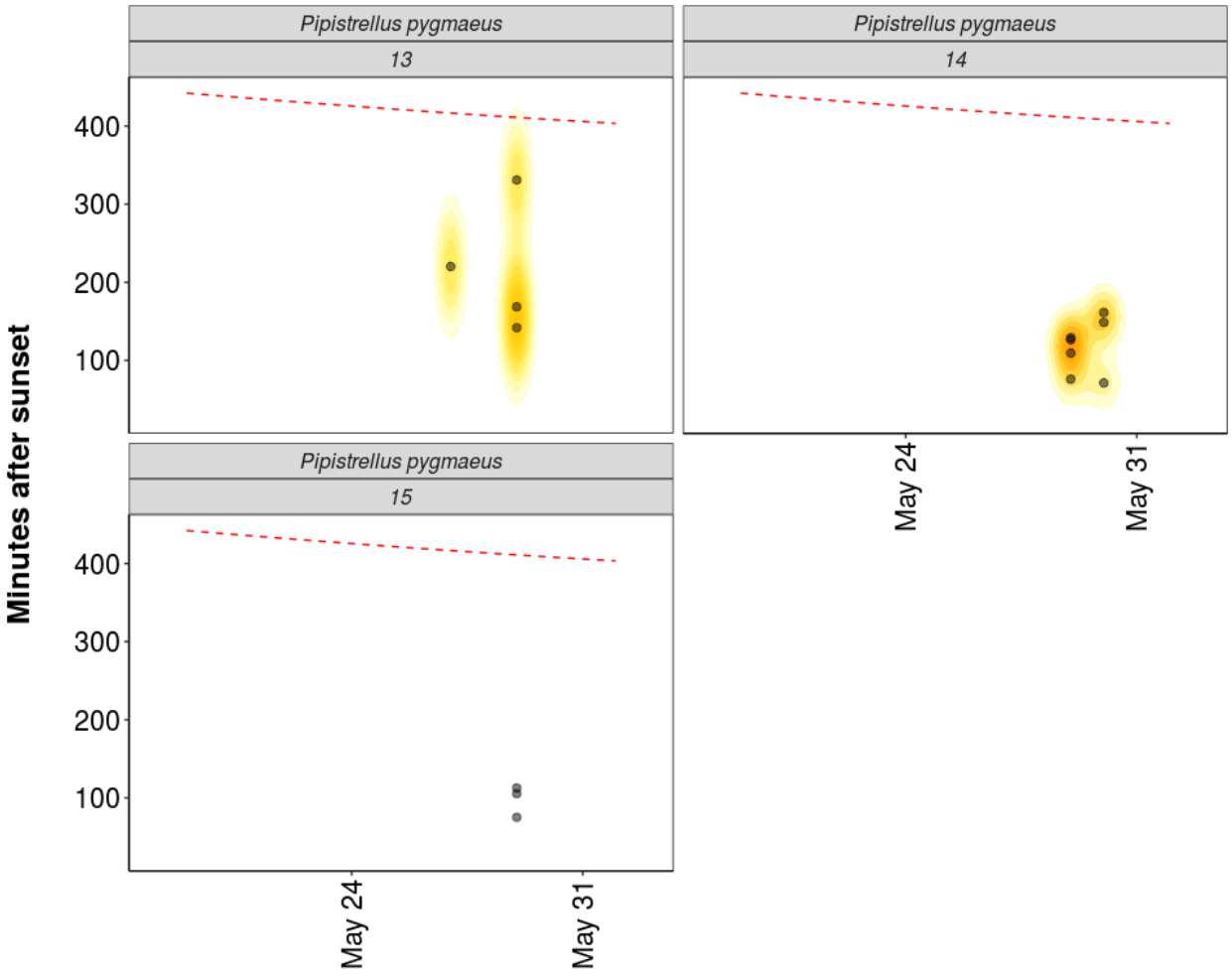

Pipistrellus
7
Pipistrellus
8
Pipistrellus
9
Pipistrellus
10
Pipistrellus
11
Pipistrellus
12
400
300
200
100
Minutes after sunset
May 24
May 31
Date


Pipistrellus
13
Pipistrellus
15
Pipistrellus pipistrellus
1
Pipistrellus pipistrellus
2
Pipistrellus pipistrellus
3
Pipistrellus pipistrellus
4
Minutes after sunset
400
300
200
100
May 24
May 31
Date


Pipistrellus pipistrellus
5
Pipistrellus pipistrellus
7
Pipistrellus pipistrellus
8
Pipistrellus pipistrellus
9
Pipistrellus pipistrellus
11
Pipistrellus pipistrellus
12
Minutes after sunset
400
300
200
100
May 24
May 31
Date


Pipistrellus pygmaeus
1
2
3
4
5
6
400
300
200
100
Minutes after sunset
May 24
May 31
Date


Pipistrellus pygmaeus
7
8
9
10
11
12
400
300
200
100
Minutes after sunset
May 24
May 31
Date


Pipistrellus pygmaeus
13
Pipistrellus pygmaeus
14
Pipistrellus pygmaeus
15
Minutes after sunset
400
300
200
100
May 24
May 31
Date

Roost Emergence Time and Bat Observation

Based on: *Russ, Jon. 2012. British Bat Calls a Guide to species Identification. Pelagic Publishing.*

For more information see https://rbats-blog.updog.co/2018/05/29/bat-emergence/

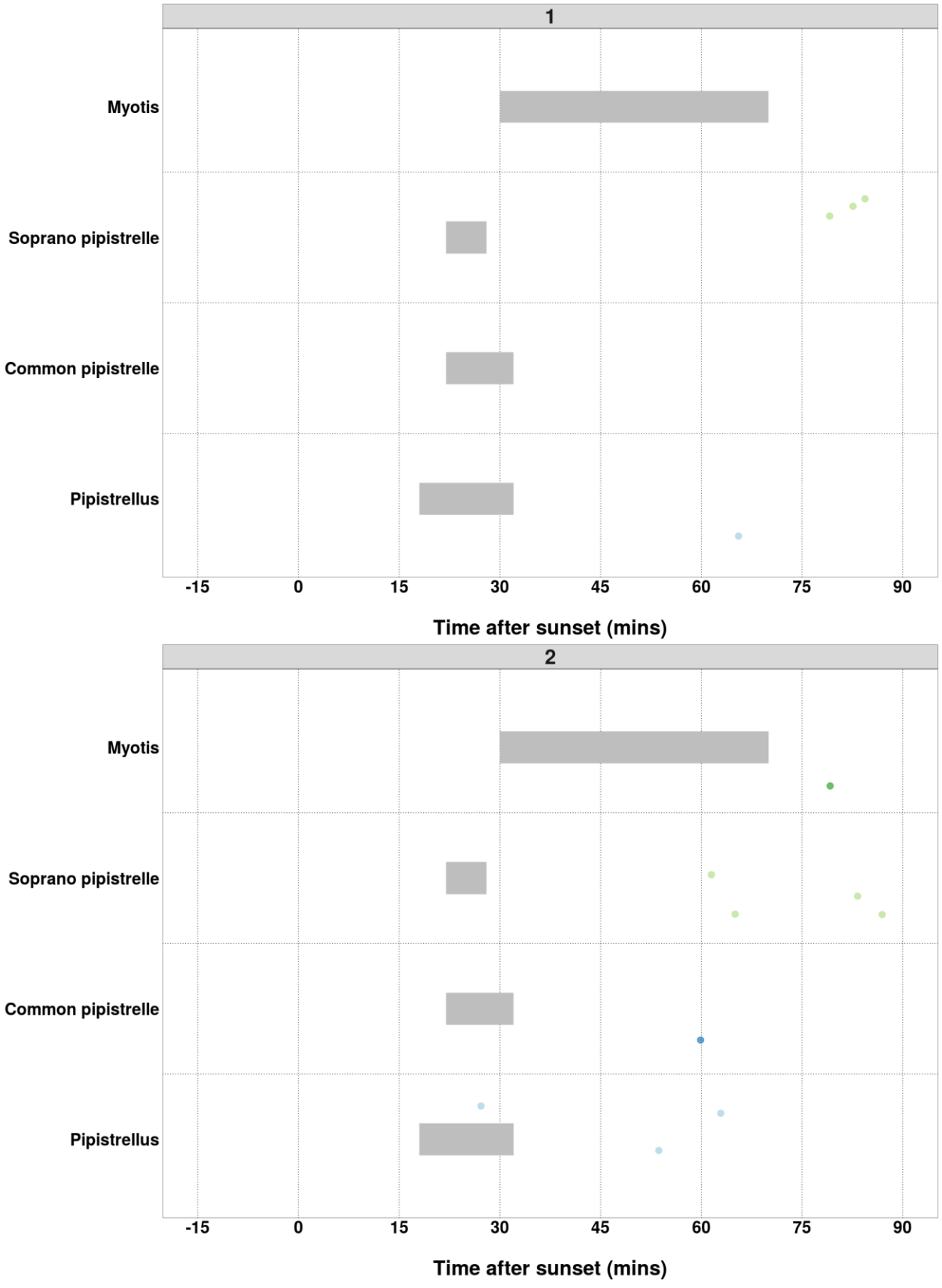
Bat Passes Potentially Indicating Close Proximity to a Roost (Russ 2012) - Table

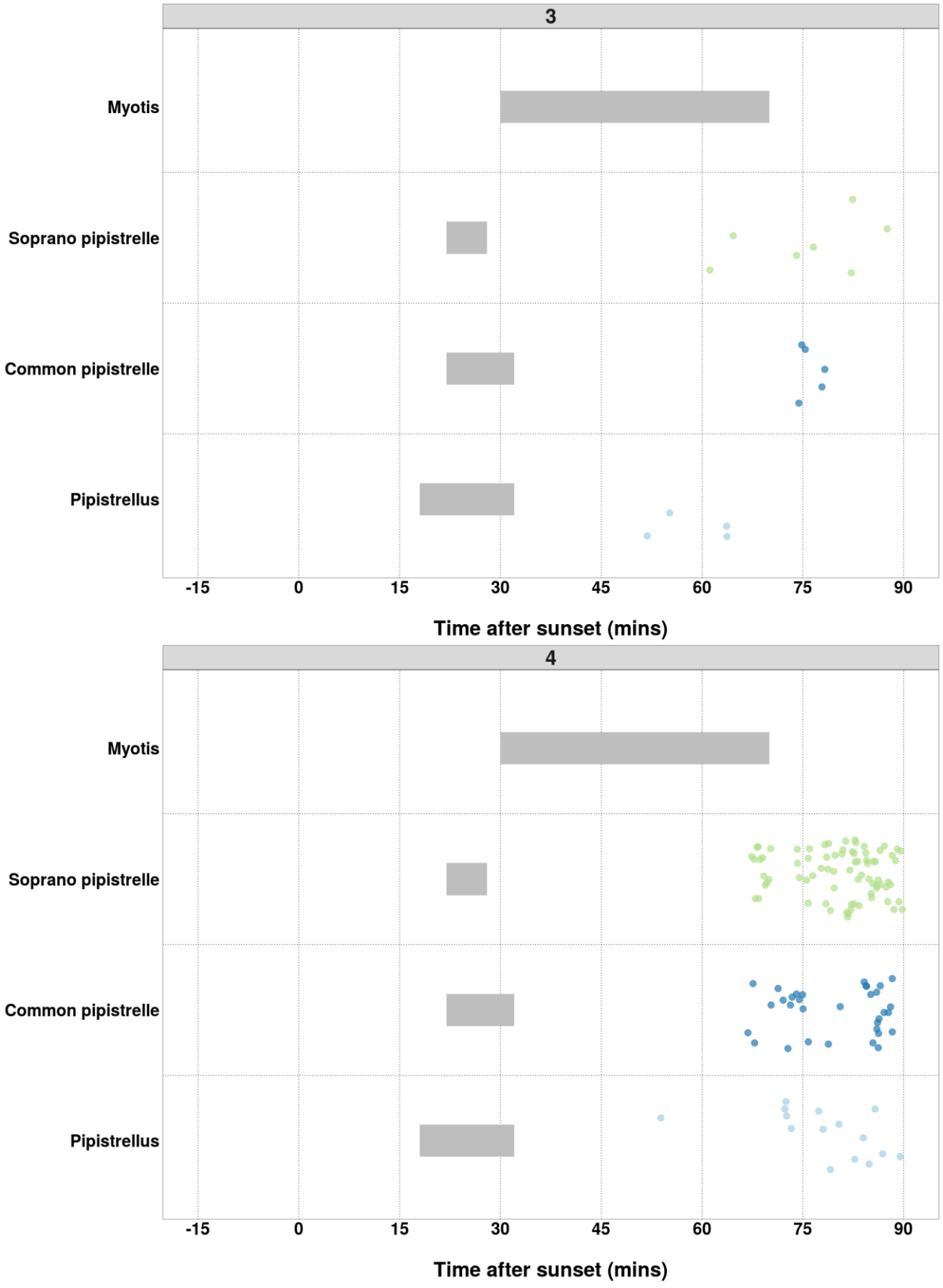
Table 12. Number of bat calls recorded before the upper time of the species-specific emergence time range, and which therefore may potentially indicate the presence of a nearby roost.

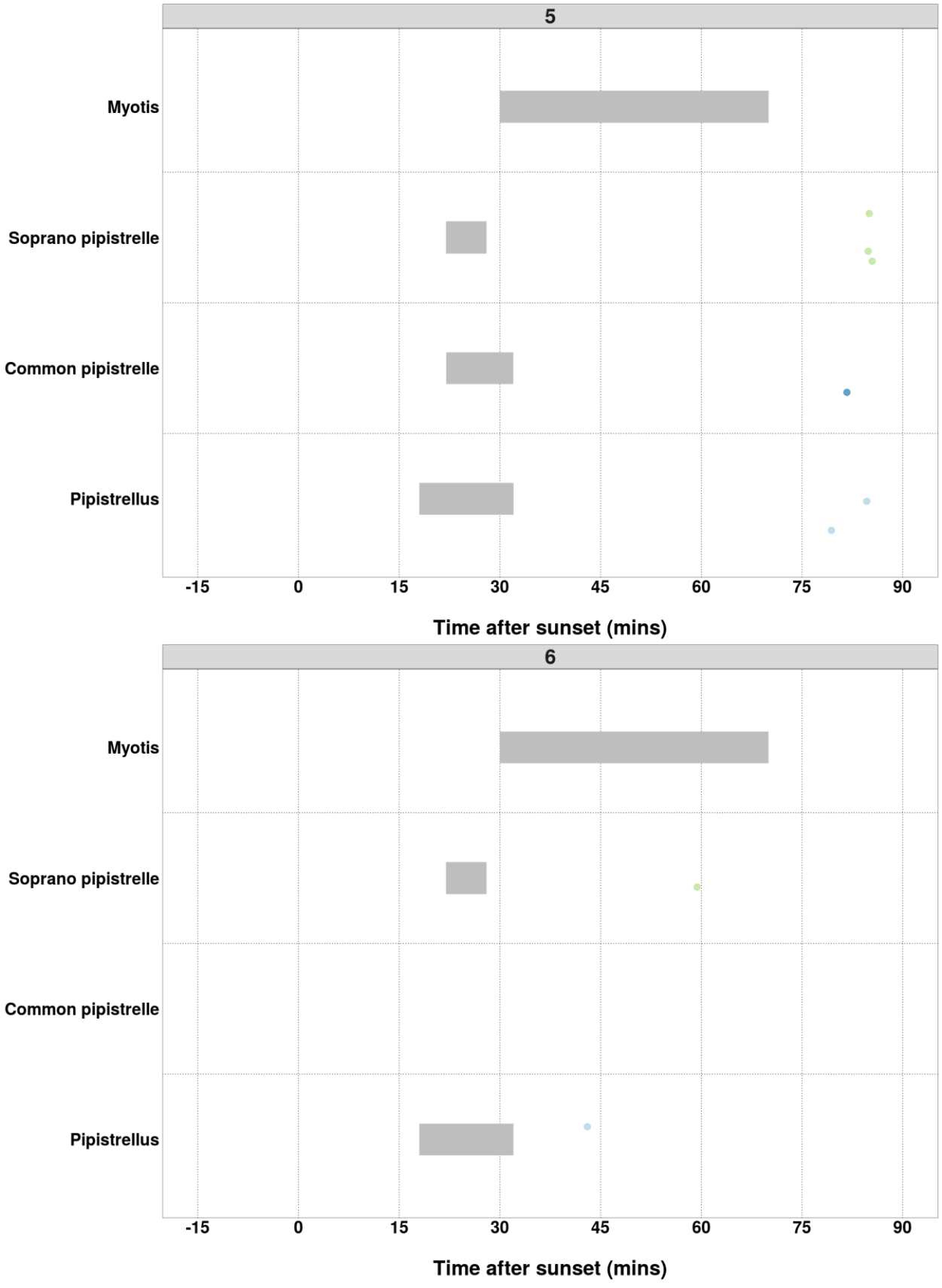
Species	Detector ID	2021-05-28
Pipistrellus	2	1

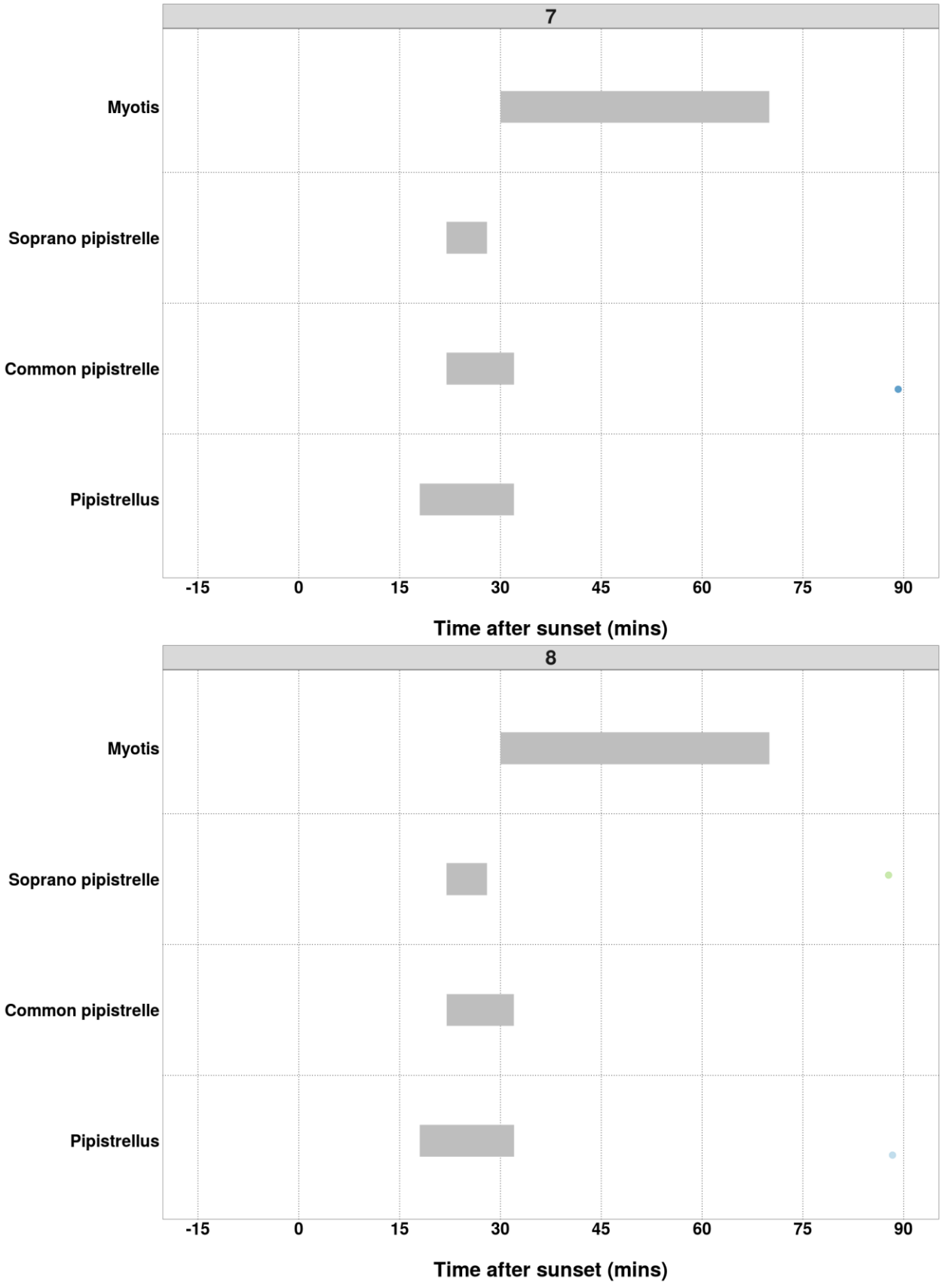
Bat Passes Potentially Indicating Close Proximity to a Roost (Russ 2012) - Figures

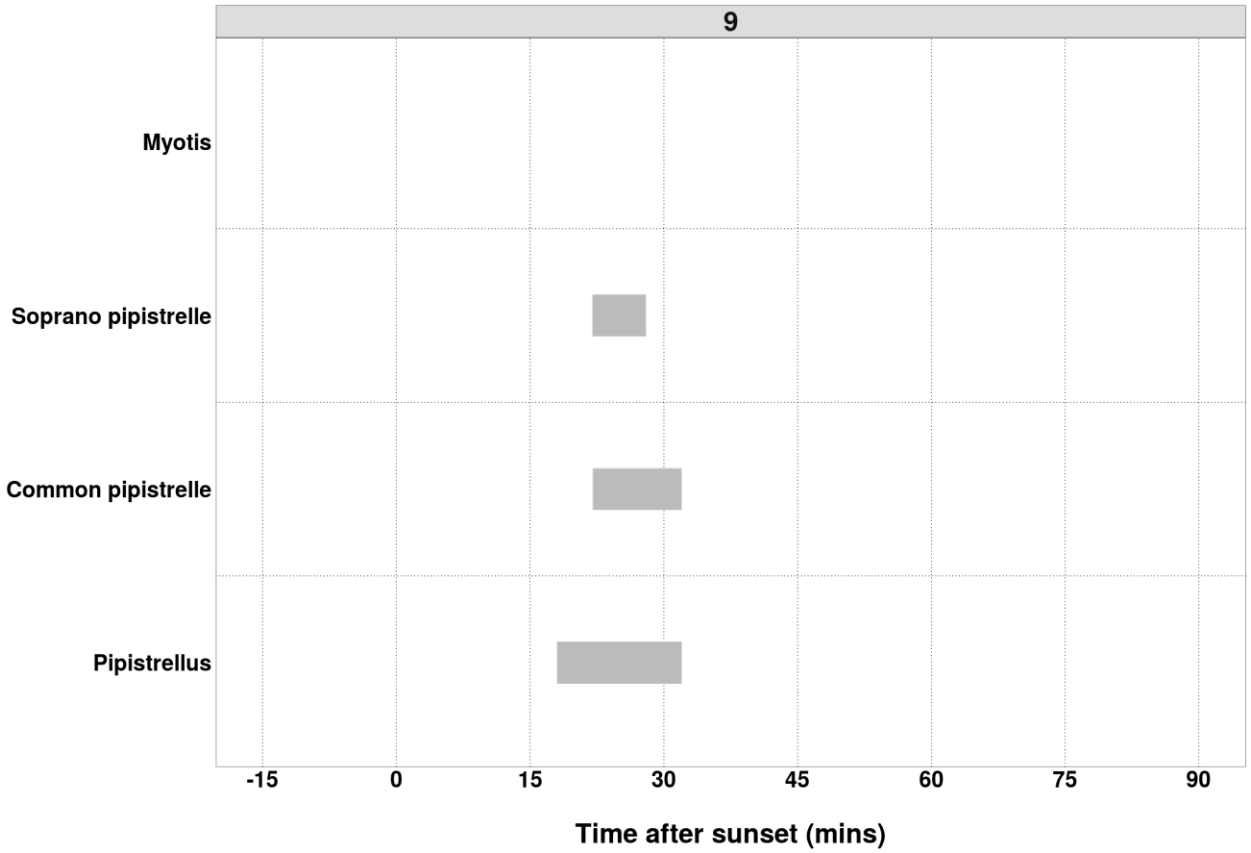
Figure 8. Time from 15 minutes before to 90 minutes after sunset. Species-specific emergence time ranges are shown as grey bars. Bat passes overlapping species-specific grey bars, or occuring earlier than this time range, may potentially indicate the presence of a nearby roost.

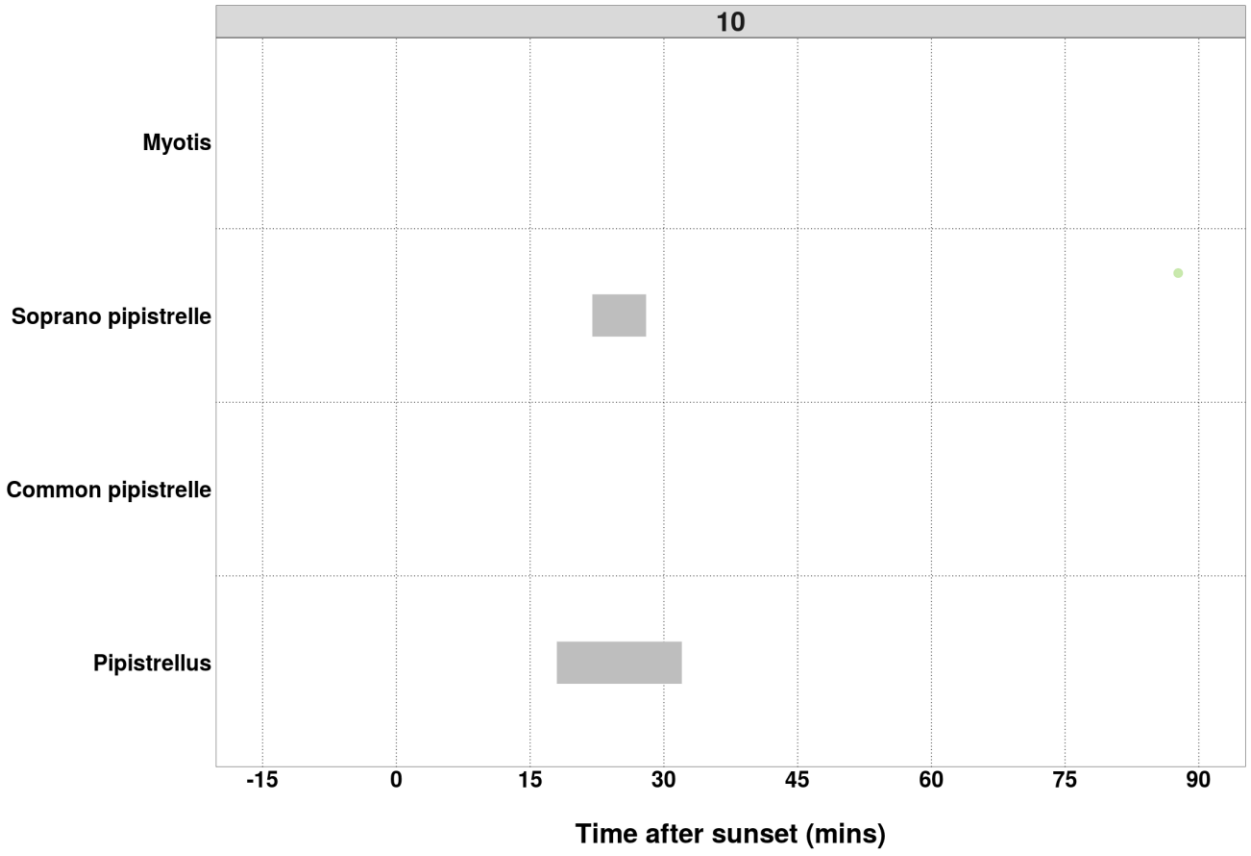

1
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
2
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

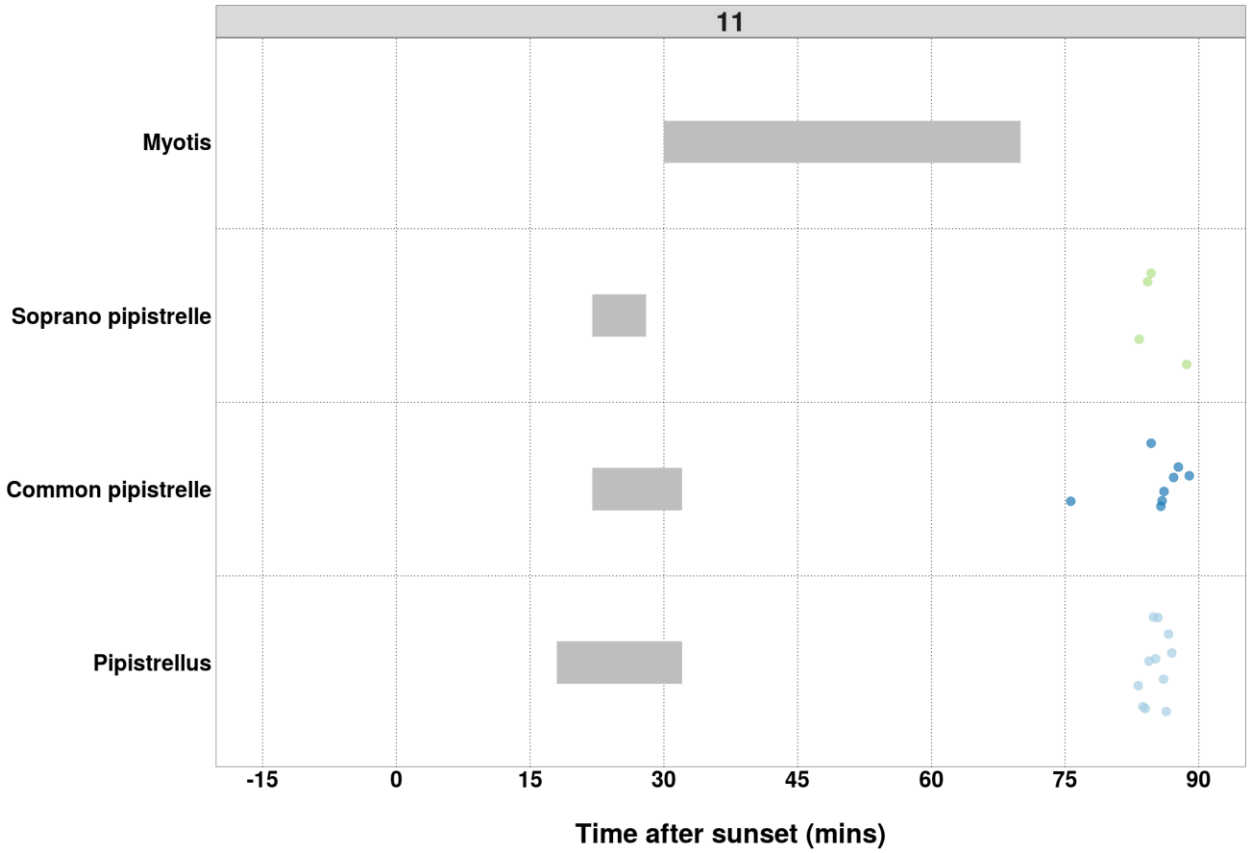

3
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
4
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

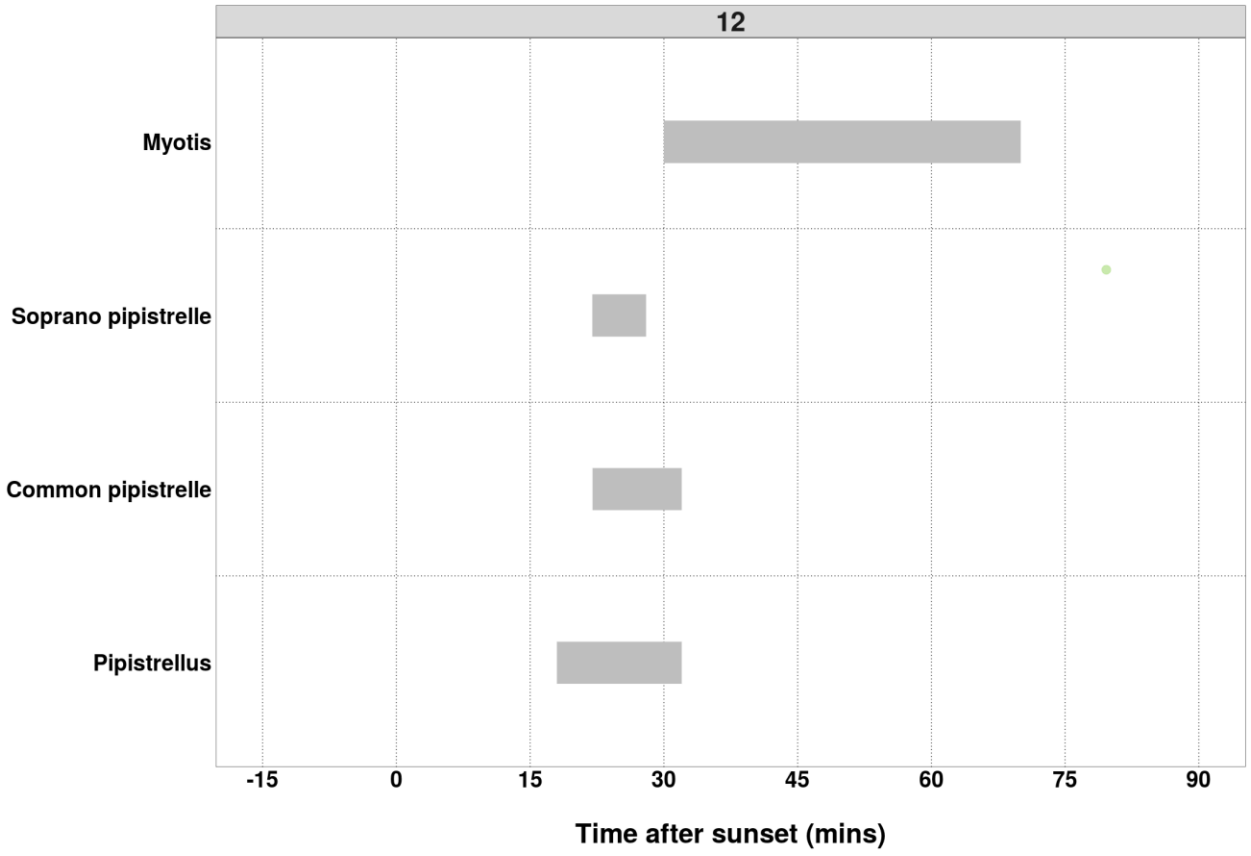

5
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
6
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

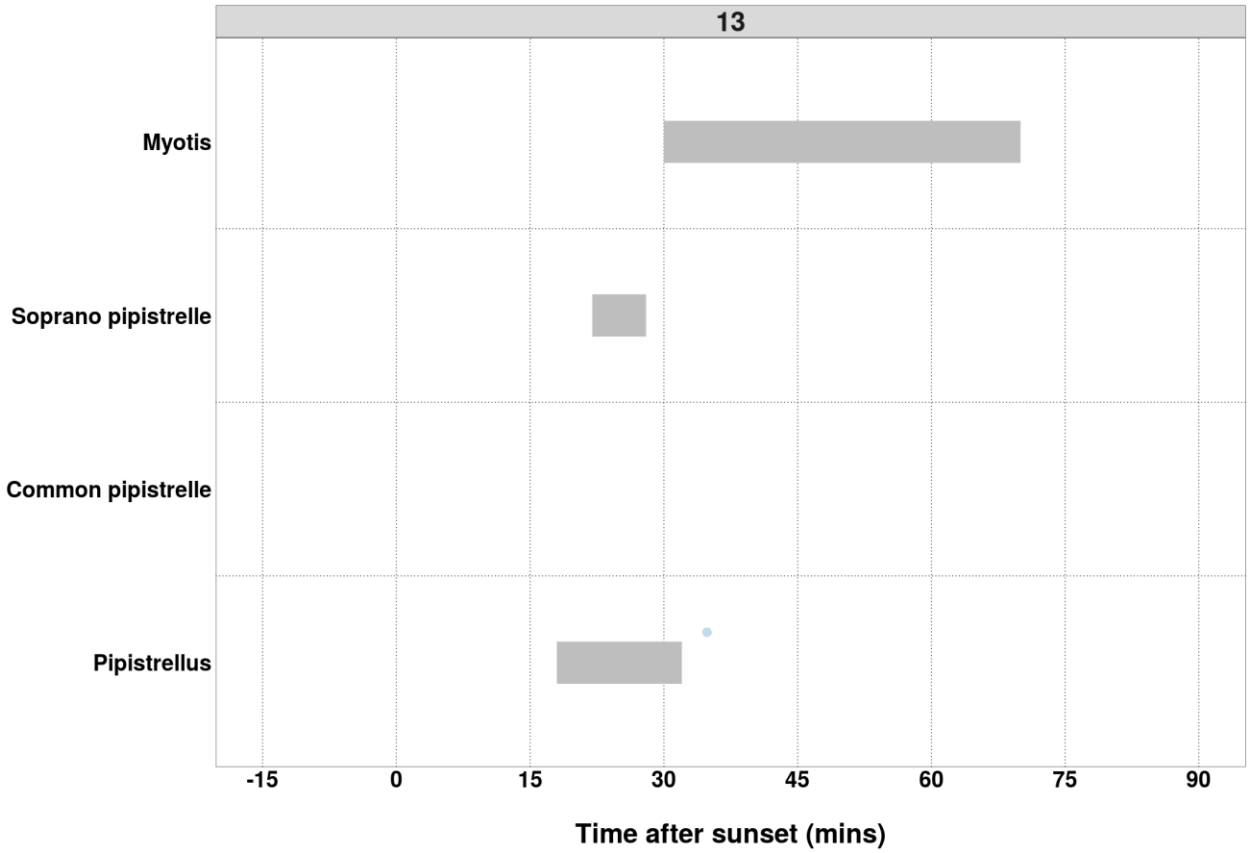

7
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
8
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

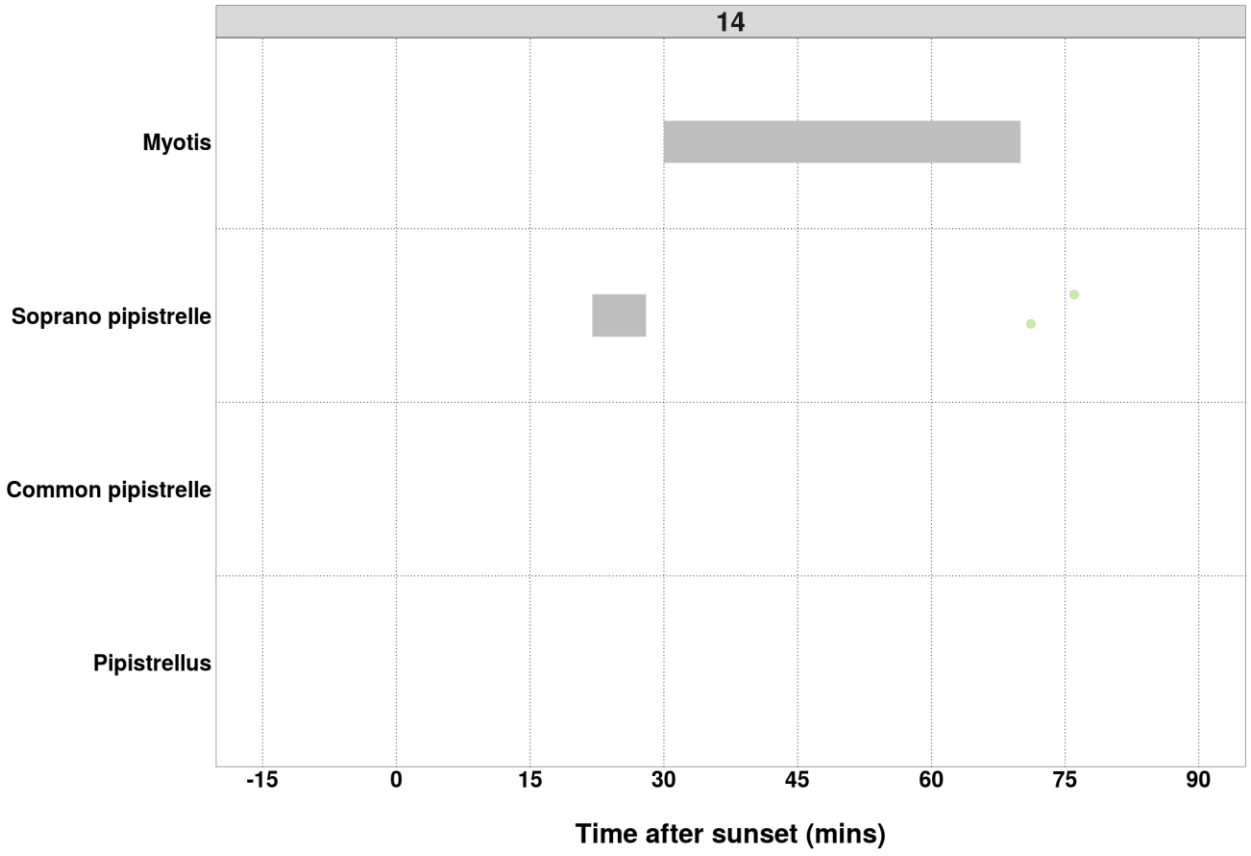

9
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

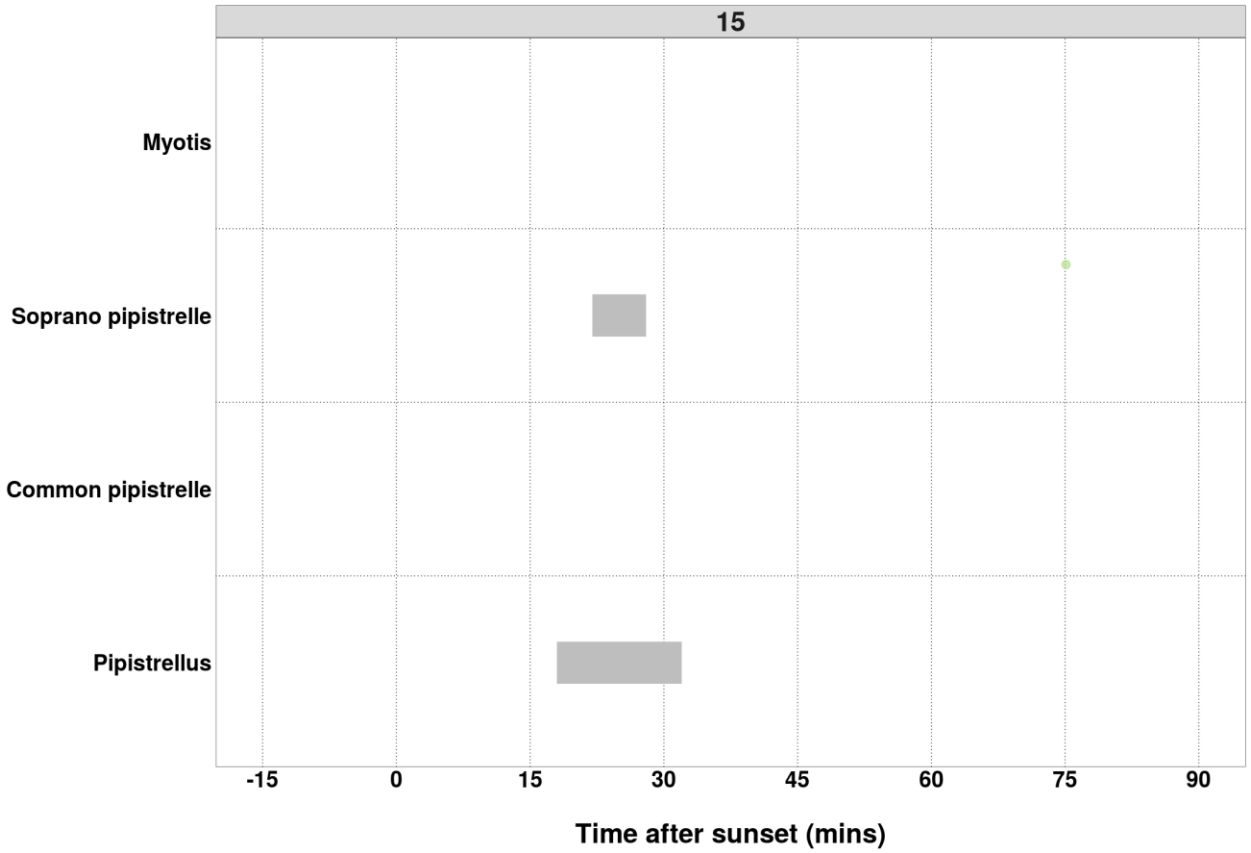

10
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


11
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


12
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


13
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


14
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


15
Myotis
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

Counts of Bat Passes

All detectors

Table 14. The total number of passes recorded for each species across all of the detectors. The 'Total' percentage may not be exactly 100% due to rounding of the percentages per species.

Species	Passes (No.)	Percentage of total (%)
Pipistrellus	2099	53.4
Common pipistrelle	503	12.8
Soprano pipistrelle	1252	31.8
Myotis	79	2.0
Total	3933	100.0

Counts of Bat Passes

Per Detector

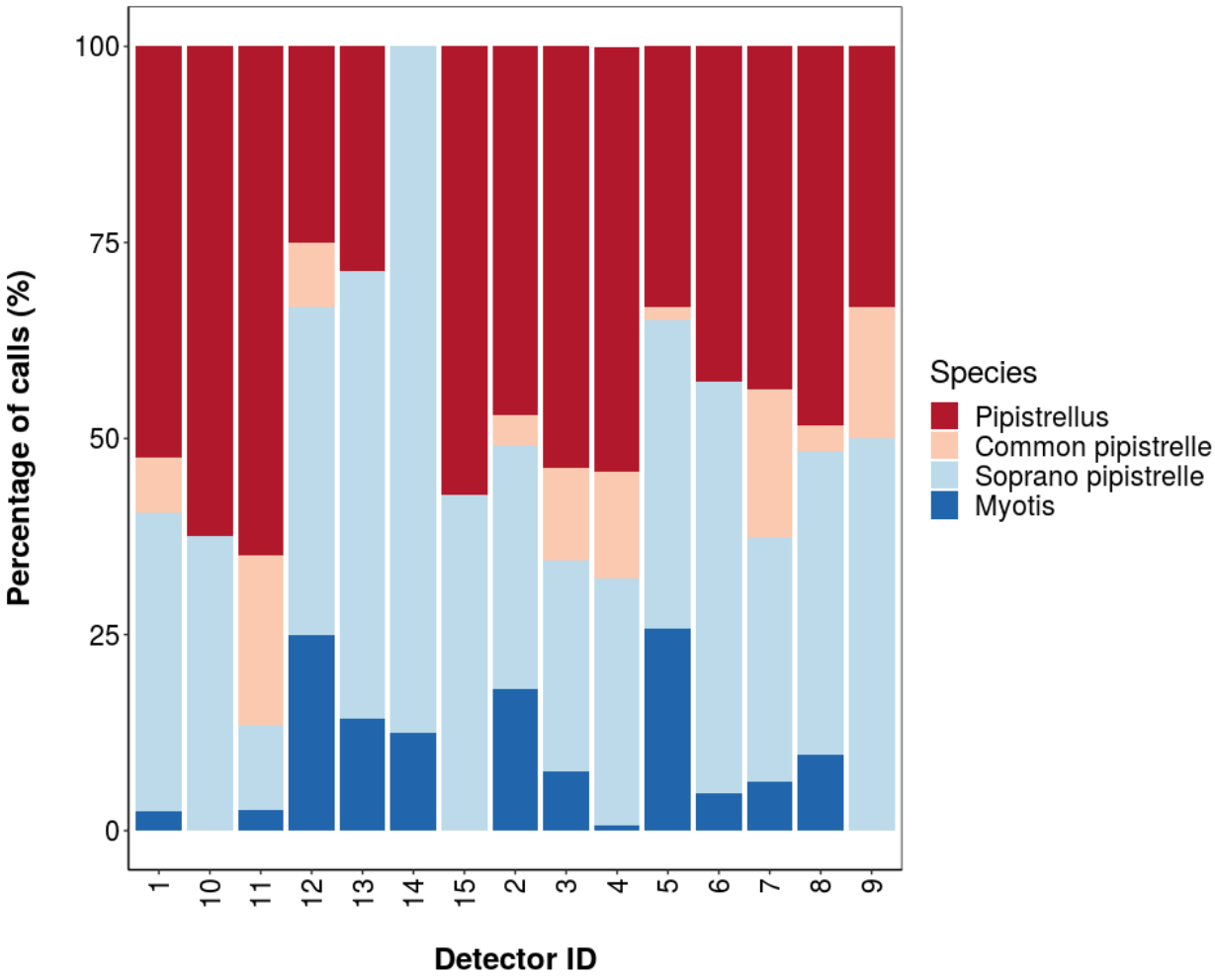
Table 15. The number of passes recorded for each species at each detector.

Species	Detector ID	Count (No)	Percentage by Detector (%)
Pipistrellus	1	22	52.4
Pipistrellus	10	5	62.5
Pipistrellus	11	24	64.9
Pipistrellus	12	3	25.0
Pipistrellus	13	2	28.6
Pipistrellus	15	4	57.1
Pipistrellus	2	47	47.0
Pipistrellus	3	72	53.7
Pipistrellus	4	1865	54.2
Pipistrellus	5	22	33.3
Pipistrellus	6	9	42.9
Pipistrellus	7	7	43.8
Pipistrellus	8	15	48.4
Pipistrellus	9	2	33.3
Common pipistrelle	1	3	7.1
Common pipistrelle	11	8	21.6
Common pipistrelle	12	1	8.3
Common pipistrelle	2	4	4.0
Common pipistrelle	3	16	11.9
Common pipistrelle	4	465	13.5
Common pipistrelle	5	1	1.5
Common pipistrelle	7	3	18.8
Common pipistrelle	8	1	3.2
Common pipistrelle	9	1	16.7
Soprano pipistrelle	1	16	38.1
Soprano pipistrelle	10	3	37.5
Soprano pipistrelle	11	4	10.8
Soprano pipistrelle	12	5	41.7
Soprano pipistrelle	13	4	57.1

Soprano pipistrelle	14	7	87.5
Soprano pipistrelle	15	3	42.9
Soprano pipistrelle	2	31	31.0
Soprano pipistrelle	3	36	26.9
Soprano pipistrelle	4	1086	31.6
Soprano pipistrelle	5	26	39.4
Soprano pipistrelle	6	11	52.4
Soprano pipistrelle	7	5	31.2
Soprano pipistrelle	8	12	38.7
Soprano pipistrelle	9	3	50.0
Myotis	1	1	2.4
Myotis	11	1	2.7
Myotis	12	3	25.0
Myotis	13	1	14.3
Myotis	14	1	12.5
Myotis	2	18	18.0
Myotis	3	10	7.5
Myotis	4	22	0.6
Myotis	5	17	25.8
Myotis	6	1	4.8
Myotis	7	1	6.2
Myotis	8	3	9.7

Species Composition

Figure 10. Percentage species composition of passes at each detector.



PART 2a: Presence Only

THE NEXT SECTION OF THE REPORT FEATURES THE RAW DATA SUPPLIED TO ECOBAT AND ONLY TAKES INTO ACCOUNT THE PRESENCE, AND NOT THE ABSENCE, OF EACH BAT SPECIES. FOR EACH NIGHT, THERE IS NO 'ZERO DATA' FOR WHEN SPECIES WERE NOT DETECTED.

Nightly Bat Pass Rate (Bat passes per hour)

Median Per Detector

Table 16. The median Nightly Pass Rate (bat passes per hour, per night) of each species. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Median Pass Rate
Pipistrellus	1	0.7
Pipistrellus	10	0.7
Pipistrellus	11	1.8
Pipistrellus	12	0.4
Pipistrellus	13	0.1
Pipistrellus	15	0.6
Pipistrellus	2	1.8
Pipistrellus	3	2.3
Pipistrellus	4	18.1
Pipistrellus	5	1.3
Pipistrellus	6	0.7
Pipistrellus	7	0.5
Pipistrellus	8	0.7
Pipistrellus	9	0.3
Common pipistrelle	1	0.2
Common pipistrelle	11	1.2
Common pipistrelle	12	0.2
Common pipistrelle	2	0.2
Common pipistrelle	3	0.2
Common pipistrelle	4	4.3
Common pipistrelle	5	0.1
Common pipistrelle	7	0.2
Common pipistrelle	8	0.2

Common pipistrelle	9	0.2
Soprano pipistrelle	1	0.3
Soprano pipistrelle	10	0.4
Soprano pipistrelle	11	0.6
Soprano pipistrelle	12	0.2
Soprano pipistrelle	13	0.3
Soprano pipistrelle	14	0.5
Soprano pipistrelle	15	0.4
Soprano pipistrelle	2	0.6
Soprano pipistrelle	3	1.2
Soprano pipistrelle	4	6.6
Soprano pipistrelle	5	0.7
Soprano pipistrelle	6	0.6
Soprano pipistrelle	7	0.4
Soprano pipistrelle	8	0.3
Soprano pipistrelle	9	0.2
Myotis	1	0.2
Myotis	11	0.1
Myotis	12	0.1
Myotis	13	0.1
Myotis	14	0.1
Myotis	2	0.3
Myotis	3	0.2
Myotis	4	0.6
Myotis	5	0.3
Myotis	6	0.1
Myotis	7	0.2
Myotis	8	0.2

Nightly Bat Pass Rate (Bat passes per hour)

Mean per Detector

Table 17. The mean Nightly Pass Rate (bat passes per hour, per night) of each species at each detector. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

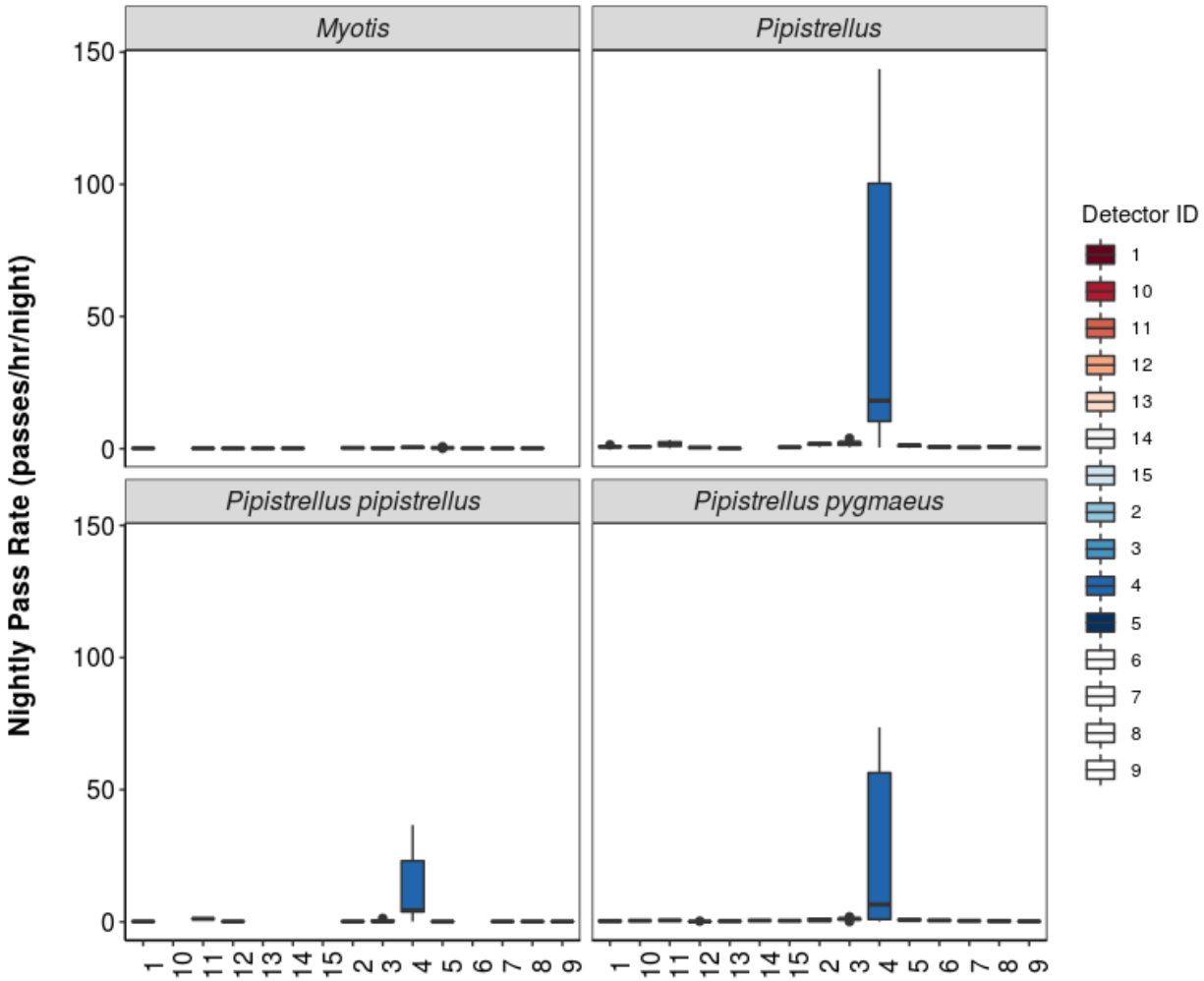
Species	Detector ID	Mean Pass Rate
Pipistrellus	1	0.8
Pipistrellus	10	0.7
Pipistrellus	11	1.8
Pipistrellus	12	0.4
Pipistrellus	13	0.1
Pipistrellus	15	0.6
Pipistrellus	2	1.7
Pipistrellus	3	2.1
Pipistrellus	4	54.6
Pipistrellus	5	1.1
Pipistrellus	6	0.7
Pipistrellus	7	0.5
Pipistrellus	8	0.7
Pipistrellus	9	0.3
Common pipistrelle	1	0.1
Common pipistrelle	11	1.2
Common pipistrelle	12	0.2
Common pipistrelle	2	0.2
Common pipistrelle	3	0.5
Common pipistrelle	4	13.6
Common pipistrelle	5	0.1
Common pipistrelle	7	0.2
Common pipistrelle	8	0.2
Common pipistrelle	9	0.2
Soprano pipistrelle	1	0.4
Soprano pipistrelle	10	0.4

Soprano pipistrelle	11	0.6
Soprano pipistrelle	12	0.2
Soprano pipistrelle	13	0.3
Soprano pipistrelle	14	0.5
Soprano pipistrelle	15	0.4
Soprano pipistrelle	2	0.8
Soprano pipistrelle	3	1.1
Soprano pipistrelle	4	26.5
Soprano pipistrelle	5	0.8
Soprano pipistrelle	6	0.5
Soprano pipistrelle	7	0.4
Soprano pipistrelle	8	0.4
Soprano pipistrelle	9	0.2
Myotis	1	0.2
Myotis	11	0.1
Myotis	12	0.1
Myotis	13	0.1
Myotis	14	0.1
Myotis	2	0.3
Myotis	3	0.3
Myotis	4	0.5
Myotis	5	0.3
Myotis	6	0.1
Myotis	7	0.2
Myotis	8	0.2

Nightly Bat Passes (Bat passes per hour)

Per Detector - Figures

Figure 11. Boxplots for the number of bat passes per hour each night, for each detector. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.


Myotis
Pipistrellus
Pipistrellus pipistrellus
Pipistrellus pygmaeus
Nightly Pass Rate (passes/hr/night)
150
100
50
0
1
10
11
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID
Detector ID

SPLIT BY MONTH

Total Bat Passes per Detector, each Month

Per Detector

Table 18. The total number of bat passes of each species in each month at each detector. This table simply tells you how many bats of each species were recorded passing each detector during each month. These numbers are not standardised by the night length, or how many nights each detector was active for during each month.

Species	Detector ID	May	Jun
Pipistrellus	1	22	0
Pipistrellus	10	5	0
Pipistrellus	11	24	0
Pipistrellus	12	3	0
Pipistrellus	13	2	0
Pipistrellus	15	4	0
Pipistrellus	2	47	0
Pipistrellus	3	72	0
Pipistrellus	4	1865	0
Pipistrellus	5	22	0
Pipistrellus	6	9	0
Pipistrellus	7	5	2
Pipistrellus	8	15	0
Pipistrellus	9	2	0
Common pipistrelle	1	3	0
Common pipistrelle	11	8	0
Common pipistrelle	12	1	0
Common pipistrelle	2	4	0
Common pipistrelle	3	16	0
Common pipistrelle	4	465	0
Common pipistrelle	5	1	0
Common pipistrelle	7	2	1
Common pipistrelle	8	1	0
Common pipistrelle	9	1	0

Soprano pipistrelle	1	16	0
Soprano pipistrelle	10	3	0
Soprano pipistrelle	11	4	0
Soprano pipistrelle	12	4	1
Soprano pipistrelle	13	4	0
Soprano pipistrelle	14	7	0
Soprano pipistrelle	15	3	0
Soprano pipistrelle	2	31	0
Soprano pipistrelle	3	36	0
Soprano pipistrelle	4	1086	0
Soprano pipistrelle	5	26	0
Soprano pipistrelle	6	11	0
Soprano pipistrelle	7	5	0
Soprano pipistrelle	8	11	1
Soprano pipistrelle	9	3	0
Myotis	1	1	0
Myotis	11	1	0
Myotis	12	3	0
Myotis	13	1	0
Myotis	14	1	0
Myotis	2	18	0
Myotis	3	10	0
Myotis	4	22	0
Myotis	5	17	0
Myotis	6	1	0
Myotis	7	1	0
Myotis	8	2	1

Survey Effort

Table 19. The number of survey nights per month per detector.

Month	Detector ID	No. of Survey Nights
May	1	6
May	2	8
May	3	7
May	4	8
May	5	9
May	6	4
May	7	3
May	8	5
May	9	3
May	10	1
May	11	3
May	12	5
May	13	4
May	14	3
May	15	1
Jun	7	1
Jun	8	1
Jun	12	1

Nightly Bat Pass Rate for each Month

Median Per Detector

Table 20. The median Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	May	Jun
Pipistrellus	1	0.7	NA
Pipistrellus	10	0.7	NA
Pipistrellus	11	1.8	NA
Pipistrellus	12	0.4	NA
Pipistrellus	13	0.1	NA
Pipistrellus	15	0.6	NA
Pipistrellus	2	1.8	NA
Pipistrellus	3	2.3	NA
Pipistrellus	4	18.1	NA
Pipistrellus	5	1.3	NA
Pipistrellus	6	0.7	NA
Pipistrellus	7	0.7	0.3
Pipistrellus	8	0.7	NA
Pipistrellus	9	0.3	NA
Common pipistrelle	1	0.2	NA
Common pipistrelle	11	1.2	NA
Common pipistrelle	12	0.2	NA
Common pipistrelle	2	0.2	NA
Common pipistrelle	3	0.2	NA
Common pipistrelle	4	4.3	NA
Common pipistrelle	5	0.1	NA
Common pipistrelle	7	0.2	0.2
Common pipistrelle	8	0.2	NA

Common pipistrelle	9	0.2	NA
Soprano pipistrelle	1	0.3	NA
Soprano pipistrelle	10	0.4	NA
Soprano pipistrelle	11	0.6	NA
Soprano pipistrelle	12	0.2	0.2
Soprano pipistrelle	13	0.3	NA
Soprano pipistrelle	14	0.5	NA
Soprano pipistrelle	15	0.4	NA
Soprano pipistrelle	2	0.6	NA
Soprano pipistrelle	3	1.2	NA
Soprano pipistrelle	4	6.6	NA
Soprano pipistrelle	5	0.7	NA
Soprano pipistrelle	6	0.6	NA
Soprano pipistrelle	7	0.4	NA
Soprano pipistrelle	8	0.4	0.2
Soprano pipistrelle	9	0.2	NA
Myotis	1	0.2	NA
Myotis	11	0.1	NA
Myotis	12	0.1	NA
Myotis	13	0.1	NA
Myotis	14	0.1	NA
Myotis	2	0.3	NA
Myotis	3	0.2	NA
Myotis	4	0.6	NA
Myotis	5	0.3	NA
Myotis	6	0.1	NA
Myotis	7	0.2	NA
Myotis	8	0.2	0.2

Nightly Bat Pass Rate for each Month

Mean per Detector

Table 21: The mean Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

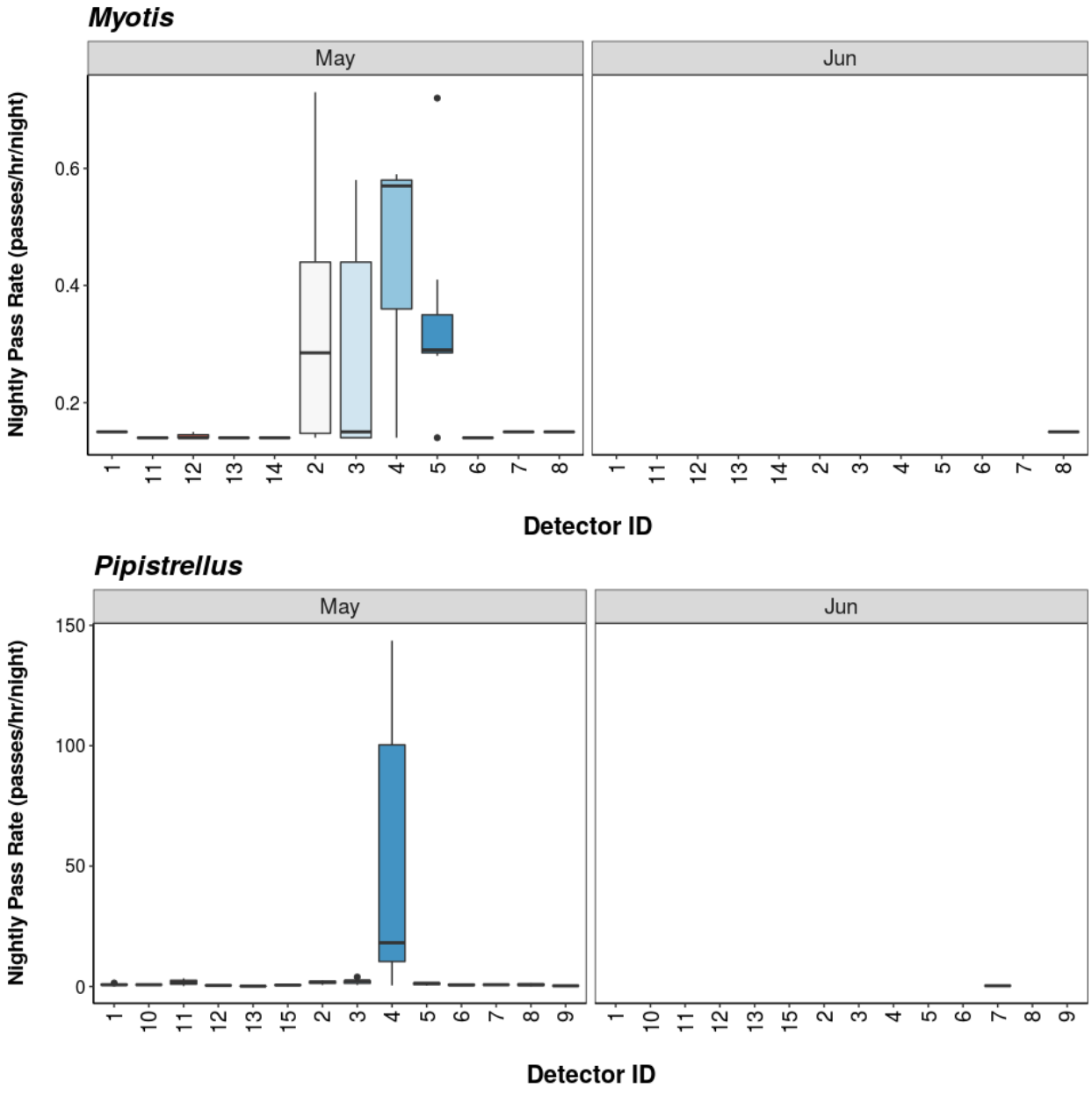
Species	Detector ID	May	Jun
Pipistrellus	1	0.8	NA
Pipistrellus	10	0.7	NA
Pipistrellus	11	1.8	NA
Pipistrellus	12	0.4	NA
Pipistrellus	13	0.1	NA
Pipistrellus	15	0.6	NA
Pipistrellus	2	1.7	NA
Pipistrellus	3	2.1	NA
Pipistrellus	4	54.6	NA
Pipistrellus	5	1.1	NA
Pipistrellus	6	0.7	NA
Pipistrellus	7	0.7	0.3
Pipistrellus	8	0.7	NA
Pipistrellus	9	0.3	NA
Common pipistrelle	1	0.1	NA
Common pipistrelle	11	1.2	NA
Common pipistrelle	12	0.2	NA
Common pipistrelle	2	0.2	NA
Common pipistrelle	3	0.5	NA
Common pipistrelle	4	13.6	NA
Common pipistrelle	5	0.1	NA
Common pipistrelle	7	0.2	0.2
Common pipistrelle	8	0.2	NA
Common pipistrelle	9	0.2	NA
Soprano pipistrelle	1	0.4	NA
Soprano pipistrelle	10	0.4	NA

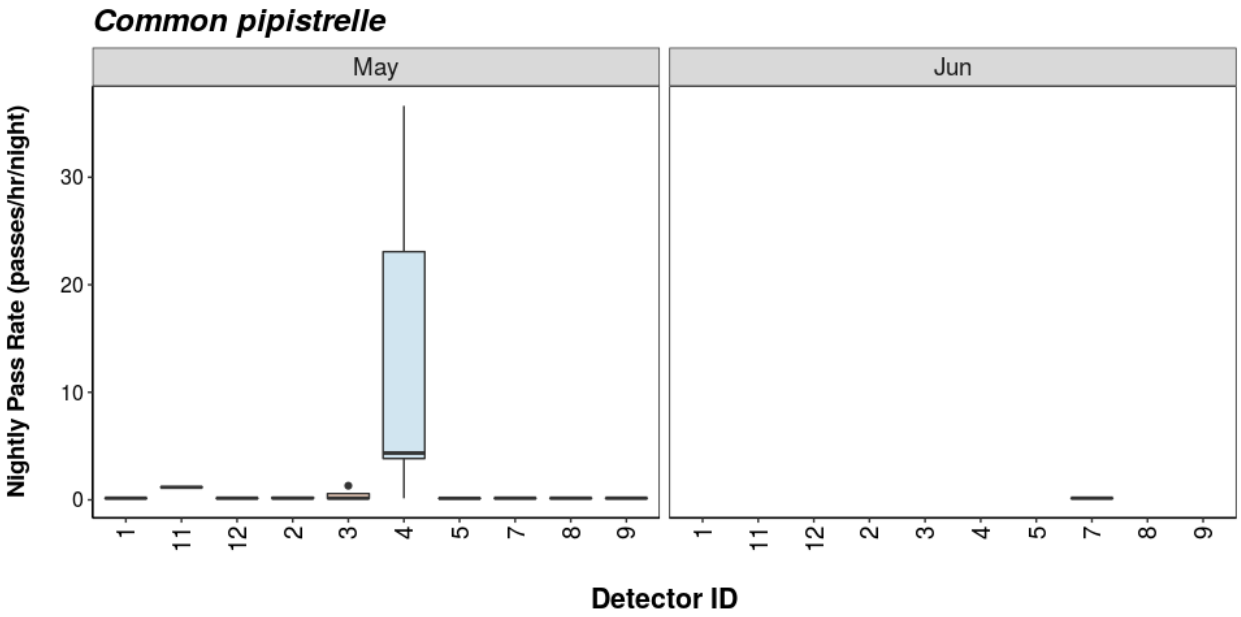
Soprano pipistrelle	11	0.6	NA
Soprano pipistrelle	12	0.2	0.2
Soprano pipistrelle	13	0.3	NA
Soprano pipistrelle	14	0.5	NA
Soprano pipistrelle	15	0.4	NA
Soprano pipistrelle	2	0.8	NA
Soprano pipistrelle	3	1.1	NA
Soprano pipistrelle	4	26.5	NA
Soprano pipistrelle	5	0.8	NA
Soprano pipistrelle	6	0.5	NA
Soprano pipistrelle	7	0.4	NA
Soprano pipistrelle	8	0.5	0.2
Soprano pipistrelle	9	0.2	NA
Myotis	1	0.2	NA
Myotis	11	0.1	NA
Myotis	12	0.1	NA
Myotis	13	0.1	NA
Myotis	14	0.1	NA
Myotis	2	0.3	NA
Myotis	3	0.3	NA
Myotis	4	0.5	NA
Myotis	5	0.3	NA
Myotis	6	0.1	NA
Myotis	7	0.2	NA
Myotis	8	0.2	0.2

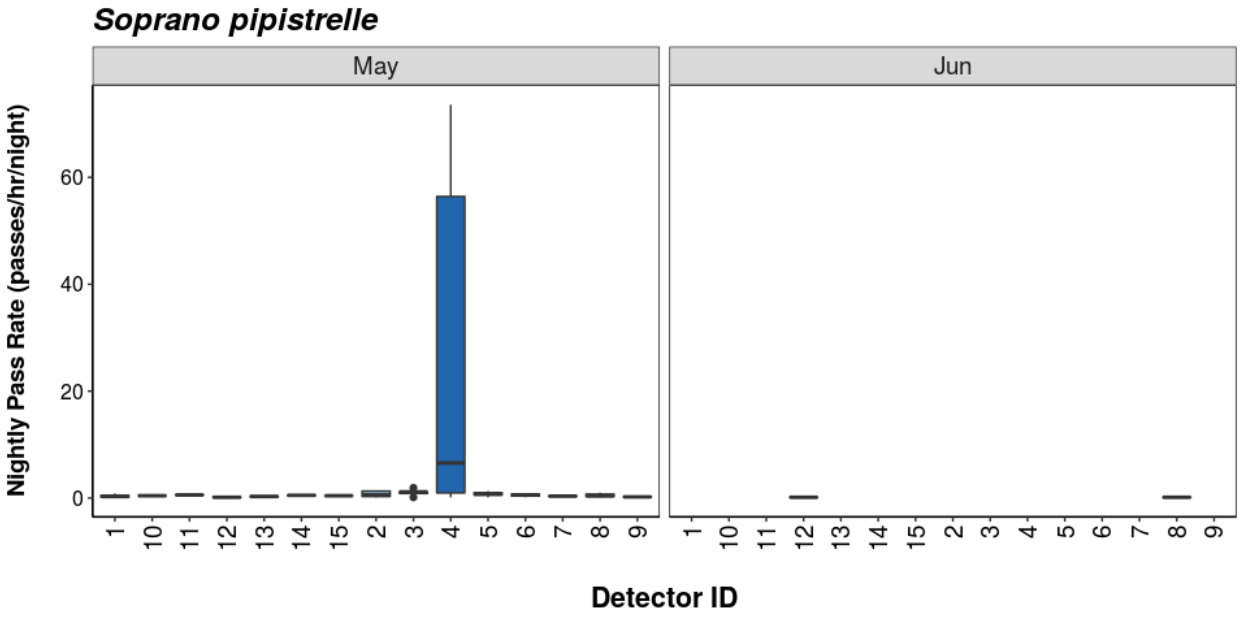
Nightly Bat Pass Rate for each Month

Per Detector - Figures

Figure 12. Figures show boxplots for the number of bat passes per hour by detector, for each month. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.




Common pipistrelle
May
Jun
Nightly Pass Rate (passes/hr/night)
0
10
20
30
1
11
12
2
3
4
5
7
8
9
Detector ID


Soprano pipistrelle
May
Jun
Nightly Pass Rate (passes/hr/night)
0
20
40
60
1
10
11
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID

Bat Activity per Detector Location

Figure 13. Detector ID reference:

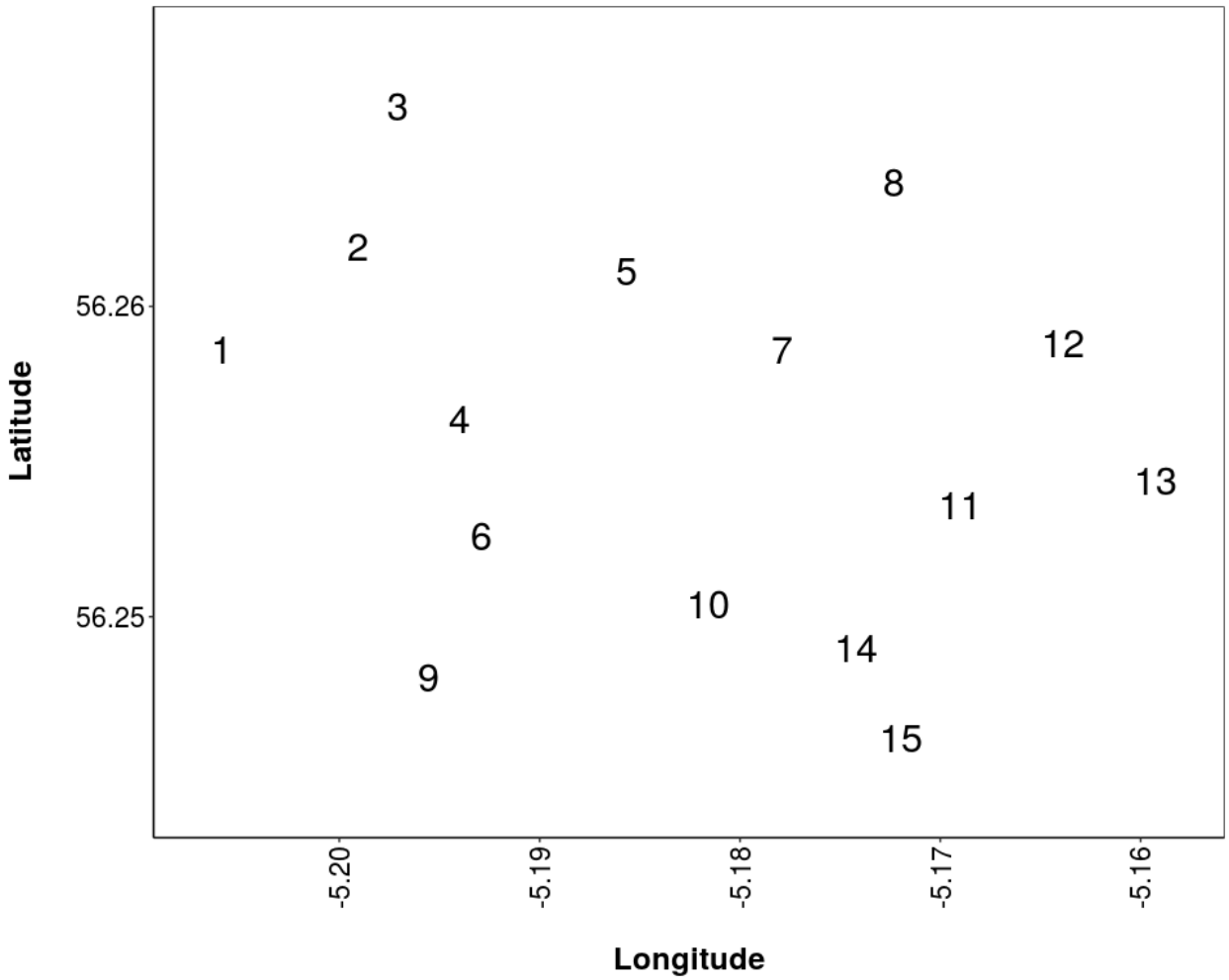


Figure 14. Median Nightly Pass Rate (bat passes/hr/night) throughout the survey period - represented by the size and colour of the point at each detector location.

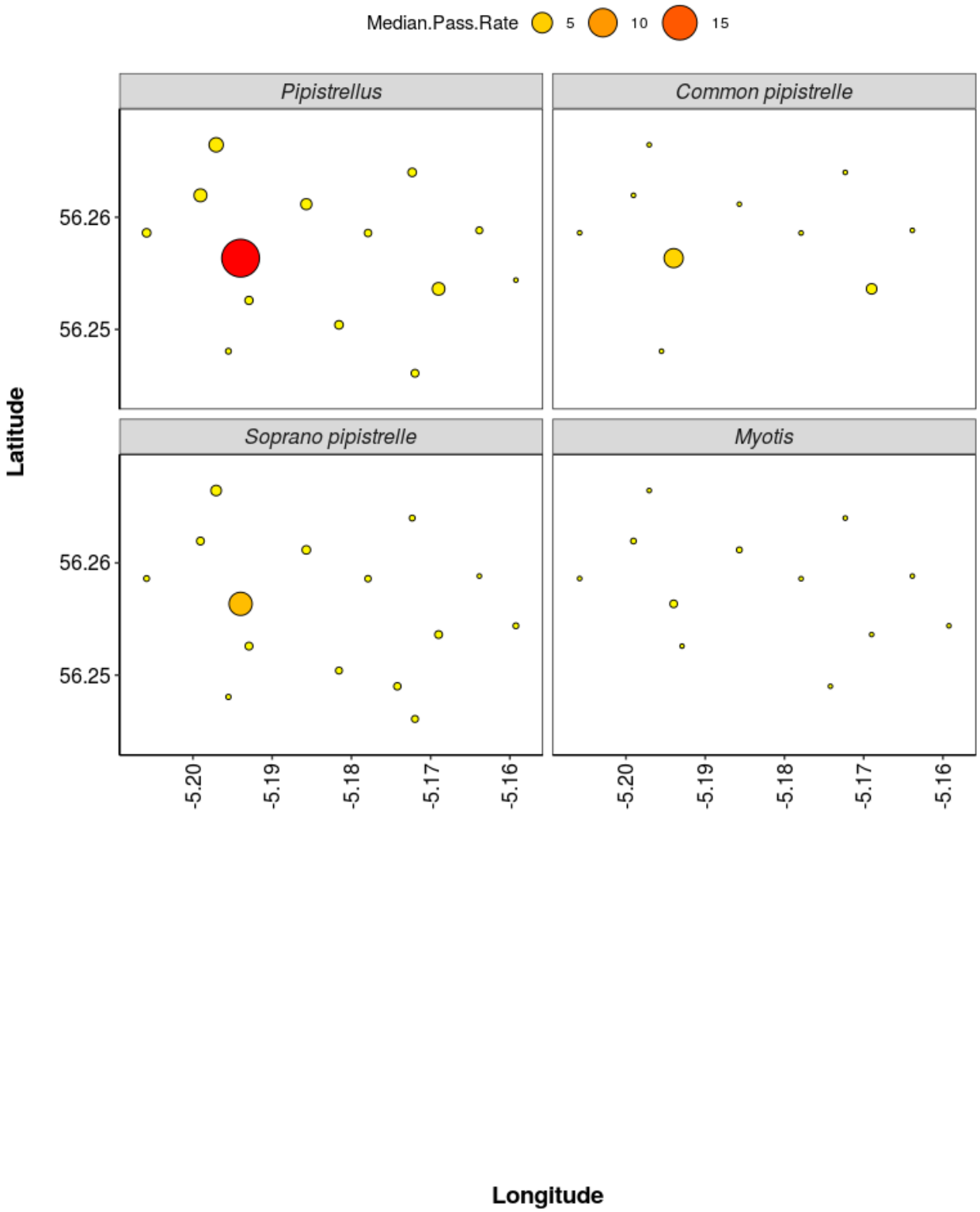
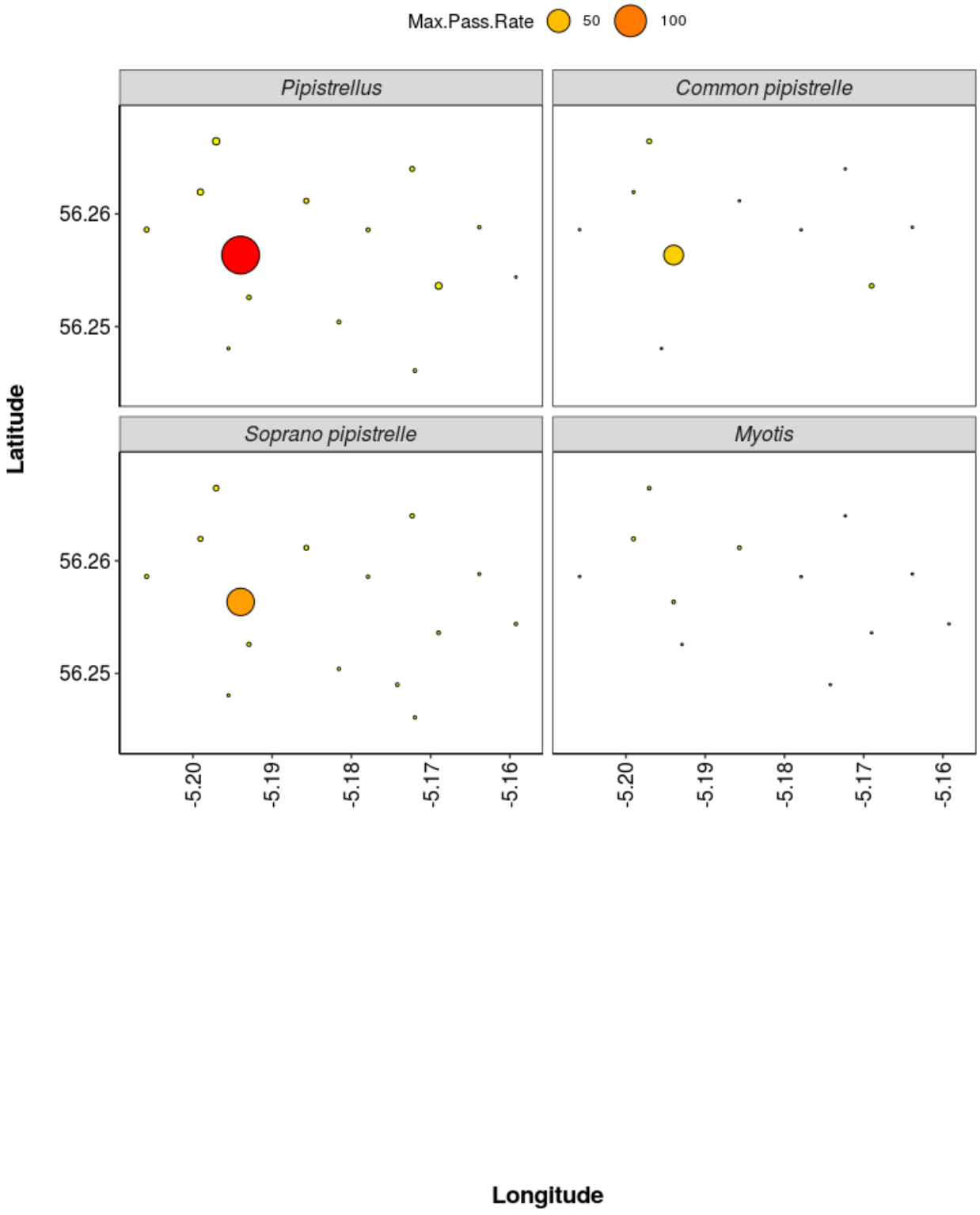


Figure 15. Maximum Nightly Pass Rate (bat passes/hr/night) recorded in a single night throughout the survey period - represented by the size and colour of the point at each detector location.



PART 2B: Includes absences

THE NEXT SECTION OF THE REPORT FEATURES THE DATA SUPPLIED TO ECOBAT BUT TAKES INTO ACCOUNT SPECIES ABSENCES, AND THEREFORE INCLUDES 'ZERO DATA' FOR WHEN SPECIES WERE NOT DETECTED AT EACH DETECTOR ON A NIGHT. THIS DRAMATICALLY LOWERS THE MEANS AND MEDIANS OF THE DATA PRESENTED.

Nightly Bat Pass Rate (Bat passes per hour)

Median Per Detector

Table 22. The median Nightly Pass Rate (bat passes per hour, per night) of each species. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Median Pass Rate
Common pipistrelle	1	0.1
Common pipistrelle	10	0.0
Common pipistrelle	11	0.0
Common pipistrelle	12	0.0
Common pipistrelle	13	0.0
Common pipistrelle	14	0.0
Common pipistrelle	15	0.0
Common pipistrelle	2	0.0
Common pipistrelle	3	0.1
Common pipistrelle	4	2.0
Common pipistrelle	5	0.0
Common pipistrelle	6	0.0
Common pipistrelle	7	0.2
Common pipistrelle	8	0.0
Common pipistrelle	9	0.0
Myotis	1	0.0
Myotis	10	0.0
Myotis	11	0.0
Myotis	12	0.1
Myotis	13	0.0
Myotis	14	0.0
Myotis	15	0.0
Myotis	2	0.3

Myotis	3	0.1
Myotis	4	0.5
Myotis	5	0.3
Myotis	6	0.0
Myotis	7	0.0
Myotis	8	0.1
Myotis	9	0.0
Pipistrellus	1	0.5
Pipistrellus	10	0.7
Pipistrellus	11	0.2
Pipistrellus	12	0.0
Pipistrellus	13	0.1
Pipistrellus	14	0.0
Pipistrellus	15	0.6
Pipistrellus	2	0.3
Pipistrellus	3	1.3
Pipistrellus	4	5.4
Pipistrellus	5	0.0
Pipistrellus	6	0.1
Pipistrellus	7	0.2
Pipistrellus	8	0.1
Pipistrellus	9	0.0
Soprano pipistrelle	1	0.3
Soprano pipistrelle	10	0.4
Soprano pipistrelle	11	0.0
Soprano pipistrelle	12	0.1
Soprano pipistrelle	13	0.1
Soprano pipistrelle	14	0.4
Soprano pipistrelle	15	0.4
Soprano pipistrelle	2	0.3
Soprano pipistrelle	3	0.9
Soprano pipistrelle	4	1.8
Soprano pipistrelle	5	0.1
Soprano pipistrelle	6	0.4
Soprano pipistrelle	7	0.1
Soprano pipistrelle	8	0.1

Soprano pipistrelle	9	0.2

Nightly Bat Pass Rate (Bat passes per hour)

Mean per Detector

Table 23. The mean Nightly Pass Rate (bat passes per hour, per night) of each species at each detector. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

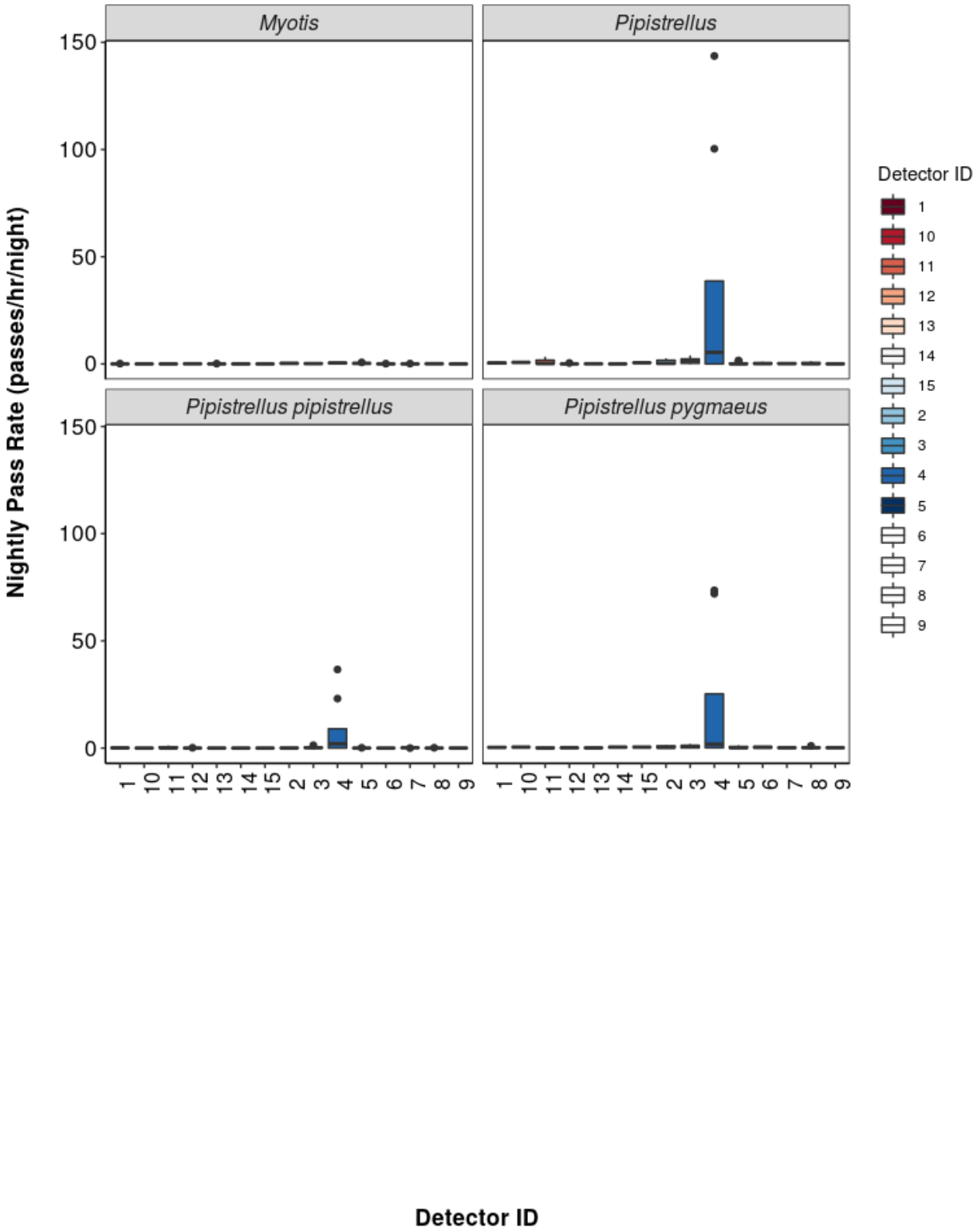
Species	Detector ID	Mean Pass Rate
Common pipistrelle	1	0.1
Common pipistrelle	10	0.0
Common pipistrelle	11	0.4
Common pipistrelle	12	0.0
Common pipistrelle	13	0.0
Common pipistrelle	14	0.0
Common pipistrelle	15	0.0
Common pipistrelle	2	0.1
Common pipistrelle	3	0.3
Common pipistrelle	4	8.5
Common pipistrelle	5	0.0
Common pipistrelle	6	0.0
Common pipistrelle	7	0.1
Common pipistrelle	8	0.0
Common pipistrelle	9	0.0
Myotis	1	0.0
Myotis	10	0.0
Myotis	11	0.0
Myotis	12	0.1
Myotis	13	0.0
Myotis	14	0.0
Myotis	15	0.0
Myotis	2	0.3
Myotis	3	0.2
Myotis	4	0.4
Myotis	5	0.3

Myotis	6	0.0
Myotis	7	0.0
Myotis	8	0.1
Myotis	9	0.0
Pipistrellus	1	0.5
Pipistrellus	10	0.7
Pipistrellus	11	1.2
Pipistrellus	12	0.1
Pipistrellus	13	0.1
Pipistrellus	14	0.0
Pipistrellus	15	0.6
Pipistrellus	2	0.9
Pipistrellus	3	1.5
Pipistrellus	4	34.1
Pipistrellus	5	0.4
Pipistrellus	6	0.3
Pipistrellus	7	0.3
Pipistrellus	8	0.4
Pipistrellus	9	0.1
Soprano pipistrelle	1	0.4
Soprano pipistrelle	10	0.4
Soprano pipistrelle	11	0.2
Soprano pipistrelle	12	0.1
Soprano pipistrelle	13	0.1
Soprano pipistrelle	14	0.3
Soprano pipistrelle	15	0.4
Soprano pipistrelle	2	0.6
Soprano pipistrelle	3	0.8
Soprano pipistrelle	4	19.9
Soprano pipistrelle	5	0.4
Soprano pipistrelle	6	0.4
Soprano pipistrelle	7	0.2
Soprano pipistrelle	8	0.3
Soprano pipistrelle	9	0.1

Nightly Bat Passes (Bat passes per hour)

Per Detector - Figures

Figure 16. Figures show boxplots for the number of bat passes per hour each night, for each detector. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.


Myotis
Pipistrellus
Pipistrellus pipistrellus
Pipistrellus pygmaeus
Nightly Pass Rate (passes/hr/night)
150
100
50
0
1
10
11
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID
Detector ID

Survey Effort

Table 24. The number of nights bats were detected per month per detector.

Month	Detector ID	No of Survey Nights
May	1	6
May	2	8
May	3	7
May	4	8
May	5	9
May	6	4
May	7	3
May	8	5
May	9	3
May	10	1
May	11	3
May	12	5
May	13	4
May	14	3
May	15	1
Jun	7	1
Jun	8	1
Jun	12	1

Nightly Bat Pass Rate for each Month

Median Per Detector

Table 25. The median Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Jun	May
Common pipistrelle	1	NA	0.1
Common pipistrelle	10	NA	0.0
Common pipistrelle	11	NA	0.0
Common pipistrelle	12	0.0	0.0
Common pipistrelle	13	NA	0.0
Common pipistrelle	14	NA	0.0
Common pipistrelle	15	NA	0.0
Common pipistrelle	2	NA	0.0
Common pipistrelle	3	NA	0.1
Common pipistrelle	4	NA	2.0
Common pipistrelle	5	NA	0.0
Common pipistrelle	6	NA	0.0
Common pipistrelle	7	0.2	0.2
Common pipistrelle	8	0.0	0.0
Common pipistrelle	9	NA	0.0
Myotis	1	NA	0.0
Myotis	10	NA	0.0
Myotis	11	NA	0.0
Myotis	12	0.0	0.1
Myotis	13	NA	0.0
Myotis	14	NA	0.0
Myotis	15	NA	0.0
Myotis	2	NA	0.3

Myotis	3	NA	0.1
Myotis	4	NA	0.5
Myotis	5	NA	0.3
Myotis	6	NA	0.0
Myotis	7	0.0	0.0
Myotis	8	0.2	0.0
Myotis	9	NA	0.0
Pipistrellus	1	NA	0.5
Pipistrellus	10	NA	0.7
Pipistrellus	11	NA	0.2
Pipistrellus	12	0.0	0.0
Pipistrellus	13	NA	0.1
Pipistrellus	14	NA	0.0
Pipistrellus	15	NA	0.6
Pipistrellus	2	NA	0.3
Pipistrellus	3	NA	1.3
Pipistrellus	4	NA	5.4
Pipistrellus	5	NA	0.0
Pipistrellus	6	NA	0.1
Pipistrellus	7	0.3	0.0
Pipistrellus	8	0.0	0.2
Pipistrellus	9	NA	0.0
Soprano pipistrelle	1	NA	0.3
Soprano pipistrelle	10	NA	0.4
Soprano pipistrelle	11	NA	0.0
Soprano pipistrelle	12	0.2	0.1
Soprano pipistrelle	13	NA	0.1
Soprano pipistrelle	14	NA	0.4
Soprano pipistrelle	15	NA	0.4
Soprano pipistrelle	2	NA	0.3
Soprano pipistrelle	3	NA	0.9
Soprano pipistrelle	4	NA	1.8
Soprano pipistrelle	5	NA	0.1
Soprano pipistrelle	6	NA	0.4
Soprano pipistrelle	7	0.0	0.3
Soprano pipistrelle	8	0.2	0.1

Soprano pipistrelle	9	NA	0.2

Nightly Bat Pass Rate for each Month

Mean per Detector

Table 26. The mean Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

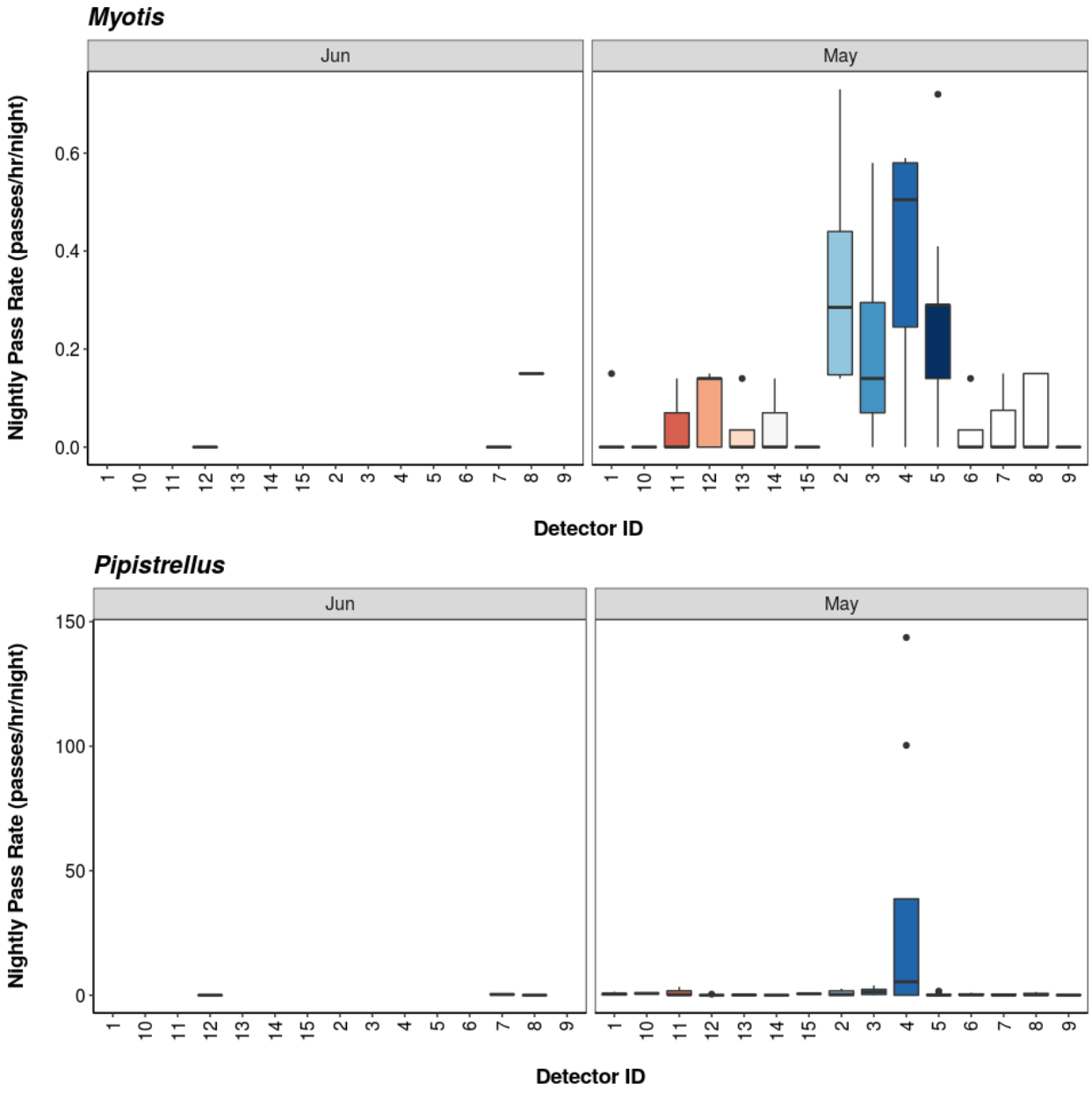
Species	Detector ID	Jun	May
Common pipistrelle	1	NA	0.1
Common pipistrelle	10	NA	0.0
Common pipistrelle	11	NA	0.4
Common pipistrelle	12	0.0	0.0
Common pipistrelle	13	NA	0.0
Common pipistrelle	14	NA	0.0
Common pipistrelle	15	NA	0.0
Common pipistrelle	2	NA	0.1
Common pipistrelle	3	NA	0.3
Common pipistrelle	4	NA	8.5
Common pipistrelle	5	NA	0.0
Common pipistrelle	6	NA	0.0
Common pipistrelle	7	0.2	0.1
Common pipistrelle	8	0.0	0.0
Common pipistrelle	9	NA	0.0
Myotis	1	NA	0.0
Myotis	10	NA	0.0
Myotis	11	NA	0.0
Myotis	12	0.0	0.1
Myotis	13	NA	0.0
Myotis	14	NA	0.0
Myotis	15	NA	0.0
Myotis	2	NA	0.3
Myotis	3	NA	0.2
Myotis	4	NA	0.4
Myotis	5	NA	0.3

Myotis	6	NA	0.0
Myotis	7	0.0	0.0
Myotis	8	0.2	0.1
Myotis	9	NA	0.0
Pipistrellus	1	NA	0.5
Pipistrellus	10	NA	0.7
Pipistrellus	11	NA	1.2
Pipistrellus	12	0.0	0.1
Pipistrellus	13	NA	0.1
Pipistrellus	14	NA	0.0
Pipistrellus	15	NA	0.6
Pipistrellus	2	NA	0.9
Pipistrellus	3	NA	1.5
Pipistrellus	4	NA	34.1
Pipistrellus	5	NA	0.4
Pipistrellus	6	NA	0.3
Pipistrellus	7	0.3	0.2
Pipistrellus	8	0.0	0.4
Pipistrellus	9	NA	0.1
Soprano pipistrelle	1	NA	0.4
Soprano pipistrelle	10	NA	0.4
Soprano pipistrelle	11	NA	0.2
Soprano pipistrelle	12	0.2	0.1
Soprano pipistrelle	13	NA	0.1
Soprano pipistrelle	14	NA	0.3
Soprano pipistrelle	15	NA	0.4
Soprano pipistrelle	2	NA	0.6
Soprano pipistrelle	3	NA	0.8
Soprano pipistrelle	4	NA	19.9
Soprano pipistrelle	5	NA	0.4
Soprano pipistrelle	6	NA	0.4
Soprano pipistrelle	7	0.0	0.2
Soprano pipistrelle	8	0.2	0.3
Soprano pipistrelle	9	NA	0.1

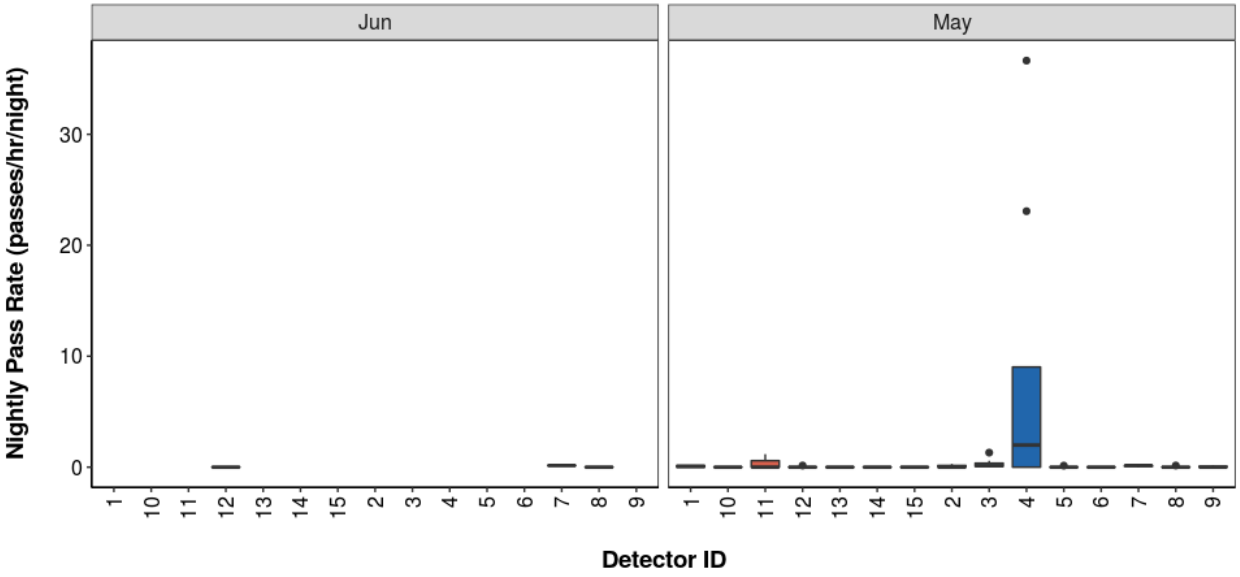
Nightly Bat Pass Rate for each Month

Per Detector - Figures

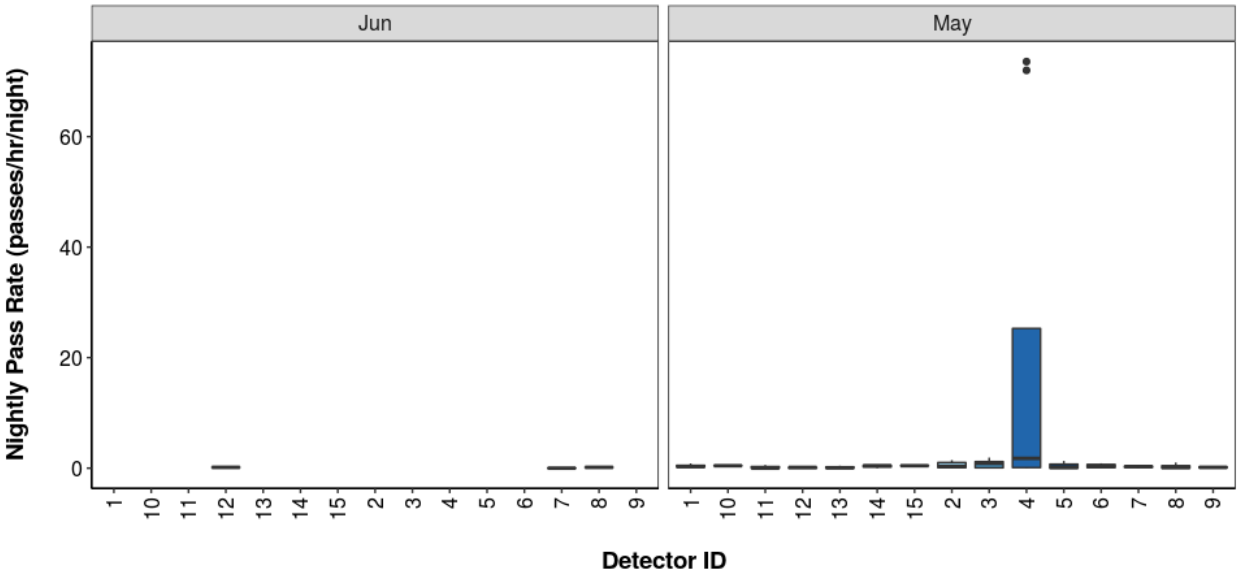
Figure 17. Figures show boxplots for the number of bat passes per hour by detector, for each month. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.



Common pipistrelle



Soprano pipistrelle



Bat Activity per Detector Location

Figure 18. Detector ID reference:

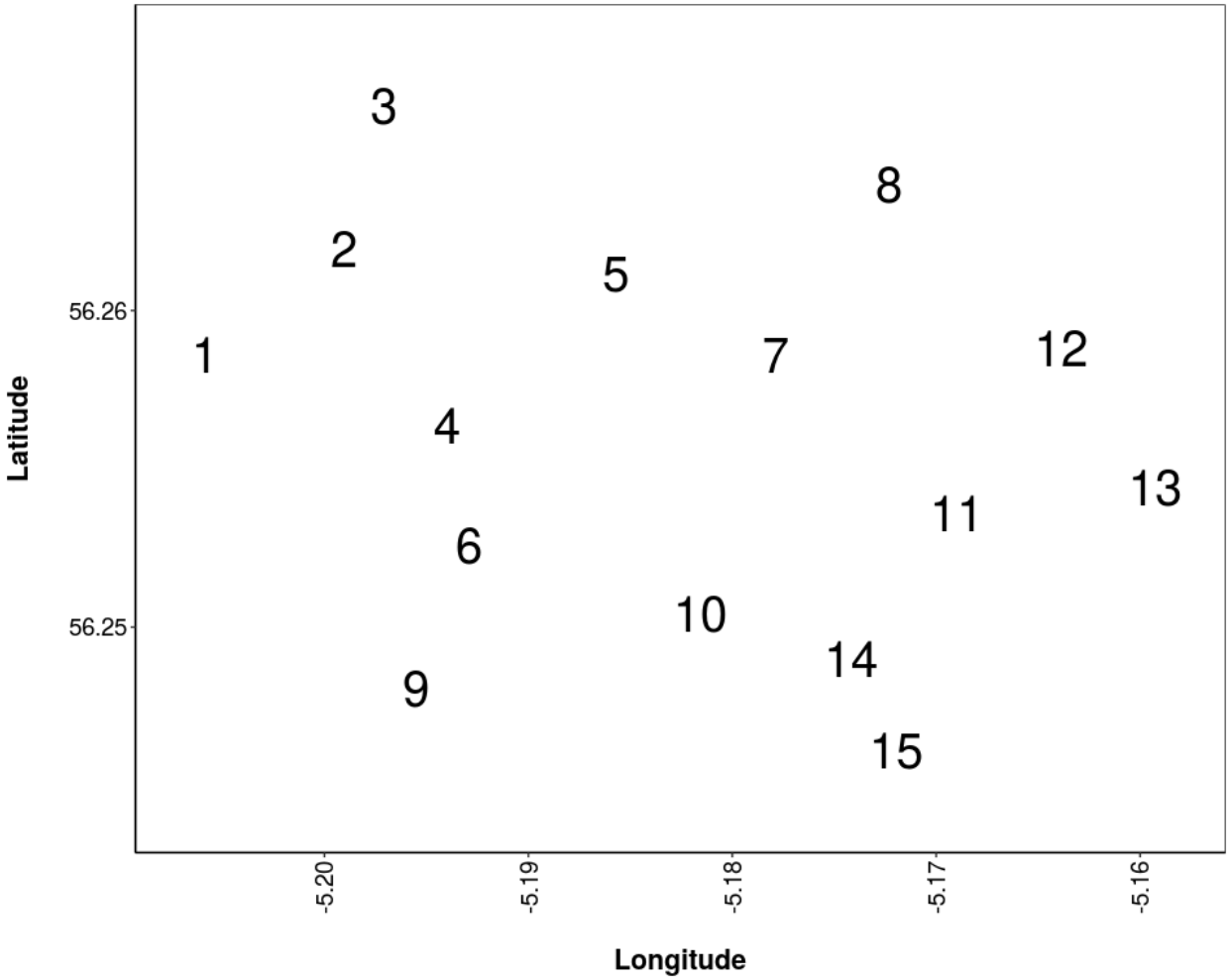


Figure 19. Median Nightly Pass Rate (bat passes/hr/night) throughout the survey period - represented by the size and colour of the point at each detector location.

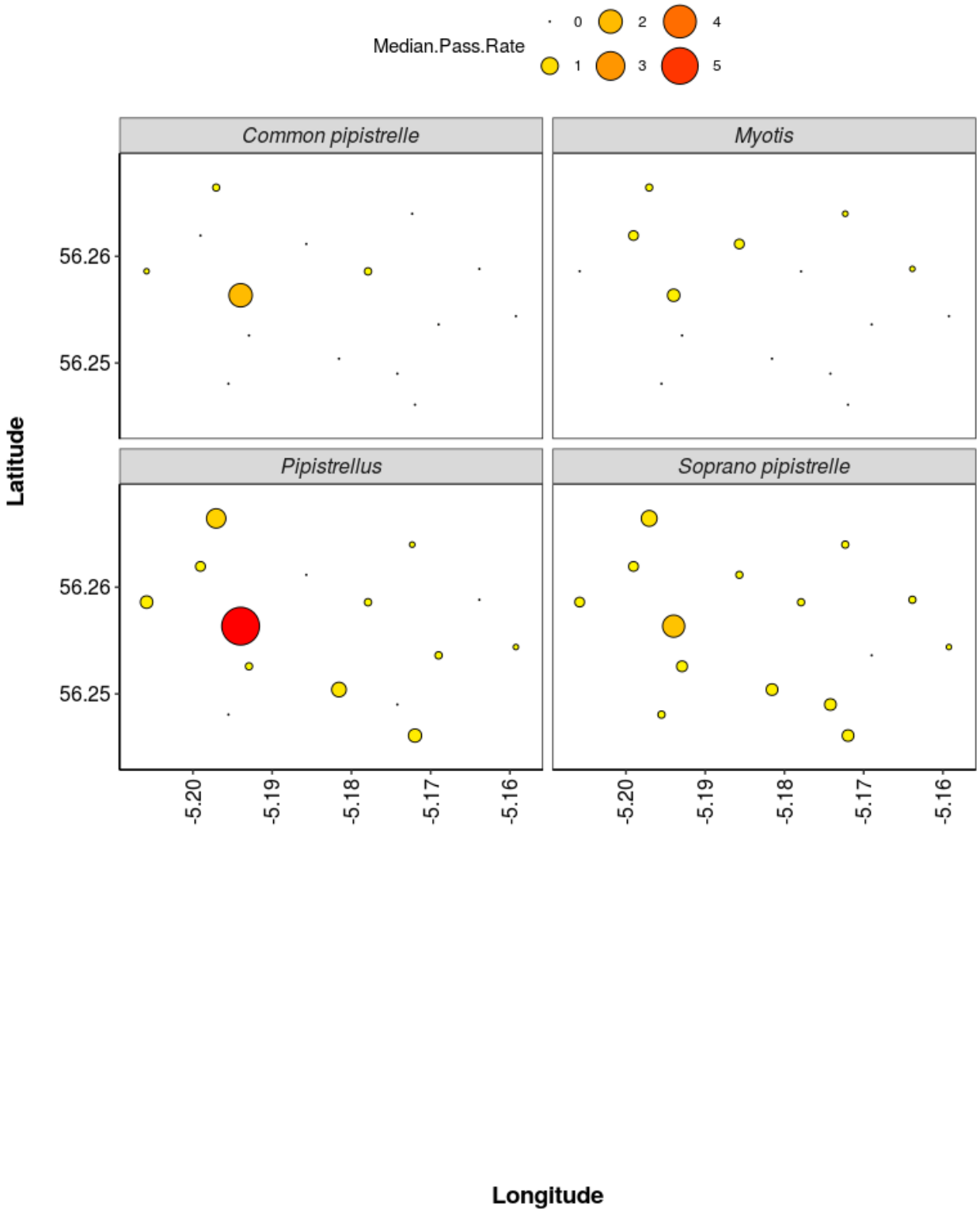
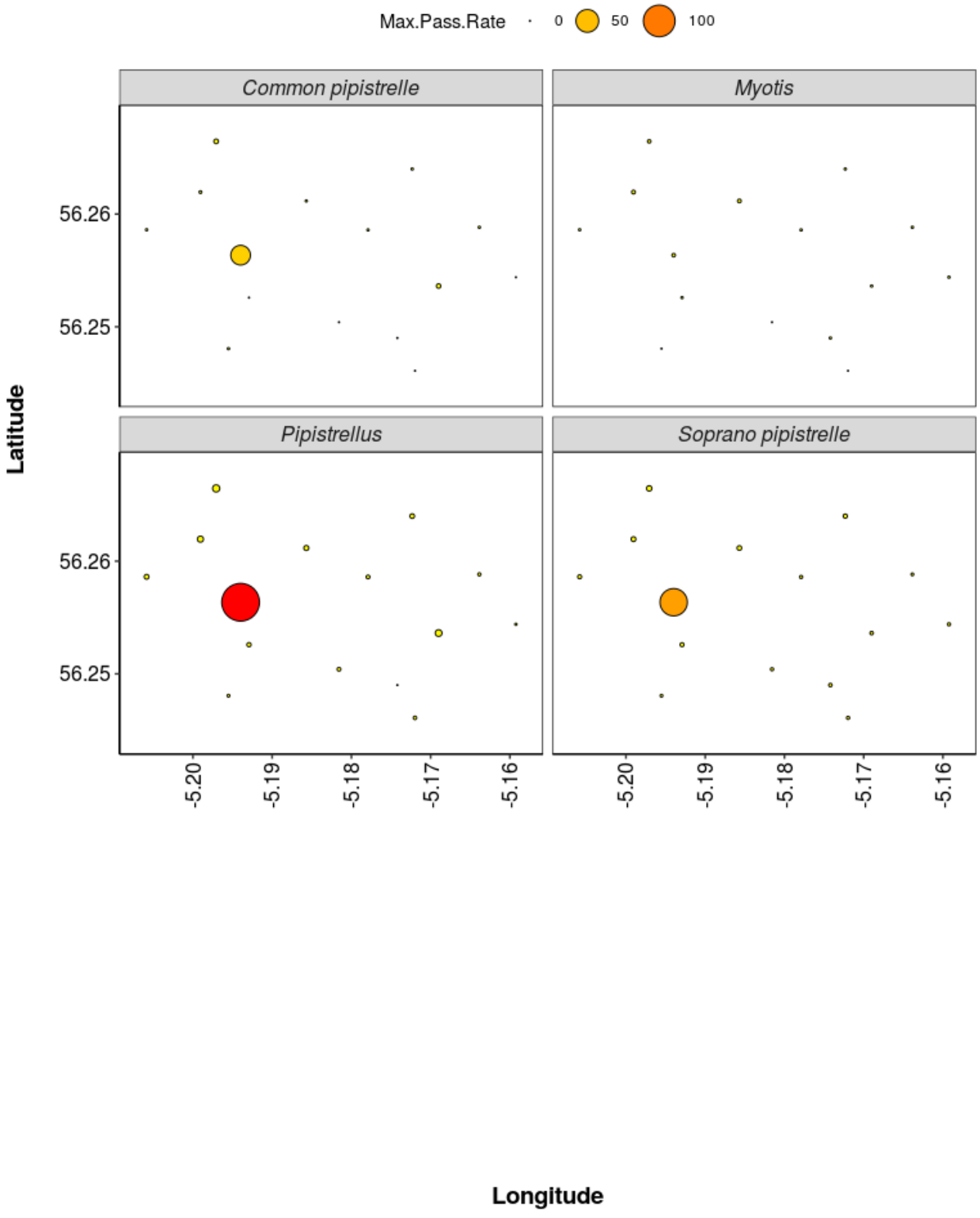


Figure 20. Maximum Nightly Pass Rate (bat passes/hr/night) recorded in a single night throughout the survey period - represented by the size and colour of the point at each detector location.



Thank you for using Ecobat! If you have any questions please email info@themammalsociety.org.uk

This report was produced free of charge by the Mammal Society to support evidence-based conservation of bats.

The following analyses are based on data supplied by the user to the Mammal Society's Ecobat website. The outputs are designed to assist decision-making, but do not replace expert interpretation by the user. The creation of the Ecobat tool was supported by the Natural Environment Research Council (NERC).

Bat Activity Analysis

Site Name: Ann Carr Dubh

Author: Arthur, M.

29/03/2022

Summary

Bats were detected on **28** nights between **2021-06-29** and **2021-07-26**, using **14** static bat detectors. Throughout this period **5** species were recorded. **Table 1.** Detectors were placed at the following locations:

Detector ID	Latitude	Longitude
1	56.25861	-5.205845
3	56.26645	-5.197067
8	56.26399	-5.172325
4	56.25635	-5.193980
5	56.26116	-5.185691
6	56.25259	-5.192923
14	56.24900	-5.174201
9	56.24806	-5.195517
12	56.25883	-5.163854
2	56.26195	-5.199050
15	56.24609	-5.171974
7	56.25859	-5.177902
10	56.25041	-5.181567

13	56.25440	-5.159241

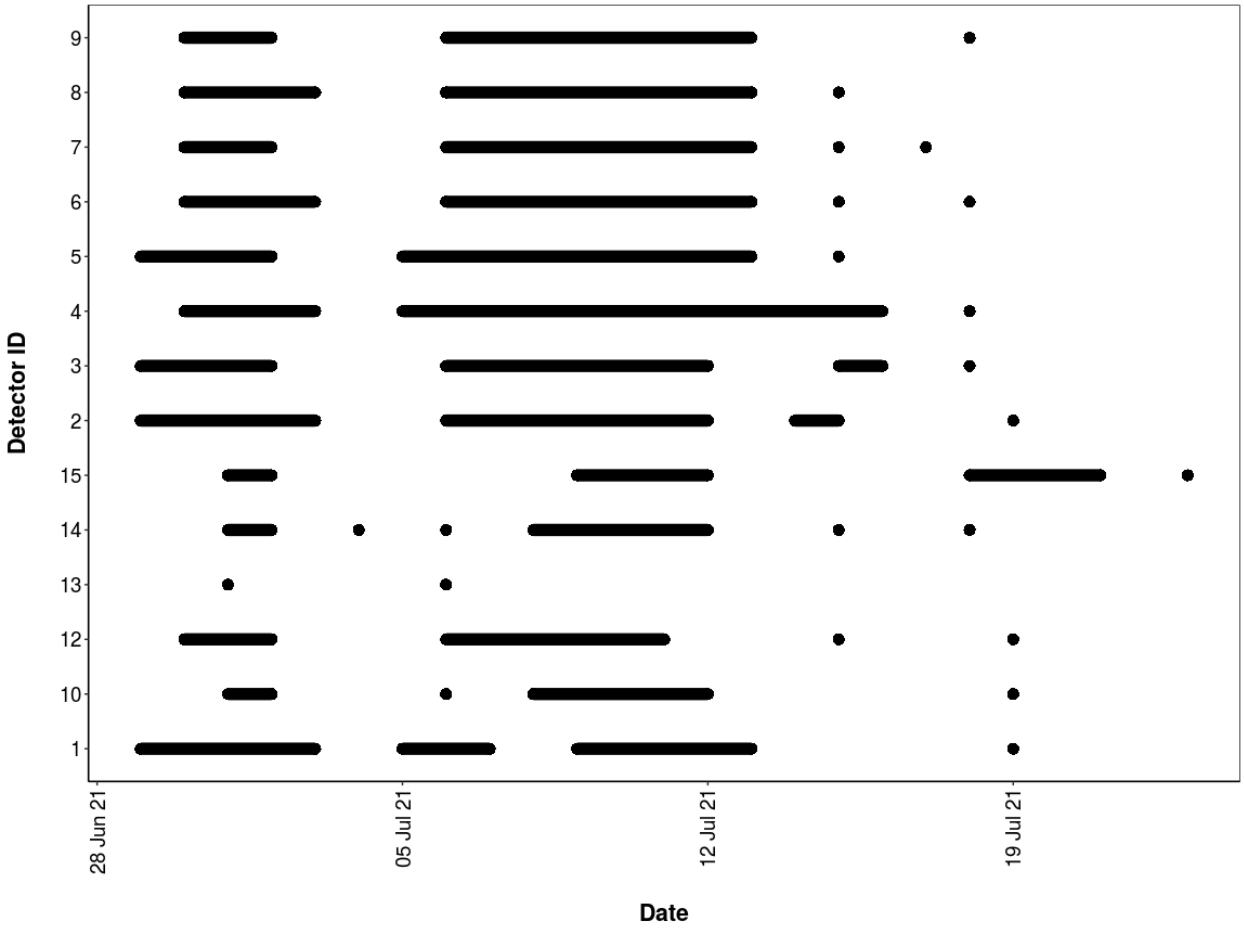
Survey Nights

Table 2. The number of nights that bats were detected on each recorder. This is not the same as the number of nights that detectors were active if there were nights when no bats were detected.

Detector ID	No. of nights
1	20
2	21
3	21
4	24
5	24
6	22
7	22
8	23
9	20
10	15
12	18
13	2
14	18
15	14

Survey Nights

Figure 1. Horizontal bars show nights when acoustic detectors recorded bats.



PART 1: Percentiles Analysis

This first part of the analysis looks at the relative activity levels of the bats you recorded. We take your value for the total bat passes each night for each species, and compare this to the values in our reference database. We tell you what percentile your data falls at, and therefore what the relative activity level is. For example, if the reference database has values of 5, 10, 15, 20 and you submit a value of 18, this will be the 80th percentile, and be classed as high activity.

The reference range dataset was stratified to include:

- Only records from within 30 days of the survey date.
- Only records from within 100km radius of the survey location.
- Records using any make of bat detector.

PER DETECTOR

Table 3. Summary table showing the number of nights recorded bat activity fell into each activity band for each species.

Detector ID	Species/Species Group	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
1	*Myotis*	0	0	0	0	6
1	*Pipistrellus*	5	7	1	0	2
1	*Pipistrellus pipistrellus*	0	3	2	2	4
1	*Pipistrellus pygmaeus*	2	5	5	1	5
10	*Myotis*	0	0	0	1	1
10	*Pipistrellus*	3	1	2	2	0
10	*Pipistrellus pipistrellus*	1	0	1	2	6
10	*Pipistrellus pygmaeus*	1	2	0	5	7
10	*Plecotus auritus*	0	0	0	0	1
12	*Myotis*	0	0	0	2	3
12	*Pipistrellus*	0	5	3	0	2
12	*Pipistrellus pipistrellus*	0	0	1	3	5
12	*Pipistrellus pygmaeus*	0	3	5	3	4
13	*Pipistrellus*	0	0	0	1	0
13	*Pipistrellus pipistrellus*	0	0	0	0	1
13	*Pipistrellus pygmaeus*	0	1	0	0	0
14	*Myotis*	0	0	0	0	2
14	*Pipistrellus*	6	1	0	1	0
14	*Pipistrellus pipistrellus*	1	3	2	0	3
14	*Pipistrellus pygmaeus*	2	4	3	3	3

15	*Myotis*	0	0	0	0	4
15	*Pipistrellus*	1	3	0	0	0
15	*Pipistrellus pipistrellus*	0	1	1	2	6
15	*Pipistrellus pygmaeus*	1	1	3	5	3
2	*Myotis*	0	0	0	0	6
2	*Pipistrellus*	0	7	1	1	2
2	*Pipistrellus pipistrellus*	0	1	4	0	3
2	*Pipistrellus pygmaeus*	0	2	4	6	7
2	*Plecotus auritus*	0	0	0	0	2
3	*Myotis*	0	0	0	4	6
3	*Pipistrellus*	4	8	1	0	1
3	*Pipistrellus pipistrellus*	0	0	6	5	4
3	*Pipistrellus pygmaeus*	0	7	6	2	4
3	*Plecotus auritus*	0	0	0	0	1
4	*Myotis*	0	0	4	2	11
4	*Pipistrellus*	18	3	0	0	0
4	*Pipistrellus pipistrellus*	11	4	0	1	3
4	*Pipistrellus pygmaeus*	16	2	2	2	1
4	*Plecotus auritus*	0	0	0	0	7
5	*Myotis*	0	0	0	0	5
5	*Pipistrellus*	10	5	3	0	1
5	*Pipistrellus pipistrellus*	0	3	5	6	4
5	*Pipistrellus pygmaeus*	4	10	3	2	3
5	*Plecotus auritus*	0	0	0	0	3
6	*Myotis*	0	0	0	0	6
6	*Pipistrellus*	9	3	1	2	0
6	*Pipistrellus pipistrellus*	0	4	5	3	1

6	*Pipistrellus pygmaeus*	4	4	5	3	4
6	*Plecotus auritus*	0	0	0	0	2
7	*Myotis*	0	0	0	2	4
7	*Pipistrellus*	6	2	4	1	0
7	*Pipistrellus pipistrellus*	0	2	3	5	5
7	*Pipistrellus pygmaeus*	0	7	4	3	4
7	*Plecotus auritus*	0	0	0	0	2
8	*Myotis*	0	0	1	0	8
8	*Pipistrellus*	7	4	3	1	0
8	*Pipistrellus pipistrellus*	0	4	4	4	6
8	*Pipistrellus pygmaeus*	0	11	4	1	3
9	*Myotis*	0	0	1	2	4
9	*Pipistrellus*	9	1	0	0	0
9	*Pipistrellus pipistrellus*	1	5	2	3	1
9	*Pipistrellus pygmaeus*	4	7	3	0	5
9	*Plecotus auritus*	0	0	0	0	1

Table 4. Summary table showing key metrics for each species recorded. The reference range is the number of nights for each species that your data were compared to. We recommend a Reference Range of 200+ to be confident in the relative activity level.

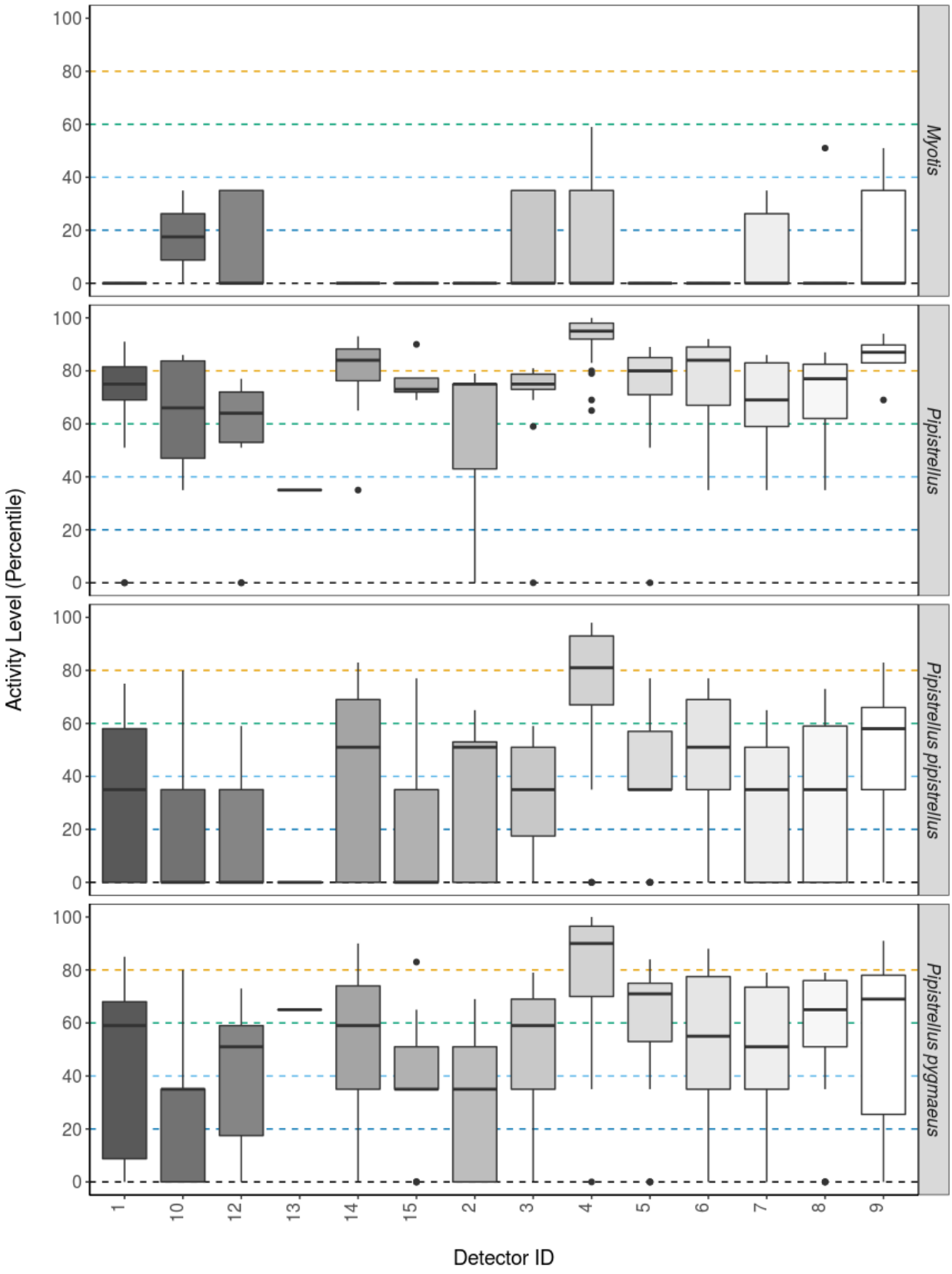
Detector ID	Species/Species Group	Median Percentile	95% CIs	Max Percentile	Nights Recorded	Reference Range
1	*Myotis*	0	0 - 0	0	6	1076
1	*Pipistrellus*	75	70 - 82.5	91	15	4126
1	*Pipistrellus pipistrellus*	35	43 - 69	75	11	2810
1	*Pipistrellus pygmaeus*	59	55 - 72	85	18	3350
10	*Myotis*	18	17.5 - 17.5	35	2	1076
10	*Pipistrellus*	66	43 - 84.5	86	8	4126
10	*Pipistrellus pipistrellus*	0	35 - 57.5	80	10	2810
10	*Pipistrellus pygmaeus*	35	35 - 57.5	80	15	3350
10	*Plecotus auritus*	0	0	0	1	241
12	*Myotis*	0	0 - 0	35	5	1076
12	*Pipistrellus*	64	59 - 75	77	10	4126
12	*Pipistrellus pipistrellus*	0	35 - 35	59	9	2810
12	*Pipistrellus pygmaeus*	51	43 - 62	73	15	3350
13	*Pipistrellus*	35	0	35	1	4126
13	*Pipistrellus pipistrellus*	0	0	0	1	2810
13	*Pipistrellus pygmaeus*	65	0	65	1	3350
14	*Myotis*	0	0 - 0	0	2	1076
14	*Pipistrellus*	84	59 - 89	93	8	4126
14	*Pipistrellus pipistrellus*	51	51 - 76	83	9	2810

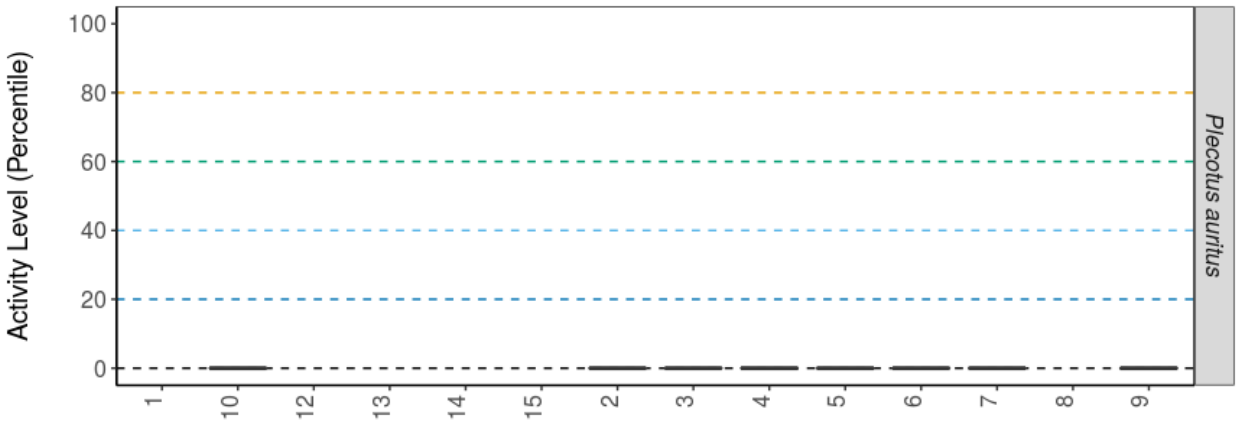
14	*Pipistrellus pygmaeus*	59	47 - 75	90	15	3350
15	*Myotis*	0	0 - 0	0	4	1076
15	*Pipistrellus*	73	71 - 81.5	90	4	4126
15	*Pipistrellus pipistrellus*	0	35 - 56	77	10	2810
15	*Pipistrellus pygmaeus*	35	35 - 58	83	13	3350
2	*Myotis*	0	0 - 0	0	6	1076
2	*Pipistrellus*	75	55 - 77	79	11	4126
2	*Pipistrellus pipistrellus*	51	51 - 58	65	8	2810
2	*Pipistrellus pygmaeus*	35	35 - 59	69	19	3350
2	*Plecotus auritus*	0	0 - 0	0	2	241
3	*Myotis*	0	0 - 0	35	10	1076
3	*Pipistrellus*	75	72 - 77.5	81	14	4126
3	*Pipistrellus pipistrellus*	35	35 - 55	59	15	2810
3	*Pipistrellus pygmaeus*	59	52 - 69	79	19	3350
3	*Plecotus auritus*	0	0	0	1	241
4	*Myotis*	0	35 - 59	59	17	1076
4	*Pipistrellus*	95	87.5 - 97.5	100	21	4126
4	*Pipistrellus pipistrellus*	81	75 - 92.5	98	19	2810
4	*Pipistrellus pygmaeus*	90	74.5 - 94.5	100	23	3350
4	*Plecotus auritus*	0	0 - 0	0	7	241
5	*Myotis*	0	0 - 0	0	5	1076
5	*Pipistrellus*	80	72 - 84	89	19	4126
5	*Pipistrellus pipistrellus*	35	43 - 58	77	18	2810

5	*Pipistrellus pygmaeus*	71	60 - 76	84	22	3350
5	*Plecotus auritus*	0	0 - 0	0	3	241
6	*Myotis*	0	0 - 0	0	6	1076
6	*Pipistrellus*	84	63 - 87.5	92	15	4126
6	*Pipistrellus pipistrellus*	51	43 - 64	77	13	2810
6	*Pipistrellus pygmaeus*	55	55 - 77	88	20	3350
6	*Plecotus auritus*	0	0 - 0	0	2	241
7	*Myotis*	0	0 - 0	35	6	1076
7	*Pipistrellus*	69	59 - 82	86	13	4126
7	*Pipistrellus pipistrellus*	35	35 - 55	65	15	2810
7	*Pipistrellus pygmaeus*	51	50 - 72	79	18	3350
7	*Plecotus auritus*	0	0 - 0	0	2	241
8	*Myotis*	0	0 - 0	51	9	1076
8	*Pipistrellus*	77	62 - 81	87	15	4126
8	*Pipistrellus pipistrellus*	35	43 - 64	73	18	2810
8	*Pipistrellus pygmaeus*	65	59 - 73	79	19	3350
9	*Myotis*	0	35 - 35	51	7	1076
9	*Pipistrellus*	87	79.5 - 90	94	10	4126
9	*Pipistrellus pipistrellus*	58	43 - 72	83	12	2810
9	*Pipistrellus pygmaeus*	69	66 - 80	91	19	3350
9	*Plecotus auritus*	0	0	0	1	241

###Figures

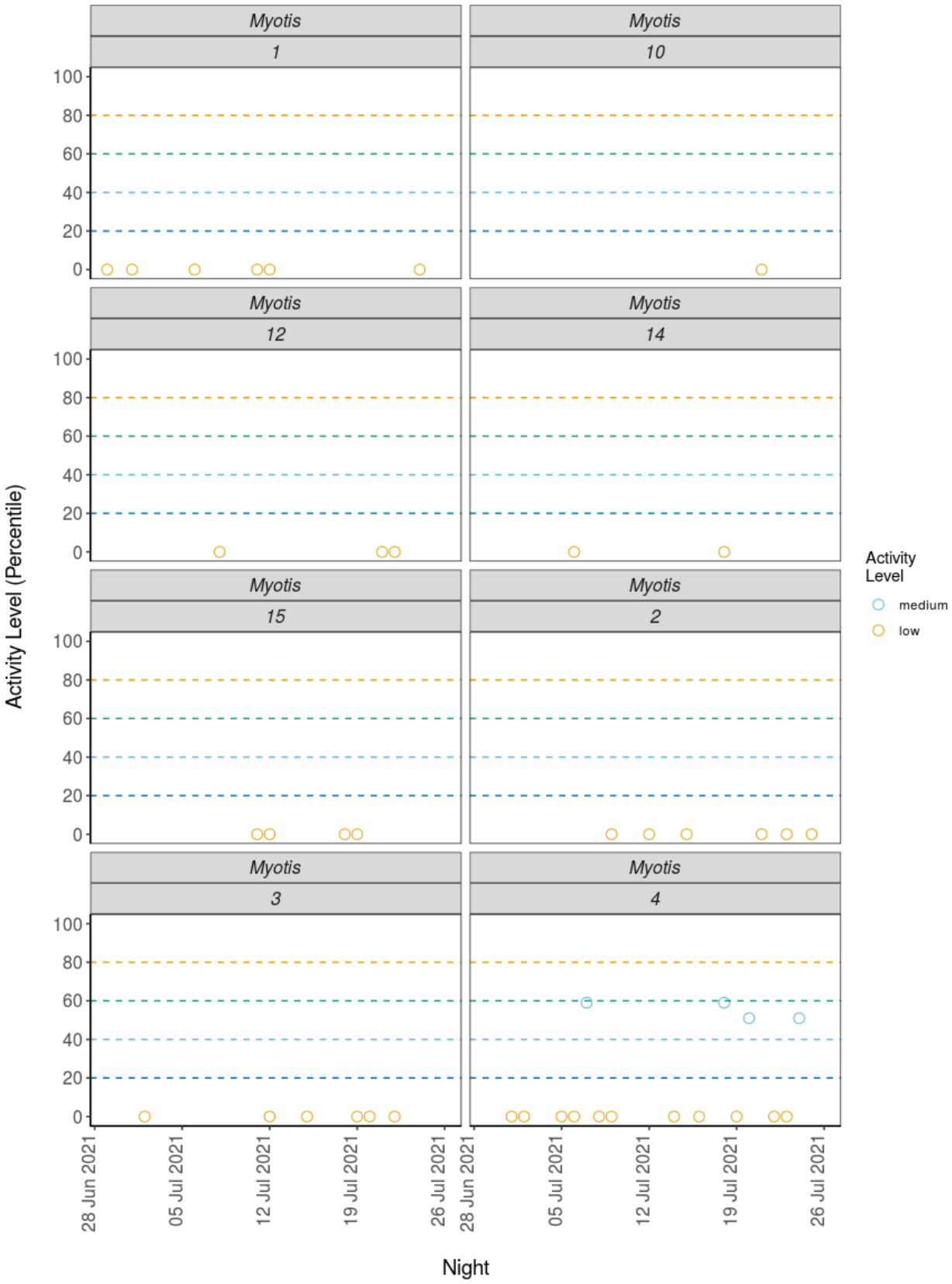
Figure 2. The recorded activity of bats during the survey. The centre line indicates the median activity level whereas the box represents the interquartile range (the spread of the middle 50% of nights of activity)

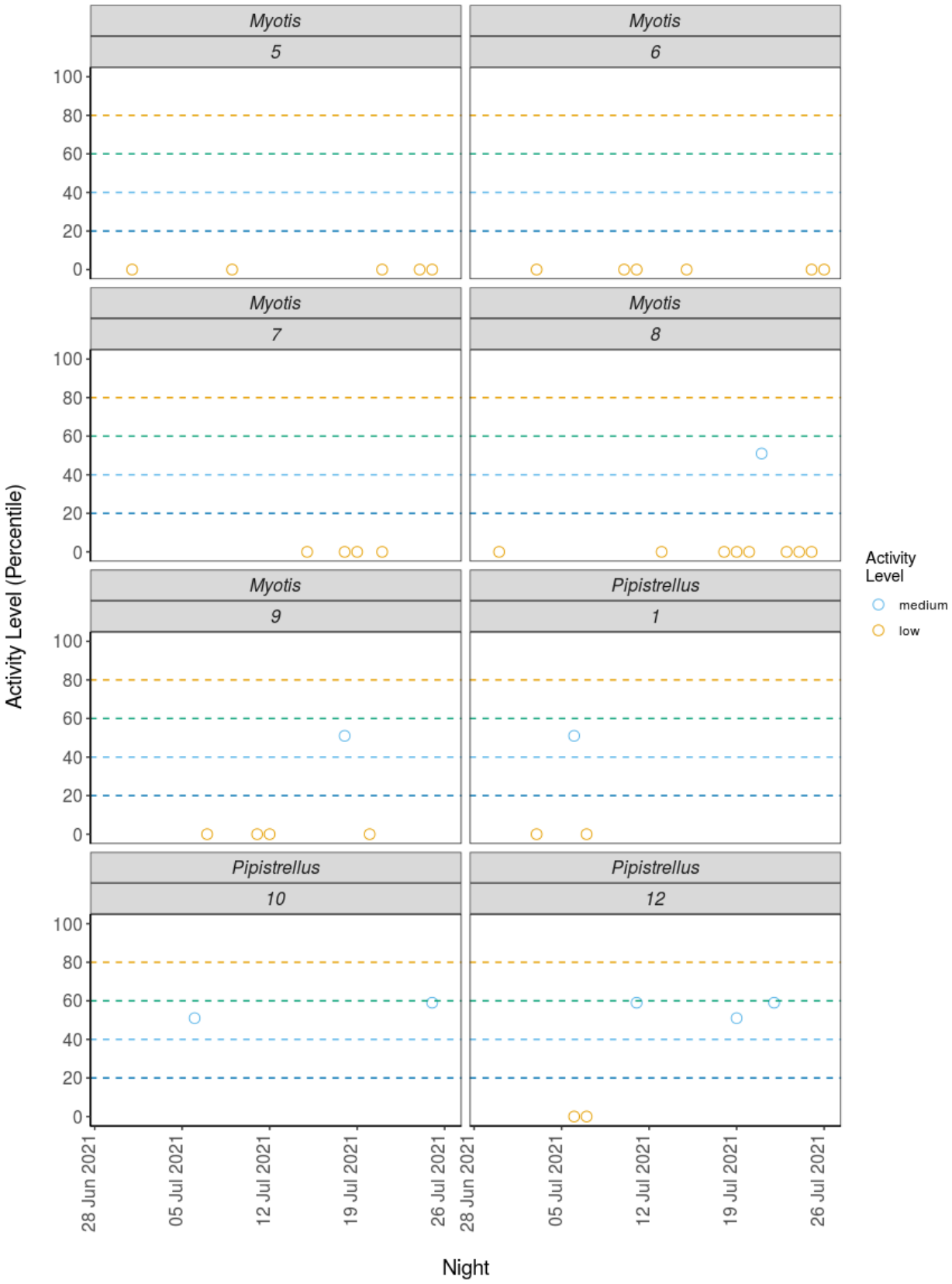

Activity Level (Percentile)
100
80
60
40
20
0
Myotis
Pipistrellus
Pipistrellus pipistrellus
Pipistrellus pygmaeus
1
10
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID

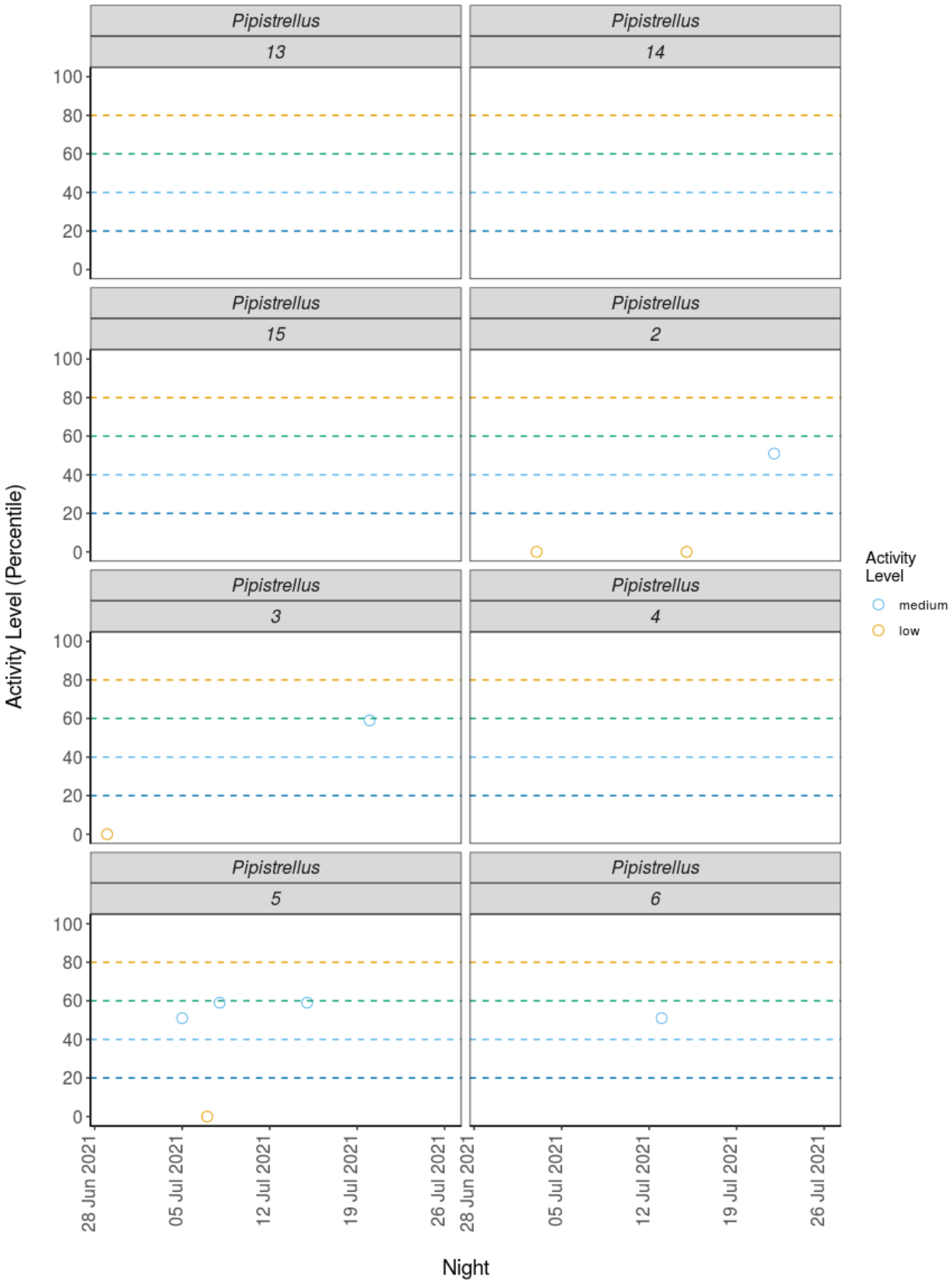

Activity Level (Percentile)
100
80
60
40
20
0
1
10
12
13
14
15
2
3
4
5
6
7
8
9
Plecotus auritus

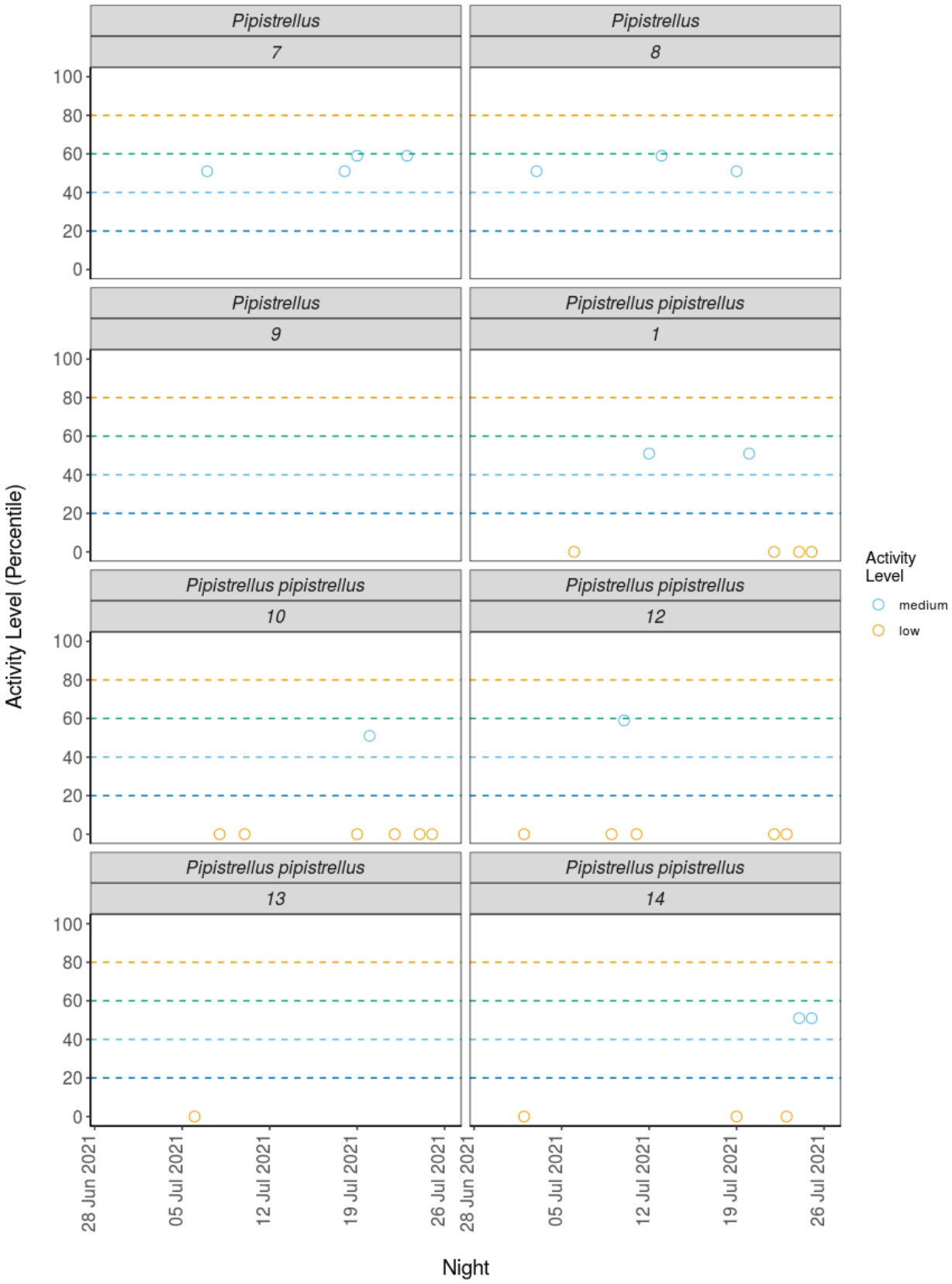
Detector ID

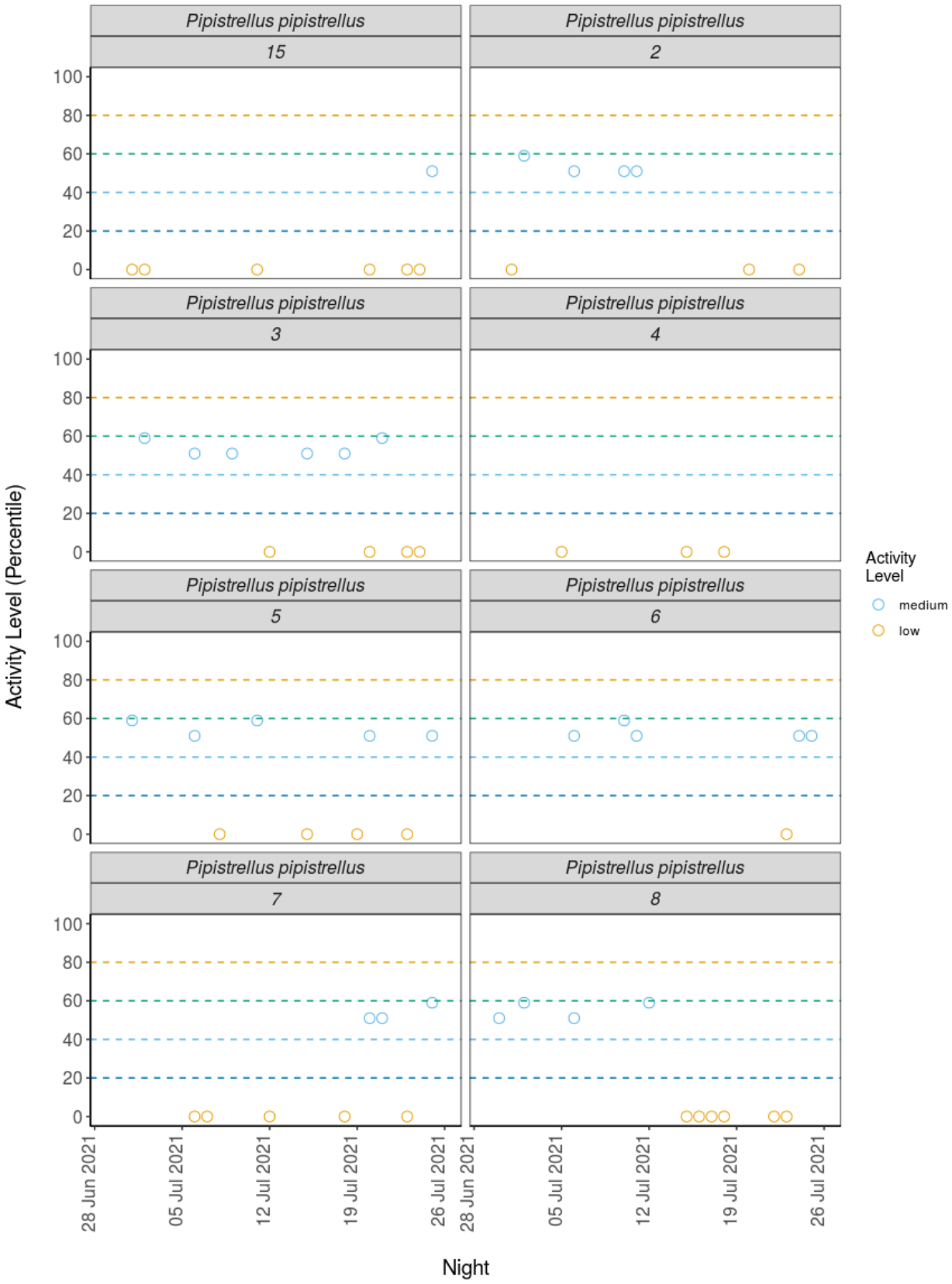
Figure 3. The activity level (percentile) of bats recorded across each night of the bat survey.

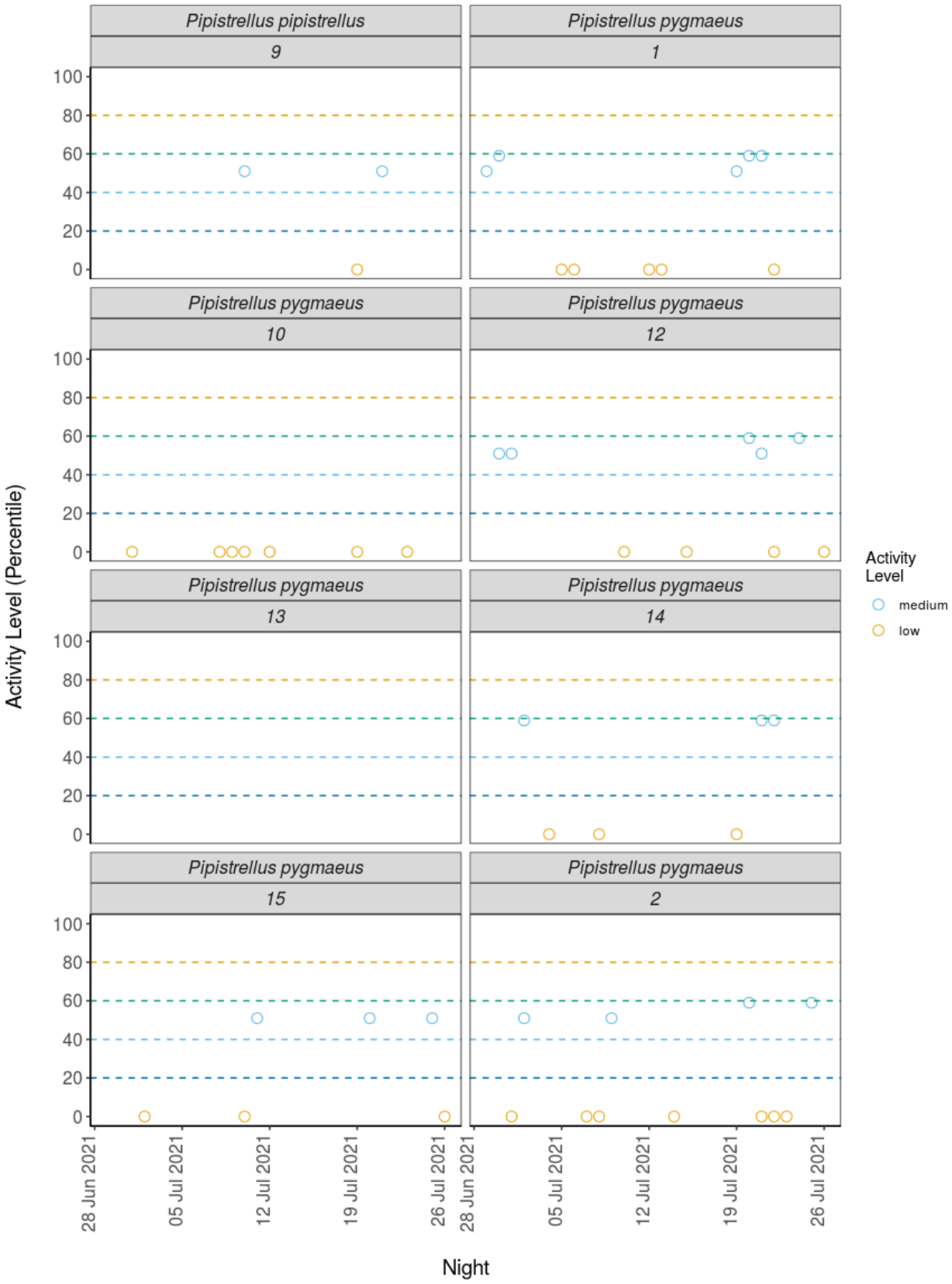

Myotis
1
Myotis
10
Myotis
12
Myotis
14
Myotis
15
Myotis
2
Myotis
3
Myotis
4
Activity Level (Percentile)
100
80
60
40
20
0
28 Jun 2021
05 Jul 2021
12 Jul 2021
19 Jul 2021
26 Jul 2021
Night
Activity Level
medium
low

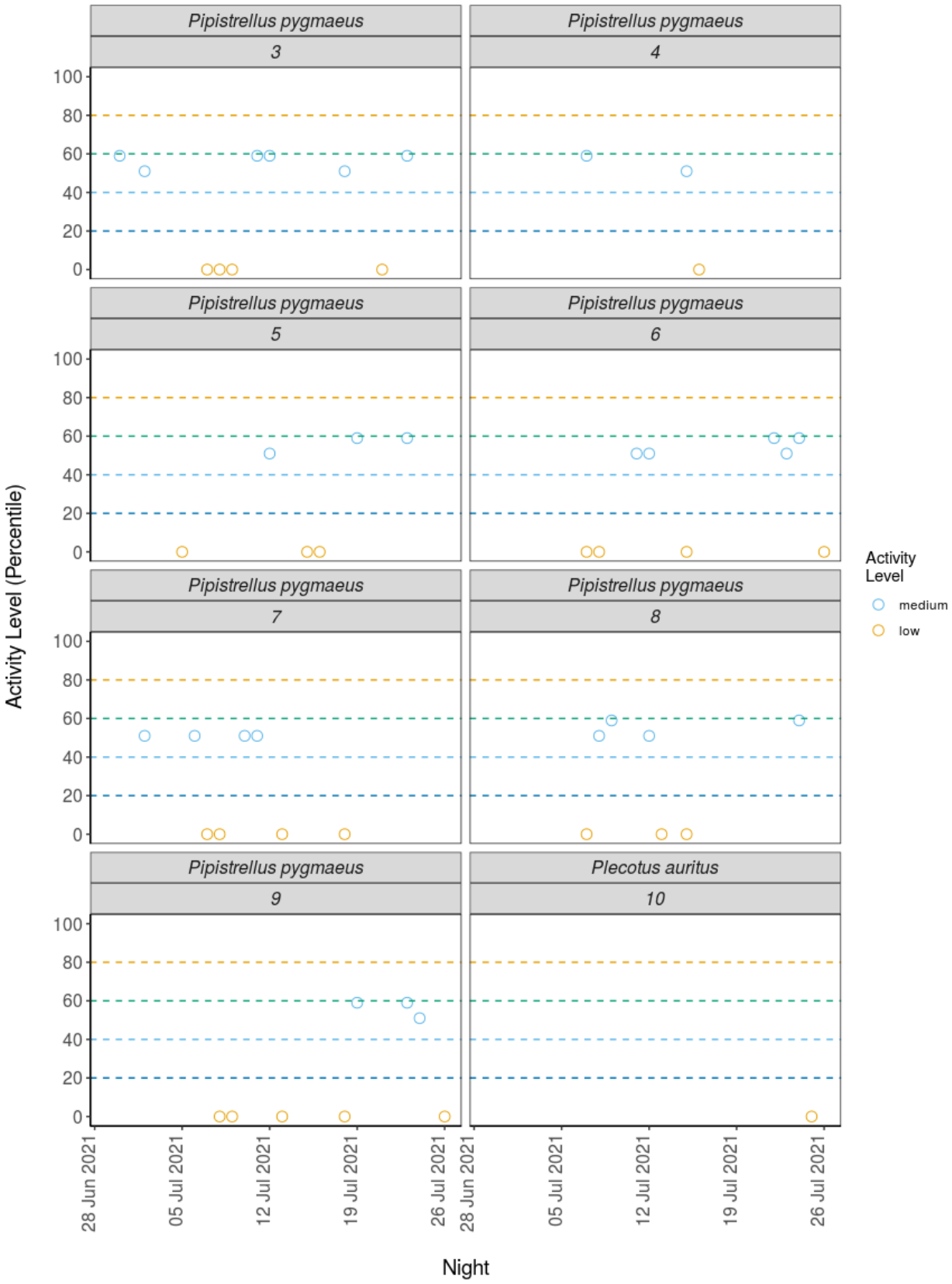

Myotis
5
Myotis
6
Myotis
7
Myotis
8
Myotis
9
Pipistrellus
1
Pipistrellus
10
Pipistrellus
12
Activity Level (Percentile)
0
20
40
60
80
100
28 Jun 2021
05 Jul 2021
12 Jul 2021
19 Jul 2021
26 Jul 2021
Night
Activity Level
medium
low

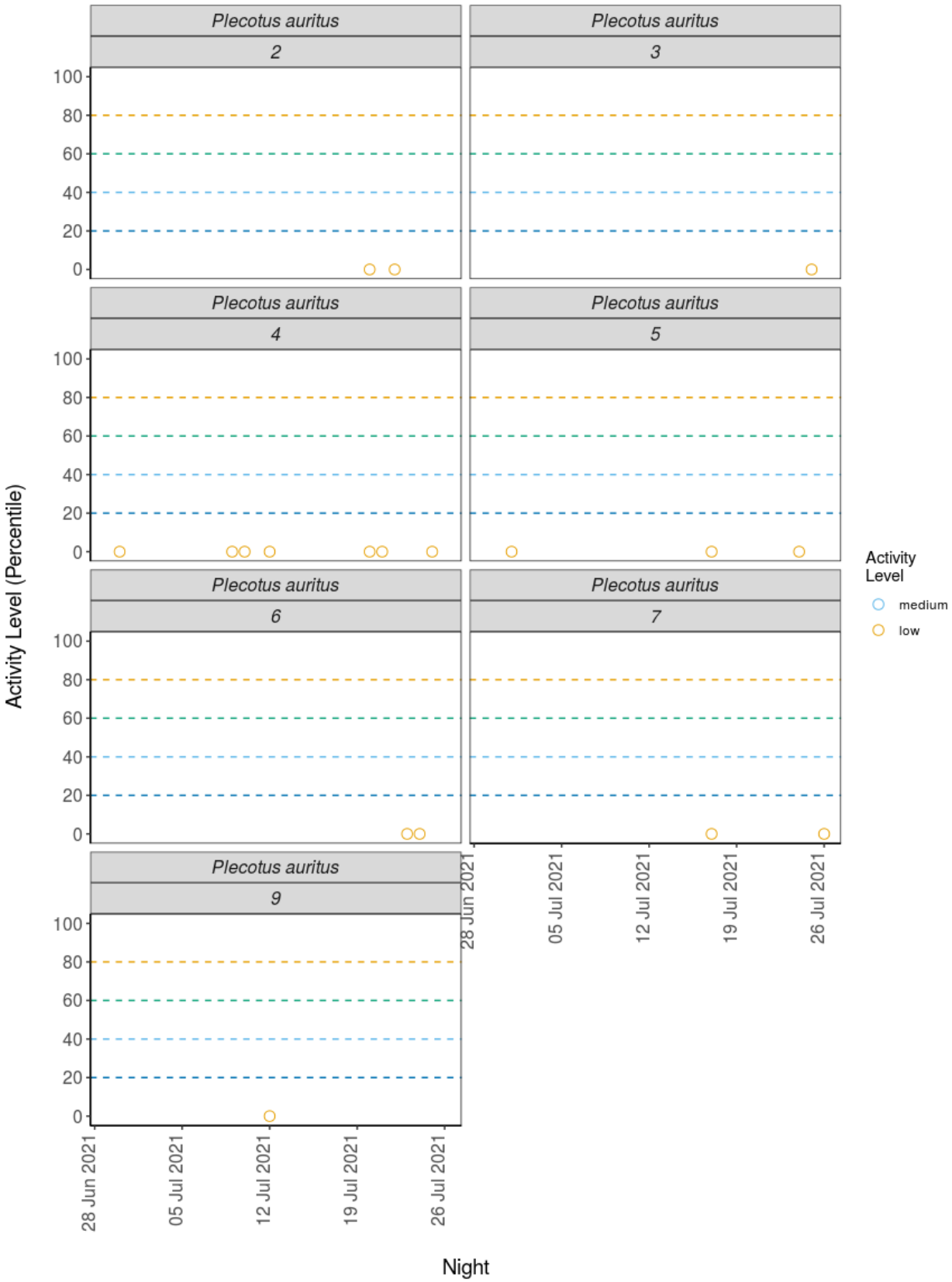

Pipistrellus
13
14
15
2
3
4
5
6
Activity Level (Percentile)
100
80
60
40
20
0
28 Jun 2021
05 Jul 2021
12 Jul 2021
19 Jul 2021
26 Jul 2021
Night
Activity Level
medium
low


Pipistrellus
7
Pipistrellus
8
Pipistrellus
9
Pipistrellus pipistrellus
1
Pipistrellus pipistrellus
10
Pipistrellus pipistrellus
12
Pipistrellus pipistrellus
13
Pipistrellus pipistrellus
14
Activity Level (Percentile)
100
80
60
40
20
0
28 Jun 2021
05 Jul 2021
12 Jul 2021
19 Jul 2021
26 Jul 2021
Night
Activity Level
medium
low


Pipistrellus pipistrellus
15
2
3
4
5
6
7
8
Activity Level (Percentile)
100
80
60
40
20
0
28 Jun 2021
05 Jul 2021
12 Jul 2021
19 Jul 2021
26 Jul 2021
Night
Activity Level
medium
low


Pipistrellus pipistrellus
9
Pipistrellus pygmaeus
1
Pipistrellus pygmaeus
10
Pipistrellus pygmaeus
12
Pipistrellus pygmaeus
13
Pipistrellus pygmaeus
14
Pipistrellus pygmaeus
15
Pipistrellus pygmaeus
2
Activity Level (Percentile)
100
80
60
40
20
0
28 Jun 2021
05 Jul 2021
12 Jul 2021
19 Jul 2021
26 Jul 2021
Night
Activity Level
medium
low


Pipistrellus pygmaeus
3
Pipistrellus pygmaeus
4
Pipistrellus pygmaeus
5
Pipistrellus pygmaeus
6
Pipistrellus pygmaeus
7
Pipistrellus pygmaeus
8
Pipistrellus pygmaeus
9
Plecotus auritus
10
Activity Level (Percentile)
100
80
60
40
20
0
28 Jun 2021
05 Jul 2021
12 Jul 2021
19 Jul 2021
26 Jul 2021
Night
Activity Level
medium
low


Plecotus auritus
2
3
4
5
6
7
9
Activity Level (Percentile)
100
80
60
40
20
0
28 Jun 2021
05 Jul 2021
12 Jul 2021
19 Jul 2021
26 Jul 2021
Night
Activity Level
medium
low

PER DETECTOR, PER MONTH

Table 5. Summary table showing the number of nights recorded bat activity fell into each activity band for each species at each detector during each month.

Detector ID	Species/Species Group	Month	Nights of High Activity	Nights of Moderate / High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
1	*Myotis*	Jun	0	0	0	0	1
1	*Myotis*	Jul	0	0	0	0	5
1	*Pipistrellus*	Jun	0	1	0	0	0
1	*Pipistrellus*	Jul	5	6	1	0	2
1	*Pipistrellus pipistrellus*	Jun	0	0	0	1	0
1	*Pipistrellus pipistrellus*	Jul	0	3	2	1	4
1	*Pipistrellus pygmaeus*	Jun	0	0	2	0	0
1	*Pipistrellus pygmaeus*	Jul	2	5	3	1	5
10	*Myotis*	Jul	0	0	0	1	1
10	*Pipistrellus*	Jul	3	1	2	2	0
10	*Pipistrellus pipistrellus*	Jul	1	0	1	2	6
10	*Pipistrellus pygmaeus*	Jul	1	2	0	5	7
10	*Plecotus auritus*	Jul	0	0	0	0	1
12	*Myotis*	Jul	0	0	0	2	3
12	*Pipistrellus*	Jul	0	5	3	0	2
12	*Pipistrellus pipistrellus*	Jun	0	0	0	1	0
12	*Pipistrellus pipistrellus*	Jul	0	0	1	2	5
12	*Pipistrellus pygmaeus*	Jun	0	0	1	0	0
12	*Pipistrellus pygmaeus*	Jul	0	3	4	3	4

13	*Pipistrellus*	Jul	0	0	0	1	0
13	*Pipistrellus pipistrellus*	Jul	0	0	0	0	1
13	*Pipistrellus pygmaeus*	Jul	0	1	0	0	0
14	*Myotis*	Jul	0	0	0	0	2
14	*Pipistrellus*	Jul	6	1	0	1	0
14	*Pipistrellus pipistrellus*	Jul	1	3	2	0	3
14	*Pipistrellus pygmaeus*	Jul	2	4	3	3	3
15	*Myotis*	Jul	0	0	0	0	4
15	*Pipistrellus*	Jul	1	3	0	0	0
15	*Pipistrellus pipistrellus*	Jul	0	1	1	2	6
15	*Pipistrellus pygmaeus*	Jul	1	1	3	5	3
2	*Myotis*	Jul	0	0	0	0	6
2	*Pipistrellus*	Jun	0	1	0	0	0
2	*Pipistrellus*	Jul	0	6	1	1	2
2	*Pipistrellus pipistrellus*	Jul	0	1	4	0	3
2	*Pipistrellus pygmaeus*	Jun	0	1	0	1	0
2	*Pipistrellus pygmaeus*	Jul	0	1	4	5	7
2	*Plecotus auritus*	Jul	0	0	0	0	2
3	*Myotis*	Jun	0	0	0	1	0
3	*Myotis*	Jul	0	0	0	3	6
3	*Pipistrellus*	Jun	0	1	0	0	1
3	*Pipistrellus*	Jul	4	7	1	0	0
3	*Pipistrellus pipistrellus*	Jul	0	0	6	5	4
3	*Pipistrellus pygmaeus*	Jun	0	0	1	0	0
3	*Pipistrellus pygmaeus*	Jul	0	7	5	2	4

3	*Plecotus auritus*	Jul	0	0	0	0	1
4	*Myotis*	Jul	0	0	4	2	11
4	*Pipistrellus*	Jun	1	0	0	0	0
4	*Pipistrellus*	Jul	17	3	0	0	0
4	*Pipistrellus pipistrellus*	Jun	1	0	0	0	0
4	*Pipistrellus pipistrellus*	Jul	10	4	0	1	3
4	*Pipistrellus pygmaeus*	Jun	1	0	0	0	0
4	*Pipistrellus pygmaeus*	Jul	15	2	2	2	1
4	*Plecotus auritus*	Jun	0	0	0	0	1
4	*Plecotus auritus*	Jul	0	0	0	0	6
5	*Myotis*	Jul	0	0	0	0	5
5	*Pipistrellus*	Jun	2	0	0	0	0
5	*Pipistrellus*	Jul	8	5	3	0	1
5	*Pipistrellus pipistrellus*	Jun	0	1	0	1	0
5	*Pipistrellus pipistrellus*	Jul	0	2	5	5	4
5	*Pipistrellus pygmaeus*	Jun	0	2	0	0	0
5	*Pipistrellus pygmaeus*	Jul	4	8	3	2	3
5	*Plecotus auritus*	Jul	0	0	0	0	3
6	*Myotis*	Jul	0	0	0	0	6
6	*Pipistrellus*	Jun	1	0	0	0	0
6	*Pipistrellus*	Jul	8	3	1	2	0
6	*Pipistrellus pipistrellus*	Jun	0	0	0	1	0
6	*Pipistrellus pipistrellus*	Jul	0	4	5	2	1
6	*Pipistrellus pygmaeus*	Jun	1	0	0	0	0

6	*Pipistrellus pygmaeus*	Jul	3	4	5	3	4
6	*Plecotus auritus*	Jul	0	0	0	0	2
7	*Myotis*	Jul	0	0	0	2	4
7	*Pipistrellus*	Jul	6	2	4	1	0
7	*Pipistrellus pipistrellus*	Jun	0	0	0	1	0
7	*Pipistrellus pipistrellus*	Jul	0	2	3	4	5
7	*Pipistrellus pygmaeus*	Jun	0	1	0	0	0
7	*Pipistrellus pygmaeus*	Jul	0	6	4	3	4
7	*Plecotus auritus*	Jul	0	0	0	0	2
8	*Myotis*	Jun	0	0	0	0	1
8	*Myotis*	Jul	0	0	1	0	7
8	*Pipistrellus*	Jul	7	4	3	1	0
8	*Pipistrellus pipistrellus*	Jun	0	0	1	0	0
8	*Pipistrellus pipistrellus*	Jul	0	4	3	4	6
8	*Pipistrellus pygmaeus*	Jun	0	1	0	0	0
8	*Pipistrellus pygmaeus*	Jul	0	10	4	1	3
9	*Myotis*	Jul	0	0	1	2	4
9	*Pipistrellus*	Jul	9	1	0	0	0
9	*Pipistrellus pipistrellus*	Jun	0	0	0	1	0
9	*Pipistrellus pipistrellus*	Jul	1	5	2	2	1
9	*Pipistrellus pygmaeus*	Jun	1	0	0	0	0
9	*Pipistrellus pygmaeus*	Jul	3	7	3	0	5
9	*Plecotus auritus*	Jul	0	0	0	0	1

Table 6. Summary table showing key metrics for each species recorded per month. Please note that we cannot split the reference range by month, hence this column is not shown in this table.

Detector ID	Species/Species Group	Month	Median Percentile	95% CIs	Max Percentile	Nights Recorded
1	*Myotis*	Jun	0	0 - 0	0	1
1	*Myotis*	Jul	0	0 - 0	0	5
1	*Pipistrellus*	Jun	79	70 - 82.5	79	1
1	*Pipistrellus*	Jul	75	70 - 82.5	91	14
1	*Pipistrellus pipistrellus*	Jun	35	43 - 69	35	1
1	*Pipistrellus pipistrellus*	Jul	43	43 - 69	75	10
1	*Pipistrellus pygmaeus*	Jun	55	55 - 72	59	2
1	*Pipistrellus pygmaeus*	Jul	59	55 - 72	85	16
10	*Myotis*	Jul	18	17.5 - 17.5	35	2
10	*Pipistrellus*	Jul	66	43 - 84.5	86	8
10	*Pipistrellus pipistrellus*	Jul	0	35 - 57.5	80	10
10	*Pipistrellus pygmaeus*	Jul	35	35 - 57.5	80	15
10	*Plecotus auritus*	Jul	0	0	0	1
12	*Myotis*	Jul	0	0 - 0	35	5
12	*Pipistrellus*	Jul	64	59 - 75	77	10
12	*Pipistrellus pipistrellus*	Jun	35	35 - 35	35	1
12	*Pipistrellus pipistrellus*	Jul	0	35 - 35	59	8
12	*Pipistrellus pygmaeus*	Jun	51	43 - 62	51	1
12	*Pipistrellus pygmaeus*	Jul	43	43 - 62	73	14

13	*Pipistrellus*	Jul	35	0	35	1
13	*Pipistrellus pipistrellus*	Jul	0	0	0	1
13	*Pipistrellus pygmaeus*	Jul	65	0	65	1
14	*Myotis*	Jul	0	0 - 0	0	2
14	*Pipistrellus*	Jul	84	59 - 89	93	8
14	*Pipistrellus pipistrellus*	Jul	51	51 - 76	83	9
14	*Pipistrellus pygmaeus*	Jul	59	47 - 75	90	15
15	*Myotis*	Jul	0	0 - 0	0	4
15	*Pipistrellus*	Jul	73	71 - 81.5	90	4
15	*Pipistrellus pipistrellus*	Jul	0	35 - 56	77	10
15	*Pipistrellus pygmaeus*	Jul	35	35 - 58	83	13
2	*Myotis*	Jul	0	0 - 0	0	6
2	*Pipistrellus*	Jun	75	55 - 77	75	1
2	*Pipistrellus*	Jul	74	55 - 77	79	10
2	*Pipistrellus pipistrellus*	Jul	51	51 - 58	65	8
2	*Pipistrellus pygmaeus*	Jun	52	35 - 59	69	2
2	*Pipistrellus pygmaeus*	Jul	35	35 - 59	69	17
2	*Plecotus auritus*	Jul	0	0 - 0	0	2
3	*Myotis*	Jun	35	0 - 0	35	1
3	*Myotis*	Jul	0	0 - 0	35	9
3	*Pipistrellus*	Jun	35	72 - 77.5	69	2
3	*Pipistrellus*	Jul	75	72 - 77.5	81	12
3	*Pipistrellus pipistrellus*	Jul	35	35 - 55	59	15

3	*Pipistrellus pygmaeus*	Jun	59	52 - 69	59	1
3	*Pipistrellus pygmaeus*	Jul	59	52 - 69	79	18
3	*Plecotus auritus*	Jul	0	0	0	1
4	*Myotis*	Jul	0	35 - 59	59	17
4	*Pipistrellus*	Jun	100	87.5 - 97.5	100	1
4	*Pipistrellus*	Jul	95	87.5 - 97.5	100	20
4	*Pipistrellus pipistrellus*	Jun	98	75 - 92.5	98	1
4	*Pipistrellus pipistrellus*	Jul	81	75 - 92.5	97	18
4	*Pipistrellus pygmaeus*	Jun	100	74.5 - 94.5	100	1
4	*Pipistrellus pygmaeus*	Jul	90	74.5 - 94.5	99	22
4	*Plecotus auritus*	Jun	0	0 - 0	0	1
4	*Plecotus auritus*	Jul	0	0 - 0	0	6
5	*Myotis*	Jul	0	0 - 0	0	5
5	*Pipistrellus*	Jun	83	72 - 84	85	2
5	*Pipistrellus*	Jul	79	72 - 84	89	17
5	*Pipistrellus pipistrellus*	Jun	50	43 - 58	65	2
5	*Pipistrellus pipistrellus*	Jul	35	43 - 58	77	16
5	*Pipistrellus pygmaeus*	Jun	74	60 - 76	79	2
5	*Pipistrellus pygmaeus*	Jul	69	60 - 76	84	20
5	*Plecotus auritus*	Jul	0	0 - 0	0	3
6	*Myotis*	Jul	0	0 - 0	0	6
6	*Pipistrellus*	Jun	87	63 - 87.5	87	1
6	*Pipistrellus*	Jul	82	63 - 87.5	92	14

6	*Pipistrellus pipistrellus*	Jun	35	43 - 64	35	1
6	*Pipistrellus pipistrellus*	Jul	51	43 - 64	77	12
6	*Pipistrellus pygmaeus*	Jun	85	55 - 77	85	1
6	*Pipistrellus pygmaeus*	Jul	51	55 - 77	88	19
6	*Plecotus auritus*	Jul	0	0 - 0	0	2
7	*Myotis*	Jul	0	0 - 0	35	6
7	*Pipistrellus*	Jul	69	59 - 82	86	13
7	*Pipistrellus pipistrellus*	Jun	35	35 - 55	35	1
7	*Pipistrellus pipistrellus*	Jul	35	35 - 55	65	14
7	*Pipistrellus pygmaeus*	Jun	65	50 - 72	65	1
7	*Pipistrellus pygmaeus*	Jul	51	50 - 72	79	17
7	*Plecotus auritus*	Jul	0	0 - 0	0	2
8	*Myotis*	Jun	0	0 - 0	0	1
8	*Myotis*	Jul	0	0 - 0	51	8
8	*Pipistrellus*	Jul	77	62 - 81	87	15
8	*Pipistrellus pipistrellus*	Jun	51	43 - 64	51	1
8	*Pipistrellus pipistrellus*	Jul	35	43 - 64	73	17
8	*Pipistrellus pygmaeus*	Jun	69	59 - 73	69	1
8	*Pipistrellus pygmaeus*	Jul	65	59 - 73	79	18
9	*Myotis*	Jul	0	35 - 35	51	7
9	*Pipistrellus*	Jul	87	79.5 - 90	94	10
9	*Pipistrellus pipistrellus*	Jun	35	43 - 72	35	1

9	*Pipistrellus pipistrellus*	Jul	65	43 - 72	83	11
9	*Pipistrellus pygmaeus*	Jun	83	66 - 80	83	1
9	*Pipistrellus pygmaeus*	Jul	67	66 - 80	91	18
9	*Plecotus auritus*	Jul	0	0	0	1

PER SITE

In this 'Per Site' section of the analysis, all values are taken from across all of the detectors to provide site-wide averages/medians.

Table 7. Summary table showing the number of nights recorded bat activity fell into each activity band for each species.

Species/Species Group	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
Myotis	0	0	6	13	66
Pipistrellus	78	50	19	9	8
Pipistrellus pipistrellus	14	30	36	36	52
Pipistrellus pygmaeus	34	66	47	36	53
Plecotus auritus	0	0	0	0	19

Table 8. Summary table showing key metrics for each species recorded.

Species/Species Group	Median Percentile	95% CIs	Max Percentile	Nights Recorded
Myotis	0	35 - 59	59	85
Pipistrellus	78	87.5 - 97.5	100	164
Pipistrellus pipistrellus	35	75 - 92.5	98	168
Pipistrellus pygmaeus	59	74.5 - 94.5	100	236
Plecotus auritus	0	0 - 0	0	19

###Figures

Figure 4. The activity level (percentile) of bats recorded across each night of the bat survey for the **entire site**.

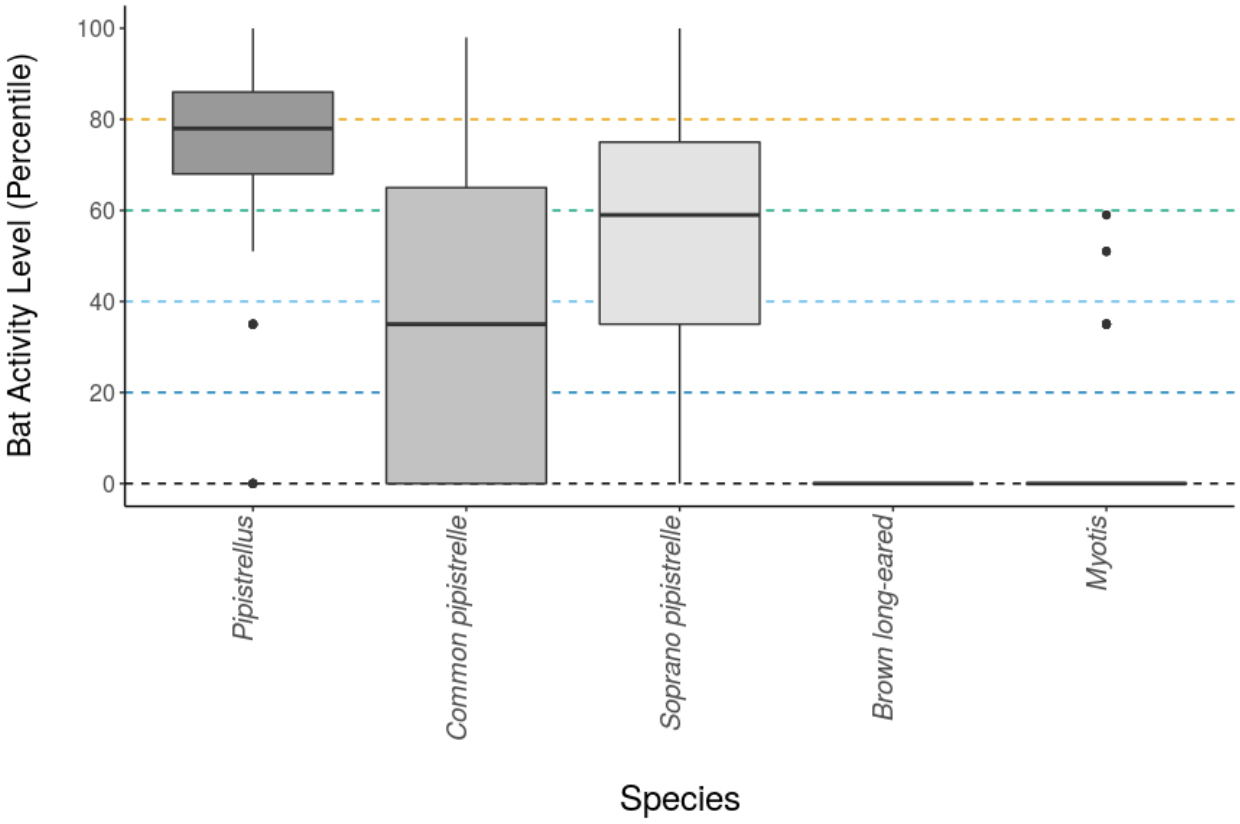


Figure 5. The median activity levels of bats recorded across all detectors each night.

PER SITE, PER MONTH

Table 9. Summary table showing the number of nights recorded bat activity fell into each activity band for each species during each month.

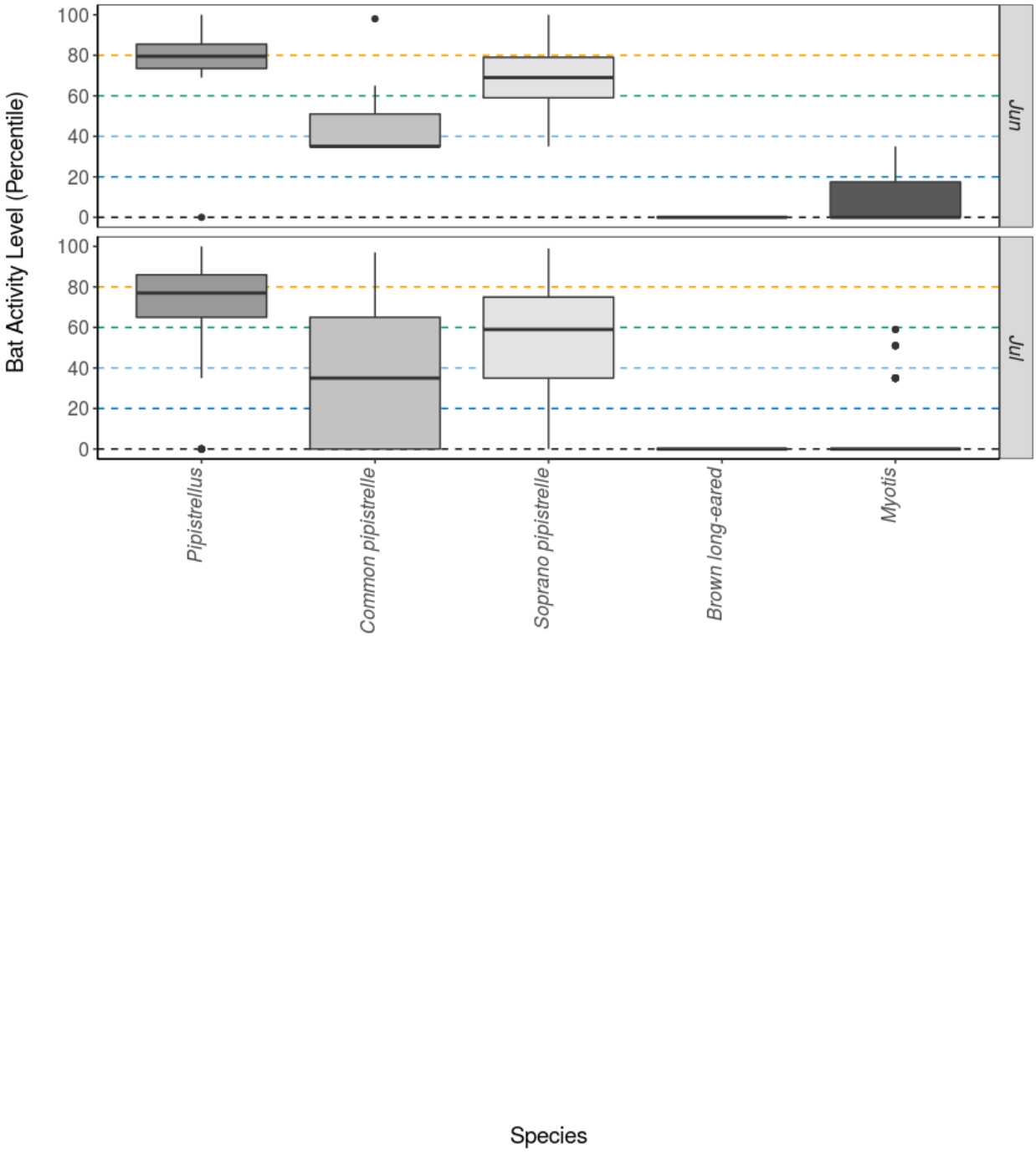
Species/Species Group	Month	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
Myotis	Jun	0	0	0	1	2
Myotis	Jul	0	0	6	12	64
Pipistrellus	Jun	4	3	0	0	1
Pipistrellus	Jul	74	47	19	9	7
Pipistrellus pipistrellus	Jun	1	1	1	6	0
Pipistrellus pipistrellus	Jul	13	29	35	30	52
Pipistrellus pygmaeus	Jun	3	5	4	1	0
Pipistrellus pygmaeus	Jul	31	61	43	35	53
Plecotus auritus	Jun	0	0	0	0	1
Plecotus auritus	Jul	0	0	0	0	18

Table 10. Summary table showing key metrics for each species recorded per month.

Species/Species Group	Month	Median Percentile	95% CIs	Max Percentile	Nights Recorded
Myotis	Jun	0	0 - 0	35	3
Myotis	Jul	0	35 - 59	59	82
Pipistrellus	Jun	80	87.5 - 97.5	100	8
Pipistrellus	Jul	77	87.5 - 97.5	100	156
Pipistrellus pipistrellus	Jun	35	75 - 92.5	98	9
Pipistrellus pipistrellus	Jul	35	75 - 92.5	97	159
Pipistrellus pygmaeus	Jun	69	74.5 - 94.5	100	13
Pipistrellus pygmaeus	Jul	59	74.5 - 94.5	99	223
Plecotus auritus	Jun	0	0 - 0	0	1
Plecotus auritus	Jul	0	0 - 0	0	18

###Figures

Figure 6. The activity level (percentile) of bats recorded across each night of the bat survey for the entire site, split between months.



PART 2: Nightly Analysis

ENTIRE SURVEY PERIOD

Sunrise and Sunset Times

Table 11. The times of sunset and sunrise the following morning for surveys beginning on the date shown.

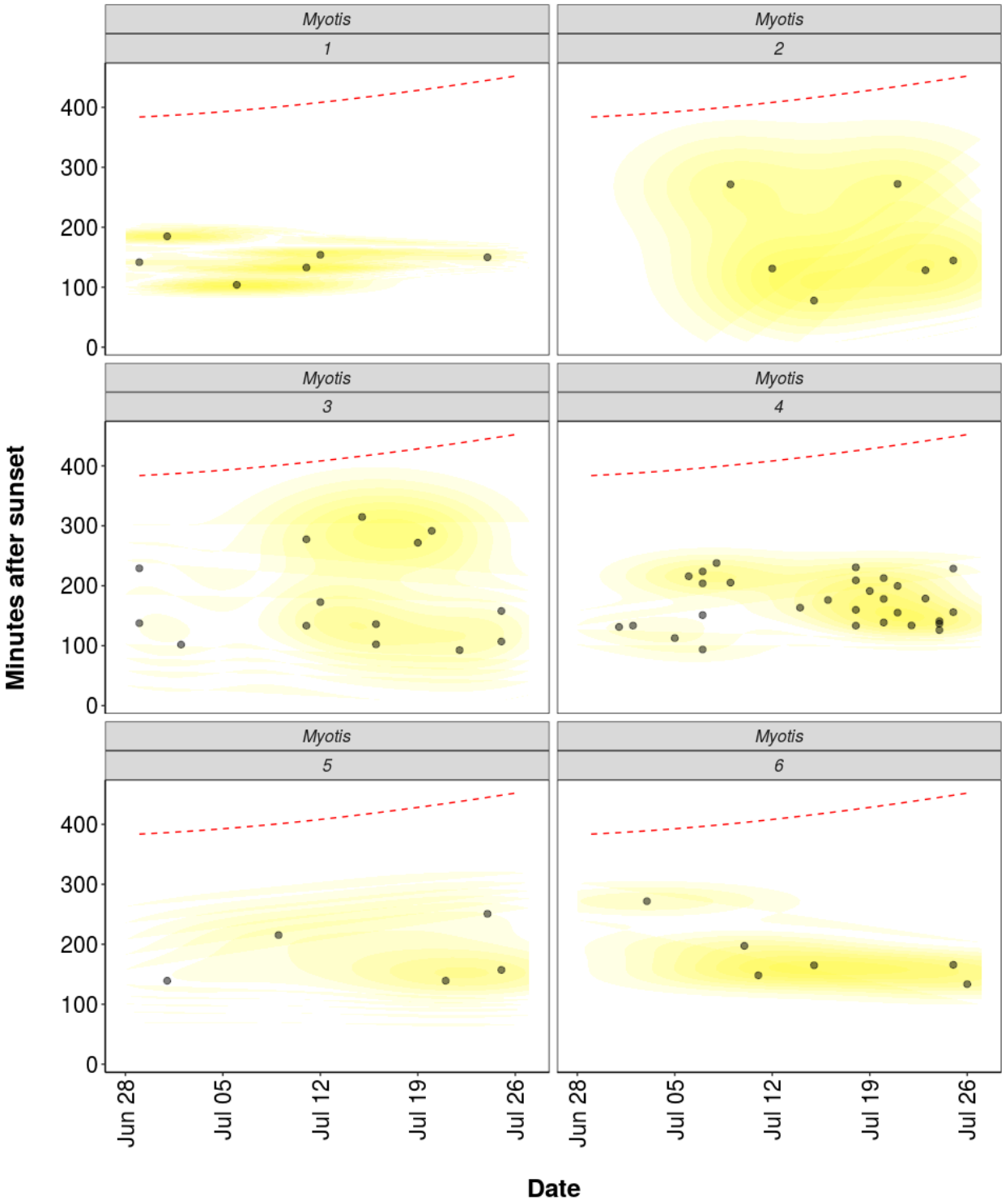
Night (y-m-d)	Sunset (hh:mm)	Sunrise (hh:mm)	Night Length (hours)
2021-06-29	22:13	04:37	6.4
2021-06-30	22:13	04:38	6.4
2021-07-01	22:13	04:39	6.4
2021-07-02	22:12	04:40	6.5
2021-07-03	22:12	04:41	6.5
2021-07-04	22:11	04:42	6.5
2021-07-05	22:10	04:43	6.5
2021-07-06	22:09	04:44	6.6
2021-07-07	22:09	04:45	6.6
2021-07-08	22:08	04:46	6.6
2021-07-09	22:07	04:48	6.7
2021-07-10	22:06	04:49	6.7
2021-07-11	22:05	04:50	6.8
2021-07-12	22:04	04:52	6.8
2021-07-13	22:02	04:53	6.8
2021-07-14	22:01	04:55	6.9
2021-07-15	22:00	04:56	6.9
2021-07-16	21:59	04:58	7.0
2021-07-17	21:57	04:59	7.0
2021-07-18	21:56	05:01	7.1
2021-07-19	21:54	05:03	7.1
2021-07-20	21:53	05:04	7.2
2021-07-21	21:51	05:06	7.2
2021-07-22	21:50	05:08	7.3
2021-07-23	21:48	05:10	7.4
2021-07-24	21:46	05:11	7.4
2021-07-25	21:45	05:13	7.5

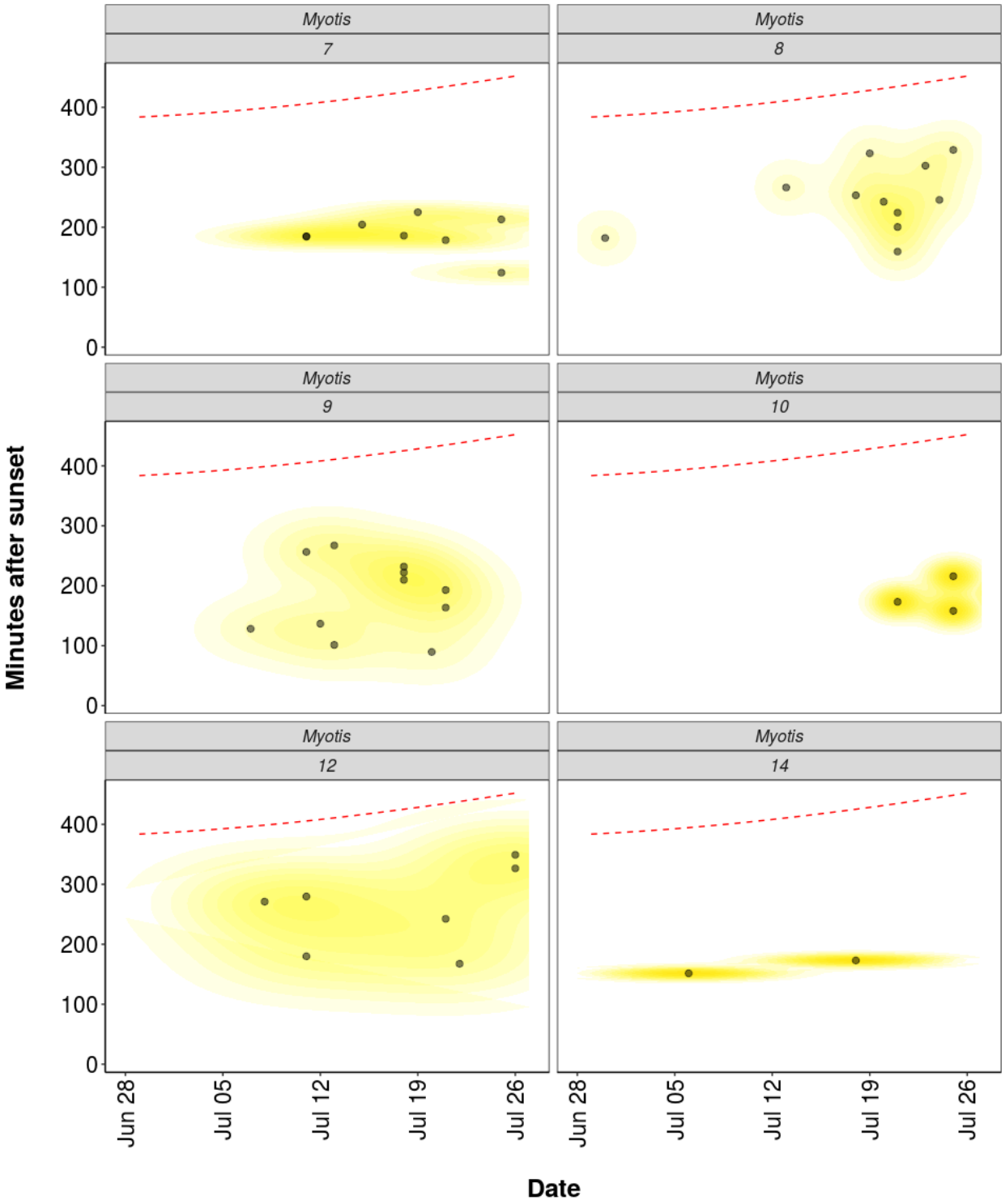
2021-07-26	21:43	05:15	7.5

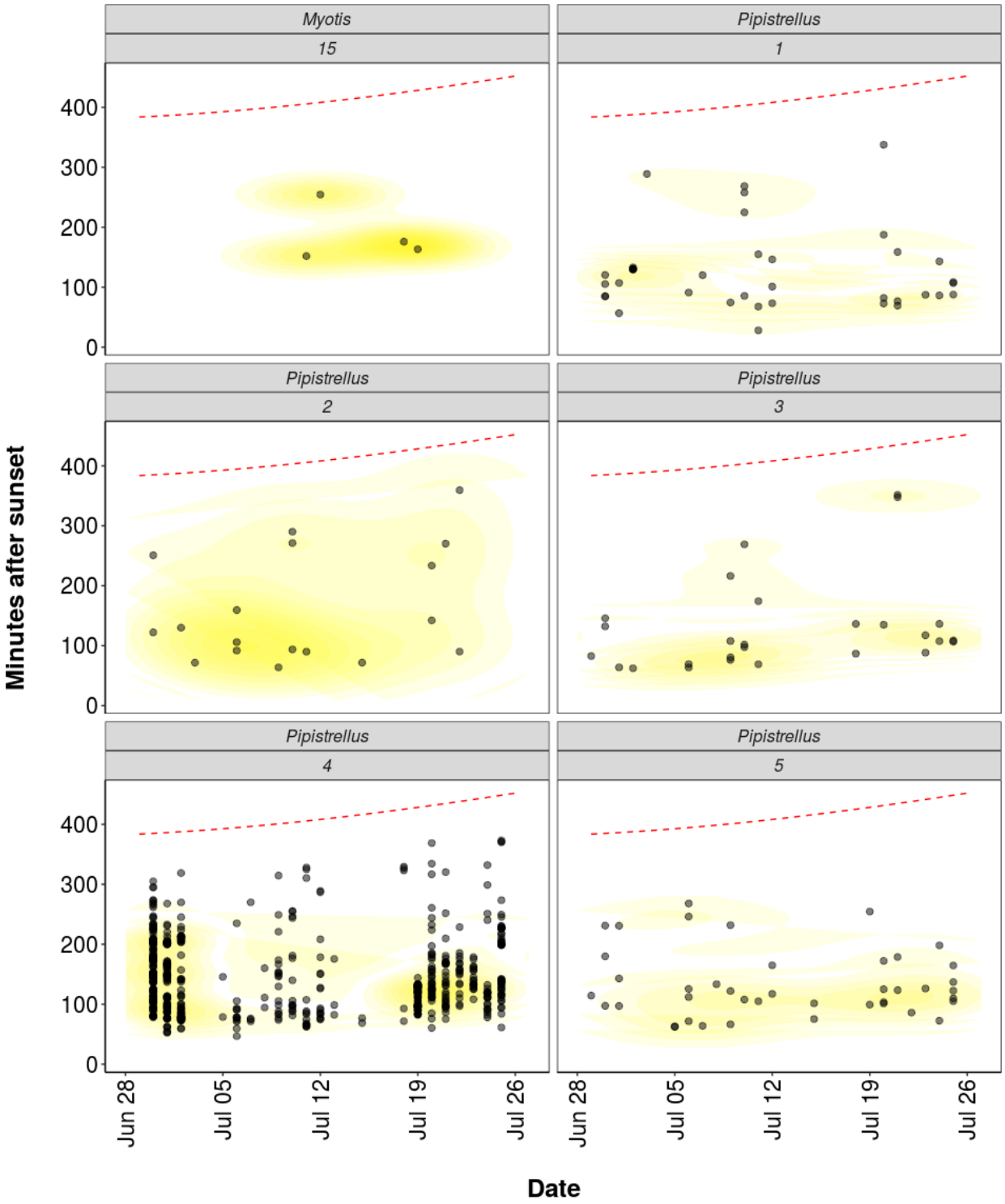
Distribution of Bat Activity Across the Night through Time

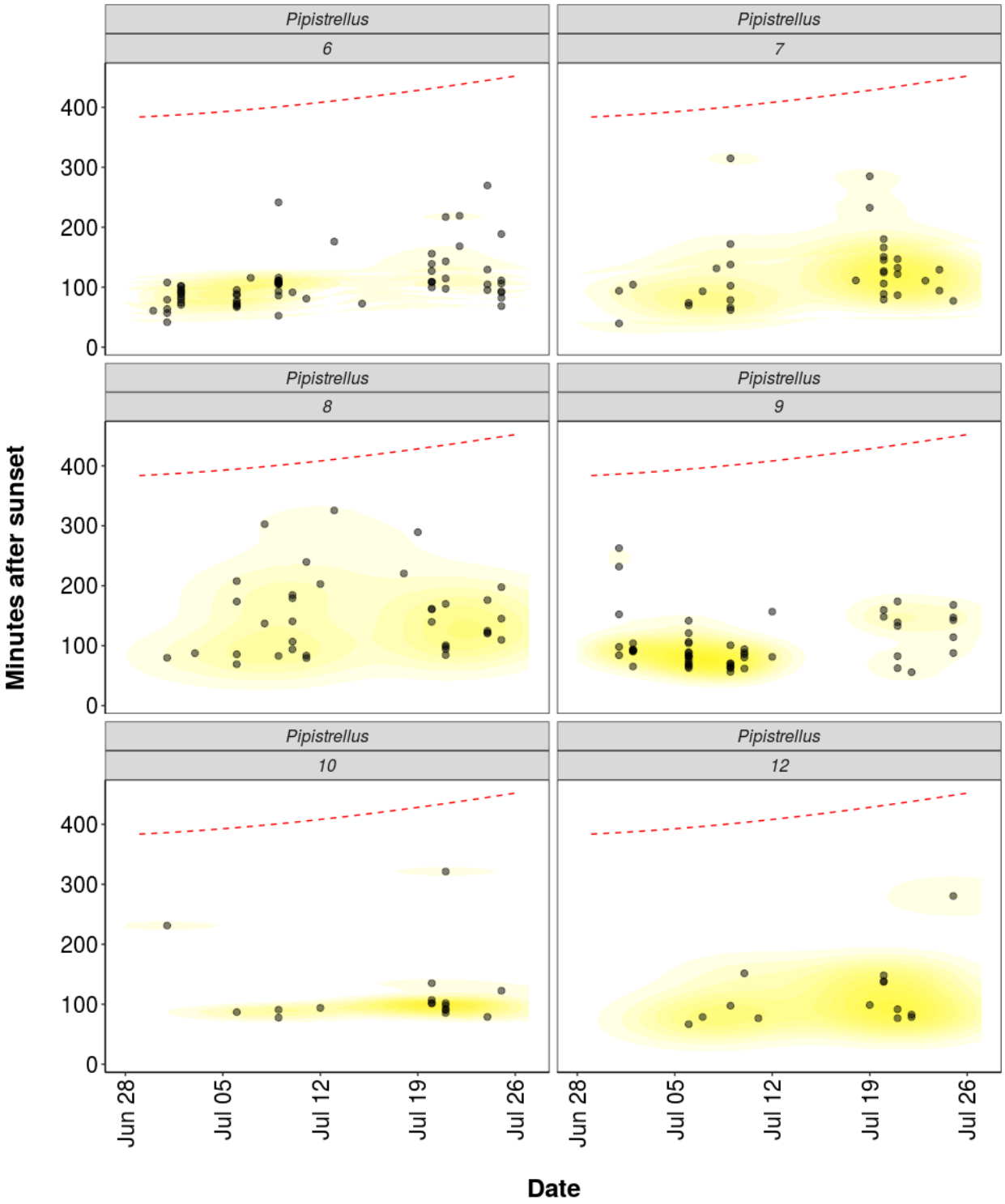
Per Detector

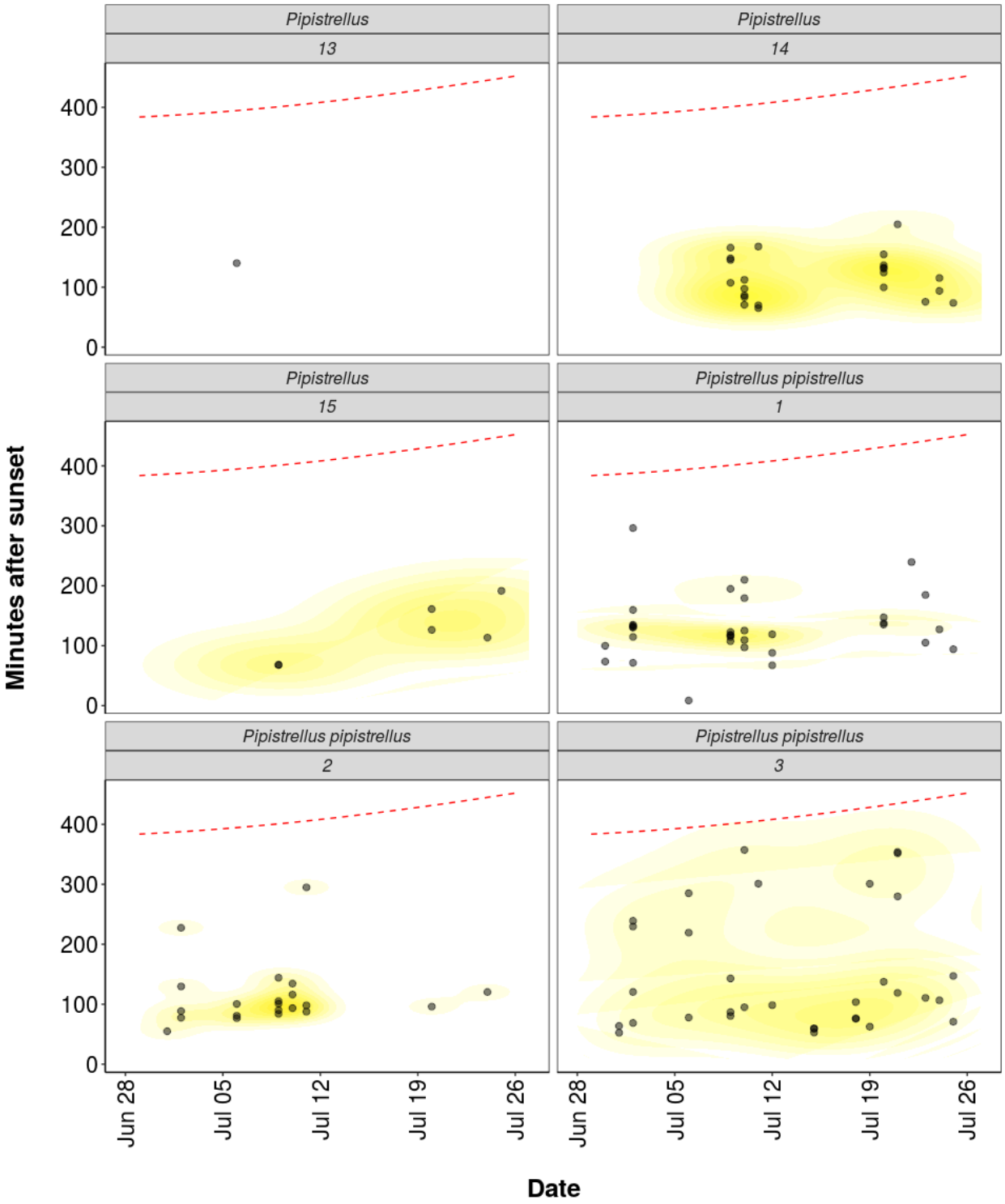
Figure 7. Timing of bat calls plotted as minutes before/after sunset, whereby 0 on the y axis represents sunset. Sunrise throughout the survey period is depicted as the red dashed line. Colours indicate kernel densities, with darkest colours showing peaks of activity. These colours are comparative only within each plot, and do not account for overall activity.

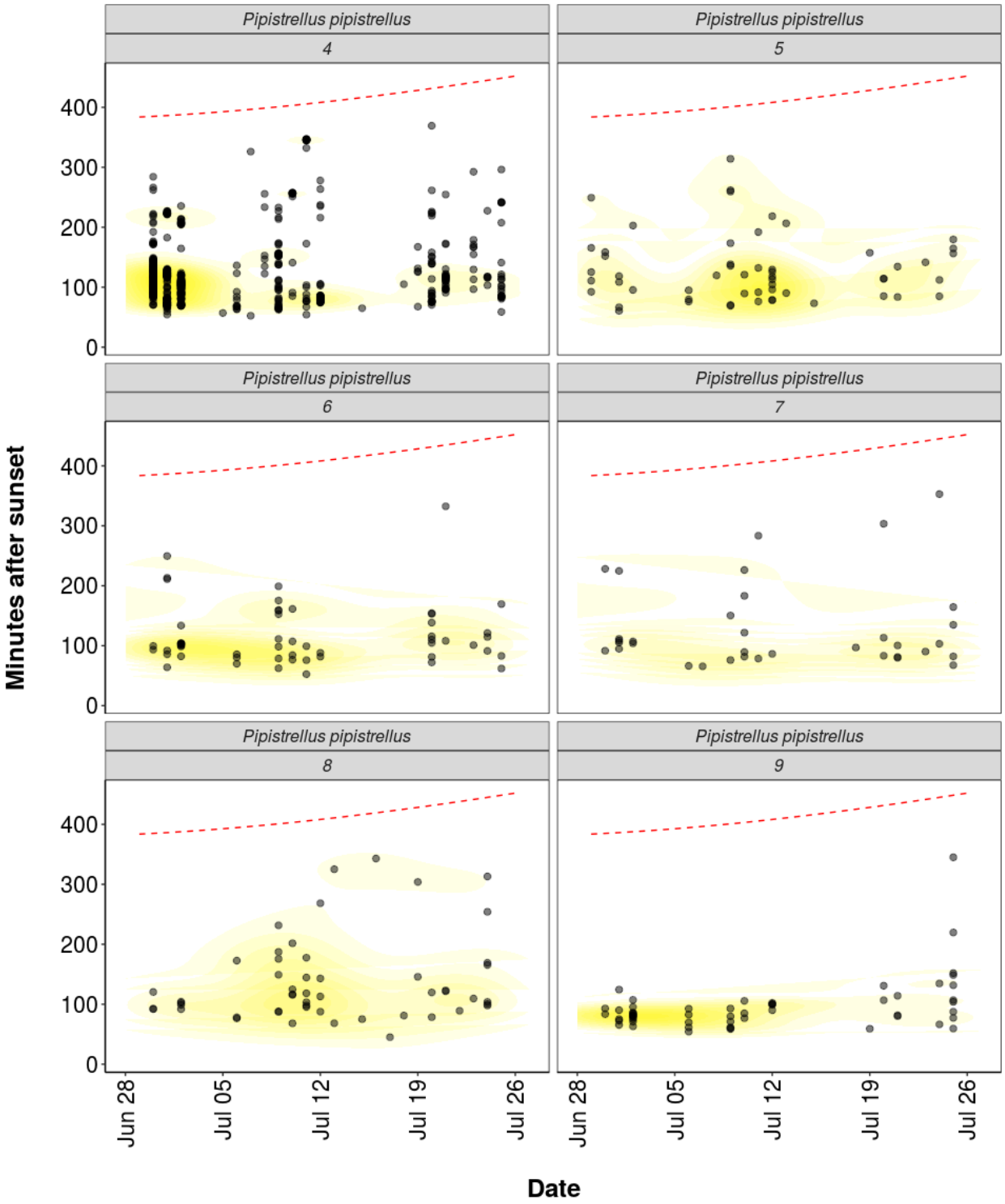

Myotis
1
Myotis
2
Myotis
3
Myotis
4
Myotis
5
Myotis
6
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date

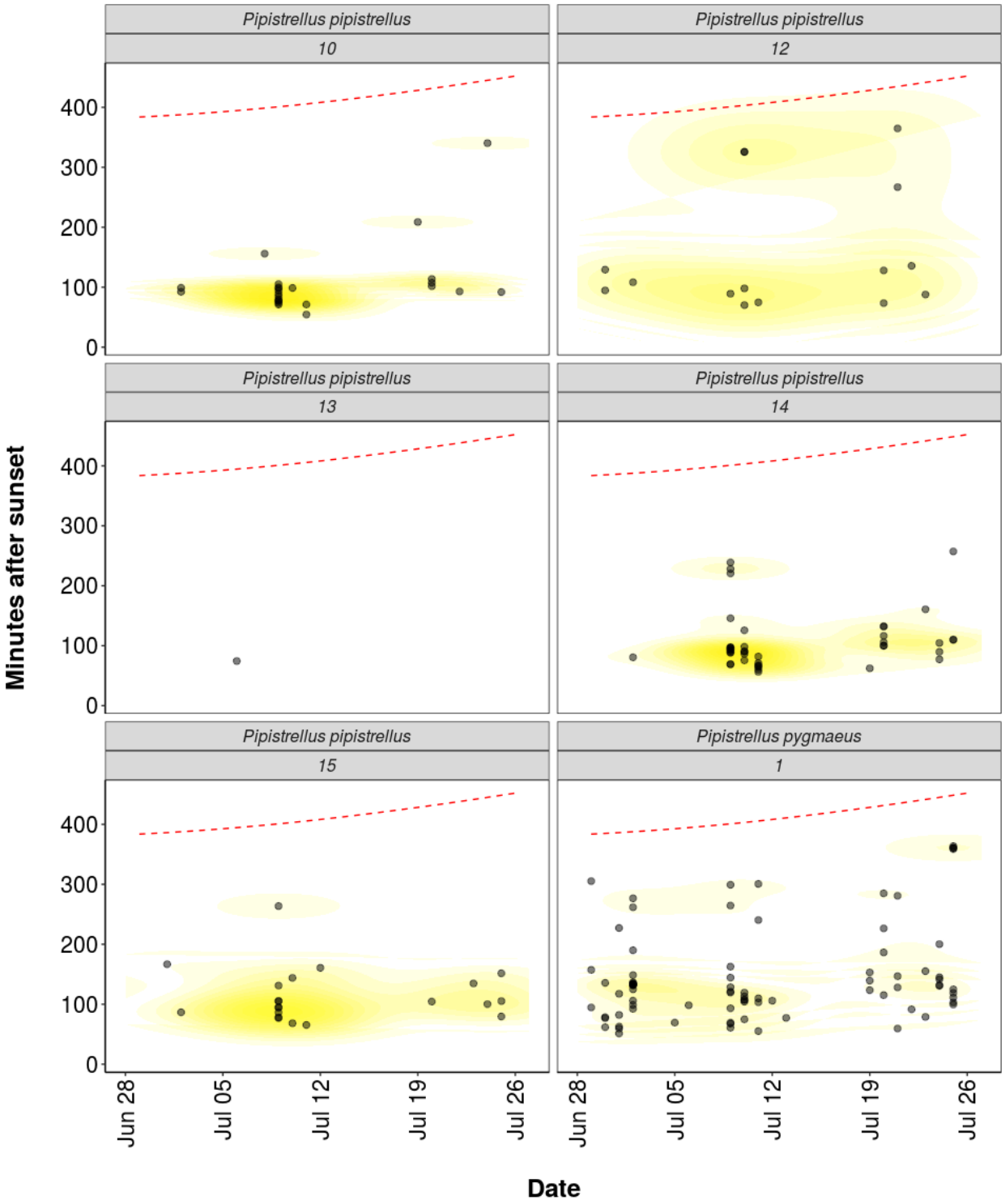

Myotis
7
Myotis
8
Myotis
9
Myotis
10
Myotis
12
Myotis
14
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date

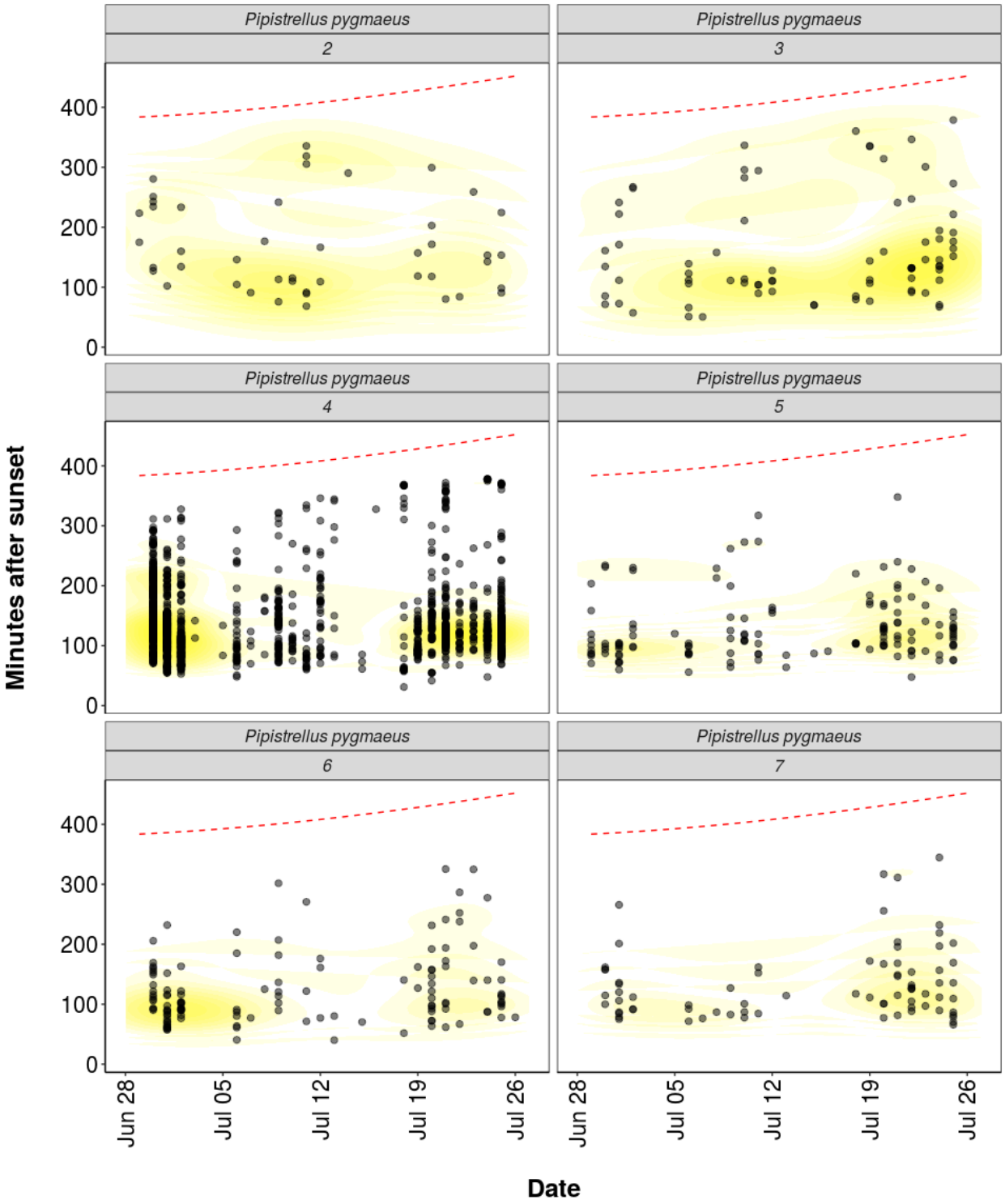

Myotis
15
Pipistrellus
1
Pipistrellus
2
Pipistrellus
3
Pipistrellus
4
Pipistrellus
5
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date

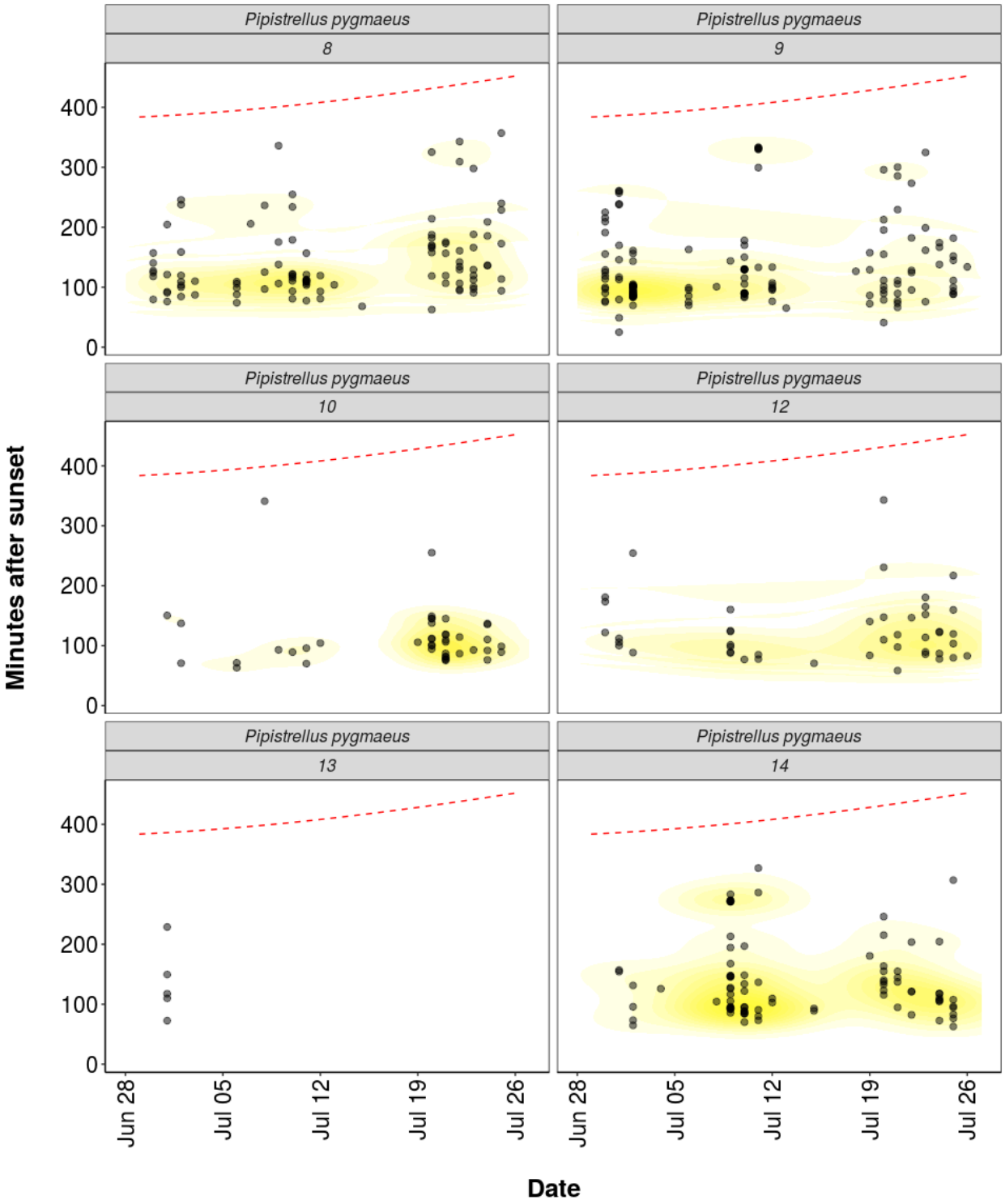

Pipistrellus
6
7
8
9
10
12
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date

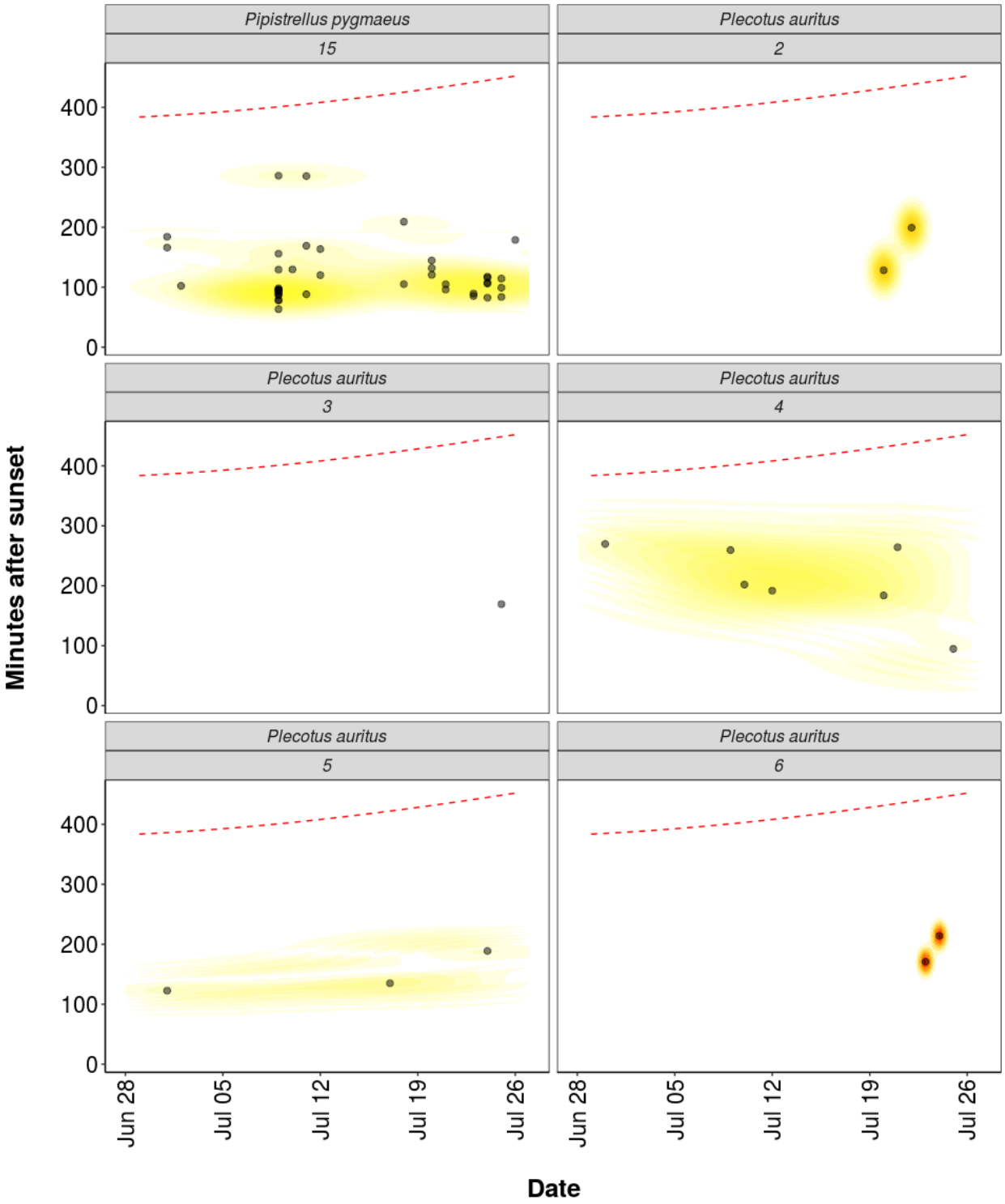

Pipistrellus
13
Pipistrellus
14
Pipistrellus
15
Pipistrellus pipistrellus
1
Pipistrellus pipistrellus
2
Pipistrellus pipistrellus
3
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date

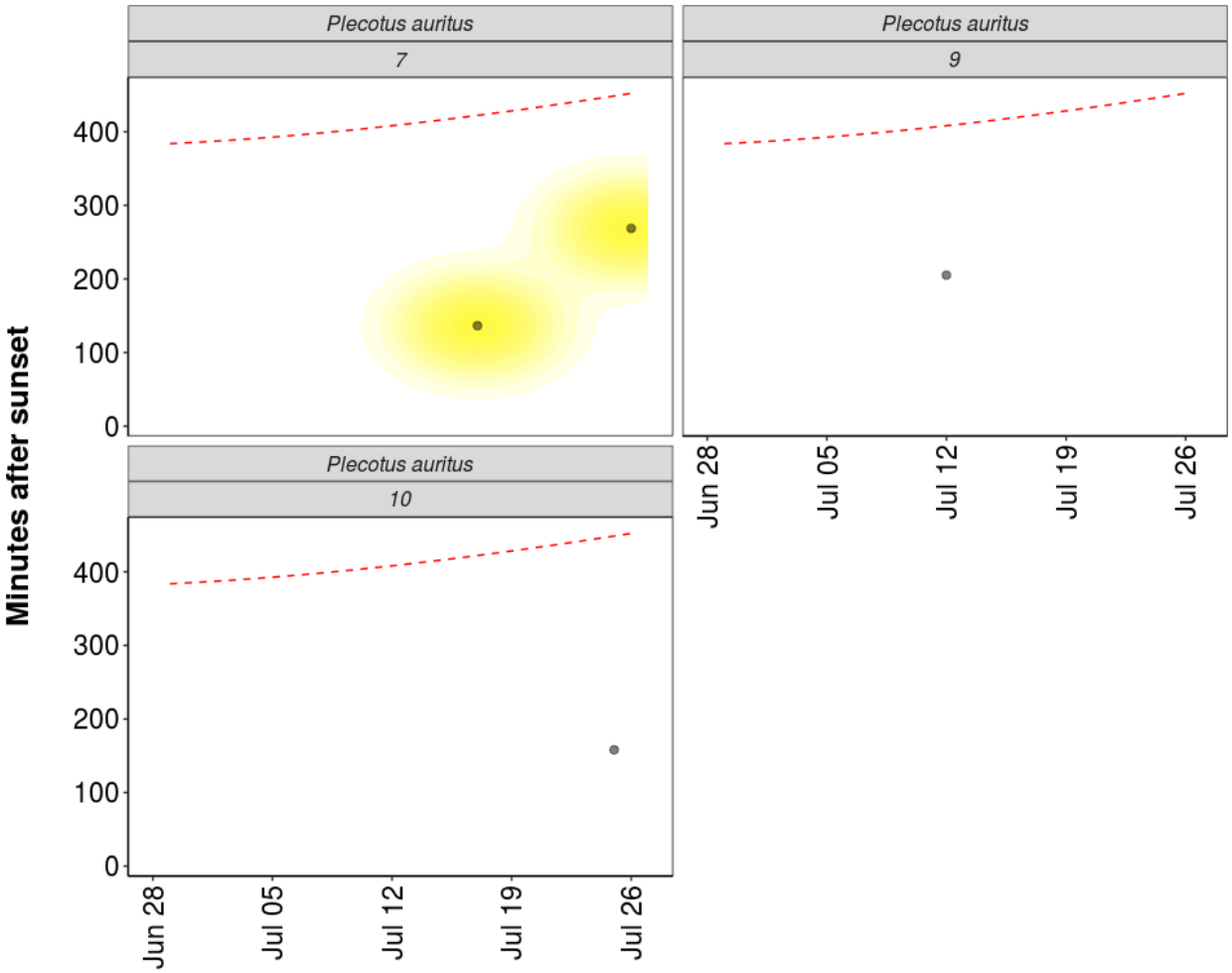

Pipistrellus pipistrellus
4
5
6
7
8
9
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date


Pipistrellus pipistrellus
10
Pipistrellus pipistrellus
12
Pipistrellus pipistrellus
13
Pipistrellus pipistrellus
14
Pipistrellus pipistrellus
15
Pipistrellus pygmaeus
1
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date


Pipistrellus pygmaeus
2
3
4
5
6
7
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date


Pipistrellus pygmaeus
8
9
10
12
13
14
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date


Pipistrellus pygmaeus
15
Plecotus auritus
2
Plecotus auritus
3
Plecotus auritus
4
Plecotus auritus
5
Plecotus auritus
6
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date


Plecotus auritus
7
Plecotus auritus
9
Plecotus auritus
10
Minutes after sunset
0
100
200
300
400
Jun 28
Jul 05
Jul 12
Jul 19
Jul 26
Date

Roost Emergence Time and Bat Observation

Based on: *Russ, Jon. 2012. British Bat Calls a Guide to species Identification. Pelagic Publishing.*

For more information see https://rbats-blog.updog.co/2018/05/29/bat-emergence/

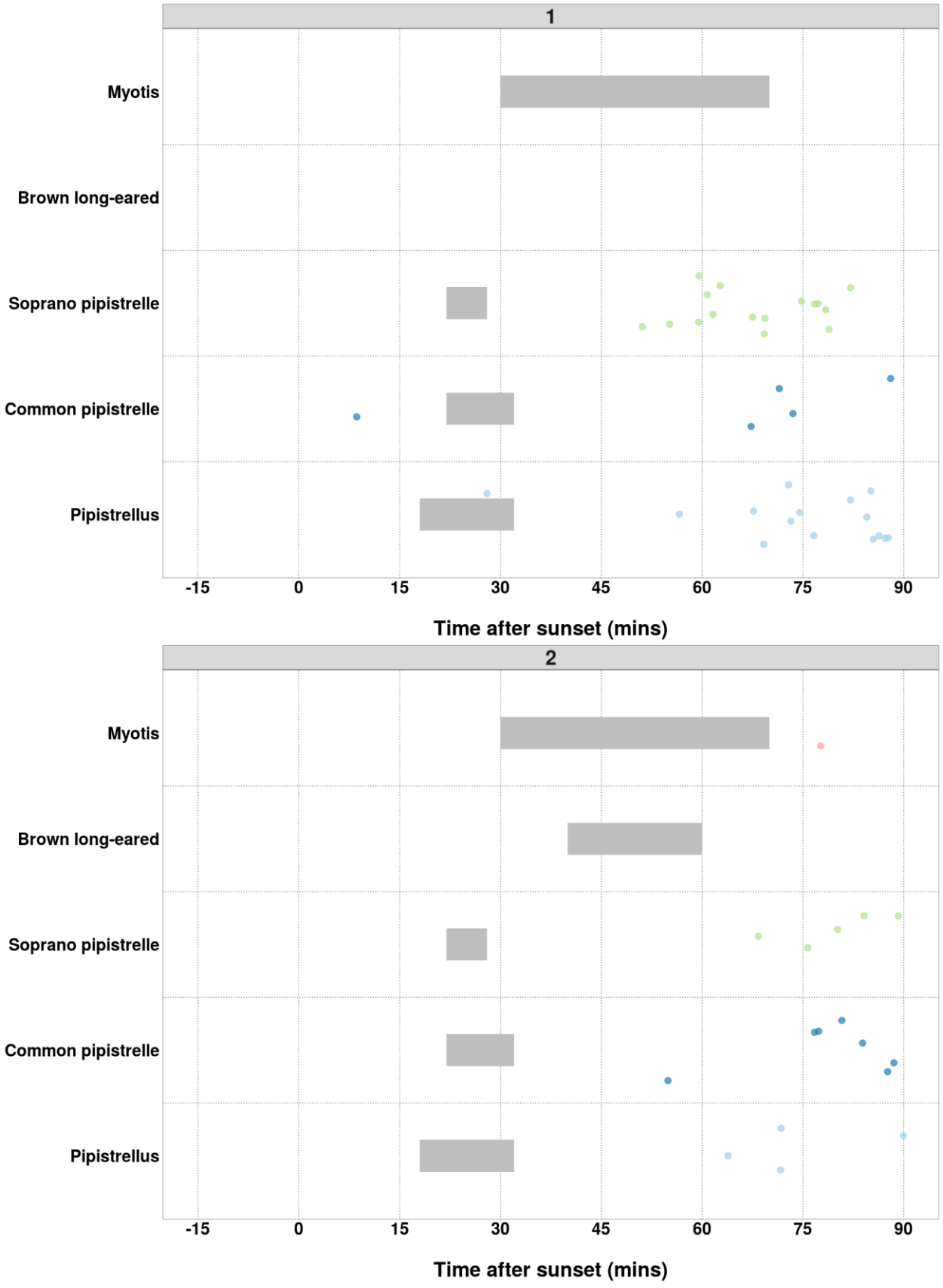
Bat Passes Potentially Indicating Close Proximity to a Roost (Russ 2012) - Table

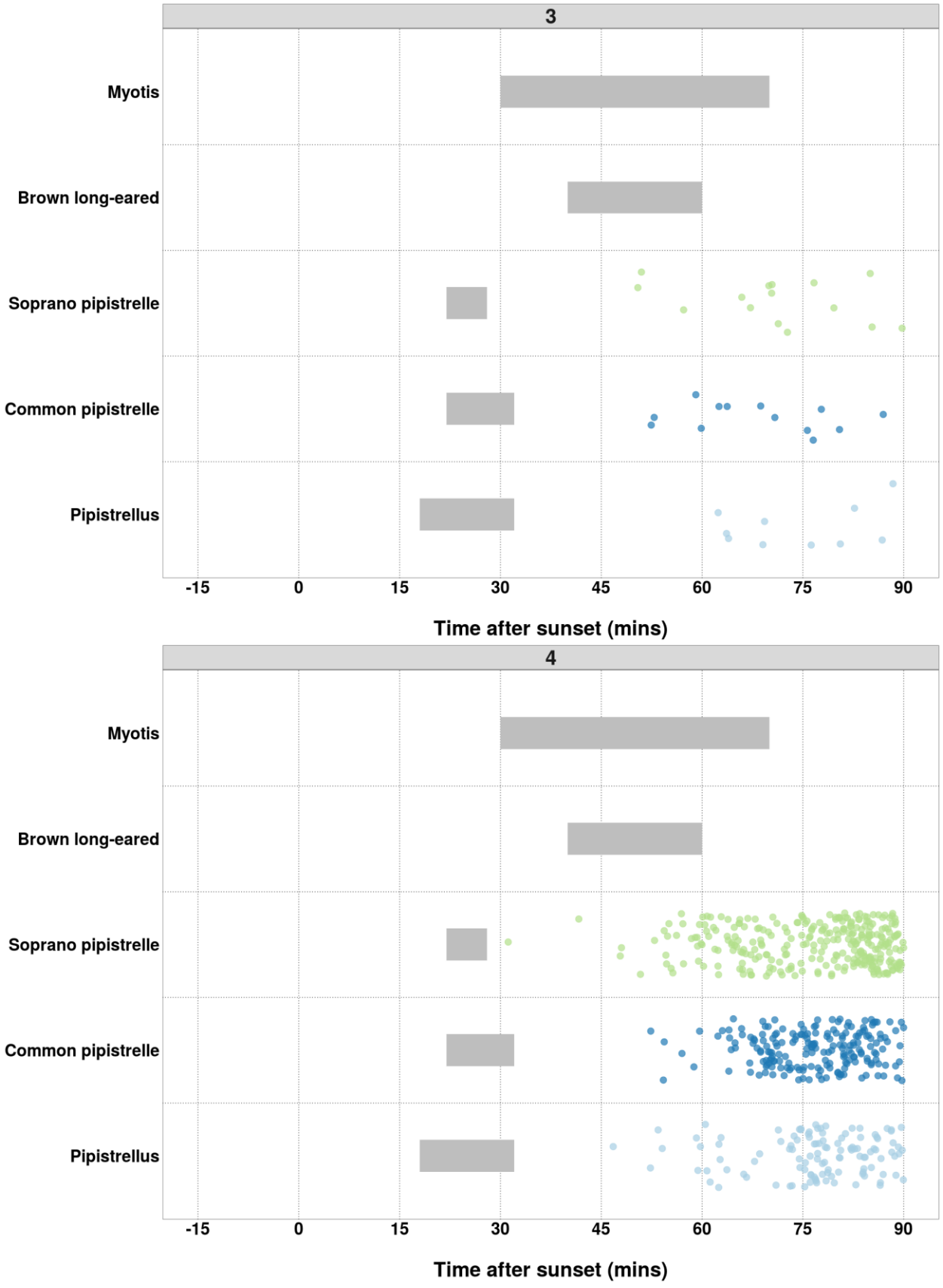
Table 12. Number of bat calls recorded before the upper time of the species-specific emergence time range, and which therefore may potentially indicate the presence of a nearby roost.

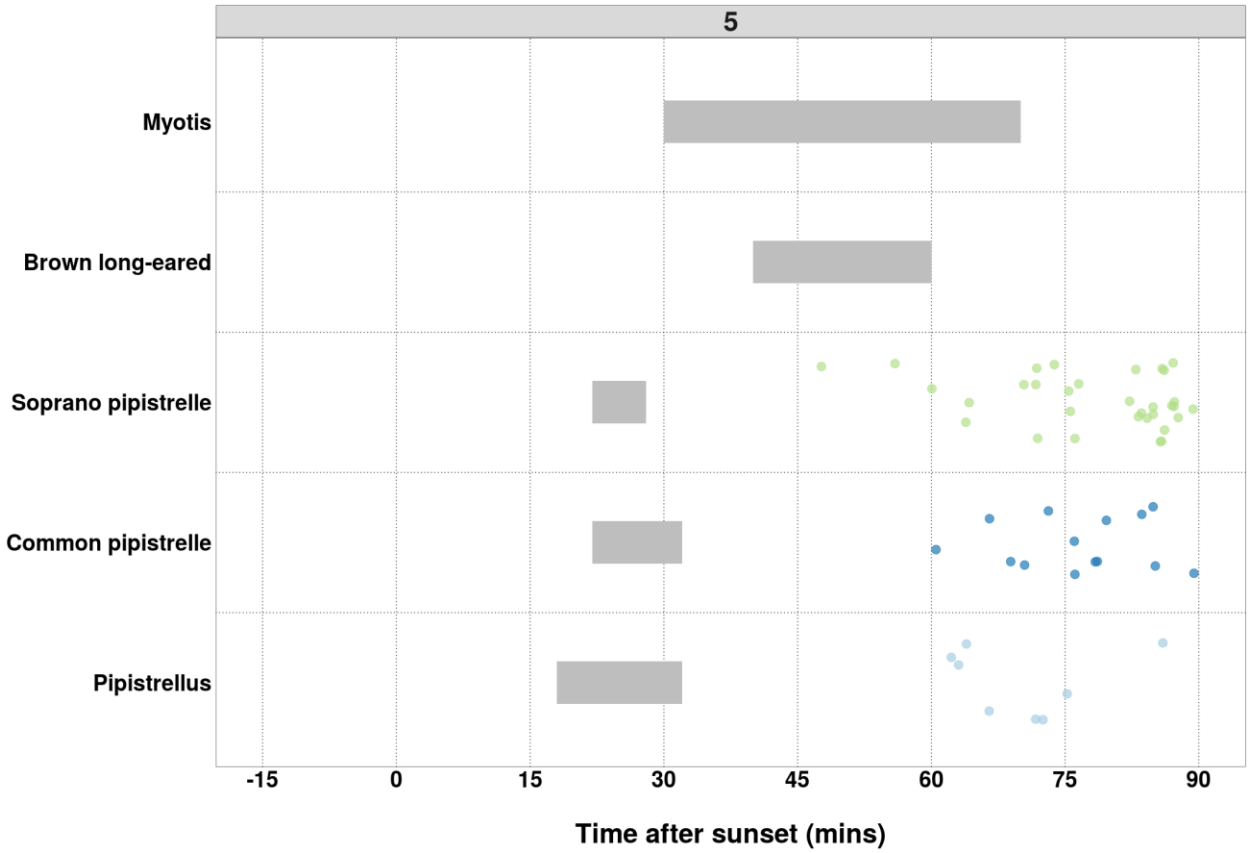
Species	Detector ID	2021-07-01	2021-07-06	2021-07-11
Pipistrellus	1	0	0	1
Common pipistrelle	1	0	1	0
Soprano pipistrelle	9	1	0	0

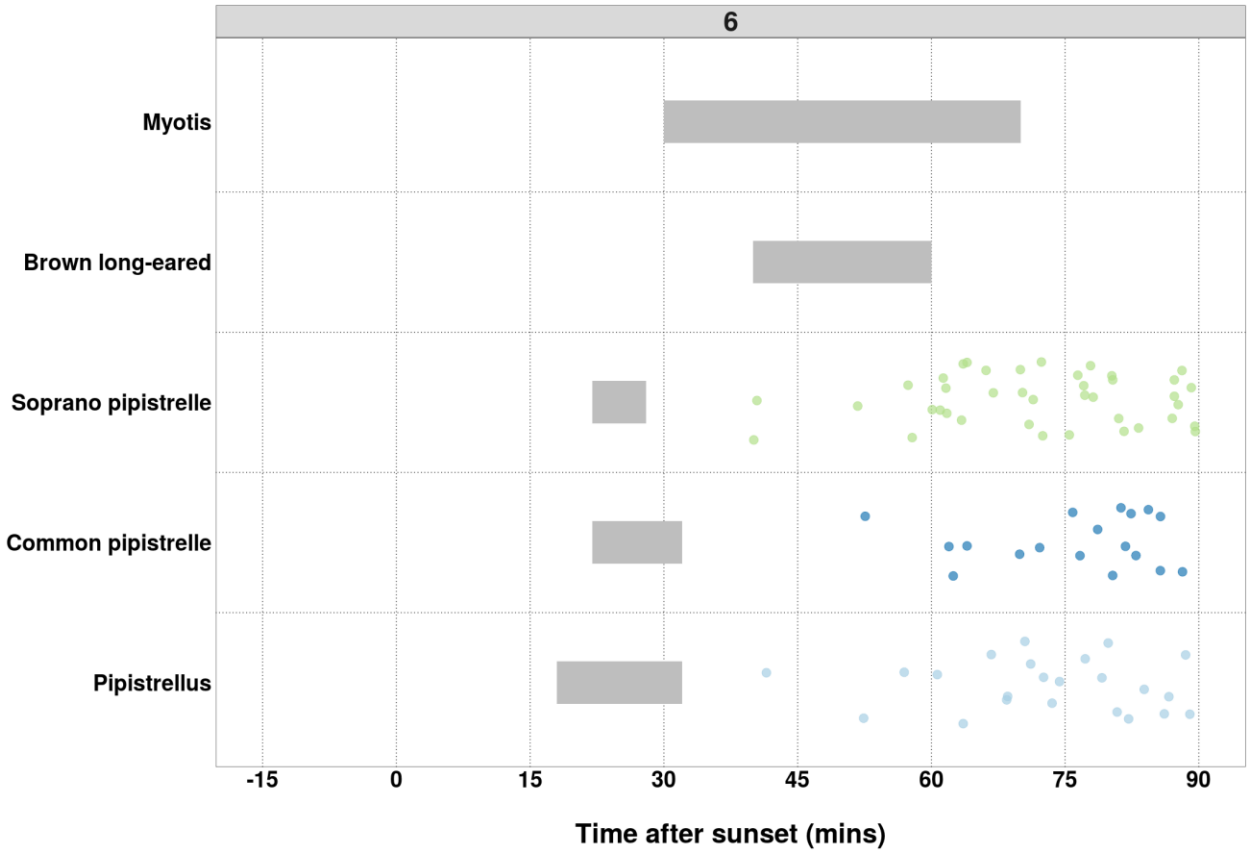
Bat Passes Potentially Indicating Close Proximity to a Roost (Russ 2012) - Figures

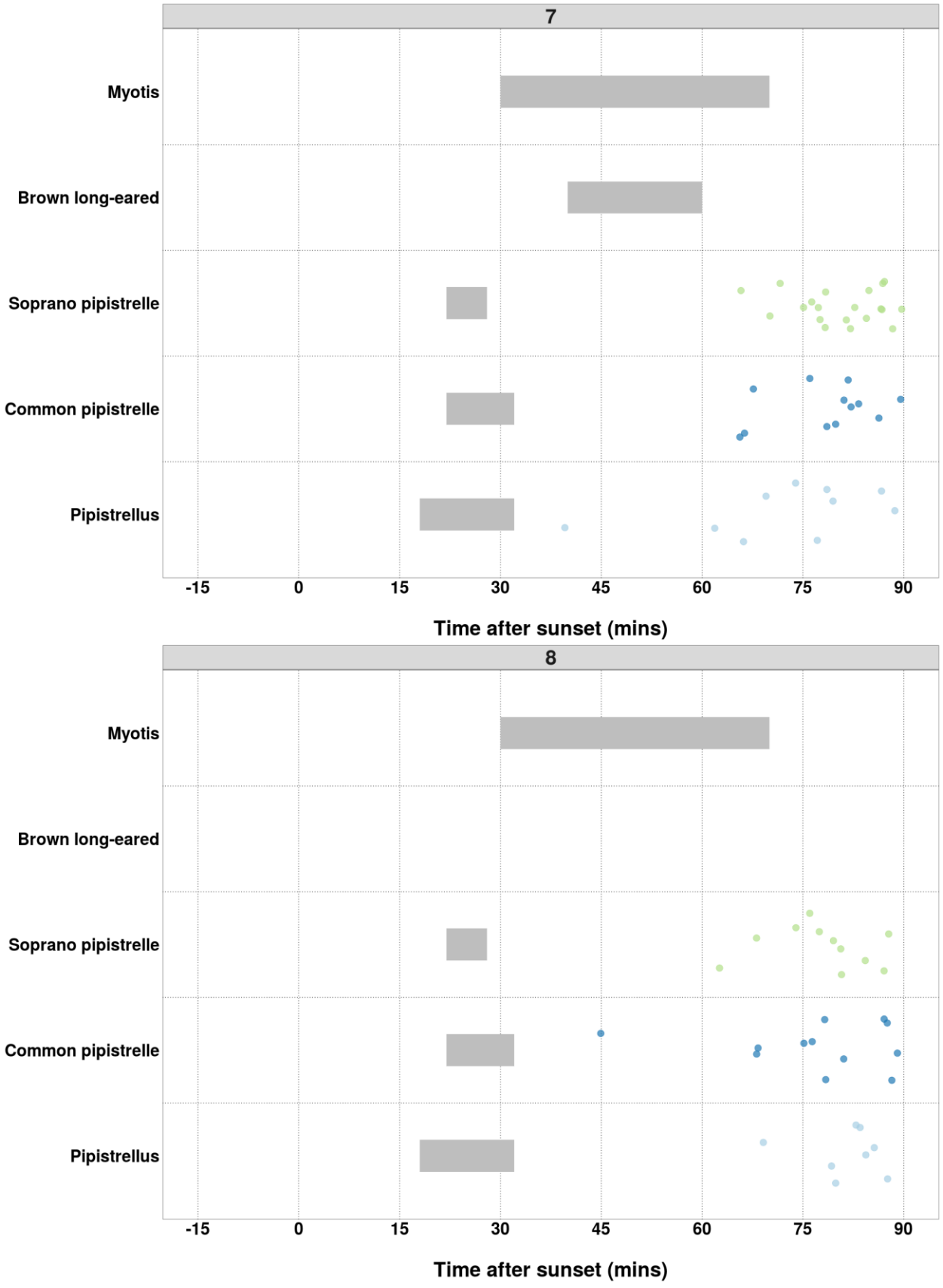
Figure 8. Time from 15 minutes before to 90 minutes after sunset. Species-specific emergence time ranges are shown as grey bars. Bat passes overlapping species-specific grey bars, or occuring earlier than this time range, may potentially indicate the presence of a nearby roost.

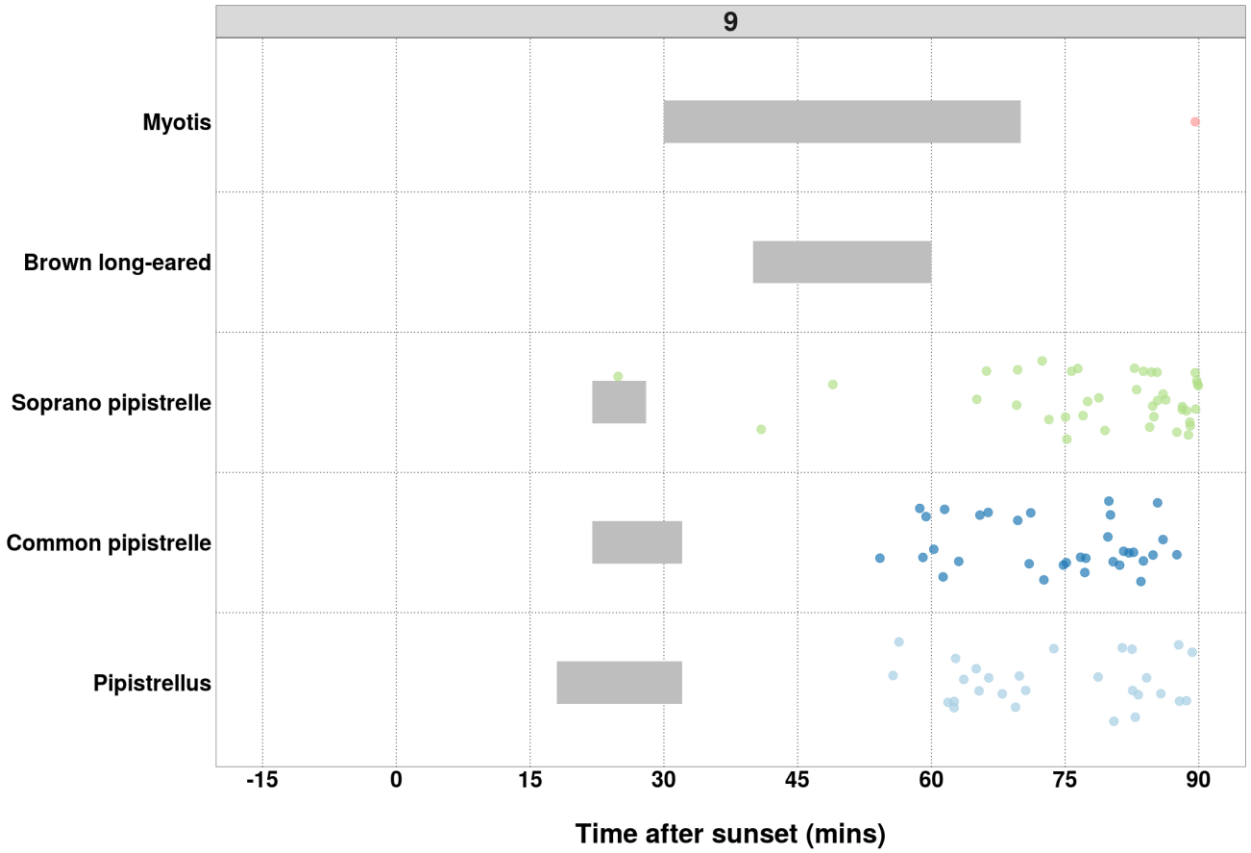

1
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
2
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

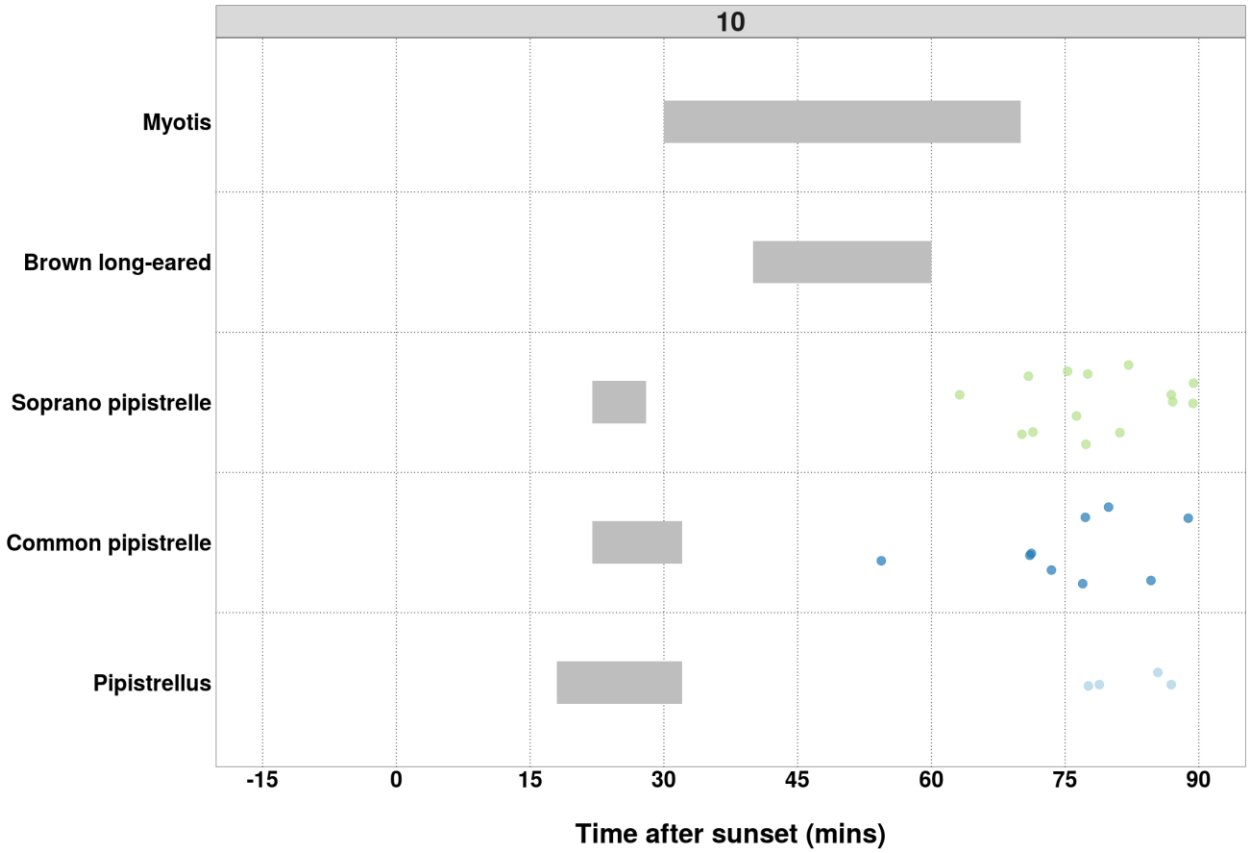

3
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
4
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

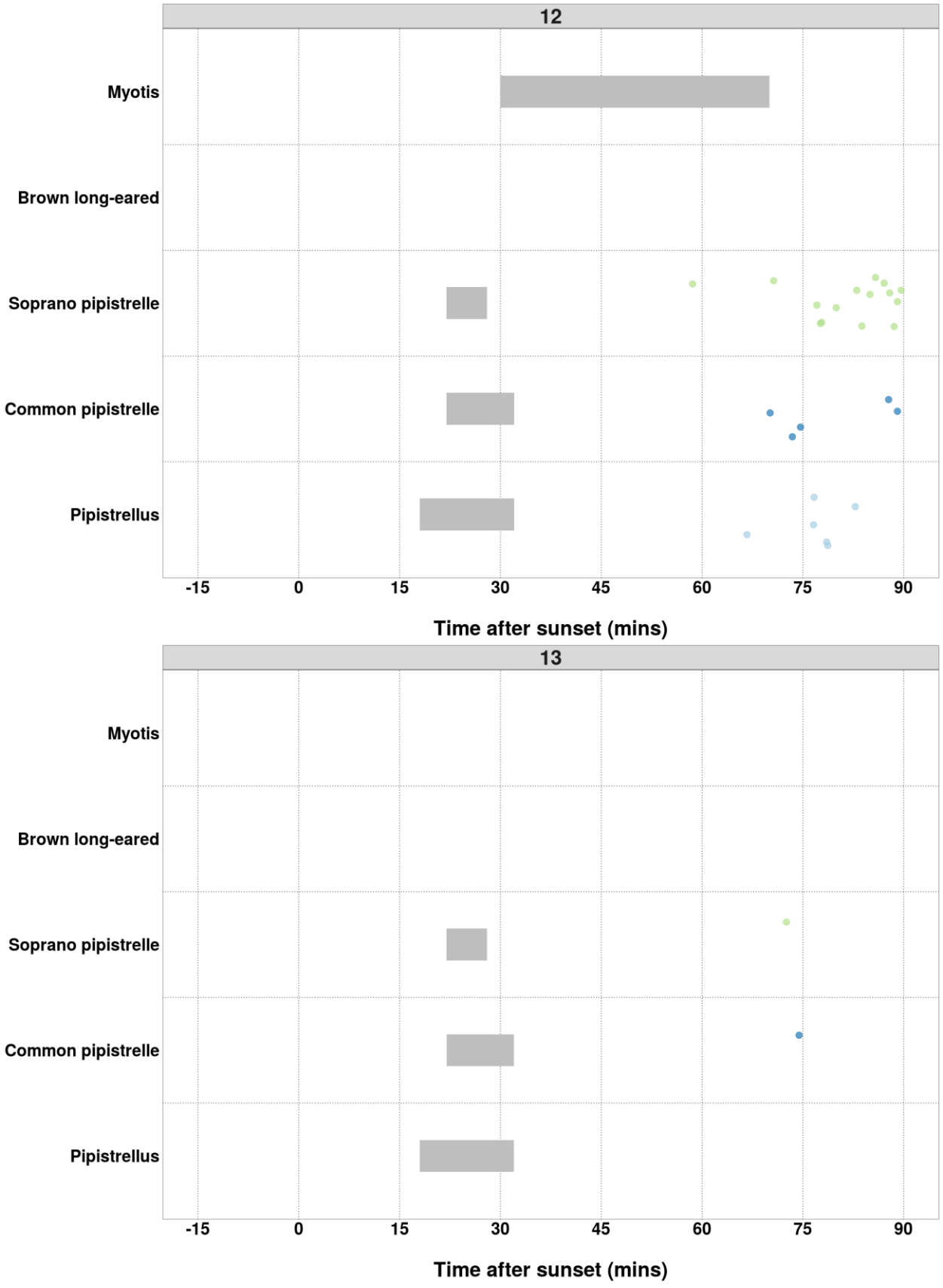

5
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

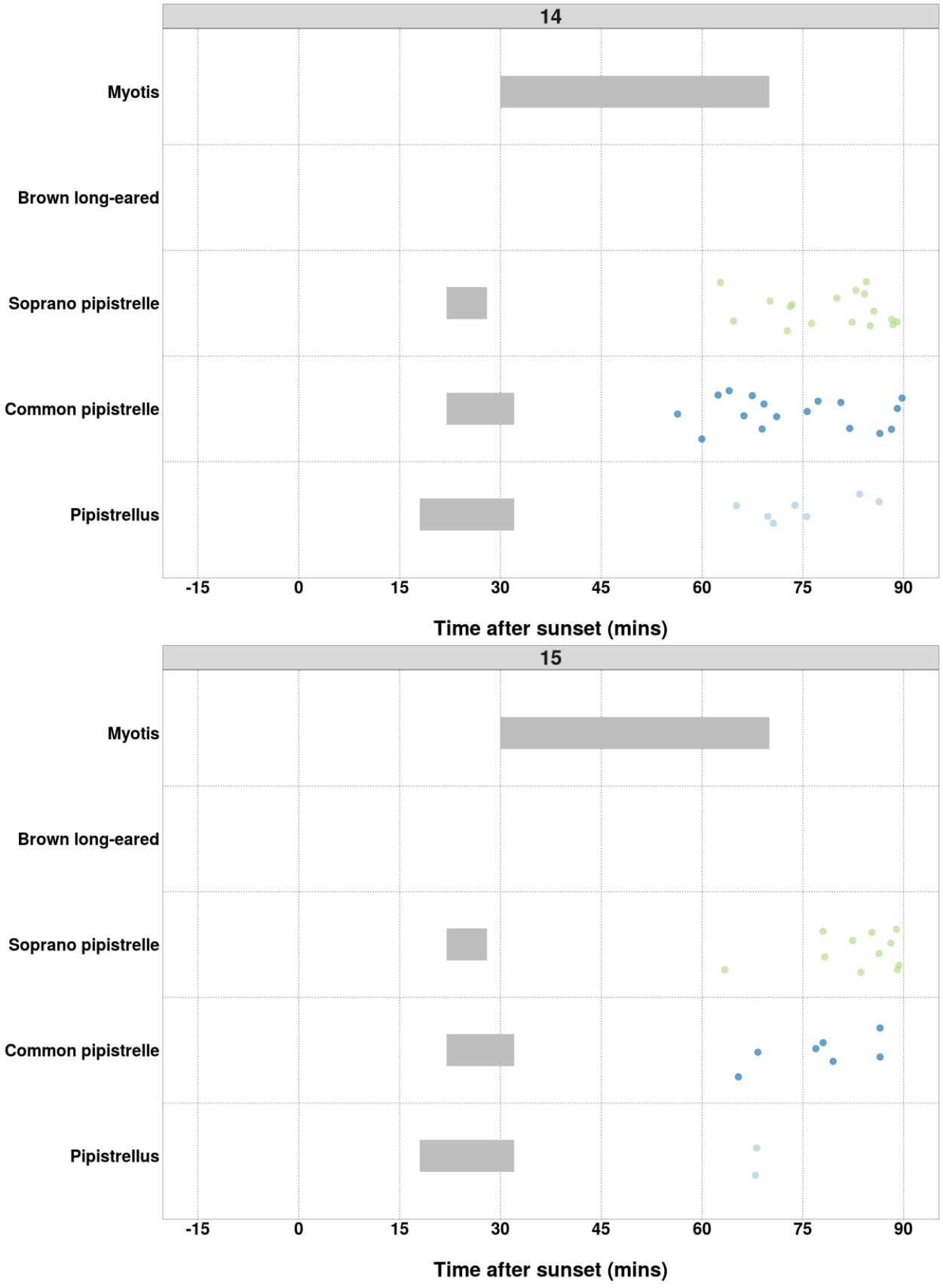

6
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


7
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
8
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


9
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


10
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


12
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
13
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)


14
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)
15
Myotis
Brown long-eared
Soprano pipistrelle
Common pipistrelle
Pipistrellus
-15
0
15
30
45
60
75
90
Time after sunset (mins)

Counts of Bat Passes

All detectors

Table 14. The total number of passes recorded for each species across all of the detectors. The 'Total' percentage may not be exactly 100% due to rounding of the percentages per species.

Species	Passes (No.)	Percentage of total (%)
Pipistrellus	4662	53.6
Common pipistrelle	1067	12.3
Soprano pipistrelle	2845	32.7
Brown long-eared	19	0.2
Myotis	112	1.3
Total	8705	100.1

Counts of Bat Passes

Per Detector

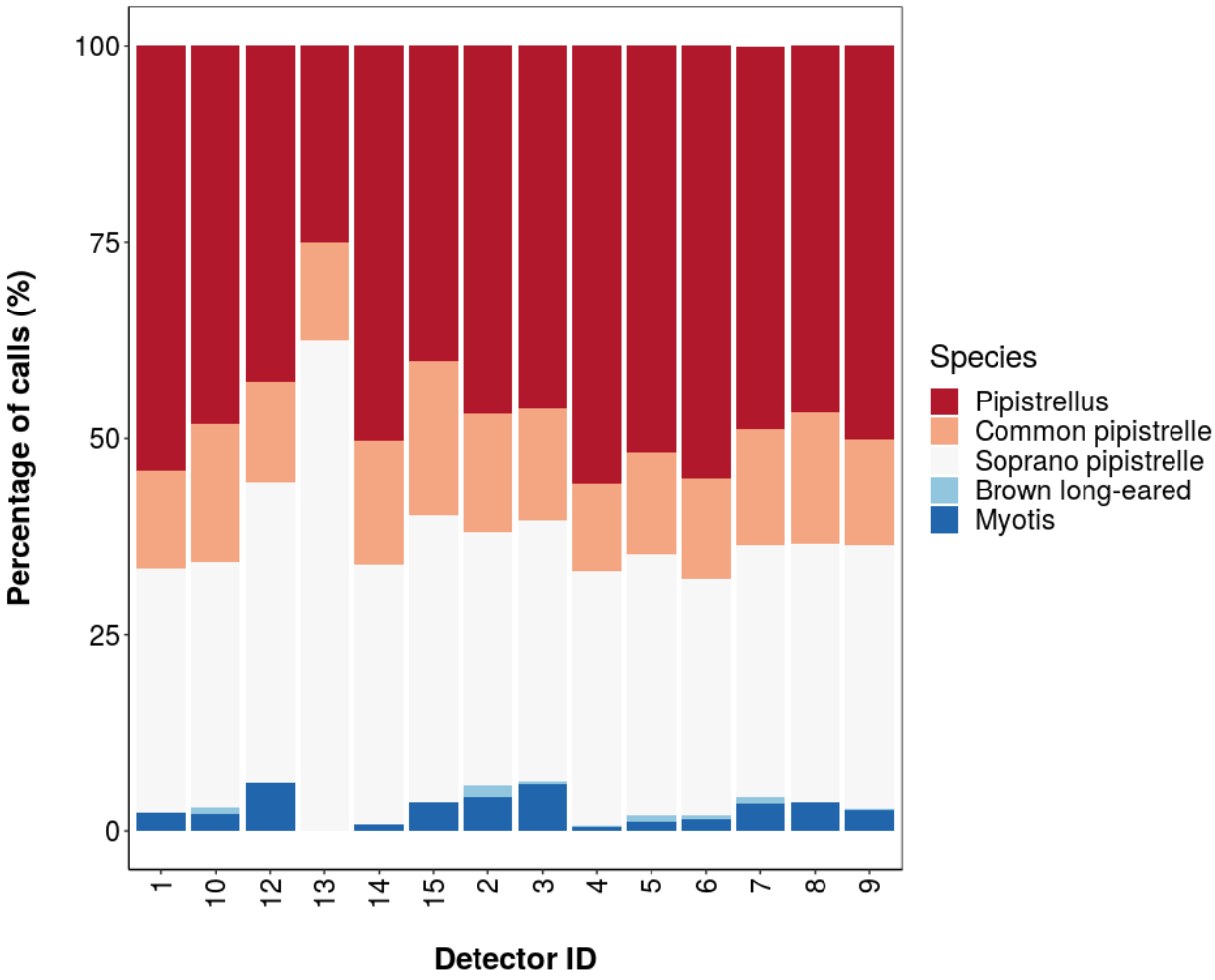
Table 15. The number of passes recorded for each species at each detector.

Species	Detector ID	Count (No)	Percentage by Detector (%)
Pipistrellus	1	144	54.1
Pipistrellus	10	66	48.2
Pipistrellus	12	50	42.7
Pipistrellus	13	2	25.0
Pipistrellus	14	134	50.4
Pipistrellus	15	45	40.2
Pipistrellus	2	65	46.8
Pipistrellus	3	110	46.2
Pipistrellus	4	3121	55.7
Pipistrellus	5	219	51.8
Pipistrellus	6	235	55.0
Pipistrellus	7	115	48.7
Pipistrellus	8	144	46.6
Pipistrellus	9	212	50.1
Common pipistrelle	1	33	12.4
Common pipistrelle	10	24	17.5
Common pipistrelle	12	15	12.8
Common pipistrelle	13	1	12.5
Common pipistrelle	14	42	15.8
Common pipistrelle	15	22	19.6
Common pipistrelle	2	21	15.1
Common pipistrelle	3	34	14.3
Common pipistrelle	4	621	11.1
Common pipistrelle	5	55	13.0
Common pipistrelle	6	55	12.9
Common pipistrelle	7	35	14.8
Common pipistrelle	8	52	16.8
Common pipistrelle	9	57	13.5
Soprano pipistrelle	1	83	31.2

Soprano pipistrelle	10	43	31.4
Soprano pipistrelle	12	45	38.5
Soprano pipistrelle	13	5	62.5
Soprano pipistrelle	14	88	33.1
Soprano pipistrelle	15	41	36.6
Soprano pipistrelle	2	45	32.4
Soprano pipistrelle	3	79	33.2
Soprano pipistrelle	4	1826	32.6
Soprano pipistrelle	5	141	33.3
Soprano pipistrelle	6	129	30.2
Soprano pipistrelle	7	76	32.2
Soprano pipistrelle	8	102	33.0
Soprano pipistrelle	9	142	33.6
Brown long-eared	10	1	0.7
Brown long-eared	2	2	1.4
Brown long-eared	3	1	0.4
Brown long-eared	4	7	0.1
Brown long-eared	5	3	0.7
Brown long-eared	6	2	0.5
Brown long-eared	7	2	0.8
Brown long-eared	9	1	0.2
Myotis	1	6	2.3
Myotis	10	3	2.2
Myotis	12	7	6.0
Myotis	14	2	0.8
Myotis	15	4	3.6
Myotis	2	6	4.3
Myotis	3	14	5.9
Myotis	4	29	0.5
Myotis	5	5	1.2
Myotis	6	6	1.4
Myotis	7	8	3.4
Myotis	8	11	3.6
Myotis	9	11	2.6

Species Composition

Figure 10. Percentage species composition of passes at each detector.



PART 2a: Presence Only

THE NEXT SECTION OF THE REPORT FEATURES THE RAW DATA SUPPLIED TO ECOBAT AND ONLY TAKES INTO ACCOUNT THE PRESENCE, AND NOT THE ABSENCE, OF EACH BAT SPECIES. FOR EACH NIGHT, THERE IS NO 'ZERO DATA' FOR WHEN SPECIES WERE NOT DETECTED.

Nightly Bat Pass Rate (Bat passes per hour)

Median Per Detector

Table 16. The median Nightly Pass Rate (bat passes per hour, per night) of each species. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Median Pass Rate
Pipistrellus	1	1.2
Pipistrellus	10	0.7
Pipistrellus	12	0.7
Pipistrellus	13	0.3
Pipistrellus	14	2.1
Pipistrellus	15	0.9
Pipistrellus	2	1.2
Pipistrellus	3	1.2
Pipistrellus	4	9.3
Pipistrellus	5	1.7
Pipistrellus	6	2.1
Pipistrellus	7	0.9
Pipistrellus	8	1.2
Pipistrellus	9	2.7
Common pipistrelle	1	0.3
Common pipistrelle	10	0.2
Common pipistrelle	12	0.2
Common pipistrelle	13	0.2
Common pipistrelle	14	0.4
Common pipistrelle	15	0.2
Common pipistrelle	2	0.4
Common pipistrelle	3	0.3
Common pipistrelle	4	1.8

Common pipistrelle	5	0.3
Common pipistrelle	6	0.4
Common pipistrelle	7	0.3
Common pipistrelle	8	0.3
Common pipistrelle	9	0.6
Soprano pipistrelle	1	0.6
Soprano pipistrelle	10	0.3
Soprano pipistrelle	12	0.4
Soprano pipistrelle	13	0.8
Soprano pipistrelle	14	0.6
Soprano pipistrelle	15	0.3
Soprano pipistrelle	2	0.3
Soprano pipistrelle	3	0.6
Soprano pipistrelle	4	3.8
Soprano pipistrelle	5	1.0
Soprano pipistrelle	6	0.5
Soprano pipistrelle	7	0.5
Soprano pipistrelle	8	0.8
Soprano pipistrelle	9	0.9
Brown long-eared	10	0.1
Brown long-eared	2	0.1
Brown long-eared	3	0.1
Brown long-eared	4	0.2
Brown long-eared	5	0.1
Brown long-eared	6	0.1
Brown long-eared	7	0.1
Brown long-eared	9	0.2
Myotis	1	0.2
Myotis	10	0.2
Myotis	12	0.2
Myotis	14	0.1
Myotis	15	0.1
Myotis	2	0.1
Myotis	3	0.2
Myotis	4	0.2
Myotis	5	0.1

Myotis	6	0.1
Myotis	7	0.1
Myotis	8	0.1
Myotis	9	0.2

Nightly Bat Pass Rate (Bat passes per hour)

Mean per Detector

Table 17. The mean Nightly Pass Rate (bat passes per hour, per night) of each species at each detector. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

Species	Detector ID	Mean Pass Rate
Pipistrellus	1	1.4
Pipistrellus	10	1.2
Pipistrellus	12	0.7
Pipistrellus	13	0.3
Pipistrellus	14	2.4
Pipistrellus	15	1.6
Pipistrellus	2	0.9
Pipistrellus	3	1.1
Pipistrellus	4	22.0
Pipistrellus	5	1.7
Pipistrellus	6	2.3
Pipistrellus	7	1.3
Pipistrellus	8	1.4
Pipistrellus	9	3.1
Common pipistrelle	1	0.4
Common pipistrelle	10	0.4
Common pipistrelle	12	0.2
Common pipistrelle	13	0.2
Common pipistrelle	14	0.7
Common pipistrelle	15	0.3
Common pipistrelle	2	0.4
Common pipistrelle	3	0.3
Common pipistrelle	4	4.9
Common pipistrelle	5	0.5
Common pipistrelle	6	0.6
Common pipistrelle	7	0.3

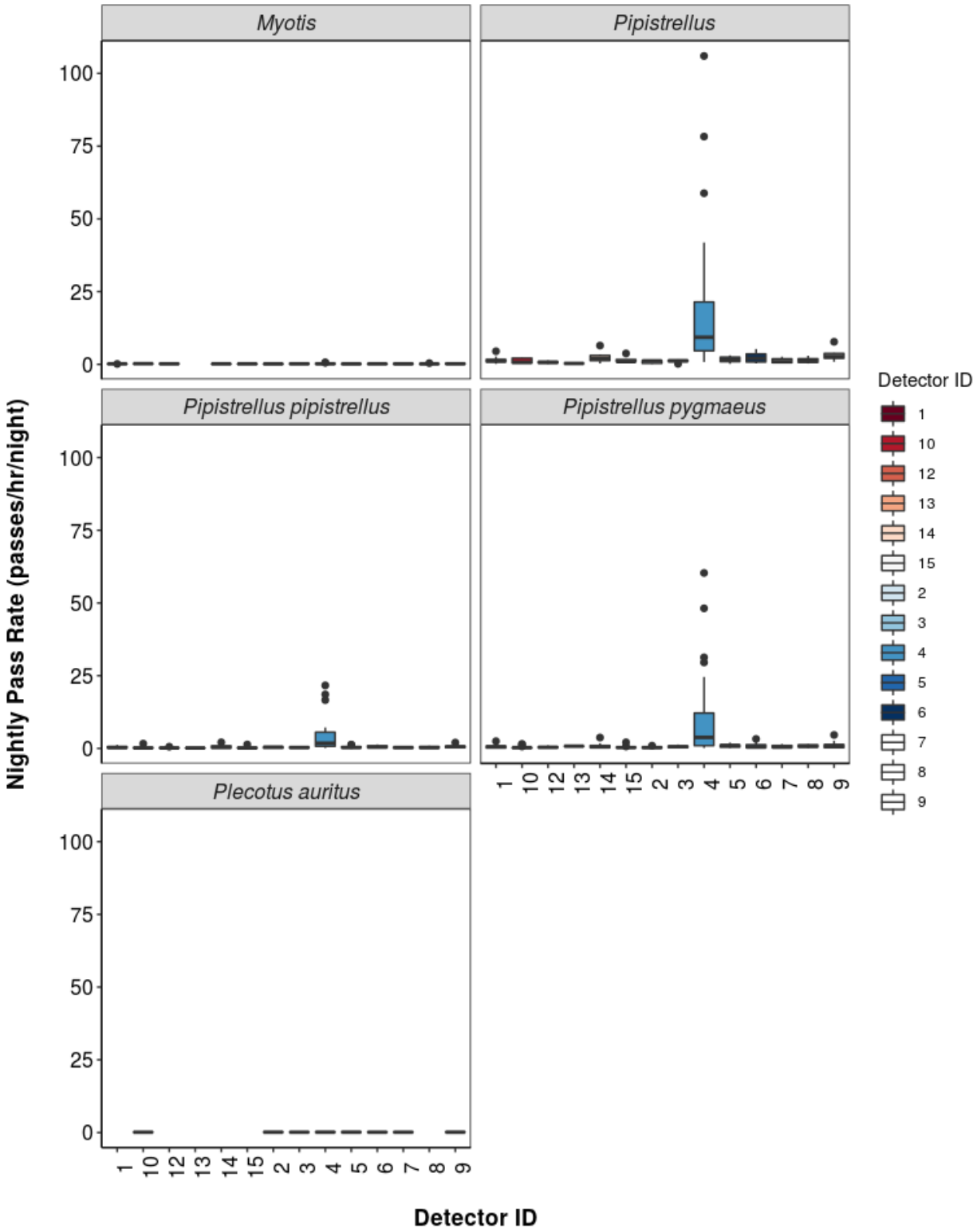
Common pipistrelle	8	0.4
Common pipistrelle	9	0.7
Soprano pipistrelle	1	0.7
Soprano pipistrelle	10	0.4
Soprano pipistrelle	12	0.4
Soprano pipistrelle	13	0.8
Soprano pipistrelle	14	0.8
Soprano pipistrelle	15	0.5
Soprano pipistrelle	2	0.3
Soprano pipistrelle	3	0.6
Soprano pipistrelle	4	11.7
Soprano pipistrelle	5	0.9
Soprano pipistrelle	6	0.9
Soprano pipistrelle	7	0.6
Soprano pipistrelle	8	0.8
Soprano pipistrelle	9	1.1
Brown long-eared	10	0.1
Brown long-eared	2	0.1
Brown long-eared	3	0.1
Brown long-eared	4	0.1
Brown long-eared	5	0.1
Brown long-eared	6	0.1
Brown long-eared	7	0.1
Brown long-eared	9	0.2
Myotis	1	0.2
Myotis	10	0.2
Myotis	12	0.2
Myotis	14	0.1
Myotis	15	0.1
Myotis	2	0.1
Myotis	3	0.2
Myotis	4	0.2
Myotis	5	0.1
Myotis	6	0.1
Myotis	7	0.2
Myotis	8	0.2

Myotis	9	0.2

Nightly Bat Passes (Bat passes per hour)

Per Detector - Figures

Figure 11. Boxplots for the number of bat passes per hour each night, for each detector. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.


Myotis
Pipistrellus
Pipistrellus pipistrellus
Pipistrellus pygmaeus
Plecotus auritus
Nightly Pass Rate (passes/hr/night)
Detector ID
Detector ID
1
10
12
13
14
15
2
3
4
5
6
7
8
9

SPLIT BY MONTH

Total Bat Passes per Detector, each Month

Per Detector

Table 18. The total number of bat passes of each species in each month at each detector. This table simply tells you how many bats of each species were recorded passing each detector during each month. These numbers are not standardised by the night length, or how many nights each detector was active for during each month.

Species	Detector ID	Jun	Jul
Pipistrellus	1	10	134
Pipistrellus	10	0	66
Pipistrellus	12	0	50
Pipistrellus	13	0	2
Pipistrellus	14	0	134
Pipistrellus	15	0	45
Pipistrellus	2	8	57
Pipistrellus	3	7	103
Pipistrellus	4	680	2441
Pipistrellus	5	27	192
Pipistrellus	6	19	216
Pipistrellus	7	0	115
Pipistrellus	8	0	144
Pipistrellus	9	0	212
Common pipistrelle	1	2	31
Common pipistrelle	10	0	24
Common pipistrelle	12	2	13
Common pipistrelle	13	0	1
Common pipistrelle	14	0	42
Common pipistrelle	15	0	22
Common pipistrelle	2	0	21
Common pipistrelle	3	0	34
Common pipistrelle	4	139	482
Common pipistrelle	5	7	48

Common pipistrelle	6	2	53
Common pipistrelle	7	2	33
Common pipistrelle	8	3	49
Common pipistrelle	9	2	55
Soprano pipistrelle	1	7	76
Soprano pipistrelle	10	0	43
Soprano pipistrelle	12	3	42
Soprano pipistrelle	13	0	5
Soprano pipistrelle	14	0	88
Soprano pipistrelle	15	0	41
Soprano pipistrelle	2	8	37
Soprano pipistrelle	3	4	75
Soprano pipistrelle	4	387	1439
Soprano pipistrelle	5	16	125
Soprano pipistrelle	6	16	113
Soprano pipistrelle	7	5	71
Soprano pipistrelle	8	6	96
Soprano pipistrelle	9	14	128
Brown long-eared	10	0	1
Brown long-eared	2	0	2
Brown long-eared	3	0	1
Brown long-eared	4	1	6
Brown long-eared	5	0	3
Brown long-eared	6	0	2
Brown long-eared	7	0	2
Brown long-eared	9	0	1
Myotis	1	1	5
Myotis	10	0	3
Myotis	12	0	7
Myotis	14	0	2
Myotis	15	0	4
Myotis	2	0	6
Myotis	3	2	12
Myotis	4	0	29
Myotis	5	0	5
Myotis	6	0	6

Myotis	7	0	8
Myotis	8	1	10
Myotis	9	0	11

Survey Effort

Table 19. The number of survey nights per month per detector.

Month	Detector ID	No. of Survey Nights
Jun	1	2
Jun	2	2
Jun	3	2
Jun	4	1
Jun	5	2
Jun	6	1
Jun	7	1
Jun	8	1
Jun	9	1
Jun	12	1
Jul	1	18
Jul	2	19
Jul	3	19
Jul	4	23
Jul	5	22
Jul	6	21
Jul	7	21
Jul	8	22
Jul	9	19
Jul	10	15
Jul	12	17
Jul	13	2
Jul	14	18
Jul	15	14

Nightly Bat Pass Rate for each Month

Median Per Detector

Table 20. The median Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Jun	Jul
Pipistrellus	1	1.6	1.1
Pipistrellus	10	NA	0.7
Pipistrellus	12	NA	0.7
Pipistrellus	13	NA	0.3
Pipistrellus	14	NA	2.1
Pipistrellus	15	NA	0.9
Pipistrellus	2	1.2	1.1
Pipistrellus	3	0.5	1.2
Pipistrellus	4	106.0	8.9
Pipistrellus	5	2.1	1.5
Pipistrellus	6	3.0	1.8
Pipistrellus	7	NA	0.9
Pipistrellus	8	NA	1.2
Pipistrellus	9	NA	2.7
Common pipistrelle	1	0.3	0.3
Common pipistrelle	10	NA	0.2
Common pipistrelle	12	0.3	0.2
Common pipistrelle	13	NA	0.2
Common pipistrelle	14	NA	0.4
Common pipistrelle	15	NA	0.2
Common pipistrelle	2	NA	0.4
Common pipistrelle	3	NA	0.3
Common pipistrelle	4	21.7	1.7

Common pipistrelle	5	0.5	0.3
Common pipistrelle	6	0.3	0.4
Common pipistrelle	7	0.3	0.3
Common pipistrelle	8	0.5	0.3
Common pipistrelle	9	0.3	0.7
Soprano pipistrelle	1	0.5	0.6
Soprano pipistrelle	10	NA	0.3
Soprano pipistrelle	12	0.5	0.4
Soprano pipistrelle	13	NA	0.8
Soprano pipistrelle	14	NA	0.6
Soprano pipistrelle	15	NA	0.3
Soprano pipistrelle	2	0.6	0.3
Soprano pipistrelle	3	0.6	0.6
Soprano pipistrelle	4	60.3	3.8
Soprano pipistrelle	5	1.2	0.9
Soprano pipistrelle	6	2.5	0.4
Soprano pipistrelle	7	0.8	0.4
Soprano pipistrelle	8	0.9	0.7
Soprano pipistrelle	9	2.2	0.8
Brown long-eared	10	NA	0.1
Brown long-eared	2	NA	0.1
Brown long-eared	3	NA	0.1
Brown long-eared	4	0.2	0.1
Brown long-eared	5	NA	0.1
Brown long-eared	6	NA	0.1
Brown long-eared	7	NA	0.1
Brown long-eared	9	NA	0.2
Myotis	1	0.2	0.2
Myotis	10	NA	0.2
Myotis	12	NA	0.2
Myotis	14	NA	0.1
Myotis	15	NA	0.1
Myotis	2	NA	0.1
Myotis	3	0.3	0.2
Myotis	4	NA	0.2
Myotis	5	NA	0.1

Myotis	6	NA	0.1
Myotis	7	NA	0.1
Myotis	8	0.2	0.1
Myotis	9	NA	0.2

Nightly Bat Pass Rate for each Month

Mean per Detector

Table 21: The mean Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

Species	Detector ID	Jun	Jul
Pipistrellus	1	1.6	1.4
Pipistrellus	10	NA	1.2
Pipistrellus	12	NA	0.7
Pipistrellus	13	NA	0.3
Pipistrellus	14	NA	2.4
Pipistrellus	15	NA	1.6
Pipistrellus	2	1.2	0.8
Pipistrellus	3	0.5	1.2
Pipistrellus	4	106.0	17.8
Pipistrellus	5	2.1	1.6
Pipistrellus	6	3.0	2.3
Pipistrellus	7	NA	1.3
Pipistrellus	8	NA	1.4
Pipistrellus	9	NA	3.1
Common pipistrelle	1	0.3	0.5
Common pipistrelle	10	NA	0.4
Common pipistrelle	12	0.3	0.2
Common pipistrelle	13	NA	0.2
Common pipistrelle	14	NA	0.7
Common pipistrelle	15	NA	0.3
Common pipistrelle	2	NA	0.4
Common pipistrelle	3	NA	0.3
Common pipistrelle	4	21.7	4.0
Common pipistrelle	5	0.5	0.4
Common pipistrelle	6	0.3	0.6
Common pipistrelle	7	0.3	0.3

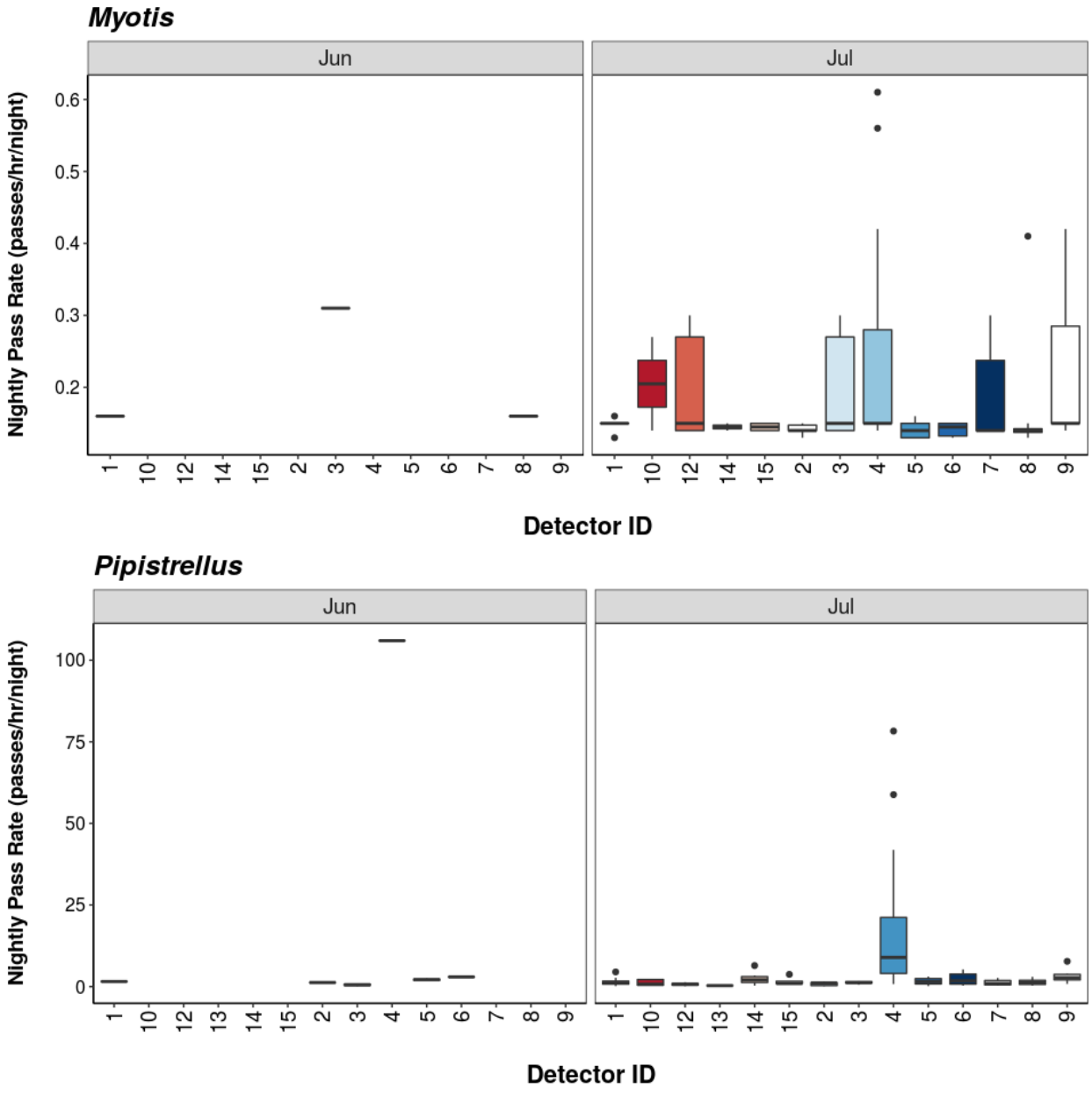
Common pipistrelle	8	0.5	0.4
Common pipistrelle	9	0.3	0.7
Soprano pipistrelle	1	0.5	0.7
Soprano pipistrelle	10	NA	0.4
Soprano pipistrelle	12	0.5	0.4
Soprano pipistrelle	13	NA	0.8
Soprano pipistrelle	14	NA	0.8
Soprano pipistrelle	15	NA	0.5
Soprano pipistrelle	2	0.6	0.3
Soprano pipistrelle	3	0.6	0.6
Soprano pipistrelle	4	60.3	9.5
Soprano pipistrelle	5	1.2	0.9
Soprano pipistrelle	6	2.5	0.9
Soprano pipistrelle	7	0.8	0.6
Soprano pipistrelle	8	0.9	0.8
Soprano pipistrelle	9	2.2	1.0
Brown long-eared	10	NA	0.1
Brown long-eared	2	NA	0.1
Brown long-eared	3	NA	0.1
Brown long-eared	4	0.2	0.1
Brown long-eared	5	NA	0.1
Brown long-eared	6	NA	0.1
Brown long-eared	7	NA	0.1
Brown long-eared	9	NA	0.2
Myotis	1	0.2	0.1
Myotis	10	NA	0.2
Myotis	12	NA	0.2
Myotis	14	NA	0.1
Myotis	15	NA	0.1
Myotis	2	NA	0.1
Myotis	3	0.3	0.2
Myotis	4	NA	0.2
Myotis	5	NA	0.1
Myotis	6	NA	0.1
Myotis	7	NA	0.2
Myotis	8	0.2	0.2

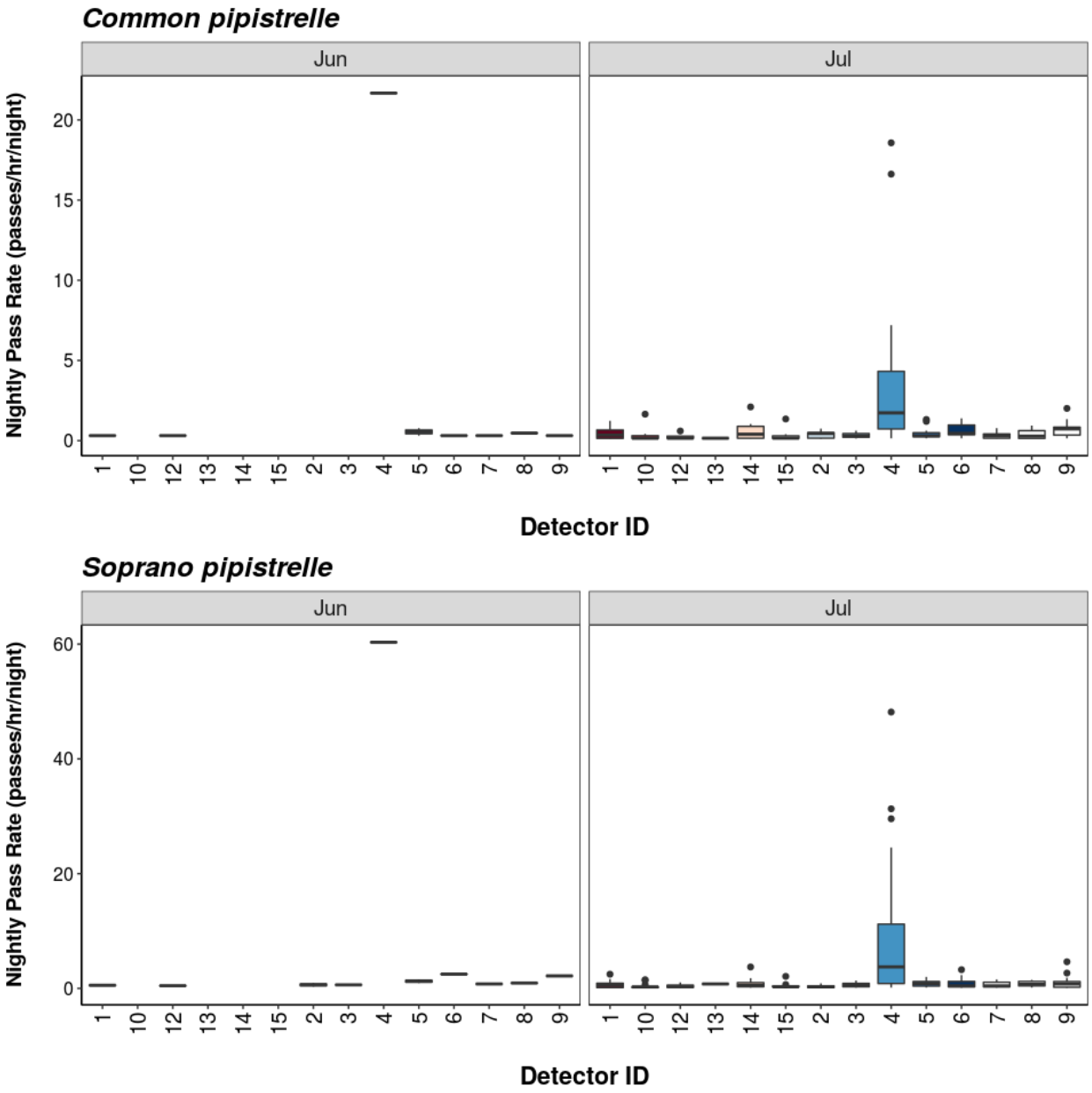
Myotis	9	NA	0.2

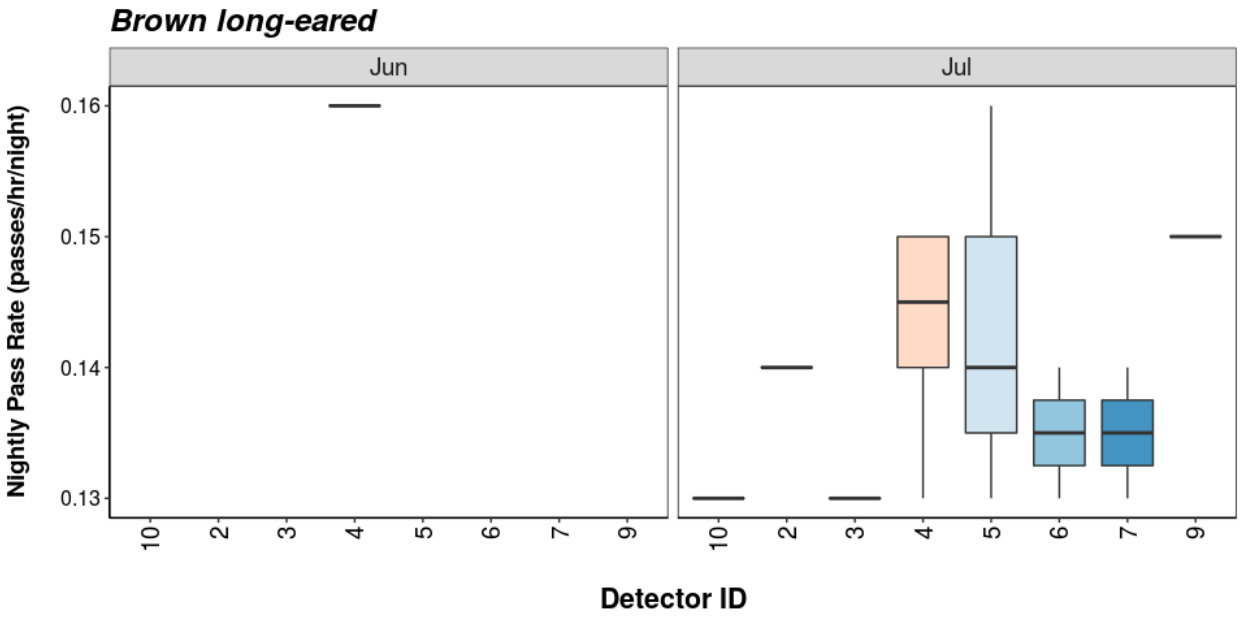
Nightly Bat Pass Rate for each Month

Per Detector - Figures

Figure 12. Figures show boxplots for the number of bat passes per hour by detector, for each month. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.




Common pipistrelle
Jun
Jul
Nightly Pass Rate (passes/hr/night)
0
5
10
15
20
1
10
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID
Soprano pipistrelle
Jun
Jul
Nightly Pass Rate (passes/hr/night)
0
20
40
60
1
10
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID


Brown long-eared
Jun
Jul
Nightly Pass Rate (passes/hr/night)
0.16
0.15
0.14
0.13
10
2
3
4
5
6
7
9
Detector ID

Bat Activity per Detector Location

Figure 13. Detector ID reference:

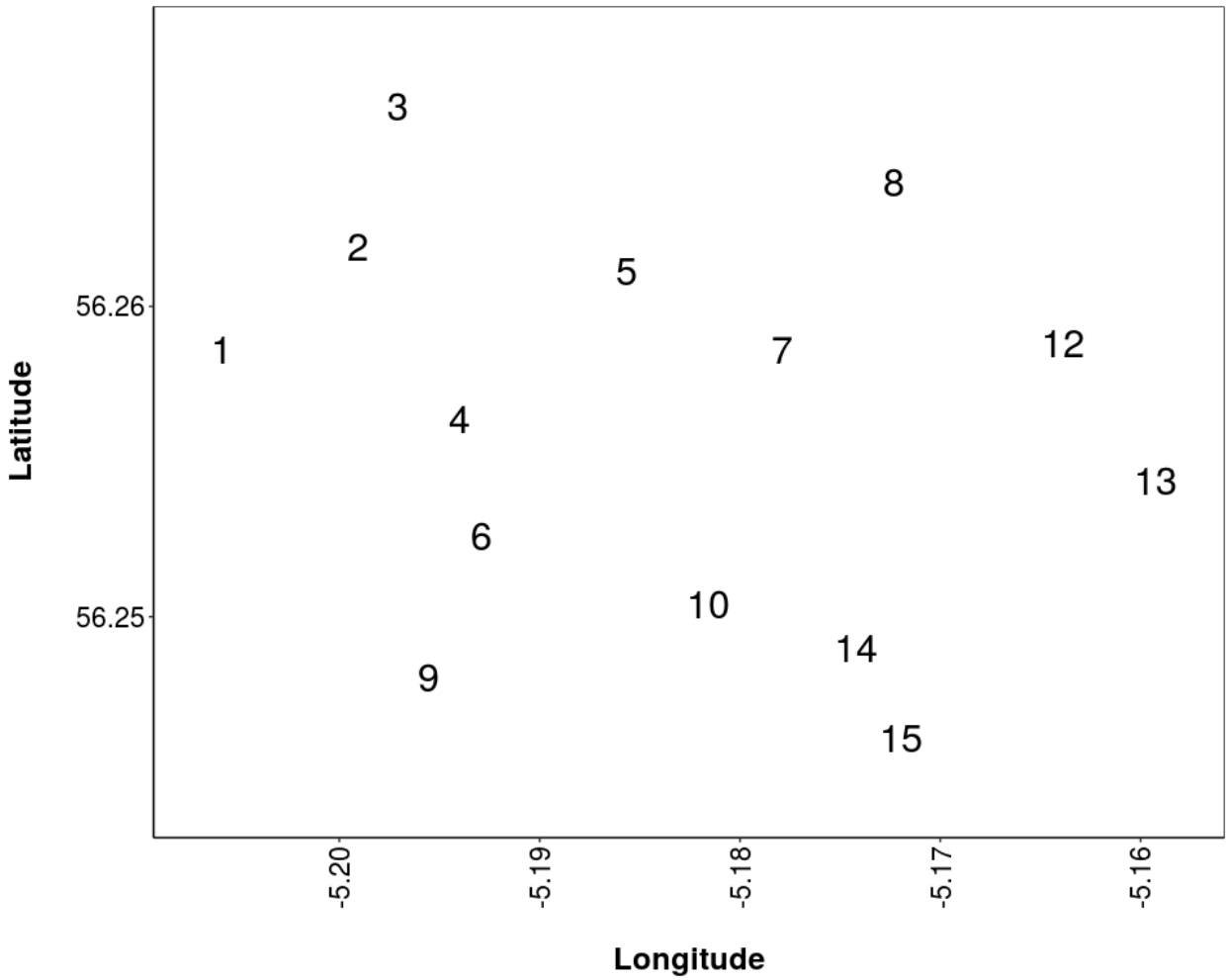


Figure 14. Median Nightly Pass Rate (bat passes/hr/night) throughout the survey period - represented by the size and colour of the point at each detector location.

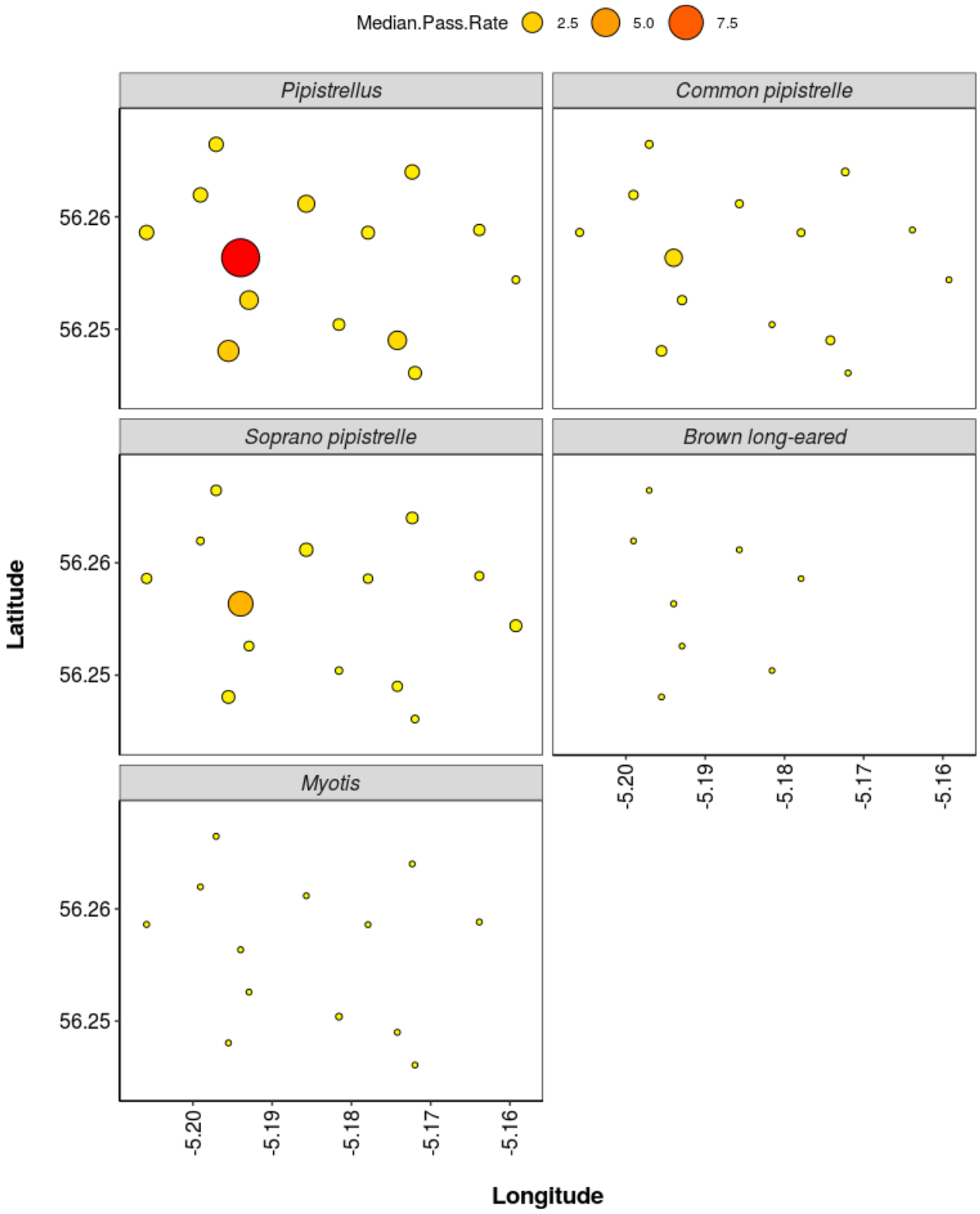
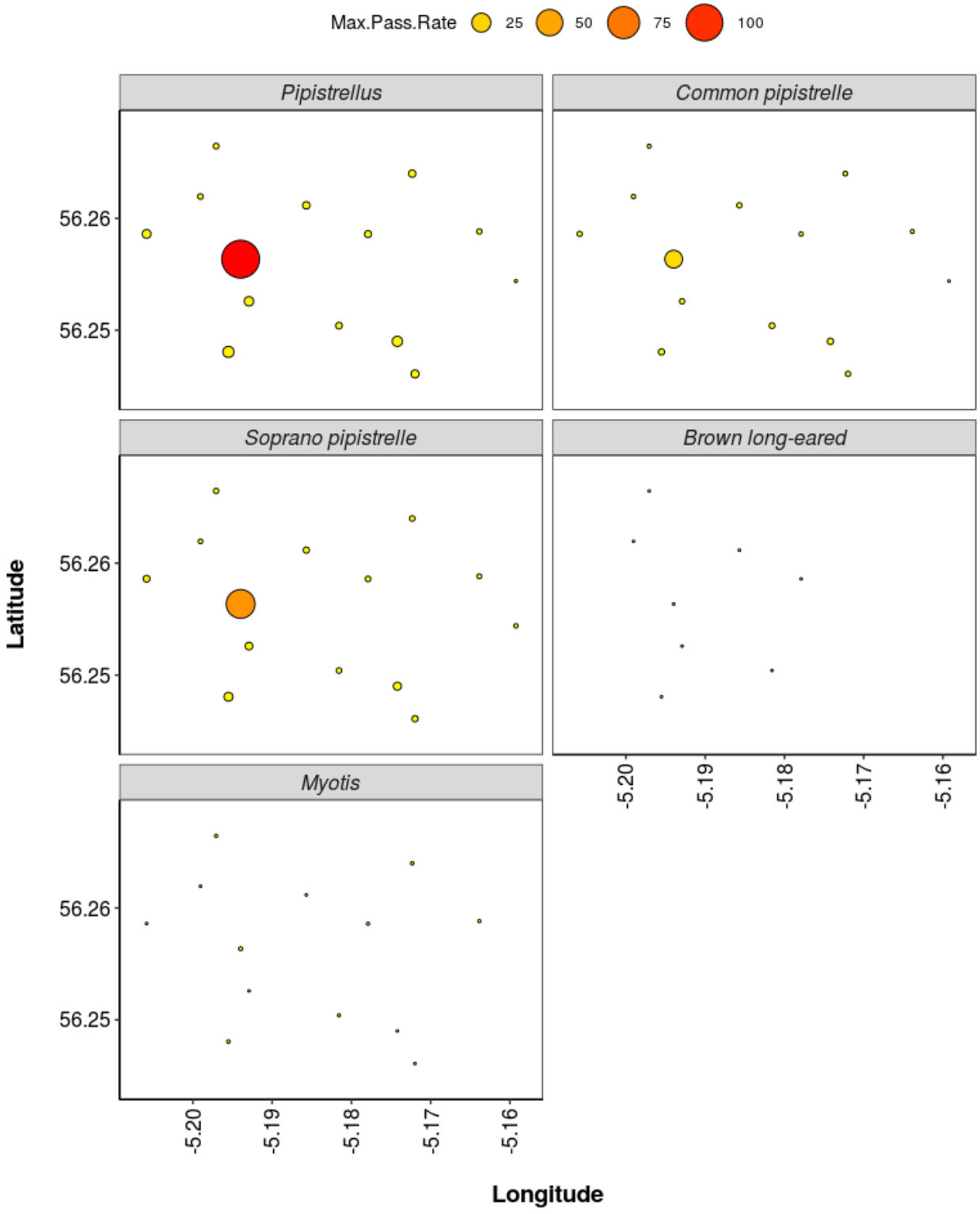


Figure 15. Maximum Nightly Pass Rate (bat passes/hr/night) recorded in a single night throughout the survey period - represented by the size and colour of the point at each detector location.



PART 2B: Includes absences

THE NEXT SECTION OF THE REPORT FEATURES THE DATA SUPPLIED TO ECOBAT BUT TAKES INTO ACCOUNT SPECIES ABSENCES, AND THEREFORE INCLUDES 'ZERO DATA' FOR WHEN SPECIES WERE NOT DETECTED AT EACH DETECTOR ON A NIGHT. THIS DRAMATICALLY LOWERS THE MEANS AND MEDIANS OF THE DATA PRESENTED.

Nightly Bat Pass Rate (Bat passes per hour)

Median Per Detector

Table 22. The median Nightly Pass Rate (bat passes per hour, per night) of each species. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Median Pass Rate
Brown long-eared	1	0.0
Brown long-eared	10	0.0
Brown long-eared	12	0.0
Brown long-eared	13	0.0
Brown long-eared	14	0.0
Brown long-eared	15	0.0
Brown long-eared	2	0.0
Brown long-eared	3	0.0
Brown long-eared	4	0.0
Brown long-eared	5	0.0
Brown long-eared	6	0.0
Brown long-eared	7	0.0
Brown long-eared	8	0.0
Brown long-eared	9	0.0
Common pipistrelle	1	0.1
Common pipistrelle	10	0.1
Common pipistrelle	12	0.1
Common pipistrelle	13	0.1
Common pipistrelle	14	0.1
Common pipistrelle	15	0.1
Common pipistrelle	2	0.0
Common pipistrelle	3	0.3
Common pipistrelle	4	1.1

Common pipistrelle	5	0.3
Common pipistrelle	6	0.3
Common pipistrelle	7	0.2
Common pipistrelle	8	0.3
Common pipistrelle	9	0.3
Myotis	1	0.0
Myotis	10	0.0
Myotis	12	0.0
Myotis	13	0.0
Myotis	14	0.0
Myotis	15	0.0
Myotis	2	0.0
Myotis	3	0.0
Myotis	4	0.2
Myotis	5	0.0
Myotis	6	0.0
Myotis	7	0.0
Myotis	8	0.0
Myotis	9	0.0
Pipistrellus	1	1.0
Pipistrellus	10	0.3
Pipistrellus	12	0.2
Pipistrellus	13	0.2
Pipistrellus	14	0.0
Pipistrellus	15	0.0
Pipistrellus	2	0.1
Pipistrellus	3	1.0
Pipistrellus	4	7.9
Pipistrellus	5	1.2
Pipistrellus	6	0.8
Pipistrellus	7	0.4
Pipistrellus	8	0.6
Pipistrellus	9	0.4
Soprano pipistrelle	1	0.5
Soprano pipistrelle	10	0.3
Soprano pipistrelle	12	0.3

Soprano pipistrelle	13	0.4
Soprano pipistrelle	14	0.4
Soprano pipistrelle	15	0.3
Soprano pipistrelle	2	0.3
Soprano pipistrelle	3	0.5
Soprano pipistrelle	4	3.8
Soprano pipistrelle	5	0.8
Soprano pipistrelle	6	0.4
Soprano pipistrelle	7	0.4
Soprano pipistrelle	8	0.6
Soprano pipistrelle	9	0.8

Nightly Bat Pass Rate (Bat passes per hour)

Mean per Detector

Table 23. The mean Nightly Pass Rate (bat passes per hour, per night) of each species at each detector. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

Species	Detector ID	Mean Pass Rate
Brown long-eared	1	0.0
Brown long-eared	10	0.0
Brown long-eared	12	0.0
Brown long-eared	13	0.0
Brown long-eared	14	0.0
Brown long-eared	15	0.0
Brown long-eared	2	0.0
Brown long-eared	3	0.0
Brown long-eared	4	0.0
Brown long-eared	5	0.0
Brown long-eared	6	0.0
Brown long-eared	7	0.0
Brown long-eared	8	0.0
Brown long-eared	9	0.0
Common pipistrelle	1	0.2
Common pipistrelle	10	0.2
Common pipistrelle	12	0.1
Common pipistrelle	13	0.1
Common pipistrelle	14	0.3
Common pipistrelle	15	0.2
Common pipistrelle	2	0.2
Common pipistrelle	3	0.2
Common pipistrelle	4	3.9
Common pipistrelle	5	0.3
Common pipistrelle	6	0.4
Common pipistrelle	7	0.2

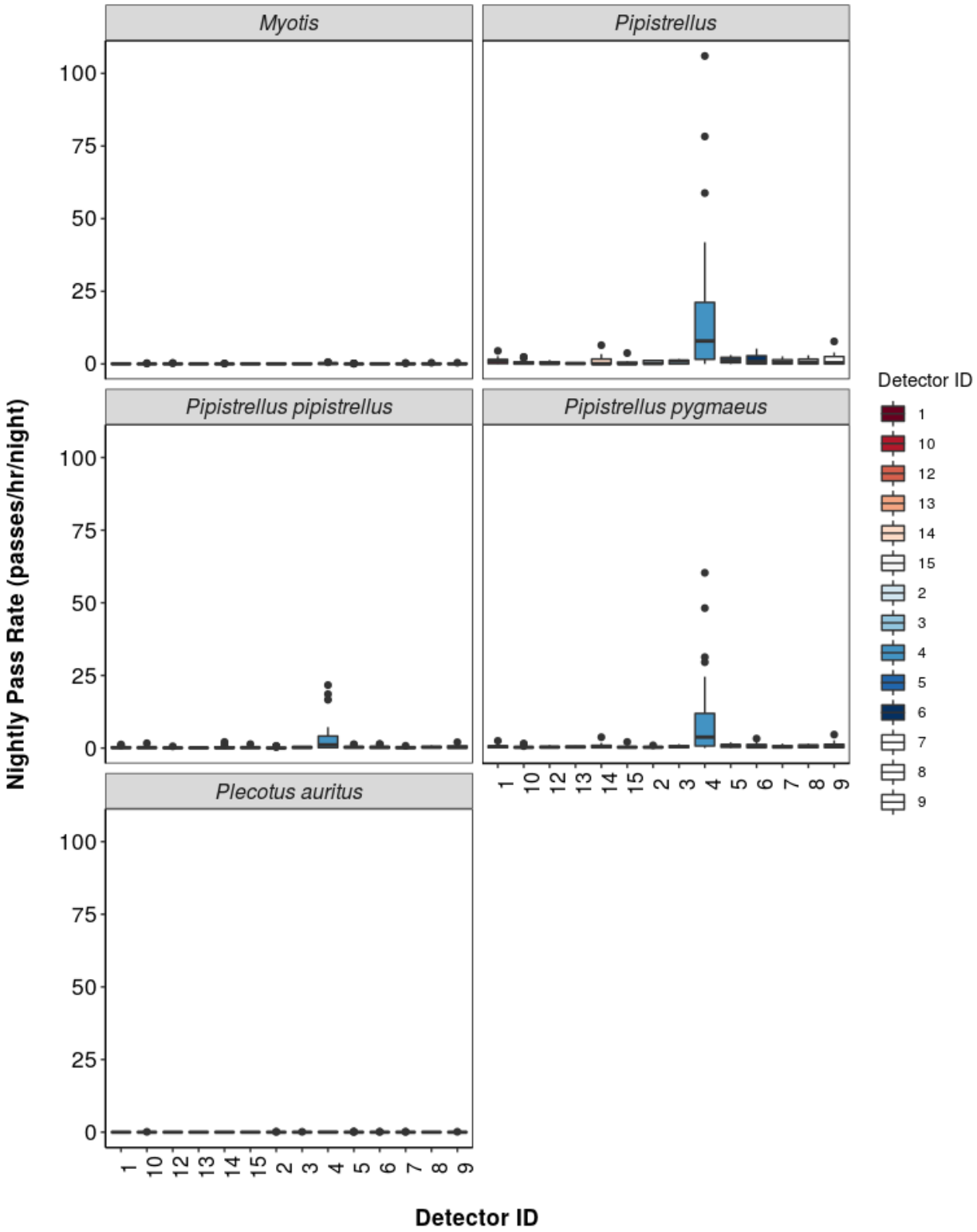
Common pipistrelle	8	0.3
Common pipistrelle	9	0.4
Myotis	1	0.0
Myotis	10	0.0
Myotis	12	0.1
Myotis	13	0.0
Myotis	14	0.0
Myotis	15	0.0
Myotis	2	0.0
Myotis	3	0.1
Myotis	4	0.2
Myotis	5	0.0
Myotis	6	0.0
Myotis	7	0.1
Myotis	8	0.1
Myotis	9	0.1
Pipistrellus	1	1.1
Pipistrellus	10	0.6
Pipistrellus	12	0.4
Pipistrellus	13	0.2
Pipistrellus	14	1.1
Pipistrellus	15	0.5
Pipistrellus	2	0.5
Pipistrellus	3	0.8
Pipistrellus	4	19.2
Pipistrellus	5	1.3
Pipistrellus	6	1.6
Pipistrellus	7	0.7
Pipistrellus	8	0.9
Pipistrellus	9	1.6
Soprano pipistrelle	1	0.6
Soprano pipistrelle	10	0.4
Soprano pipistrelle	12	0.4
Soprano pipistrelle	13	0.4
Soprano pipistrelle	14	0.7
Soprano pipistrelle	15	0.4

Soprano pipistrelle	2	0.3
Soprano pipistrelle	3	0.5
Soprano pipistrelle	4	11.2
Soprano pipistrelle	5	0.9
Soprano pipistrelle	6	0.9
Soprano pipistrelle	7	0.5
Soprano pipistrelle	8	0.6
Soprano pipistrelle	9	1.0

Nightly Bat Passes (Bat passes per hour)

Per Detector - Figures

Figure 16. Figures show boxplots for the number of bat passes per hour each night, for each detector. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.


Myotis
Pipistrellus
Pipistrellus pipistrellus
Pipistrellus pygmaeus
Plecotus auritus
Nightly Pass Rate (passes/hr/night)
0
25
50
75
100
1
10
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID
Detector ID

Survey Effort

Table 24. The number of nights bats were detected per month per detector.

Month	Detector ID	No of Survey Nights
Jun	1	2
Jun	2	2
Jun	3	2
Jun	4	1
Jun	5	2
Jun	6	1
Jun	7	1
Jun	8	1
Jun	9	1
Jun	12	1
Jul	1	18
Jul	2	19
Jul	3	19
Jul	4	23
Jul	5	22
Jul	6	21
Jul	7	21
Jul	8	22
Jul	9	19
Jul	10	15
Jul	12	17
Jul	13	2
Jul	14	18
Jul	15	14

Nightly Bat Pass Rate for each Month

Median Per Detector

Table 25. The median Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. If NA, then no bat passes.

Bat pass rates are often highly variable between nights, with some nights having few or no passes and other nights having high activity. In these circumstances, the median is likely to be a more useful summary of the 'average' activity than is the mean. For further information see: *Lintott, P. R., & Mathews, F. (2018). Basic mathematical errors may make ecological assessments unreliable. Biodiversity and Conservation, 27(1), 265-267.* https://doi.org/10.1007/s10531-017-1418-5

Species	Detector ID	Jul	Jun
Brown long-eared	1	0.0	0.0
Brown long-eared	10	0.0	NA
Brown long-eared	12	0.0	0.0
Brown long-eared	13	0.0	NA
Brown long-eared	14	0.0	NA
Brown long-eared	15	0.0	NA
Brown long-eared	2	0.0	0.0
Brown long-eared	3	0.0	0.0
Brown long-eared	4	0.0	0.2
Brown long-eared	5	0.0	0.0
Brown long-eared	6	0.0	0.0
Brown long-eared	7	0.0	0.0
Brown long-eared	8	0.0	0.0
Brown long-eared	9	0.0	0.0
Common pipistrelle	1	0.1	0.2
Common pipistrelle	10	0.1	NA
Common pipistrelle	12	0.0	0.3
Common pipistrelle	13	0.1	NA
Common pipistrelle	14	0.1	NA
Common pipistrelle	15	0.1	NA
Common pipistrelle	2	0.0	0.0
Common pipistrelle	3	0.3	0.0
Common pipistrelle	4	0.9	21.7

Common pipistrelle	5	0.3	0.5
Common pipistrelle	6	0.3	0.3
Common pipistrelle	7	0.2	0.3
Common pipistrelle	8	0.2	0.5
Common pipistrelle	9	0.3	0.3
Myotis	1	0.0	0.1
Myotis	10	0.0	NA
Myotis	12	0.0	0.0
Myotis	13	0.0	NA
Myotis	14	0.0	NA
Myotis	15	0.0	NA
Myotis	2	0.0	0.0
Myotis	3	0.0	0.2
Myotis	4	0.2	0.0
Myotis	5	0.0	0.0
Myotis	6	0.0	0.0
Myotis	7	0.0	0.0
Myotis	8	0.0	0.2
Myotis	9	0.0	0.0
Pipistrellus	1	1.0	0.8
Pipistrellus	10	0.3	NA
Pipistrellus	12	0.2	0.0
Pipistrellus	13	0.2	NA
Pipistrellus	14	0.0	NA
Pipistrellus	15	0.0	NA
Pipistrellus	2	0.1	0.6
Pipistrellus	3	1.0	0.5
Pipistrellus	4	7.2	106.0
Pipistrellus	5	1.1	2.1
Pipistrellus	6	0.7	3.0
Pipistrellus	7	0.4	0.0
Pipistrellus	8	0.7	0.0
Pipistrellus	9	0.8	0.0
Soprano pipistrelle	1	0.5	0.5
Soprano pipistrelle	10	0.3	NA
Soprano pipistrelle	12	0.3	0.5

Soprano pipistrelle	13	0.4	NA
Soprano pipistrelle	14	0.4	NA
Soprano pipistrelle	15	0.3	NA
Soprano pipistrelle	2	0.3	0.6
Soprano pipistrelle	3	0.5	0.3
Soprano pipistrelle	4	3.7	60.3
Soprano pipistrelle	5	0.7	1.2
Soprano pipistrelle	6	0.4	2.5
Soprano pipistrelle	7	0.3	0.8
Soprano pipistrelle	8	0.6	0.9
Soprano pipistrelle	9	0.7	2.2

Nightly Bat Pass Rate for each Month

Mean per Detector

Table 26. The mean Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. Values are given to 1 decimal place.

We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

Species	Detector ID	Jul	Jun
Brown long-eared	1	0.0	0.0
Brown long-eared	10	0.0	NA
Brown long-eared	12	0.0	0.0
Brown long-eared	13	0.0	NA
Brown long-eared	14	0.0	NA
Brown long-eared	15	0.0	NA
Brown long-eared	2	0.0	0.0
Brown long-eared	3	0.0	0.0
Brown long-eared	4	0.0	0.2
Brown long-eared	5	0.0	0.0
Brown long-eared	6	0.0	0.0
Brown long-eared	7	0.0	0.0
Brown long-eared	8	0.0	0.0
Brown long-eared	9	0.0	0.0
Common pipistrelle	1	0.3	0.2
Common pipistrelle	10	0.2	NA
Common pipistrelle	12	0.1	0.3
Common pipistrelle	13	0.1	NA
Common pipistrelle	14	0.3	NA
Common pipistrelle	15	0.2	NA
Common pipistrelle	2	0.2	0.0
Common pipistrelle	3	0.3	0.0
Common pipistrelle	4	3.1	21.7
Common pipistrelle	5	0.3	0.5
Common pipistrelle	6	0.4	0.3
Common pipistrelle	7	0.2	0.3

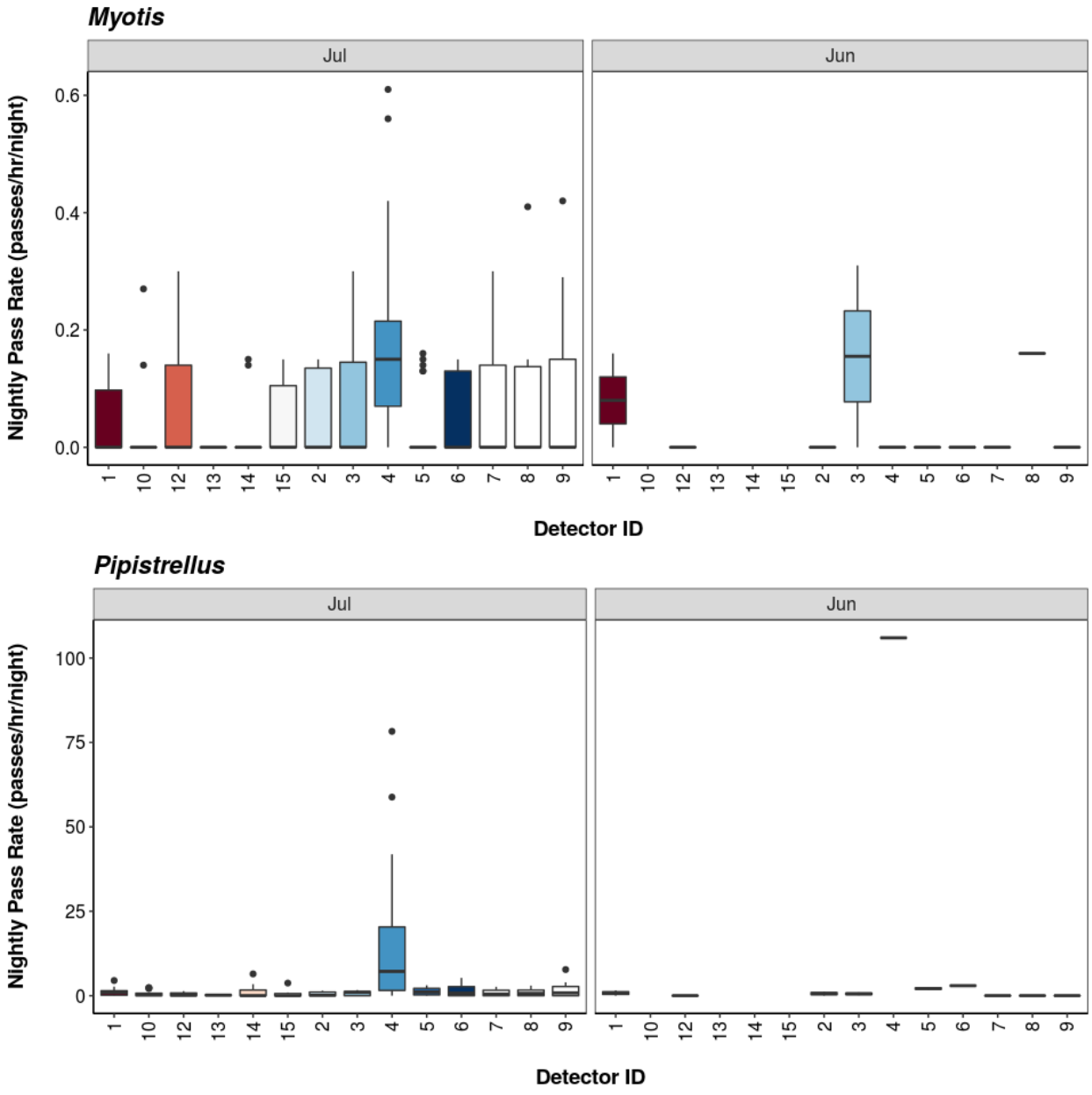
Common pipistrelle	8	0.3	0.5
Common pipistrelle	9	0.4	0.3
Myotis	1	0.0	0.1
Myotis	10	0.0	NA
Myotis	12	0.1	0.0
Myotis	13	0.0	NA
Myotis	14	0.0	NA
Myotis	15	0.0	NA
Myotis	2	0.0	0.0
Myotis	3	0.1	0.2
Myotis	4	0.2	0.0
Myotis	5	0.0	0.0
Myotis	6	0.0	0.0
Myotis	7	0.1	0.0
Myotis	8	0.1	0.2
Myotis	9	0.1	0.0
Pipistrellus	1	1.1	0.8
Pipistrellus	10	0.6	NA
Pipistrellus	12	0.4	0.0
Pipistrellus	13	0.2	NA
Pipistrellus	14	1.1	NA
Pipistrellus	15	0.5	NA
Pipistrellus	2	0.4	0.6
Pipistrellus	3	0.8	0.5
Pipistrellus	4	15.5	106.0
Pipistrellus	5	1.3	2.1
Pipistrellus	6	1.5	3.0
Pipistrellus	7	0.8	0.0
Pipistrellus	8	0.9	0.0
Pipistrellus	9	1.6	0.0
Soprano pipistrelle	1	0.6	0.5
Soprano pipistrelle	10	0.4	NA
Soprano pipistrelle	12	0.4	0.5
Soprano pipistrelle	13	0.4	NA
Soprano pipistrelle	14	0.7	NA
Soprano pipistrelle	15	0.4	NA

Soprano pipistrelle	2	0.3	0.6
Soprano pipistrelle	3	0.6	0.3
Soprano pipistrelle	4	9.1	60.3
Soprano pipistrelle	5	0.8	1.2
Soprano pipistrelle	6	0.8	2.5
Soprano pipistrelle	7	0.5	0.8
Soprano pipistrelle	8	0.6	0.9
Soprano pipistrelle	9	1.0	2.2

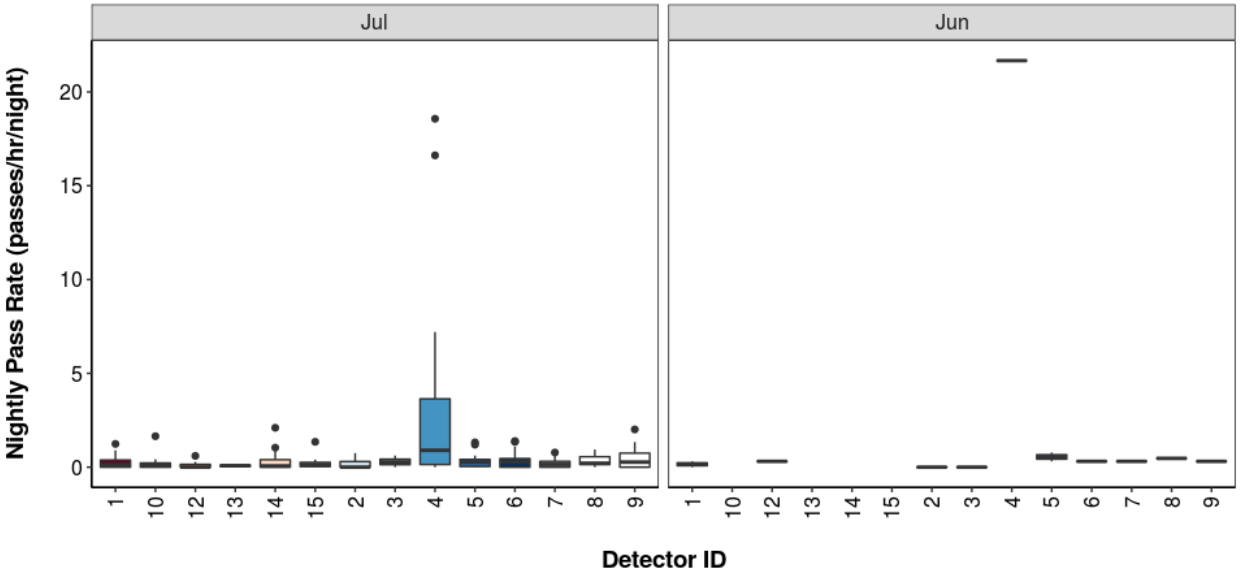
Nightly Bat Pass Rate for each Month

Per Detector - Figures

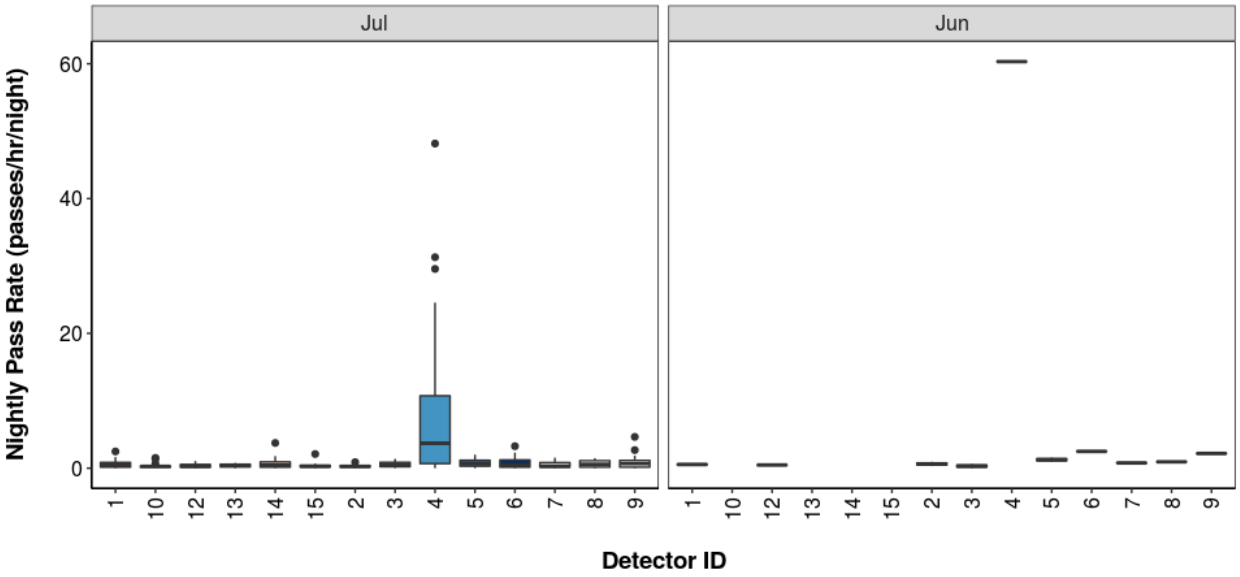
Figure 17. Figures show boxplots for the number of bat passes per hour by detector, for each month. The 'box' shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The 'whiskers' extend from the box and represent the ranges for the bottom 25% and the top 25% of the data values, excluding outliers. An outlier is any extreme value that lies further away from the box than 1.5 times the interquartile range. Outliers are shown as dots. Where very few passes are recorded it is not possible to produce the box, so the data are shown as a line.

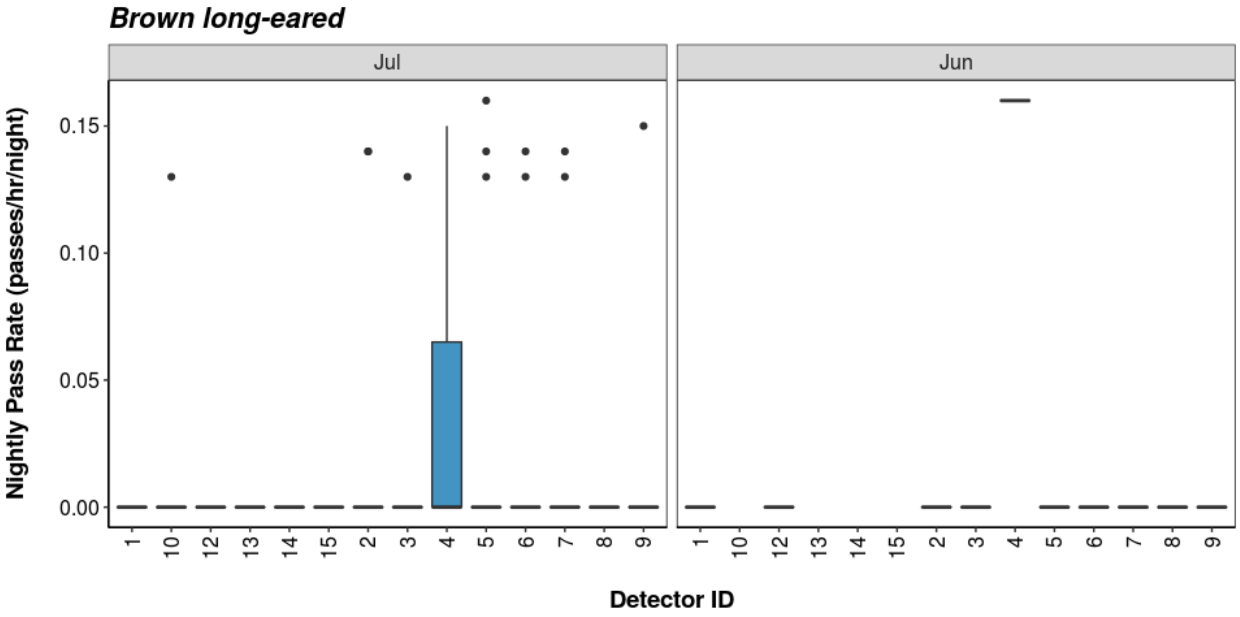


Common pipistrelle



Soprano pipistrelle




Brown long-eared
Jul
Jun
Nightly Pass Rate (passes/hr/night)
0.15
0.10
0.05
0.00
1
10
12
13
14
15
2
3
4
5
6
7
8
9
Detector ID

Bat Activity per Detector Location

Figure 18. Detector ID reference:

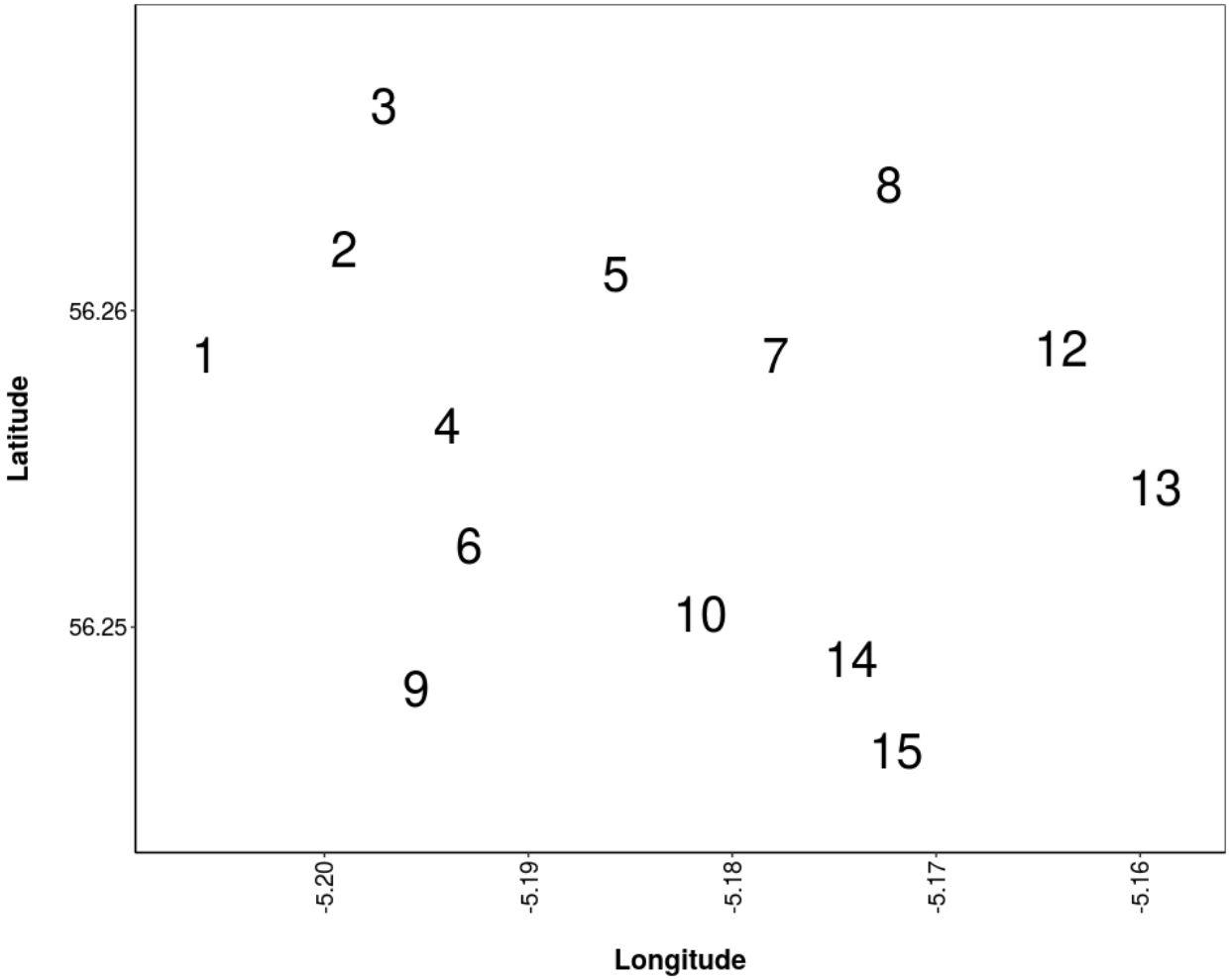


Figure 19. Median Nightly Pass Rate (bat passes/hr/night) throughout the survey period - represented by the size and colour of the point at each detector location.

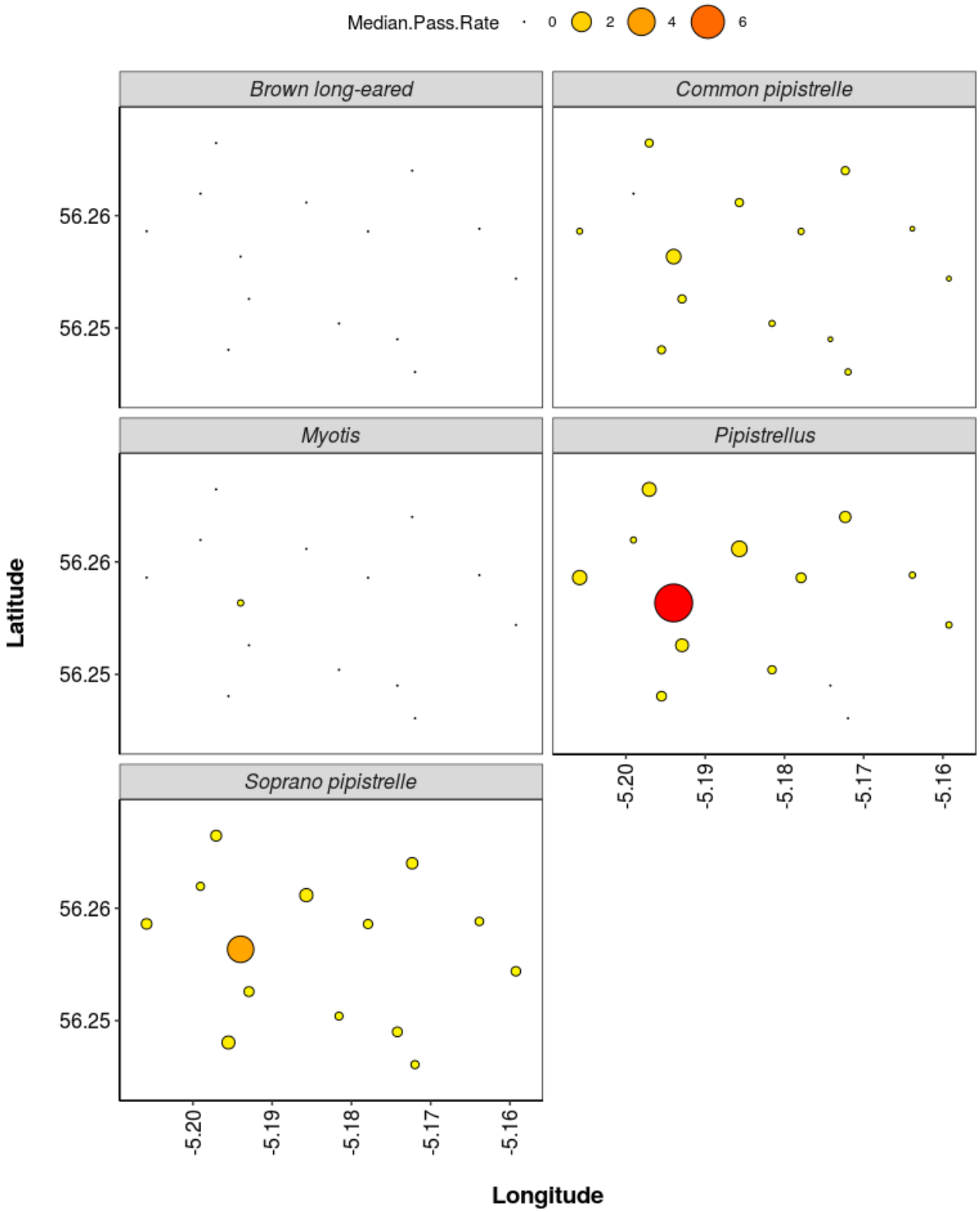
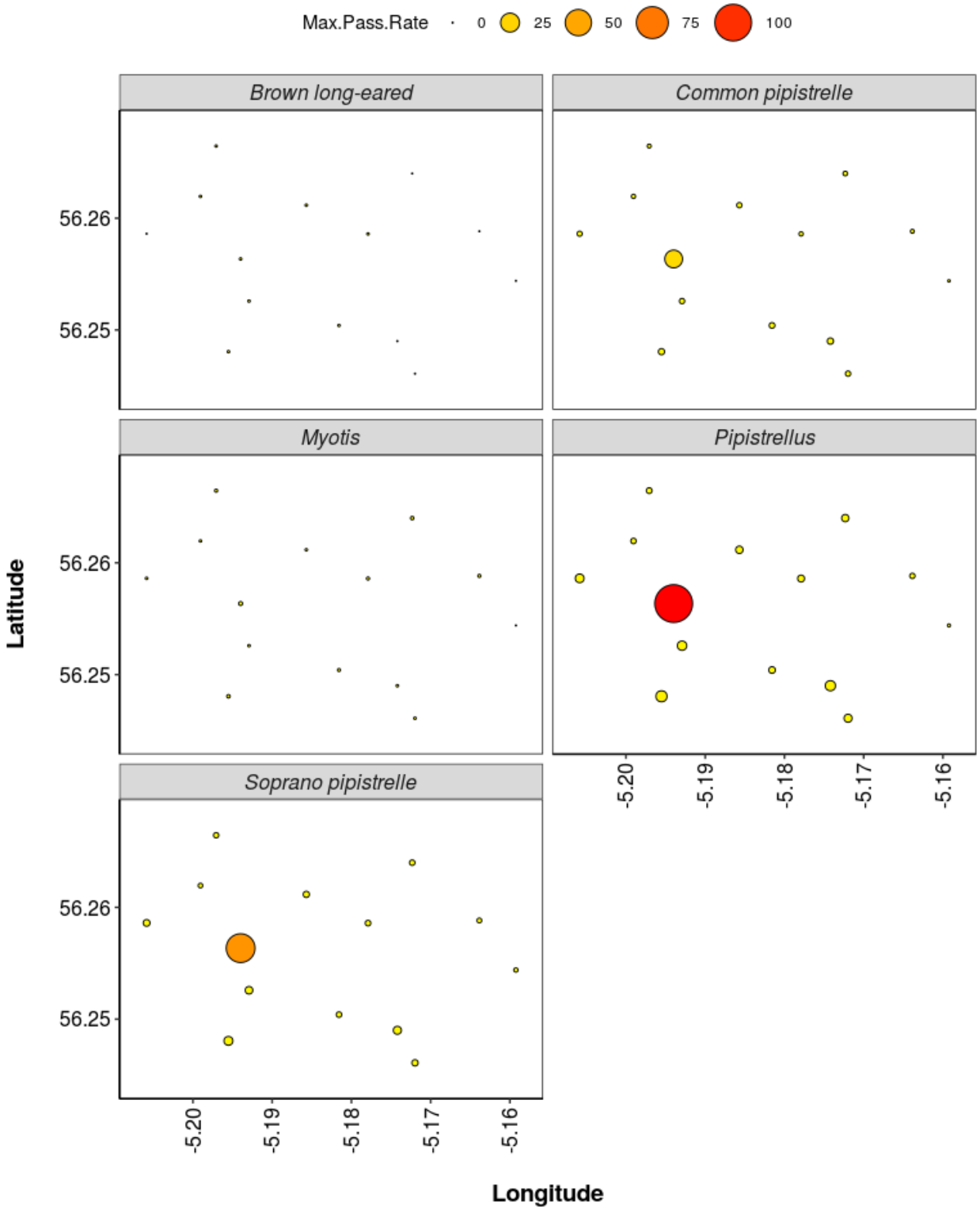


Figure 20. Maximum Nightly Pass Rate (bat passes/hr/night) recorded in a single night throughout the survey period - represented by the size and colour of the point at each detector location.



Thank you for using Ecobat! If you have any questions please email info@themammalsociety.org.uk