Rhyswg Wind Farm

FINAL DRAFT

Technical Appendix 8B: Ecobat (Collision Risk) Assessment

Prepared by:
The Environmental Dimension Partnership Ltd

On behalf of:
Pennant Walters

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APPENDICES

PLANS

Section 1
Introduction

1.1 This Technical Appendix has been written as a supplement to the Environmental Statement (ES) for the proposed wind farm at Rhyswg Wind Farm (hereafter referred to as the 'the Site'). It details the results of an Ecobat assessment to determine the vulnerability of bat species to potential wind turbine collisions[1] and is based on automated detector surveys of the Site undertaken over a five-year period.

1.2 Ecobat[2] is a web-based tool, and while initially designed by the University of Exeter, is now hosted and developed by the Mammal Society. The purpose of Ecobat is to provide a standardised and objective method for analysing bat activity data, comparing the data collected from the Site with bat survey information collected from similar areas at the same time of year and in comparable weather conditions. This allows Ecobat to generate a percentile rank for each night of activity, providing a quantitative means of interpreting the levels of bat activity recorded at a site across regions in Britain. This tool is recommended by Nature Scotland (previously known as Scottish Natural Heritage[3]) for providing a measure of relative bat activity required to assess potential collision risk by taking into account the relative vulnerability of each species of bat present, at the population level.

[1] Whereby 'collision' is taken to mean any form of injury or mortality associated with the operation of wind turbines, including mortality due to barotrauma.

[2] https://www.mammal.org.uk/science-research/ecostat/

[3] NatureScot (2019) Bats and Onshore Wind turbines – Survey, Assessment and Mitigation (https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation; last accessed 19/09/2025).

Section 2
Methodology

2.1 In accordance with best practice guidance[4], a measure of relative bat activity was obtained using the online tool Ecobat to provide an automated measure of relative bat activity across the Site and analysed to assess collision risk to bats.

BAT ACTIVITY SURVEYS

2.2 Automated detector surveys were undertaken at Locations **L1** and **L2** between 2020 and 2021 and updated in 2023 (refer to **Plan EDP 1** for automated detector locations). Automated detector surveys were repeated between September 2024 and July 2025 following confirmation of proposed turbine locations. During this sampling period, three automated detectors were deployed at Locations **L3**, **L4** and **L5** as illustrated on **Plan EDP 1**, their locations chosen to match the proposed turbine locations as far as possible. Full details of the methodologies adopted and results of automated detector surveys are provided within **Appendix 8A** to the ES.

2.3 The nearest automated detector location to each turbine location is shown in **Table EDP 2.1**.

Table EDP 2.1: Proposed turbine location and nearest automated detector

Turbine Location	2020-2023			2024-2025		
	Nearest Detector ID	Distance (m)	Direction	Nearest Detector ID	Distance (m)	Direction
Turbine 1	L1	248	NE	L3	30	S
Turbine 2	L2	178	S	L4	25	S
Turbine 3	L2	352	N	L5	10	S

2.4 Of relevance to this report, and in relation to the analysis of the automated detector results, Myotis spp. were reported at the genus level due to overlapping acoustic parameters. For the purposes of this assessment, where *Nyctalus* spp. were previously reported in 2020-2023, a sample of this historic data was reviewed and it was determined that those recordings marked as *Nyctalus* spp. should be assumed to be Leisler's bats (*Nyctalus leislerii*) due to the higher correlation of parameters that fit Leisler's bat better than noctule (*Nyctalus noctula)*; although a level of uncertainty remains due to the parameter overlaps within this genus). As such, all *Nyctalus* spp. results were updated to Leisler's bat for the Ecobat assessment. In addition, where *Plecotus* spp. was reported, it is assumed that these records relate to brown long-eared bat (*Plecotus auritus*) due to the geographic location of

[4] NatureScot (2019) Bats and Onshore Wind turbines – Survey, Assessment and Mitigation (https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation; last accessed 10/10/2025).

the Site and absence of the rarer grey long-eared bat (*Plecotus austriacus*) in this area of the country.

Limitations

2.5 The original sonogram survey data for 2020 and 2021 had been archived while Ecobat was offline (between 2023 and 2025). By the time Ecobat had returned online, the data outputs from Analook Insight for the 2020 and 2021 data had been summarised into hours, rather than per minute. This may have impacted the Ecobat's ability to interpret bat activity at a fine scale with regards to activity shortly before sunset and sunrise and may have reduced its ability to determine the likelihood of nearby roosts. However, as the detector locations were refined for the 2024-2025 survey period, the data collected during this time is considered to be the most recent and accurate data, without such limitations.

ECOBAT

2.6 The results of the automated detector surveys were uploaded to the Ecobat website in September 2025, with the data divided between the 2024-2025 and 2020-2023 survey periods due to the change in deployment locations, with a report generated for each data set. The Ecobat analysis tool was set to compare across all times recorded by the automated detectors and against Welsh data held by Ecobat. The generated reports produced by Ecobat for 2020-2023 data are provided at **Appendix EDP 1** whilst the reports for 2024-2025 data are provided at **Appendix EDP 2**. Part 1 of each Ecobat report includes a percentile analysis of the detector locations, setting out the relative levels of:

- Bat activity across the Site;
- Bat activity across the Site per month;
- Bat activity per detector location; and
- Bat activity per bat detector location per month.

2.7 Part two of each Ecobat report provides nightly analysis for the entire survey period, including:

- The distribution of bat activity across the night through time per detector;
- The roost emergence times that potentially indicate close proximity to a roost per detector; and
- The count of bat and species composition of registrations for the Site and per detector.

2.8 These two Ecobat reports are summarised and assessed against best practice guidance[4] individually in **Section 3**.

2.9 Best practice guidance (as referred to above) identifies those bat species of higher vulnerability to collision, based on collision risk and rarity, which varies per country. A summary of collision vulnerability for bats in Wales is provided in **Table EDP 2.2**.

Table EDP 2.2: Summary of Collision Vulnerability of Bat Species in Wales

Risk Level	Common Name	Latin Name
High vulnerability (high collision risk and rarest species)	Noctule Leisler's bat Nathusius' pipistrelle	*Nyctalus noctula* *Nyctalus leisleri* *Pipistrellus nathusii*
High vulnerability (medium collision risk and rarest species)	Serotine Barbastelle	*Eptesicus serotinus* *Barbastella barbastellus*
Medium vulnerability	Common pipistrelle Soprano pipistrelle Alcathoe bat Bechstein's bat Brandt's bat Greater horseshoe bat Grey long-eared bat Whiskered bat	*Pipistrellus pipistrellus* *Pipistrellus pygmaeus* *Myotis alcathoe* *Myotis bechsteinii* *Myotis brandtii* *Rhinolophus ferrumequinum* *Plecotus austriacus* *Myotis mystacinus*
Low vulnerability	Brown long-eared bat Daubenton's bat Natterer's bat Lesser horseshoe bat	*Plecotus auritus* *Myotis daubentonii* *Myotis nattereri* *Rhinolophus hipposideros*

Adapted from: Table 2 (Wales) of NatureScot (2019) Bats and Onshore Wind turbines – Survey, Assessment and Mitigation (https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation; last accessed 19/09/2025).

2.10 The results (with sensitive data removed) were then run through an AI tool (Microsoft CoPilot GPT-5) to pull out trends and patterns within the generated Ecobat reports, the outputs of which were subsequently reviewed for accuracy and interpreted in line with best practice guidance referenced above.

RISK ANALYSIS

2.11 Taking the data provided by Ecobat for the 2024-2025 survey period (which provided a more accurate representation of proposed turbine locations) the highest median percentile and the highest maximum percentile reported were used to categorise the level of bat activity with reference to NatureScot (2019) Table 1 and assigned a score. The 'Site Risk assessment' category and score was calculated using NatureScot (2019) Table 3a.

2.12 The scores taken from Table 1 and Table 3a were multiplied together in accordance with Table 3b to provide the 'Overall Risk Assessment' per species per automated detector location.

Section 3
Discussion of Ecobat Results

RELATIVE LEVELS OF BAT ACTIVITY (WHOLE SITE)

3.1 **Table 14** of both **Appendices EDP 1** and **2** provides the species composition of the Site for the 2020-2023 survey period and the 2024-2025 survey period respectively.

3.2 The medium percentile scores in **Table 8** of both **Appendices EDP 1** and **2** shows whether the level of activity per species is considered to be higher than other comparable data sets held by Ecobat in Wales.

3.3 **Figure 4** of both appendices illustrates the activity percentile for each bat species generalised across the whole site, with higher percentiles indicating higher or exceptional levels of activity. **Figure 5** depicts the generalised activity per species across the whole site across the survey period.

3.4 These tables and figures are discussed below for the two survey periods 2020-2023 and 2024-2025.

2020-2023

3.5 The most active species across the Site during the 2020-2023 survey period was common pipistrelle *(pipistrellus pipistrellus)* (comprising 58% of total registrations) with soprano pipistrelle *(pipistrellus pygmaeus)* (34%) also frequent. *Myotis* spp. (4%) and brown long-eared bat *(plecotus auritus)* (1%) were infrequently recorded, with serotine *(eptesicus serotinus),* noctule *(nyctalus noctule)*, Leisler's bat (nyctalus leisleri), lesser horseshoe bat *(rhinolophus hipposideros)*, greater horseshoe bat *(Rhinolophus ferrumequinum)* and Nathusius' pipistrelle *(Pipistrellus nathusii)* recorded rarely (forming less than 1% of total registrations each).

3.6 The median percentile for Leisler's bat was 50 (i.e. activity recorded on-site for Leisler's bat is greater at the Site than 50% of other sites in Wales). The median percentile for greater horseshoe bat was 47, for lesser horseshoe bat it was 37 and for serotine it was 42. Median percentile scores for noctule and all three pipistrelle species were low.

3.7 Common pipistrelle, soprano pipistrelle, brown long-eared bat and serotine show occasional high activity, although most species have low median percentiles, indicating generally low bat activity in comparison to other sites in Wales. Of particular note:

- Common and soprano pipistrelle show frequent spikes in activity, particularly in the summer months, with generally high levels of activity and some exceptional levels of activity;

- Serotine, Leisler's bat and brown long-eared bat show moderate levels of activity. Serotine and Leisler's bat had some peaks in late summer and autumn periods, with brown long-eared bat also showing occasional high activity levels in September; and

- Low activity species include: *Myotis* spp., noctule, lesser and greater horseshoe bats, and Nathusius' pipistrelle with few or no nights of high activity.

2024-2025

3.8 Species composition during the 2024-2025 survey period was similar to the 2020-2023 survey period, with common pipistrelle dominating (comprising 86.7% of total passes). Soprano pipistrelle was recorded less frequently (6%), while Leisler's bat (3.5%) formed a slightly greater proportion of the bat recordings compared to 2020-2023 data. *Myotis* spp. and brown long-eared bat also occurred frequently, albeit at slightly lower levels, while greater and lesser horseshoe bats, noctule, serotine were recorded rarely.

3.9 The median percentile for greater horseshoe activity was 48 (i.e. activity recorded on-site for greater horseshoe is greater at the Site than 48% of other sites in Wales) with activity considered moderate. Both serotine and lesser horseshoe scored 31, which falls into the low-moderate level for bat activity. All other species recorded (common and soprano pipistrelle (despite high pass counts), noctule, Leisler's bat and brown long-eared bat) fall into the low level for bat activity. Of some note when reviewing **Figures 4** and **5**:

- Serotine, noctule, and brown long-eared bat show higher activity later in the season; and

- *Myotis* spp., common pipistrelle, and greater horseshoe bat show more evenly distributed activity.

Summary

3.10 Species diversity remained consistent between both survey periods, although the proportion of activity per species changed slightly over the entire survey period.

3.11 Species of high vulnerability of collision were recorded during survey effort including noctule, Leisler's bat, serotine and Nathusius' pipistrelle. These species were recorded throughout the survey period aside from Nathusius' pipistrelle for which only a handful of passes were recorded during the 2020-2023 survey period. Nathusius' pipistrelle was not recorded during 2024-2025.

3.12 Activity peaks in the late summer and autumn periods for a number of species, including some of those listed as having high vulnerability for collisions include noctule, Leisler's bat, and serotine.

RELATIVE LEVELS OF BAT ACTIVITY PER LOCATION

3.13 **Tables 3-4** and **Figure 2** of **Appendices EDP 1** and **2** illustrate the relative levels of bat activity per automated detector location in tabular summaries and in visual form. On **Figure 2** the box plots illustrate the typical bat activity levels per location per species, with the horizontal bar indicating the median, with outliers shown as dots and whiskers.

3.14 These tables and figures are discussed below for the two survey periods 2020-2023 and 2024-2025:

2020-2023

3.15 Species composition remains similar between the automated detector locations, although Nathusius' pipistrelle was only recorded (with very few registrations across two nights) at Location **L2**.

3.16 Location **L1** shows occasional exceptional levels of activity for soprano pipistrelle with moderate-high levels of activity for serotine, *Myotis* spp., Leisler's bat, and common pipistrelle. In contrast, Location **L2** showed only occasional exceptional activity for brown long-eared bat and serotine. Serotine were often active at moderate levels when recorded. Occasional moderate levels were recorded for Leisler's bat and brown long-eared bat, while both horseshoe species were recorded at low levels.

2024-2025

3.17 Species composition was similar across the three locations between 2024-2025, although, Leisler's bat was not recorded at **L3**, and noctule was not recorded at **L5**.

3.18 **L3** recorded predominantly low levels of bat activity across all species, with the exception of greater horseshoe bat, which showed moderate activity on five nights and a median percentile of 48. All other species, including common pipistrelle, *Myotis* spp., and noctule, fell within the low percentile bands (0–13), indicating low relative activity compared to the national (Wales) dataset.

3.19 **L4** showed slightly elevated activity for Leisler's bat, a species of high vulnerability to collision, with one night of exceptional activity and a maximum percentile of 100, while the remainder of the nights recorded low levels of activity. Greater horseshoe bat, a species of medium vulnerability to collision, also had one night of exceptional activity and a maximum percentile of 100, with the remaining activity at a moderate level. Serotine and lesser horseshoe bat showed moderate activity, with median percentiles of 31.

3.20 **L5** recorded moderate activity for greater horseshoe (median percentile 48) and lesser horseshoe (median 31). *Myotis* spp. and Leisler's bat were present but at low percentile levels, and both common and soprano pipistrelles showed consistent but low activity.

3.21 In summary, **L4** had the most notable activity for high-risk species, while **L3** had the lowest overall bat activity. Single nights of high or exceptional activity may relate to opportunistic foraging occurring close to the detector, while regular activity may indicate reliance and regular foraging/commuting.

Summary

3.22 A brief summary of the relative levels of bat activity per location across the entire Site are provided in **Table EDP 3.1**, with reference to each species' vulnerability to collision.

Table EDP 3.1: Summary of relative levels of bat activity per location across the entire Site

Species	Vulnerability [a]	Activity Summary from Ecobat
Noctule	High	Very low activity across all survey locations in both the 2020-2023 period and the 2024-2025 period.
Leisler's bat	High	Moderate activity across all survey locations in the 2020-2023 period. Not recorded at **L3**, and usually low activity at **L4** and **L5**, but one night of exceptional activity at **L4** reported.
Serotine	High	Moderate levels of activity at all locations across 2020-2025, with some nights of exceptional levels of activity at **L2** during the 2020-2023 survey.
Nathusius' pipistrelle	High	Very low levels of activity (2 registrations over 2 nights) at **L2** only during the 2020-2023 survey period. No records during the 2024-2025 surveys.
Common pipistrelle	Medium	High number of registrations, but comparatively low to other sites.
Soprano pipistrelle	Medium	High number of registrations, but comparatively low to other sites.
Greater horseshoe bat	Medium	Moderate levels of activity at **L2** and slightly higher activity at **L4** compared to **L3** and **L5**.
Myotis spp.	Low-Medium	Frequent detection, but consistently low activity.
Lesser horseshoe bat	Low	Moderate levels of activity at **L2**, **L3**, **L4** and **L5**.
Brown long-eared bat	Low	Moderate activity at **L2**, with some exceptional nights. Low activity in 2024-2025 survey period.

[a] Vulnerability assessment taken from NatureScot (2019) Table 2 (Wales).

RELATIVE LEVELS OF BAT ACTIVITY PER LOCATION PER MONTH

3.23 **Appendices EDP 1** and **2**: **Tables 5-6** and **Figure 3** show the relative levels of bat activity per location per month in tabular summaries. **Figure 3** illustrates the variation in activity per month per location for each species which shows how the variation of typical bat activity changes per month.

3.24 These tables and figures are discussed below for the two survey periods 2020-2023 and 2024-2025:

2020-2023

3.25 Across all detectors between 2020-2024, the above referenced tables and figures show that:

- At Location **L1**, Leisler's bat had moderate activity in September and October. Common and soprano pipistrelles were most active in July and August but had comparatively low levels of activity (despite high numbers of registrations); and

- At Location **L2**, serotine had exceptional activity levels in July and September for one and two nights respectively and moderate activity levels spread across the summer and autumn periods. Brown long-eared bat had two nights of exceptional activity in September.

2024-2025

3.26 Across all detectors between 2024-2025, the above referenced tables and figures show that:

- Bat activity peaked in June–August, with September showing the highest percentiles for greater horseshoe, *Myotis* spp., and Leisler's bat;

- Leisler's bat showed one night of exceptional activity at **L4** in June;

- Noctule activity was relatively low, and concentrated in the autumn months at **L3** and **L4**;

- Peaks in August and September activity were recorded for serotine (all locations) and *Myotis* spp. (**L3** and **L5**, with a spring peak at **L4**)

- Greater horseshoe bat showed one night of exceptional activity in July at **L4**;

- Greater horseshoe showed moderate activity at **L3** and **L5** in May–July across one to three nights (of the five-night survey periods); and

- Common pipistrelle was consistently present and the most frequently recorded species at all locations but remained in the low percentile bands across all months at each location.

3.27 This seasonal pattern aligns with NatureScot (2019) guidance, which notes increased bat activity during the maternity and post-maternity periods (June–August) and September as the start of the potential mating and migration period.

Summary

3.28 A brief summary of the relative levels of bat activity per location across the entire Site are provided in **Table EDP 3.2**.

Table EDP 3.2: Summary of Relative Levels of Bat Activity per Survey Location per Month

Species	**Vulnerability** (taken from NatureScot (2019) Table 2 (Wales))	**Activity Summary from Ecobat**
Noctule	High	Consistently low activity and no seasonal peaks.

Species	Vulnerability (taken from NatureScot (2019) Table 2 (Wales))	Activity Summary from Ecobat
Leisler's bat	High	Moderate activity at **L1** in autumn. Usually, low levels of activity in 2024-2025 survey period, with one exceptional night at **L4** in June.
Serotine	High	Moderate activity at **L2** in late summer during 2021-2023. Low activity in 2024-2025 with a slight elevation at **L5** in July.
Nathusius' pipistrelle	High	Recorded in 2021-2023 at **L2** with low activity in late summer only. Not detected in 2024-2025.
Common and soprano pipistrelle	Medium	Frequent detection, but low comparable activity (percentiles). Peak in activity during the summer period across survey locations.
Greater horseshoe bat	Medium	Moderate activity at **L2** between July-September during 2020-2023. Consistent moderate activity at **L4** and **L5**, peaking in July.
Myotis spp.	Low-Medium	Consistently low activity.
Lesser horseshoe bat	Low	Moderate activity at **L2** in late summer between 2020-2023. Low but consistent activity in 2024-2025, with slight peaks in June and July.
Brown long-eared bat	Low	Occasional moderate activity at **L2** in September between 2020-2023. Low activity through 2024-2025.

DISTRIBUTION OF BAT ACTIVITY ACROSS THE NIGHT

3.29 **Figure 7** of both **Appendices EDP 1** and **2** show that bat activity occurred through the night, with most activity between sunset and 250 minutes (4 hours 10 minutes) post sunset. This aligns with the known species-specific emergence and peak foraging times.

3.30 Greater horseshoe bat, *Myotis* spp., brown long-eared bat and both common and soprano pipistrelle were active throughout the night. In contrast, Leisler's bat, lesser horseshoe bat and serotine showed concentrated activity shortly after sunset, which may indicate commuting routes or proximity to roosts.

ROOST EMERGENCE TIMES THAT POTENTIALLY INDICATE CLOSE PROXIMITY TO A ROOST

3.31 Based on Russ (2012) emergence times[5], **Appendices EDP 1** and **2**: **Table 12** and **Figure 8** compares recorded activity to the known average emergence times of each species. These tables and figures are discussed below for the two survey periods 2020-2023 and 2024-2025:

2020-2023

3.32 Acknowledging the constraints to the archived survey data (not splitting by minute), the Ecobat report indicates that there may be roosts in proximity to the two survey locations. Of note:

- Common and soprano pipistrelle activity were recorded at both automated detector locations prior to sunset and throughout the emergence window. This is inclusive of the core maternity period (mid-June to end of July). Both species were identified as medium vulnerability for collision risk in Wales by NatureScot (2019);
- *Myotis* spp. activity at both automated detector locations prior to sunset and through the emergence window. This is inclusive of the core maternity period for Location **L2** only (mid-June to end of July) and the genus is considered to be of low-medium vulnerability for collision; and
- A greater horseshoe bat record prior to this species typical emergence time was recorded at **L2** (outside of the core maternity period). This may indicate an infrequently used occasional roost nearby of a medium vulnerability for collision species.

3.33 No potential roosts of the species identified as high vulnerability for collision risk were identified.

2024-2025

3.34 The Ecobat report, reports early bat passes at **L3** across five nights in May 2025 which suggest potential roost proximity for common pipistrelle, *Myotis* spp., and brown long-eared bat, with common pipistrelle recorded most frequently. These passes occurred outside of the core maternity period as defined by Ecobat, although maternity colonies may form earlier (in May). However, given that these passes were recorded in very low numbers and only in a single month, it is considered more likely to be occasional day roosts with low usage.

Summary

3.35 Both the 2020-2023 and 2024-2025 data sets recorded potential bat roosts across the locations. While this does not correspond to any species of high vulnerability for collisions,

[5] Emergence time parameters have been updated in Table 3.3 of the 4th Edition of the Bat Survey Guidelines. However, changes are minor.
Collins (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition). The Bat Conservation Trust, London.

this does include species of medium vulnerability such as common and soprano pipistrelles (which may include a maternity roost), *Myotis* spp. roost/s which are of low-medium vulnerability (where the vulnerability category is dependent on species) and a brown long-eared bat roost which is of low vulnerability for collisions.

Section 4
Risk Analysis

SITE RISK ASSESSMENT

4.1 The overall risk assessment of the Site has been calculated using NatureScot's Table 3a. Following NatureScot (2019) Table 3a (and sub-tables), the Site is considered to be Small (<10 turbines proposed) although there are another 6 existing turbines within 10km, and a further 32 proposed within 10km[6].

4.2 Given the presence of hedgerows, trees with potential roost features for bats, large woodland blocks surrounding the Site, and river corridors nearby, the Site is considered to be of High suitability for bats.

4.3 Therefore, following NatureScot's Table 3a, the overall risk assessment for the Site is therefore Medium (3).

RISK ASSESSMENT PER SPECIES PER LOCATION

4.4 An assessment of the overall risk assessment has been undertaken for each species for each of the automated detector locations surveyed between 2024-2025, in line with the NatureScot guidance, whereby the vulnerability of the bat population of each species recorded within the Site has been assessed both using the highest median percentile and the highest maximum percentile, such that a judgment can be made on which is most relevant (i.e. which scores the highest).

4.5 The overall risk assessment for each species has been calculated by multiplying the level of bat activity by the site risk assessment (e.g. 1x3 = 3 for common pipistrelle at **L3** in **Table EDP 4.1**).

4.6 The results are provided in **Table EDP 4.1**.

4.7 In summary, at **L3**, the majority of species detected are considered to be at low risk to the proposed plans, with three species (serotine, greater horseshoe bat and lesser horseshoe bat) considered to be at medium risk to the proposed plans. At Location **L4**, the overall risk is split 50:50 with low-risk species and medium-risk species, where the medium-risk species include: serotine, brown long-eared bat, greater horseshoe bat and lesser horseshoe bat. At Location **L4**, two species – Leisler's bat and Greater horseshoe bat – are considered to be of high risk to the proposed development plans.

[6] Map of planned pylon routes and Wind Farms in Wales. Available at https://caruteifi.cymru/map-rethink-interactive.html [Last accessed: 20/09/2025]

Table EDP 4.1: Overall Risk Assessment for each Species Recorded on Site

Detector	Species	Collision Risk [1]	Vulnerability [1]	Highest MEDIAN percentile [2]	Highest MAXIMUM percentile [2]	95% Confidence Interval[2]	Highest categorised level of bat activity [3]	Site risk assessment [4]	Overall risk assessment [5]
L3	Common pipistrelle	High	Medium	0	6	1-3.5	Low (1)	Medium (3)	Low (3)
	Soprano pipistrelle	High	Medium	0	0	0-0	Low (1)	Medium (3)	Low (3)
	Noctule	High	High	0	0	0-0	Low (1)	Medium (3)	Low (3)
	Serotine	Medium	High	31	31	31-31	Low-moderate (2)	Medium (3)	Medium (6)
	Myotis spp.	Low	Low-Medium	0	0	0-0	Low (1)	Medium (3)	Low (3)
	Brown long-eared bat	Low	Low	13	13	13-13	Low (1)	Medium (3)	Low (3)
	Greater horseshoe bat	Low	Medium	48	59	48-48	Moderate (3)	Medium (3)	Medium (9)
	Lesser horseshoe bat	Low	Low	31	31	0-0	Low-moderate (2)	Medium (3)	Medium (6)
L4	Common pipistrelle	High	Medium	0	17	3-6.5	Low (1)	Medium (3)	Low (3)
	Soprano pipistrelle	High	Medium	0	10	1-4	Low (1)	Medium (3)	Low (3)
	Nathusius' pipistrelle[6]	High	High	15	17	15-15	Low (1)	Medium (3)	Low (3)
	Noctule	High	High	0	0	0-0	Low (1)	Medium (3)	Low (3)
	Leisler's bat	High	High	9	100	6-100	High (5)	Medium (3)	High (15)
	Serotine	Medium	High	31	65	31-31	Moderate-high (4)	Medium (3)	Medium (12)
	Myotis spp.	Low	Low-Medium	1	7	3.5-7	Low (1)	Medium (3)	Low (3)
	Brown long-eared bat	Low	Low	13	13	0-0	Low (1)	Medium (3)	Low (3)
	Greater horseshoe bat	Low	Medium	48	100	48-48	High (5)	Medium (3)	High (15)

Detector	Species	Collision Risk [1]	Vulnerability [1]	Highest MEDIAN percentile [2]	Highest MAXIMUM percentile [2]	95% Confidence Interval[2]	Highest categorised level of bat activity [3]	Site risk assessment [4]	Overall risk assessment [5]
	Lesser horseshoe bat	Low	Low	31	37	31-31	Low-moderate (2)	Medium (3)	Medium (6)
L5	Common pipistrelle	High	Medium	0	4	1-4	Low (1)	Medium (3)	Low (3)
	Soprano pipistrelle	High	Medium	0	8	1.5-5	Low (1)	Medium (3)	Low (3)
	Leisler's bat	High	High	6	9	6-6	Low (1)	Medium (3)	Low (3)
	Serotine	Medium	High	31	65	31-31	Moderate-high (4)	Medium (3)	Medium (12)
	Myotis spp.	Low	Low-Medium	1	6	1-6	Low (1)	Medium (3)	Low (3)
	Brown long-eared bat	Low	Low	13	33	13-13	Low-moderate (2)	Medium (3)	Medium (12)
	Greater horseshoe bat	Low	Medium	48	59	48-48	Moderate (3)	Medium (3)	Medium (9)
	Lesser horseshoe bat	Low	Low	31	31	31-31	Low-moderate (2)	Medium (3)	Medium (6)

[1] From NatureScot (2019) guidance (Wales)
[2] Table 4 from the Ecobat report
[3] Table 1 from NatureScot (2019) Guidance
[4] Average site risk assessment
[5] Table 3b from NatureScot Guidance
[6] Nathusius' pipistrelle not recorded in 2024-2025, therefore for the purposes of this assessment, the results from survey location L2 for the 2020-2023 survey period has been included here as the closest location

Common Pipistrelle

4.8 Common pipistrelles were recorded across all locations across the survey periods. While the number of registrations was generally higher than most other species on site, comparable activity levels for common pipistrelle activity was reported as low in the Ecobat reports. This species was consistently assessed as Low Overall Risk across all survey locations. While the confidence intervals varied slightly, this indicates a low but consistent activity, supporting the low overall risk designations. As such, it is considered that this species would not be adversely affected by the turbine locations.

Soprano Pipistrelle

4.9 Soprano pipistrelle was recorded across all locations across the two survey periods. Similarly to common pipistrelle, while the number of registrations was generally higher than most other species on site, comparable activity levels for soprano pipistrelle were low in the Ecobat reports. This species was consistently assessed as low overall risk across all survey locations. While the confidence intervals varied slightly (0-0 to 1.5-5), this indicates a low but consistent activity, supporting the low-risk designations.

4.10 As such, overall, it is considered that this species would not be adversely affected by the turbine locations.

Nathusius' Pipistrelle

4.11 Nathusius's pipistrelle was not recorded during the 2024-2025 survey period, and only two registrations were record during the 2022-2023 survey period. This species is only using the Site very rarely and is therefore not reliant on the Site, or the habitats it provides. Although the collision risk is high, it is considered that very few individuals would enter the Site and, therefore, the risk to the population of Nathusius' pipistrelle is very low. Overall, it is considered that this species would not be adversely affected by the turbine locations.

Noctule

4.12 Noctule were recorded at survey locations **L3** and **L4** and despite noctule having high collision risk and high vulnerability, due to the low levels of activity, noctule are considered to have low overall risk. As such it is considered that this species would not be adversely affected by the turbine locations.

Leisler's Bat

4.13 While Leisler's bat was not recorded at survey location **L3**, overall risk varied across the other survey locations. Leisler's bat was recorded at low risk at survey location **L5** and high risk at **L4**. However, the wide confidence interval indicates high variability in activity and **Appendix EDP 2**, **Table 3** shows only one night of exceptional activity during the 2024-2025 survey period, with activity otherwise low. Therefore, it is considered Leisler's bat only have significant levels of activity rarely and should be considered low risk. It is considered that this species would not be adversely affected by the turbine locations.

Serotine

4.14 Serotine were recorded at all three survey locations, with medium overall risk for all survey locations and high vulnerability to collision. Given the consistent confidence interval, it is considered that this measure of activity and therefore level of risk assigned is reliable. Therefore, it is considered that this species may be adversely affected by the turbine locations, and this is discussed further in the ES Chapter.

***Myotis* spp.**

4.15 According to the desk study undertaken in the baseline report (edp6611_r007), no records of Bechstein's bats have been returned within 6km of the Site and therefore this Annex II species would not be adversely affected by the turbine.

4.16 *Myotis* spp. were recorded at all three survey locations, with low overall risk for all survey locations. Given the consistent confidence interval, it is considered that this measure of activity and therefore level of risk assigned is reliable.

4.17 As such, overall, it is considered that this genus would not be adversely affected by the turbine locations.

Brown Long-eared Bat

4.18 Brown long-eared bats were recorded at all three survey locations, with low overall risk for survey locations **L3** and **L4** and moderate overall risk for **L5**. Given the consistent confidence interval, it is considered that this measure of activity and therefore level of risk assigned is reliable. As such, it is considered that this species would not be adversely affected by the turbine locations at turbine locations **T1** and **T2**, although may be affected at **T3**, and this is discussed further in the ES Chapter.

Greater Horseshoe Bat

4.19 Greater horseshoe bats were recorded at all three survey locations, with medium overall risk for survey locations **L3** and **L5** and high overall risk for **L4**. Given the consistent confidence intervals, it is considered that this measure of activity and therefore level of risk assigned is reliable for each location. However, as noted in **Appendix EDP 2**, **Table 3**, greater horseshoe bats were only recorded for a total of four nights out of the 2024-2025 survey period at survey location **L4**, with a single night of exceptional activity and the remaining three nights at moderate activity levels. Therefore, it is considered that the single night of exceptional activity is rare (and with no such high or exceptional nights of activity levels detected during 2020-2023 survey period) and that on nights where greater horseshoe is present at this location, it also is usually at medium overall risk.

4.20 Overall, however, it is considered that greater horseshoe bats may be adversely affected by the turbine locations at all three turbine locations without appropriate mitigation measures, and this is discussed further in the ES Chapter.

Lesser Horseshoe Bat

4.21 Lesser horseshoe bats were recorded at all three survey locations, with a low overall risk for all survey locations. Given the consistent confidence interval, it is considered that this measure of activity and therefore level of risk assigned is reliable. As such, overall, it is considered that this species would not be adversely affected by the turbine locations.

Appendix EDP 1
Ecobat Report for 2020-2023 Data

Ecobat Report
2025-09-17

Geo filter: country, Time filter: all

Summary

Bats were detected on **179** nights between **22/06/2020** and **25/10/2023**, using **2** static bat detectors. Throughout this period, **10** species were recorded. **Table 1.** Detectors were placed at the following locations:

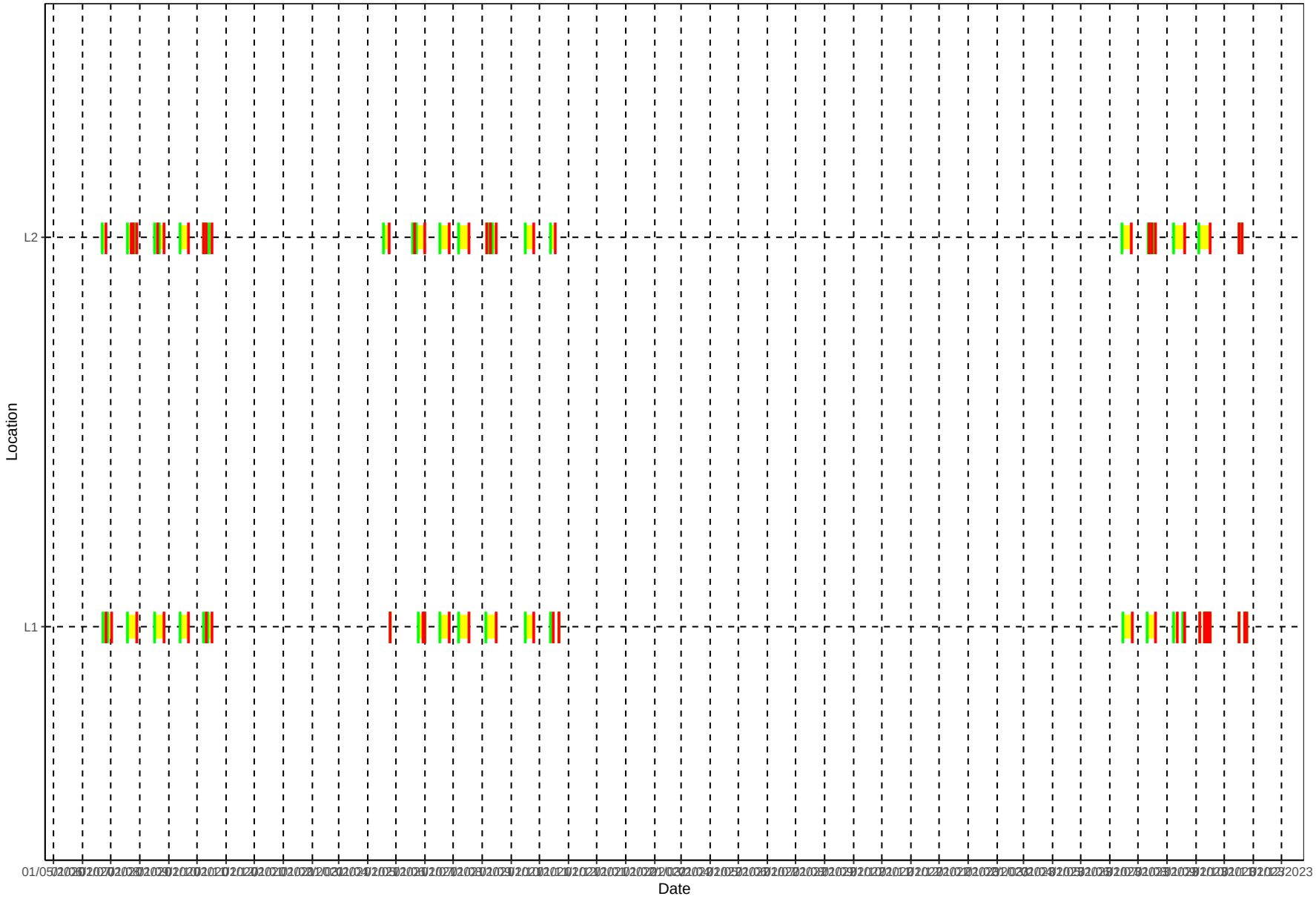
Detector ID	Latitude	Longitude
L2	51.64766	-3.102895
L1	51.64716	-3.111242
L2	51.64770	-3.102895

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
L1	145
L2	159

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


Location
L2
L1
01/05/2023
Date

Part 1: Percentile 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.

Per Detector

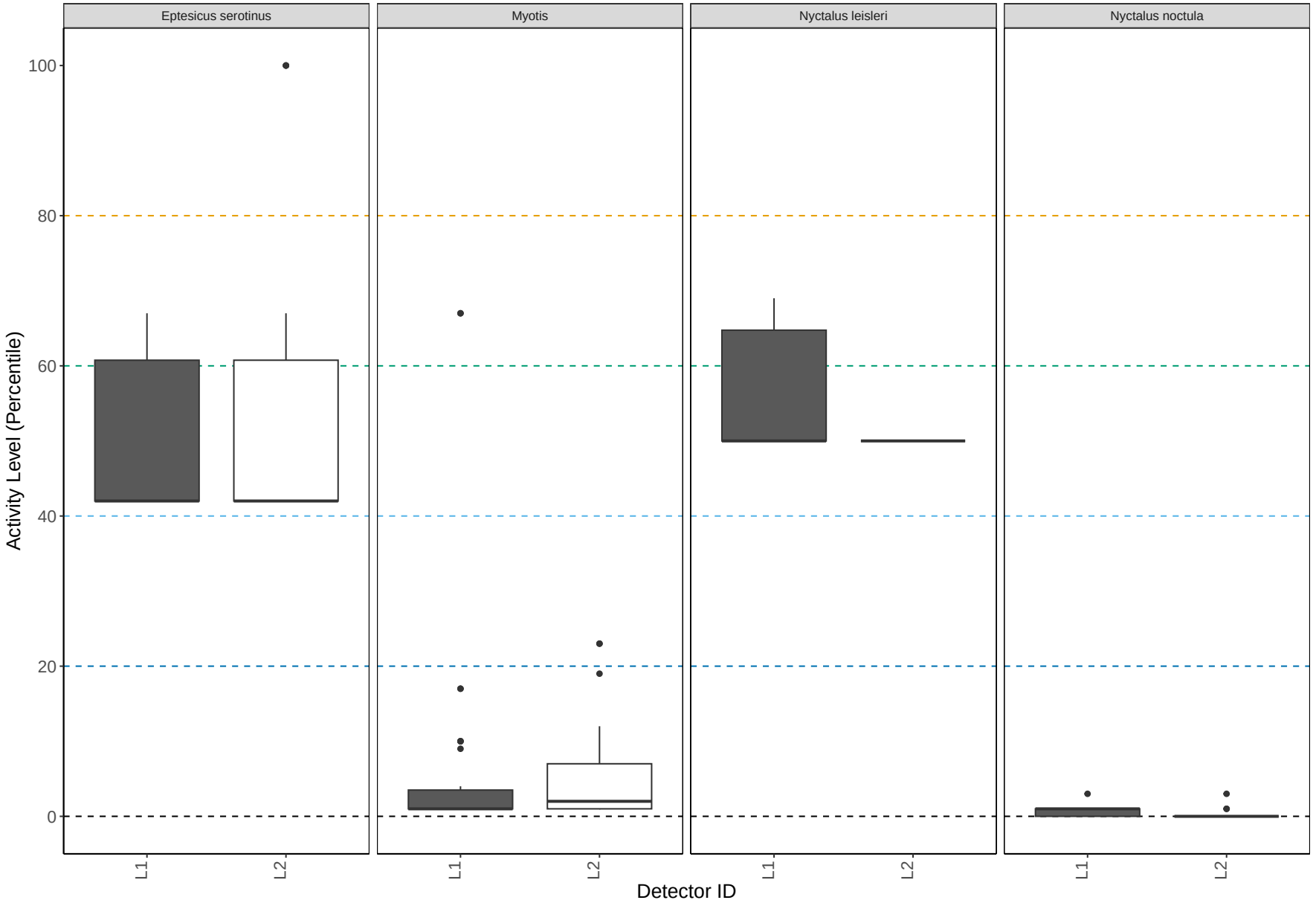
Table 3. Summary table showing the number of nights recorded bat activity fell into each activity band for each species.

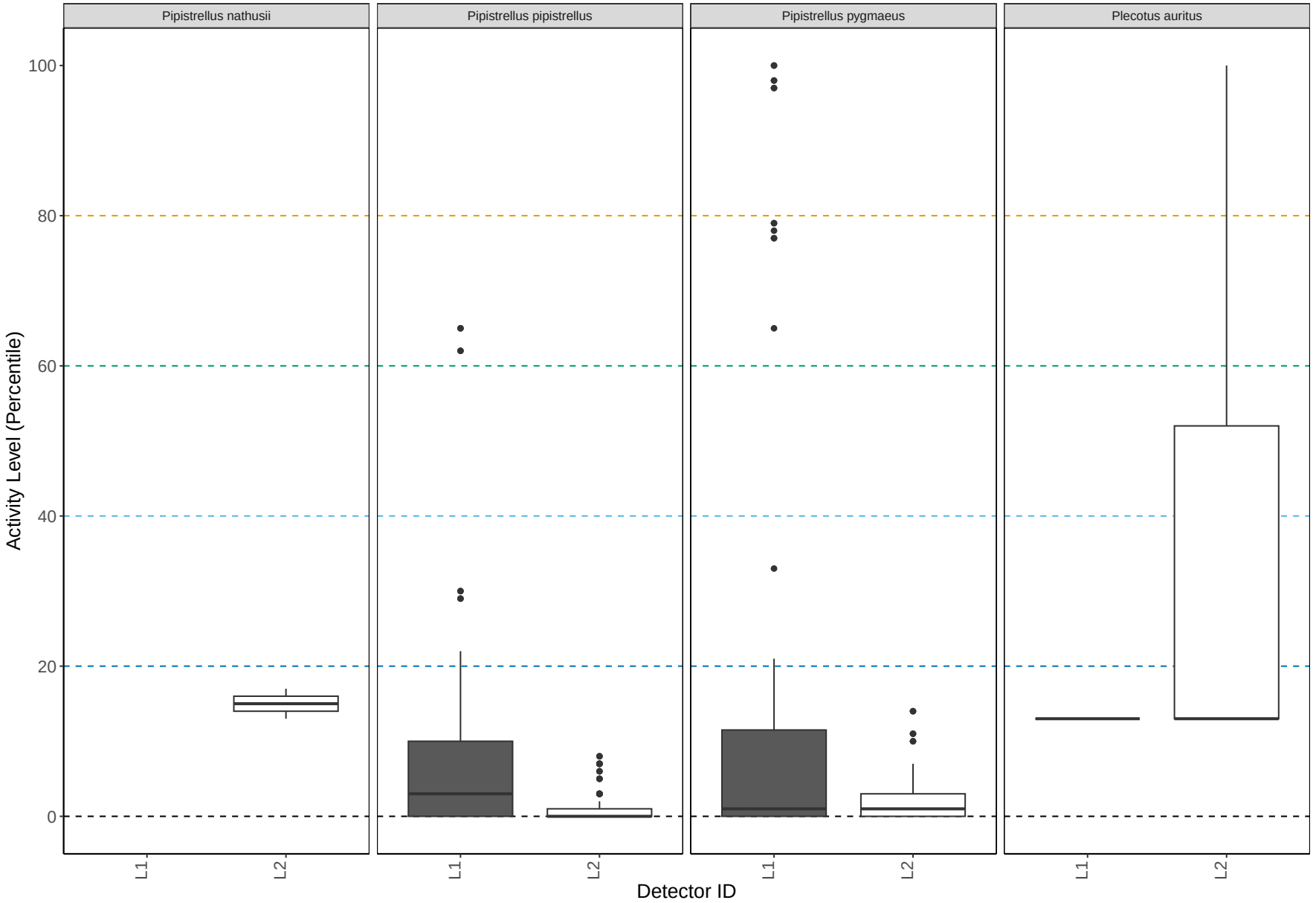
Detector ID	Species/Species Group	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L1	Eptesicus serotinus	0	0	3	7	0	0
L1	Myotis	0	0	2	0	0	48
L1	Nyctalus leisleri	0	0	4	10	0	0
L1	Nyctalus noctula	0	0	0	0	0	8
L1	Pipistrellus pipistrellus	0	0	4	0	6	119
L1	Pipistrellus pygmaeus	6	0	6	0	2	46
L1	Plecotus auritus	0	0	0	0	0	1
L1	Rhinolophus hipposideros	0	0	0	0	5	0
L2	Eptesicus serotinus	3	0	2	13	0	0
L2	Myotis	0	0	0	0	2	101
L2	Nyctalus leisleri	0	0	0	5	0	0
L2	Nyctalus noctula	0	0	0	0	0	16
L2	Pipistrellus nathusii	0	0	0	0	0	2
L2	Pipistrellus pipistrellus	0	0	0	0	0	141
L2	Pipistrellus pygmaeus	0	0	0	0	0	90
L2	Plecotus auritus	2	1	3	6	1	16
L2	Rhinolophus ferrumequinum	0	0	0	6	0	0
L2	Rhinolophus hipposideros	0	0	0	3	9	0

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
L1	Eptesicus serotinus	42	42 - 54.5	67	10	49
L1	Myotis	1	1.5 - 2.5	67	50	7026
L1	Nyctalus leisleri	50	50 - 59.5	69	14	36
L1	Nyctalus noctula	1	1 - 1	3	8	4339
L1	Pipistrellus pipistrellus	3	7 - 10.5	65	129	142846
L1	Pipistrellus pygmaeus	1	10 - 50.5	100	60	22313
L1	Plecotus auritus	13	0	13	1	454
L1	Rhinolophus hipposideros	37	37 - 37	37	5	77
L2	Eptesicus serotinus	42	42 - 71	100	18	49
L2	Myotis	2	2.5 - 4.5	23	103	7026
L2	Nyctalus leisleri	50	50 - 50	50	5	36
L2	Nyctalus noctula	0	1 - 1	3	16	4339
L2	Pipistrellus nathusii	15	15 - 15	17	2	249
L2	Pipistrellus pipistrellus	0	2 - 4	8	141	142846
L2	Pipistrellus pygmaeus	1	2.5 - 3.5	14	90	22313
L2	Plecotus auritus	13	13 - 48	100	29	454
L2	Rhinolophus ferrumequinum	47	47 - 47	56	6	23
L2	Rhinolophus hipposideros	37	37 - 46	55	12	77

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).


Eptesicus serotinus
Myotis
Nyctalus leisleri
Nyctalus noctula
Activity Level (Percentile)
100
80
60
40
20
0
L1
L2
Detector ID


Pipistrellus nathusii
Pipistrellus pipistrellus
Pipistrellus pygmaeus
Plecotus auritus
Activity Level (Percentile)
100
80
60
40
20
0
L1
L2
Detector ID

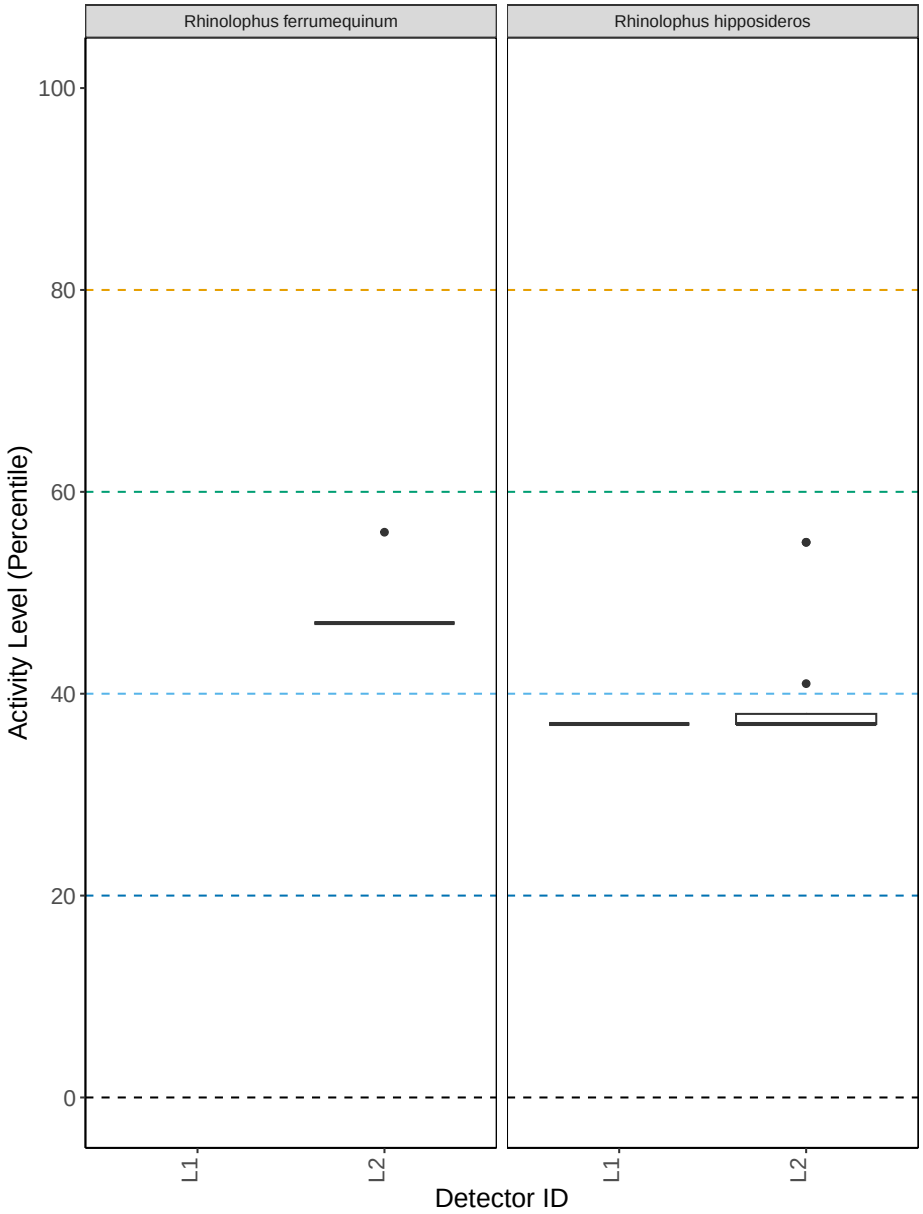
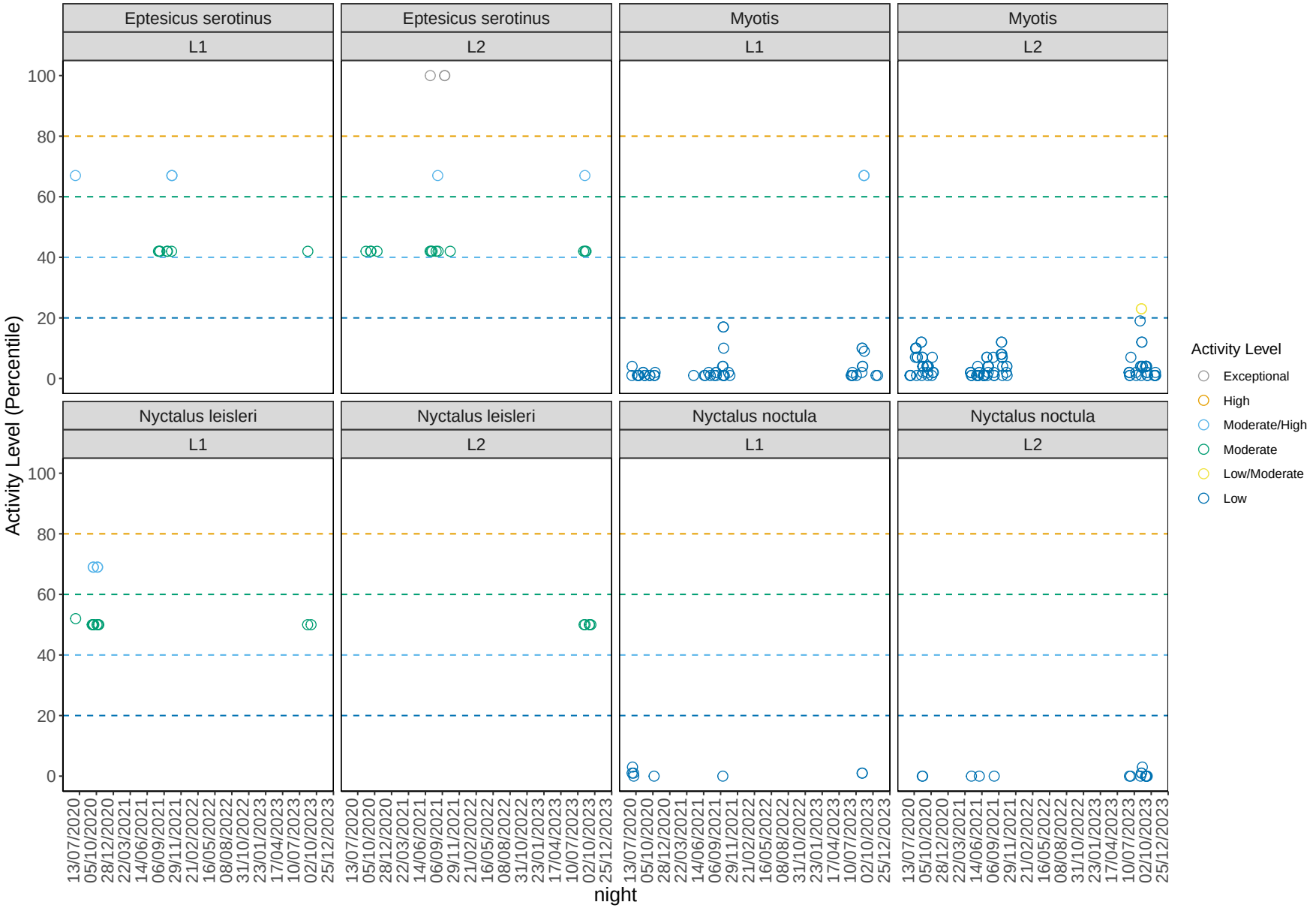
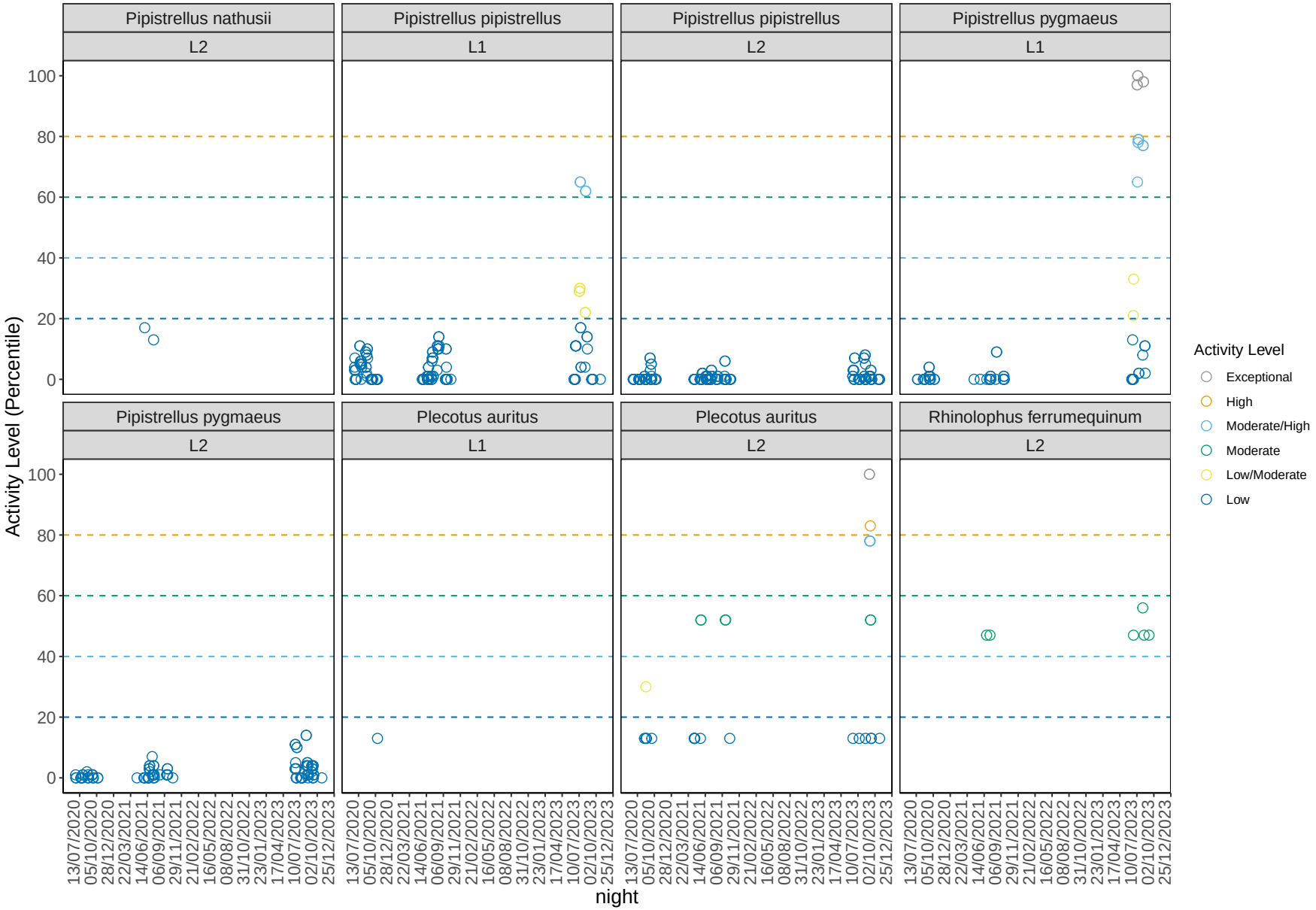
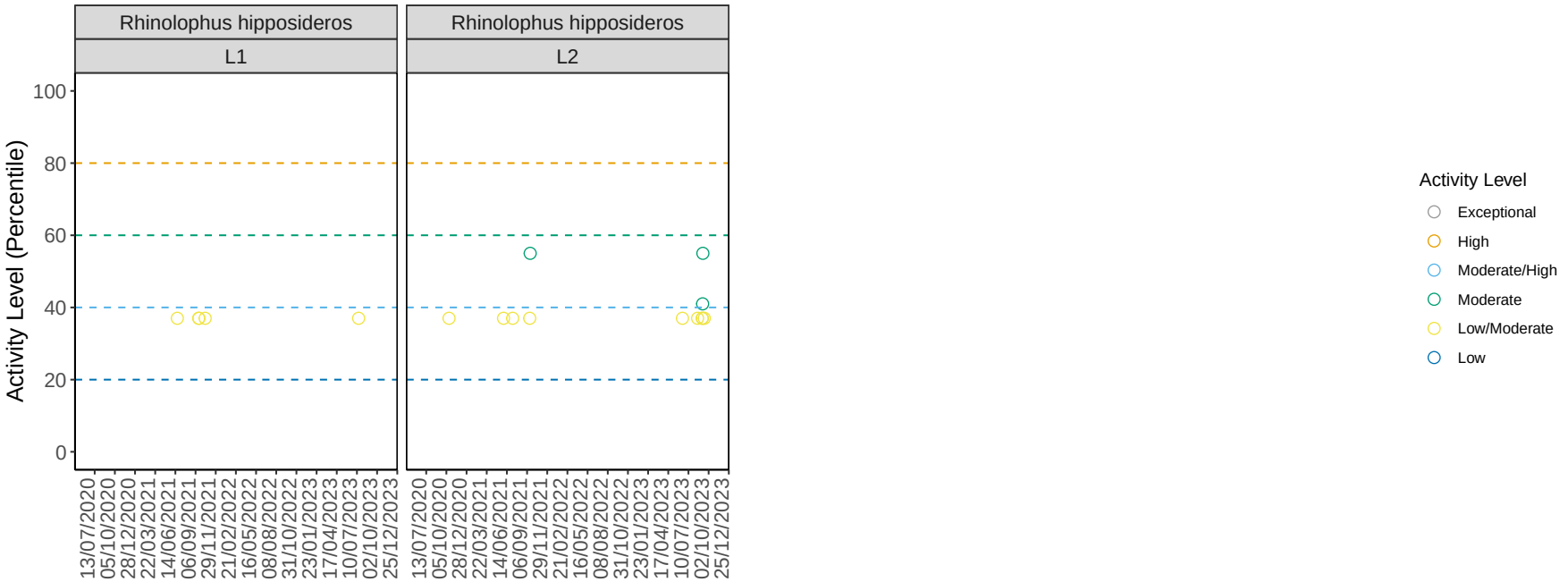

Rhinolophus ferrumequinum
Rhinolophus hipposideros
100
80
60
40
20
0
Activity Level (Percentile)
L1
L2
L1
L2
Detector ID

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


Eptesicus serotinus
L1
Eptesicus serotinus
L2
Myotis
L1
Myotis
L2
Nyctalus leisleri
L1
Nyctalus leisleri
L2
Nyctalus noctula
L1
Nyctalus noctula
L2
Activity Level (Percentile)
100
80
60
40
20
0
13/07/2020
05/10/2020
28/12/2020
22/03/2021
14/06/2021
06/09/2021
29/11/2021
21/02/2022
16/05/2022
08/08/2022
31/10/2022
23/01/2023
17/04/2023
10/07/2023
02/10/2023
25/12/2023
night
Activity Level
Exceptional
High
Moderate/High
Moderate
Low/Moderate
Low


Pipistrellus nathusii
L2
Pipistrellus pipistrellus
L1
Pipistrellus pipistrellus
L2
Pipistrellus pygmaeus
L1
Pipistrellus pygmaeus
L2
Plecotus auritus
L1
Plecotus auritus
L2
Rhinolophus ferrumequinum
L2
Activity Level (Percentile)
100
80
60
40
20
0
13/07/2020
05/10/2020
28/12/2020
22/03/2021
14/06/2021
06/09/2021
29/11/2021
21/02/2022
16/05/2022
08/08/2022
31/10/2022
23/01/2023
17/04/2023
10/07/2023
02/10/2023
25/12/2023
night
Activity Level
Exceptional
High
Moderate/High
Moderate
Low/Moderate
Low


Rhinolophus hipposideros
L1
Rhinolophus hipposideros
L2
Activity Level (Percentile)
100
80
60
40
20
0
13/07/2020
05/10/2020
28/12/2020
22/03/2021
14/06/2021
06/09/2021
29/11/2021
21/02/2022
16/05/2022
08/08/2022
31/10/2022
23/01/2023
17/04/2023
10/07/2023
02/10/2023
25/12/2023
Activity Level
Exceptional
High
Moderate/High
Moderate
Low/Moderate
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 Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L1	Eptesicus serotinus	Jun	0	0	1	0	0	0
L1	Eptesicus serotinus	Aug	0	0	0	4	0	0
L1	Eptesicus serotinus	Sep	0	0	0	2	0	0
L1	Eptesicus serotinus	Oct	0	0	2	1	0	0
L1	Myotis	Apr	0	0	0	0	0	1
L1	Myotis	Jun	0	0	0	0	0	8
L1	Myotis	Jul	0	0	0	0	0	7
L1	Myotis	Aug	0	0	2	0	0	14
L1	Myotis	Sep	0	0	0	0	0	11
L1	Myotis	Oct	0	0	0	0	0	7
L1	Nyctalus leisleri	Jun	0	0	0	1	0	0
L1	Nyctalus leisleri	Aug	0	0	0	1	0	0
L1	Nyctalus leisleri	Sep	0	0	2	5	0	0
L1	Nyctalus leisleri	Oct	0	0	2	3	0	0
L1	Nyctalus noctula	Jun	0	0	0	0	0	2
L1	Nyctalus noctula	Jul	0	0	0	0	0	2
L1	Nyctalus noctula	Aug	0	0	0	0	0	2
L1	Nyctalus noctula	Sep	0	0	0	0	0	1
L1	Nyctalus noctula	Oct	0	0	0	0	0	1
L1	Pipistrellus pipistrellus	May	0	0	0	0	0	6
L1	Pipistrellus pipistrellus	Jun	0	0	0	0	0	30
L1	Pipistrellus pipistrellus	Jul	0	0	2	0	4	28

Detector ID	Species/Species Group	month	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L1	Pipistrellus pipistrellus	Aug	0	0	2	0	2	26
L1	Pipistrellus pipistrellus	Sep	0	0	0	0	0	22
L1	Pipistrellus pipistrellus	Oct	0	0	0	0	0	7
L1	Pipistrellus pygmaeus	Apr	0	0	0	0	0	1
L1	Pipistrellus pygmaeus	May	0	0	0	0	0	1
L1	Pipistrellus pygmaeus	Jun	0	0	0	0	2	9
L1	Pipistrellus pygmaeus	Jul	4	0	4	0	0	10
L1	Pipistrellus pygmaeus	Aug	2	0	2	0	0	10
L1	Pipistrellus pygmaeus	Sep	0	0	0	0	0	13
L1	Pipistrellus pygmaeus	Oct	0	0	0	0	0	2
L1	Plecotus auritus	Oct	0	0	0	0	0	1
L1	Rhinolophus hipposideros	Jun	0	0	0	0	1	0
L1	Rhinolophus hipposideros	Jul	0	0	0	0	1	0
L1	Rhinolophus hipposideros	Sep	0	0	0	0	2	0
L1	Rhinolophus hipposideros	Oct	0	0	0	0	1	0
L2	Eptesicus serotinus	Jul	1	0	0	3	0	0
L2	Eptesicus serotinus	Aug	0	0	2	6	0	0

Detector ID	Species/Species Group	month	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L2	Eptesicus serotinus	Sep	2	0	0	2	0	0
L2	Eptesicus serotinus	Oct	0	0	0	2	0	0
L2	Myotis	Apr	0	0	0	0	0	5
L2	Myotis	May	0	0	0	0	0	6
L2	Myotis	Jun	0	0	0	0	0	14
L2	Myotis	Jul	0	0	0	0	0	17
L2	Myotis	Aug	0	0	0	0	2	20
L2	Myotis	Sep	0	0	0	0	0	25
L2	Myotis	Oct	0	0	0	0	0	14
L2	Nyctalus leisleri	Aug	0	0	0	2	0	0
L2	Nyctalus leisleri	Sep	0	0	0	3	0	0
L2	Nyctalus noctula	Apr	0	0	0	0	0	1
L2	Nyctalus noctula	Jun	0	0	0	0	0	3
L2	Nyctalus noctula	Aug	0	0	0	0	0	7
L2	Nyctalus noctula	Sep	0	0	0	0	0	5
L2	Pipistrellus nathusii	May	0	0	0	0	0	1
L2	Pipistrellus nathusii	Jul	0	0	0	0	0	1
L2	Pipistrellus pipistrellus	Apr	0	0	0	0	0	4
L2	Pipistrellus pipistrellus	May	0	0	0	0	0	9
L2	Pipistrellus pipistrellus	Jun	0	0	0	0	0	28
L2	Pipistrellus pipistrellus	Jul	0	0	0	0	0	26
L2	Pipistrellus pipistrellus	Aug	0	0	0	0	0	29
L2	Pipistrellus pipistrellus	Sep	0	0	0	0	0	33

Detector ID	Species/Species Group	month	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L2	Pipistrellus pipistrellus	Oct	0	0	0	0	0	12
L2	Pipistrellus pygmaeus	Apr	0	0	0	0	0	1
L2	Pipistrellus pygmaeus	May	0	0	0	0	0	3
L2	Pipistrellus pygmaeus	Jun	0	0	0	0	0	23
L2	Pipistrellus pygmaeus	Jul	0	0	0	0	0	20
L2	Pipistrellus pygmaeus	Aug	0	0	0	0	0	17
L2	Pipistrellus pygmaeus	Sep	0	0	0	0	0	22
L2	Pipistrellus pygmaeus	Oct	0	0	0	0	0	4
L2	Plecotus auritus	Apr	0	0	0	0	0	4
L2	Plecotus auritus	May	0	0	0	2	0	1
L2	Plecotus auritus	Jun	0	0	0	0	0	1
L2	Plecotus auritus	Jul	0	0	0	0	0	1
L2	Plecotus auritus	Aug	0	0	0	0	1	4
L2	Plecotus auritus	Sep	2	1	3	4	0	3
L2	Plecotus auritus	Oct	0	0	0	0	0	2
L2	Rhinolophus ferrumequinum	Jun	0	0	0	2	0	0
L2	Rhinolophus ferrumequinum	Jul	0	0	0	1	0	0
L2	Rhinolophus ferrumequinum	Aug	0	0	0	2	0	0
L2	Rhinolophus ferrumequinum	Sep	0	0	0	1	0	0
L2	Rhinolophus hipposideros	May	0	0	0	0	1	0

Detector ID	Species/Species Group	month	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L2	Rhinolophus hipposideros	Jun	0	0	0	0	1	0
L2	Rhinolophus hipposideros	Jul	0	0	0	0	1	0
L2	Rhinolophus hipposideros	Aug	0	0	0	0	1	0
L2	Rhinolophus hipposideros	Sep	0	0	0	3	4	0
L2	Rhinolophus hipposideros	Oct	0	0	0	0	1	0

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
L1	Eptesicus serotinus	Jun	67	42 - 54.5	67	1
L1	Eptesicus serotinus	Aug	42	42 - 54.5	42	4
L1	Eptesicus serotinus	Sep	42	42 - 54.5	42	2
L1	Eptesicus serotinus	Oct	67	42 - 54.5	67	3
L1	Myotis	Apr	1	1.5 - 2.5	1	1
L1	Myotis	Jun	1	1.5 - 2.5	4	8
L1	Myotis	Jul	1	1.5 - 2.5	2	7
L1	Myotis	Aug	2	1.5 - 2.5	67	16
L1	Myotis	Sep	1	1.5 - 2.5	17	11
L1	Myotis	Oct	1	1.5 - 2.5	2	7
L1	Nyctalus leisleri	Jun	52	50 - 59.5	52	1
L1	Nyctalus leisleri	Aug	50	50 - 59.5	50	1
L1	Nyctalus leisleri	Sep	50	50 - 59.5	69	7
L1	Nyctalus leisleri	Oct	50	50 - 59.5	69	5
L1	Nyctalus noctula	Jun	2	1 - 1	3	2
L1	Nyctalus noctula	Jul	1	1 - 1	1	2
L1	Nyctalus noctula	Aug	1	1 - 1	1	2
L1	Nyctalus noctula	Sep	0	1 - 1	0	1
L1	Nyctalus noctula	Oct	0	1 - 1	0	1
L1	Pipistrellus pipistrellus	May	0	7 - 10.5	0	6
L1	Pipistrellus pipistrellus	Jun	0	7 - 10.5	11	30
L1	Pipistrellus pipistrellus	Jul	6	7 - 10.5	65	34
L1	Pipistrellus pipistrellus	Aug	10	7 - 10.5	62	30
L1	Pipistrellus pipistrellus	Sep	0	7 - 10.5	10	22
L1	Pipistrellus pipistrellus	Oct	0	7 - 10.5	0	7
L1	Pipistrellus pygmaeus	Apr	0	10 - 50.5	0	1
L1	Pipistrellus pygmaeus	May	0	10 - 50.5	0	1
L1	Pipistrellus pygmaeus	Jun	0	10 - 50.5	33	11
L1	Pipistrellus pygmaeus	Jul	2	10 - 50.5	100	18
L1	Pipistrellus pygmaeus	Aug	9	10 - 50.5	98	14
L1	Pipistrellus pygmaeus	Sep	1	10 - 50.5	4	13
L1	Pipistrellus pygmaeus	Oct	0	10 - 50.5	0	2
L1	Plecotus auritus	Oct	13	0	13	1

Detector ID	Species/Species Group	month	Median Percentile	95% CIs	Max. Percentile	Nights Recorded
L1	Rhinolophus hipposideros	Jun	37	37 - 37	37	1
L1	Rhinolophus hipposideros	Jul	37	37 - 37	37	1
L1	Rhinolophus hipposideros	Sep	37	37 - 37	37	2
L1	Rhinolophus hipposideros	Oct	37	37 - 37	37	1
L2	Eptesicus serotinus	Jul	42	42 - 71	100	4
L2	Eptesicus serotinus	Aug	42	42 - 71	67	8
L2	Eptesicus serotinus	Sep	71	42 - 71	100	4
L2	Eptesicus serotinus	Oct	42	42 - 71	42	2
L2	Myotis	Apr	2	2.5 - 4.5	2	5
L2	Myotis	May	1	2.5 - 4.5	4	6
L2	Myotis	Jun	1	2.5 - 4.5	7	14
L2	Myotis	Jul	7	2.5 - 4.5	10	17
L2	Myotis	Aug	4	2.5 - 4.5	23	22
L2	Myotis	Sep	4	2.5 - 4.5	12	25
L2	Myotis	Oct	2	2.5 - 4.5	7	14
L2	Nyctalus leisleri	Aug	50	50 - 50	50	2
L2	Nyctalus leisleri	Sep	50	50 - 50	50	3
L2	Nyctalus noctula	Apr	0	1 - 1	0	1
L2	Nyctalus noctula	Jun	0	1 - 1	0	3
L2	Nyctalus noctula	Aug	0	1 - 1	3	7
L2	Nyctalus noctula	Sep	0	1 - 1	0	5
L2	Pipistrellus nathusii	May	17	15 - 15	17	1
L2	Pipistrellus nathusii	Jul	13	15 - 15	13	1
L2	Pipistrellus pipistrellus	Apr	0	2 - 4	0	4
L2	Pipistrellus pipistrellus	May	0	2 - 4	2	9
L2	Pipistrellus pipistrellus	Jun	0	2 - 4	7	28
L2	Pipistrellus pipistrellus	Jul	0	2 - 4	3	26
L2	Pipistrellus pipistrellus	Aug	0	2 - 4	8	29
L2	Pipistrellus pipistrellus	Sep	1	2 - 4	7	33
L2	Pipistrellus pipistrellus	Oct	0	2 - 4	0	12
L2	Pipistrellus pygmaeus	Apr	0	2.5 - 3.5	0	1
L2	Pipistrellus pygmaeus	May	0	2.5 - 3.5	0	3
L2	Pipistrellus pygmaeus	Jun	3	2.5 - 3.5	11	23
L2	Pipistrellus pygmaeus	Jul	1	2.5 - 3.5	7	20
L2	Pipistrellus pygmaeus	Aug	2	2.5 - 3.5	14	17
L2	Pipistrellus pygmaeus	Sep	1	2.5 - 3.5	4	22

Detector ID	Species/Species Group	month	Median Percentile	95% CIs	Max. Percentile	Nights Recorded
L2	Pipistrellus pygmaeus	Oct	0	2.5 - 3.5	0	4
L2	Plecotus auritus	Apr	13	13 - 48	13	4
L2	Plecotus auritus	May	52	13 - 48	52	3
L2	Plecotus auritus	Jun	13	13 - 48	13	1
L2	Plecotus auritus	Jul	13	13 - 48	13	1
L2	Plecotus auritus	Aug	13	13 - 48	30	5
L2	Plecotus auritus	Sep	52	13 - 48	100	13
L2	Plecotus auritus	Oct	13	13 - 48	13	2
L2	Rhinolophus ferrumequinum	Jun	47	47 - 47	47	2
L2	Rhinolophus ferrumequinum	Jul	47	47 - 47	47	1
L2	Rhinolophus ferrumequinum	Aug	52	47 - 47	56	2
L2	Rhinolophus ferrumequinum	Sep	47	47 - 47	47	1
L2	Rhinolophus hipposideros	May	37	37 - 46	37	1
L2	Rhinolophus hipposideros	Jun	37	37 - 46	37	1
L2	Rhinolophus hipposideros	Jul	37	37 - 46	37	1
L2	Rhinolophus hipposideros	Aug	37	37 - 46	37	1
L2	Rhinolophus hipposideros	Sep	37	37 - 46	55	7
L2	Rhinolophus hipposideros	Oct	37	37 - 46	37	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 Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
Eptesicus serotinus	3	0	5	20	0	0
Myotis	0	0	2	0	2	149
Nyctalus leisleri	0	0	4	15	0	0
Nyctalus noctula	0	0	0	0	0	24
Pipistrellus nathusii	0	0	0	0	0	2
Pipistrellus pipistrellus	0	0	4	0	6	260
Pipistrellus pygmaeus	6	0	6	0	2	136
Plecotus auritus	2	1	3	6	1	17
Rhinolophus ferrumequinum	0	0	0	6	0	0
Rhinolophus hipposideros	0	0	0	3	14	0

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

Species/Species Group	Median Percentile	95% CIs	Max. Percentile	Nights Recorded
Eptesicus serotinus	42	42 - 71	100	28
Myotis	2	2.5 - 4.5	67	153
Nyctalus leisleri	50	50 - 59.5	69	19
Nyctalus noctula	0	1 - 1	3	24
Pipistrellus nathusii	15	15 - 15	17	2
Pipistrellus pipistrellus	0	7 - 10.5	65	270
Pipistrellus pygmaeus	1	2.5 - 3.5	100	150
Plecotus auritus	13	13 - 48	100	30
Rhinolophus ferrumequinum	47	47 - 47	56	6
Rhinolophus hipposideros	37	37 - 46	55	17

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

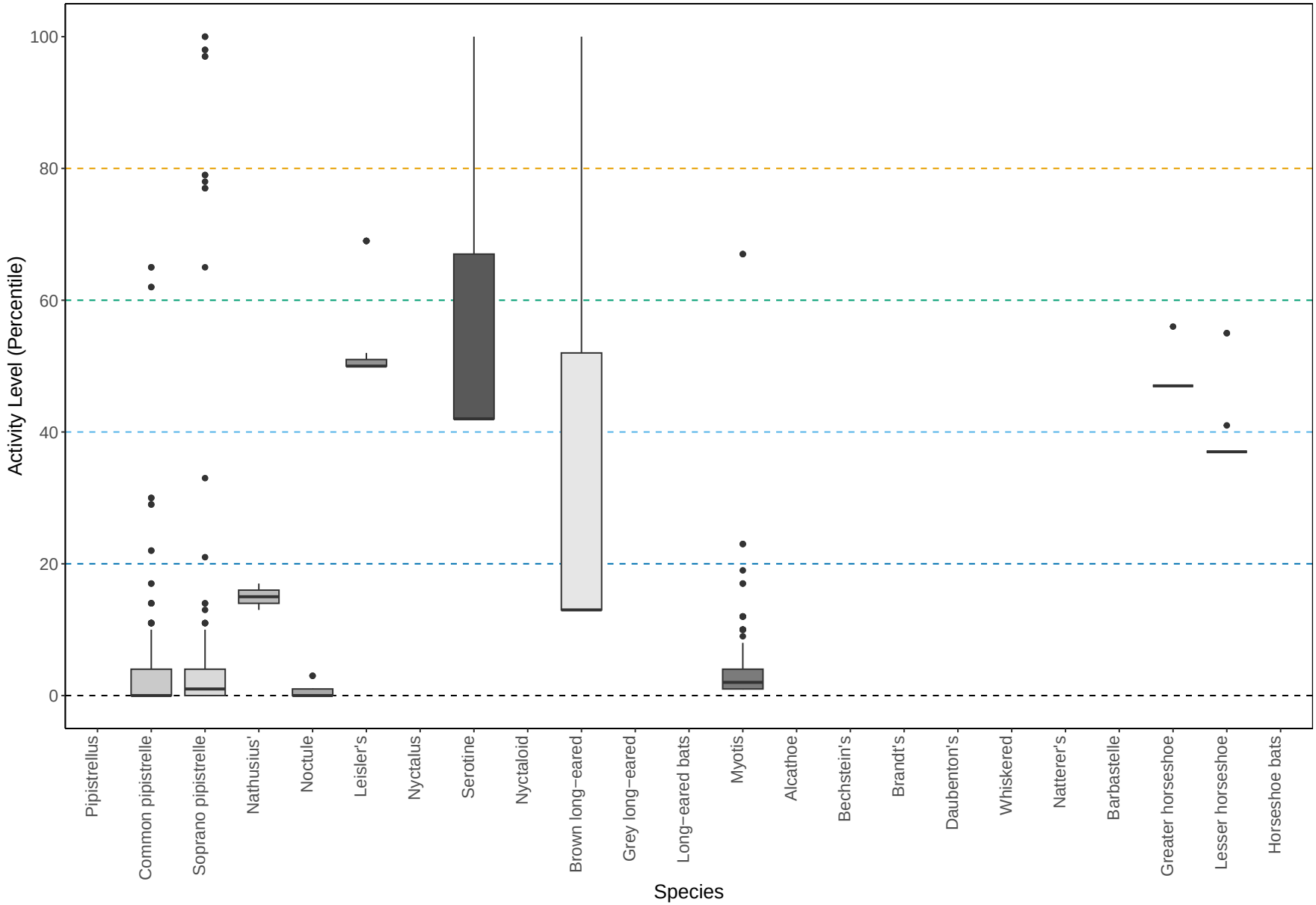
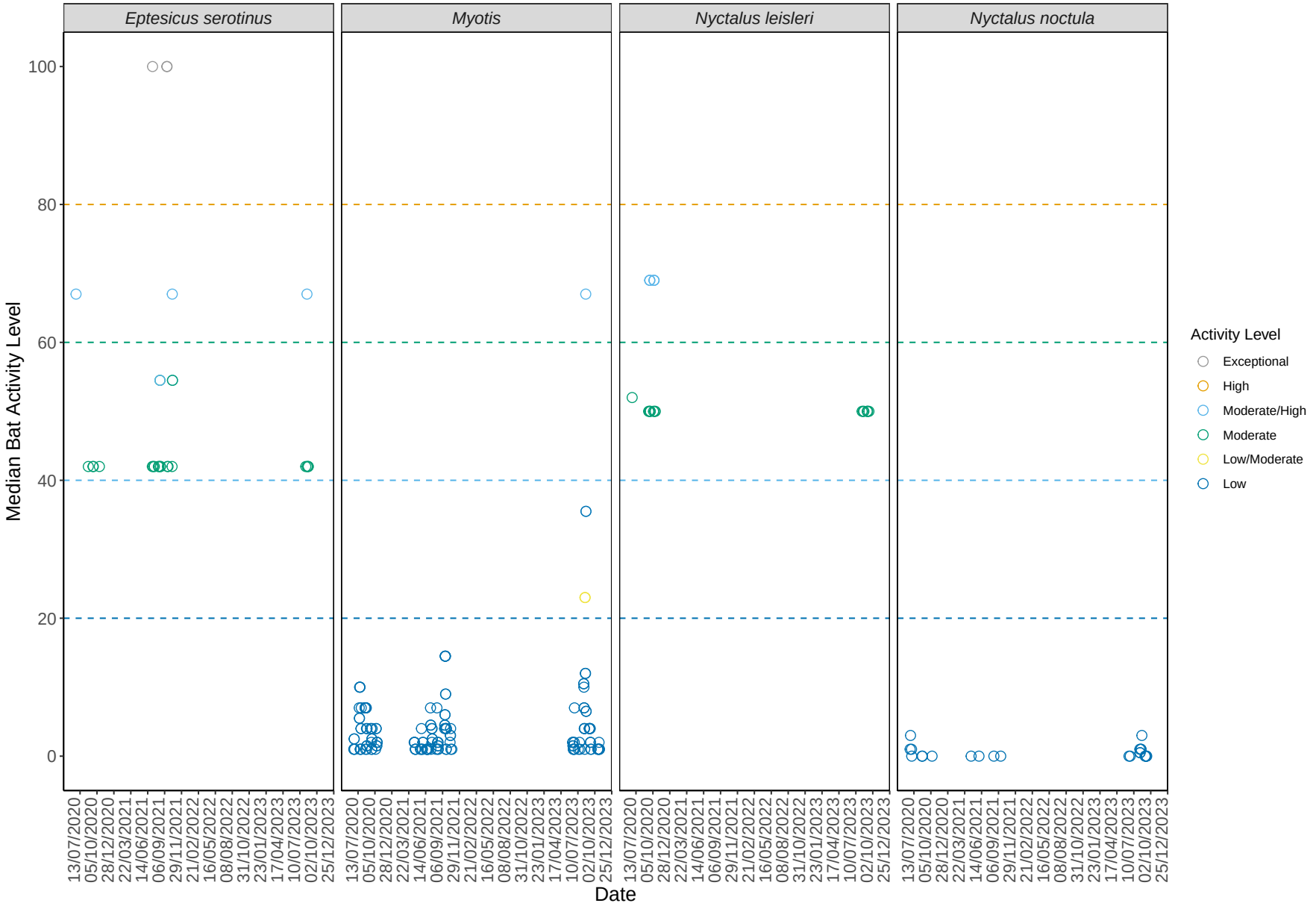
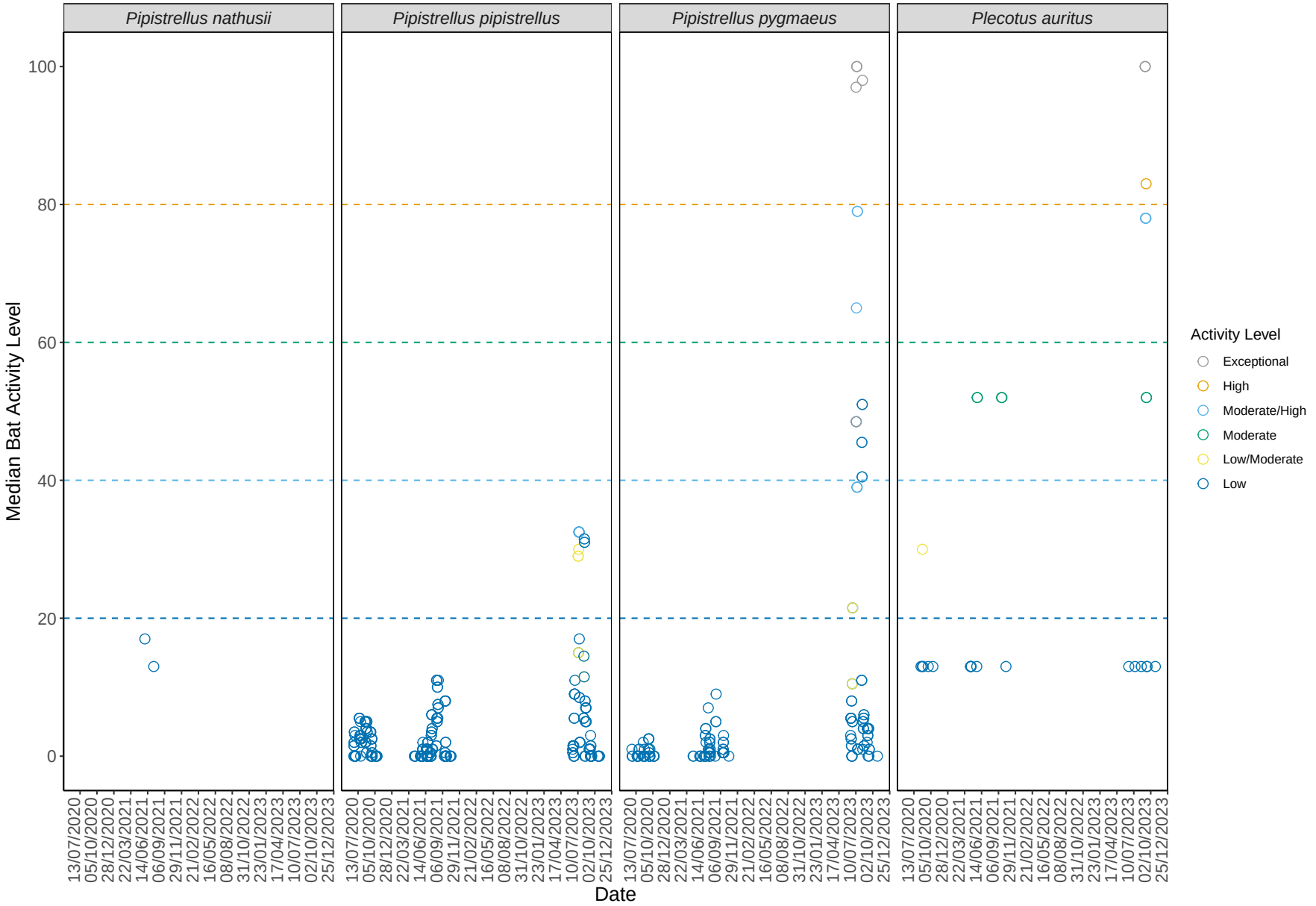
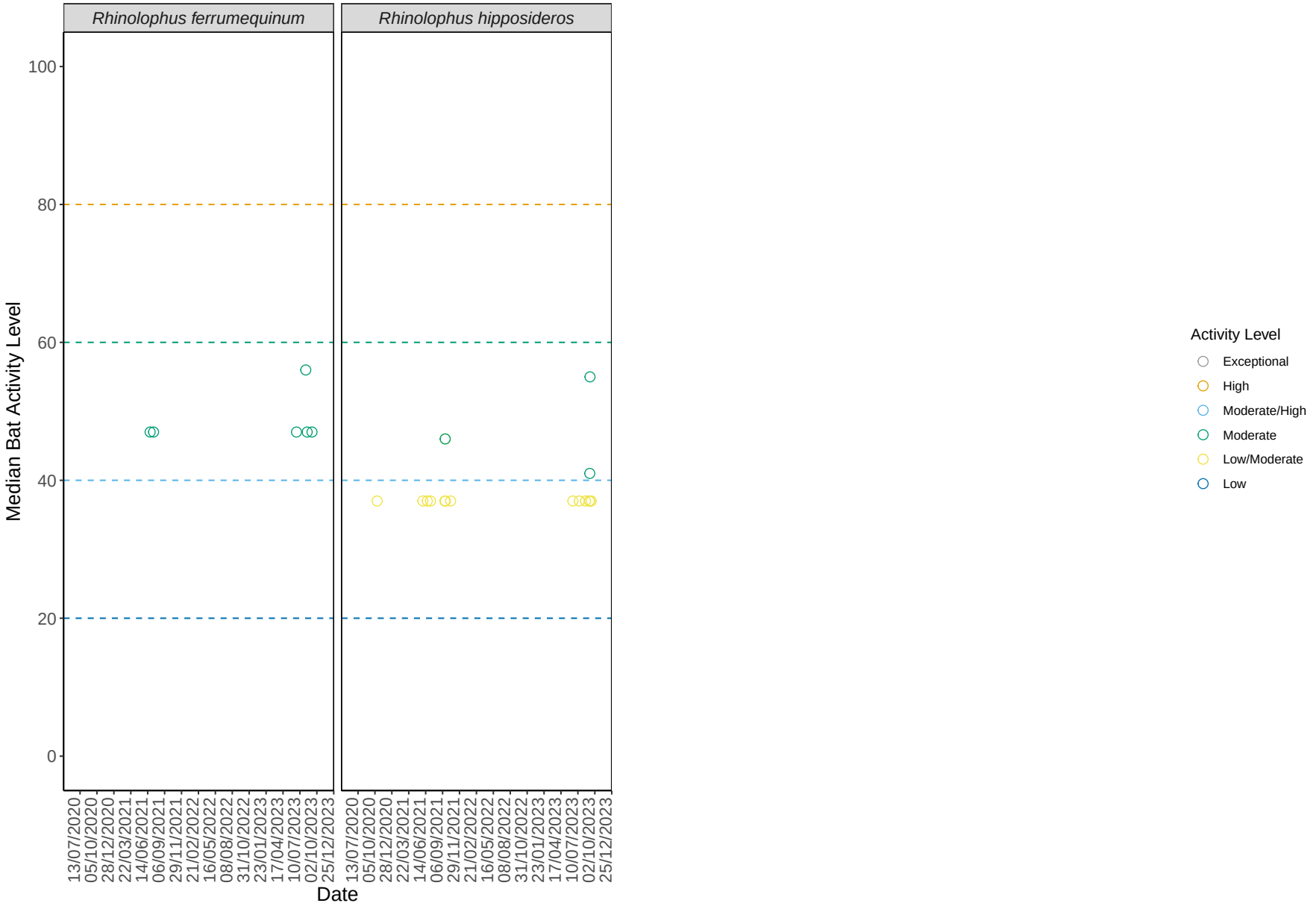

Activity Level (Percentile)
100
80
60
40
20
0
Pipistrellus
Common pipistrelle
Soprano pipistrelle
Nathusius'
Noctule
Leisler's
Nyctalus
Serotine
Nyctaloid
Brown long−eared
Grey long−eared
Long−eared bats
Myotis
Alcathoe
Bechstein's
Brandt's
Daubenton's
Whiskered
Natterer's
Barbastelle
Greater horseshoe
Lesser horseshoe
Horseshoe bats
Species

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


Eptesicus serotinus
Myotis
Nyctalus leisleri
Nyctalus noctula
Median Bat Activity Level
100
80
60
40
20
0
13/07/2020
05/10/2020
28/12/2020
22/03/2021
14/06/2021
06/09/2021
29/11/2021
21/02/2022
16/05/2022
08/08/2022
31/10/2022
23/01/2023
17/04/2023
10/07/2023
02/10/2023
25/12/2023
Date
Activity Level
Exceptional
High
Moderate/High
Moderate
Low/Moderate
Low


Pipistrellus nathusii
Pipistrellus pipistrellus
Pipistrellus pygmaeus
Plecotus auritus
Median Bat Activity Level
100
80
60
40
20
0
13/07/2020
05/10/2020
28/12/2020
22/03/2021
14/06/2021
06/09/2021
29/11/2021
21/02/2022
16/05/2022
08/08/2022
31/10/2022
23/01/2023
17/04/2023
10/07/2023
02/10/2023
25/12/2023
Date
Activity Level
Exceptional
High
Moderate/High
Moderate
Low/Moderate
Low


Rhinolophus ferrumequinum
Rhinolophus hipposideros
Median Bat Activity Level
100
80
60
40
20
0
13/07/2020
05/10/2020
28/12/2020
22/03/2021
14/06/2021
06/09/2021
29/11/2021
21/02/2022
16/05/2022
08/08/2022
31/10/2022
23/01/2023
17/04/2023
10/07/2023
02/10/2023
25/12/2023
Date
Activity Level
Exceptional
High
Moderate/High
Moderate
Low/Moderate
Low

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 Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
Eptesicus serotinus	Jun	0	0	1	0	0	0
Eptesicus serotinus	Jul	1	0	0	3	0	0
Eptesicus serotinus	Aug	0	0	2	10	0	0
Eptesicus serotinus	Sep	2	0	0	4	0	0
Eptesicus serotinus	Oct	0	0	2	3	0	0
Myotis	Apr	0	0	0	0	0	6
Myotis	May	0	0	0	0	0	6
Myotis	Jun	0	0	0	0	0	22
Myotis	Jul	0	0	0	0	0	24
Myotis	Aug	0	0	2	0	2	34
Myotis	Sep	0	0	0	0	0	36
Myotis	Oct	0	0	0	0	0	21
Nyctalus leisleri	Jun	0	0	0	1	0	0
Nyctalus leisleri	Aug	0	0	0	3	0	0
Nyctalus leisleri	Sep	0	0	2	8	0	0
Nyctalus leisleri	Oct	0	0	2	3	0	0
Nyctalus noctula	Apr	0	0	0	0	0	1
Nyctalus noctula	Jun	0	0	0	0	0	5
Nyctalus noctula	Jul	0	0	0	0	0	2
Nyctalus noctula	Aug	0	0	0	0	0	9
Nyctalus noctula	Sep	0	0	0	0	0	6
Nyctalus noctula	Oct	0	0	0	0	0	1
Pipistrellus nathusii	May	0	0	0	0	0	1
Pipistrellus nathusii	Jul	0	0	0	0	0	1

Species/Species Group	month	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
Pipistrellus pipistrellus	Apr	0	0	0	0	0	4
Pipistrellus pipistrellus	May	0	0	0	0	0	15
Pipistrellus pipistrellus	Jun	0	0	0	0	0	58
Pipistrellus pipistrellus	Jul	0	0	2	0	4	54
Pipistrellus pipistrellus	Aug	0	0	2	0	2	55
Pipistrellus pipistrellus	Sep	0	0	0	0	0	55
Pipistrellus pipistrellus	Oct	0	0	0	0	0	19
Pipistrellus pygmaeus	Apr	0	0	0	0	0	2
Pipistrellus pygmaeus	May	0	0	0	0	0	4
Pipistrellus pygmaeus	Jun	0	0	0	0	2	32
Pipistrellus pygmaeus	Jul	4	0	4	0	0	30
Pipistrellus pygmaeus	Aug	2	0	2	0	0	27
Pipistrellus pygmaeus	Sep	0	0	0	0	0	35
Pipistrellus pygmaeus	Oct	0	0	0	0	0	6
Plecotus auritus	Apr	0	0	0	0	0	4
Plecotus auritus	May	0	0	0	2	0	1
Plecotus auritus	Jun	0	0	0	0	0	1
Plecotus auritus	Jul	0	0	0	0	0	1
Plecotus auritus	Aug	0	0	0	0	1	4
Plecotus auritus	Sep	2	1	3	4	0	3
Plecotus auritus	Oct	0	0	0	0	0	3

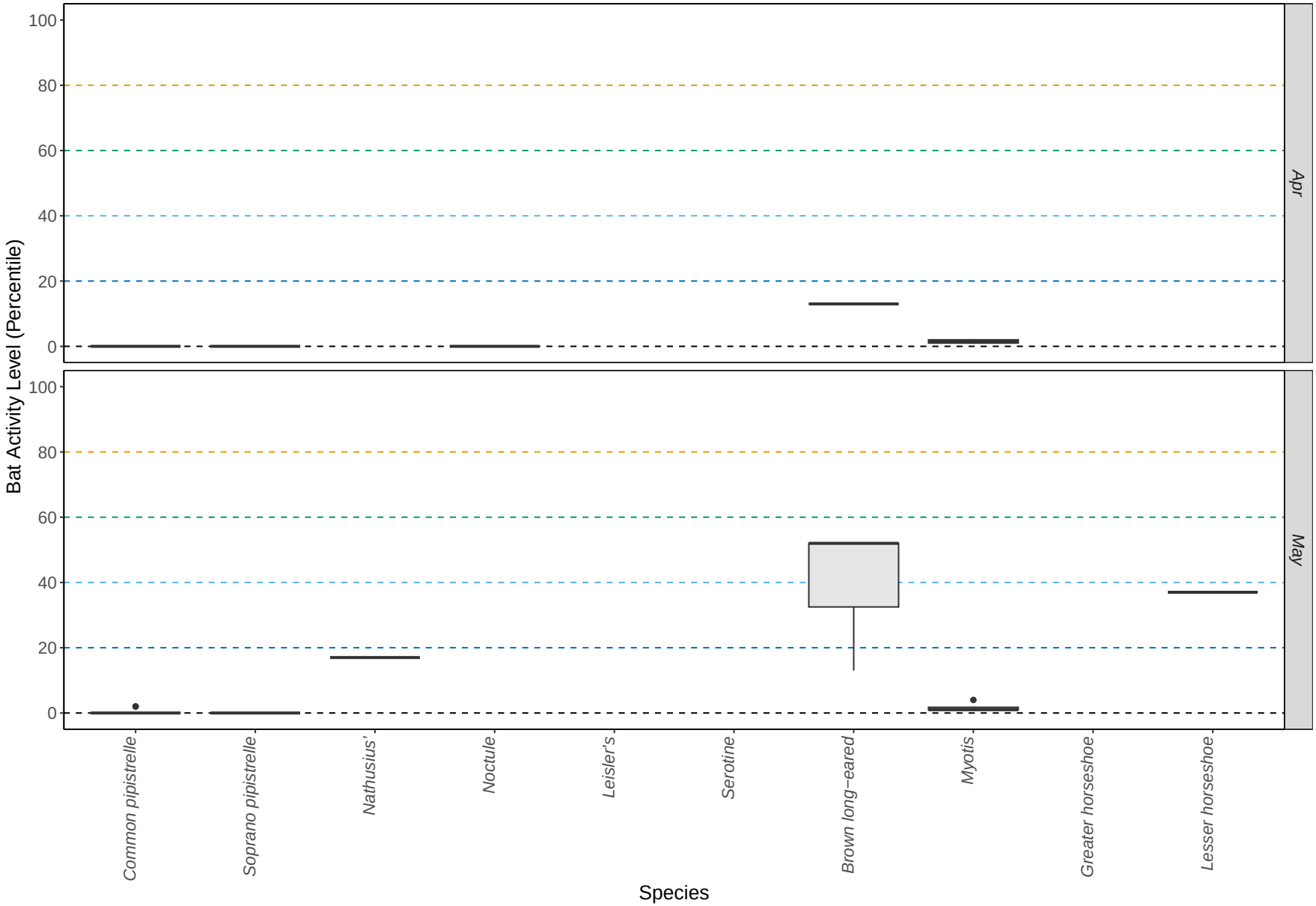
Species/Species Group	month	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
Rhinolophus ferrumequinum	Jun	0	0	0	2	0	0
Rhinolophus ferrumequinum	Jul	0	0	0	1	0	0
Rhinolophus ferrumequinum	Aug	0	0	0	2	0	0
Rhinolophus ferrumequinum	Sep	0	0	0	1	0	0
Rhinolophus hipposideros	May	0	0	0	0	1	0
Rhinolophus hipposideros	Jun	0	0	0	0	2	0
Rhinolophus hipposideros	Jul	0	0	0	0	2	0
Rhinolophus hipposideros	Aug	0	0	0	0	1	0
Rhinolophus hipposideros	Sep	0	0	0	3	6	0
Rhinolophus hipposideros	Oct	0	0	0	0	2	0

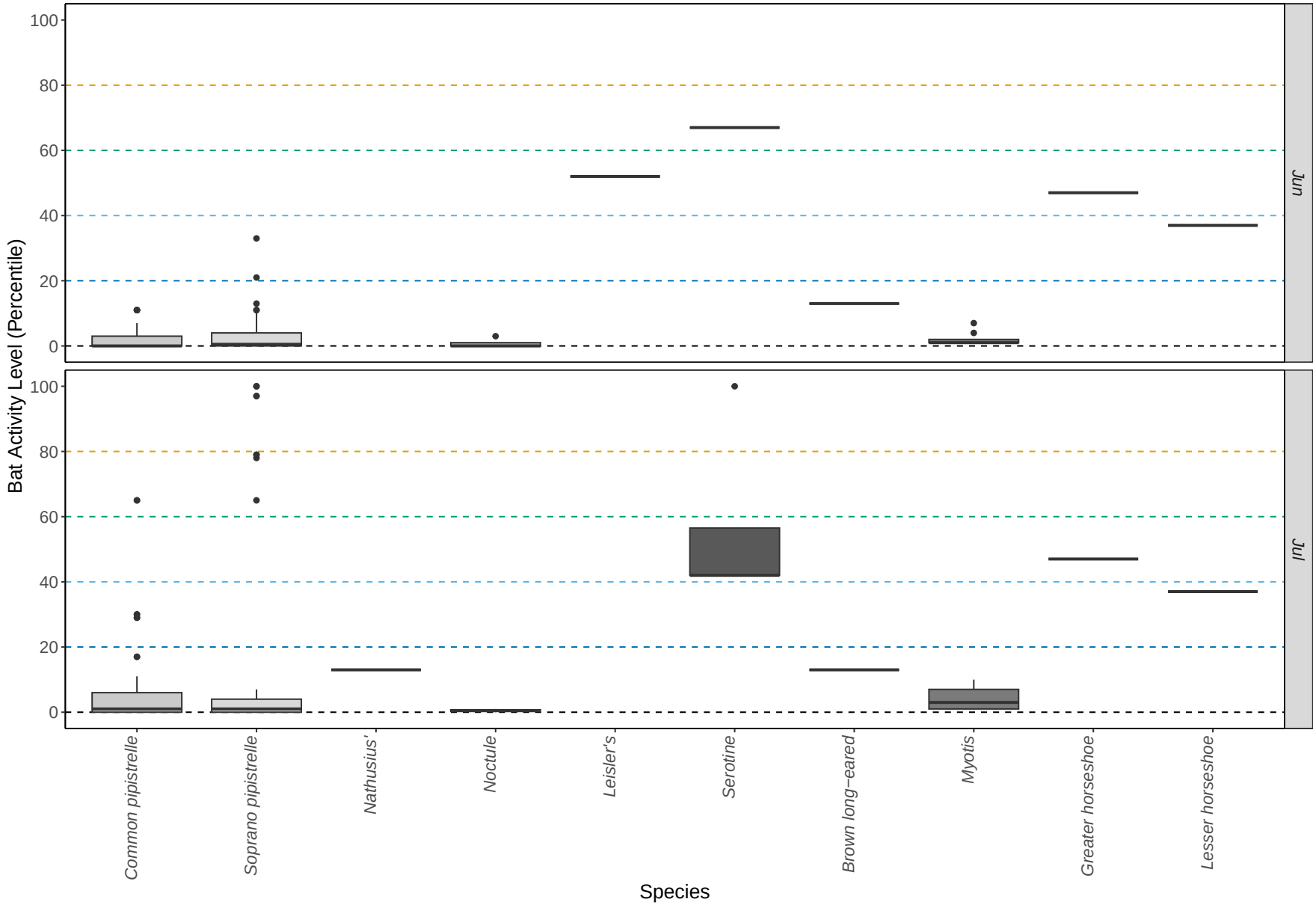
Table 10. Summary table showing key metrics for each species recorded per month.

Species/Species Group	month	Median Percentile	95% CIs	Max. Percentile	Nights Recorded
Eptesicus serotinus	Jun	67	42 - 54.5	67	1
Eptesicus serotinus	Jul	42	42 - 71	100	4
Eptesicus serotinus	Aug	42	42 - 71	67	12
Eptesicus serotinus	Sep	42	42 - 71	100	6
Eptesicus serotinus	Oct	42	42 - 71	67	5
Myotis	Apr	2	2.5 - 4.5	2	6
Myotis	May	1	2.5 - 4.5	4	6
Myotis	Jun	1	2.5 - 4.5	7	22
Myotis	Jul	3	2.5 - 4.5	10	24
Myotis	Aug	4	2.5 - 4.5	67	38
Myotis	Sep	4	2.5 - 4.5	17	36
Myotis	Oct	1	2.5 - 4.5	7	21
Nyctalus leisleri	Jun	52	50 - 59.5	52	1
Nyctalus leisleri	Aug	50	50 - 59.5	50	3
Nyctalus leisleri	Sep	50	50 - 59.5	69	10
Nyctalus leisleri	Oct	50	50 - 59.5	69	5
Nyctalus noctula	Apr	0	1 - 1	0	1
Nyctalus noctula	Jun	0	1 - 1	3	5
Nyctalus noctula	Jul	1	1 - 1	1	2
Nyctalus noctula	Aug	1	1 - 1	3	9
Nyctalus noctula	Sep	0	1 - 1	0	6
Nyctalus noctula	Oct	0	1 - 1	0	1
Pipistrellus nathusii	May	17	15 - 15	17	1
Pipistrellus nathusii	Jul	13	15 - 15	13	1
Pipistrellus pipistrellus	Apr	0	2 - 4	0	4
Pipistrellus pipistrellus	May	0	7 - 10.5	2	15
Pipistrellus pipistrellus	Jun	0	7 - 10.5	11	58
Pipistrellus pipistrellus	Jul	1	7 - 10.5	65	60
Pipistrellus pipistrellus	Aug	4	7 - 10.5	62	59
Pipistrellus pipistrellus	Sep	0	7 - 10.5	10	55
Pipistrellus pipistrellus	Oct	0	7 - 10.5	0	19
Pipistrellus pygmaeus	Apr	0	2.5 - 3.5	0	2
Pipistrellus pygmaeus	May	0	2.5 - 3.5	0	4
Pipistrellus pygmaeus	Jun	1	2.5 - 3.5	33	34

Species/Species Group	month	Median Percentile	95% CIs	Max. Percentile	Nights Recorded
Pipistrellus pygmaeus	Jul	1	2.5 - 3.5	100	38
Pipistrellus pygmaeus	Aug	4	2.5 - 3.5	98	31
Pipistrellus pygmaeus	Sep	1	2.5 - 3.5	4	35
Pipistrellus pygmaeus	Oct	0	2.5 - 3.5	0	6
Plecotus auritus	Apr	13	13 - 48	13	4
Plecotus auritus	May	52	13 - 48	52	3
Plecotus auritus	Jun	13	13 - 48	13	1
Plecotus auritus	Jul	13	13 - 48	13	1
Plecotus auritus	Aug	13	13 - 48	30	5
Plecotus auritus	Sep	52	13 - 48	100	13
Plecotus auritus	Oct	13	13 - 48	13	3
Rhinolophus ferrumequinum	Jun	47	47 - 47	47	2
Rhinolophus ferrumequinum	Jul	47	47 - 47	47	1
Rhinolophus ferrumequinum	Aug	52	47 - 47	56	2
Rhinolophus ferrumequinum	Sep	47	47 - 47	47	1
Rhinolophus hipposideros	May	37	37 - 46	37	1
Rhinolophus hipposideros	Jun	37	37 - 46	37	2
Rhinolophus hipposideros	Jul	37	37 - 46	37	2
Rhinolophus hipposideros	Aug	37	37 - 46	37	1
Rhinolophus hipposideros	Sep	37	37 - 46	55	9
Rhinolophus hipposideros	Oct	37	37 - 46	37	2

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


Bat Activity Level (Percentile)
100
80
60
40
20
0
Apr
May
Common pipistrelle
Soprano pipistrelle
Nathusius'
Noctule
Leisler's
Serotine
Brown long−eared
Myotis
Greater horseshoe
Lesser horseshoe
Species


Bat Activity Level (Percentile)
100
80
60
40
20
0
Jun
Jul
Common pipistrelle
Soprano pipistrelle
Nathusius'
Noctule
Leisler's
Serotine
Brown long−eared
Myotis
Greater horseshoe
Lesser horseshoe
Species

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 (h:m)	Sunrise (h:m)	Night Length (hours)
2020-06-22	21:35	04:56	7.3
2020-06-23	21:35	04:56	7.3
2020-06-24	21:35	04:56	7.3
2020-06-25	21:35	04:57	7.4
2020-06-26	21:35	04:57	7.4
2020-06-28	21:35	04:58	7.4
2020-06-29	21:35	04:59	7.4
2020-06-30	21:35	05:00	7.4
2020-07-01	21:34	05:00	7.4
2020-07-02	21:34	05:01	7.5
2020-07-19	21:21	05:20	8.0
2020-07-20	21:19	05:21	8.0
2020-07-21	21:18	05:22	8.1
2020-07-22	21:17	05:24	8.1
2020-07-23	21:16	05:25	8.2
2020-07-24	21:14	05:26	8.2
2020-07-25	21:13	05:28	8.3
2020-07-26	21:11	05:29	8.3
2020-07-27	21:10	05:31	8.3
2020-07-28	21:08	05:32	8.4
2020-07-29	21:07	05:34	8.4
2020-08-17	20:33	06:04	9.5
2020-08-18	20:31	06:05	9.6
2020-08-19	20:29	06:07	9.6
2020-08-20	20:27	06:09	9.7
2020-08-21	20:24	06:10	9.8
2020-08-22	20:22	06:12	9.8
2020-08-23	20:20	06:13	9.9

Night (y-m-d)	Sunset (h:m)	Sunrise (h:m)	Night Length (hours)
2020-08-24	20:18	06:15	9.9
2020-08-25	20:16	06:17	10.0
2020-08-26	20:14	06:18	10.1
2020-08-27	20:12	06:20	10.1
2020-09-13	19:33	06:47	11.2
2020-09-14	19:31	06:49	11.3
2020-09-15	19:28	06:50	11.4
2020-09-16	19:26	06:52	11.4
2020-09-17	19:24	06:53	11.5
2020-09-18	19:21	06:55	11.6
2020-09-19	19:19	06:57	11.6
2020-09-20	19:17	06:58	11.7
2020-09-21	19:14	07:00	11.8
2020-09-22	19:12	07:01	11.8
2020-10-08	18:35	07:28	12.9
2020-10-09	18:33	07:29	12.9
2020-10-10	18:31	07:31	13.0
2020-10-11	18:29	07:33	13.1
2020-10-13	18:24	07:36	13.2
2020-10-14	18:22	07:38	13.3
2020-10-15	18:20	07:39	13.3
2020-10-16	18:18	07:41	13.4
2020-10-17	18:16	07:43	13.5
2021-04-18	20:14	06:08	9.9
2021-04-19	20:16	06:06	9.8
2021-04-20	20:18	06:04	9.8
2021-04-21	20:19	06:02	9.7
2021-04-22	20:21	06:00	9.7
2021-04-23	20:23	05:58	9.6
2021-04-24	20:24	05:56	9.5
2021-04-25	20:26	05:54	9.5
2021-05-19	21:05	05:14	8.2
2021-05-20	21:06	05:13	8.1
2021-05-21	21:07	05:11	8.1
2021-05-23	21:10	05:09	8.0
2021-05-24	21:12	05:08	7.9

Night (y-m-d)	Sunset (h:m)	Sunrise (h:m)	Night Length (hours)
2021-05-25	21:13	05:07	7.9
2021-05-26	21:14	05:06	7.9
2021-05-27	21:15	05:05	7.8
2021-05-28	21:17	05:04	7.8
2021-05-29	21:18	05:03	7.7
2021-05-30	21:19	05:02	7.7
2021-05-31	21:20	05:01	7.7
2021-06-01	21:21	05:00	7.6
2021-06-17	21:34	04:55	7.3
2021-06-18	21:34	04:55	7.3
2021-06-19	21:34	04:55	7.3
2021-06-20	21:35	04:55	7.3
2021-06-21	21:35	04:55	7.3
2021-06-22	21:35	04:56	7.3
2021-06-23	21:35	04:56	7.3
2021-06-24	21:35	04:56	7.3
2021-06-25	21:35	04:57	7.4
2021-06-26	21:35	04:57	7.4
2021-06-27	21:35	04:58	7.4
2021-07-07	21:32	05:05	7.6
2021-07-08	21:31	05:06	7.6
2021-07-09	21:30	05:07	7.6
2021-07-10	21:30	05:08	7.6
2021-07-11	21:29	05:09	7.7
2021-07-12	21:28	05:11	7.7
2021-07-13	21:27	05:12	7.7
2021-07-14	21:26	05:13	7.8
2021-07-15	21:25	05:14	7.8
2021-07-16	21:24	05:15	7.9
2021-07-17	21:23	05:17	7.9
2021-07-18	21:22	05:18	7.9
2021-08-05	20:56	05:44	8.8
2021-08-06	20:54	05:46	8.9
2021-08-07	20:52	05:47	8.9
2021-08-08	20:51	05:49	9.0
2021-08-09	20:49	05:50	9.0

Night (y-m-d)	Sunset (h:m)	Sunrise (h:m)	Night Length (hours)
2021-08-10	20:47	05:52	9.1
2021-08-11	20:45	05:54	9.1
2021-08-12	20:43	05:55	9.2
2021-08-13	20:41	05:57	9.3
2021-08-14	20:39	05:58	9.3
2021-08-15	20:37	06:00	9.4
2021-08-16	20:35	06:02	9.4
2021-09-16	19:27	06:51	11.4
2021-09-17	19:24	06:53	11.5
2021-09-18	19:22	06:55	11.5
2021-09-19	19:20	06:56	11.6
2021-09-20	19:17	06:58	11.7
2021-09-21	19:15	06:59	11.7
2021-09-22	19:13	07:01	11.8
2021-09-23	19:10	07:03	11.9
2021-09-24	19:08	07:04	11.9
2021-09-25	19:06	07:06	12.0
2021-10-13	18:25	07:36	13.2
2021-10-14	18:23	07:37	13.2
2021-10-15	18:20	07:39	13.3
2021-10-16	18:18	07:41	13.4
2021-10-17	18:16	07:42	13.4
2021-10-18	18:14	07:44	13.5
2021-10-22	18:06	07:51	13.8
2023-06-14	21:32	04:55	7.4
2023-06-15	21:33	04:55	7.4
2023-06-16	21:33	04:55	7.4
2023-06-17	21:34	04:55	7.4
2023-06-18	21:34	04:55	7.3
2023-06-19	21:34	04:55	7.3
2023-06-20	21:35	04:55	7.3
2023-06-21	21:35	04:55	7.3
2023-06-22	21:35	04:55	7.3
2023-06-23	21:35	04:56	7.3
2023-06-24	21:35	04:56	7.3
2023-06-25	21:35	04:56	7.4

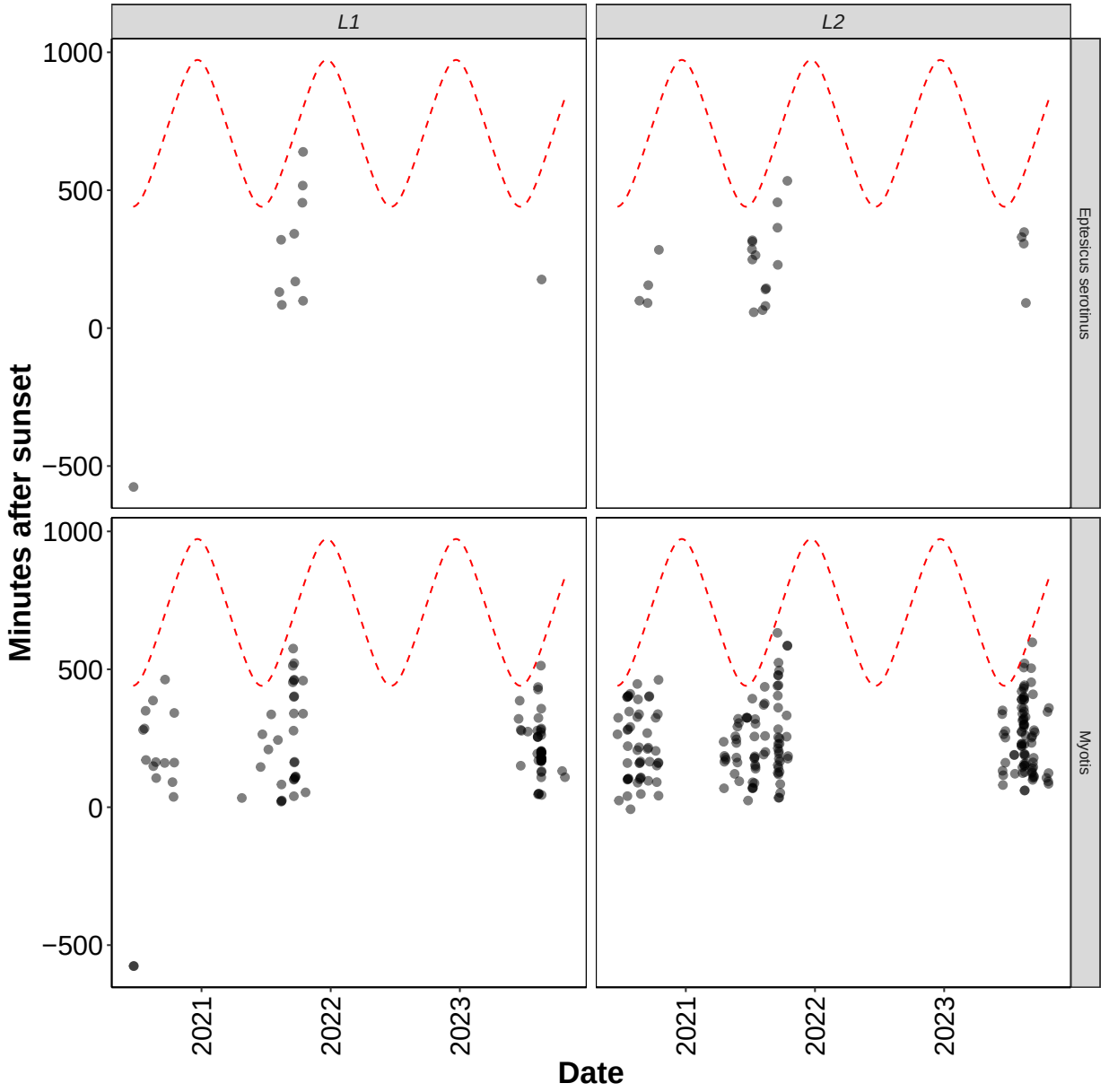
Night (y-m-d)	Sunset (h:m)	Sunrise (h:m)	Night Length (hours)
2023-07-11	21:29	05:09	7.7
2023-07-12	21:28	05:10	7.7
2023-07-13	21:27	05:11	7.7
2023-07-14	21:27	05:12	7.8
2023-07-15	21:26	05:13	7.8
2023-07-16	21:25	05:15	7.8
2023-07-17	21:24	05:16	7.9
2023-07-18	21:23	05:17	7.9
2023-07-19	21:21	05:18	8.0
2023-07-20	21:20	05:20	8.0
2023-08-08	20:51	05:48	8.9
2023-08-09	20:50	05:50	9.0
2023-08-10	20:48	05:51	9.1
2023-08-11	20:46	05:53	9.1
2023-08-12	20:44	05:54	9.2
2023-08-13	20:42	05:56	9.2
2023-08-14	20:40	05:58	9.3
2023-08-15	20:38	05:59	9.4
2023-08-16	20:36	06:01	9.4
2023-08-17	20:34	06:02	9.5
2023-08-18	20:32	06:04	9.5
2023-08-19	20:30	06:06	9.6
2023-08-20	20:28	06:07	9.7
2023-09-04	19:56	06:31	10.6
2023-09-05	19:53	06:33	10.7
2023-09-06	19:51	06:35	10.7
2023-09-07	19:49	06:36	10.8
2023-09-08	19:46	06:38	10.9
2023-09-09	19:44	06:39	10.9
2023-09-10	19:42	06:41	11.0
2023-09-11	19:40	06:43	11.1
2023-09-12	19:37	06:44	11.1
2023-09-13	19:35	06:46	11.2
2023-09-14	19:33	06:47	11.2
2023-09-15	19:30	06:49	11.3
2023-09-16	19:28	06:50	11.4

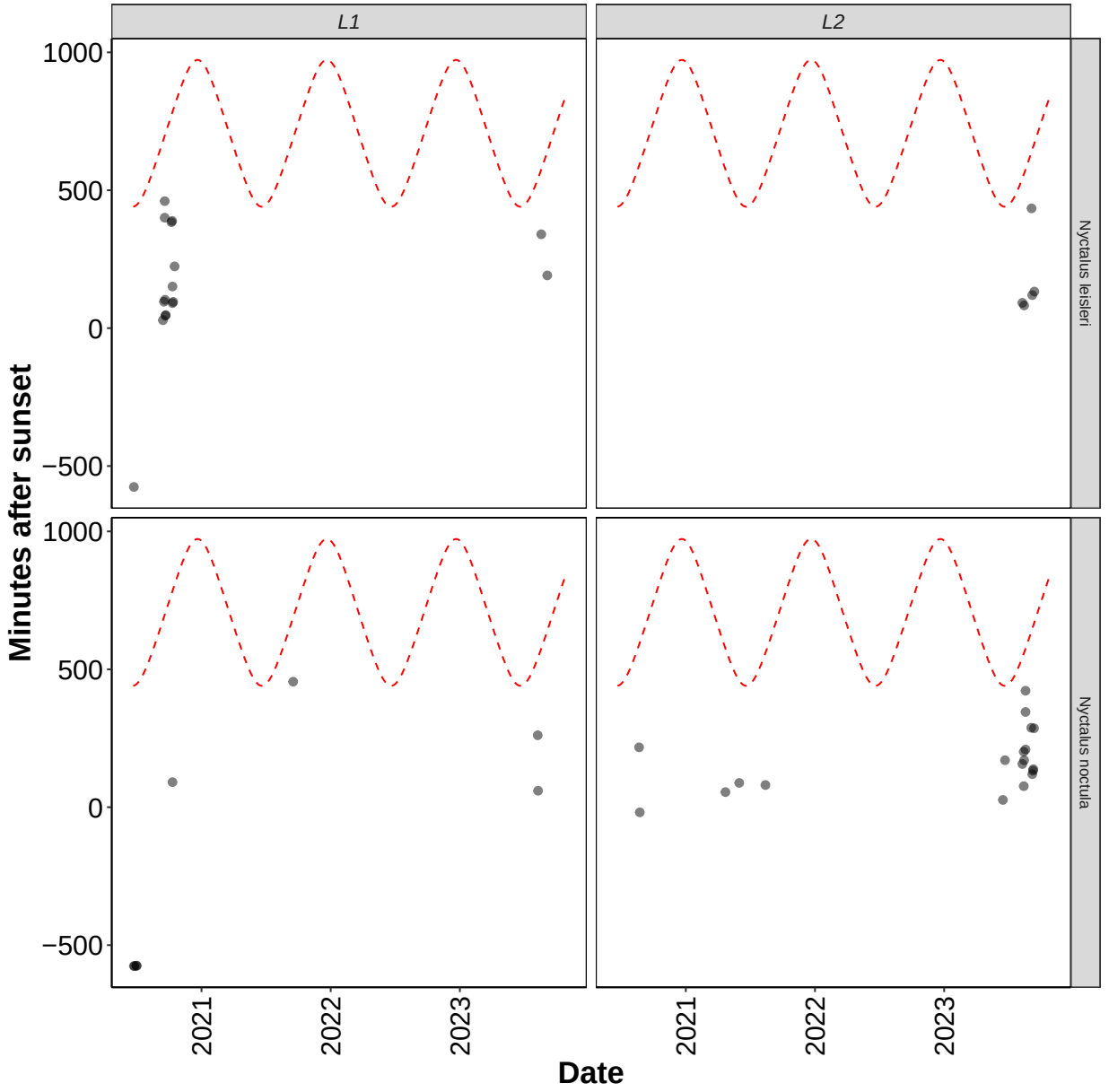
Night (y-m-d)	Sunset (h:m)	Sunrise (h:m)	Night Length (hours)
2023-10-17	18:17	07:41	13.4
2023-10-20	18:11	07:47	13.6
2023-10-21	18:09	07:48	13.7
2023-10-22	18:07	07:50	13.7
2023-10-23	18:05	07:52	13.8
2023-10-24	18:03	07:54	13.8
2023-10-25	18:01	07:55	13.9

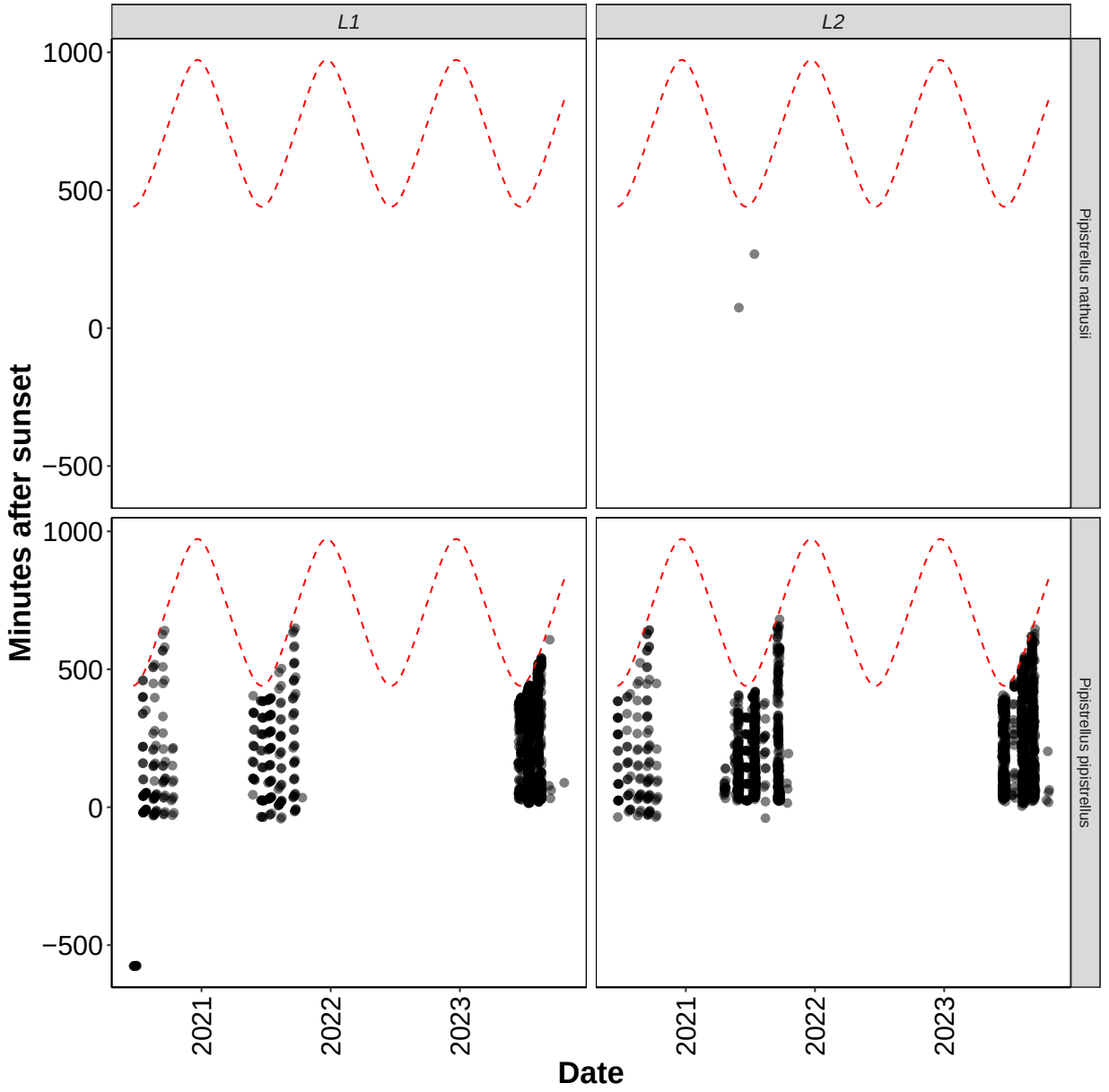
Distribution of Bat Activity Across the Night through Time

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.


L1
L2
Eptesicus serotinus
Myotis
Minutes after sunset
1000
500
0
−500
2021
2022
2023
Date


L1
L2
Nyctalus leisleri
Nyctalus noctula
Minutes after sunset
1000
500
0
−500
2021
2022
2023
Date


L1
L2
Pipistrellus nathusii
Pipistrellus pipistrellus
Minutes after sunset
1000
500
0
−500
2021
2022
2023
Date

Roost Emergence Time and Bat Observation

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

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

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.

Table 12: Table continues below

Species	Detector ID	2020-06-23	2020-06-24	2020-06-25	2020-06-26	2020-06-28
Common pipistrelle	L1	1	1	1	1	1
Common pipistrelle	L2	2	2	2	1	0
Soprano pipistrelle	L1	0	0	0	0	0
Soprano pipistrelle	L2	0	0	0	1	0
Noctule	L1	0	1	0	1	0
Noctule	L2	0	0	0	0	0
Leisler's	L1	0	1	0	0	0
Serotine	L1	1	0	0	0	0
Brown long-eared	L2	0	0	0	0	0
Myotis	L1	1	1	0	0	0
Myotis	L2	0	0	0	1	0
Greater horseshoe	L2	0	0	0	0	0
Lesser horseshoe	L1	0	0	0	0	0

Table 13: Table continues below

2020-06-29	2020-06-30	2020-07-01	2020-07-02	2020-07-20	2020-07-21	2020-07-22
1	1	1	1	3	2	1
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	1	1	0	0	0
0	0	0	0	0	0	0

2020-06-29	2020-06-30	2020-07-01	2020-07-02	2020-07-20	2020-07-21	2020-07-22
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	1	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 14: Table continues below

2020-07-23	2020-07-25	2020-07-26	2020-07-27	2020-07-28	2020-07-29	2020-08-18
2	2	1	2	3	1	2
1	0	0	1	1	1	2
0	0	0	0	0	0	0
0	0	0	0	0	1	1
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	1	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 15: Table continues below

2020-08-19	2020-08-20	2020-08-21	2020-08-22	2020-08-23	2020-08-24	2020-08-26
2	1	1	1	1	1	1
0	0	0	0	0	1	0
0	0	0	0	1	0	0
0	0	0	0	0	1	0
0	0	0	0	0	0	0

2020-08-19	2020-08-20	2020-08-21	2020-08-22	2020-08-23	2020-08-24	2020-08-26
0	0	0	0	0	1	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	1	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 16: Table continues below

2020-08-27	2020-09-14	2020-09-15	2020-09-16	2020-09-17	2020-09-19	2020-09-20
1	0	0	1	1	0	1
1	1	2	1	1	1	1
1	0	0	0	0	0	1
0	0	1	1	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
1	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 17: Table continues below

2020-09-21	2020-09-22	2020-10-08	2020-10-09	2020-10-10	2020-10-11	2020-10-14
0	0	1	0	0	2	0
1	1	2	0	0	2	0
0	0	0	1	0	0	0
0	0	0	0	1	0	0

2020-09-21	2020-09-22	2020-10-08	2020-10-09	2020-10-10	2020-10-11	2020-10-14
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	1
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 18: Table continues below

2020-10-15	2020-10-16	2021-04-19	2021-04-23	2021-04-25	2021-05-26	2021-06-01
1	0	0	0	0	0	0
0	0	0	1	0	2	2
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	1	0	0
0	1	1	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 19: Table continues below

2021-06-18	2021-06-19	2021-06-20	2021-06-21	2021-06-22	2021-06-23	2021-06-24
2	2	1	0	1	2	1
1	1	1	1	1	1	1
0	0	0	0	0	0	0

2021-06-18	2021-06-19	2021-06-20	2021-06-21	2021-06-22	2021-06-23	2021-06-24
1	0	0	1	0	1	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 20: Table continues below

2021-06-25	2021-06-26	2021-06-27	2021-07-08	2021-07-09	2021-07-11	2021-07-12
2	1	1	0	1	1	1
1	1	0	0	0	0	0
0	0	1	0	0	0	0
2	1	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	1	0	1	1	0	0
0	1	0	0	0	0	0
0	0	0	0	0	0	0

Table 21: Table continues below

2021-07-13	2021-07-14	2021-07-15	2021-07-18	2021-08-06	2021-08-07	2021-08-08
1	1	0	1	1	1	1
0	0	1	0	0	0	0

2021-07-13	2021-07-14	2021-07-15	2021-07-18	2021-08-06	2021-08-07	2021-08-08
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 22: Table continues below

2021-08-09	2021-08-10	2021-08-12	2021-08-13	2021-08-14	2021-08-15	2021-08-16
1	1	1	2	1	1	2
0	0	0	0	2	0	0
0	1	0	0	0	2	0
0	0	0	0	1	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	1	1	1
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 23: Table continues below

2021-09-17	2021-09-18	2021-09-19	2021-09-20	2021-09-21	2021-09-22	2021-09-23
0	0	0	0	1	1	1
1	1	2	0	1	4	0
0	0	0	0	0	0	0
0	0	0	1	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	1	0	0	0	0
0	0	0	1	0	1	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 24: Table continues below

2021-09-24	2021-09-25	2021-10-15	2021-10-16	2021-10-22	2023-06-16	2023-06-17
1	1	0	0	0	1	0
0	4	1	0	0	1	1
0	0	0	0	0	0	0
0	0	0	0	0	1	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	1	0	0
0	1	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	1	0	0	0

Table 25: Table continues below

2023-06-18	2023-06-21	2023-06-23	2023-06-25	2023-07-12	2023-07-13	2023-07-14
1	1	0	1	5	3	8
1	0	1	0	0	0	0
0	0	0	0	0	0	6
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 26: Table continues below

2023-07-15	2023-07-16	2023-07-17	2023-07-18	2023-07-19	2023-07-20	2023-08-09
13	11	7	8	3	2	2
0	0	0	0	0	0	2
2	1	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 27: Table continues below

2023-08-10	2023-08-11	2023-08-12	2023-08-15	2023-08-16	2023-08-17	2023-08-19
1	0	14	0	0	0	5
1	1	0	2	2	1	1
1	0	5	0	0	0	1
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
1	0	2	0	0	0	0
0	0	0	0	1	1	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

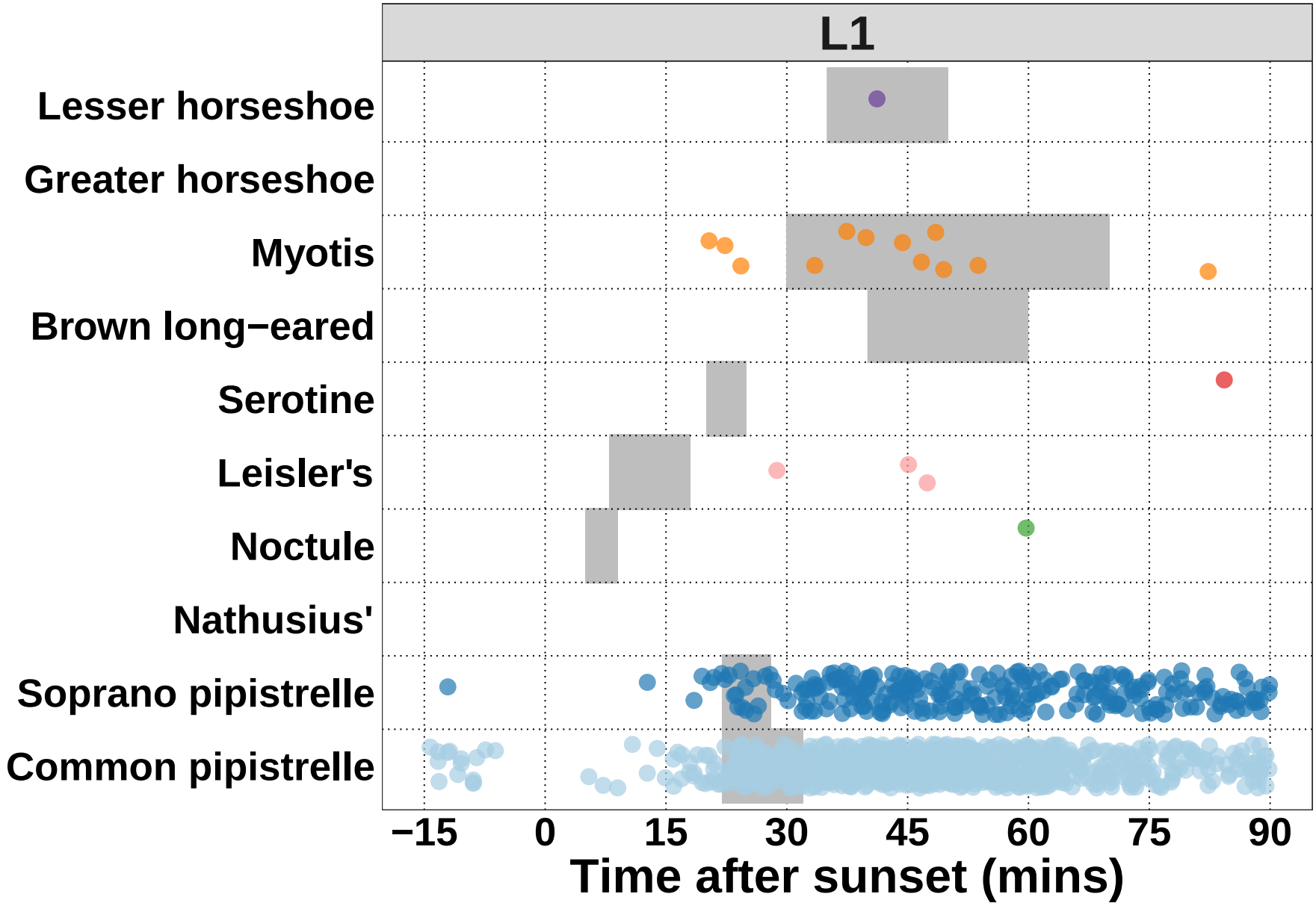
Table 28: Table continues below

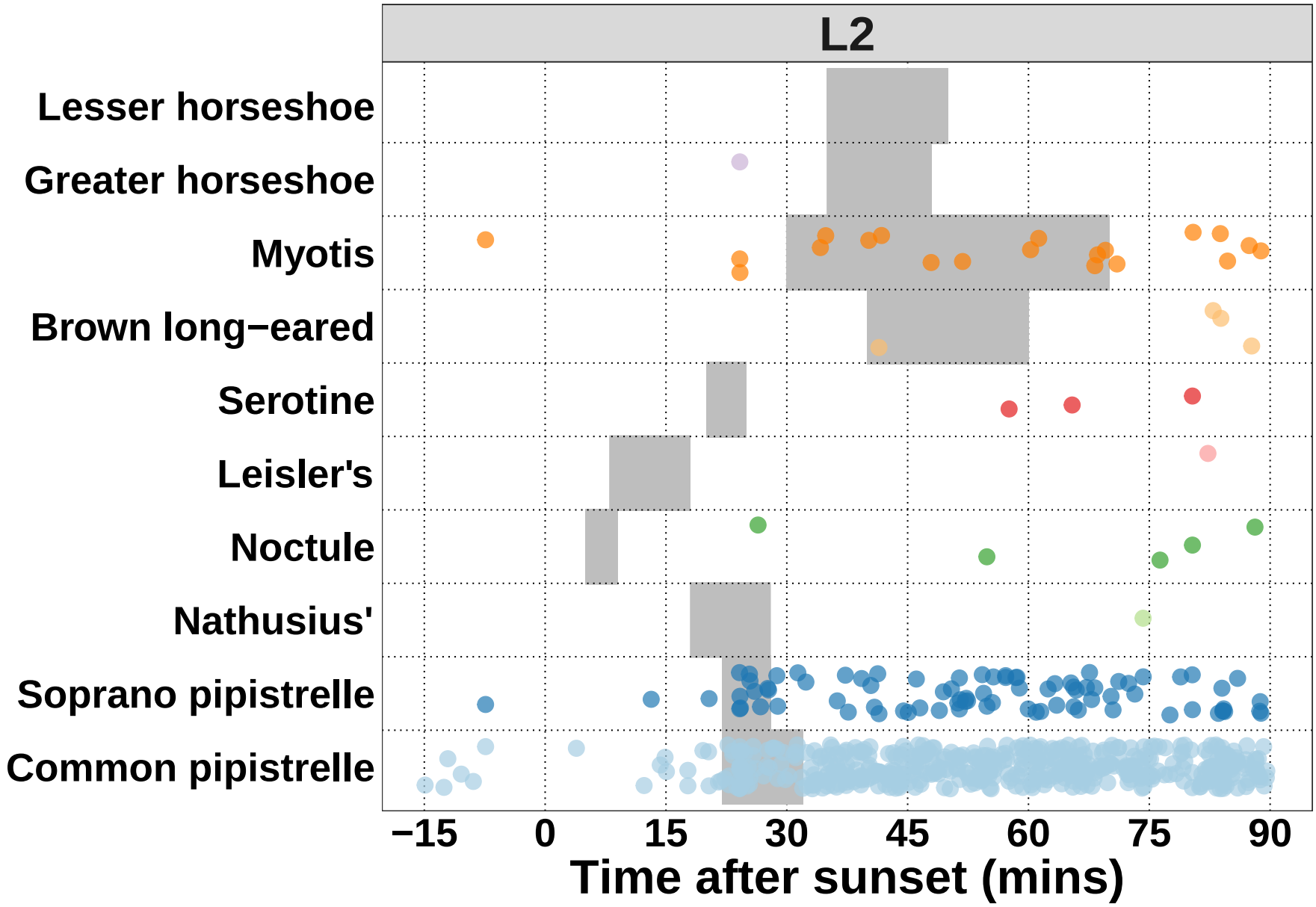
2023-08-20	2023-09-05	2023-09-06	2023-09-10	2023-09-11	2023-09-13	2023-09-14
0	0	0	0	0	0	1
0	1	1	1	0	1	0
0	0	0	0	0	0	0
0	0	0	0	1	1	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
1	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

2023-10-17	2023-10-23	2023-10-25
0	0	0
1	1	0
0	0	0
0	0	2
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

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

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.


L1
Lesser horseshoe
Greater horseshoe
Myotis
Brown long−eared
Serotine
Leisler's
Noctule
Nathusius'
Soprano pipistrelle
Common pipistrelle
−15
0
15
30
45
60
75
90
Time after sunset (mins)


L2
Lesser horseshoe
Greater horseshoe
Myotis
Brown long−eared
Serotine
Leisler's
Noctule
Nathusius'
Soprano pipistrelle
Common pipistrelle
−15
0
15
30
45
60
75
90
Time after sunset (mins)

Bat Passes Potentially Indicating Close Proximity to a Roost (Maternity Period Only) - *Maternity period defined as 15th June - 30th July.

Table 30: Table continues below

Species	Detector ID	2020-06-23	2020-06-24	2020-06-25	2020-06-26	2020-06-28
Common pipistrelle	L1	1	1	1	1	1
Common pipistrelle	L2	2	2	2	1	0
Soprano pipistrelle	L1	0	0	0	0	0
Soprano pipistrelle	L2	0	0	0	1	0
Noctule	L1	0	1	0	1	0
Leisler's	L1	0	1	0	0	0
Serotine	L1	1	0	0	0	0
Myotis	L1	1	1	0	0	0
Myotis	L2	0	0	0	1	0
Greater horseshoe	L2	0	0	0	0	0

Table 31: Table continues below

2020-06-29	2020-06-30	2020-07-01	2020-07-02	2020-07-20	2020-07-21	2020-07-22
1	1	1	1	3	2	1
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	1	1	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	1	0	0
0	0	0	0	0	0	0

Table 32: Table continues below

2020-07-23	2020-07-25	2020-07-26	2020-07-27	2020-07-28	2020-07-29	2021-06-18
2	2	1	2	3	1	2

2020-07-23	2020-07-25	2020-07-26	2020-07-27	2020-07-28	2020-07-29	2021-06-18
1	0	0	1	1	1	1
0	0	0	0	0	0	0
0	0	0	0	0	1	1
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	1	0
0	0	0	0	0	0	0

Table 33: Table continues below

2021-06-19	2021-06-20	2021-06-21	2021-06-22	2021-06-23	2021-06-24	2021-06-25
2	1	0	1	2	1	2
1	1	1	1	1	1	1
0	0	0	0	0	0	0
0	0	1	0	1	0	2
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Table 34: Table continues below

2021-06-26	2021-06-27	2021-07-08	2021-07-09	2021-07-11	2021-07-12	2021-07-13
1	1	0	1	1	1	1
1	0	0	0	0	0	0
0	1	0	0	0	0	0
1	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

2021-06-26	2021-06-27	2021-07-08	2021-07-09	2021-07-11	2021-07-12	2021-07-13
0	0	0	0	0	0	0
0	0	0	0	0	0	0
1	0	1	1	0	0	0
1	0	0	0	0	0	0

Table 35: Table continues below

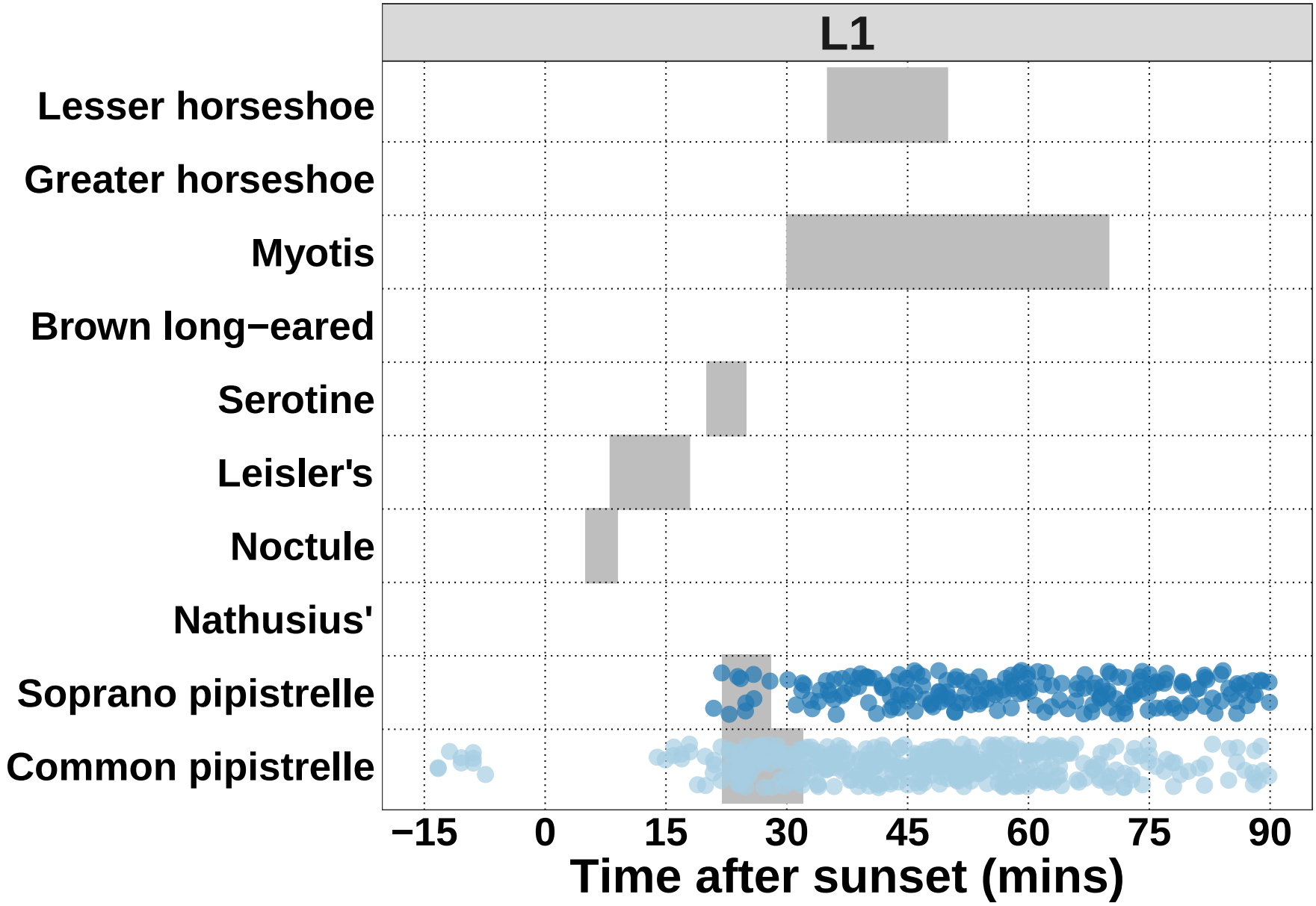
2021-07-14	2021-07-15	2021-07-18	2023-06-16	2023-06-17	2023-06-18	2023-06-21
1	0	1	1	0	1	1
0	1	0	1	1	1	0
0	0	0	0	0	0	0
0	0	0	1	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

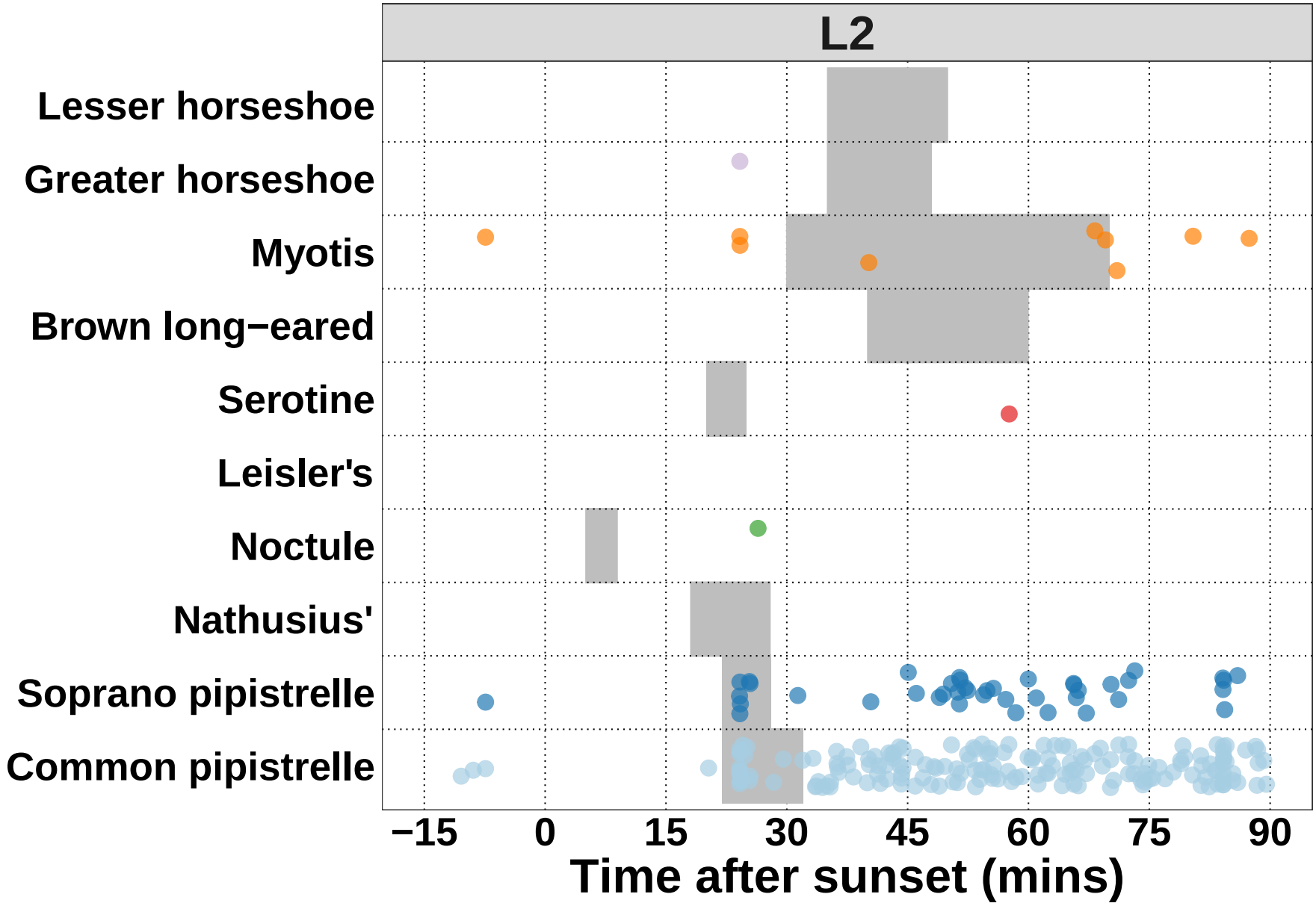
Table 36: Table continues below

2023-06-23	2023-06-25	2023-07-12	2023-07-13	2023-07-14	2023-07-15	2023-07-16
0	1	5	3	8	13	11
1	0	0	0	0	0	0
0	0	0	0	6	2	1
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

2023-07-17	2023-07-18	2023-07-19	2023-07-20
7	8	3	2
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Bat Passes Potentially Indicating Close Proximity to a Roost (Maternity Period Only) - Maternity period defined as 15th June - 30th July.


L1
Lesser horseshoe
Greater horseshoe
Myotis
Brown long−eared
Serotine
Leisler's
Noctule
Nathusius'
Soprano pipistrelle
Common pipistrelle
−15
0
15
30
45
60
75
90
Time after sunset (mins)


L2
Lesser horseshoe
Greater horseshoe
Myotis
Brown long−eared
Serotine
Leisler's
Noctule
Nathusius'
Soprano pipistrelle
Common pipistrelle
−15
0
15
30
45
60
75
90
Time after sunset (mins)

Count 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 (%)
Eptesicus serotinus	33	0.5
Myotis	304	4.4
Nyctalus leisleri	21	0.3
Nyctalus noctula	27	0.4
Pipistrellus nathusii	2	0.0
Pipistrellus pipistrellus	4024	58.2
Pipistrellus pygmaeus	2389	34.6
Plecotus auritus	85	1.2
Rhinolophus ferrumequinum	7	0.1
Rhinolophus hipposideros	19	0.3
Total	6911	100.0

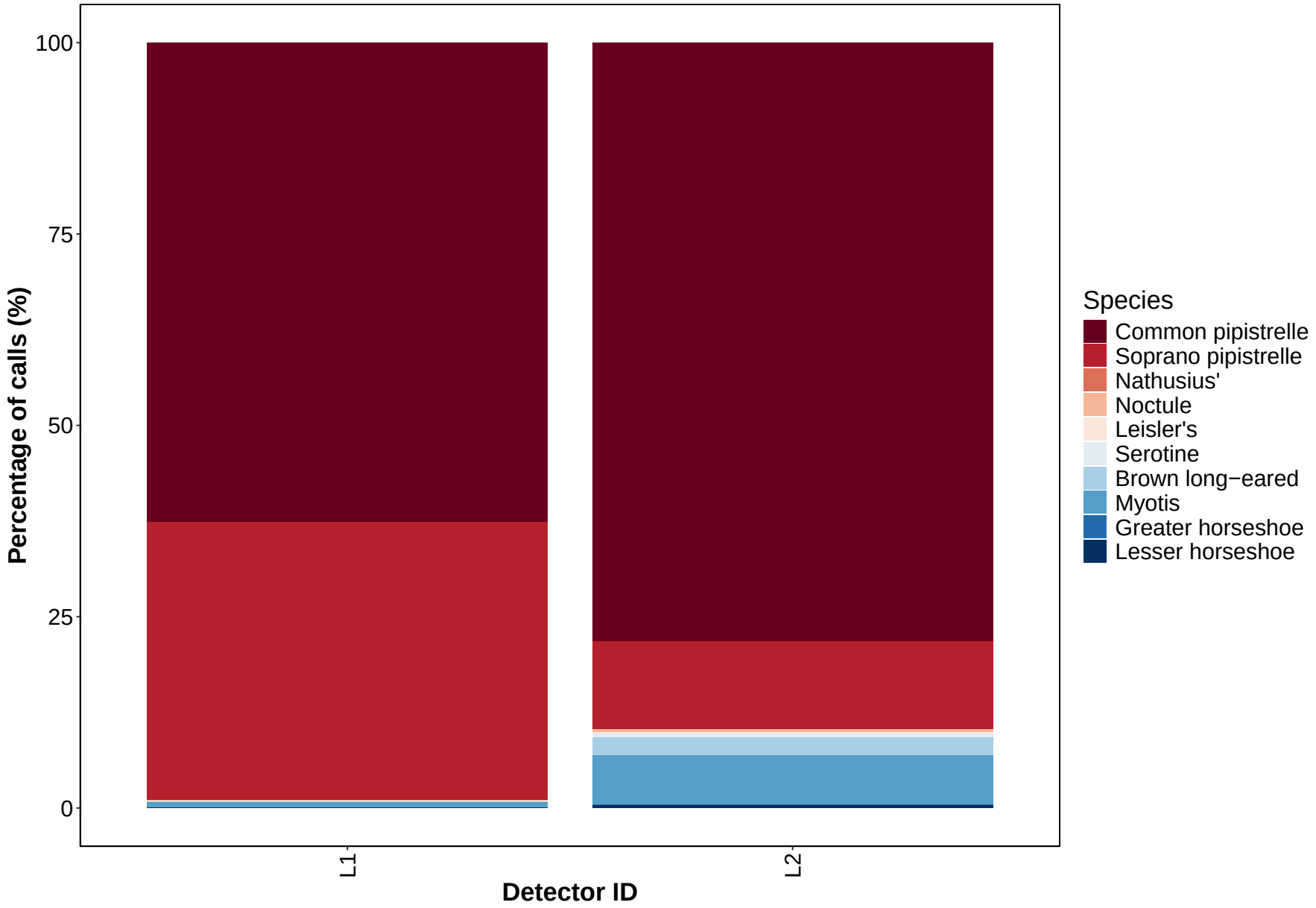
Per Detector

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

Species	Detector ID	Count (no.)	Percentage by Detector (%)
Common pipistrelle	L1	2327	51.4709135
Common pipistrelle	L2	1697	71.0041841
Soprano pipistrelle	L1	2055	45.4545455
Soprano pipistrelle	L2	334	13.9748954
Nathusius'	L2	2	0.0836820
Noctule	L1	8	0.1769520
Noctule	L2	19	0.7949791
Leisler's	L1	16	0.3539040
Leisler's	L2	5	0.2092050
Serotine	L1	11	0.2433090
Serotine	L2	22	0.9205021
Brown long-eared	L1	1	0.0221190
Brown long-eared	L2	84	3.5146444
Myotis	L1	98	2.1676620
Myotis	L2	206	8.6192469
Greater horseshoe	L2	7	0.2928870
Lesser horseshoe	L1	5	0.1105950
Lesser horseshoe	L2	14	0.5857741

Species Composition

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


100
75
50
25
0
Percentage of calls (%)
L1
L2
Detector ID
Species
Common pipistrelle
Soprano pipistrelle
Nathusius'
Noctule
Leisler's
Serotine
Brown long−eared
Myotis
Greater horseshoe
Lesser horseshoe

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.

Nighlty 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
Common pipistrelle	L1	6.1
Common pipistrelle	L2	1.9
Soprano pipistrelle	L1	0.4
Soprano pipistrelle	L2	0.4
Nathusius'	L2	0.2
Noctule	L1	0.2
Noctule	L2	0.1
Leisler's	L1	0.1
Leisler's	L2	0.1
Serotine	L1	0.1
Serotine	L2	0.1
Brown long-eared	L1	0.1
Brown long-eared	L2	0.1
Myotis	L1	0.1
Myotis	L2	0.3
Greater horseshoe	L2	0.1
Lesser horseshoe	L1	0.1
Lesser horseshoe	L2	0.1

Mean Per Detector

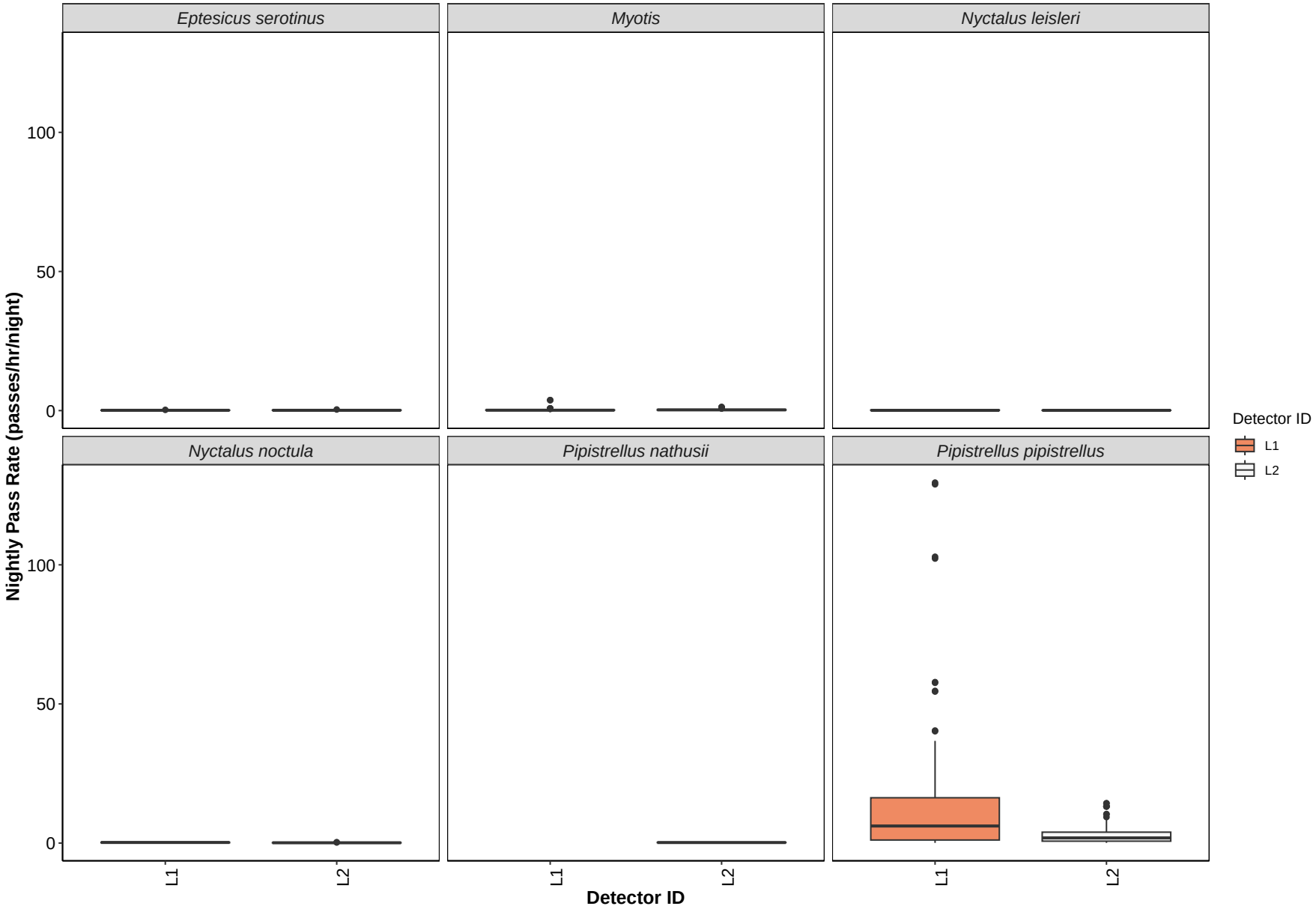
Table 17. The mean Nightly Pass Rate (bat passes per hour, per night) of each species at each detector. Values are given to 1 decimal place.

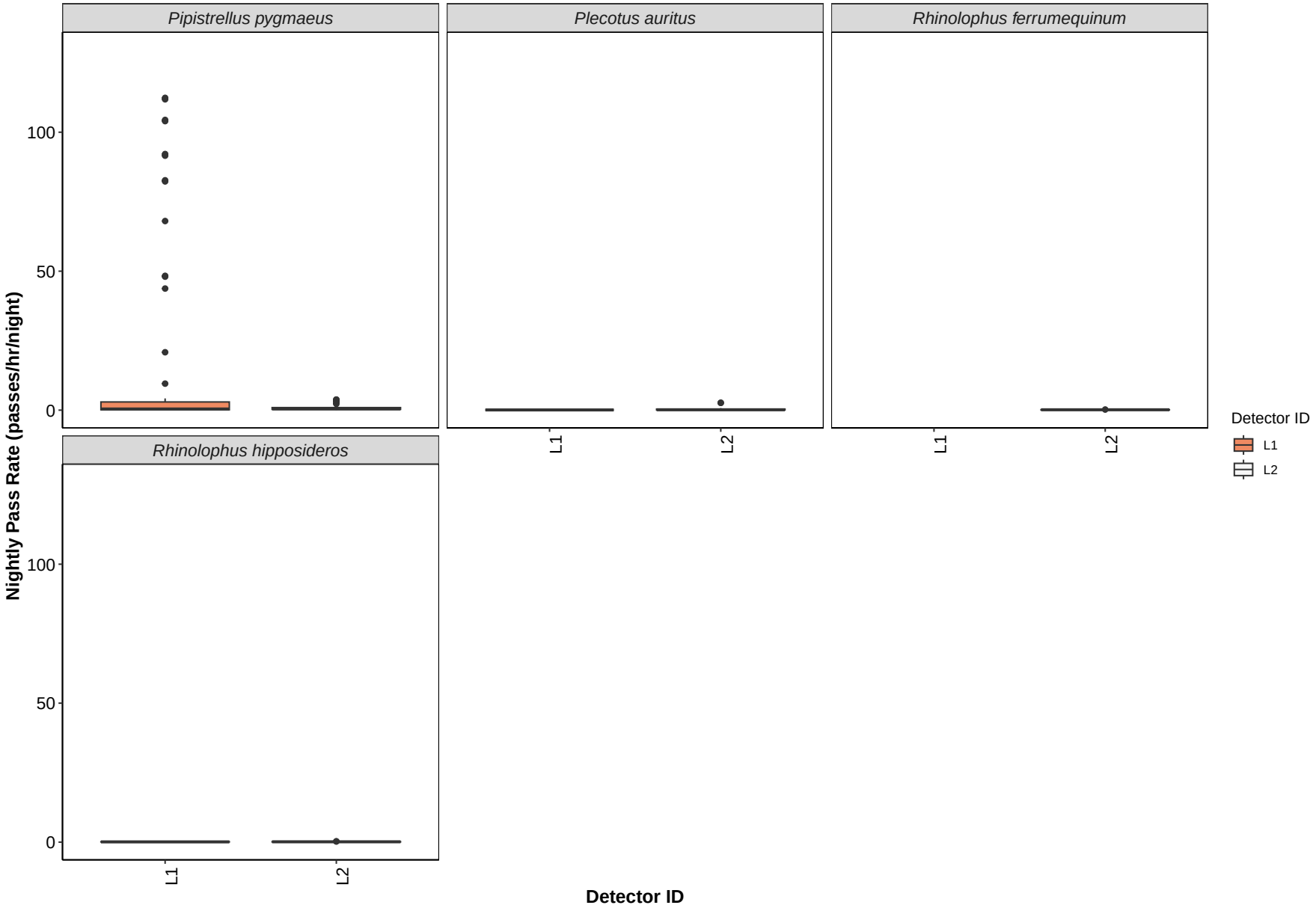
We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

Species	Detector ID	Mean Pass Rate
Common pipistrelle	L1	13.5
Common pipistrelle	L2	3.0
Soprano pipistrelle	L1	17.5
Soprano pipistrelle	L2	0.7
Nathusius'	L2	0.2
Noctule	L1	0.2
Noctule	L2	0.1
Leisler's	L1	0.1
Leisler's	L2	0.1
Serotine	L1	0.1
Serotine	L2	0.2
Brown long-eared	L1	0.1
Brown long-eared	L2	0.4
Myotis	L1	0.4
Myotis	L2	0.3
Greater horseshoe	L2	0.1
Lesser horseshoe	L1	0.1
Lesser horseshoe	L2	0.1

Per Detector

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.


Eptesicus serotinus
Myotis
Nyctalus leisleri
Nyctalus noctula
Pipistrellus nathusii
Pipistrellus pipistrellus
Nightly Pass Rate (passes/hr/night)
0
50
100
L1
L2
Detector ID
Detector ID
L1
L2


Pipistrellus pygmaeus
Plecotus auritus
Rhinolophus ferrumequinum
Rhinolophus hipposideros
Nightly Pass Rate (passes/hr/night)
100
50
0
L1
L2
Detector ID
Detector ID
L1
L2

Split by Month

Total Bat Passes per Detector each Month

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	Apr	May	Jun	Jul	Aug	Sep	Oct
Common pipistrelle	L1	0	48	1500	6242	6360	534	35
Common pipistrelle	L2	17	201	912	416	965	1298	67
Soprano pipistrelle	L1	1	1	270	5546	2667	49	2
Soprano pipistrelle	L2	2	5	188	84	161	121	7
Nathusius'	L2	0	2	0	1	0	0	0
Noctule	L1	0	0	5	3	4	1	1
Noctule	L2	1	0	3	0	11	5	0
Leisler's	L1	0	0	2	0	1	11	9
Leisler's	L2	0	0	0	0	2	3	0
Serotine	L1	0	0	2	0	4	2	5
Serotine	L2	0	0	0	6	10	8	2
Brown long-eared	L1	0	0	0	0	0	0	1
Brown long-eared	L2	4	7	1	1	6	97	2
Myotis	L1	1	0	11	8	112	37	9
Myotis	L2	8	9	21	64	104	82	26
Greater horseshoe	L2	0	0	2	1	3	1	0
Lesser horseshoe	L1	0	0	1	1	0	2	1
Lesser horseshoe	L2	0	1	1	1	1	12	1

Survey Effort

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

month	Detector ID	No. of Survey Nights
Apr	L1	1
Apr	L2	7
May	L1	6
May	L2	12
Jun	L1	30
Jun	L2	28
Jul	L1	35
Jul	L2	28
Aug	L1	31
Aug	L2	31
Sep	L1	25
Sep	L2	33
Oct	L1	17
Oct	L2	20

Nightly Bat Passes 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	Apr	May	Jun	Jul	Aug	Sep	Oct
Common pipistrelle	L1	NA	1.0	3.1	11.1	17.2	0.9	0.1
Common pipistrelle	L2	0.5	1.7	3.0	1.1	2.0	2.5	0.1
Soprano pipistrelle	L1	0.1	0.1	0.3	0.8	2.1	0.3	0.1
Soprano pipistrelle	L2	0.2	0.1	0.9	0.4	0.6	0.4	0.1
Nathusius'	L2	NA	0.3	NA	0.1	NA	NA	NA
Noctule	L1	NA	NA	0.3	0.2	0.2	0.1	0.1
Noctule	L2	0.1	NA	0.1	NA	0.1	0.1	NA
Leisler's	L1	NA	NA	0.3	NA	0.1	0.1	0.1
Leisler's	L2	NA	NA	NA	NA	0.1	0.1	NA
Serotine	L1	NA	NA	0.3	NA	0.1	0.1	0.1
Serotine	L2	NA	NA	NA	0.1	0.1	0.2	0.1
Brown long-eared	L1	NA	NA	NA	NA	NA	NA	0.1
Brown long-eared	L2	0.1	0.4	0.1	0.1	0.1	0.3	0.1
Myotis	L1	0.1	NA	0.1	0.1	0.2	0.1	0.1
Myotis	L2	0.2	0.1	0.1	0.5	0.3	0.3	0.1
Greater horseshoe	L2	NA	NA	0.1	0.1	0.2	0.1	NA
Lesser horseshoe	L1	NA	NA	0.1	0.1	NA	0.1	0.1
Lesser horseshoe	L2	NA	0.1	0.1	0.1	0.1	0.1	0.1

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.

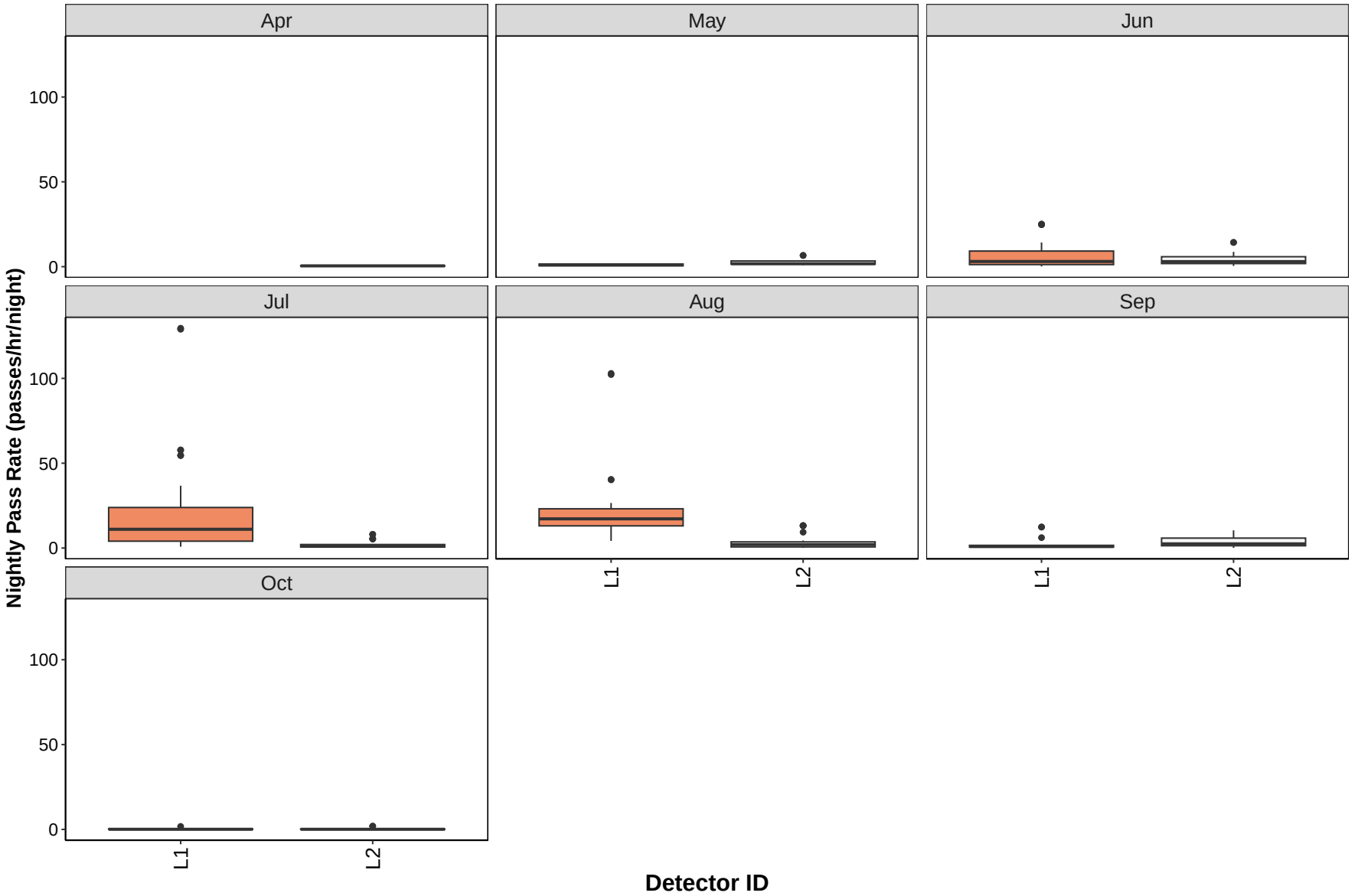
We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

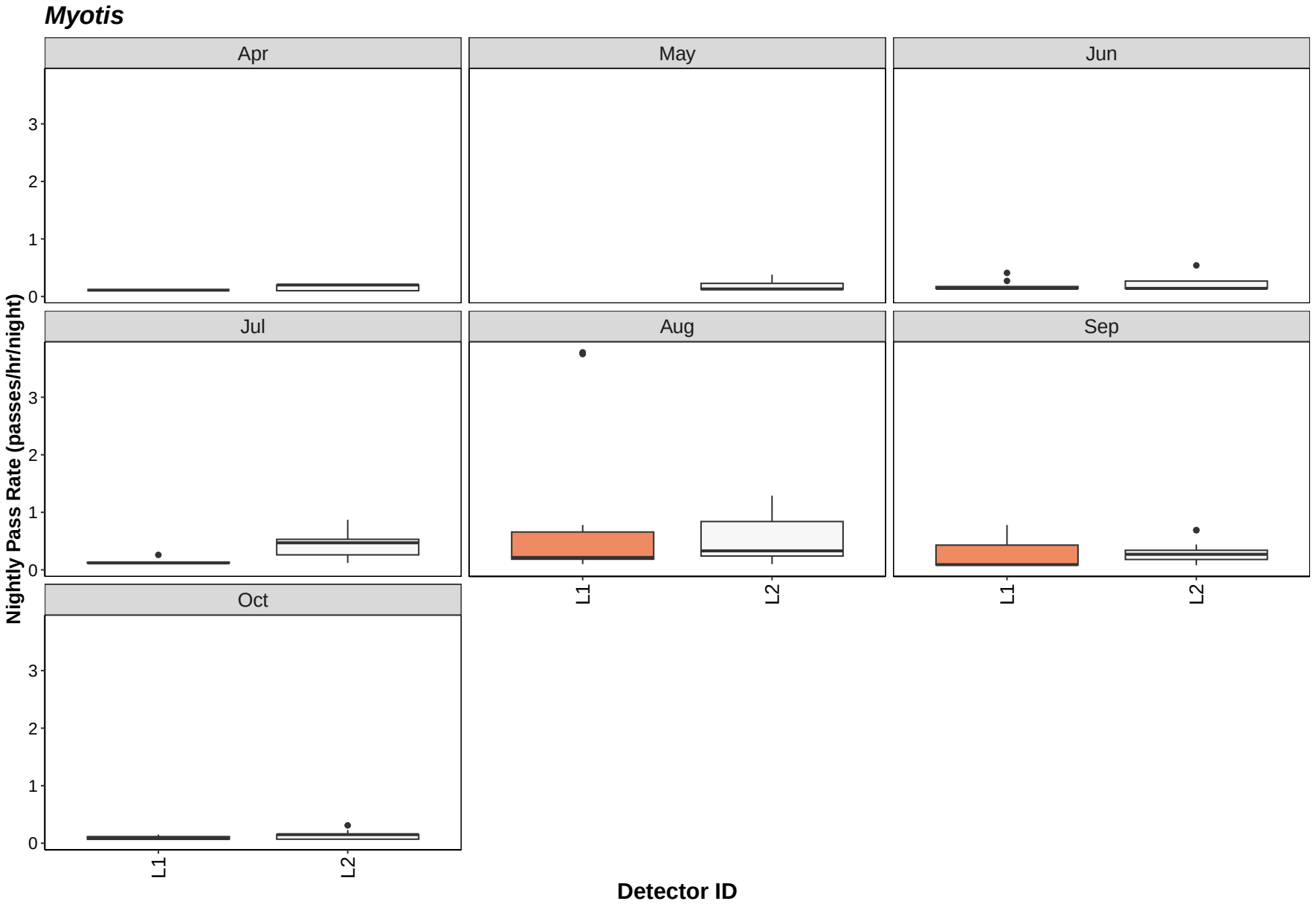
Species	Detector ID	Apr	May	Jun	Jul	Aug	Sep	Oct
Common pipistrelle	L1	NA	1.0	6.8	23.4	22.8	2.1	0.4
Common pipistrelle	L2	0.4	2.9	4.4	2.0	3.6	3.5	0.4
Soprano pipistrelle	L1	0.1	0.1	3.3	39.6	20.9	0.3	0.1
Soprano pipistrelle	L2	0.2	0.2	1.1	0.5	1.0	0.5	0.1
Nathusius'	L2	NA	0.3	NA	0.1	NA	NA	NA
Noctule	L1	NA	NA	0.3	0.2	0.2	0.1	0.1
Noctule	L2	0.1	NA	0.1	NA	0.2	0.1	NA
Leisler's	L1	NA	NA	0.3	NA	0.1	0.1	0.1
Leisler's	L2	NA	NA	NA	NA	0.1	0.1	NA
Serotine	L1	NA	NA	0.3	NA	0.1	0.1	0.1
Serotine	L2	NA	NA	NA	0.2	0.1	0.2	0.1
Brown long-eared	L1	NA	NA	NA	NA	NA	NA	0.1
Brown long-eared	L2	0.1	0.3	0.1	0.1	0.1	0.7	0.1
Myotis	L1	0.1	NA	0.2	0.1	0.7	0.3	0.1
Myotis	L2	0.2	0.2	0.2	0.5	0.5	0.3	0.1
Greater horseshoe	L2	NA	NA	0.1	0.1	0.2	0.1	NA
Lesser horseshoe	L1	NA	NA	0.1	0.1	NA	0.1	0.1
Lesser horseshoe	L2	NA	0.1	0.1	0.1	0.1	0.2	0.1

Per Detector

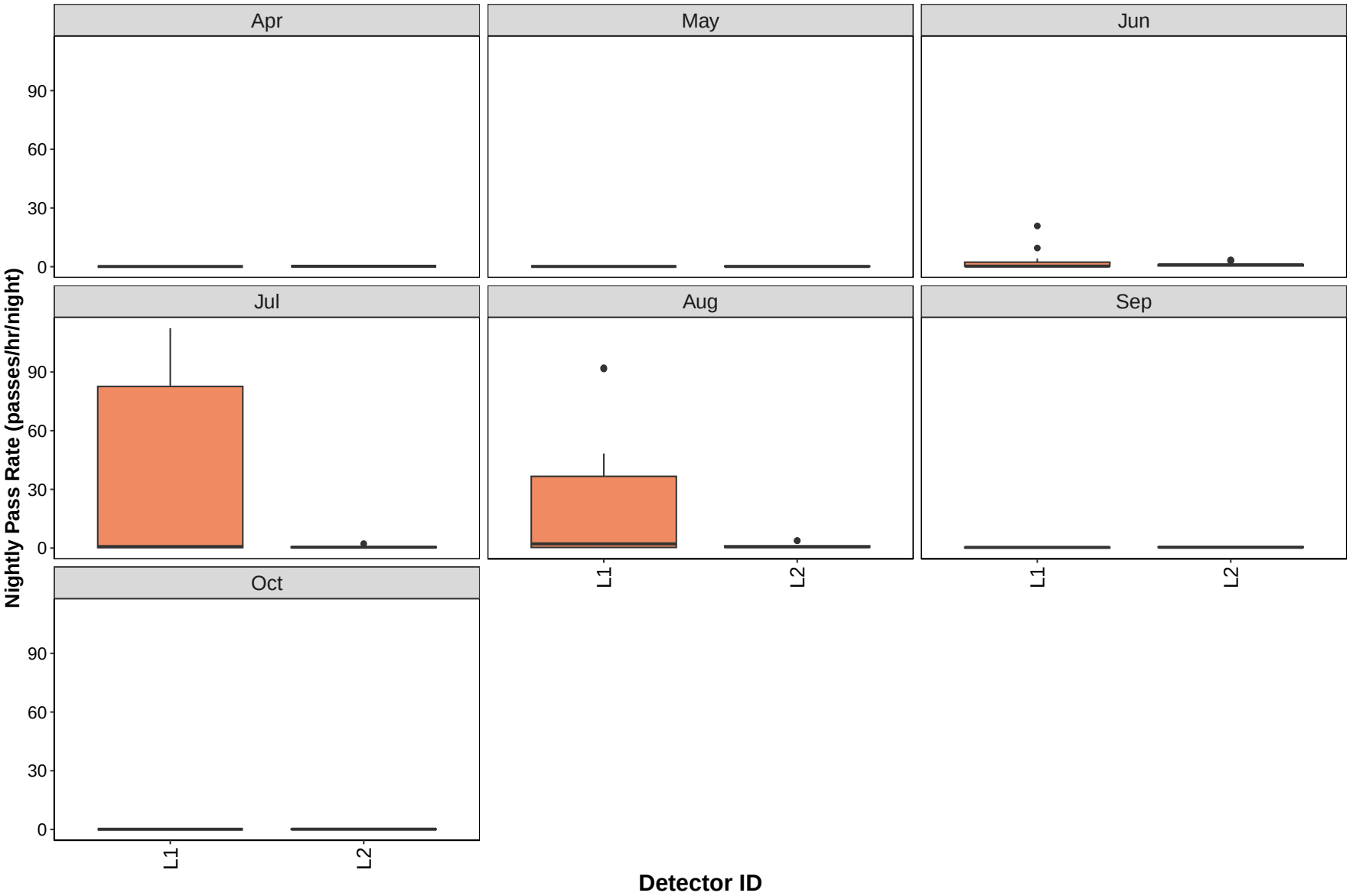
Figure 12. Figures show boxplots for the number of bat passes per hour by detector, for each month. The ‘box’ shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The ‘whiskers’ extend from the box and represent 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.

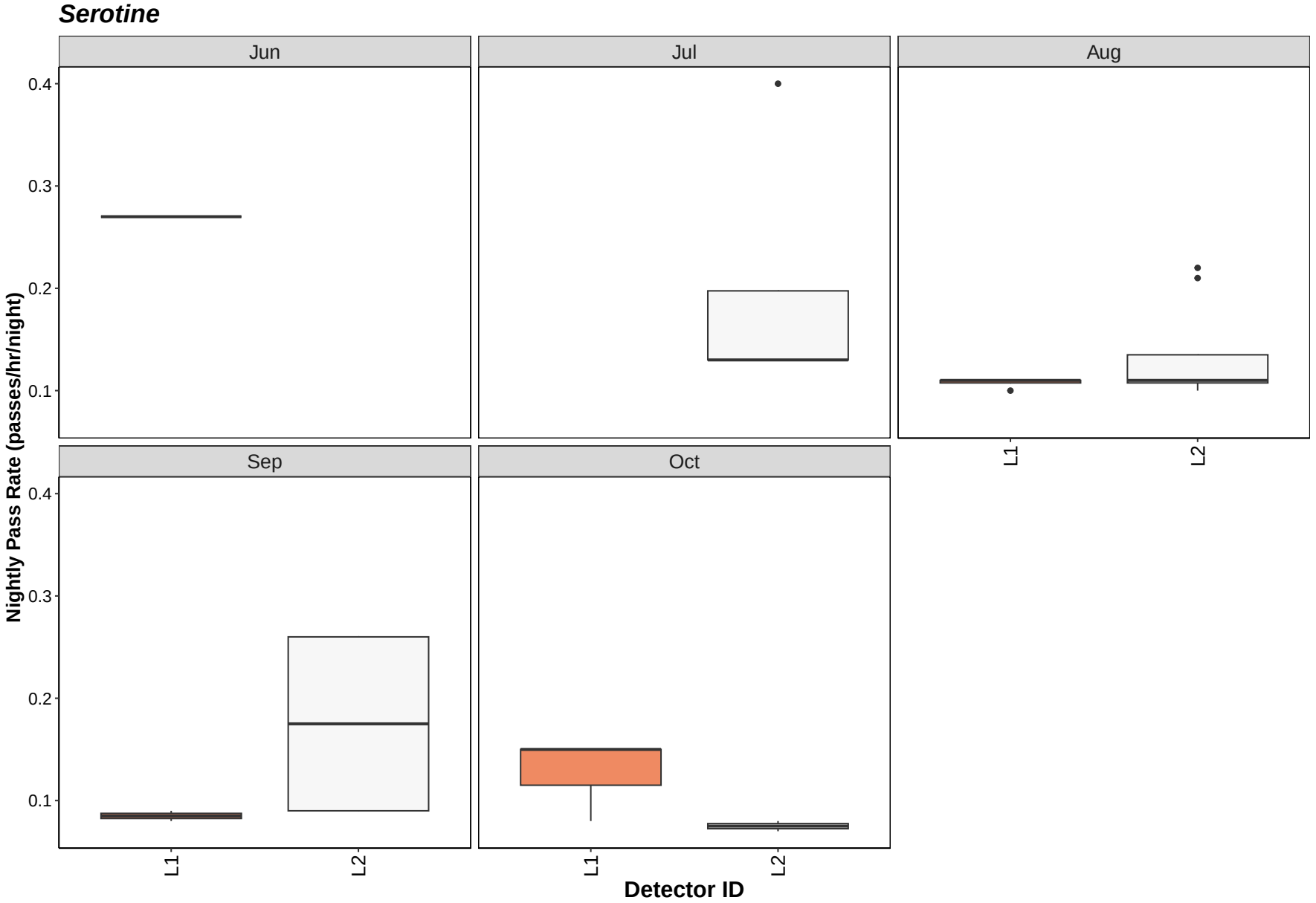
Common pipistrelle

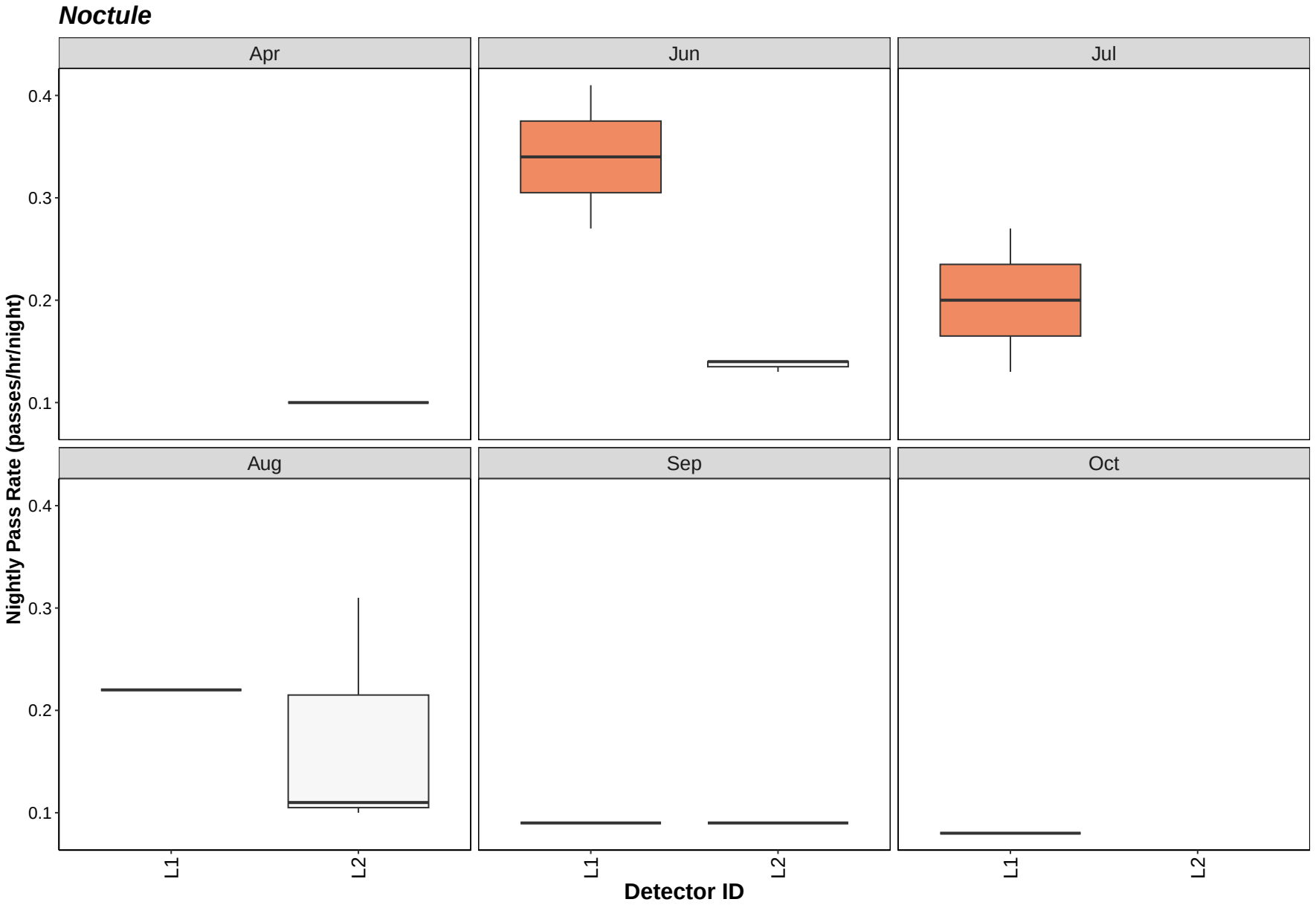



Myotis
Apr
May
Jun
Jul
Aug
Sep
Oct
Nightly Pass Rate (passes/hr/night)
0
1
2
3
L1
L2
Detector ID

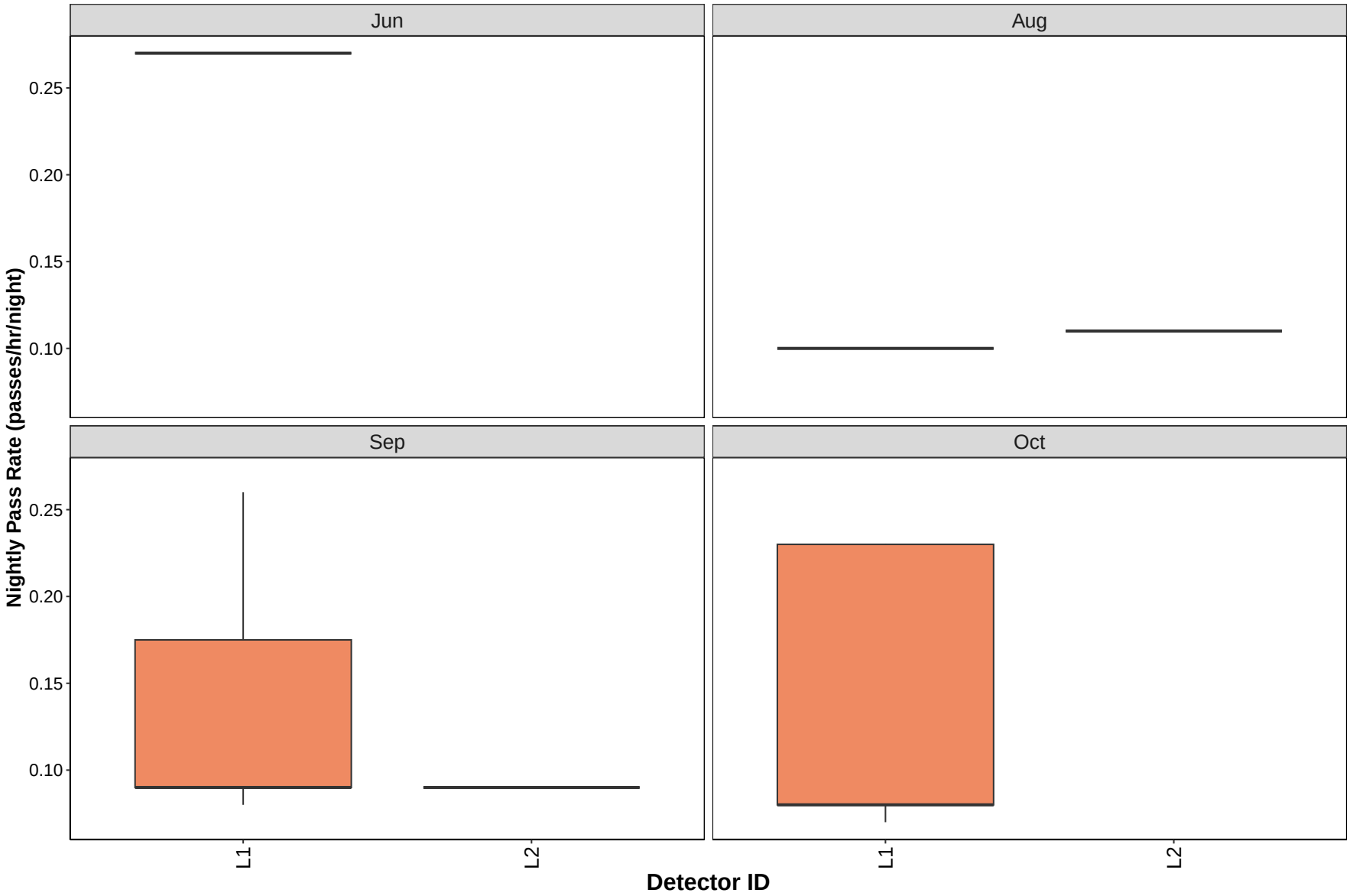
Soprano pipistrelle



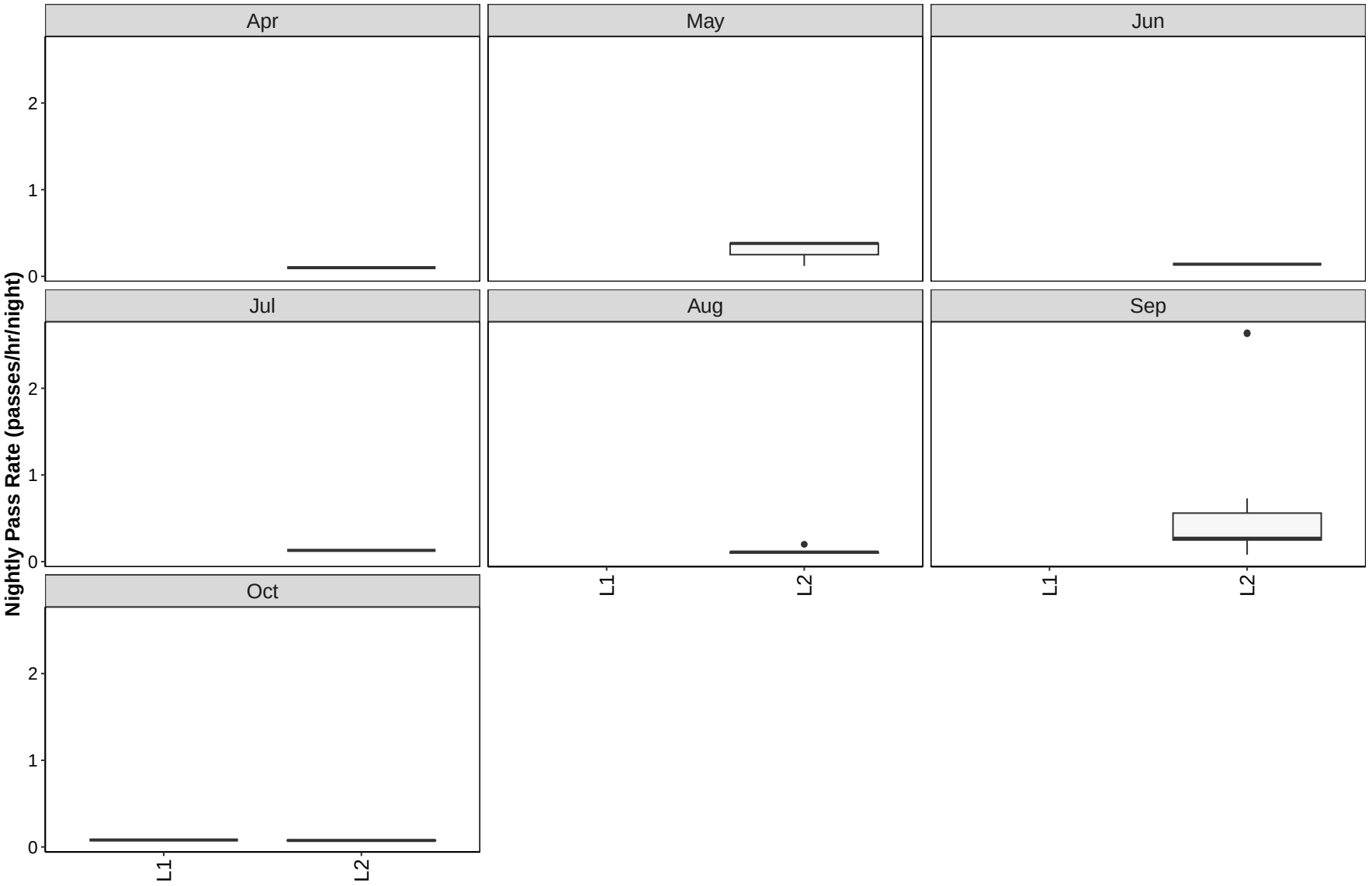

Serotine
Jun
Jul
Aug
Sep
Oct
Nightly Pass Rate (passes/hr/night)
0.4
0.3
0.2
0.1
L1
L2
Detector ID


Noctule
Apr
Jun
Jul
Aug
Sep
Oct
Nightly Pass Rate (passes/hr/night)
0.4
0.3
0.2
0.1
L1
L2
Detector ID

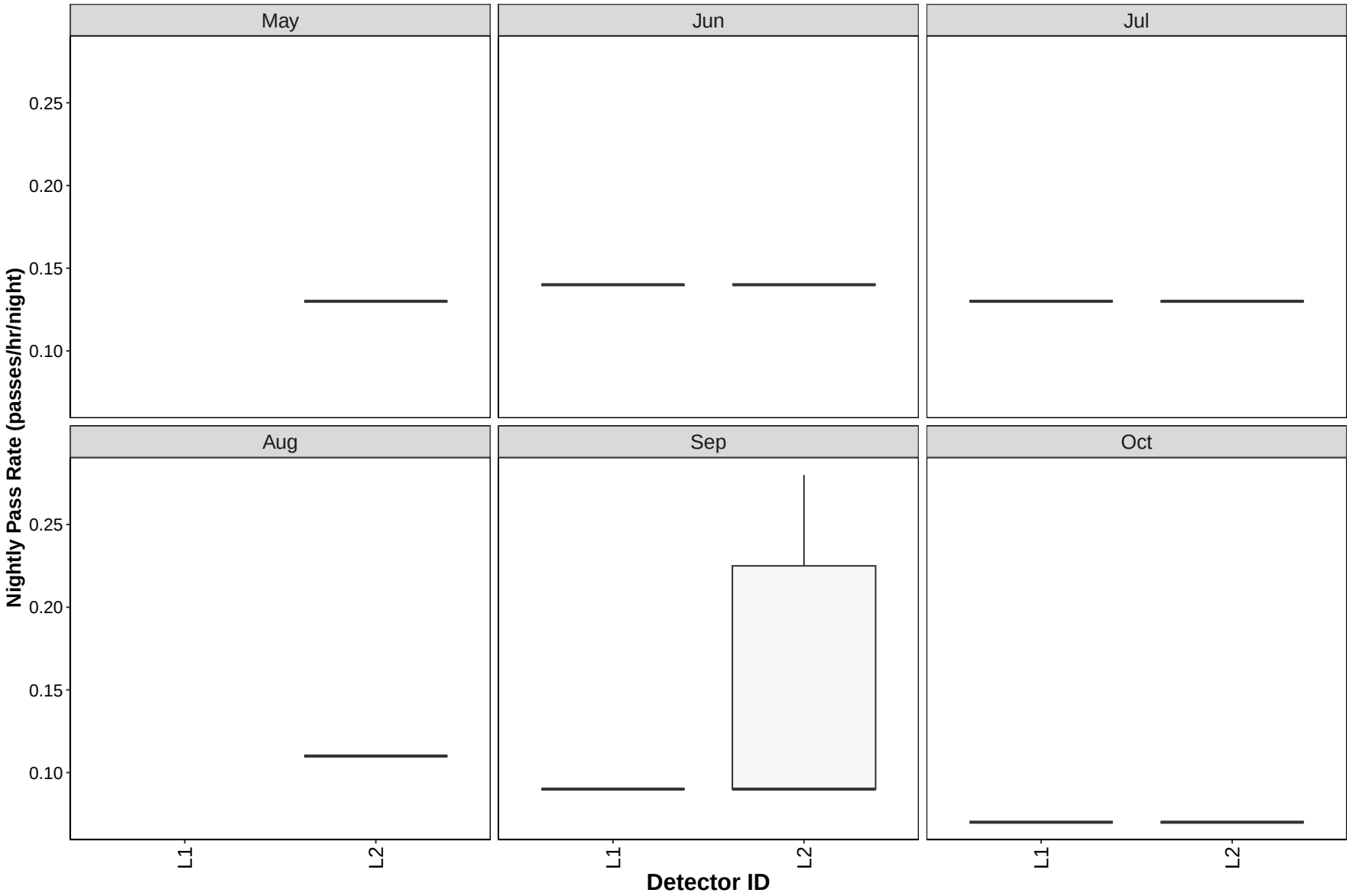
Leisler's

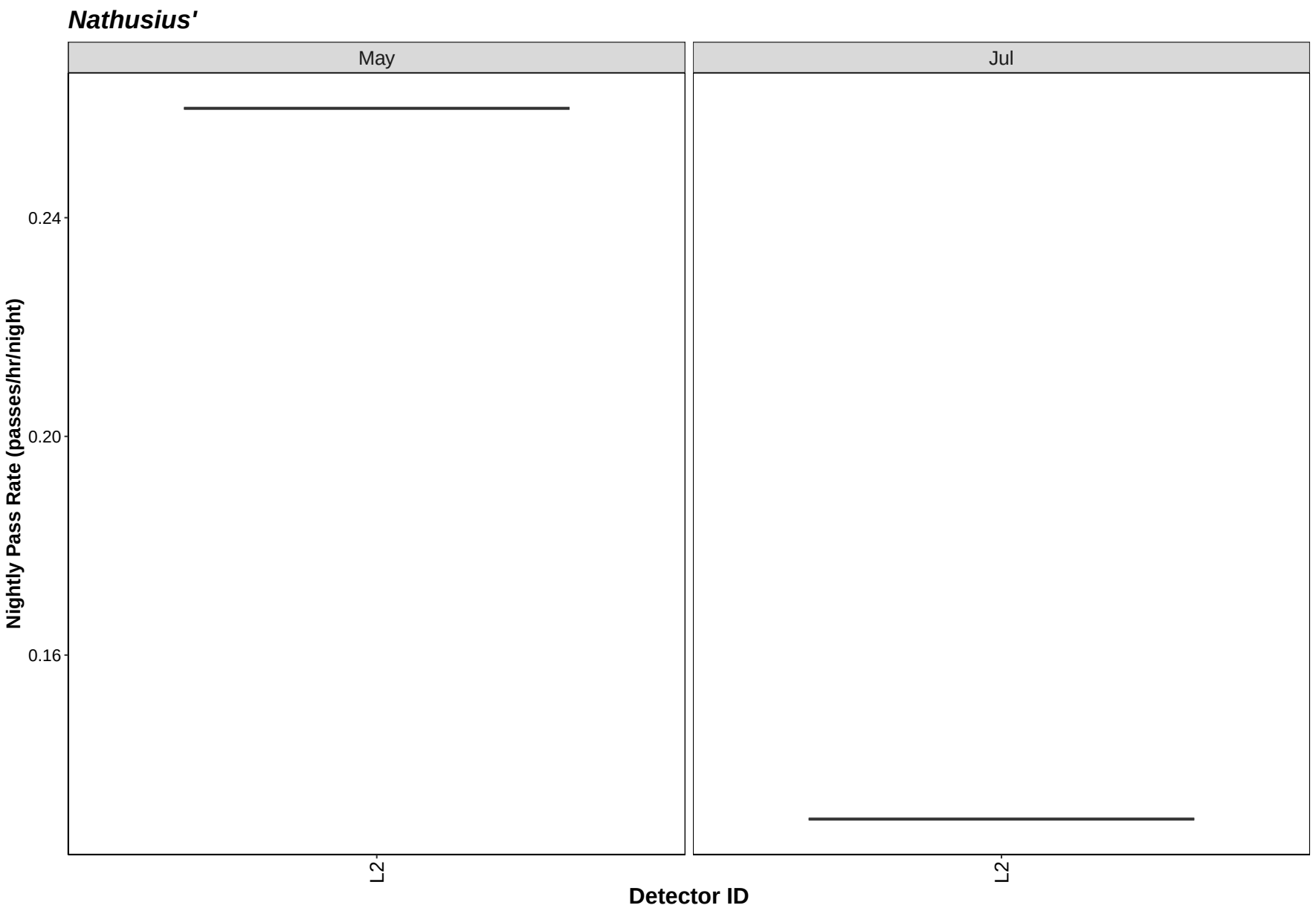

Jun
Aug
Sep
Oct
0.25
0.20
0.15
0.10
Nightly Pass Rate (passes/hr/night)
L1
L2
Detector ID

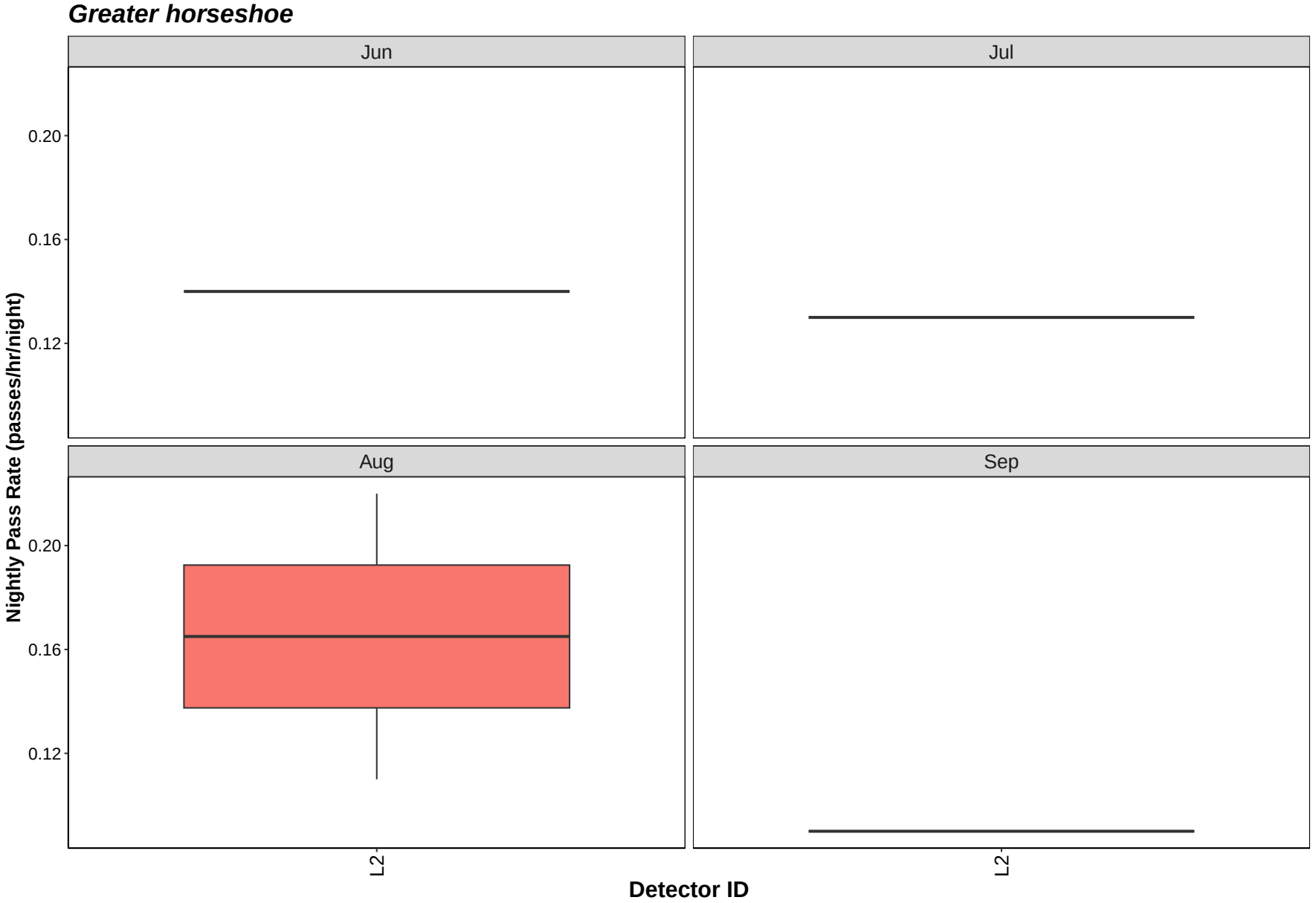
Brown long−eared



Lesser horseshoe




Nathusius'
May
Jul
0.24
0.20
0.16
Nightly Pass Rate (passes/hr/night)
L2
L2
Detector ID


Greater horseshoe
Jun
Jul
Aug
Sep
0.20
0.16
0.12
Nightly Pass Rate (passes/hr/night)
L2
Detector ID

Bat Activity per Detector Location

Figure 13. Detector ID reference:

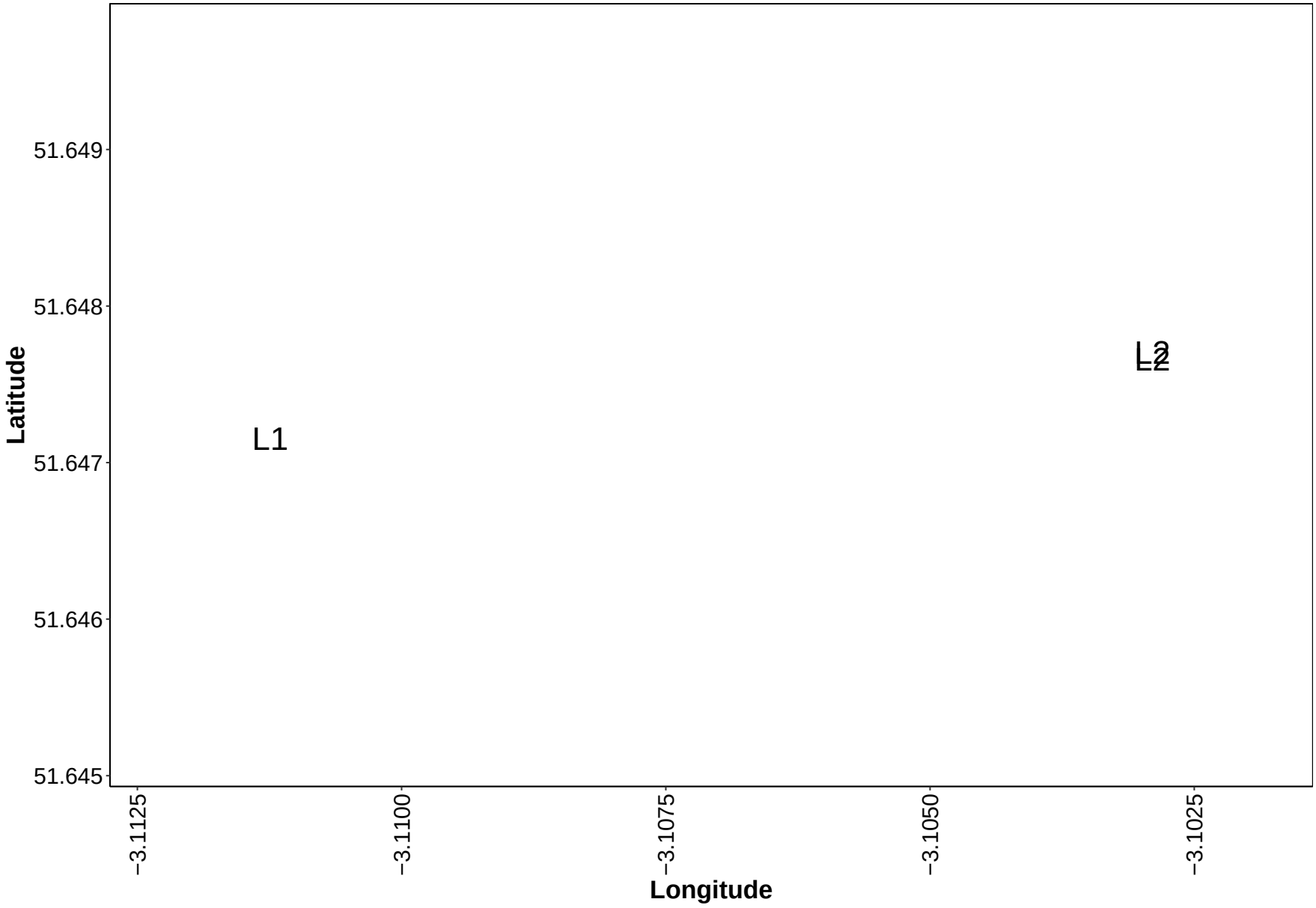
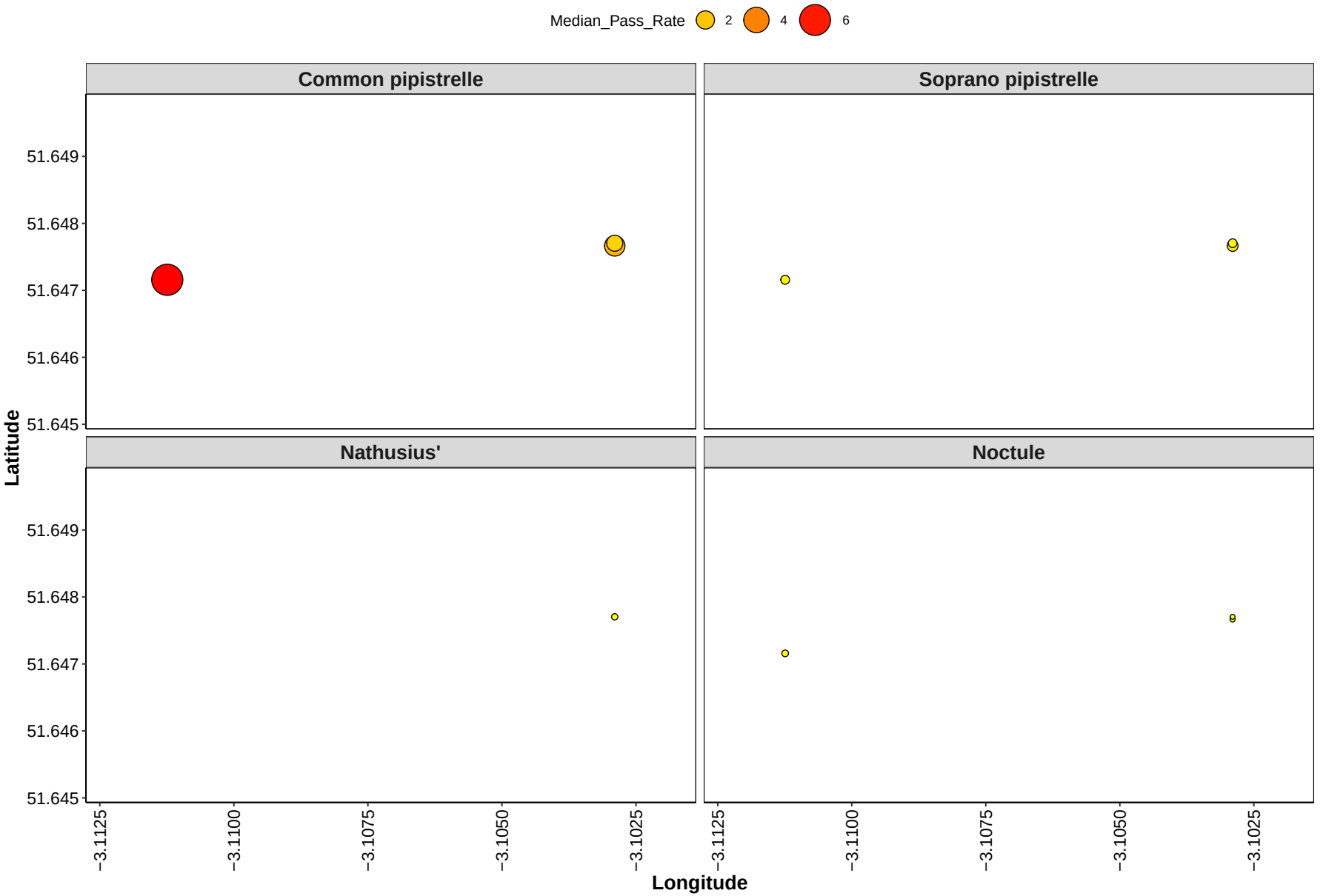

Latitude
51.649
51.648
51.647
51.646
51.645
L1
L2
−3.1125
−3.1100
−3.1075
−3.1050
−3.1025
Longitude

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.


Median_Pass_Rate
2
4
6
Common pipistrelle
Soprano pipistrelle
Nathusius'
Noctule
Latitude
51.649
51.648
51.647
51.646
51.645
−3.1125
−3.1100
−3.1075
−3.1050
−3.1025
Longitude

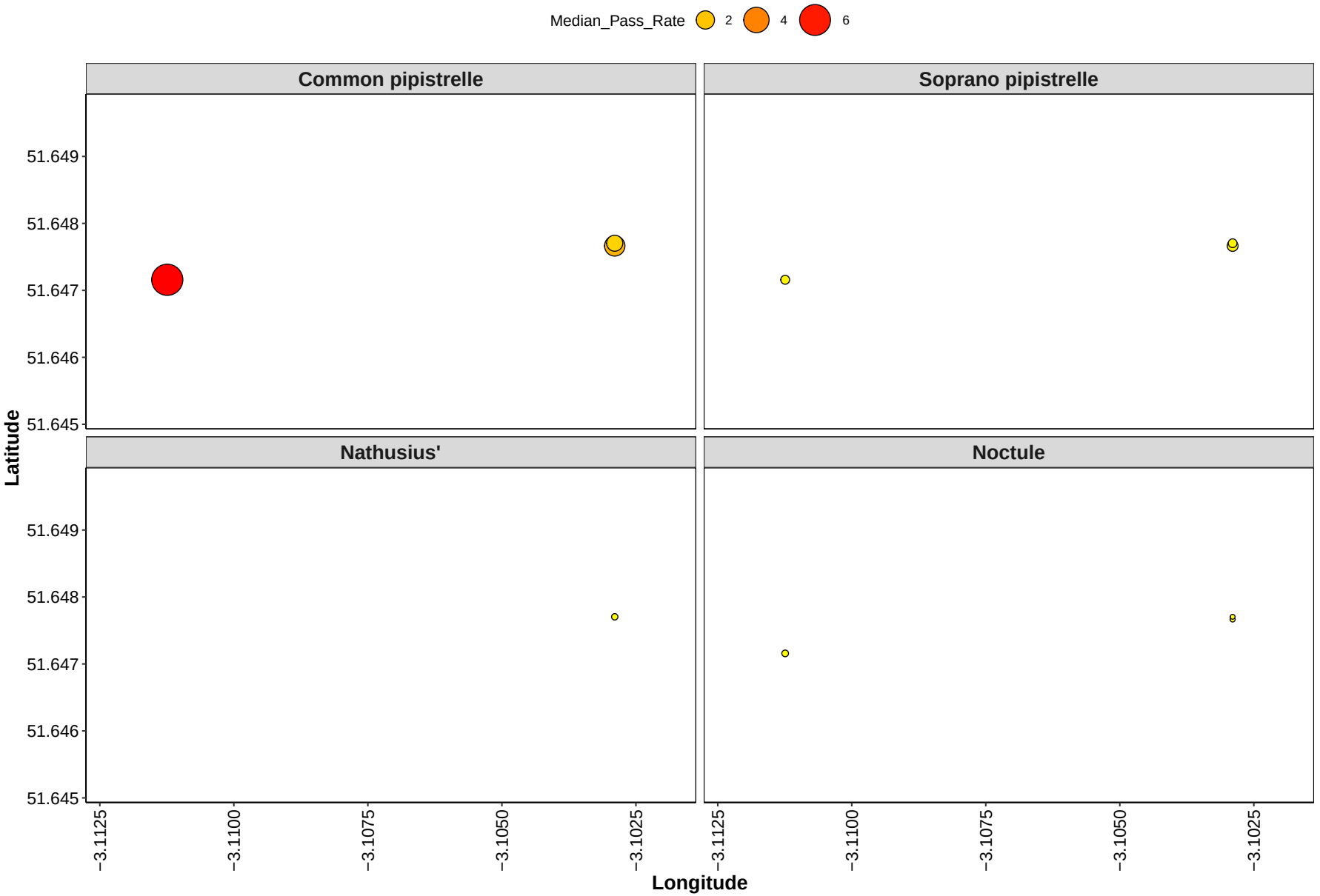
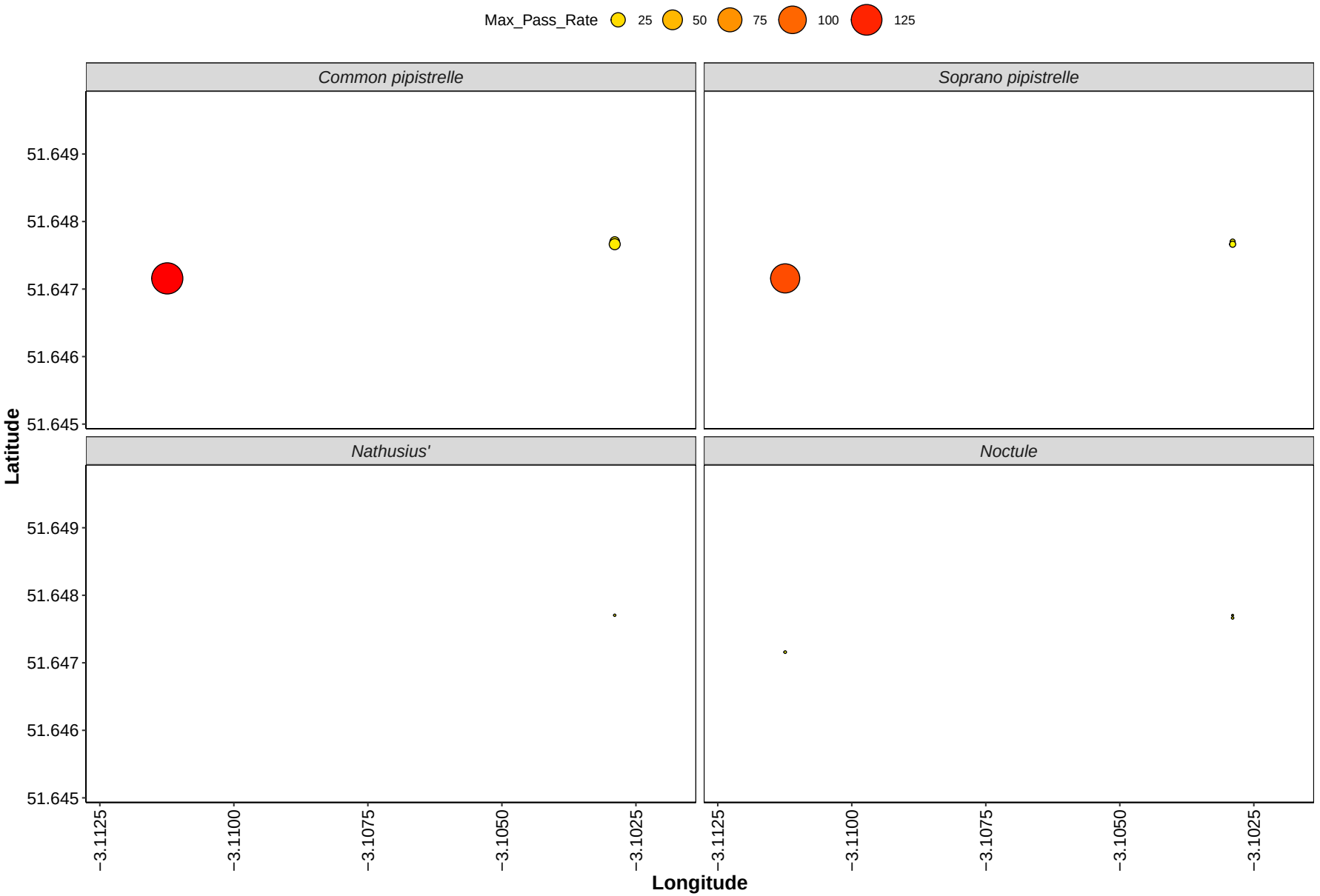
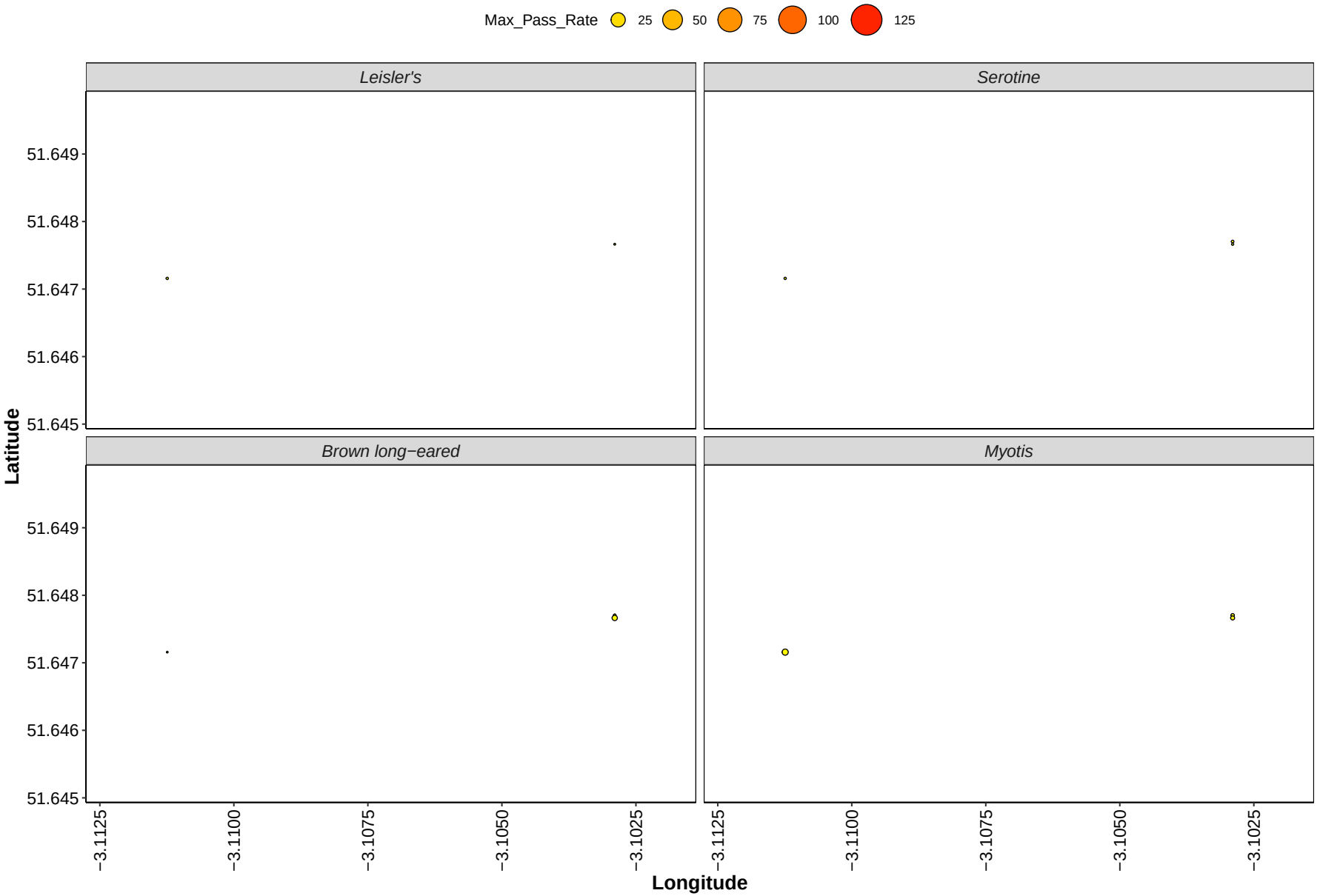

Median_Pass_Rate
2
4
6
Common pipistrelle
Soprano pipistrelle
Nathusius'
Noctule
Latitude
51.649
51.648
51.647
51.646
51.645
−3.1125
−3.1100
−3.1075
−3.1050
−3.1025
Longitude

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.


Max_Pass_Rate
25
50
75
100
125
Common pipistrelle
Soprano pipistrelle
Nathusius'
Noctule
Latitude
51.649
51.648
51.647
51.646
51.645
−3.1125
−3.1100
−3.1075
−3.1050
−3.1025
Longitude


Max_Pass_Rate
25
50
75
100
125
Leisler's
Serotine
Brown long−eared
Myotis
Latitude
51.649
51.648
51.647
51.646
51.645
−3.1125
−3.1100
−3.1075
−3.1050
−3.1025
Longitude

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

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	L1	0.0
Brown long-eared	L2	0.0
Common pipistrelle	L1	3.7
Common pipistrelle	L2	1.5
Greater horseshoe	L1	0.0
Greater horseshoe	L2	0.0
Leisler's	L1	0.0
Leisler's	L2	0.0
Lesser horseshoe	L1	0.0
Lesser horseshoe	L2	0.0
Myotis	L1	0.0
Myotis	L2	0.1
Nathusius'	L1	0.0
Nathusius'	L2	0.0
Noctule	L1	0.0
Noctule	L2	0.0
Serotine	L1	0.0
Serotine	L2	0.0
Soprano pipistrelle	L1	0.0
Soprano pipistrelle	L2	0.1

Mean per Detector

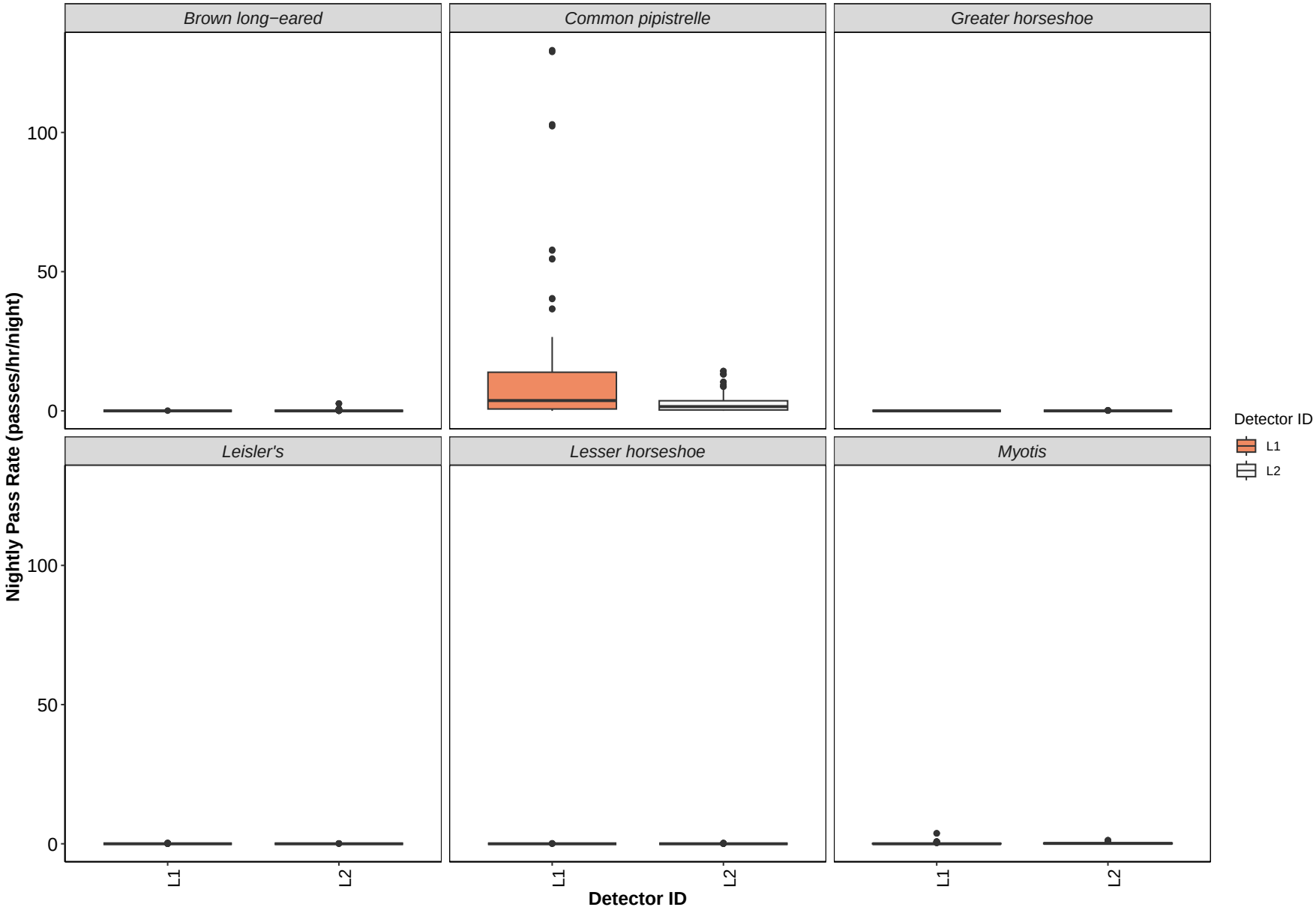
Table 23. The mean Nightly Pass Rate (bat passes per hour, per night) of each species at each detector. Values are given to 1 decimal place.

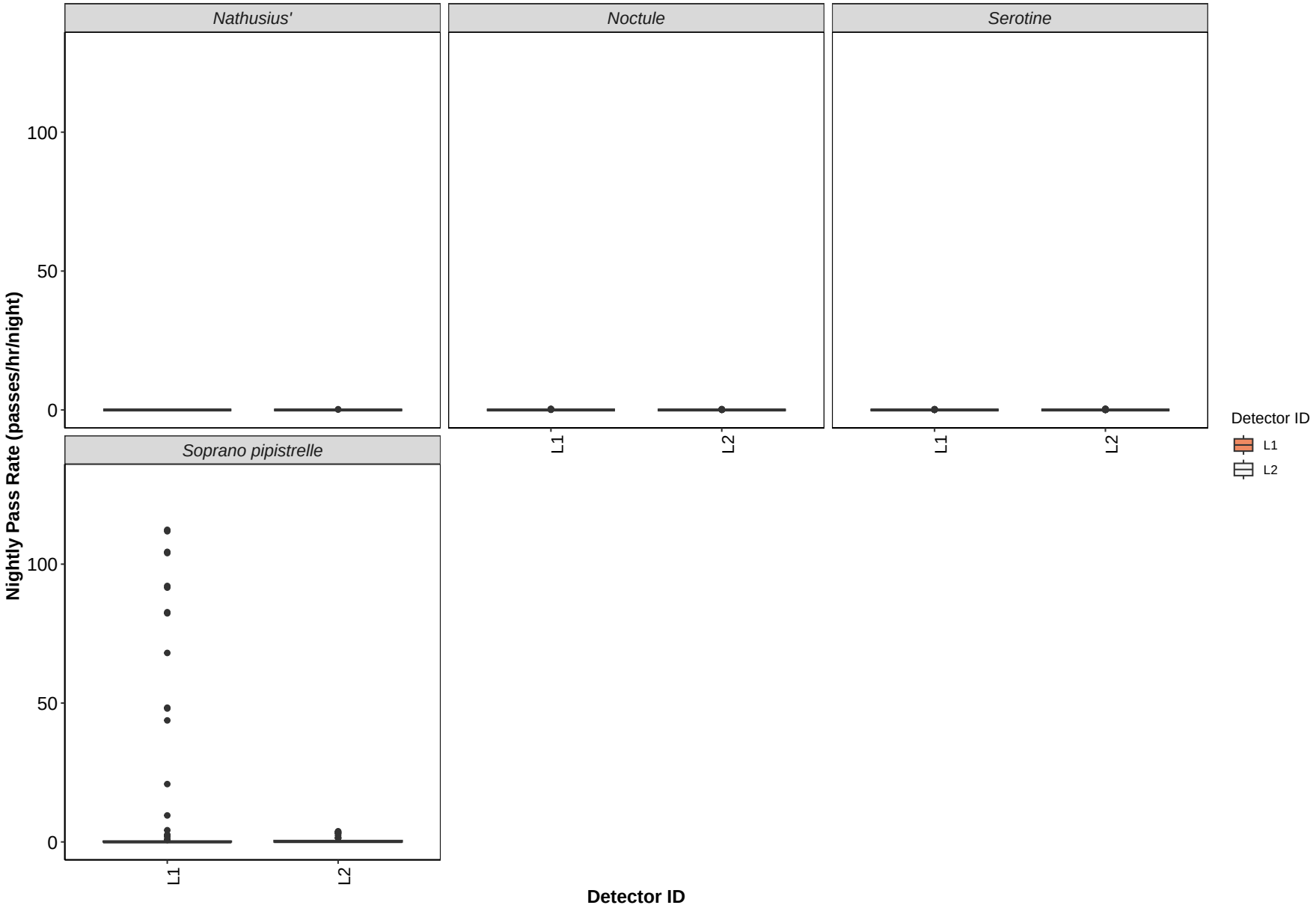
We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

Species	Detector ID	Mean Pass Rate
Brown long-eared	L1	0.0
Brown long-eared	L2	0.1
Common pipistrelle	L1	12.0
Common pipistrelle	L2	2.7
Greater horseshoe	L1	0.0
Greater horseshoe	L2	0.0
Leisler's	L1	0.0
Leisler's	L2	0.0
Lesser horseshoe	L1	0.0
Lesser horseshoe	L2	0.0
Myotis	L1	0.1
Myotis	L2	0.2
Nathusius'	L1	0.0
Nathusius'	L2	0.0
Noctule	L1	0.0
Noctule	L2	0.0
Serotine	L1	0.0
Serotine	L2	0.0
Soprano pipistrelle	L1	7.2
Soprano pipistrelle	L2	0.4

Per Detector

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.


Brown long−eared
Common pipistrelle
Greater horseshoe
Leisler's
Lesser horseshoe
Myotis
Nightly Pass Rate (passes/hr/night)
0
50
100
L1
L2
Detector ID
Detector ID
L1
L2


Nathusius'
Noctule
Serotine
Soprano pipistrelle
100
50
0
L1
L2
Nightly Pass Rate (passes/hr/night)
Detector ID
Detector ID
L1
L2

Survey Effort

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

month	Detector ID	No. of Survey Nights
Apr	L1	1
Apr	L2	7
May	L1	6
May	L2	12
Jun	L1	30
Jun	L2	28
Jul	L1	35
Jul	L2	28
Aug	L1	31
Aug	L2	31
Sep	L1	25
Sep	L2	33
Oct	L1	17
Oct	L2	20

Nighlty 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	Apr	Aug	Jul	Jun	May	Oct	Sep
Brown long-eared	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brown long-eared	L2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Common pipistrelle	L1	0.0	17.2	11.0	3.1	1.0	0.0	0.7
Common pipistrelle	L2	0.2	1.9	0.9	3.0	1.6	0.1	2.5
Greater horseshoe	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Greater horseshoe	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leisler's	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leisler's	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lesser horseshoe	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lesser horseshoe	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Myotis	L1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Myotis	L2	0.1	0.3	0.2	0.1	0.1	0.1	0.3
Nathusius'	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nathusius'	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Noctule	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Noctule	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serotine	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serotine	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Soprano pipistrelle	L1	0.1	0.0	0.1	0.0	0.0	0.0	0.1
Soprano pipistrelle	L2	0.0	0.1	0.3	0.5	0.0	0.0	0.3

Mean per Detector

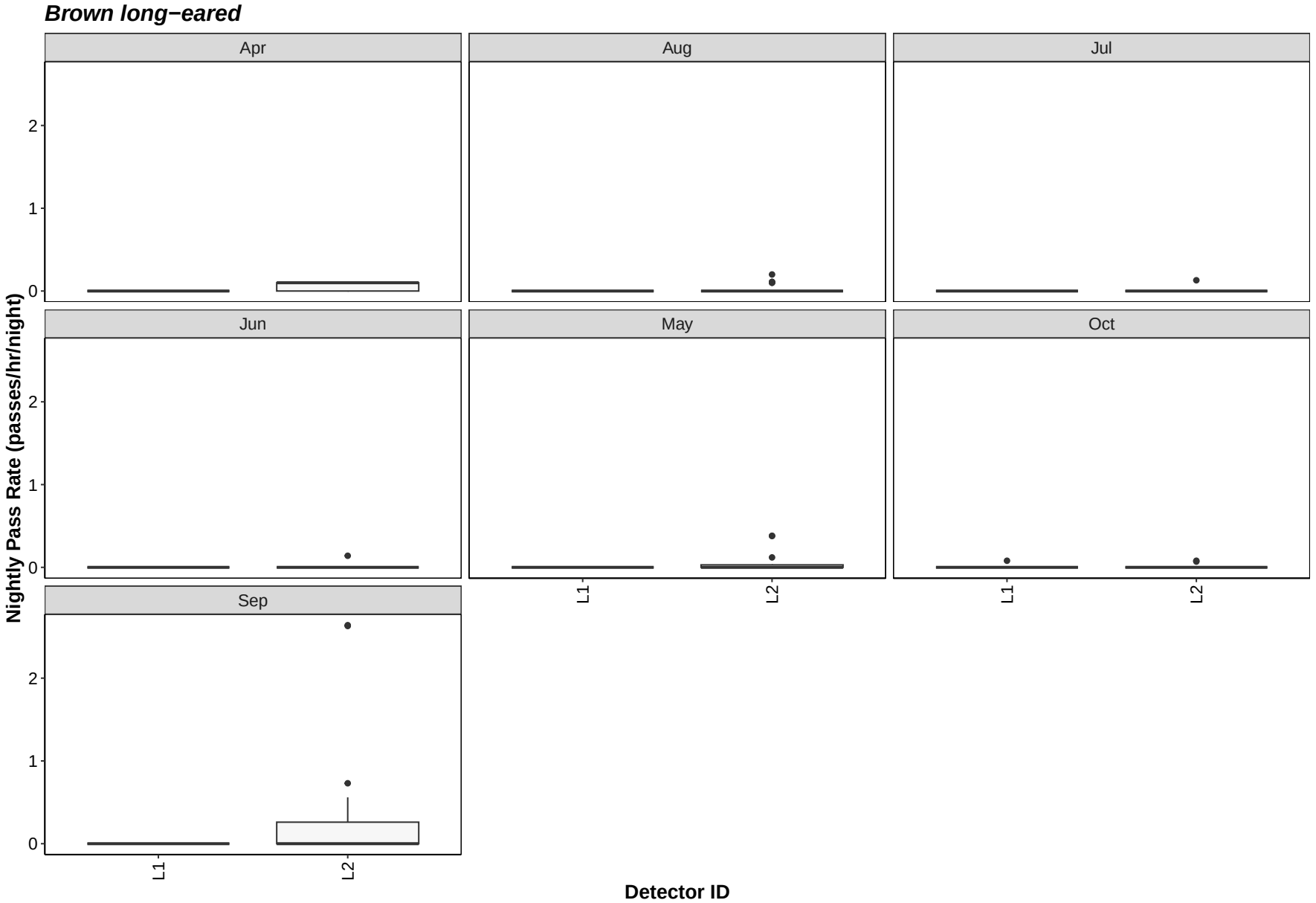
Table 26. The mean Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. Values are given to 1 decimal place.

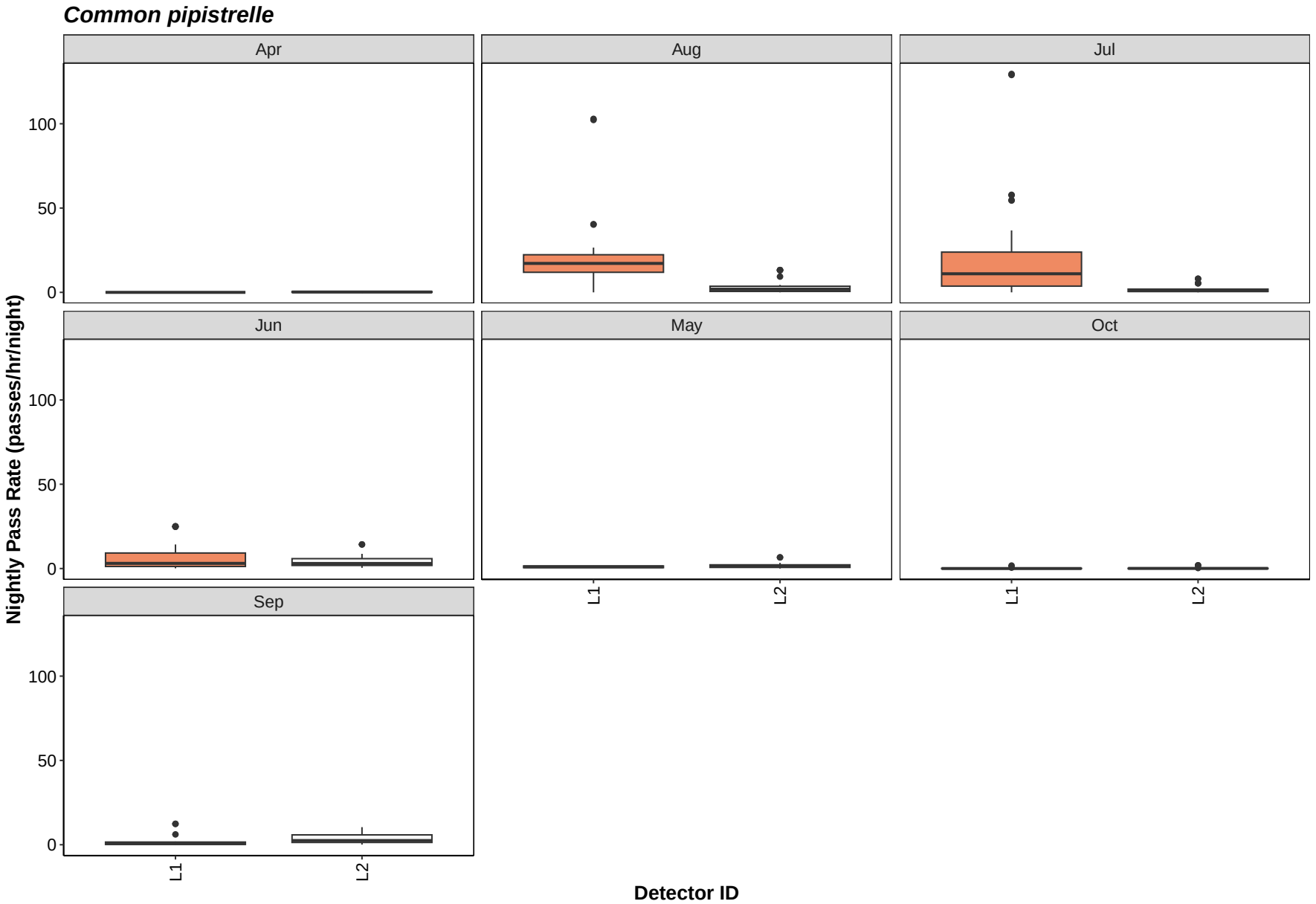
We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

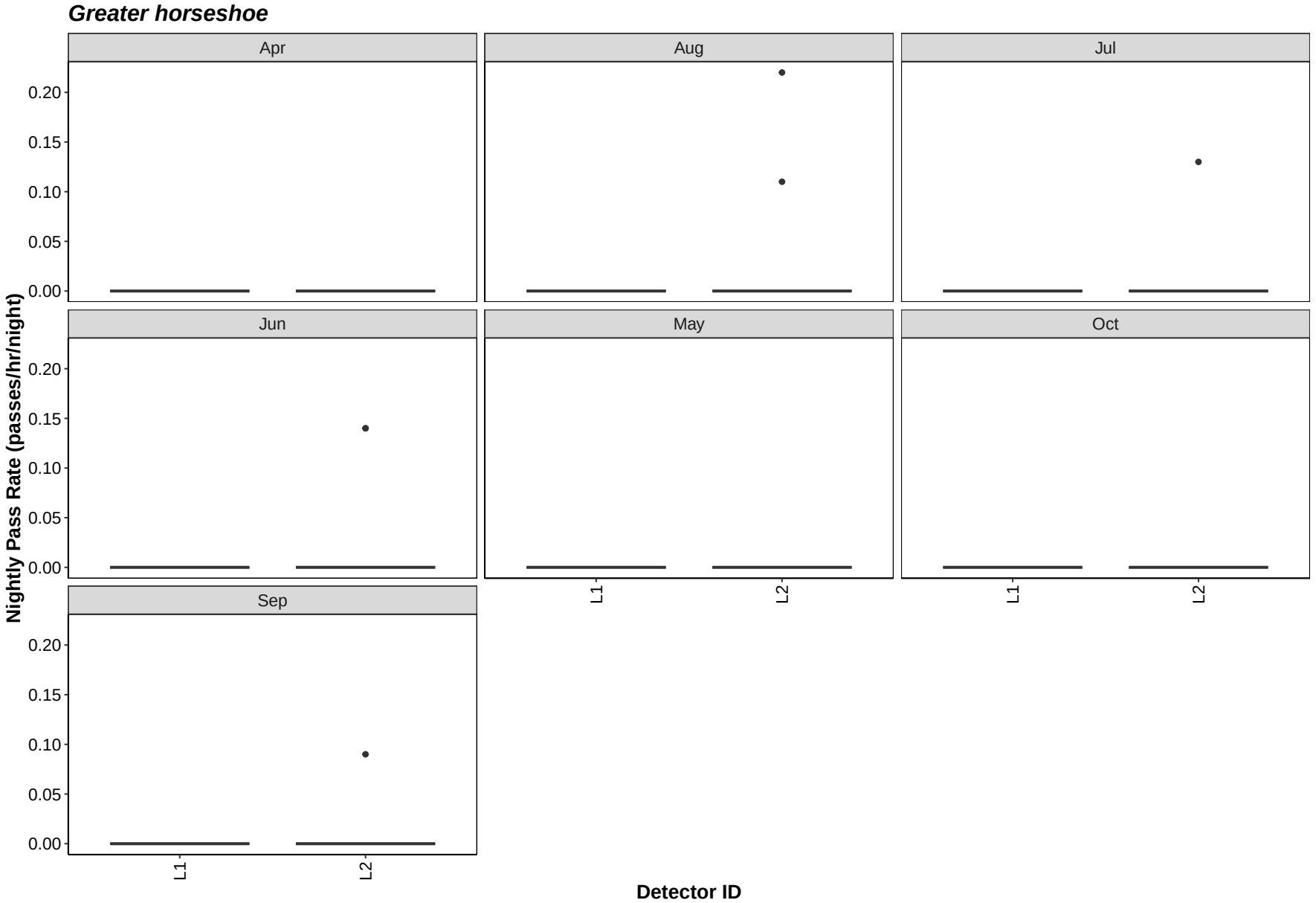
Species	Detector ID	Apr	Aug	Jul	Jun	May	Oct	Sep
Brown long-eared	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brown long-eared	L2	0.1	0.0	0.0	0.0	0.1	0.0	0.3
Common pipistrelle	L1	0.0	22.1	22.7	6.8	1.0	0.2	1.8
Common pipistrelle	L2	0.2	3.4	1.9	4.4	2.2	0.3	3.5
Greater horseshoe	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Greater horseshoe	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leisler's	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leisler's	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lesser horseshoe	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lesser horseshoe	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Myotis	L1	0.1	0.4	0.0	0.1	0.0	0.0	0.1
Myotis	L2	0.1	0.4	0.3	0.1	0.1	0.1	0.2
Nathusius'	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nathusius'	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Noctule	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Noctule	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serotine	L1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serotine	L2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Soprano pipistrelle	L1	0.1	9.4	20.4	1.2	0.0	0.0	0.2
Soprano pipistrelle	L2	0.0	0.6	0.4	0.9	0.1	0.0	0.3

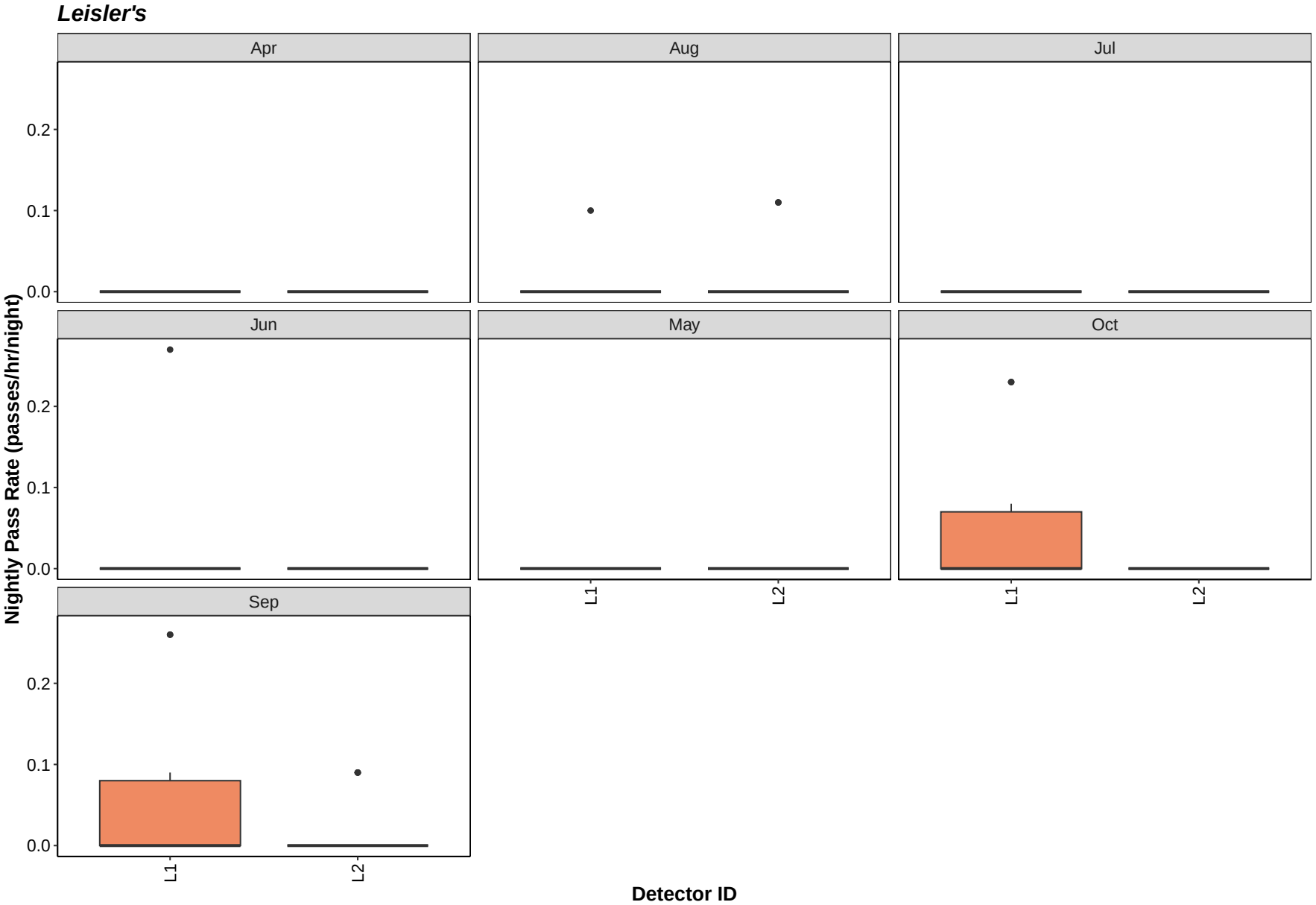
Per Detector

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.

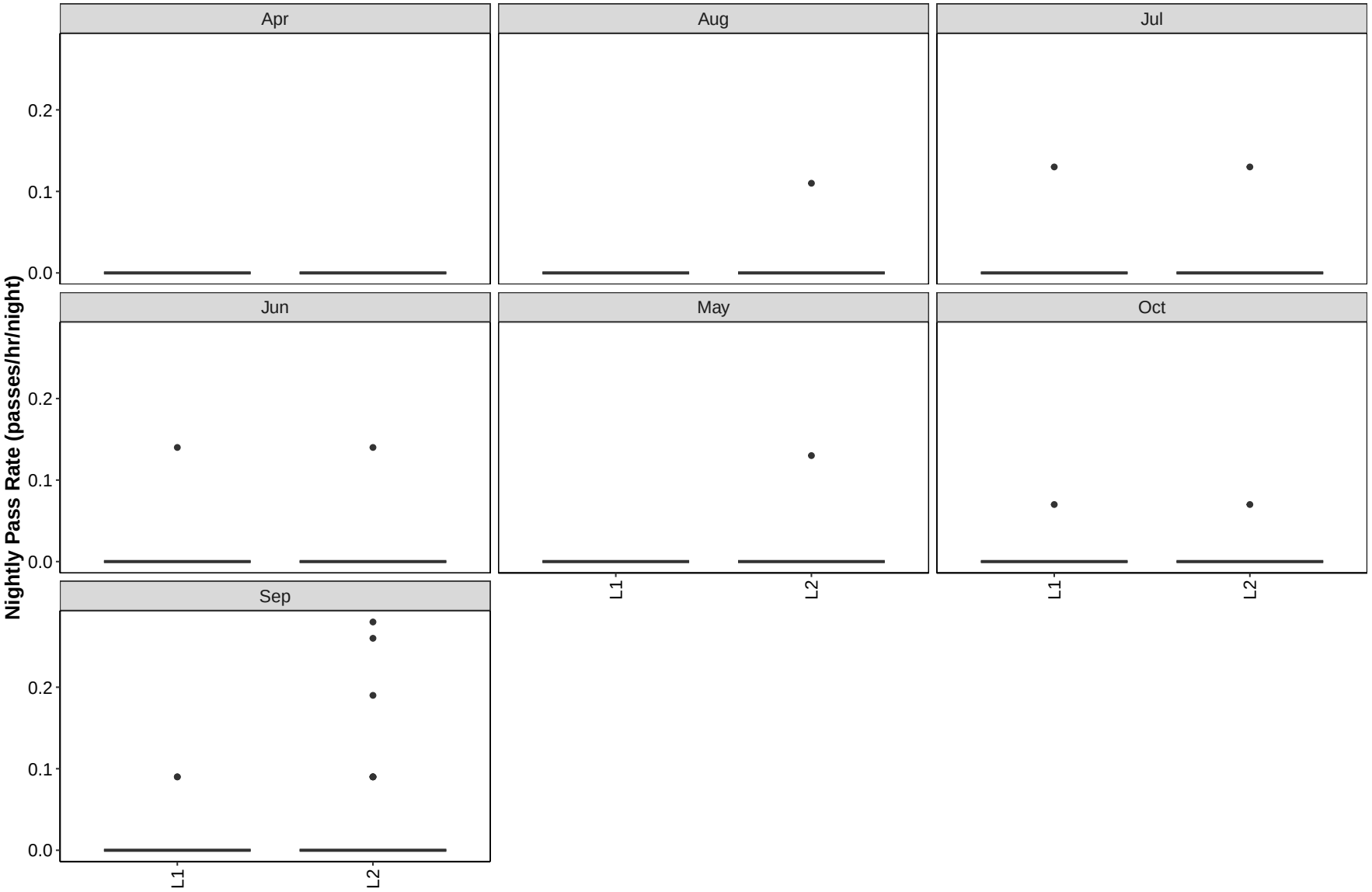

Brown long−eared
Apr
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0
1
2
L1
L2
Detector ID

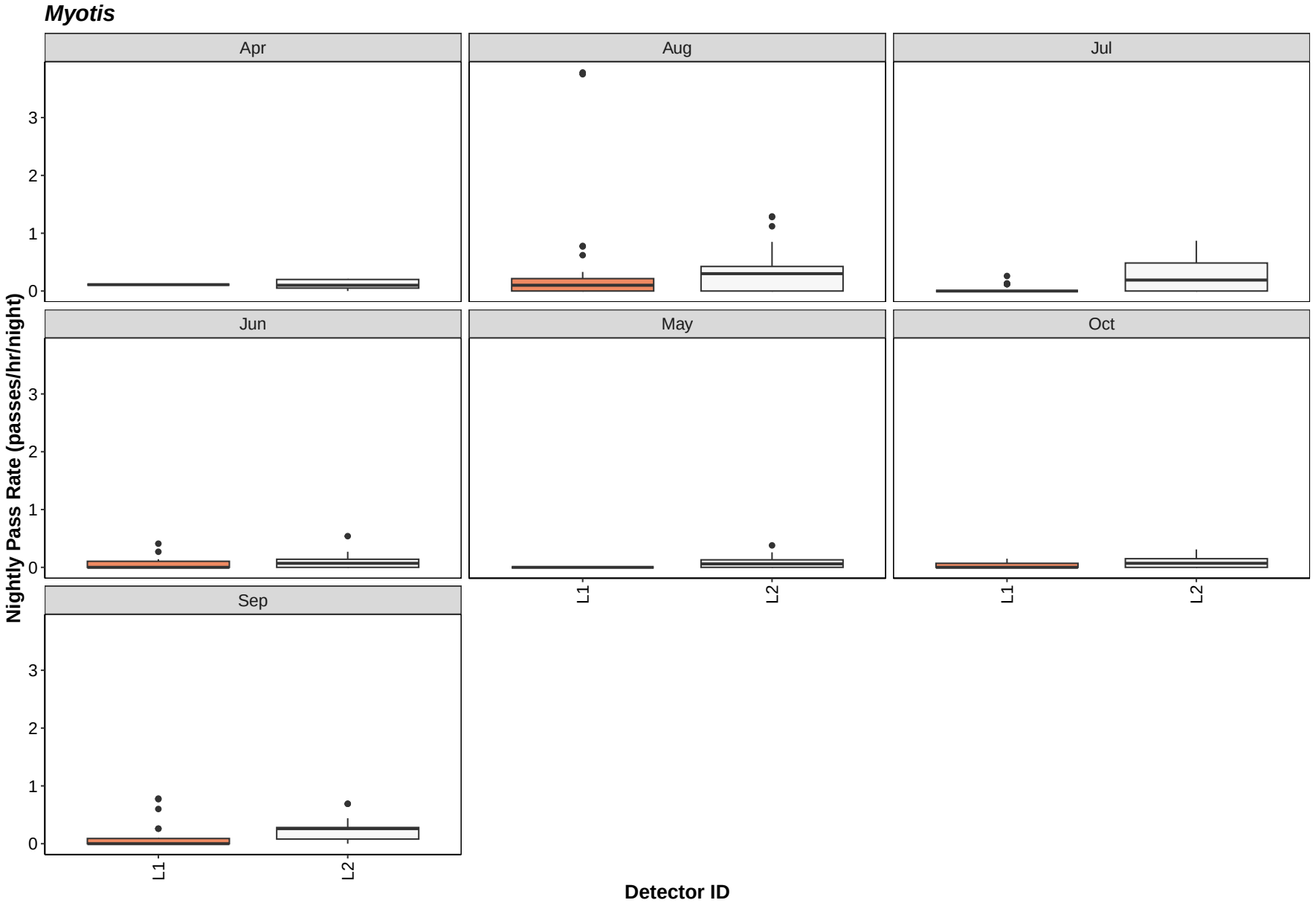

Common pipistrelle
Apr
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0
50
100
L1
L2
Detector ID


Greater horseshoe
Apr
Aug
Jul
Jun
May
Oct
Sep
0.20
0.15
0.10
0.05
0.00
L1
L2
Nightly Pass Rate (passes/hr/night)
Detector ID

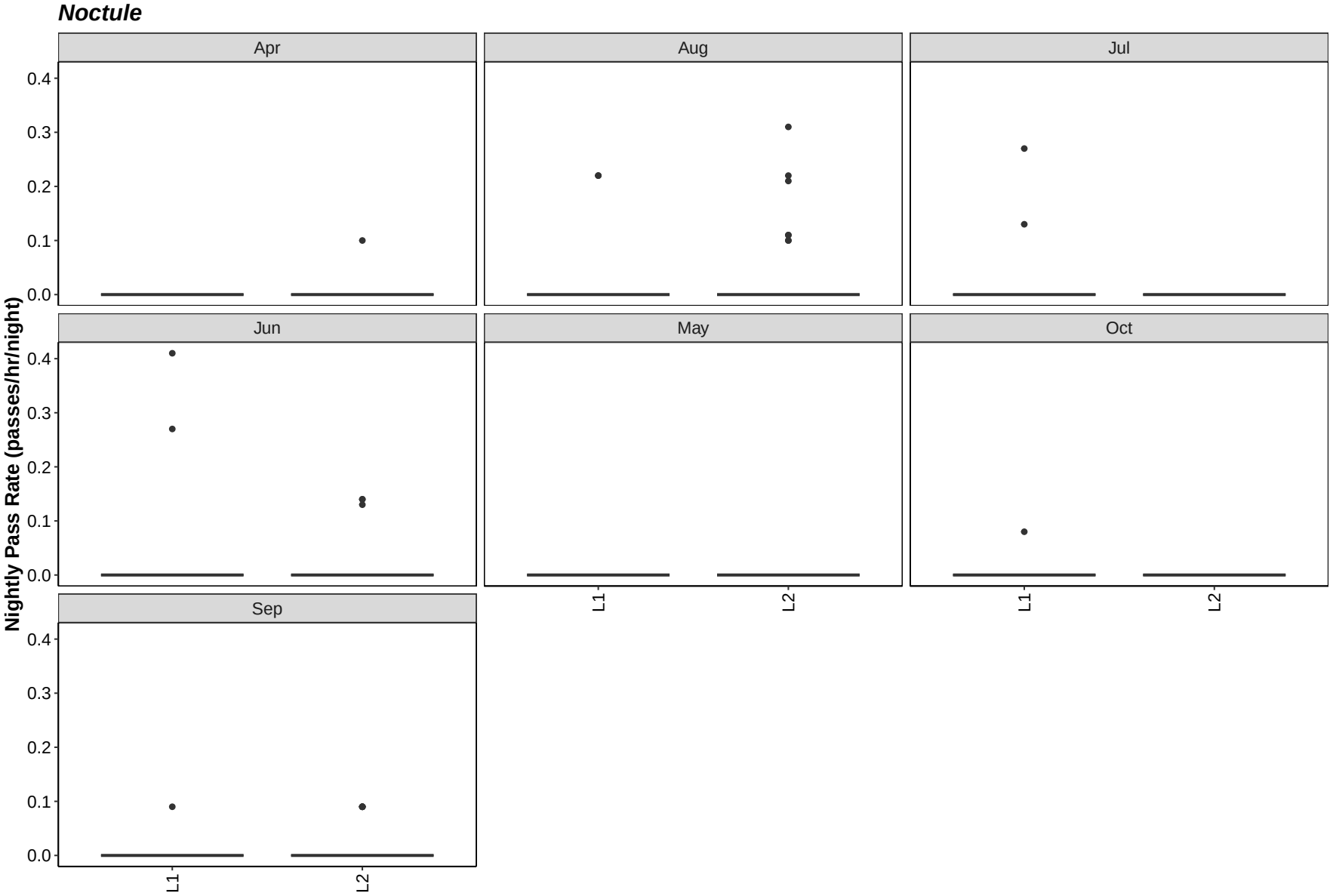

Leisler's
Apr
Aug
Jul
Jun
May
Oct
Sep
0.0
0.1
0.2
L1
L2
Nightly Pass Rate (passes/hr/night)
Detector ID

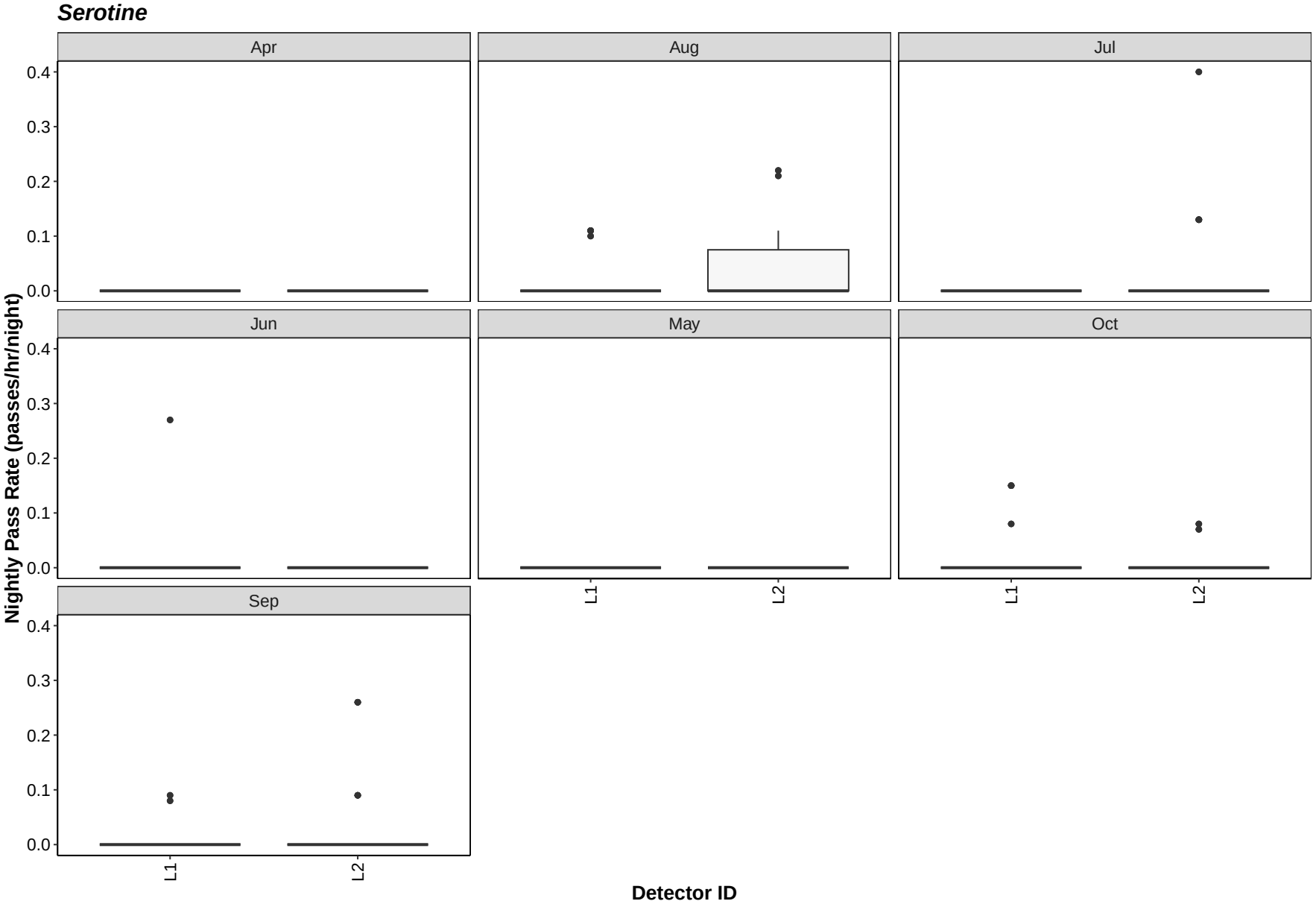
Lesser horseshoe

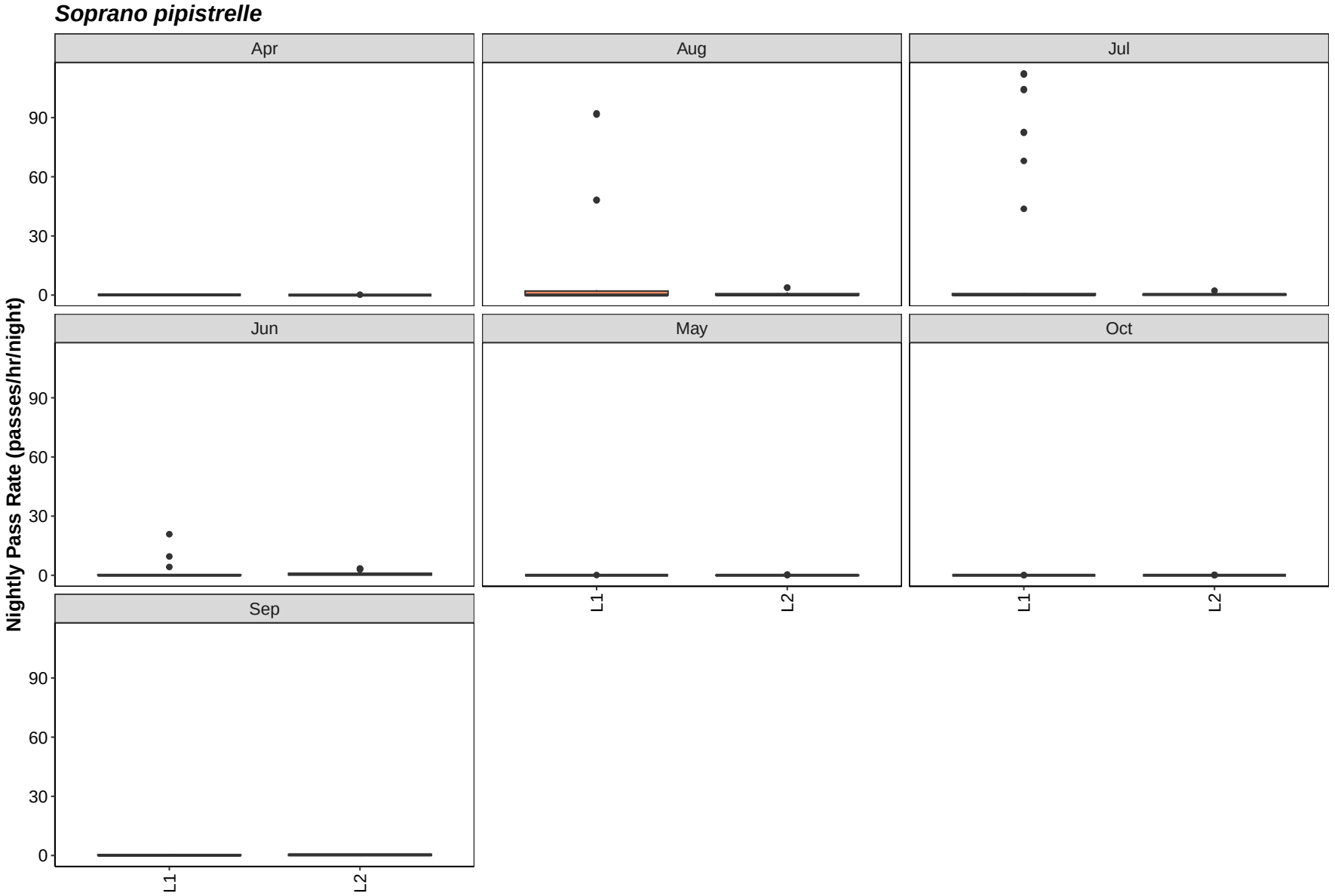



Myotis
Apr
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0
1
2
3
L1
L2
Detector ID


Nathusius'
Apr
Aug
Jul
Jun
May
Oct
Sep
0.2
0.1
0.0
L1
L2
Nightly Pass Rate (passes/hr/night)
Detector ID


Noctule
Apr
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0.0
0.1
0.2
0.3
0.4
L1
L2
Detector ID


Serotine
Apr
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0.0
0.1
0.2
0.3
0.4
L1
L2
Detector ID


Soprano pipistrelle
Apr
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0
30
60
90
L1
L2
Detector ID

Bat Activity per Detector Location

Figure 18. Detector ID reference:

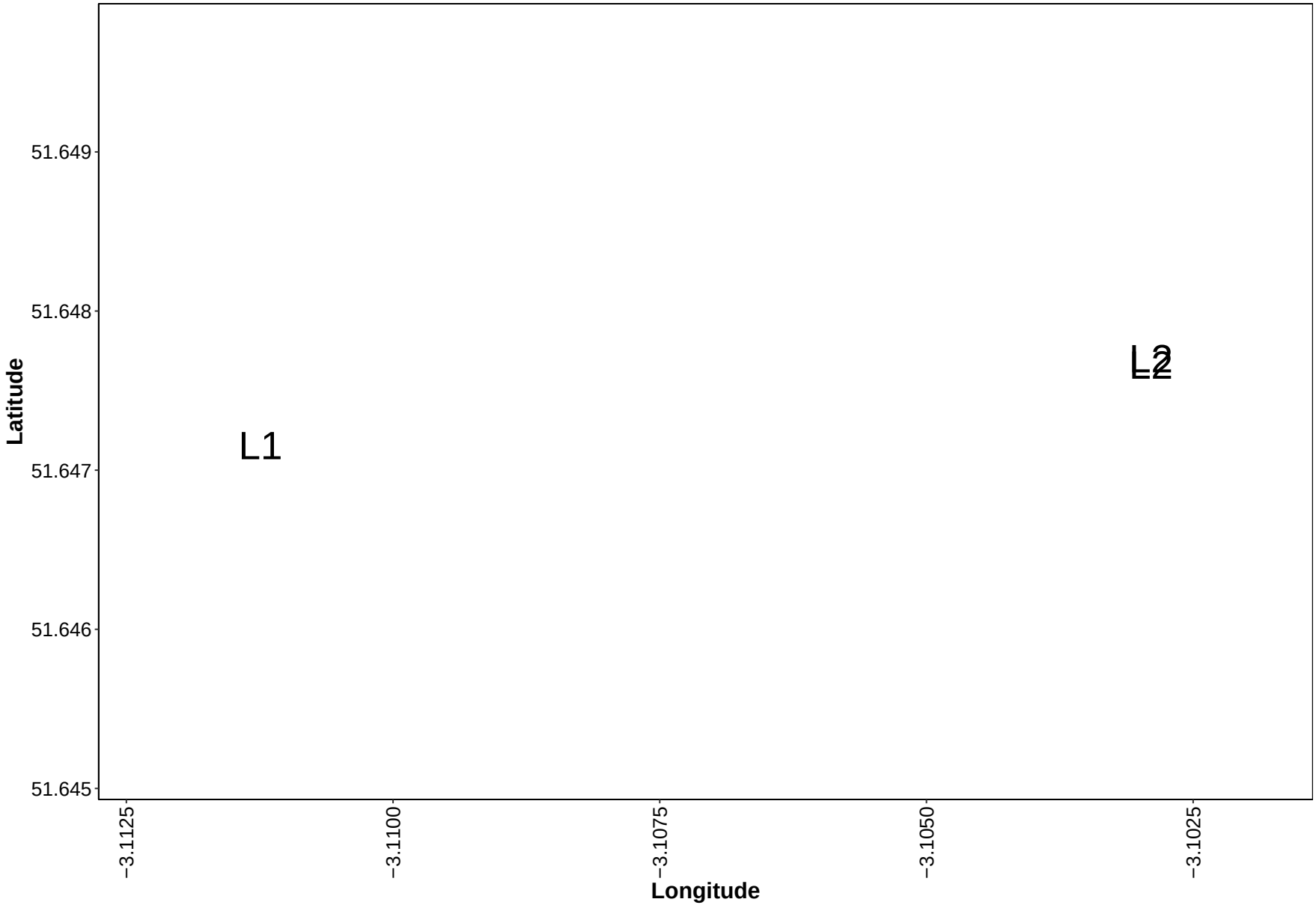
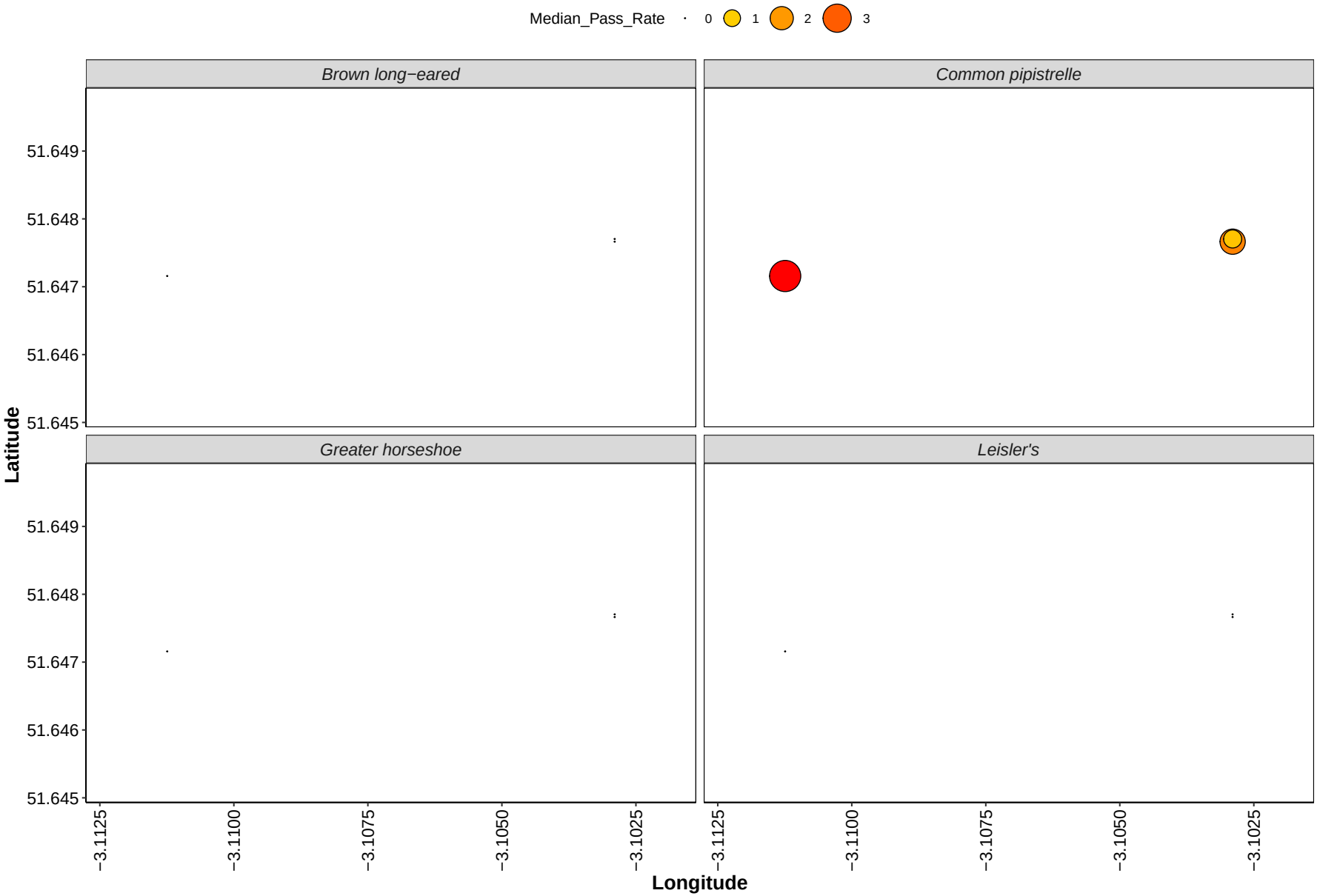

51.649
51.648
51.647
51.646
51.645
Latitude
L1
L2
−3.1125
−3.1100
−3.1075
−3.1050
−3.1025
Longitude

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.


Median_Pass_Rate
0
1
2
3
Brown long−eared
Common pipistrelle
Greater horseshoe
Leisler's
Latitude
51.649
51.648
51.647
51.646
51.645
−3.1125
−3.1100
−3.1075
−3.1050
−3.1025
Longitude

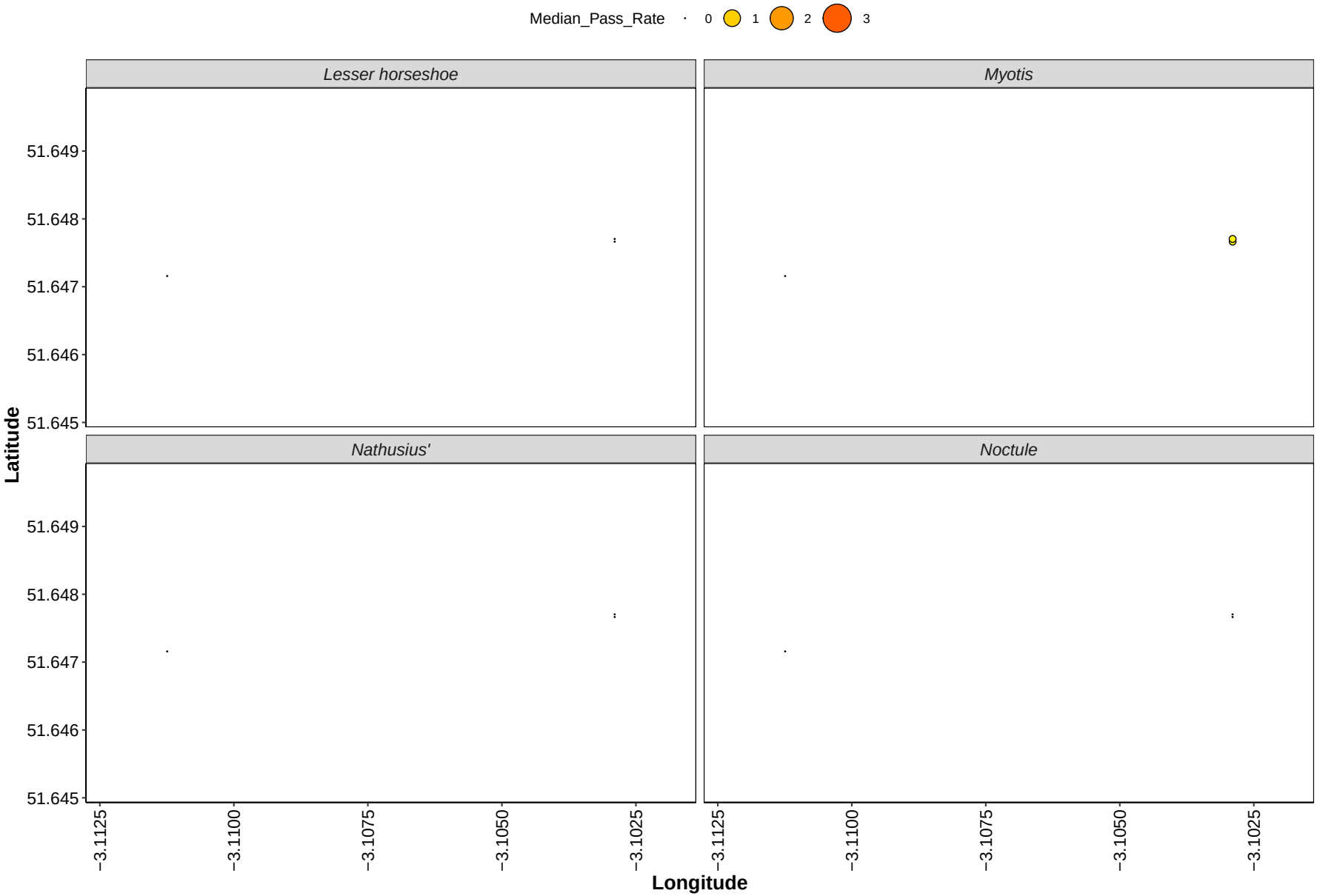
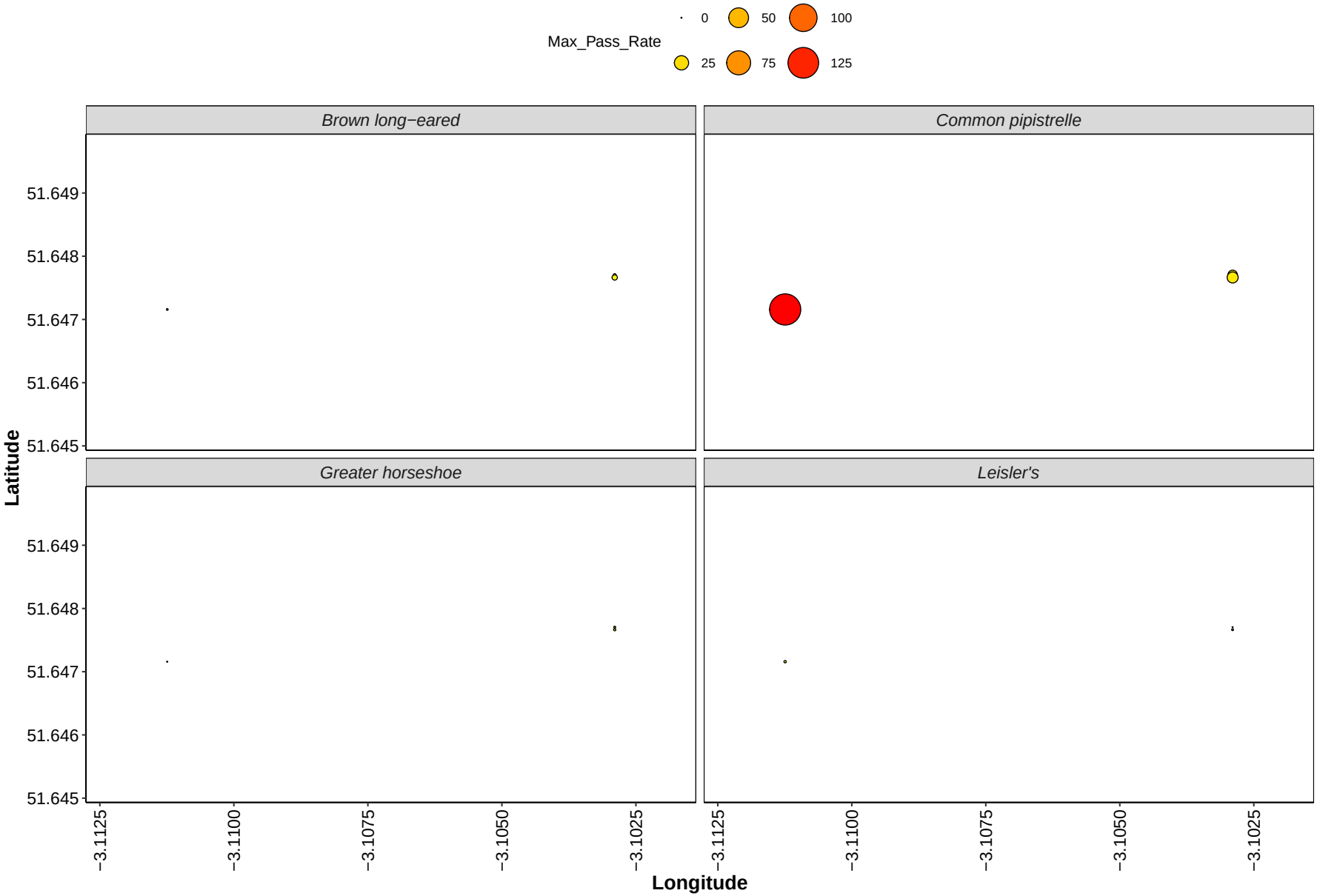
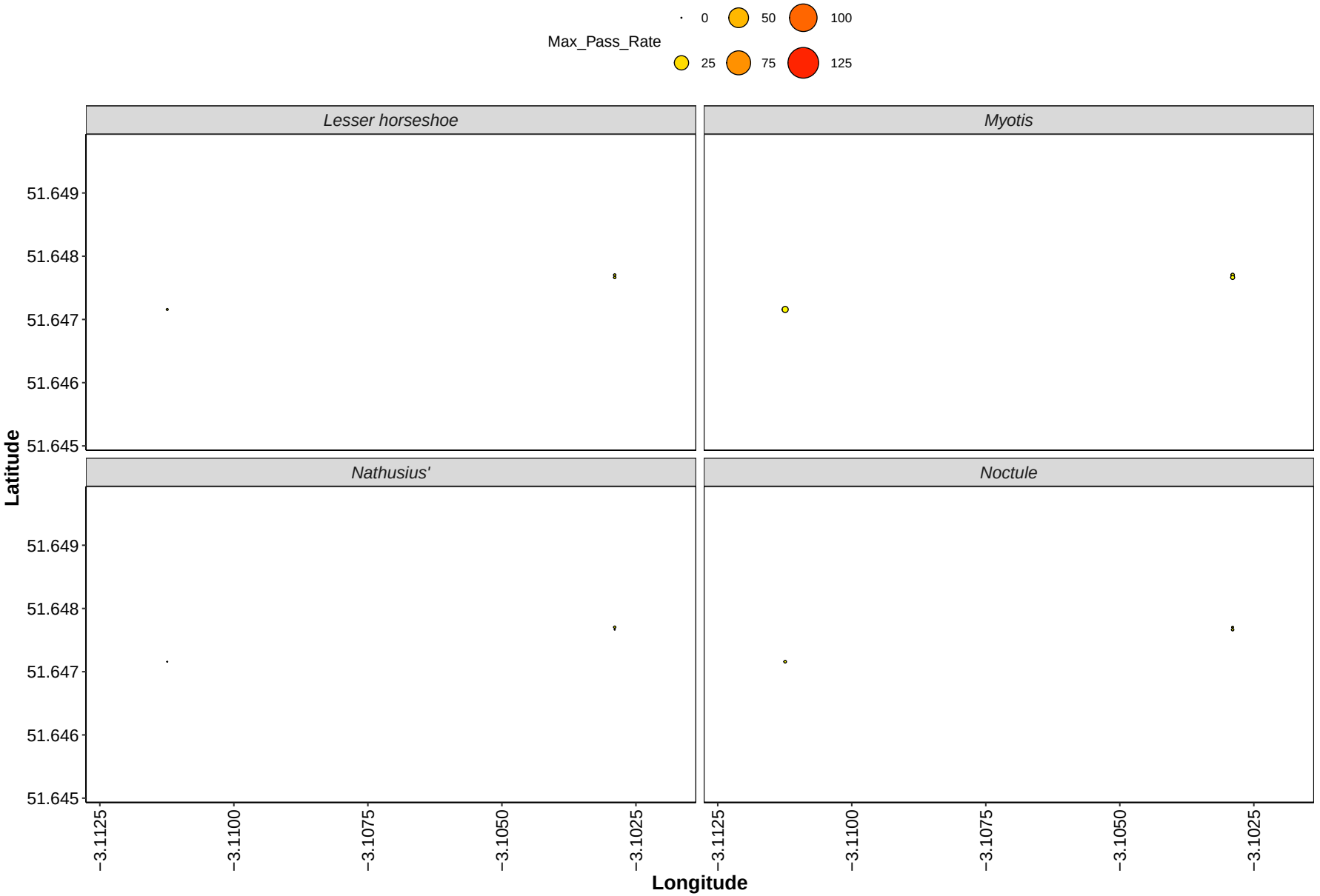

Median_Pass_Rate
0
1
2
3
Lesser horseshoe
Myotis
Nathusius'
Noctule
Latitude
51.649
51.648
51.647
51.646
51.645
−3.1125
−3.1100
−3.1075
−3.1050
−3.1025
Longitude

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.


Max_Pass_Rate
0
25
50
75
100
125
Brown long−eared
Common pipistrelle
Greater horseshoe
Leisler's
Latitude
51.649
51.648
51.647
51.646
51.645
−3.1125
−3.1100
−3.1075
−3.1050
−3.1025
Longitude


Max_Pass_Rate
0
25
50
75
100
125
Lesser horseshoe
Myotis
Nathusius'
Noctule
Latitude
51.649
51.648
51.647
51.646
51.645
−3.1125
−3.1100
−3.1075
−3.1050
−3.1025
Longitude

Thank you for using Ecobat!

Appendix EDP 2
Ecobat Report for 2024-2025 Data

Ecobat Report
2025-09-18

Geo filter: country, Time filter: all

Summary

Bats were detected on **59** nights between **01/08/2024** and **20/07/2025**, using **3** static bat detectors. Throughout this period, **9** species were recorded. **Table 1.** Detectors were placed at the following locations:

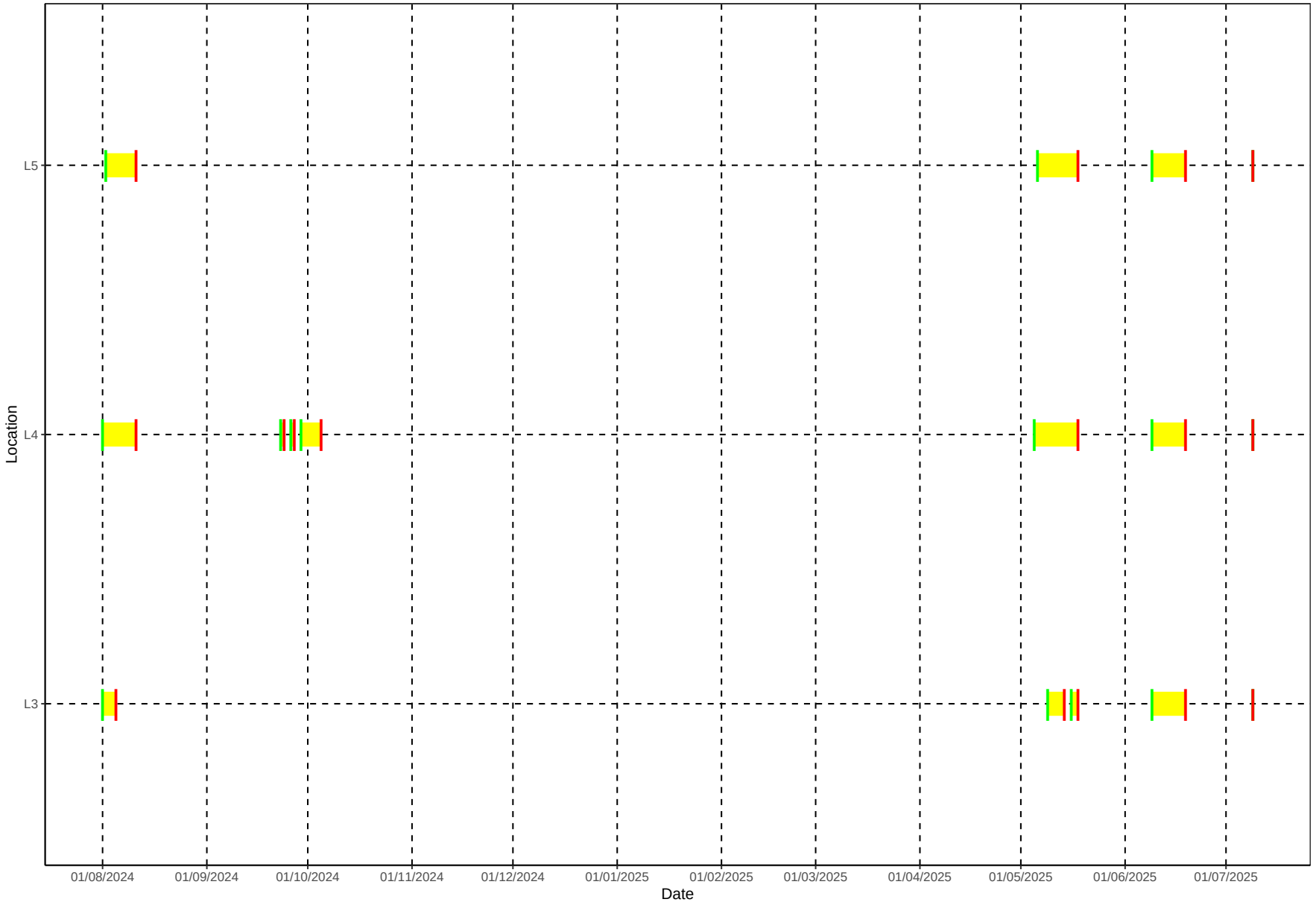
Detector ID	Latitude	Longitude
L5	51.64451	-3.102168
L4	51.64866	-3.103862
L3	51.64555	-3.114393
L4	51.64896	-3.103710
L5	51.64440	-3.102000
L3	51.64519	-3.114457
L3	51.64585	-3.114535
L4	51.19935	-3.093086
L5	51.64445	-3.102011
L4	51.64855	-3.103837
L5	51.64451	-3.101995
L4	51.64899	-3.104137
L3	51.64520	-3.114418

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
L3	37
L4	59
L5	46

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


Location
L5
L4
L3
01/08/2024
01/09/2024
01/10/2024
01/11/2024
01/12/2024
01/01/2025
01/02/2025
01/03/2025
01/04/2025
01/05/2025
01/06/2025
01/07/2025
Date

Part 1: Percentile 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.

Per Detector

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

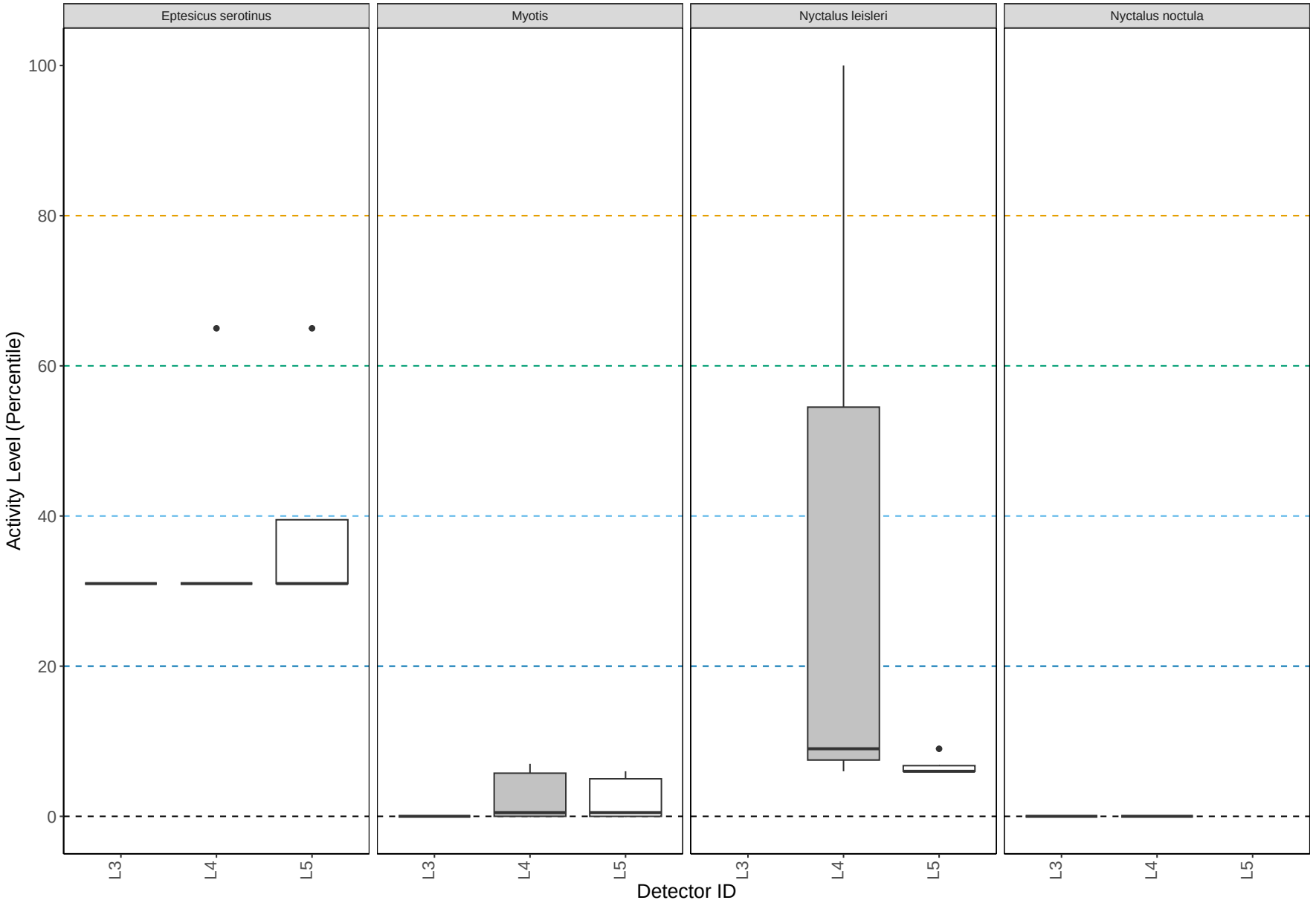
Detector ID	Species/Species Group	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L3	Eptesicus serotinus	0	0	0	0	2	0
L3	Myotis	0	0	0	0	0	11
L3	Nyctalus noctula	0	0	0	0	0	1
L3	Pipistrellus pipistrellus	0	0	0	0	0	36
L3	Pipistrellus pygmaeus	0	0	0	0	0	9
L3	Plecotus auritus	0	0	0	0	0	2
L3	Rhinolophus ferrumequinum	0	0	0	5	0	0
L3	Rhinolophus hipposideros	0	0	0	0	1	0
L4	Eptesicus serotinus	0	0	1	0	4	0
L4	Myotis	0	0	0	0	0	10
L4	Nyctalus leisleri	1	0	0	0	0	2
L4	Nyctalus noctula	0	0	0	0	0	2
L4	Pipistrellus pipistrellus	0	0	0	0	0	57
L4	Pipistrellus pygmaeus	0	0	0	0	0	35
L4	Plecotus auritus	0	0	0	0	0	1
L4	Rhinolophus ferrumequinum	1	0	0	3	0	0
L4	Rhinolophus hipposideros	0	0	0	0	4	0
L5	Eptesicus serotinus	0	0	1	0	3	0
L5	Myotis	0	0	0	0	0	12

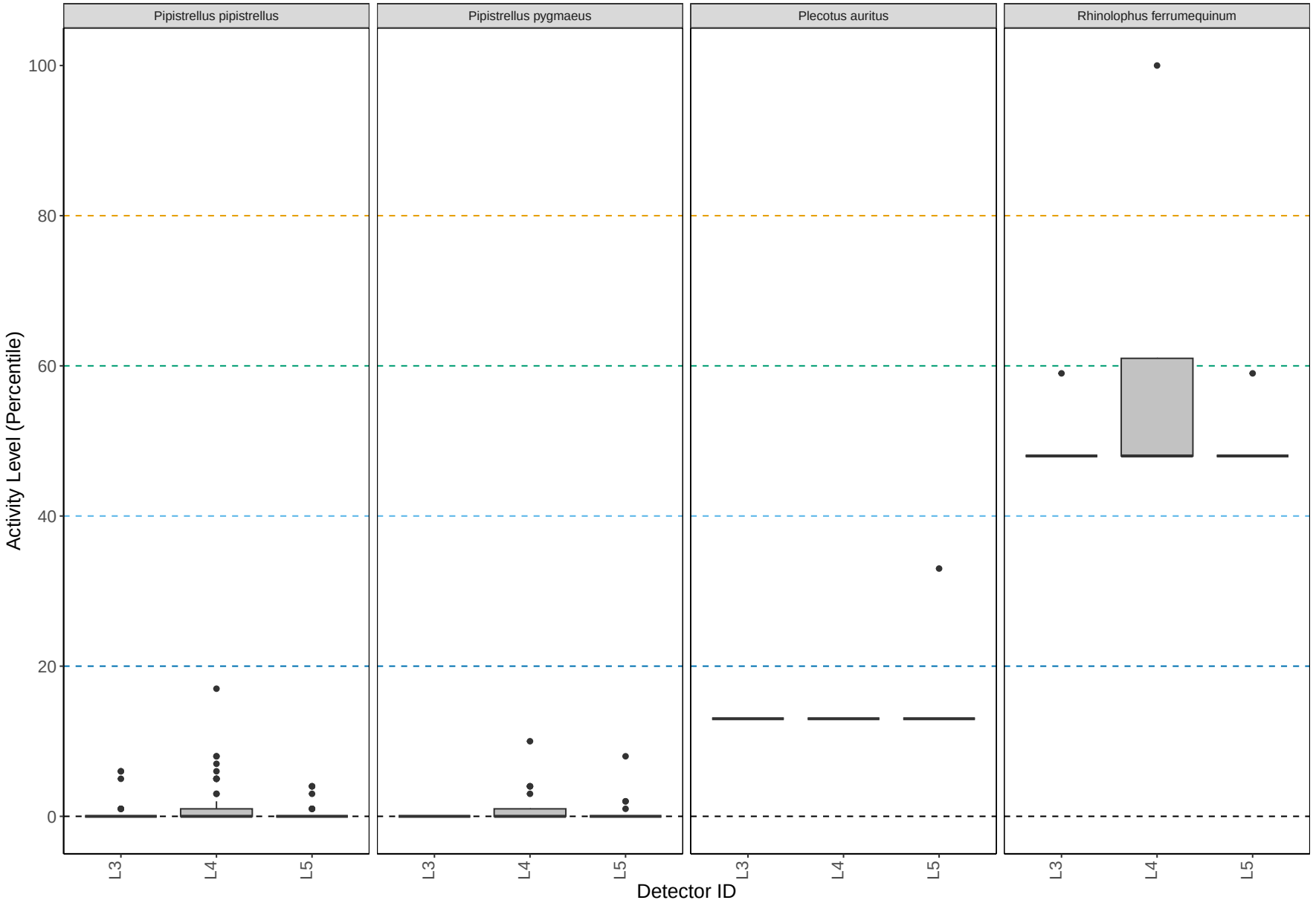
Detector ID	Species/Species Group	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L5	Nyctalus leisleri	0	0	0	0	0	4
L5	Pipistrellus pipistrellus	0	0	0	0	0	46
L5	Pipistrellus pygmaeus	0	0	0	0	0	21
L5	Plecotus auritus	0	0	0	0	1	7
L5	Rhinolophus ferrumequinum	0	0	0	6	0	0
L5	Rhinolophus hipposideros	0	0	0	0	2	0

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
L3	Eptesicus serotinus	31	31 - 31	31	2	29
L3	Myotis	0	0 - 0	0	11	6789
L3	Nyctalus noctula	0	0	0	1	4315
L3	Pipistrellus pipistrellus	0	1 - 3.5	6	36	141703
L3	Pipistrellus pygmaeus	0	0 - 0	0	9	20124
L3	Plecotus auritus	13	13 - 13	13	2	381
L3	Rhinolophus ferrumequinum	48	48 - 48	59	5	37
L3	Rhinolophus hipposideros	31	0	31	1	66
L4	Eptesicus serotinus	31	31 - 31	65	5	29
L4	Myotis	1	3.5 - 7	7	10	6789
L4	Nyctalus leisleri	9	6 - 100	100	3	132
L4	Nyctalus noctula	0	0 - 0	0	2	4315
L4	Pipistrellus pipistrellus	0	3 - 6.5	17	57	141703
L4	Pipistrellus pygmaeus	0	1 - 4	10	35	20124
L4	Plecotus auritus	13	0	13	1	381
L4	Rhinolophus ferrumequinum	48	48 - 48	100	4	37
L4	Rhinolophus hipposideros	31	31 - 31	37	4	66
L5	Eptesicus serotinus	31	31 - 31	65	4	29
L5	Myotis	1	1 - 6	6	12	6789
L5	Nyctalus leisleri	6	6 - 6	9	4	132
L5	Pipistrellus pipistrellus	0	1 - 4	4	46	141703
L5	Pipistrellus pygmaeus	0	1.5 - 5	8	21	20124
L5	Plecotus auritus	13	13 - 13	33	8	381
L5	Rhinolophus ferrumequinum	48	48 - 48	59	6	37
L5	Rhinolophus hipposideros	31	31 - 31	31	2	66

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).


Eptesicus serotinus
Myotis
Nyctalus leisleri
Nyctalus noctula
Activity Level (Percentile)
100
80
60
40
20
0
L3
L4
L5
Detector ID


Pipistrellus pipistrellus
Pipistrellus pygmaeus
Plecotus auritus
Rhinolophus ferrumequinum
Activity Level (Percentile)
100
80
60
40
20
0
L3
L4
L5
Detector ID

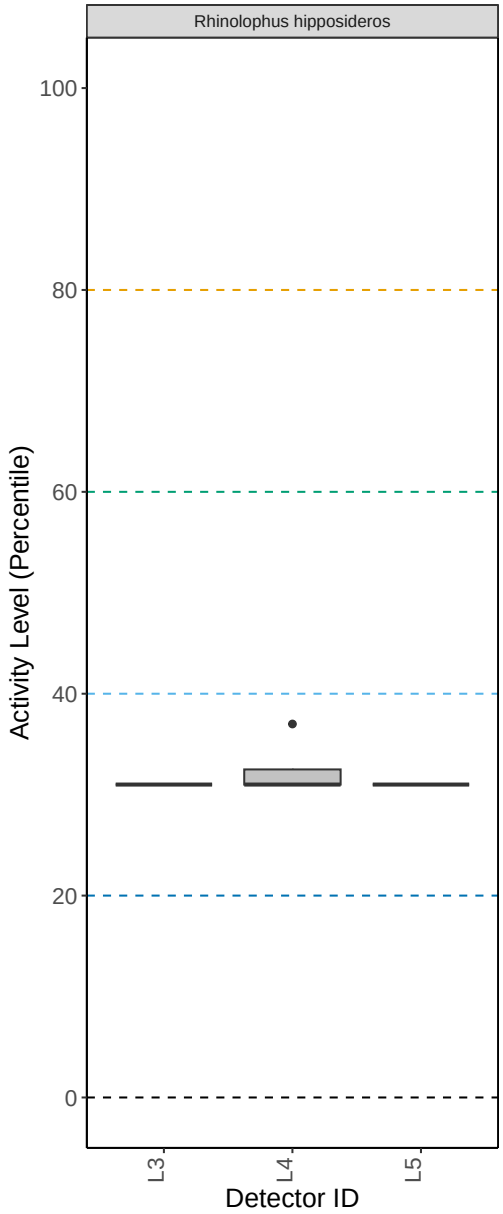
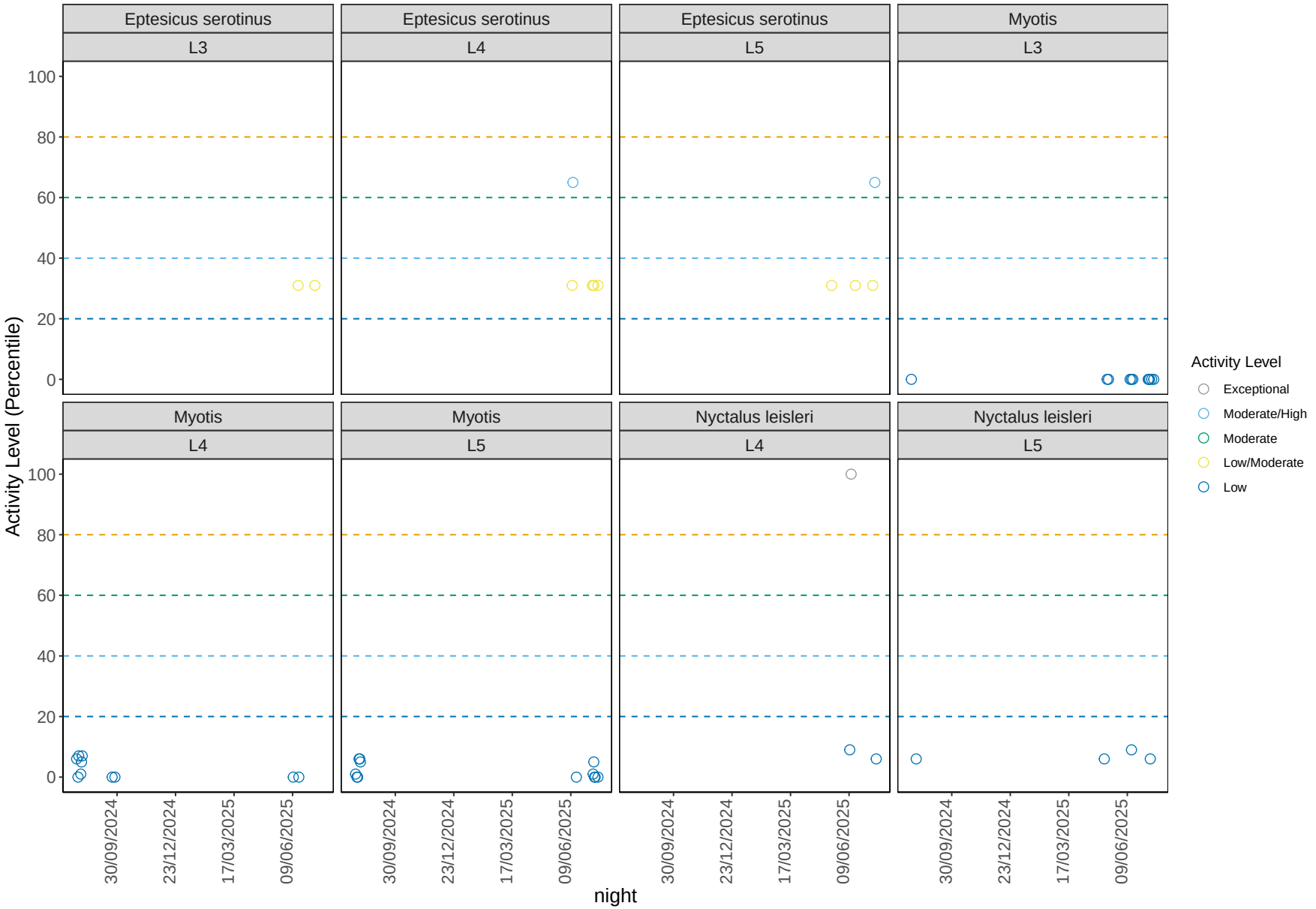
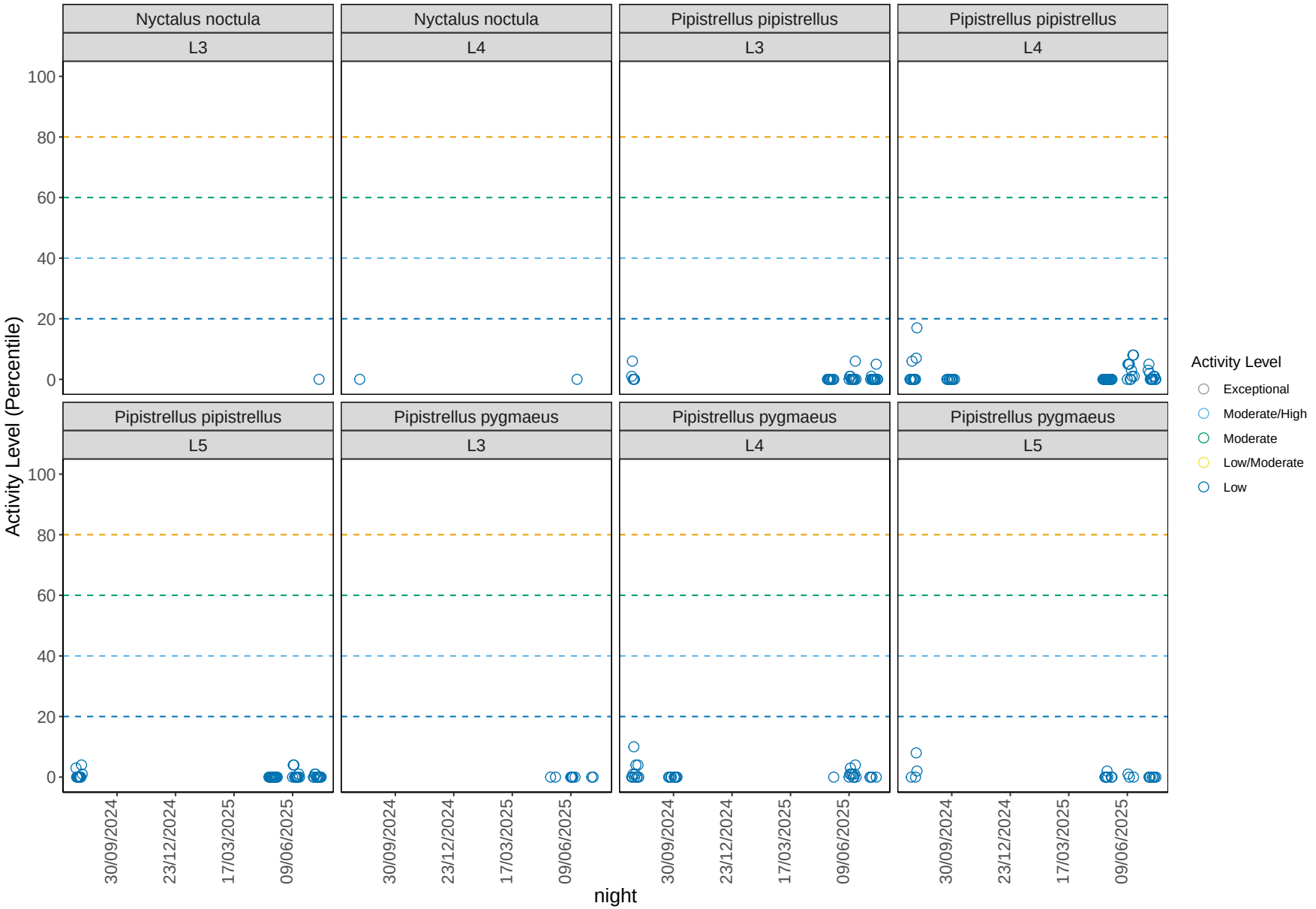
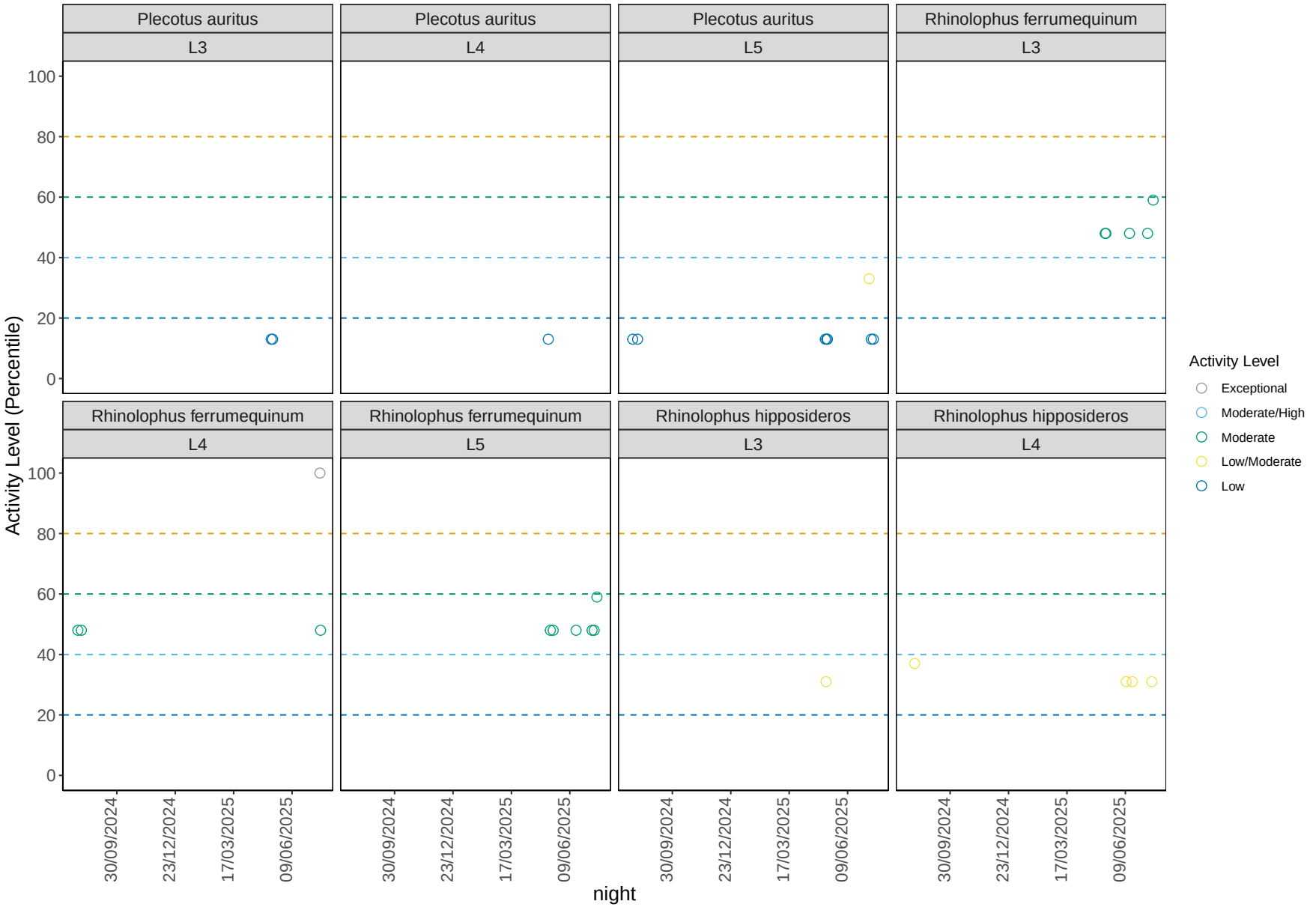
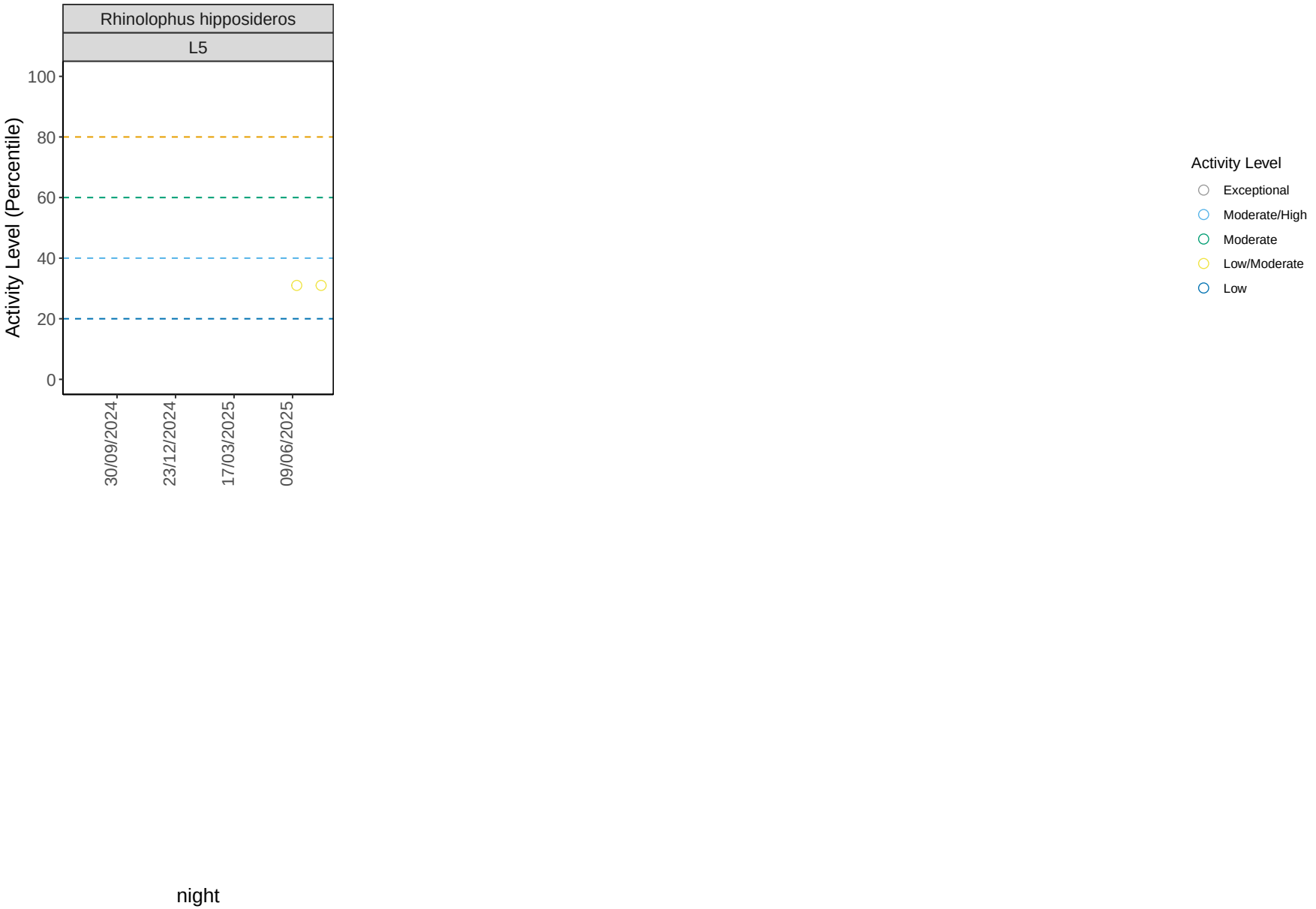

Rhinolophus hipposideros
100
80
60
40
20
0
Activity Level (Percentile)
L3
L4
L5
Detector ID

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


Eptesicus serotinus
L3
Eptesicus serotinus
L4
Eptesicus serotinus
L5
Myotis
L3
Myotis
L4
Myotis
L5
Nyctalus leisleri
L4
Nyctalus leisleri
L5
Activity Level (Percentile)
100
80
60
40
20
0
30/09/2024
23/12/2024
17/03/2025
09/06/2025
night
Activity Level
Exceptional
Moderate/High
Moderate
Low/Moderate
Low


Nyctalus noctula
L3
Nyctalus noctula
L4
Pipistrellus pipistrellus
L3
Pipistrellus pipistrellus
L4
Pipistrellus pipistrellus
L5
Pipistrellus pygmaeus
L3
Pipistrellus pygmaeus
L4
Pipistrellus pygmaeus
L5
Activity Level (Percentile)
100
80
60
40
20
0
30/09/2024
23/12/2024
17/03/2025
09/06/2025
night
Activity Level
Exceptional
Moderate/High
Moderate
Low/Moderate
Low


Plecotus auritus
L3
Plecotus auritus
L4
Plecotus auritus
L5
Rhinolophus ferrumequinum
L3
Rhinolophus ferrumequinum
L4
Rhinolophus ferrumequinum
L5
Rhinolophus hipposideros
L3
Rhinolophus hipposideros
L4
Activity Level (Percentile)
0
20
40
60
80
100
30/09/2024
23/12/2024
17/03/2025
09/06/2025
night
Activity Level
Exceptional
Moderate/High
Moderate
Low/Moderate
Low


Rhinolophus hipposideros
L5
Activity Level (Percentile)
100
80
60
40
20
0
30/09/2024
23/12/2024
17/03/2025
09/06/2025
night
Activity Level
Exceptional
Moderate/High
Moderate
Low/Moderate
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 Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L3	Eptesicus serotinus	Jun	0	0	0	0	1	0
L3	Eptesicus serotinus	Jul	0	0	0	0	1	0
L3	Myotis	May	0	0	0	0	0	2
L3	Myotis	Jun	0	0	0	0	0	3
L3	Myotis	Jul	0	0	0	0	0	5
L3	Myotis	Aug	0	0	0	0	0	1
L3	Nyctalus noctula	Jul	0	0	0	0	0	1
L3	Pipistrellus pipistrellus	May	0	0	0	0	0	9
L3	Pipistrellus pipistrellus	Jun	0	0	0	0	0	11
L3	Pipistrellus pipistrellus	Jul	0	0	0	0	0	11
L3	Pipistrellus pipistrellus	Aug	0	0	0	0	0	5
L3	Pipistrellus pygmaeus	May	0	0	0	0	0	2
L3	Pipistrellus pygmaeus	Jun	0	0	0	0	0	5
L3	Pipistrellus pygmaeus	Jul	0	0	0	0	0	2
L3	Plecotus auritus	May	0	0	0	0	0	2
L3	Rhinolophus ferrumequinum	May	0	0	0	2	0	0
L3	Rhinolophus ferrumequinum	Jun	0	0	0	1	0	0
L3	Rhinolophus ferrumequinum	Jul	0	0	0	2	0	0

Detector ID	Species/Species Group	month	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L3	Rhinolophus hipposideros	May	0	0	0	0	1	0
L4	Eptesicus serotinus	Jun	0	0	1	0	1	0
L4	Eptesicus serotinus	Jul	0	0	0	0	3	0
L4	Myotis	Jun	0	0	0	0	0	2
L4	Myotis	Aug	0	0	0	0	0	6
L4	Myotis	Sep	0	0	0	0	0	2
L4	Nyctalus leisleri	Jun	1	0	0	0	0	1
L4	Nyctalus leisleri	Jul	0	0	0	0	0	1
L4	Nyctalus noctula	Jun	0	0	0	0	0	1
L4	Nyctalus noctula	Aug	0	0	0	0	0	1
L4	Pipistrellus pipistrellus	May	0	0	0	0	0	14
L4	Pipistrellus pipistrellus	Jun	0	0	0	0	0	11
L4	Pipistrellus pipistrellus	Jul	0	0	0	0	0	12
L4	Pipistrellus pipistrellus	Aug	0	0	0	0	0	11
L4	Pipistrellus pipistrellus	Sep	0	0	0	0	0	6
L4	Pipistrellus pipistrellus	Oct	0	0	0	0	0	3
L4	Pipistrellus pygmaeus	May	0	0	0	0	0	1
L4	Pipistrellus pygmaeus	Jun	0	0	0	0	0	10
L4	Pipistrellus pygmaeus	Jul	0	0	0	0	0	4
L4	Pipistrellus pygmaeus	Aug	0	0	0	0	0	11

Detector ID	Species/Species Group	month	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L4	Pipistrellus pygmaeus	Sep	0	0	0	0	0	4
L4	Pipistrellus pygmaeus	Oct	0	0	0	0	0	5
L4	Plecotus auritus	May	0	0	0	0	0	1
L4	Rhinolophus ferrumequinum	Jul	1	0	0	1	0	0
L4	Rhinolophus ferrumequinum	Aug	0	0	0	2	0	0
L4	Rhinolophus hipposideros	Jun	0	0	0	0	2	0
L4	Rhinolophus hipposideros	Jul	0	0	0	0	1	0
L4	Rhinolophus hipposideros	Aug	0	0	0	0	1	0
L5	Eptesicus serotinus	May	0	0	0	0	1	0
L5	Eptesicus serotinus	Jun	0	0	0	0	1	0
L5	Eptesicus serotinus	Jul	0	0	1	0	1	0
L5	Myotis	Jun	0	0	0	0	0	1
L5	Myotis	Jul	0	0	0	0	0	5
L5	Myotis	Aug	0	0	0	0	0	6
L5	Nyctalus leisleri	May	0	0	0	0	0	1
L5	Nyctalus leisleri	Jun	0	0	0	0	0	1
L5	Nyctalus leisleri	Jul	0	0	0	0	0	1
L5	Nyctalus leisleri	Aug	0	0	0	0	0	1
L5	Pipistrellus pipistrellus	May	0	0	0	0	0	13
L5	Pipistrellus pipistrellus	Jun	0	0	0	0	0	11
L5	Pipistrellus pipistrellus	Jul	0	0	0	0	0	12

Detector ID	Species/Species Group	month	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
L5	Pipistrellus pipistrellus	Aug	0	0	0	0	0	10
L5	Pipistrellus pygmaeus	May	0	0	0	0	0	7
L5	Pipistrellus pygmaeus	Jun	0	0	0	0	0	3
L5	Pipistrellus pygmaeus	Jul	0	0	0	0	0	7
L5	Pipistrellus pygmaeus	Aug	0	0	0	0	0	4
L5	Plecotus auritus	May	0	0	0	0	0	3
L5	Plecotus auritus	Jul	0	0	0	0	1	2
L5	Plecotus auritus	Aug	0	0	0	0	0	2
L5	Rhinolophus ferrumequinum	May	0	0	0	2	0	0
L5	Rhinolophus ferrumequinum	Jun	0	0	0	1	0	0
L5	Rhinolophus ferrumequinum	Jul	0	0	0	3	0	0
L5	Rhinolophus hipposideros	Jun	0	0	0	0	1	0
L5	Rhinolophus hipposideros	Jul	0	0	0	0	1	0

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
L3	Eptesicus serotinus	Jun	31	31 - 31	31	1
L3	Eptesicus serotinus	Jul	31	31 - 31	31	1
L3	Myotis	May	0	0 - 0	0	2
L3	Myotis	Jun	0	0 - 0	0	3
L3	Myotis	Jul	0	0 - 0	0	5
L3	Myotis	Aug	0	0 - 0	0	1
L3	Nyctalus noctula	Jul	0	0	0	1
L3	Pipistrellus pipistrellus	May	0	1 - 3.5	0	9
L3	Pipistrellus pipistrellus	Jun	0	1 - 3.5	6	11
L3	Pipistrellus pipistrellus	Jul	0	1 - 3.5	5	11
L3	Pipistrellus pipistrellus	Aug	0	1 - 3.5	6	5
L3	Pipistrellus pygmaeus	May	0	0 - 0	0	2
L3	Pipistrellus pygmaeus	Jun	0	0 - 0	0	5
L3	Pipistrellus pygmaeus	Jul	0	0 - 0	0	2
L3	Plecotus auritus	May	13	13 - 13	13	2
L3	Rhinolophus ferrumequinum	May	48	48 - 48	48	2
L3	Rhinolophus ferrumequinum	Jun	48	48 - 48	48	1
L3	Rhinolophus ferrumequinum	Jul	54	48 - 48	59	2
L3	Rhinolophus hipposideros	May	31	0	31	1
L4	Eptesicus serotinus	Jun	48	31 - 31	65	2
L4	Eptesicus serotinus	Jul	31	31 - 31	31	3
L4	Myotis	Jun	0	3.5 - 7	0	2
L4	Myotis	Aug	6	3.5 - 7	7	6
L4	Myotis	Sep	0	3.5 - 7	0	2
L4	Nyctalus leisleri	Jun	55	6 - 100	100	2
L4	Nyctalus leisleri	Jul	6	6 - 100	6	1
L4	Nyctalus noctula	Jun	0	0 - 0	0	1
L4	Nyctalus noctula	Aug	0	0 - 0	0	1
L4	Pipistrellus pipistrellus	May	0	3 - 6.5	0	14
L4	Pipistrellus pipistrellus	Jun	3	3 - 6.5	8	11
L4	Pipistrellus pipistrellus	Jul	0	3 - 6.5	5	12
L4	Pipistrellus pipistrellus	Aug	0	3 - 6.5	17	11
L4	Pipistrellus pipistrellus	Sep	0	3 - 6.5	0	6

Detector ID	Species/Species Group	month	Median Percentile	95% CIs	Max. Percentile	Nights Recorded
L4	Pipistrellus pipistrellus	Oct	0	3 - 6.5	0	3
L4	Pipistrellus pygmaeus	May	0	1 - 4	0	1
L4	Pipistrellus pygmaeus	Jun	1	1 - 4	4	10
L4	Pipistrellus pygmaeus	Jul	0	1 - 4	0	4
L4	Pipistrellus pygmaeus	Aug	0	1 - 4	10	11
L4	Pipistrellus pygmaeus	Sep	0	1 - 4	0	4
L4	Pipistrellus pygmaeus	Oct	0	1 - 4	0	5
L4	Plecotus auritus	May	13	0	13	1
L4	Rhinolophus ferrumequinum	Jul	74	48 - 48	100	2
L4	Rhinolophus ferrumequinum	Aug	48	48 - 48	48	2
L4	Rhinolophus hipposideros	Jun	31	31 - 31	31	2
L4	Rhinolophus hipposideros	Jul	31	31 - 31	31	1
L4	Rhinolophus hipposideros	Aug	37	31 - 31	37	1
L5	Eptesicus serotinus	May	31	31 - 31	31	1
L5	Eptesicus serotinus	Jun	31	31 - 31	31	1
L5	Eptesicus serotinus	Jul	48	31 - 31	65	2
L5	Myotis	Jun	0	1 - 6	0	1
L5	Myotis	Jul	0	1 - 6	5	5
L5	Myotis	Aug	3	1 - 6	6	6
L5	Nyctalus leisleri	May	6	6 - 6	6	1
L5	Nyctalus leisleri	Jun	9	6 - 6	9	1
L5	Nyctalus leisleri	Jul	6	6 - 6	6	1
L5	Nyctalus leisleri	Aug	6	6 - 6	6	1
L5	Pipistrellus pipistrellus	May	0	1 - 4	0	13
L5	Pipistrellus pipistrellus	Jun	0	1 - 4	4	11
L5	Pipistrellus pipistrellus	Jul	0	1 - 4	1	12
L5	Pipistrellus pipistrellus	Aug	0	1 - 4	4	10
L5	Pipistrellus pygmaeus	May	0	1.5 - 5	2	7
L5	Pipistrellus pygmaeus	Jun	0	1.5 - 5	1	3
L5	Pipistrellus pygmaeus	Jul	0	1.5 - 5	0	7
L5	Pipistrellus pygmaeus	Aug	1	1.5 - 5	8	4
L5	Plecotus auritus	May	13	13 - 13	13	3
L5	Plecotus auritus	Jul	13	13 - 13	33	3
L5	Plecotus auritus	Aug	13	13 - 13	13	2
L5	Rhinolophus ferrumequinum	May	48	48 - 48	48	2
L5	Rhinolophus ferrumequinum	Jun	48	48 - 48	48	1

Detector ID	Species/Species Group	month	Median Percentile	95% CIs	Max. Percentile	Nights Recorded
L5	Rhinolophus ferrumequinum	Jul	48	48 - 48	59	3
L5	Rhinolophus hipposideros	Jun	31	31 - 31	31	1
L5	Rhinolophus hipposideros	Jul	31	31 - 31	31	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 Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
Eptesicus serotinus	0	0	2	0	9	0
Myotis	0	0	0	0	0	33
Nyctalus leisleri	1	0	0	0	0	6
Nyctalus noctula	0	0	0	0	0	3
Pipistrellus pipistrellus	0	0	0	0	0	139
Pipistrellus pygmaeus	0	0	0	0	0	65
Plecotus auritus	0	0	0	0	1	10
Rhinolophus ferrumequinum	1	0	0	14	0	0
Rhinolophus hipposideros	0	0	0	0	7	0

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

Species/Species Group	Median Percentile	95% CIs	Max. Percentile	Nights Recorded
Eptesicus serotinus	31	31 - 31	65	11
Myotis	0	3.5 - 7	7	33
Nyctalus leisleri	6	6 - 6	100	7
Nyctalus noctula	0	0 - 0	0	3
Pipistrellus pipistrellus	0	3 - 6.5	17	139
Pipistrellus pygmaeus	0	1.5 - 5	10	65
Plecotus auritus	13	13 - 13	33	11
Rhinolophus ferrumequinum	48	48 - 48	100	15
Rhinolophus hipposideros	31	31 - 31	37	7

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

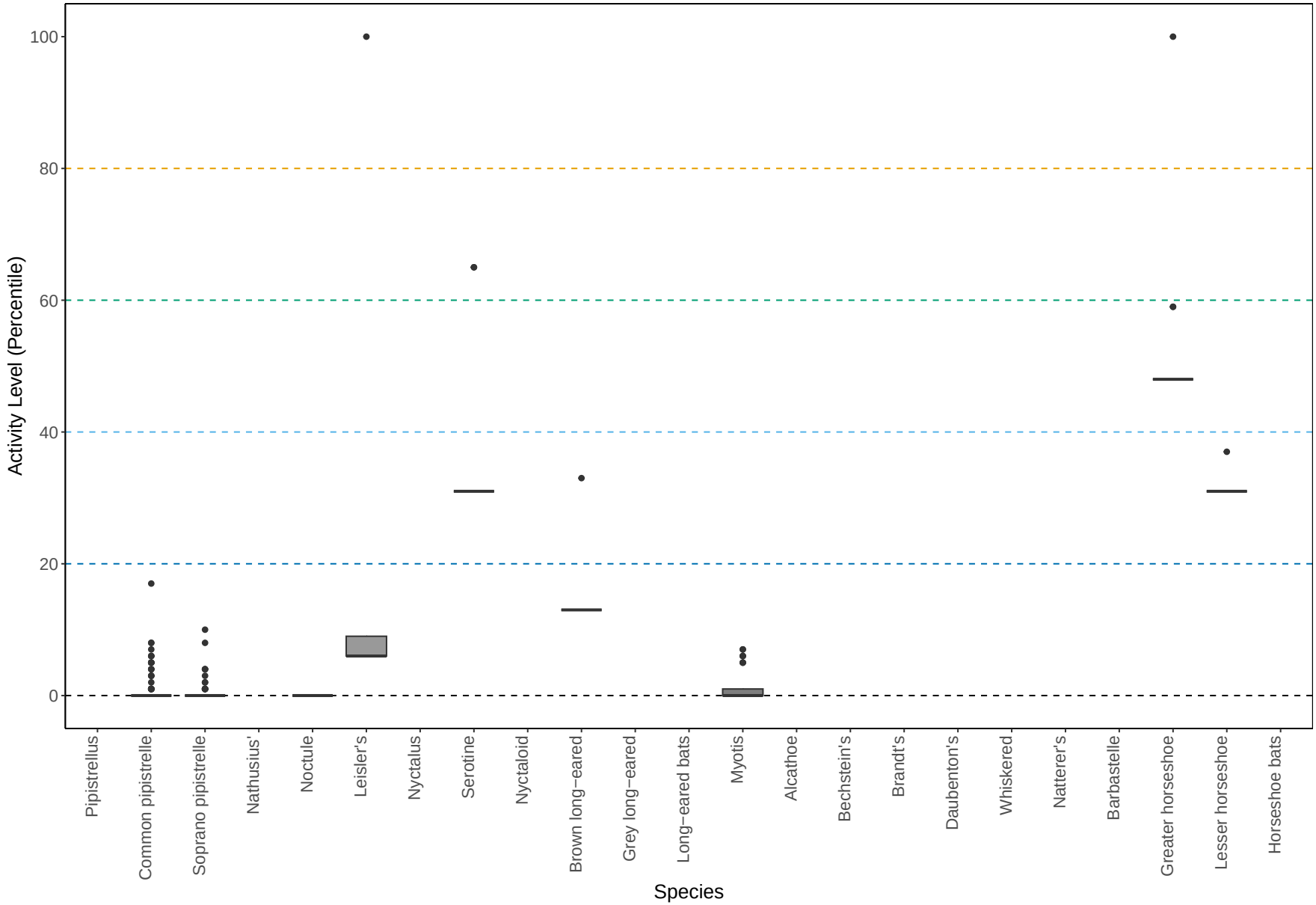
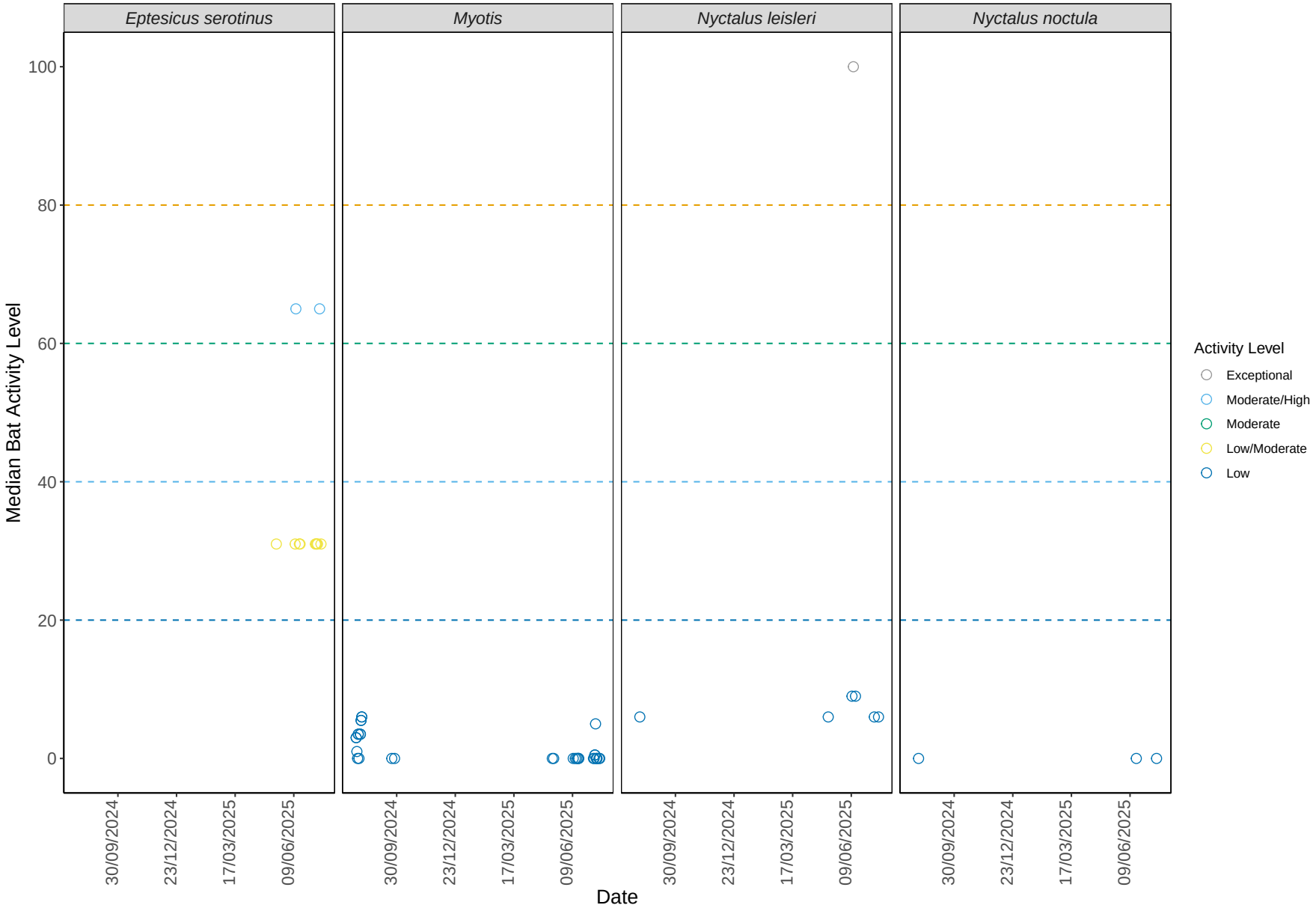
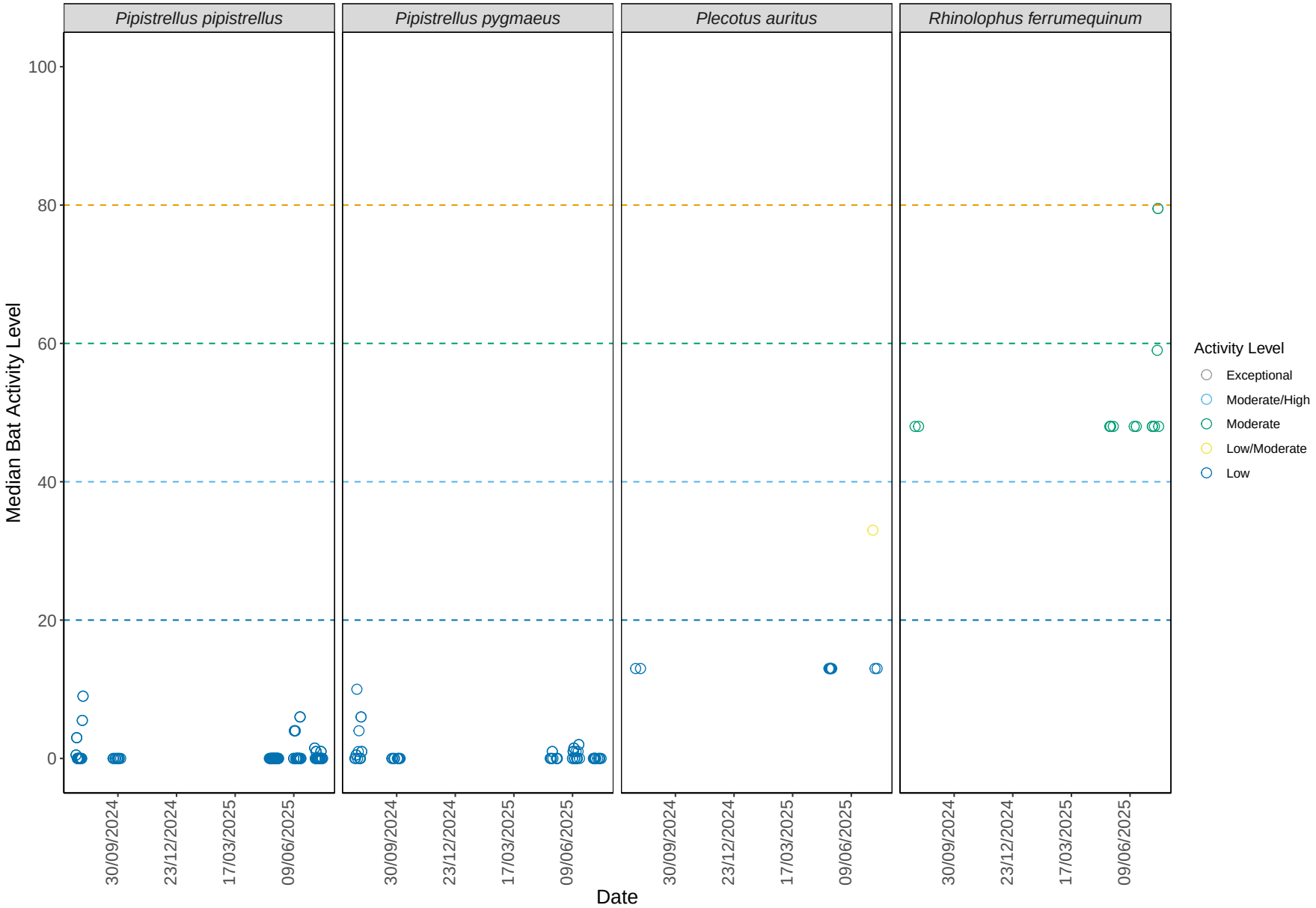
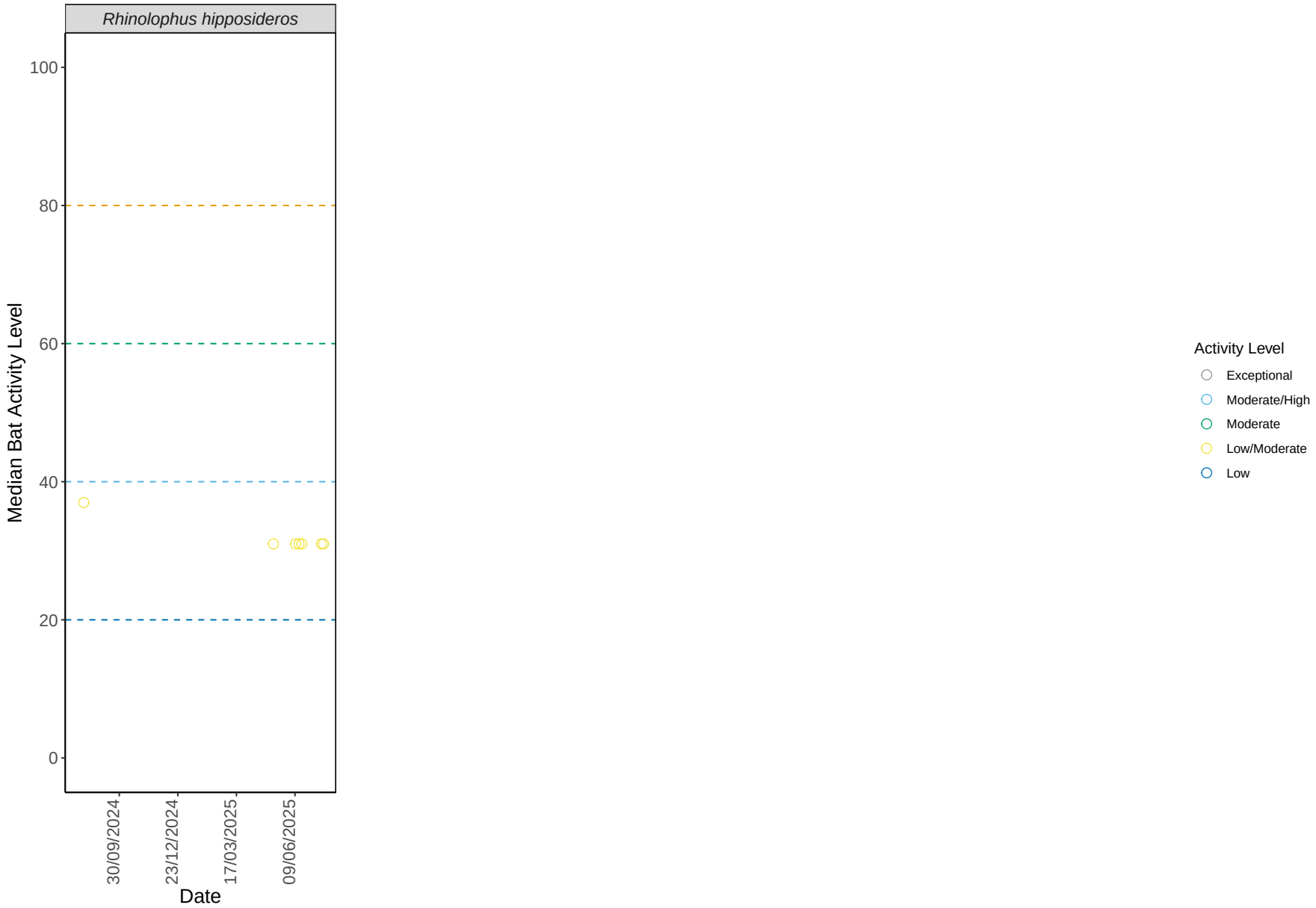

Activity Level (Percentile)
100
80
60
40
20
0
Pipistrellus
Common pipistrelle
Soprano pipistrelle
Nathusius'
Noctule
Leisler's
Nyctalus
Serotine
Nyctaloid
Brown long−eared
Grey long−eared
Long−eared bats
Myotis
Alcathoe
Bechstein's
Brandt's
Daubenton's
Whiskered
Natterer's
Barbastelle
Greater horseshoe
Lesser horseshoe
Horseshoe bats
Species

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


Eptesicus serotinus
Myotis
Nyctalus leisleri
Nyctalus noctula
Median Bat Activity Level
100
80
60
40
20
0
30/09/2024
23/12/2024
17/03/2025
09/06/2025
Date
Activity Level
Exceptional
Moderate/High
Moderate
Low/Moderate
Low


Pipistrellus pipistrellus
Pipistrellus pygmaeus
Plecotus auritus
Rhinolophus ferrumequinum
Median Bat Activity Level
100
80
60
40
20
0
30/09/2024
23/12/2024
17/03/2025
09/06/2025
Date
Activity Level
Exceptional
Moderate/High
Moderate
Low/Moderate
Low


Rhinolophus hipposideros
Median Bat Activity Level
100
80
60
40
20
0
30/09/2024
23/12/2024
17/03/2025
09/06/2025
Date
Activity Level
Exceptional
Moderate/High
Moderate
Low/Moderate
Low

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 Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
Eptesicus serotinus	May	0	0	0	0	1	0
Eptesicus serotinus	Jun	0	0	1	0	3	0
Eptesicus serotinus	Jul	0	0	1	0	5	0
Myotis	May	0	0	0	0	0	2
Myotis	Jun	0	0	0	0	0	6
Myotis	Jul	0	0	0	0	0	10
Myotis	Aug	0	0	0	0	0	13
Myotis	Sep	0	0	0	0	0	2
Nyctalus leisleri	May	0	0	0	0	0	1
Nyctalus leisleri	Jun	1	0	0	0	0	2
Nyctalus leisleri	Jul	0	0	0	0	0	2
Nyctalus leisleri	Aug	0	0	0	0	0	1
Nyctalus noctula	Jun	0	0	0	0	0	1
Nyctalus noctula	Jul	0	0	0	0	0	1
Nyctalus noctula	Aug	0	0	0	0	0	1
Pipistrellus pipistrellus	May	0	0	0	0	0	36
Pipistrellus pipistrellus	Jun	0	0	0	0	0	33
Pipistrellus pipistrellus	Jul	0	0	0	0	0	35
Pipistrellus pipistrellus	Aug	0	0	0	0	0	26
Pipistrellus pipistrellus	Sep	0	0	0	0	0	6
Pipistrellus pipistrellus	Oct	0	0	0	0	0	3

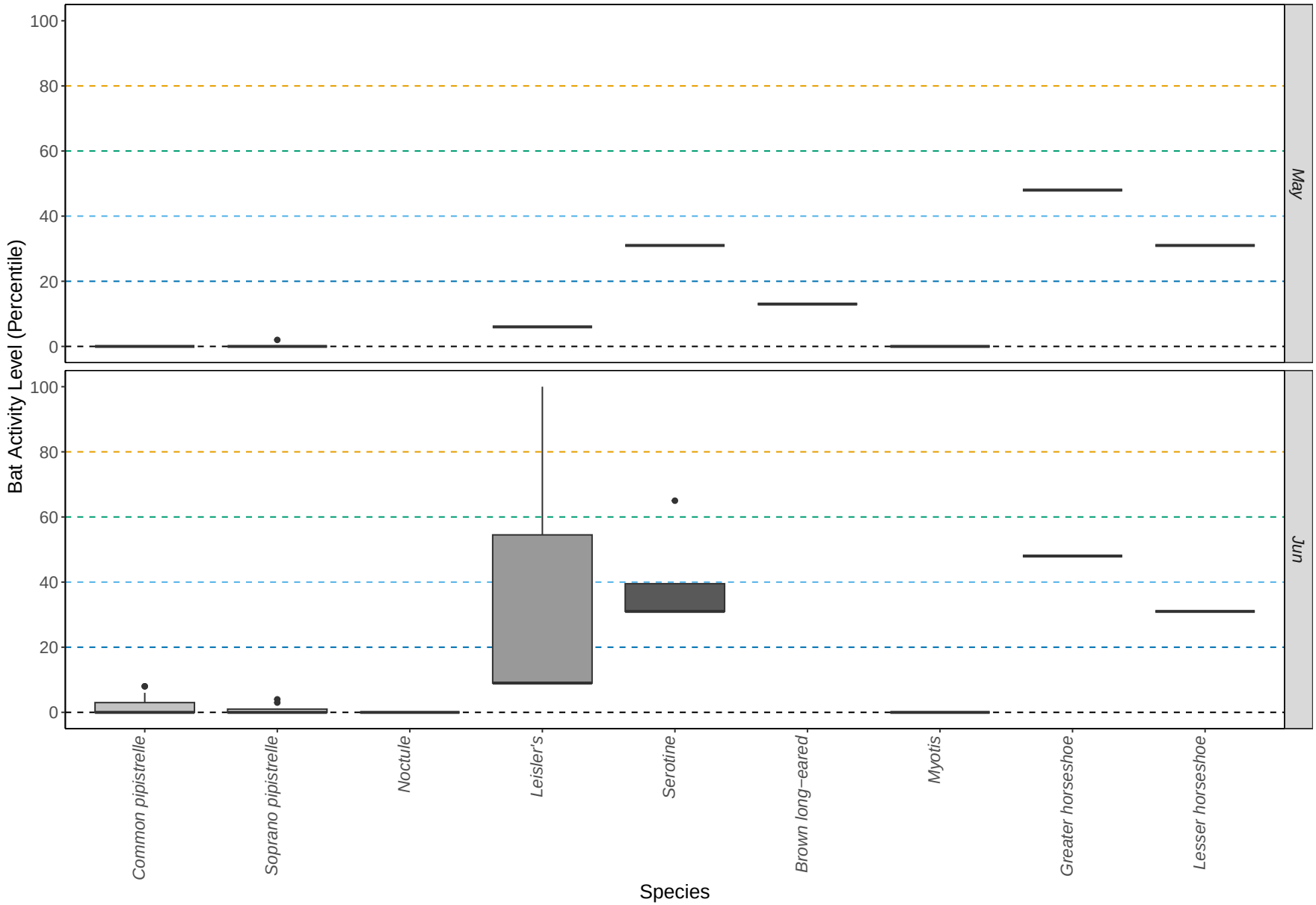
Species/Species Group	month	Nights of Exceptional Activity	Nights of High Activity	Nights of Moderate/High Activity	Nights of Moderate Activity	Nights of Low/Moderate Activity	Nights of Low Activity
Pipistrellus pygmaeus	May	0	0	0	0	0	10
Pipistrellus pygmaeus	Jun	0	0	0	0	0	18
Pipistrellus pygmaeus	Jul	0	0	0	0	0	13
Pipistrellus pygmaeus	Aug	0	0	0	0	0	15
Pipistrellus pygmaeus	Sep	0	0	0	0	0	4
Pipistrellus pygmaeus	Oct	0	0	0	0	0	5
Plecotus auritus	May	0	0	0	0	0	6
Plecotus auritus	Jul	0	0	0	0	1	2
Plecotus auritus	Aug	0	0	0	0	0	2
Rhinolophus ferrumequinum	May	0	0	0	4	0	0
Rhinolophus ferrumequinum	Jun	0	0	0	2	0	0
Rhinolophus ferrumequinum	Jul	1	0	0	6	0	0
Rhinolophus ferrumequinum	Aug	0	0	0	2	0	0
Rhinolophus hipposideros	May	0	0	0	0	1	0
Rhinolophus hipposideros	Jun	0	0	0	0	3	0
Rhinolophus hipposideros	Jul	0	0	0	0	2	0
Rhinolophus hipposideros	Aug	0	0	0	0	1	0

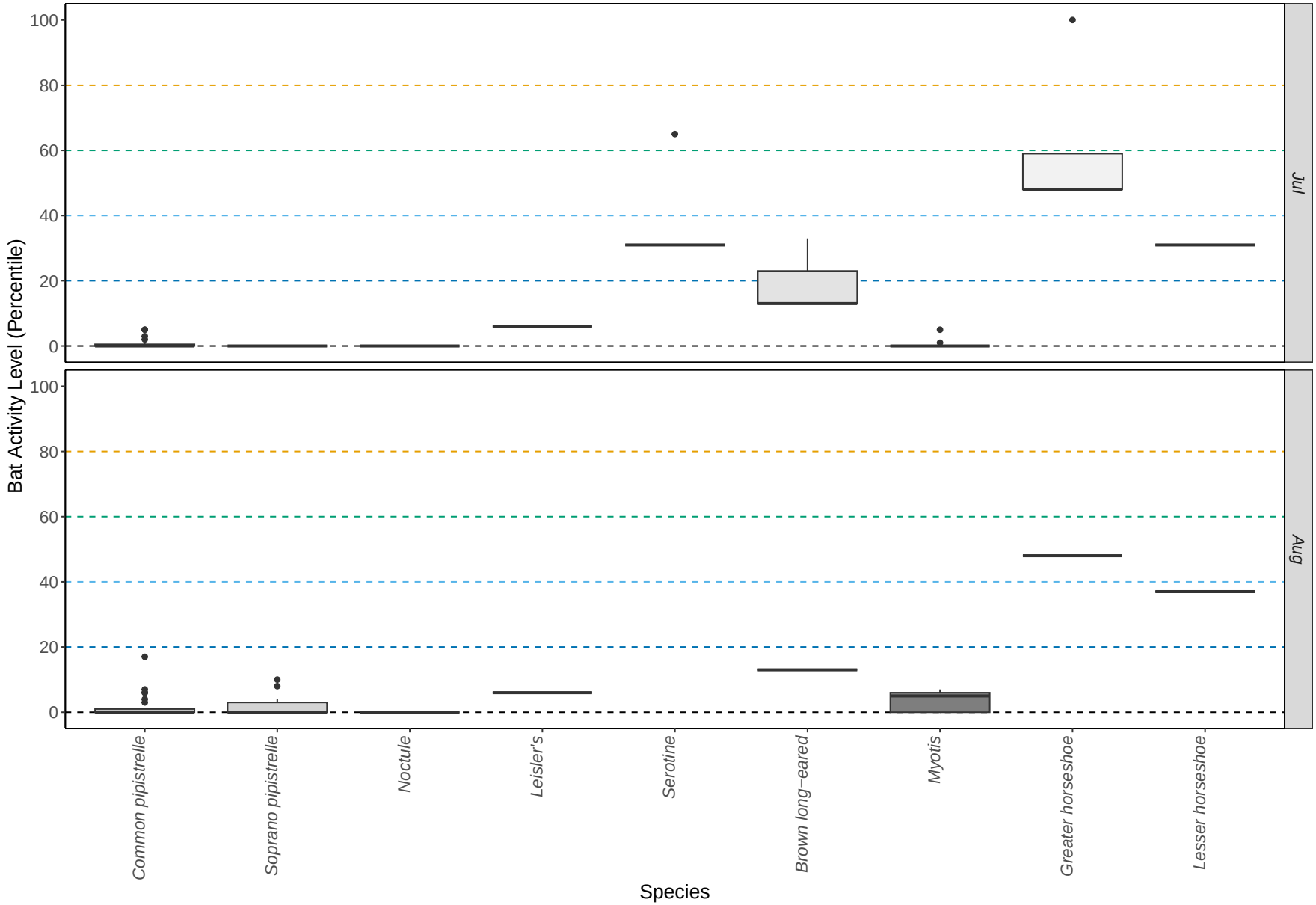
Table 10. Summary table showing key metrics for each species recorded per month.

Species/Species Group	month	Median Percentile	95% CIs	Max. Percentile	Nights Recorded
Eptesicus serotinus	May	31	31 - 31	31	1
Eptesicus serotinus	Jun	31	31 - 31	65	4
Eptesicus serotinus	Jul	31	31 - 31	65	6
Myotis	May	0	0 - 0	0	2
Myotis	Jun	0	3.5 - 7	0	6
Myotis	Jul	0	1 - 6	5	10
Myotis	Aug	5	3.5 - 7	7	13
Myotis	Sep	0	3.5 - 7	0	2
Nyctalus leisleri	May	6	6 - 6	6	1
Nyctalus leisleri	Jun	9	6 - 6	100	3
Nyctalus leisleri	Jul	6	6 - 6	6	2
Nyctalus leisleri	Aug	6	6 - 6	6	1
Nyctalus noctula	Jun	0	0 - 0	0	1
Nyctalus noctula	Jul	0	0	0	1
Nyctalus noctula	Aug	0	0 - 0	0	1
Pipistrellus pipistrellus	May	0	3 - 6.5	0	36
Pipistrellus pipistrellus	Jun	0	3 - 6.5	8	33
Pipistrellus pipistrellus	Jul	0	3 - 6.5	5	35
Pipistrellus pipistrellus	Aug	0	3 - 6.5	17	26
Pipistrellus pipistrellus	Sep	0	3 - 6.5	0	6
Pipistrellus pipistrellus	Oct	0	3 - 6.5	0	3
Pipistrellus pygmaeus	May	0	1.5 - 5	2	10
Pipistrellus pygmaeus	Jun	0	1.5 - 5	4	18
Pipistrellus pygmaeus	Jul	0	1.5 - 5	0	13
Pipistrellus pygmaeus	Aug	0	1.5 - 5	10	15
Pipistrellus pygmaeus	Sep	0	1 - 4	0	4
Pipistrellus pygmaeus	Oct	0	1 - 4	0	5
Plecotus auritus	May	13	13 - 13	13	6
Plecotus auritus	Jul	13	13 - 13	33	3
Plecotus auritus	Aug	13	13 - 13	13	2
Rhinolophus ferrumequinum	May	48	48 - 48	48	4
Rhinolophus ferrumequinum	Jun	48	48 - 48	48	2
Rhinolophus ferrumequinum	Jul	48	48 - 48	100	7
Rhinolophus ferrumequinum	Aug	48	48 - 48	48	2

Species/Species Group	month	Median Percentile	95% CIs	Max. Percentile	Nights Recorded
Rhinolophus hipposideros	May	31	0	31	1
Rhinolophus hipposideros	Jun	31	31 - 31	31	3
Rhinolophus hipposideros	Jul	31	31 - 31	31	2
Rhinolophus hipposideros	Aug	37	31 - 31	37	1

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


Bat Activity Level (Percentile)
100
80
60
40
20
0
May
Jun
Common pipistrelle
Soprano pipistrelle
Noctule
Leisler's
Serotine
Brown long−eared
Myotis
Greater horseshoe
Lesser horseshoe
Species


Bat Activity Level (Percentile)
100
80
60
40
20
0
Jul
Aug
Common pipistrelle
Soprano pipistrelle
Noctule
Leisler's
Serotine
Brown long−eared
Myotis
Greater horseshoe
Lesser horseshoe
Species

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.

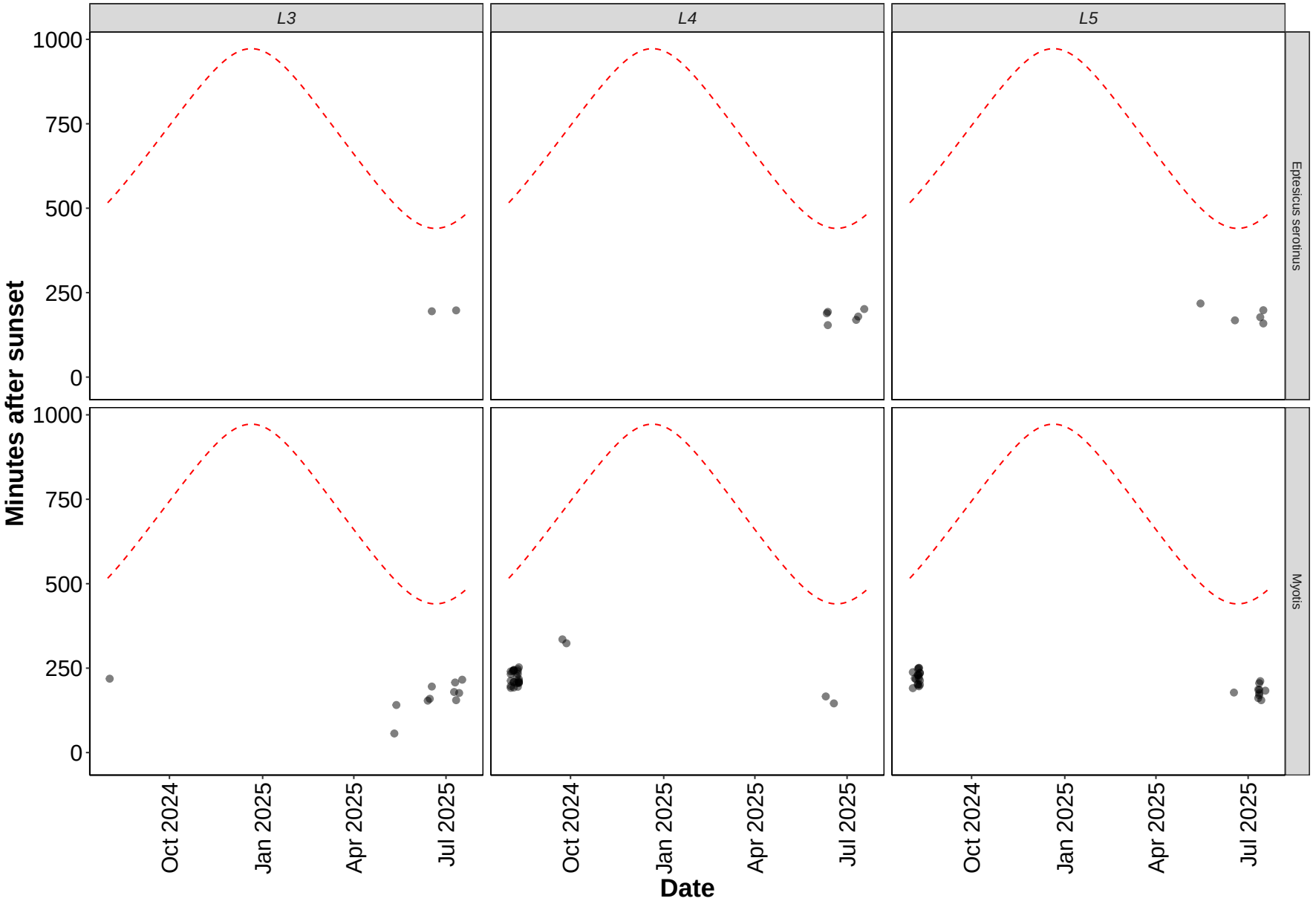
Night (y-m-d)	Sunset (h:m)	Sunrise (h:m)	Night Length (hours)
2024-08-01	21:02	05:38	8.6
2024-08-02	21:01	05:40	8.7
2024-08-03	20:59	05:41	8.7
2024-08-04	20:57	05:43	8.8
2024-08-05	20:55	05:44	8.8
2024-08-06	20:54	05:46	8.9
2024-08-07	20:52	05:48	8.9
2024-08-08	20:50	05:49	9.0
2024-08-09	20:48	05:51	9.0
2024-08-10	20:46	05:52	9.1
2024-08-11	20:44	05:54	9.2
2024-09-23	19:10	07:03	11.9
2024-09-24	19:07	07:04	11.9
2024-09-26	19:03	07:08	12.1
2024-09-27	19:00	07:09	12.1
2024-09-29	18:56	07:13	12.3
2024-09-30	18:54	07:14	12.3
2024-10-01	18:51	07:16	12.4
2024-10-02	18:49	07:17	12.5
2024-10-03	18:47	07:19	12.5
2024-10-04	18:44	07:21	12.6
2024-10-05	18:42	07:22	12.7
2025-05-05	20:43	05:35	8.9
2025-05-06	20:44	05:34	8.8
2025-05-07	20:46	05:32	8.8
2025-05-08	20:47	05:30	8.7
2025-05-09	20:49	05:29	8.7
2025-05-10	20:51	05:27	8.6

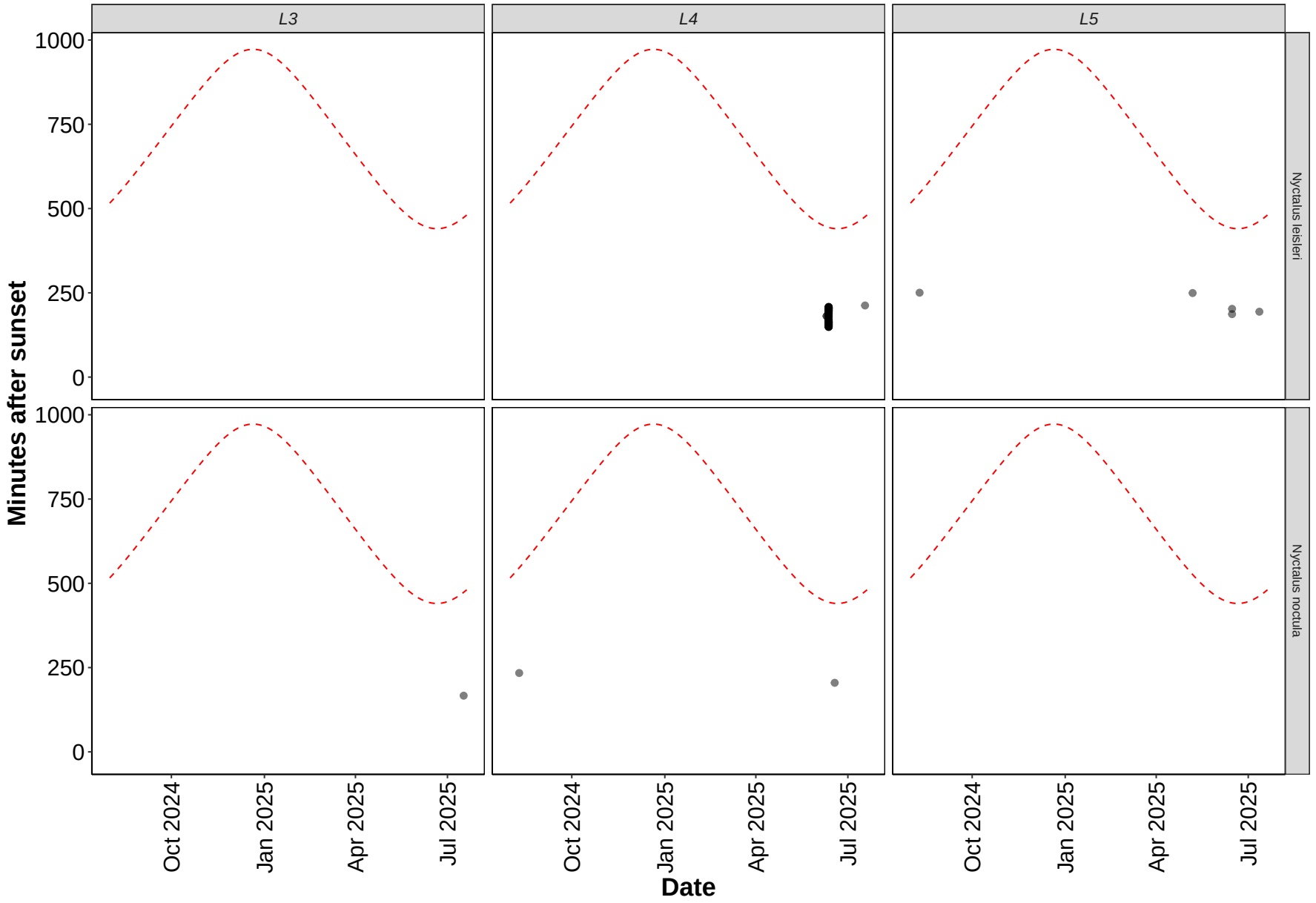
Night (y-m-d)	Sunset (h:m)	Sunrise (h:m)	Night Length (hours)
2025-05-11	20:52	05:25	8.6
2025-05-12	20:54	05:24	8.5
2025-05-13	20:55	05:22	8.4
2025-05-14	20:57	05:21	8.4
2025-05-15	20:59	05:19	8.3
2025-05-16	21:00	05:18	8.3
2025-05-17	21:02	05:17	8.2
2025-05-18	21:03	05:15	8.2
2025-06-09	21:29	04:56	7.4
2025-06-10	21:30	04:56	7.4
2025-06-11	21:30	04:55	7.4
2025-06-12	21:31	04:55	7.4
2025-06-13	21:32	04:55	7.4
2025-06-14	21:32	04:55	7.4
2025-06-15	21:33	04:55	7.4
2025-06-16	21:33	04:55	7.4
2025-06-17	21:34	04:55	7.3
2025-06-18	21:34	04:55	7.3
2025-06-19	21:34	04:55	7.3
2025-07-09	21:30	05:07	7.6
2025-07-10	21:30	05:08	7.6
2025-07-11	21:29	05:09	7.7
2025-07-12	21:28	05:10	7.7
2025-07-13	21:27	05:12	7.7
2025-07-14	21:26	05:13	7.8
2025-07-15	21:25	05:14	7.8
2025-07-16	21:24	05:15	7.9
2025-07-17	21:23	05:16	7.9
2025-07-18	21:22	05:18	7.9
2025-07-19	21:21	05:19	8.0
2025-07-20	21:20	05:20	8.0

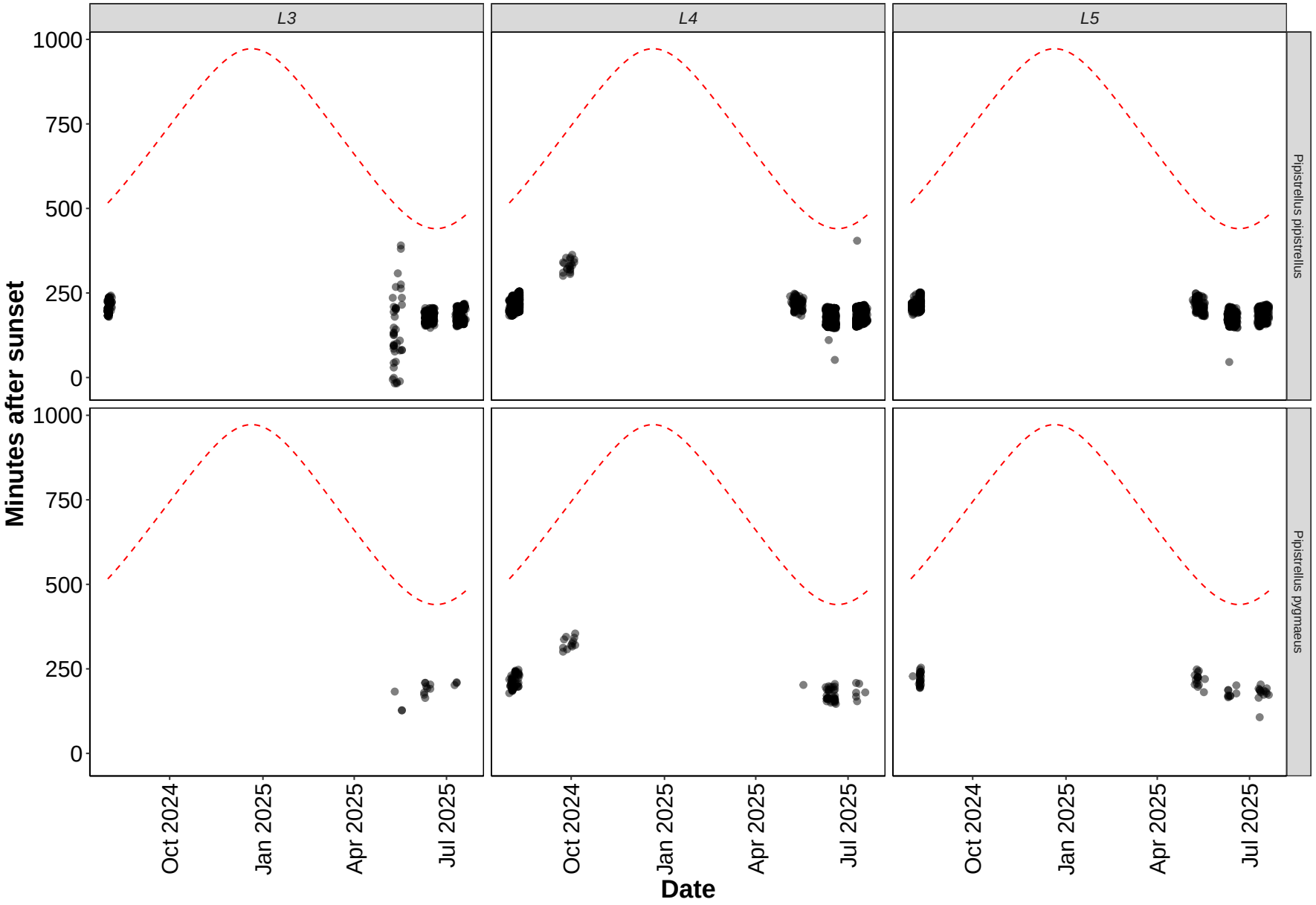
Distribution of Bat Activity Across the Night through Time

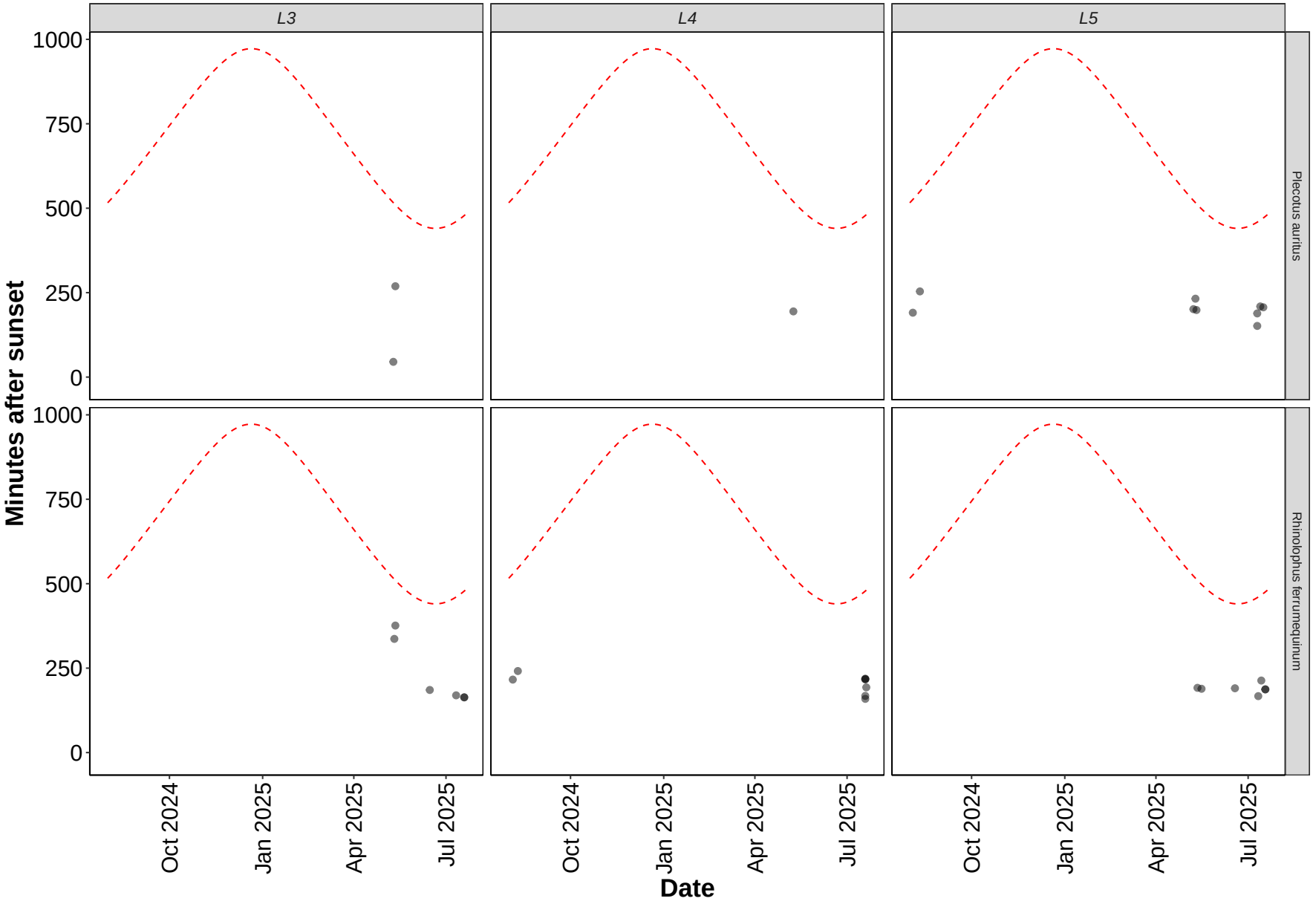
Per Detector

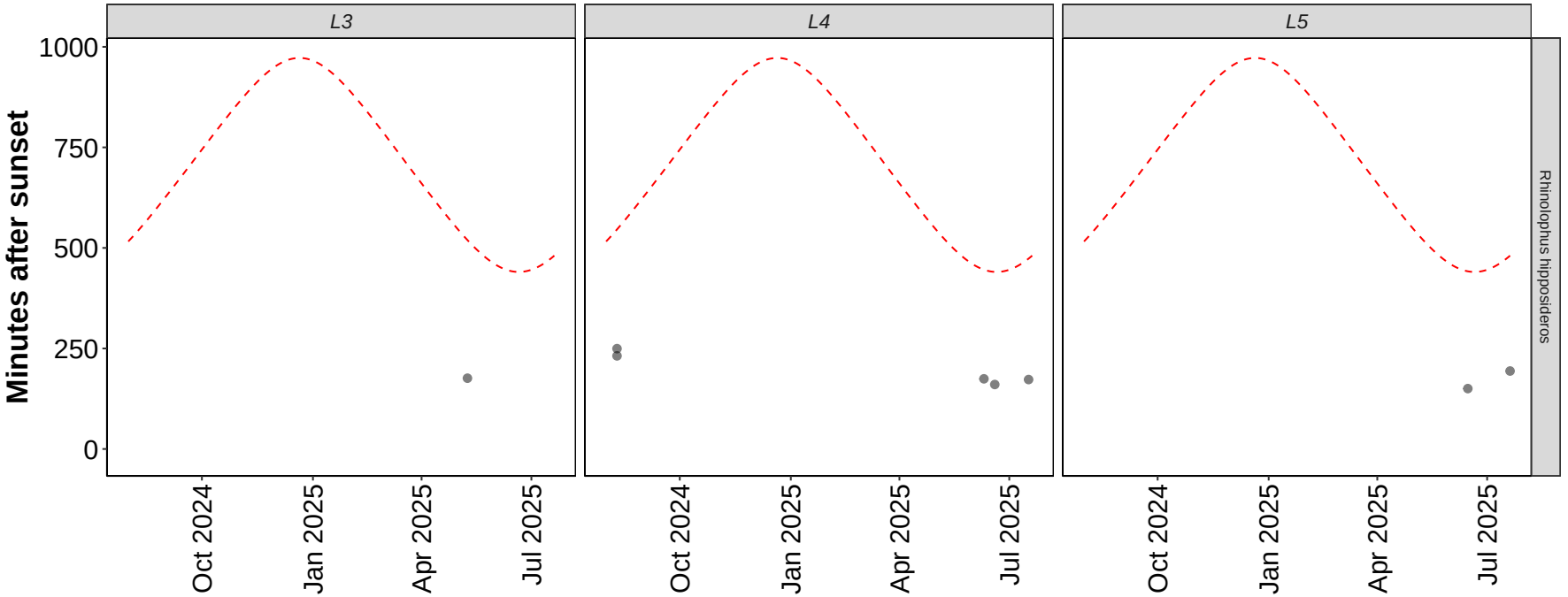
Figure 7. Timing of bat calls plotted as minutes before/after sunset, whereby 0 on the y axis represents sunset. Sunrise throughout the survey period is depicted as the red dashed line. Colours indicate kernel densities, with darkest colours showing peaks of activity. These colours are comparative only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


L3
L4
L5
Eptesicus serotinus
Myotis
Minutes after sunset
1000
750
500
250
0
Oct 2024
Jan 2025
Apr 2025
Jul 2025
Date


L3
L4
L5
Nyctalus leisleri
Nyctalus noctula
Minutes after sunset
1000
750
500
250
0
Oct 2024
Jan 2025
Apr 2025
Jul 2025
Date


L3
L4
L5
Pipistrellus pipistrellus
Pipistrellus pygmaeus
Minutes after sunset
1000
750
500
250
0
Oct 2024
Jan 2025
Apr 2025
Jul 2025
Date


L3
L4
L5
Plecotus auritus
Rhinolophus ferrumequinum
Minutes after sunset
1000
750
500
250
0
Oct 2024
Jan 2025
Apr 2025
Jul 2025
Date


L3
L4
L5
Minutes after sunset
1000
750
500
250
0
Oct 2024
Jan 2025
Apr 2025
Jul 2025
Rhinolophus hipposideros

Date

Roost Emergence Time and Bat Observation

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

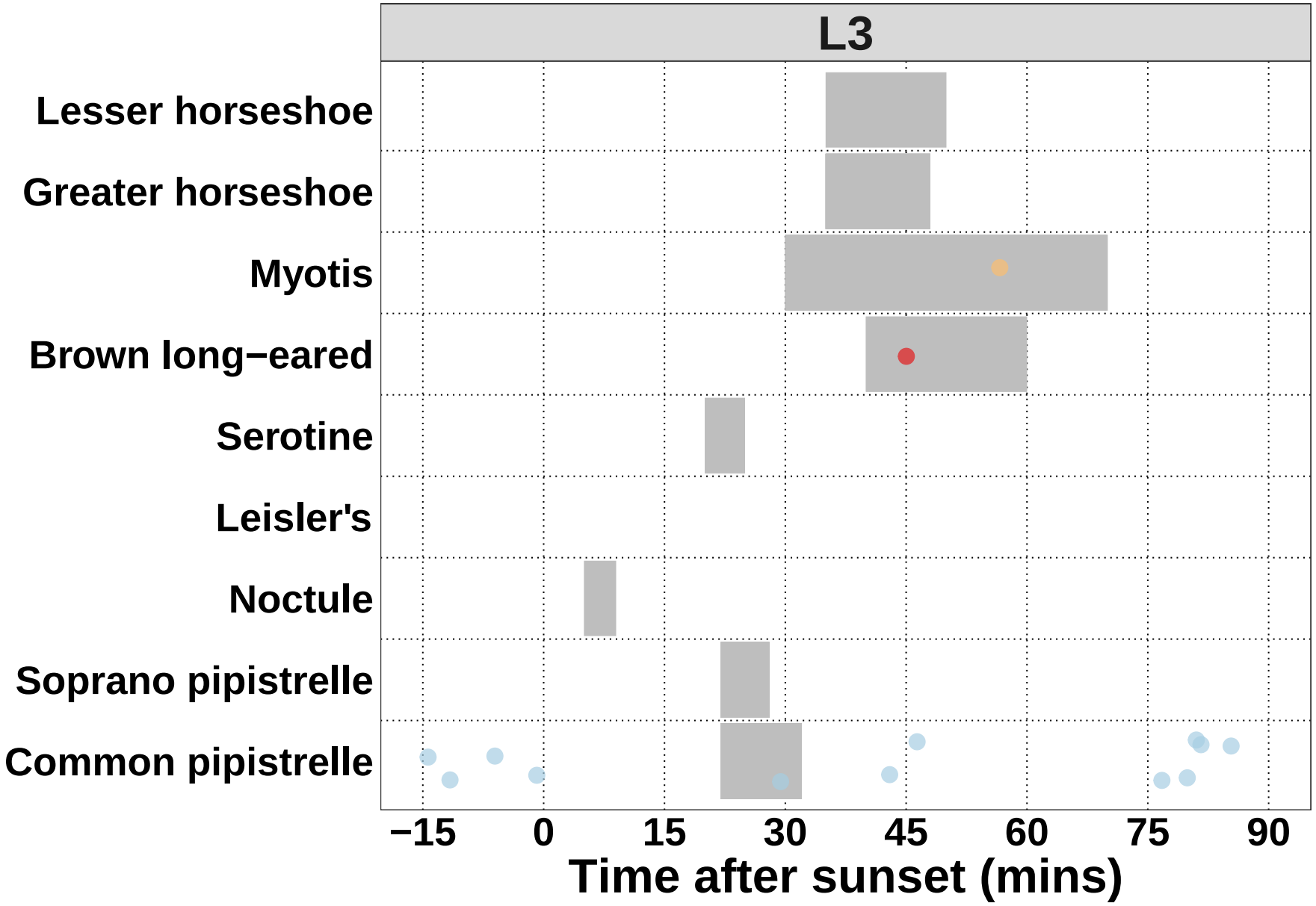
Bat Passes Potentially Indicating Close Proximity to a Roost (Russ 2012)

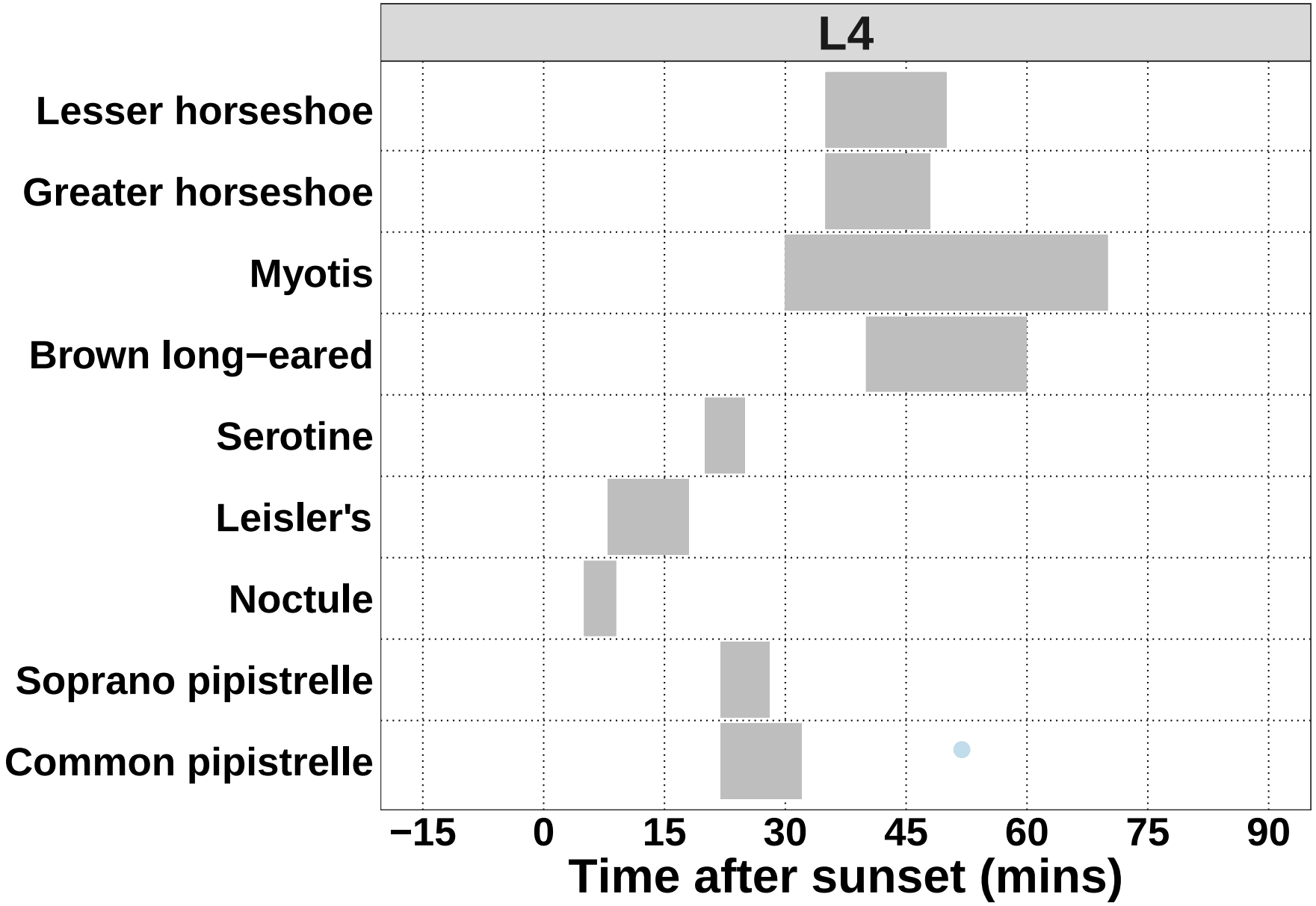
Table 12. Number of bat calls recorded before the upper time of the species-specific emergence time range, and which therefore may potentially indicate the presence of a nearby roost.

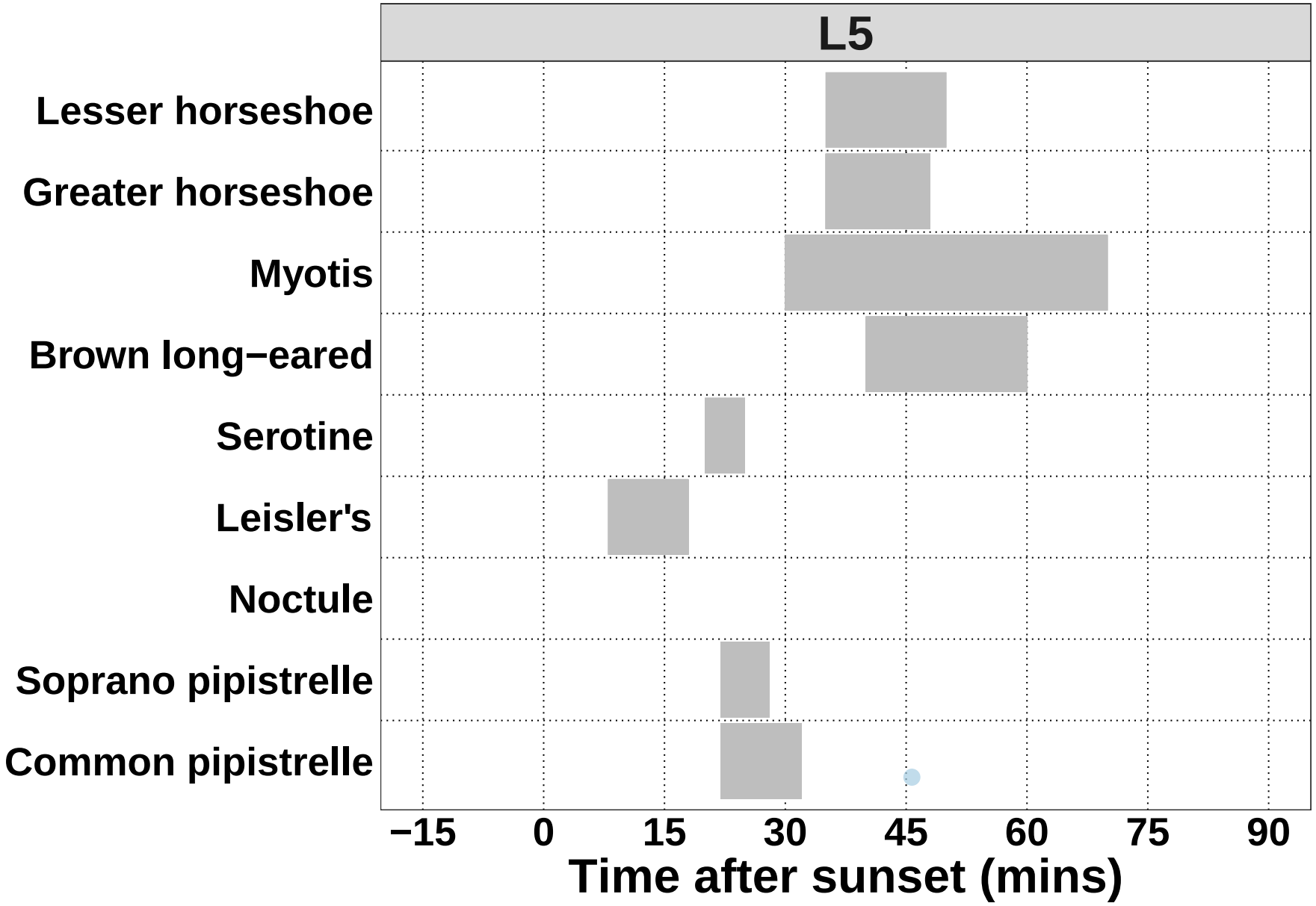
Species	Detector ID	2025-05-09	2025-05-10	2025-05-11	2025-05-13	2025-05-16
Common pipistrelle	L3	1	2	1	2	1
Brown long-eared	L3	0	1	0	0	0
Myotis	L3	0	0	1	0	0

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

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.


L3
Lesser horseshoe
Greater horseshoe
Myotis
Brown long−eared
Serotine
Leisler's
Noctule
Soprano pipistrelle
Common pipistrelle
−15
0
15
30
45
60
75
90
Time after sunset (mins)

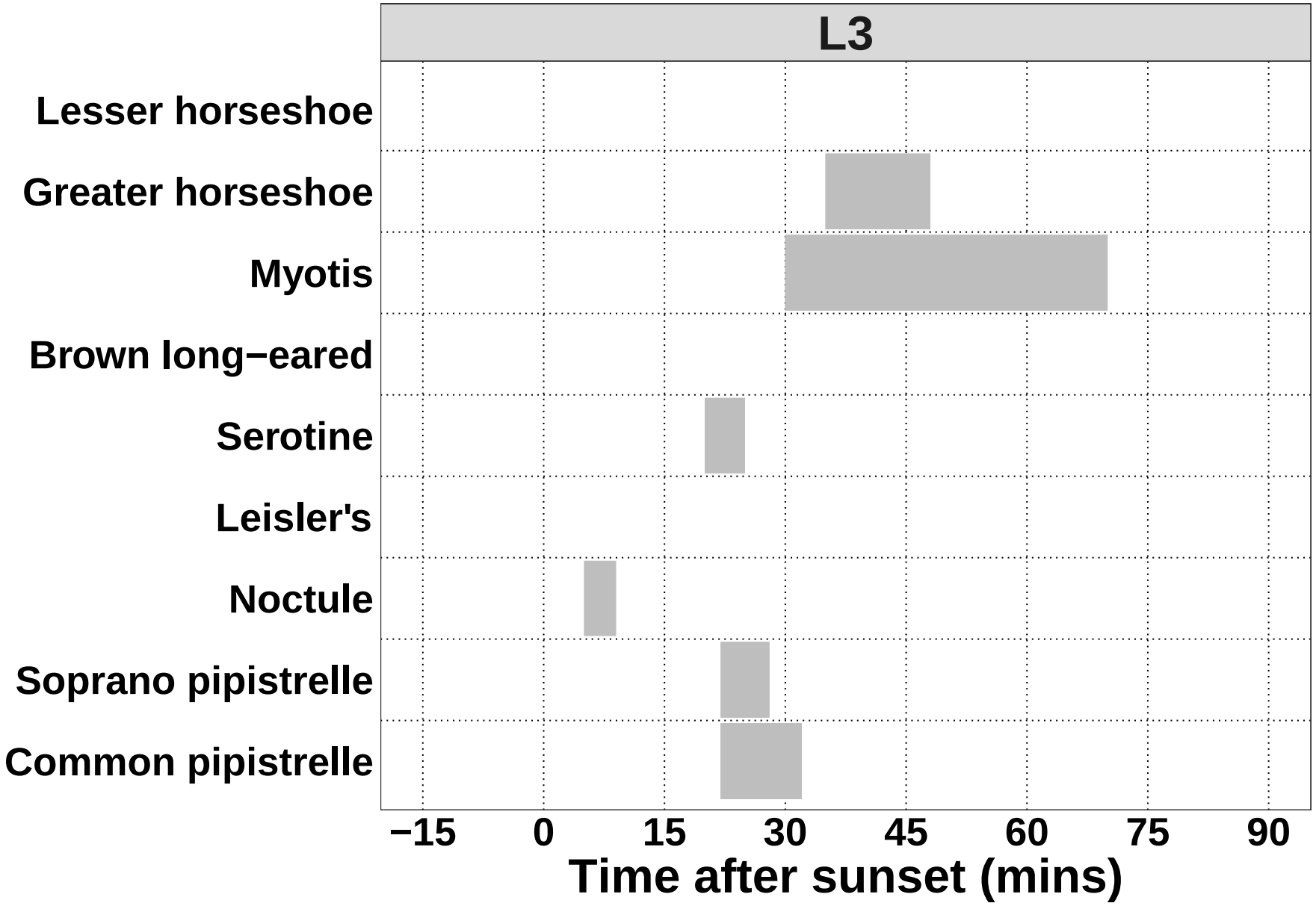

L4
Lesser horseshoe
Greater horseshoe
Myotis
Brown long−eared
Serotine
Leisler's
Noctule
Soprano pipistrelle
Common pipistrelle
−15
0
15
30
45
60
75
90
Time after sunset (mins)

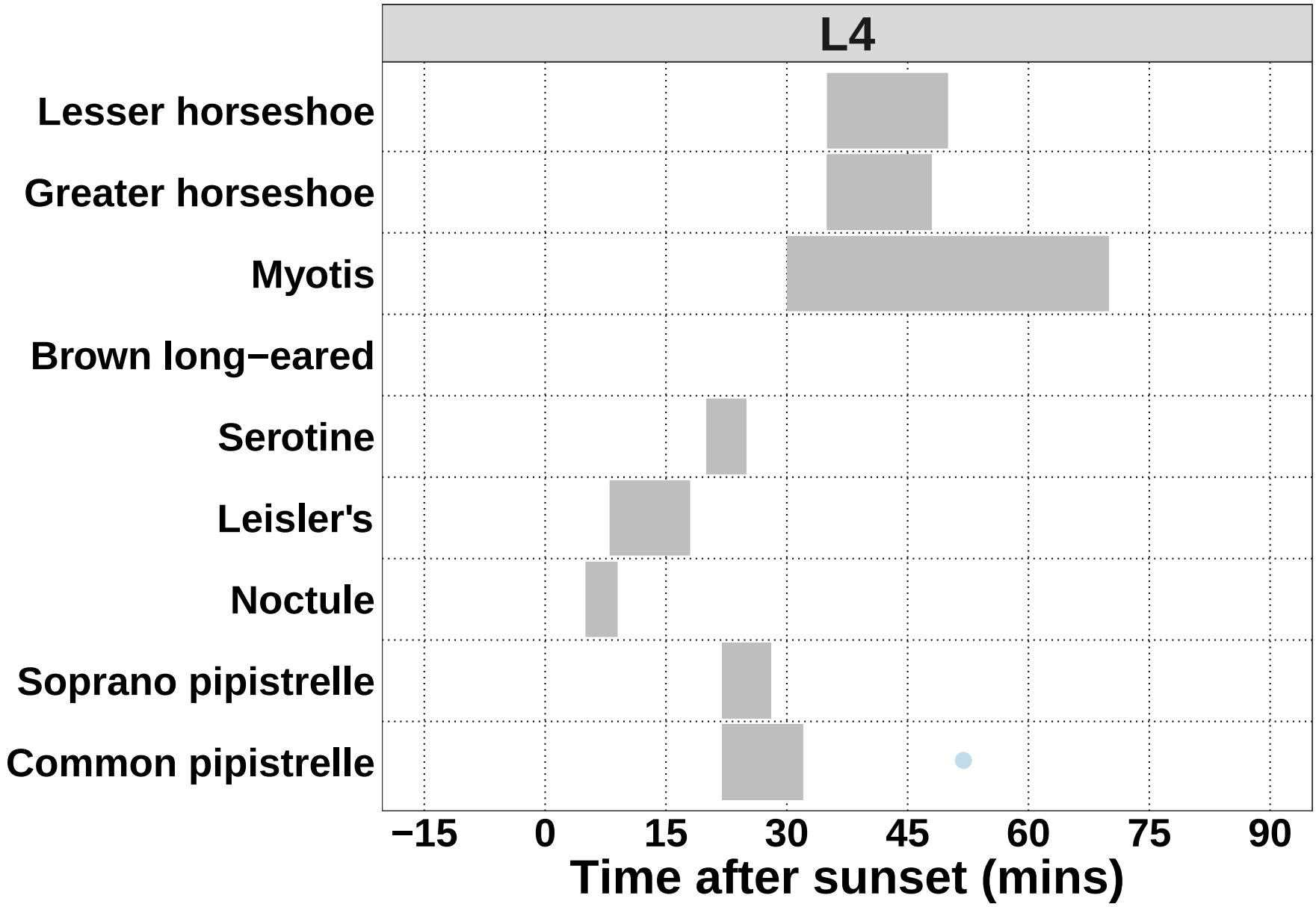

L5
Lesser horseshoe
Greater horseshoe
Myotis
Brown long−eared
Serotine
Leisler's
Noctule
Soprano pipistrelle
Common pipistrelle
−15
0
15
30
45
60
75
90
Time after sunset (mins)

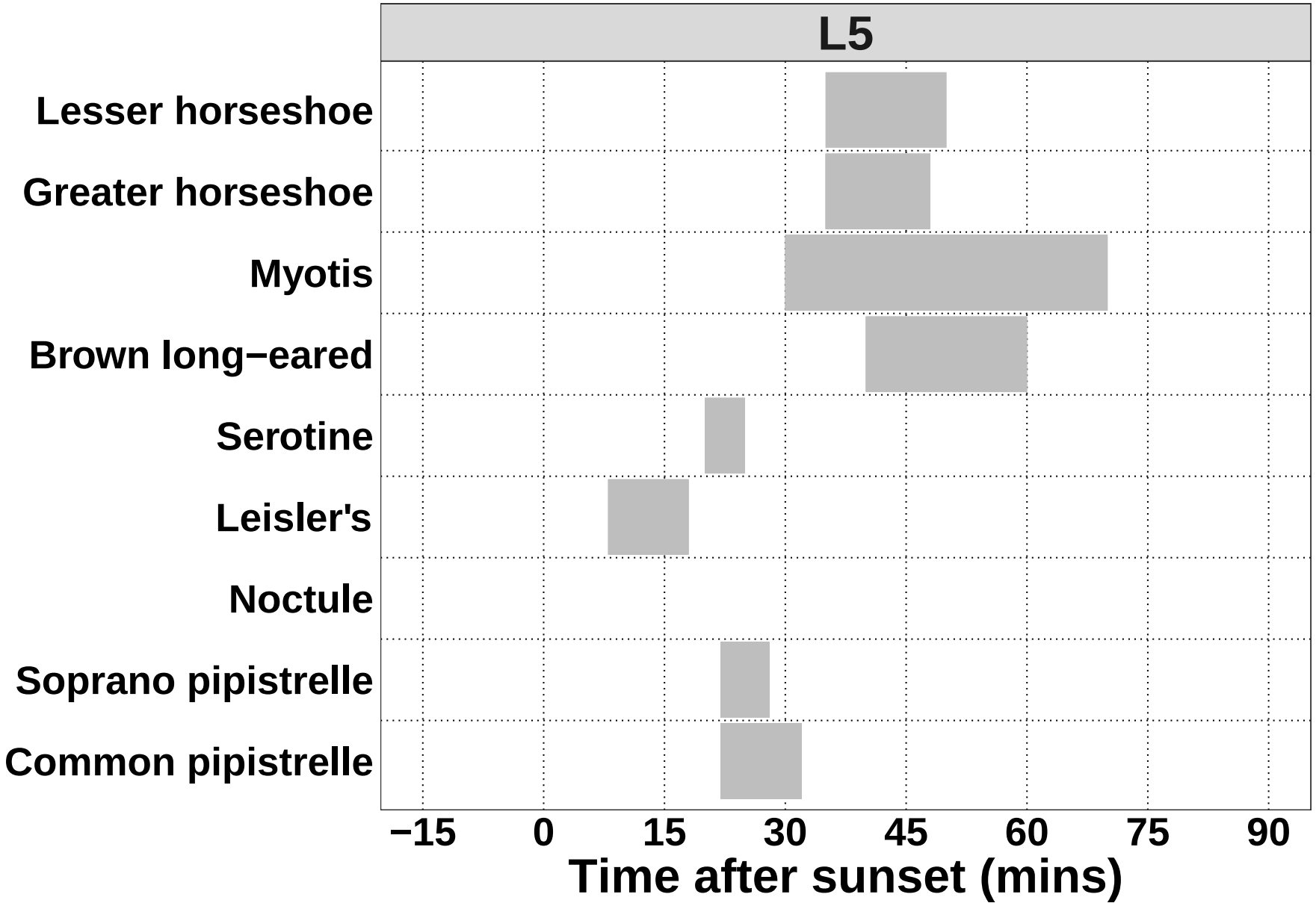
Bat Passes Potentially Indicating Close Proximity to a Roost (Maternity Period Only) - *Maternity period defined as 15th June - 30th July.

Species	Detector ID

Bat Passes Potentially Indicating Close Proximity to a Roost (Maternity Period Only) - Maternity period defined as 15th June - 30th July.


L3
Lesser horseshoe
Greater horseshoe
Myotis
Brown long−eared
Serotine
Leisler's
Noctule
Soprano pipistrelle
Common pipistrelle
−15
0
15
30
45
60
75
90
Time after sunset (mins)


L4
Lesser horseshoe
Greater horseshoe
Myotis
Brown long−eared
Serotine
Leisler's
Noctule
Soprano pipistrelle
Common pipistrelle
−15
0
15
30
45
60
75
90
Time after sunset (mins)


L5
Lesser horseshoe
Greater horseshoe
Myotis
Brown long−eared
Serotine
Leisler's
Noctule
Soprano pipistrelle
Common pipistrelle
−15
0
15
30
45
60
75
90
Time after sunset (mins)

Count 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 (%)
Eptesicus serotinus	13	0.4
Myotis	67	2.0
Nyctalus leisleri	117	3.5
Nyctalus noctula	3	0.1
Pipistrellus pipistrellus	2881	86.7
Pipistrellus pygmaeus	200	6.0
Plecotus auritus	12	0.4
Rhinolophus ferrumequinum	21	0.6
Rhinolophus hipposideros	8	0.2
Total	3322	99.9

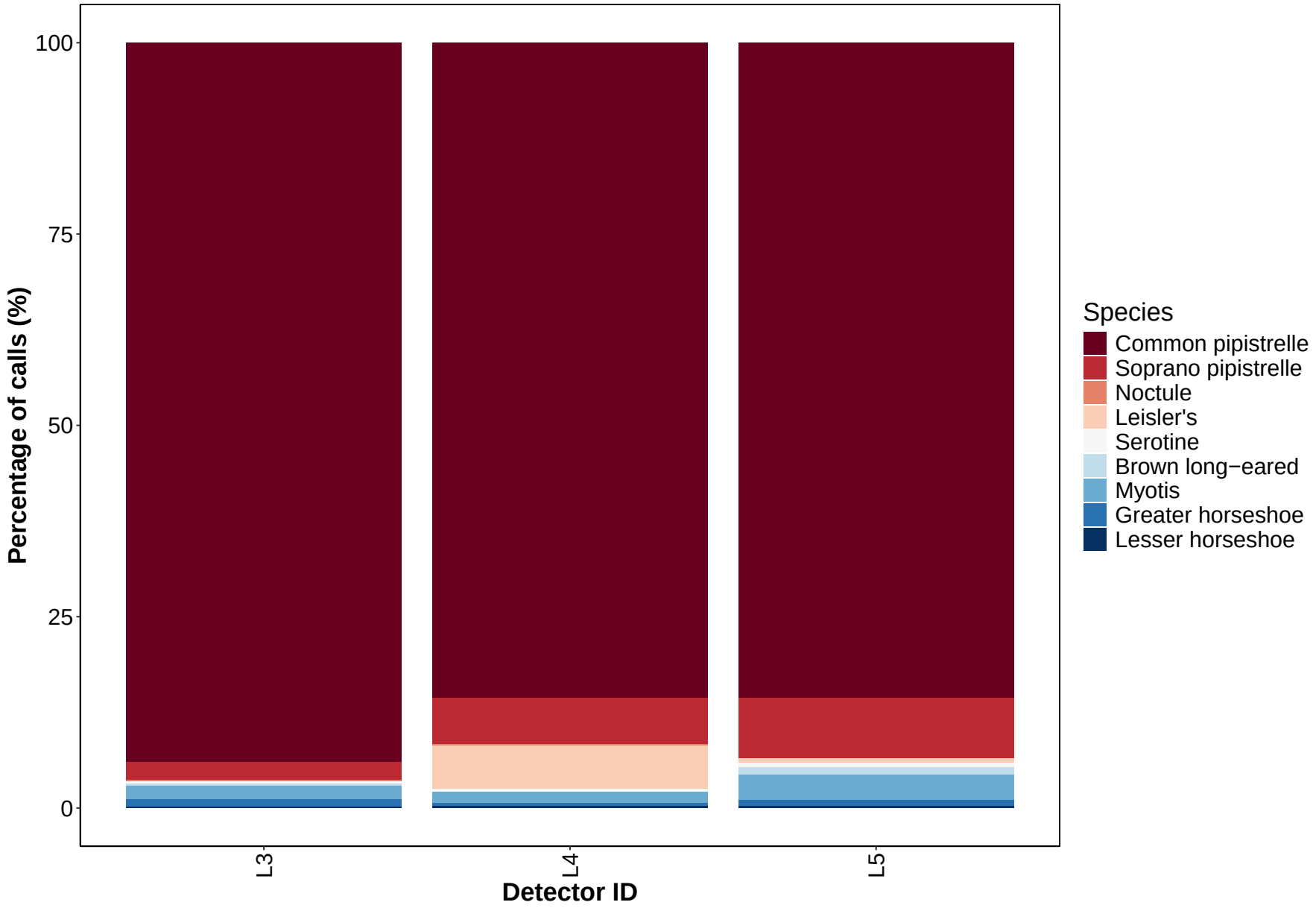
Per Detector

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

Species	Detector ID	Count (no.)	Percentage by Detector (%)
Common pipistrelle	L3	569	93.7397035
Common pipistrelle	L4	1606	85.1086380
Common pipistrelle	L5	706	85.2657005
Soprano pipistrelle	L3	15	2.4711697
Soprano pipistrelle	L4	119	6.3063063
Soprano pipistrelle	L5	66	7.9710145
Noctule	L3	1	0.1647446
Noctule	L4	2	0.1059883
Leisler's	L4	112	5.9353471
Leisler's	L5	5	0.6038647
Serotine	L3	2	0.3294893
Serotine	L4	6	0.3179650
Serotine	L5	5	0.6038647
Brown long-eared	L3	2	0.3294893
Brown long-eared	L4	1	0.0529942
Brown long-eared	L5	9	1.0869565
Myotis	L3	11	1.8121911
Myotis	L4	28	1.4838368
Myotis	L5	28	3.3816425
Greater horseshoe	L3	6	0.9884679
Greater horseshoe	L4	8	0.4239534
Greater horseshoe	L5	7	0.8454106
Lesser horseshoe	L3	1	0.1647446
Lesser horseshoe	L4	5	0.2649709
Lesser horseshoe	L5	2	0.2415459

Species Composition

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


100
75
50
25
0
Percentage of calls (%)
L3
L4
L5
Detector ID
Species
Common pipistrelle
Soprano pipistrelle
Noctule
Leisler's
Serotine
Brown long−eared
Myotis
Greater horseshoe
Lesser horseshoe

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.

Nighlty 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
Common pipistrelle	L3	0.8
Common pipistrelle	L4	1.4
Common pipistrelle	L5	1.2
Soprano pipistrelle	L3	0.2
Soprano pipistrelle	L4	0.2
Soprano pipistrelle	L5	0.2
Noctule	L3	0.1
Noctule	L4	0.1
Leisler's	L4	0.3
Leisler's	L5	0.1
Serotine	L3	0.1
Serotine	L4	0.1
Serotine	L5	0.1
Brown long-eared	L3	0.1
Brown long-eared	L4	0.1
Brown long-eared	L5	0.1
Myotis	L3	0.1
Myotis	L4	0.2
Myotis	L5	0.2
Greater horseshoe	L3	0.1
Greater horseshoe	L4	0.1
Greater horseshoe	L5	0.1
Lesser horseshoe	L3	0.1
Lesser horseshoe	L4	0.1
Lesser horseshoe	L5	0.1

Mean Per Detector

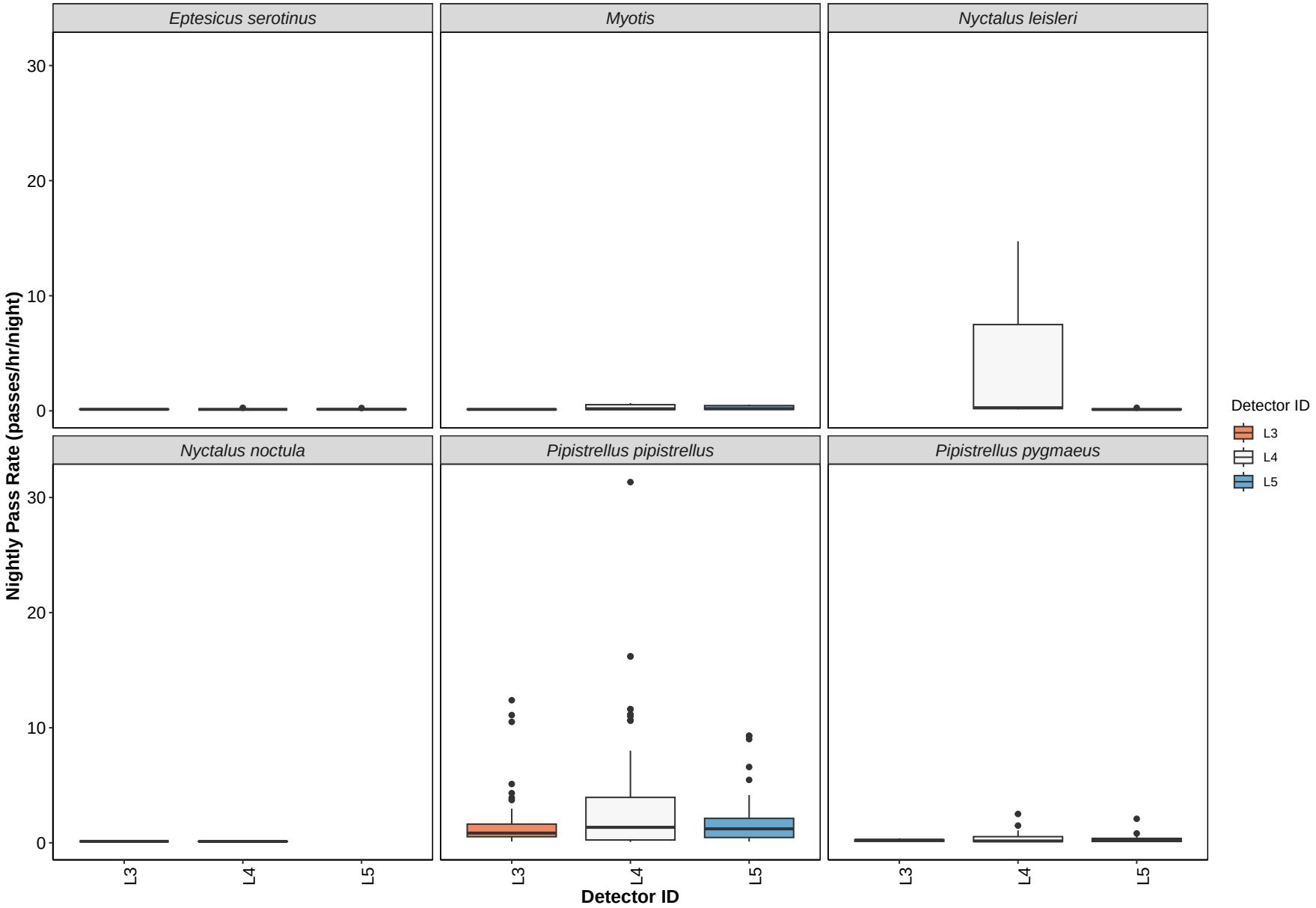
Table 17. The mean Nightly Pass Rate (bat passes per hour, per night) of each species at each detector. Values are given to 1 decimal place.

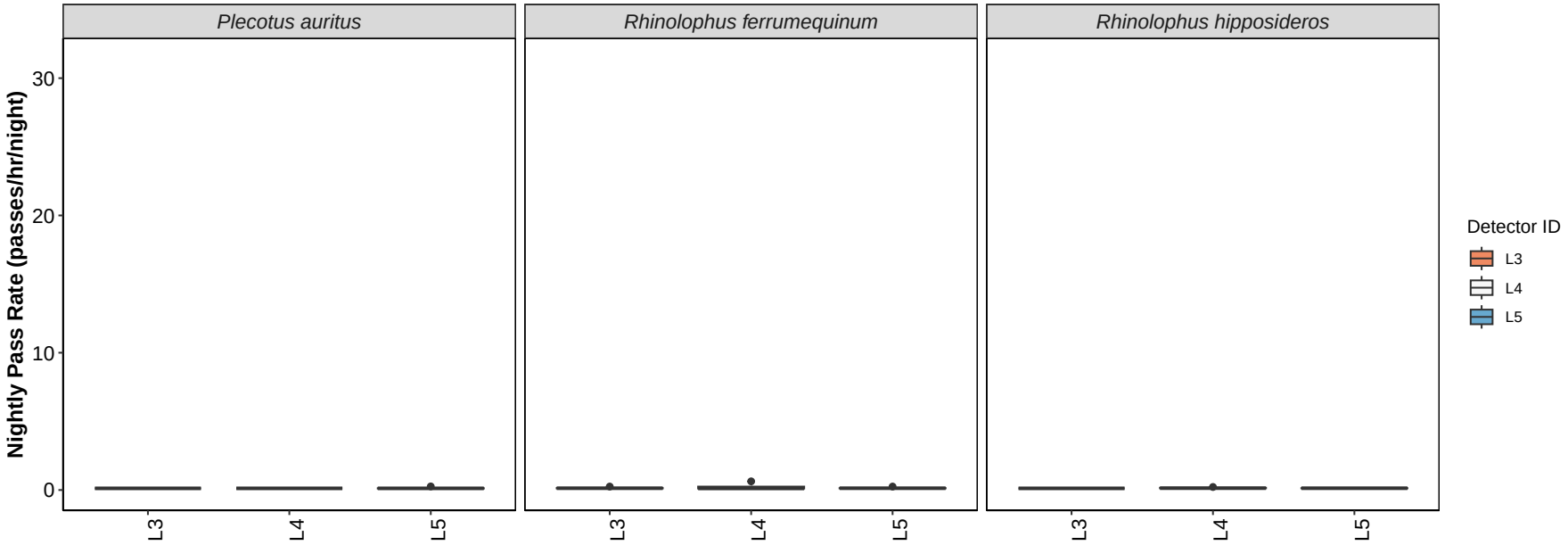
We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

Species	Detector ID	Mean Pass Rate
Common pipistrelle	L3	2.1
Common pipistrelle	L4	3.6
Common pipistrelle	L5	2.0
Soprano pipistrelle	L3	0.2
Soprano pipistrelle	L4	0.4
Soprano pipistrelle	L5	0.4
Noctule	L3	0.1
Noctule	L4	0.1
Leisler's	L4	5.0
Leisler's	L5	0.2
Serotine	L3	0.1
Serotine	L4	0.2
Serotine	L5	0.2
Brown long-eared	L3	0.1
Brown long-eared	L4	0.1
Brown long-eared	L5	0.1
Myotis	L3	0.1
Myotis	L4	0.3
Myotis	L5	0.3
Greater horseshoe	L3	0.2
Greater horseshoe	L4	0.2
Greater horseshoe	L5	0.1
Lesser horseshoe	L3	0.1
Lesser horseshoe	L4	0.2
Lesser horseshoe	L5	0.1

Per Detector

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.


Eptesicus serotinus
Myotis
Nyctalus leisleri
Nyctalus noctula
Pipistrellus pipistrellus
Pipistrellus pygmaeus
Nightly Pass Rate (passes/hr/night)
0
10
20
30
L3
L4
L5
Detector ID
Detector ID
L3
L4
L5


Plecotus auritus
Rhinolophus ferrumequinum
Rhinolophus hipposideros
Nightly Pass Rate (passes/hr/night)
30
20
10
0
L3
L4
L5
Detector ID
L3
L4
L5

Detector ID

Split by Month

Total Bat Passes per Detector each Month

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	Jul	Aug	Sep	Oct
Common pipistrelle	L3	65	203	181	143	0	0
Common pipistrelle	L4	77	672	324	575	15	5
Common pipistrelle	L5	97	247	174	217	0	0
Soprano pipistrelle	L3	3	9	3	0	0	0
Soprano pipistrelle	L4	1	40	6	60	5	7
Soprano pipistrelle	L5	16	9	15	27	0	0
Noctule	L3	0	0	1	0	0	0
Noctule	L4	0	1	0	1	0	0
Leisler's	L4	0	111	1	0	0	0
Leisler's	L5	1	2	1	1	0	0
Serotine	L3	0	1	1	0	0	0
Serotine	L4	0	3	3	0	0	0
Serotine	L5	1	1	3	0	0	0
Brown long-eared	L3	2	0	0	0	0	0
Brown long-eared	L4	1	0	0	0	0	0
Brown long-eared	L5	3	0	4	2	0	0
Myotis	L3	2	3	5	1	0	0
Myotis	L4	0	2	0	24	2	0
Myotis	L5	0	1	9	18	0	0
Greater horseshoe	L3	2	1	3	0	0	0
Greater horseshoe	L4	0	0	6	2	0	0
Greater horseshoe	L5	2	1	4	0	0	0
Lesser horseshoe	L3	1	0	0	0	0	0
Lesser horseshoe	L4	0	2	1	2	0	0
Lesser horseshoe	L5	0	1	1	0	0	0

Survey Effort

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

month	Detector ID	No. of Survey Nights
May	L3	9
May	L4	14
May	L5	13
Jun	L3	11
Jun	L4	11
Jun	L5	11
Jul	L3	12
Jul	L4	12
Jul	L5	12
Aug	L3	5
Aug	L4	11
Aug	L5	10
Sep	L4	6
Oct	L4	5

Nightly Bat Passes 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	Jul	Aug	Sep	Oct
Common pipistrelle	L3	0.7	0.9	0.8	1.1	NA	NA
Common pipistrelle	L4	0.5	8.0	2.4	1.6	0.1	0.2
Common pipistrelle	L5	0.5	1.9	1.1	0.9	NA	NA
Soprano pipistrelle	L3	0.2	0.3	0.2	NA	NA	NA
Soprano pipistrelle	L4	0.1	0.5	0.1	0.3	0.1	0.1
Soprano pipistrelle	L5	0.2	0.3	0.3	0.4	NA	NA
Noctule	L3	NA	NA	0.1	NA	NA	NA
Noctule	L4	NA	0.1	NA	0.1	NA	NA
Leisler's	L4	NA	7.5	0.1	NA	NA	NA
Leisler's	L5	0.1	0.3	0.1	0.1	NA	NA
Serotine	L3	NA	0.1	0.1	NA	NA	NA
Serotine	L4	NA	0.2	0.1	NA	NA	NA
Serotine	L5	0.1	0.1	0.2	NA	NA	NA
Brown long-eared	L3	0.1	NA	NA	NA	NA	NA
Brown long-eared	L4	0.1	NA	NA	NA	NA	NA
Brown long-eared	L5	0.1	NA	0.1	0.1	NA	NA
Myotis	L3	0.1	0.1	0.1	0.1	NA	NA
Myotis	L4	NA	0.1	NA	0.5	0.1	NA
Myotis	L5	NA	0.1	0.1	0.3	NA	NA
Greater horseshoe	L3	0.1	0.1	0.2	NA	NA	NA
Greater horseshoe	L4	NA	NA	0.4	0.1	NA	NA
Greater horseshoe	L5	0.1	0.1	0.1	NA	NA	NA
Lesser horseshoe	L3	0.1	NA	NA	NA	NA	NA
Lesser horseshoe	L4	NA	0.1	0.1	0.2	NA	NA
Lesser horseshoe	L5	NA	0.1	0.1	NA	NA	NA

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.

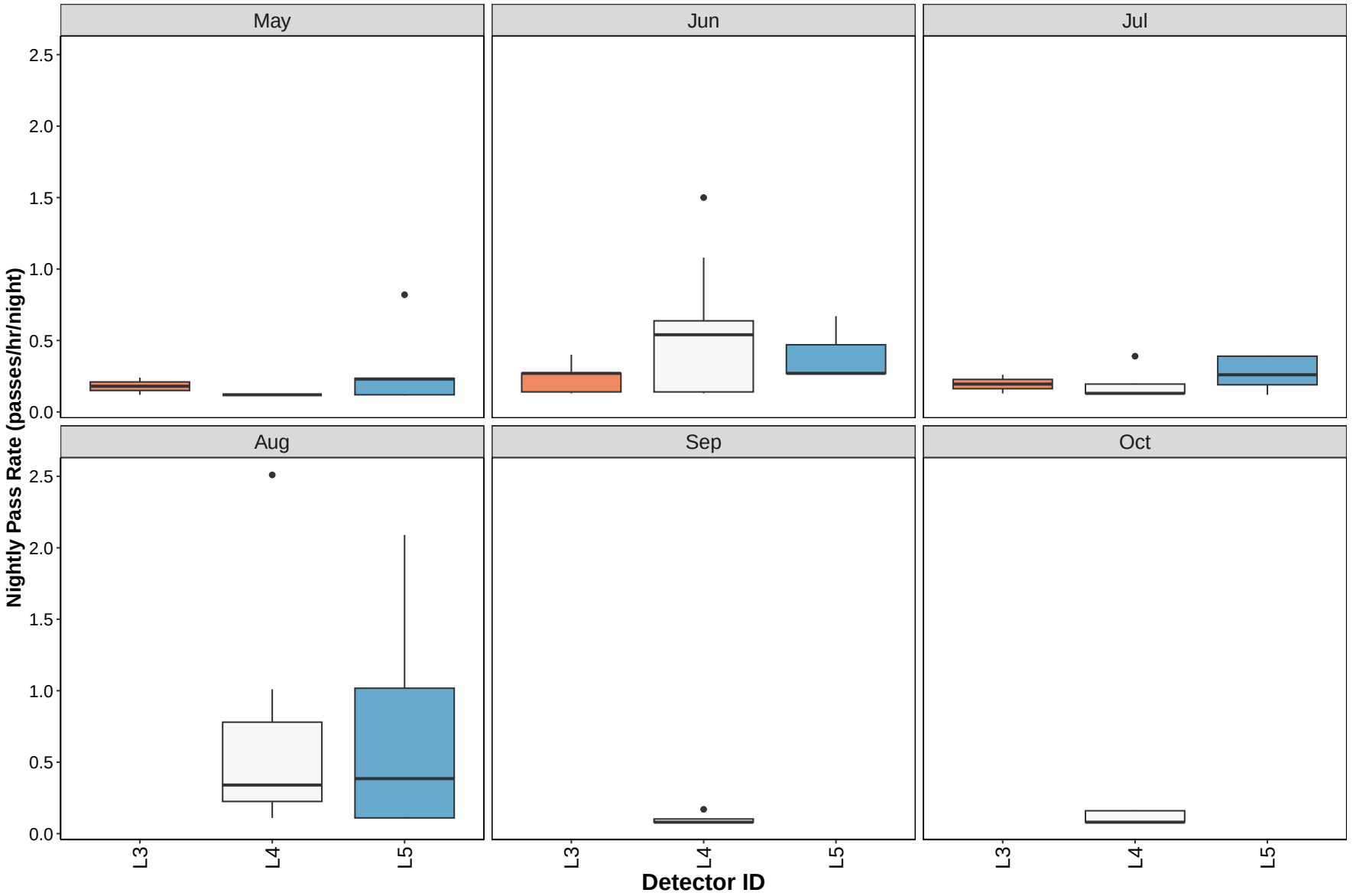
We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

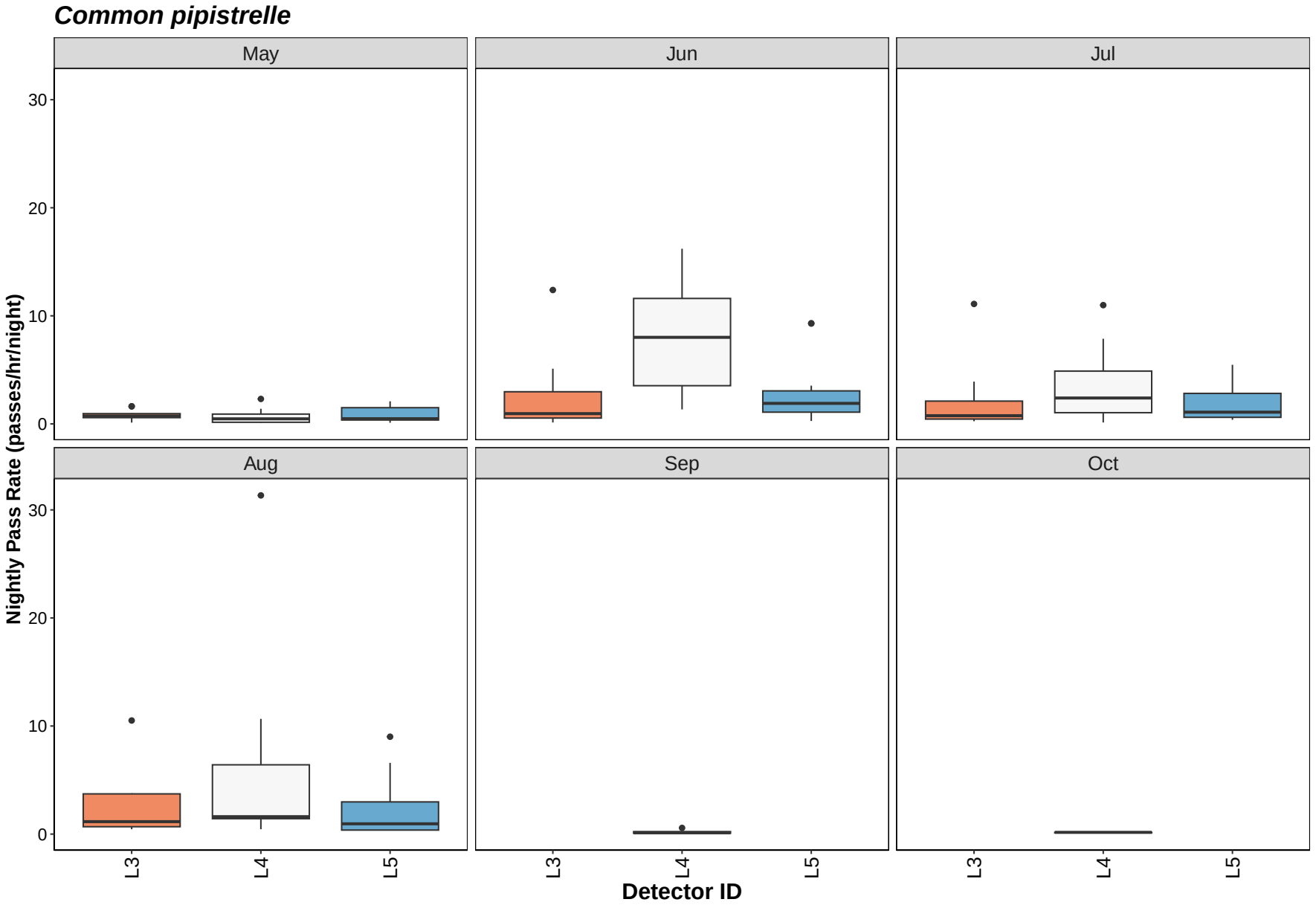
Species	Detector ID	May	Jun	Jul	Aug	Sep	Oct
Common pipistrelle	L3	0.9	2.5	2.1	3.3	NA	NA
Common pipistrelle	L4	0.6	8.3	3.5	5.8	0.2	0.1
Common pipistrelle	L5	0.9	3.0	1.9	2.4	NA	NA
Soprano pipistrelle	L3	0.2	0.2	0.2	NA	NA	NA
Soprano pipistrelle	L4	0.1	0.5	0.2	0.6	0.1	0.1
Soprano pipistrelle	L5	0.3	0.4	0.3	0.7	NA	NA
Noctule	L3	NA	NA	0.1	NA	NA	NA
Noctule	L4	NA	0.1	NA	0.1	NA	NA
Leisler's	L4	NA	7.5	0.1	NA	NA	NA
Leisler's	L5	0.1	0.3	0.1	0.1	NA	NA
Serotine	L3	NA	0.1	0.1	NA	NA	NA
Serotine	L4	NA	0.2	0.1	NA	NA	NA
Serotine	L5	0.1	0.1	0.2	NA	NA	NA
Brown long-eared	L3	0.1	NA	NA	NA	NA	NA
Brown long-eared	L4	0.1	NA	NA	NA	NA	NA
Brown long-eared	L5	0.1	NA	0.2	0.1	NA	NA
Myotis	L3	0.1	0.1	0.1	0.1	NA	NA
Myotis	L4	NA	0.1	NA	0.4	0.1	NA
Myotis	L5	NA	0.1	0.2	0.3	NA	NA
Greater horseshoe	L3	0.1	0.1	0.2	NA	NA	NA
Greater horseshoe	L4	NA	NA	0.4	0.1	NA	NA
Greater horseshoe	L5	0.1	0.1	0.2	NA	NA	NA
Lesser horseshoe	L3	0.1	NA	NA	NA	NA	NA
Lesser horseshoe	L4	NA	0.1	0.1	0.2	NA	NA
Lesser horseshoe	L5	NA	0.1	0.1	NA	NA	NA

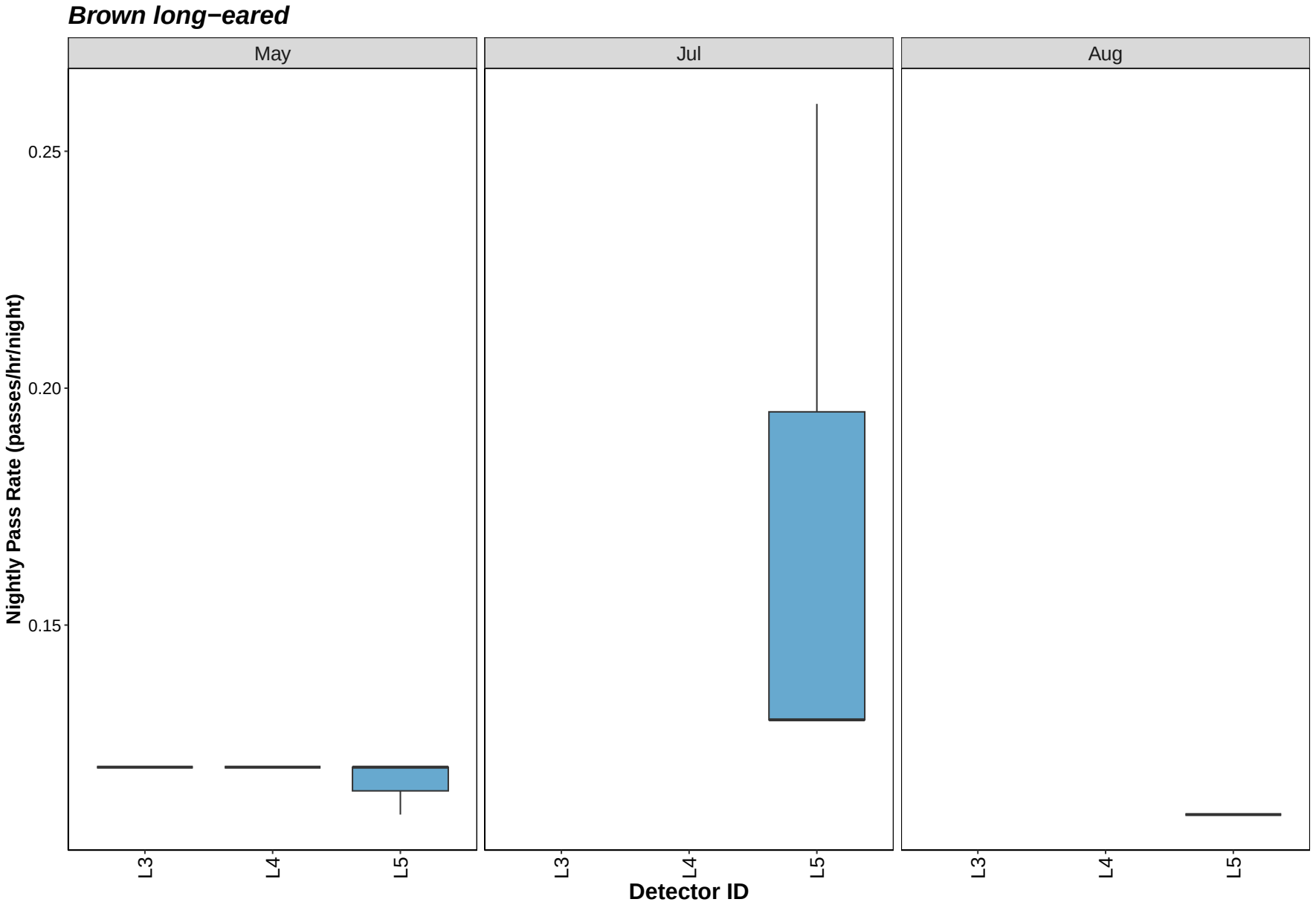
Per Detector

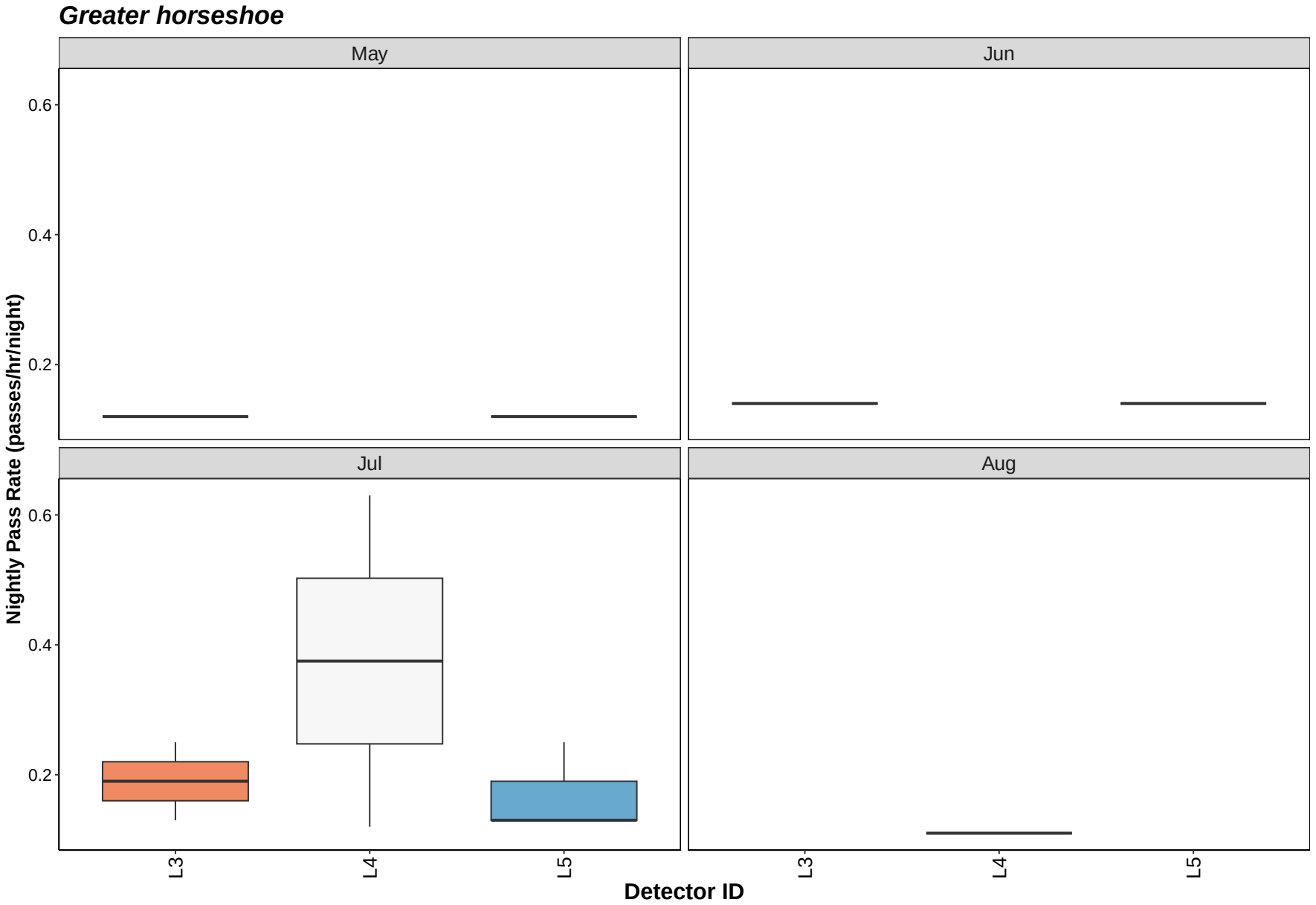
Figure 12. Figures show boxplots for the number of bat passes per hour by detector, for each month. The ‘box’ shows the interquartile range, which is where the middle 50% of the data lie. The line dividing the box is the median, the mid-point of the data. The ‘whiskers’ extend from the box and represent 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.

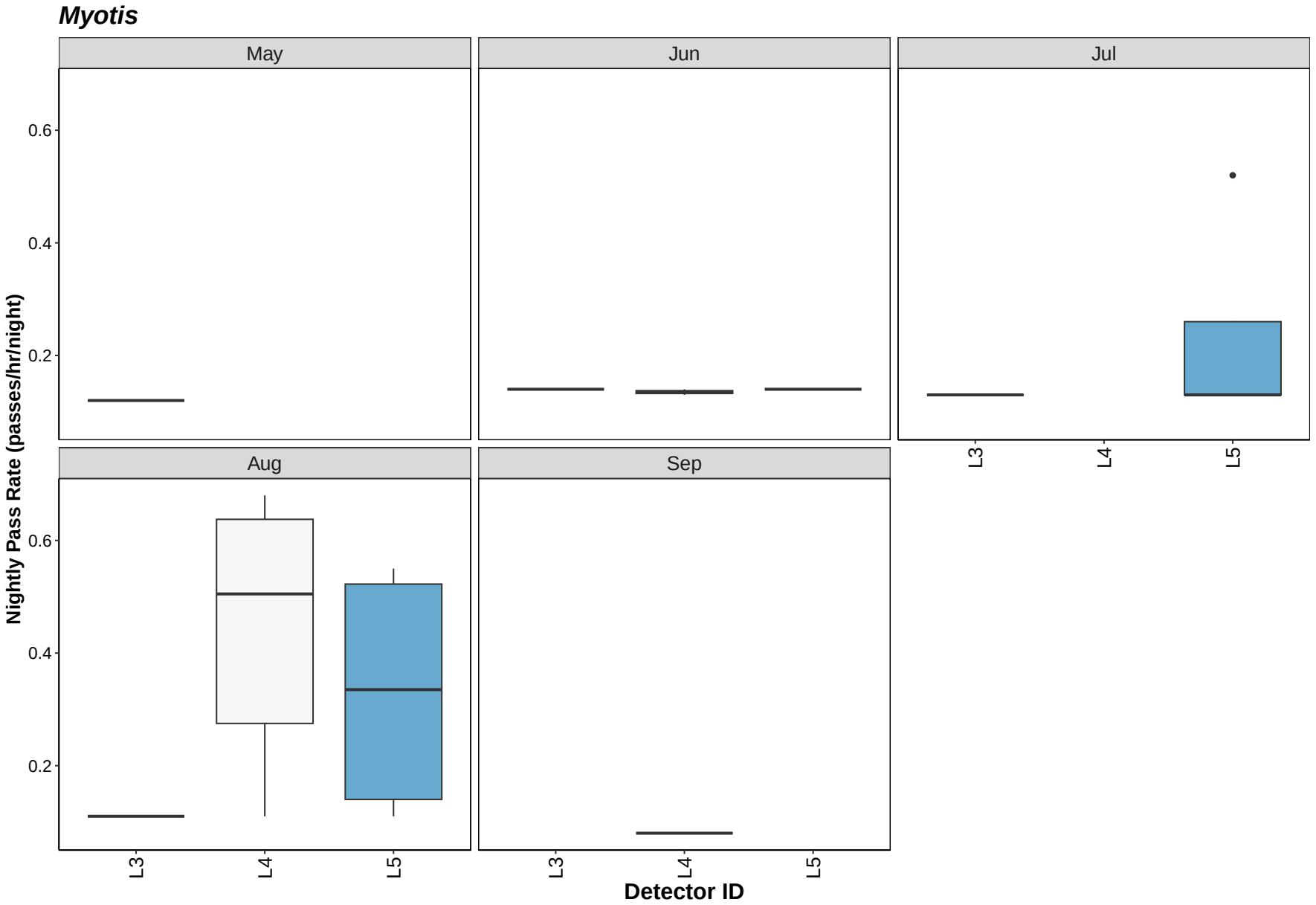
Soprano pipistrelle

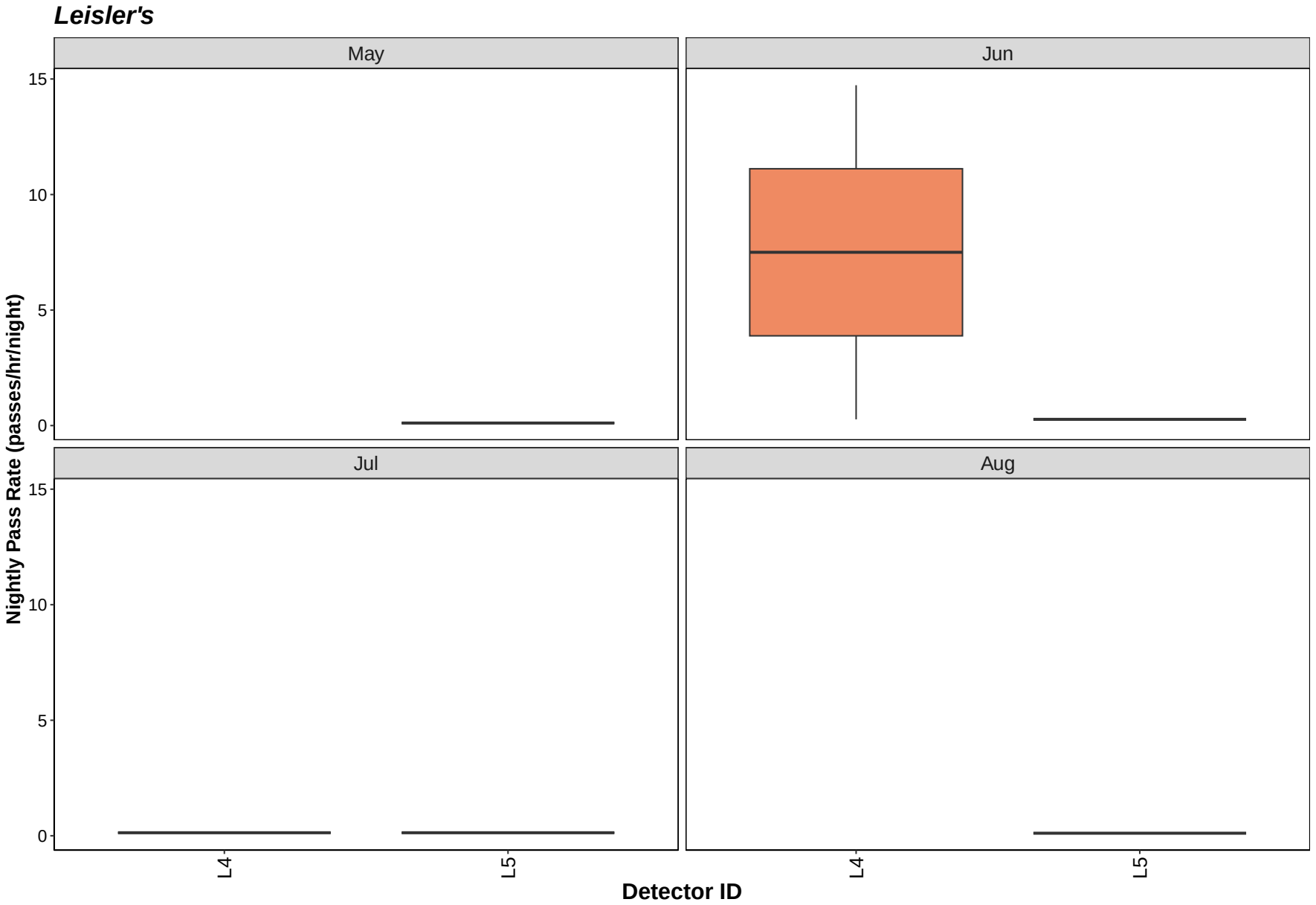


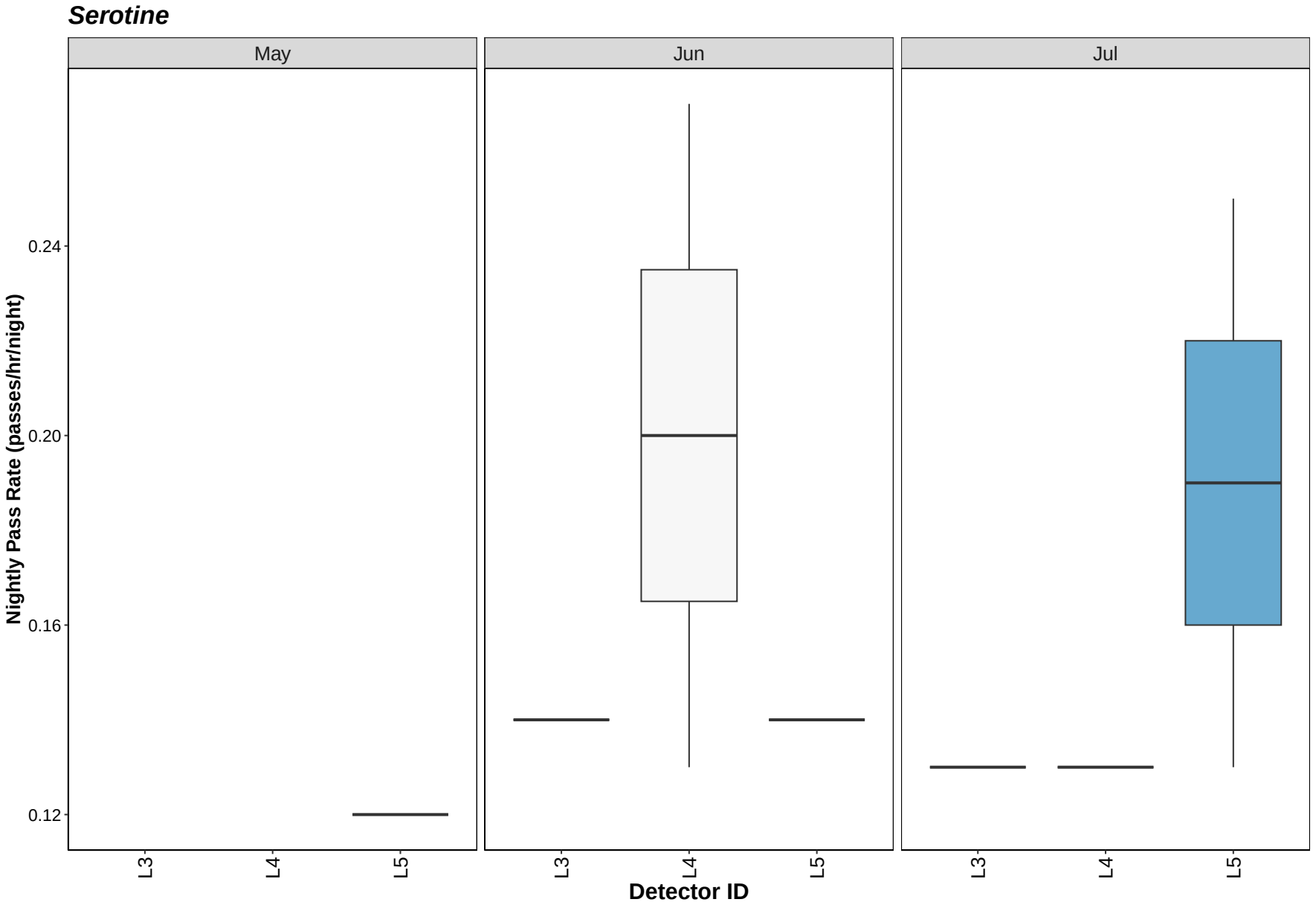

Common pipistrelle
May
Jun
Jul
Aug
Sep
Oct
Nightly Pass Rate (passes/hr/night)
0
10
20
30
L3
L4
L5
Detector ID


Brown long−eared
May
Jul
Aug
0.25
0.20
0.15
Nightly Pass Rate (passes/hr/night)
L3
L4
L5
Detector ID

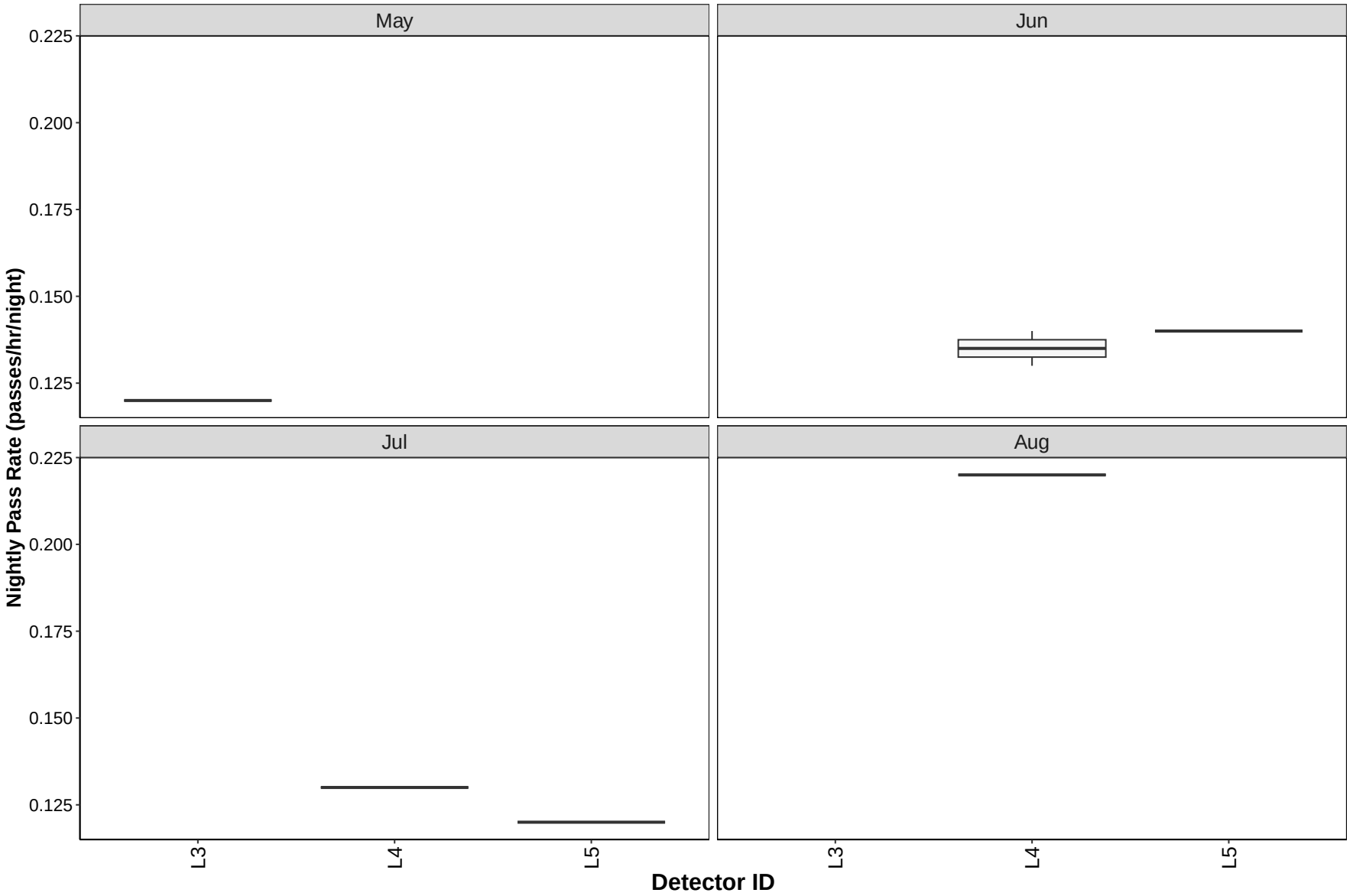

Greater horseshoe
May
Jun
Jul
Aug
Nightly Pass Rate (passes/hr/night)
0.6
0.4
0.2
L3
L4
L5
Detector ID

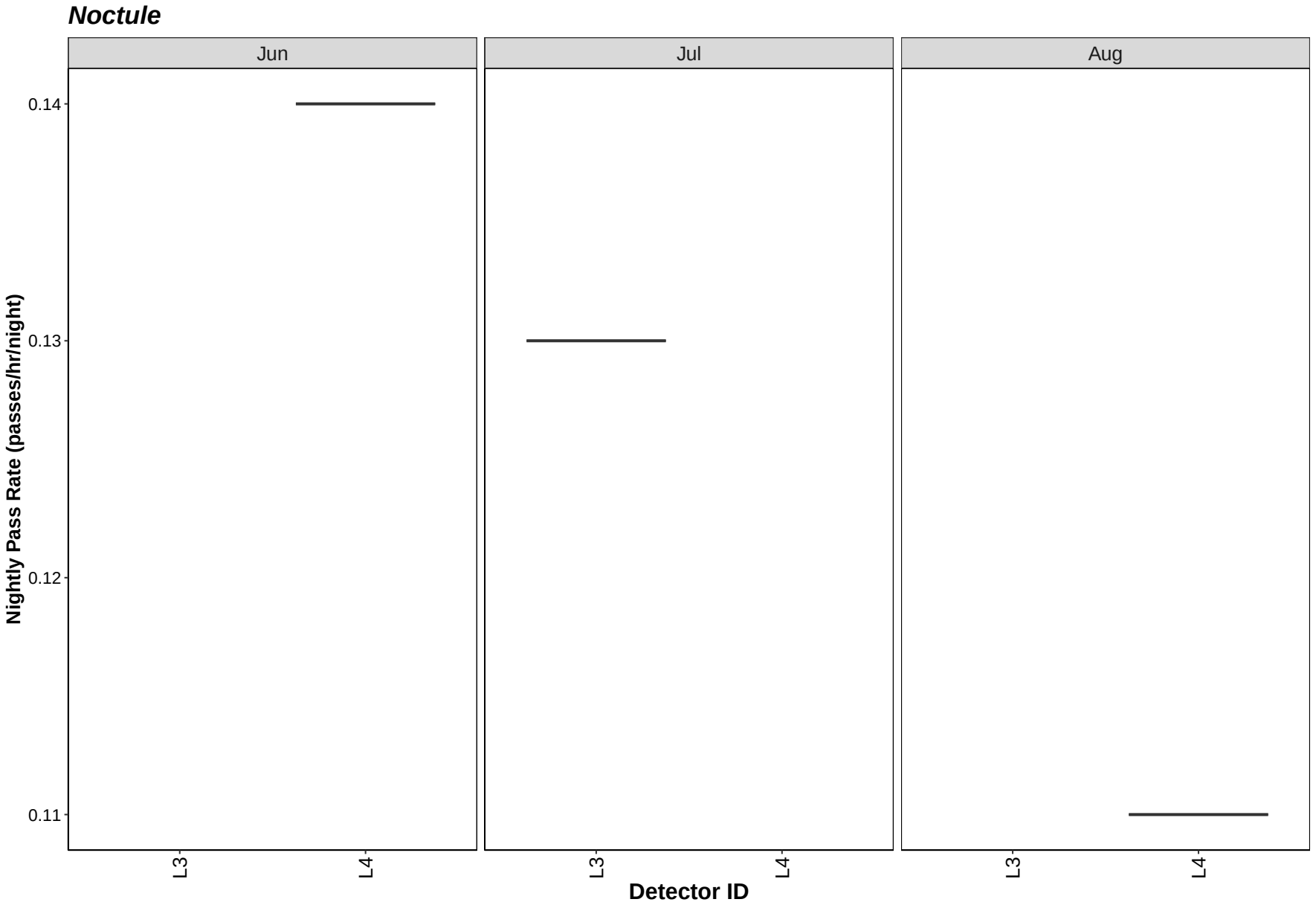

Myotis
May
Jun
Jul
Aug
Sep
Nightly Pass Rate (passes/hr/night)
0.6
0.4
0.2
L3
L4
L5
Detector ID


Leisler's
May
Jun
Jul
Aug
15
10
5
0
Nightly Pass Rate (passes/hr/night)
L4
L5
Detector ID


Serotine
May
Jun
Jul
Nightly Pass Rate (passes/hr/night)
0.24
0.20
0.16
0.12
L3
L4
L5
Detector ID

Lesser horseshoe




Noctule
Jun
Jul
Aug
0.14
0.13
0.12
0.11
Nightly Pass Rate (passes/hr/night)
L3
L4
Detector ID

Bat Activity per Detector Location

Figure 13. Detector ID reference:

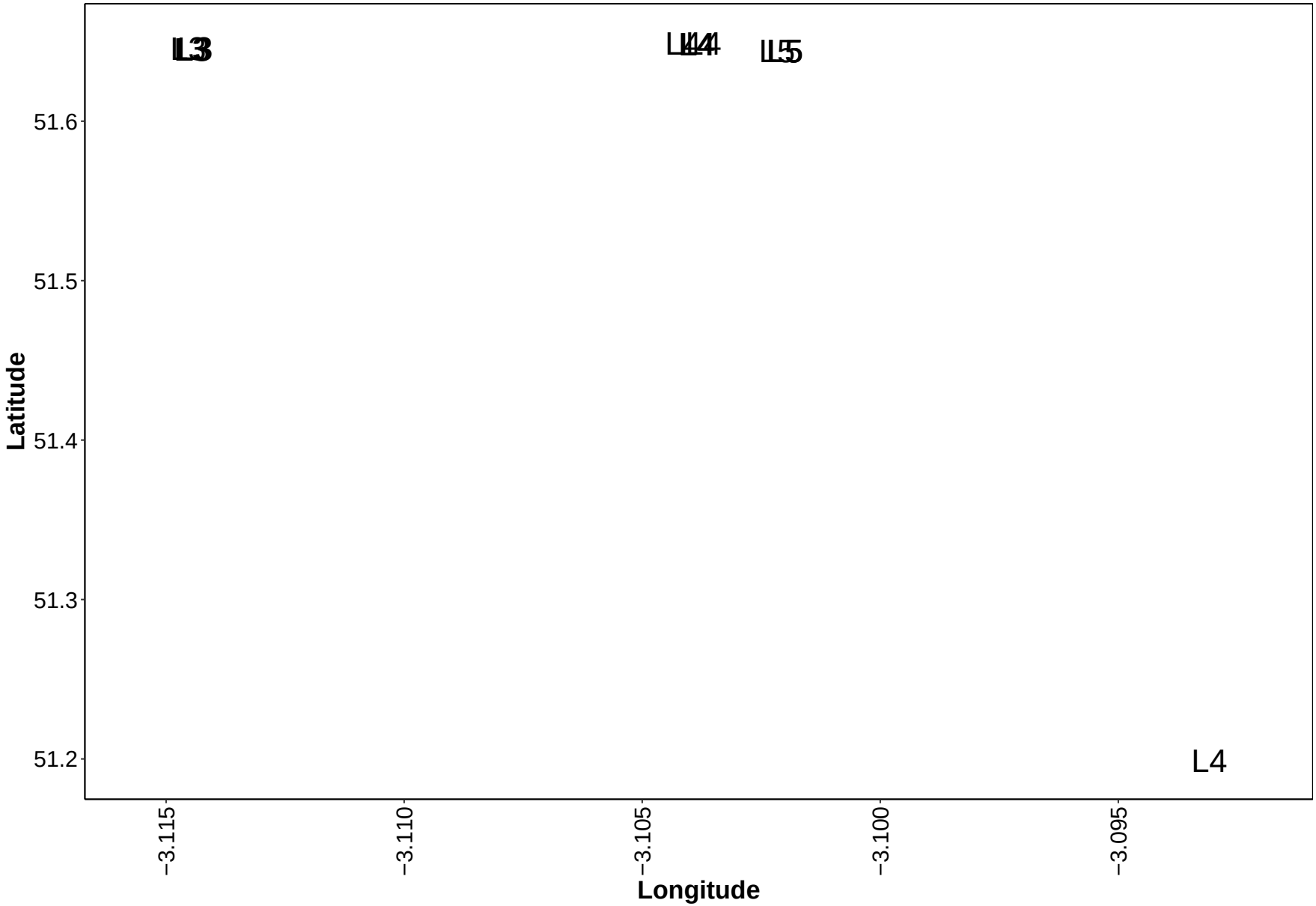
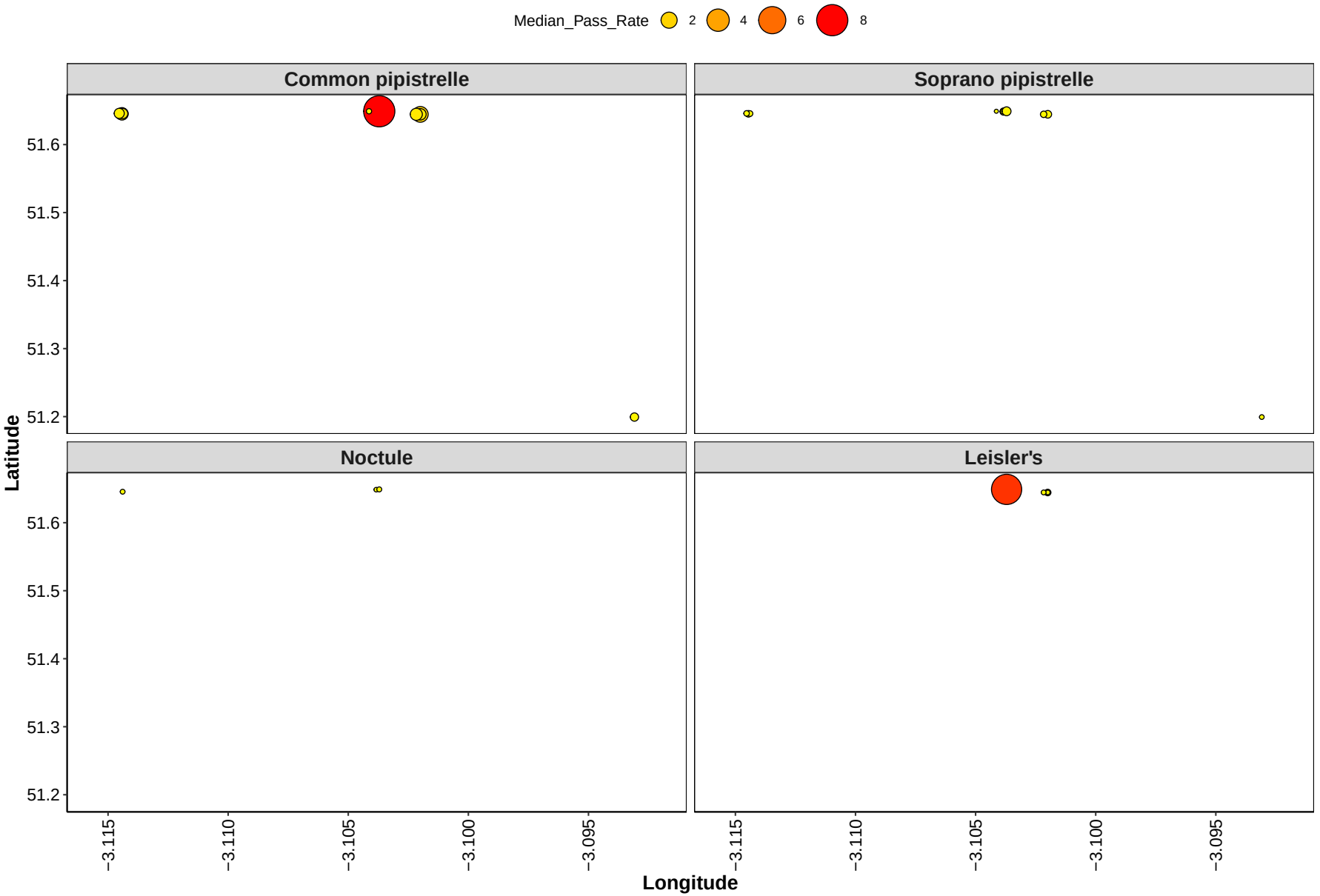

L3
L4
L5
51.6
51.5
51.4
51.3
51.2
Latitude
−3.115
−3.110
−3.105
−3.100
−3.095
Longitude

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.


Median_Pass_Rate
2
4
6
8
Common pipistrelle
Soprano pipistrelle
Noctule
Leisler's
Latitude
51.6
51.5
51.4
51.3
51.2
−3.115
−3.110
−3.105
−3.100
−3.095
Longitude

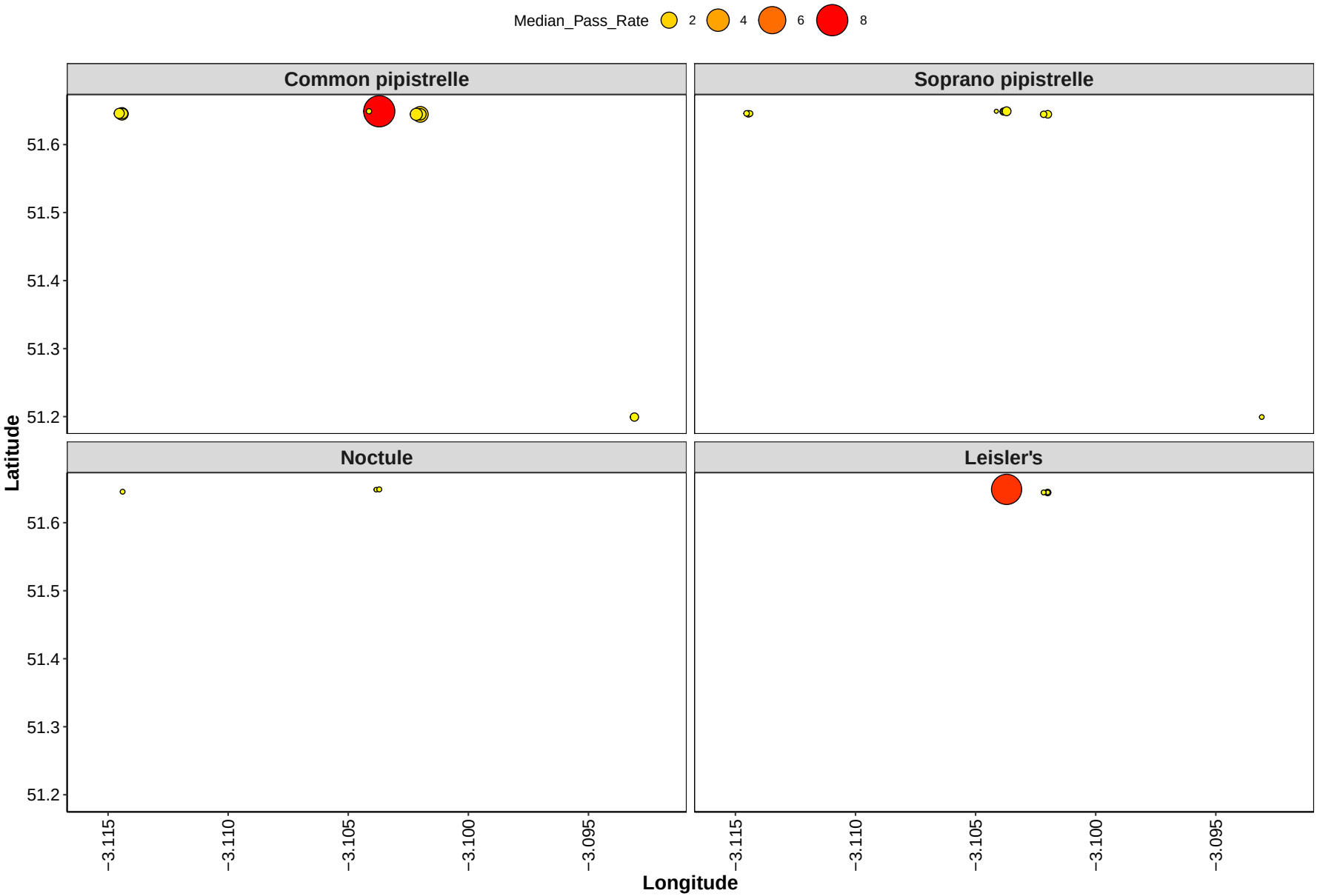
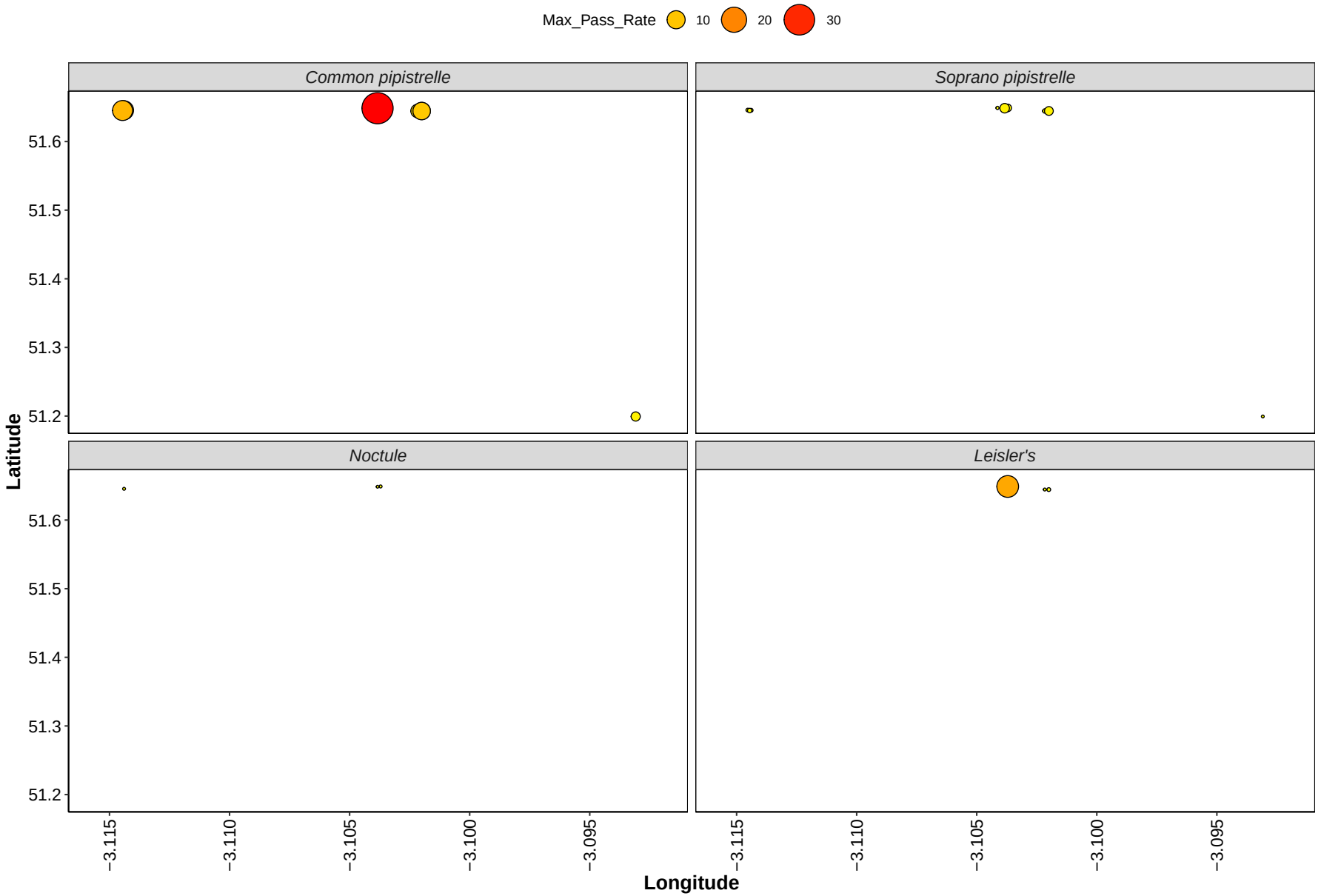
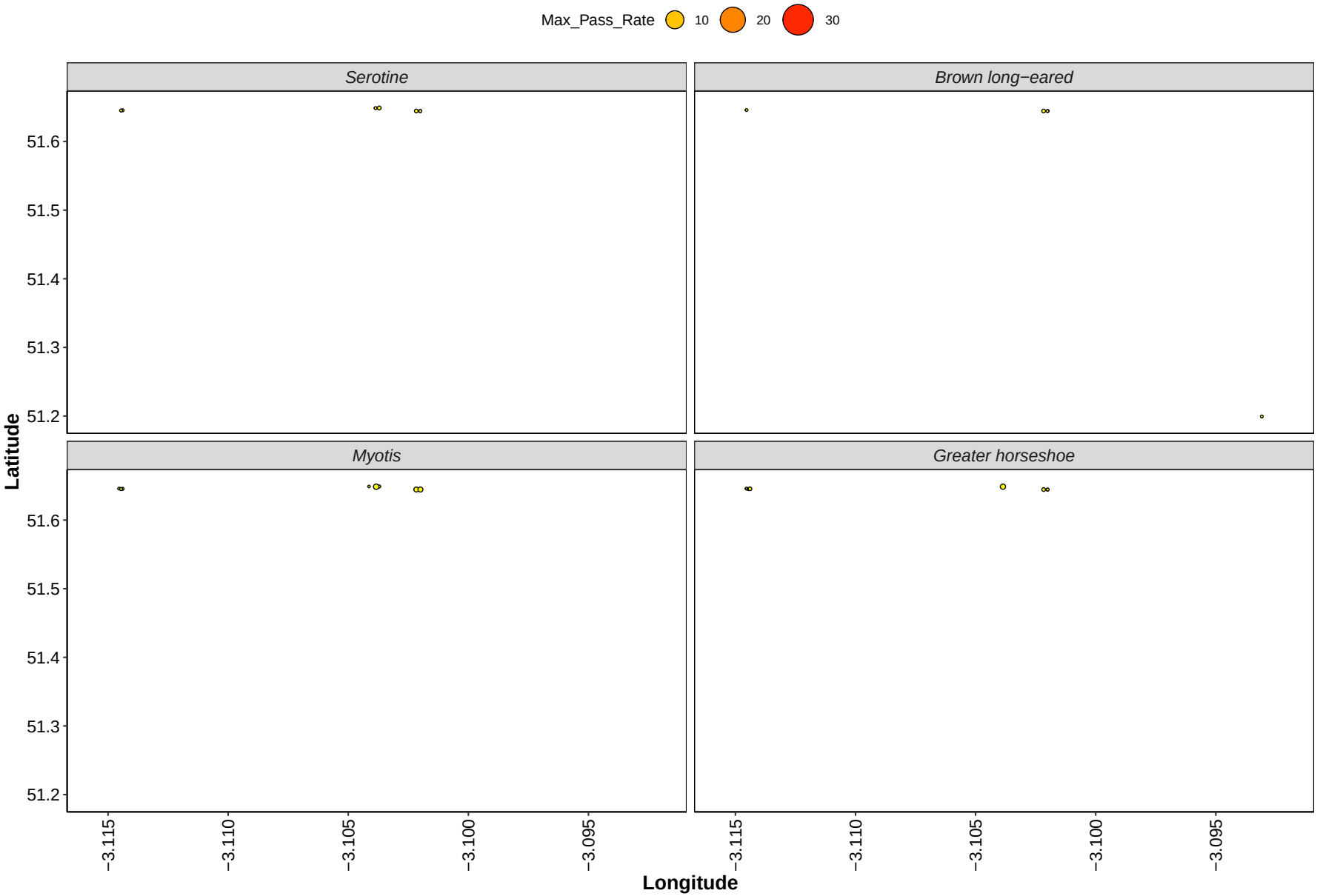

Median_Pass_Rate
2
4
6
8
Common pipistrelle
Soprano pipistrelle
Noctule
Leisler's
Latitude
51.6
51.5
51.4
51.3
51.2
−3.115
−3.110
−3.105
−3.100
−3.095
Longitude

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.


Max_Pass_Rate
10
20
30
Common pipistrelle
Soprano pipistrelle
Noctule
Leisler's
Latitude
51.6
51.5
51.4
51.3
51.2
−3.115
−3.110
−3.105
−3.100
−3.095
Longitude


Max_Pass_Rate
10
20
30
Serotine
Brown long−eared
Myotis
Greater horseshoe
Latitude
51.6
51.5
51.4
51.3
51.2
−3.115
−3.110
−3.105
−3.100
−3.095
Longitude

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

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	L3	0.0
Brown long-eared	L4	0.0
Brown long-eared	L5	0.0
Common pipistrelle	L3	0.8
Common pipistrelle	L4	1.3
Common pipistrelle	L5	1.2
Greater horseshoe	L3	0.0
Greater horseshoe	L4	0.0
Greater horseshoe	L5	0.0
Leisler's	L3	0.0
Leisler's	L4	0.0
Leisler's	L5	0.0
Lesser horseshoe	L3	0.0
Lesser horseshoe	L4	0.0
Lesser horseshoe	L5	0.0
Myotis	L3	0.0
Myotis	L4	0.0
Myotis	L5	0.0
Noctule	L3	0.0
Noctule	L4	0.0
Noctule	L5	0.0
Serotine	L3	0.0
Serotine	L4	0.0
Serotine	L5	0.0
Soprano pipistrelle	L3	0.0
Soprano pipistrelle	L4	0.1
Soprano pipistrelle	L5	0.0

Mean per Detector

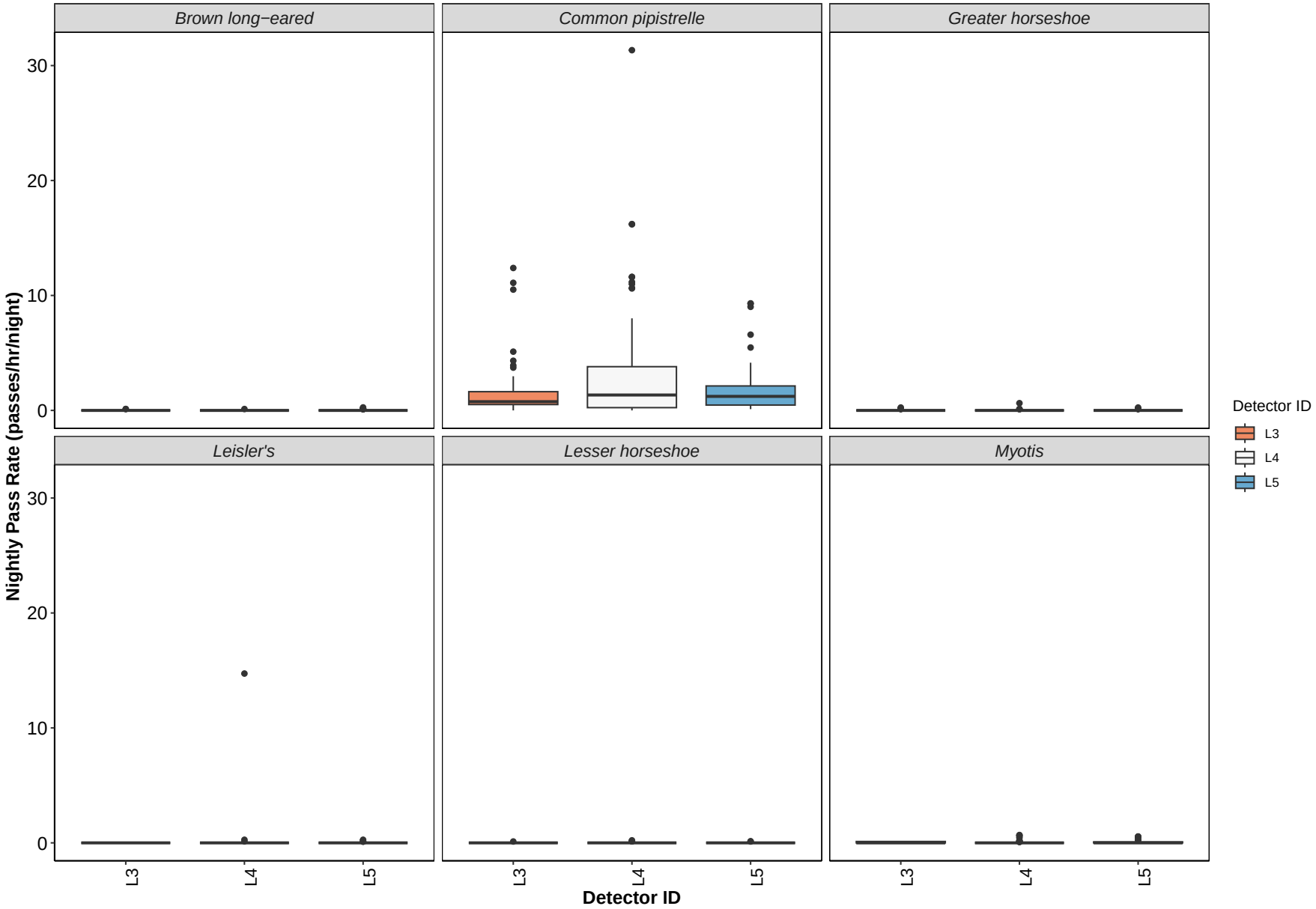
Table 23. The mean Nightly Pass Rate (bat passes per hour, per night) of each species at each detector. Values are given to 1 decimal place.

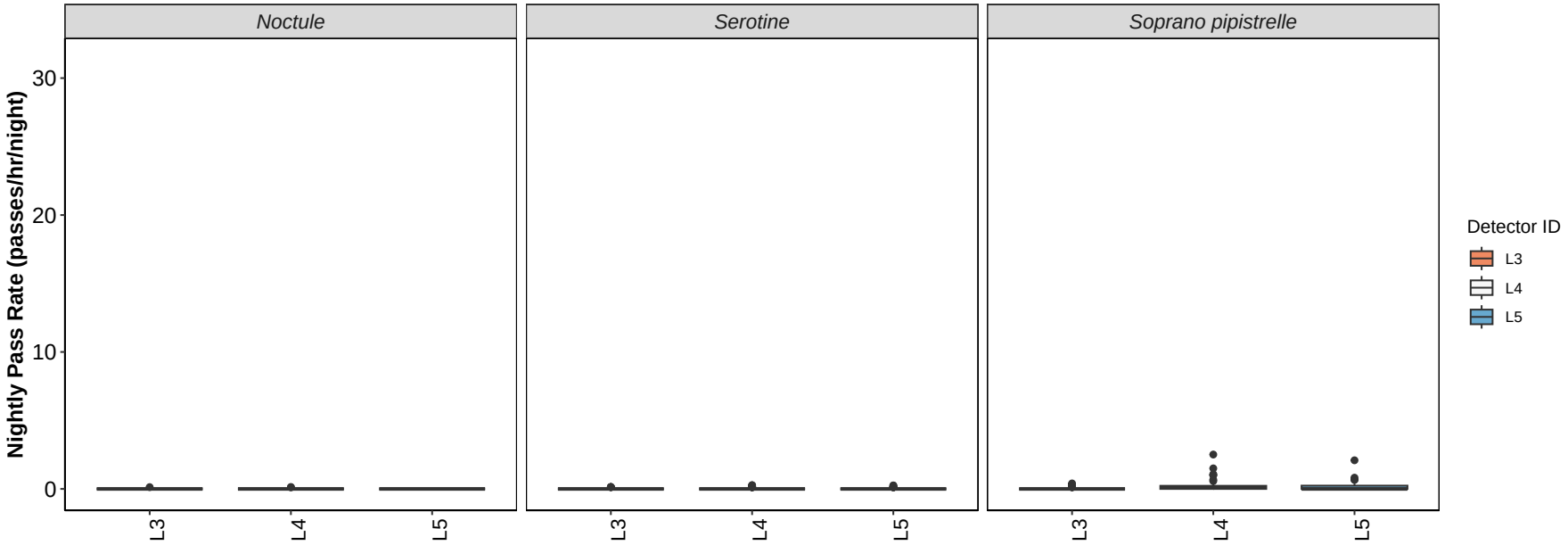
We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

Species	Detector ID	Mean Pass Rate
Brown long-eared	L3	0.0
Brown long-eared	L4	0.0
Brown long-eared	L5	0.0
Common pipistrelle	L3	2.0
Common pipistrelle	L4	3.5
Common pipistrelle	L5	2.0
Greater horseshoe	L3	0.0
Greater horseshoe	L4	0.0
Greater horseshoe	L5	0.0
Leisler's	L3	0.0
Leisler's	L4	0.3
Leisler's	L5	0.0
Lesser horseshoe	L3	0.0
Lesser horseshoe	L4	0.0
Lesser horseshoe	L5	0.0
Myotis	L3	0.0
Myotis	L4	0.1
Myotis	L5	0.1
Noctule	L3	0.0
Noctule	L4	0.0
Noctule	L5	0.0
Serotine	L3	0.0
Serotine	L4	0.0
Serotine	L5	0.0
Soprano pipistrelle	L3	0.1
Soprano pipistrelle	L4	0.2
Soprano pipistrelle	L5	0.2

Per Detector

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.


Brown long−eared
Common pipistrelle
Greater horseshoe
Leisler's
Lesser horseshoe
Myotis
Nightly Pass Rate (passes/hr/night)
0
10
20
30
L3
L4
L5
Detector ID
Detector ID
L3
L4
L5


Noctule
Serotine
Soprano pipistrelle
Nightly Pass Rate (passes/hr/night)
30
20
10
0
L3
L4
L5
Detector ID
L3
L4
L5
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	L3	9
May	L4	14
May	L5	13
Jun	L3	11
Jun	L4	11
Jun	L5	11
Jul	L3	12
Jul	L4	12
Jul	L5	12
Aug	L3	5
Aug	L4	11
Aug	L5	10
Sep	L4	6
Oct	L4	5

Nighlty 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	Aug	Jul	Jun	May	Oct	Sep
Brown long-eared	L3	0.0	0.0	0.0	0.0	NA	NA
Brown long-eared	L4	0.0	0.0	0.0	0.0	0.0	0.0
Brown long-eared	L5	0.0	0.0	0.0	0.0	NA	NA
Common pipistrelle	L3	1.1	0.7	0.9	0.7	NA	NA
Common pipistrelle	L4	1.6	2.4	8.0	0.5	0.1	0.1
Common pipistrelle	L5	0.9	1.1	1.9	0.5	NA	NA
Greater horseshoe	L3	0.0	0.0	0.0	0.0	NA	NA
Greater horseshoe	L4	0.0	0.0	0.0	0.0	0.0	0.0
Greater horseshoe	L5	0.0	0.0	0.0	0.0	NA	NA
Leisler's	L3	0.0	0.0	0.0	0.0	NA	NA
Leisler's	L4	0.0	0.0	0.0	0.0	0.0	0.0
Leisler's	L5	0.0	0.0	0.0	0.0	NA	NA
Lesser horseshoe	L3	0.0	0.0	0.0	0.0	NA	NA
Lesser horseshoe	L4	0.0	0.0	0.0	0.0	0.0	0.0
Lesser horseshoe	L5	0.0	0.0	0.0	0.0	NA	NA
Myotis	L3	0.0	0.0	0.0	0.0	NA	NA
Myotis	L4	0.1	0.0	0.0	0.0	0.0	0.0
Myotis	L5	0.1	0.0	0.0	0.0	NA	NA
Noctule	L3	0.0	0.0	0.0	0.0	NA	NA
Noctule	L4	0.0	0.0	0.0	0.0	0.0	0.0
Noctule	L5	0.0	0.0	0.0	0.0	NA	NA
Serotine	L3	0.0	0.0	0.0	0.0	NA	NA
Serotine	L4	0.0	0.0	0.0	0.0	0.0	0.0
Serotine	L5	0.0	0.0	0.0	0.0	NA	NA
Soprano pipistrelle	L3	0.0	0.0	0.0	0.0	NA	NA
Soprano pipistrelle	L4	0.3	0.0	0.5	0.0	0.1	0.1
Soprano pipistrelle	L5	0.0	0.1	0.0	0.1	NA	NA

Mean per Detector

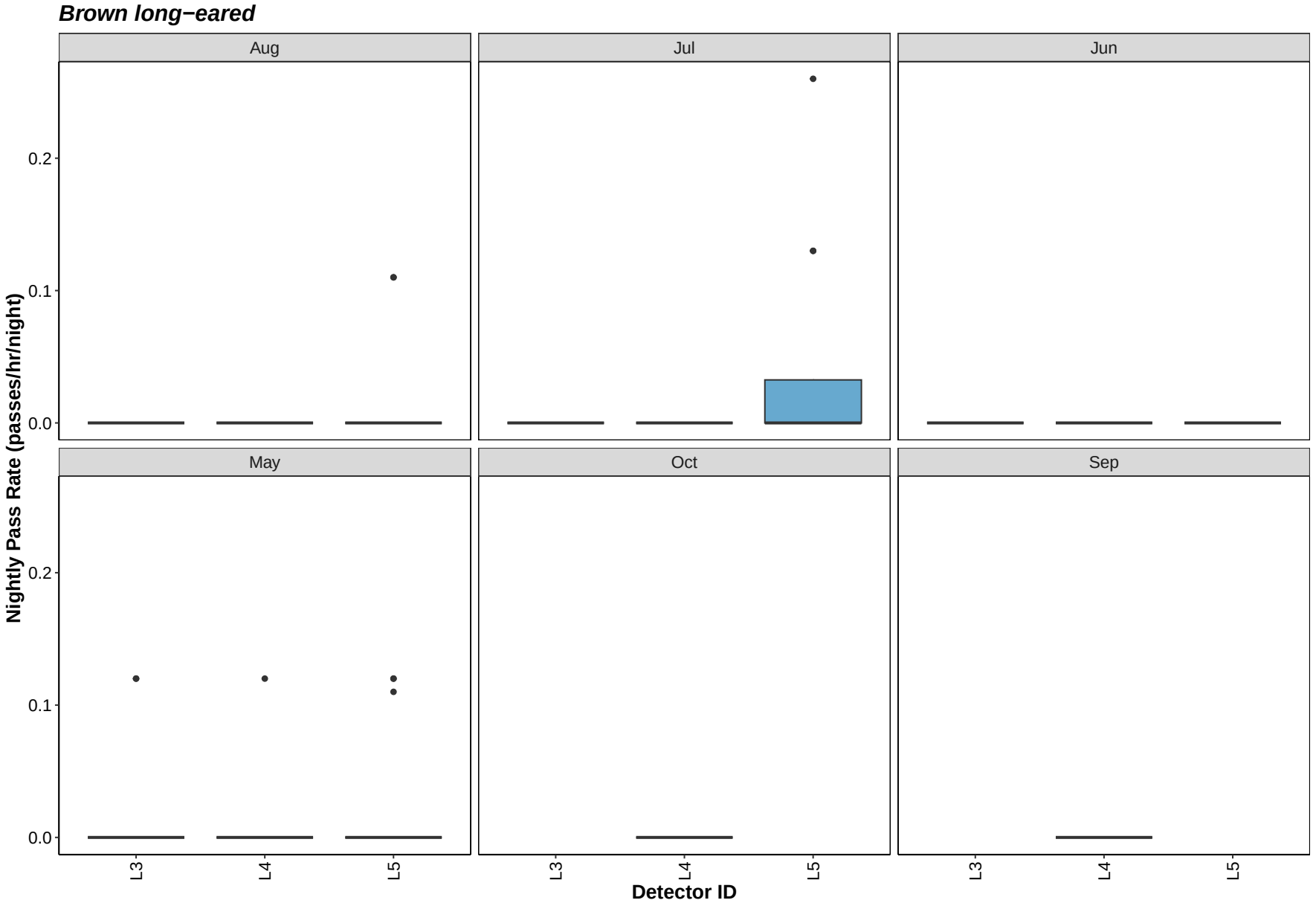
Table 26. The mean Nightly Pass Rate (bat passes per hour, per night) of each species throughout each month. Values are given to 1 decimal place.

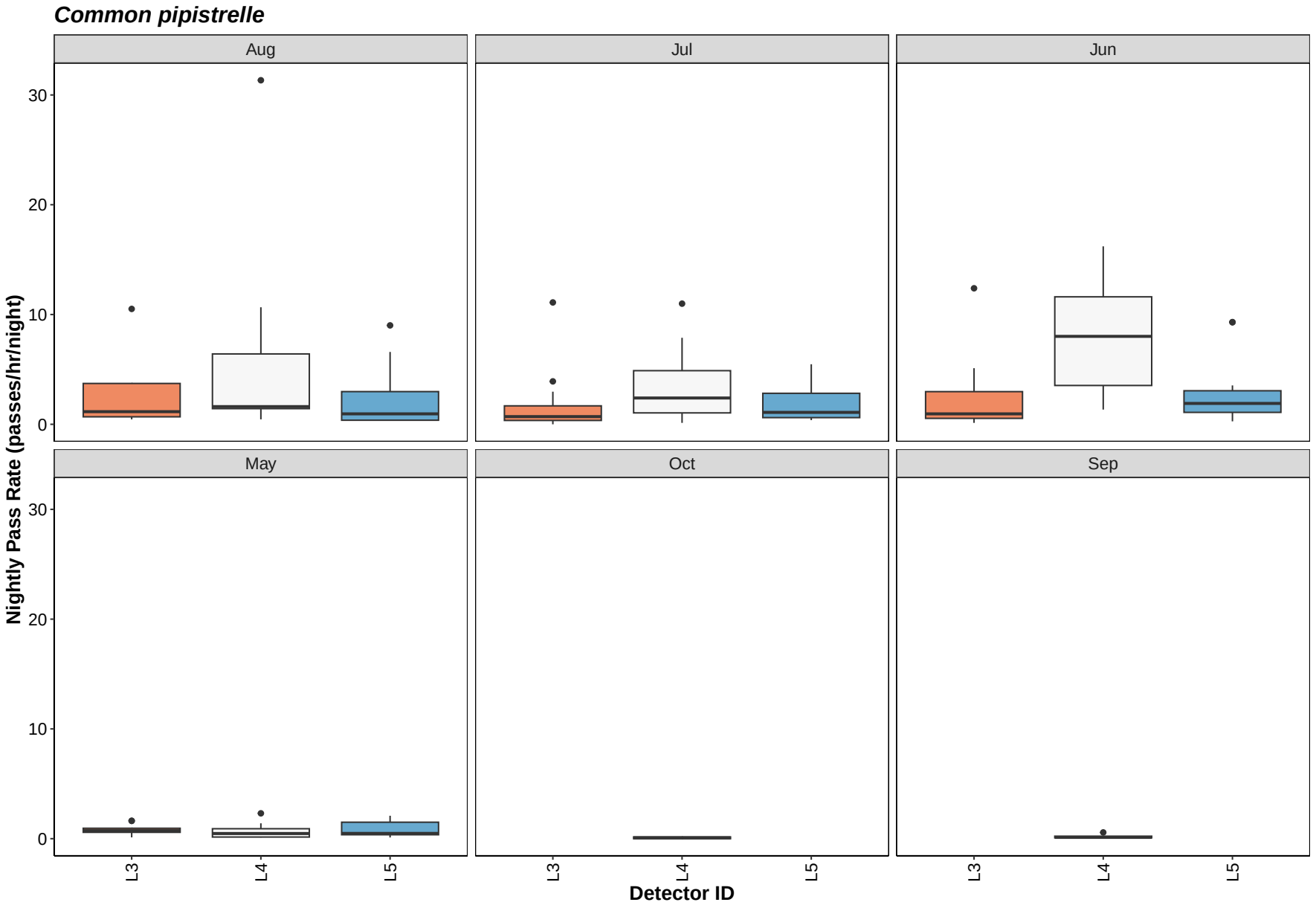
We recommend using the median values given above, for the reasons stated above, but provide the mean values in the table below.

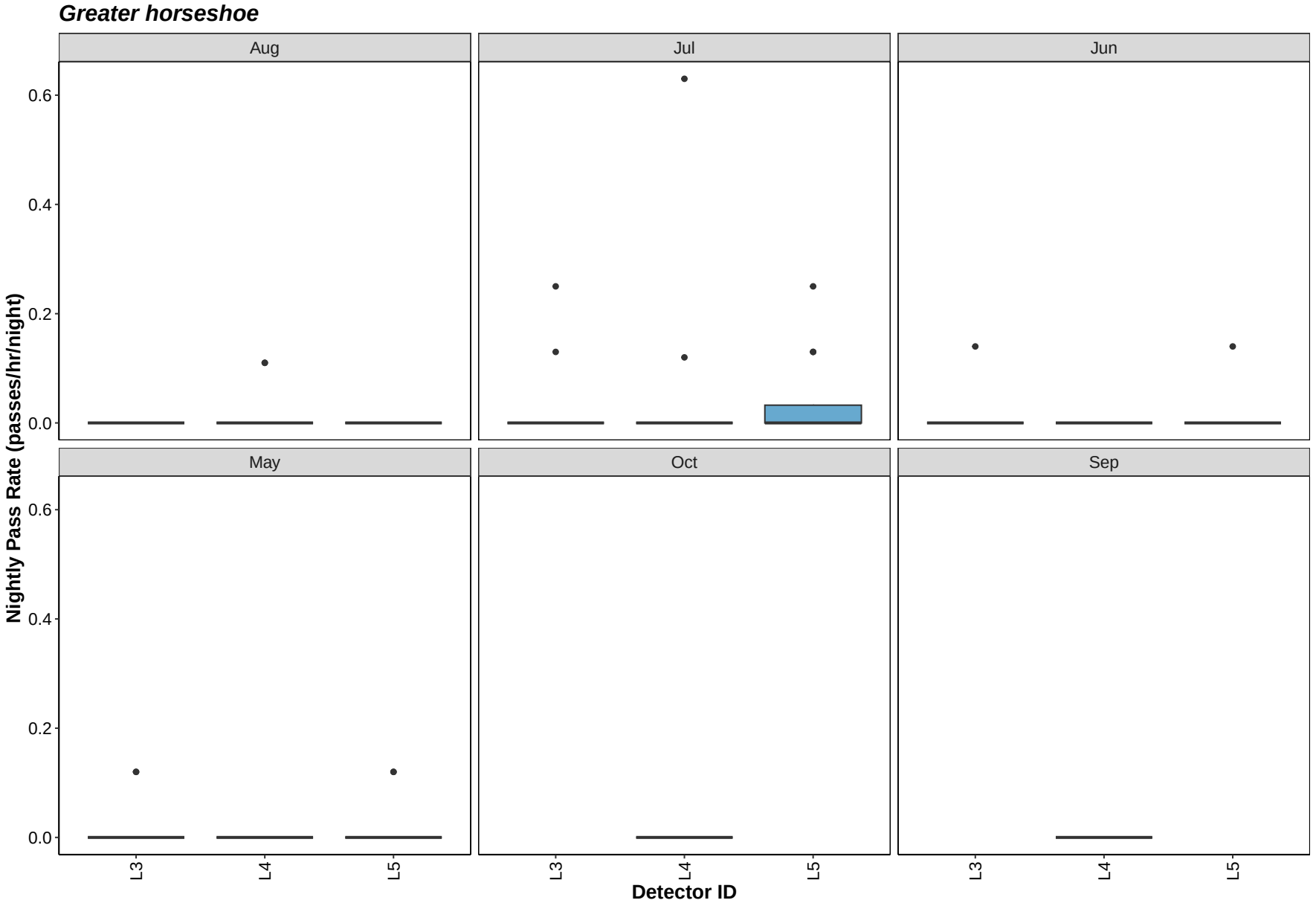
Species	Detector ID	Aug	Jul	Jun	May	Oct	Sep
Brown long-eared	L3	0.0	0.0	0.0	0.0	NA	NA
Brown long-eared	L4	0.0	0.0	0.0	0.0	0.0	0.0
Brown long-eared	L5	0.0	0.0	0.0	0.0	NA	NA
Common pipistrelle	L3	3.3	1.9	2.5	0.9	NA	NA
Common pipistrelle	L4	5.8	3.5	8.3	0.6	0.1	0.2
Common pipistrelle	L5	2.4	1.9	3.0	0.9	NA	NA
Greater horseshoe	L3	0.0	0.0	0.0	0.0	NA	NA
Greater horseshoe	L4	0.0	0.1	0.0	0.0	0.0	0.0
Greater horseshoe	L5	0.0	0.0	0.0	0.0	NA	NA
Leisler's	L3	0.0	0.0	0.0	0.0	NA	NA
Leisler's	L4	0.0	0.0	1.4	0.0	0.0	0.0
Leisler's	L5	0.0	0.0	0.0	0.0	NA	NA
Lesser horseshoe	L3	0.0	0.0	0.0	0.0	NA	NA
Lesser horseshoe	L4	0.0	0.0	0.0	0.0	0.0	0.0
Lesser horseshoe	L5	0.0	0.0	0.0	0.0	NA	NA
Myotis	L3	0.0	0.1	0.0	0.0	NA	NA
Myotis	L4	0.2	0.0	0.0	0.0	0.0	0.0
Myotis	L5	0.2	0.1	0.0	0.0	NA	NA
Noctule	L3	0.0	0.0	0.0	0.0	NA	NA
Noctule	L4	0.0	0.0	0.0	0.0	0.0	0.0
Noctule	L5	0.0	0.0	0.0	0.0	NA	NA
Serotine	L3	0.0	0.0	0.0	0.0	NA	NA
Serotine	L4	0.0	0.0	0.0	0.0	0.0	0.0
Serotine	L5	0.0	0.0	0.0	0.0	NA	NA
Soprano pipistrelle	L3	0.0	0.0	0.1	0.0	NA	NA
Soprano pipistrelle	L4	0.6	0.1	0.5	0.0	0.1	0.1
Soprano pipistrelle	L5	0.3	0.2	0.1	0.1	NA	NA

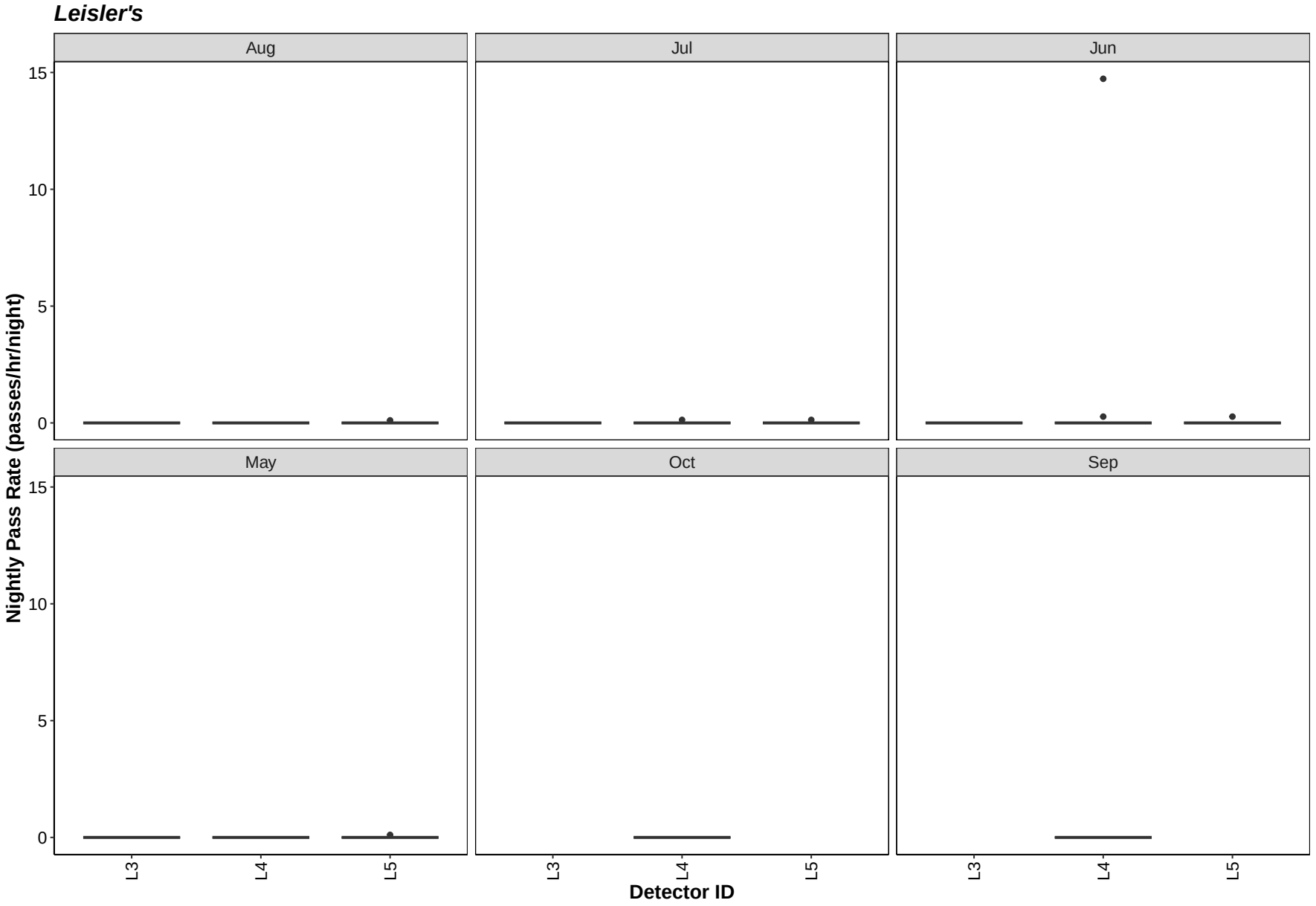
Per Detector

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.

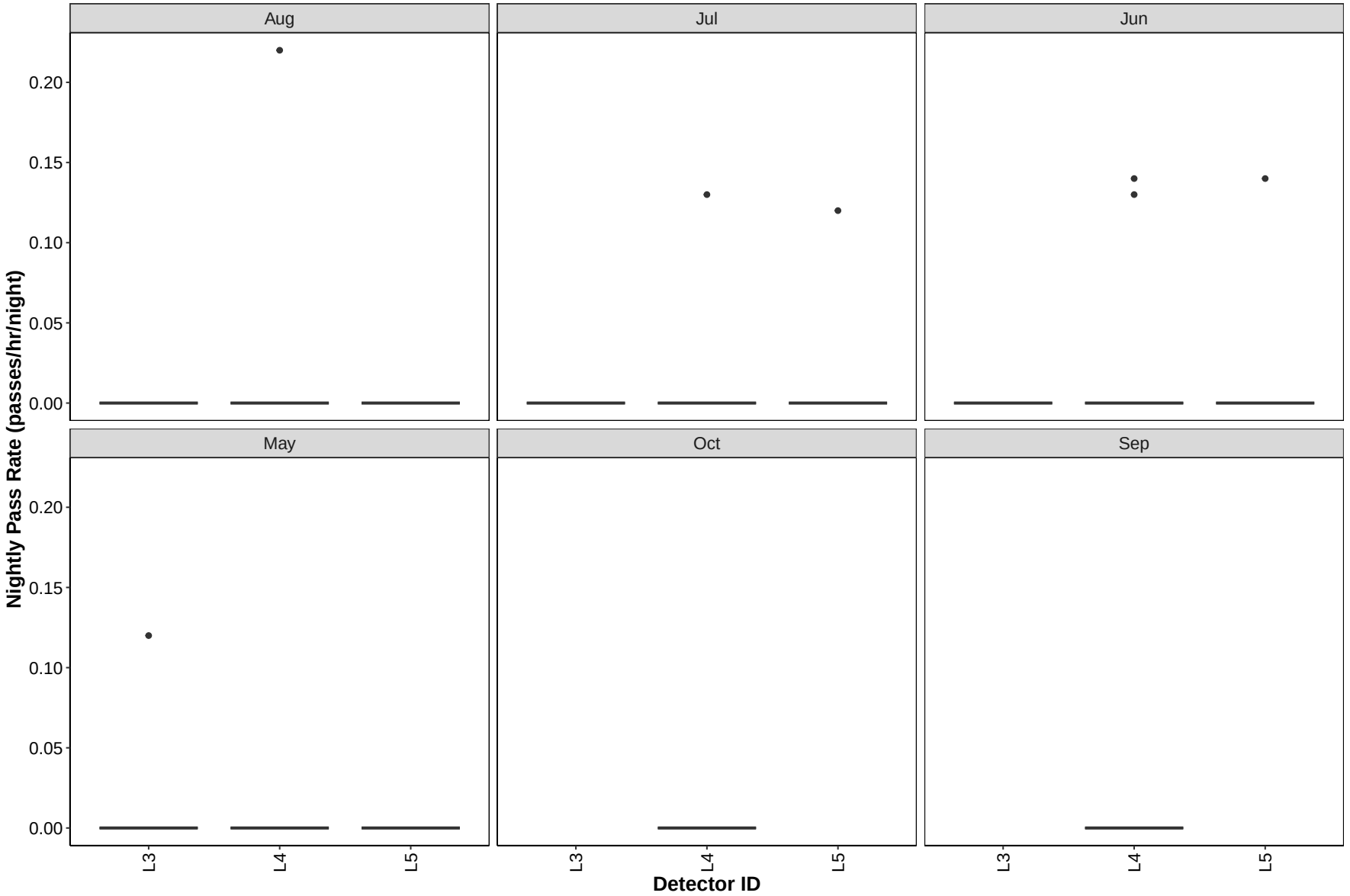

Brown long−eared
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0.0
0.1
0.2
L3
L4
L5
Detector ID

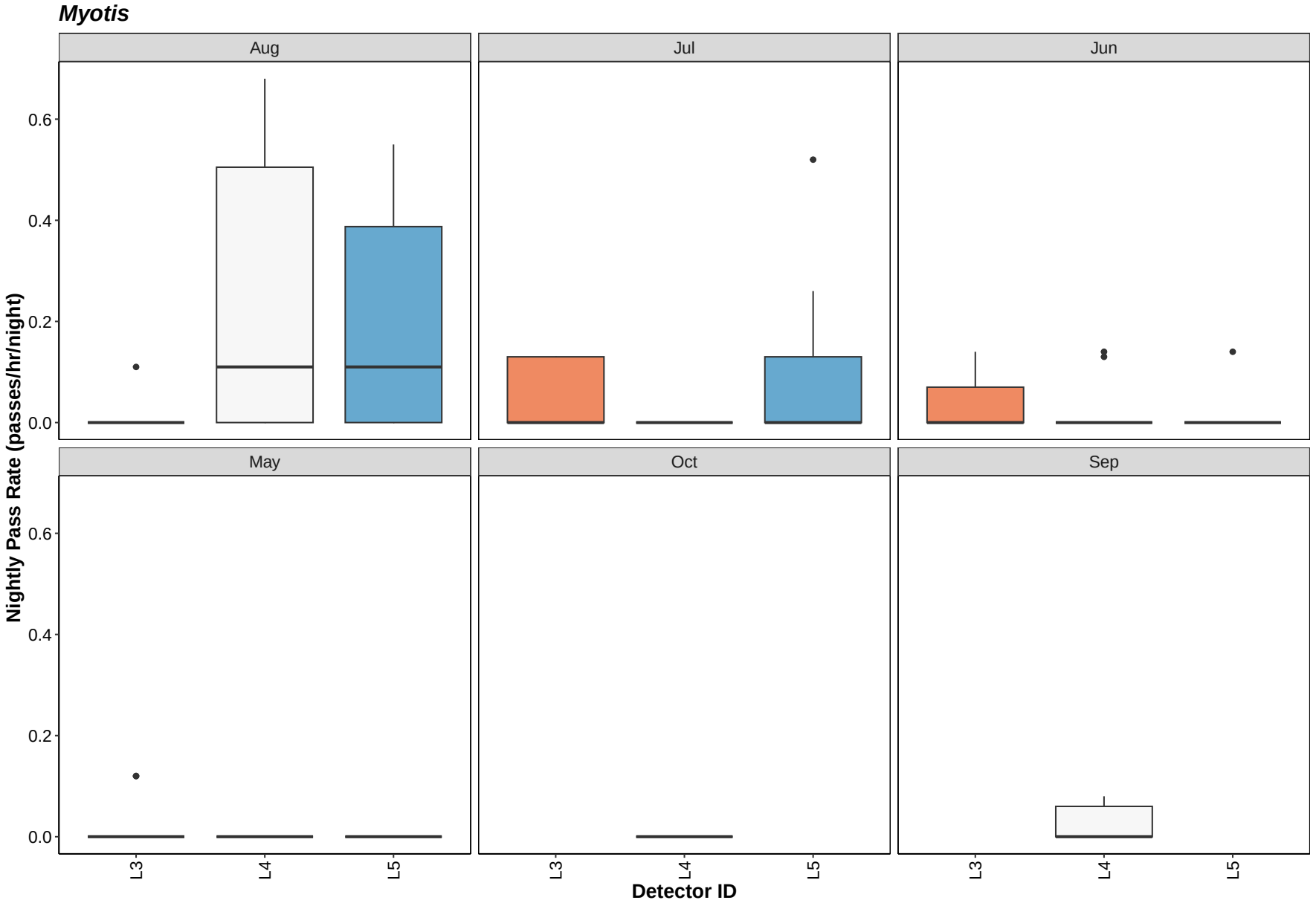

Common pipistrelle
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0
10
20
30
L3
L4
L5
Detector ID

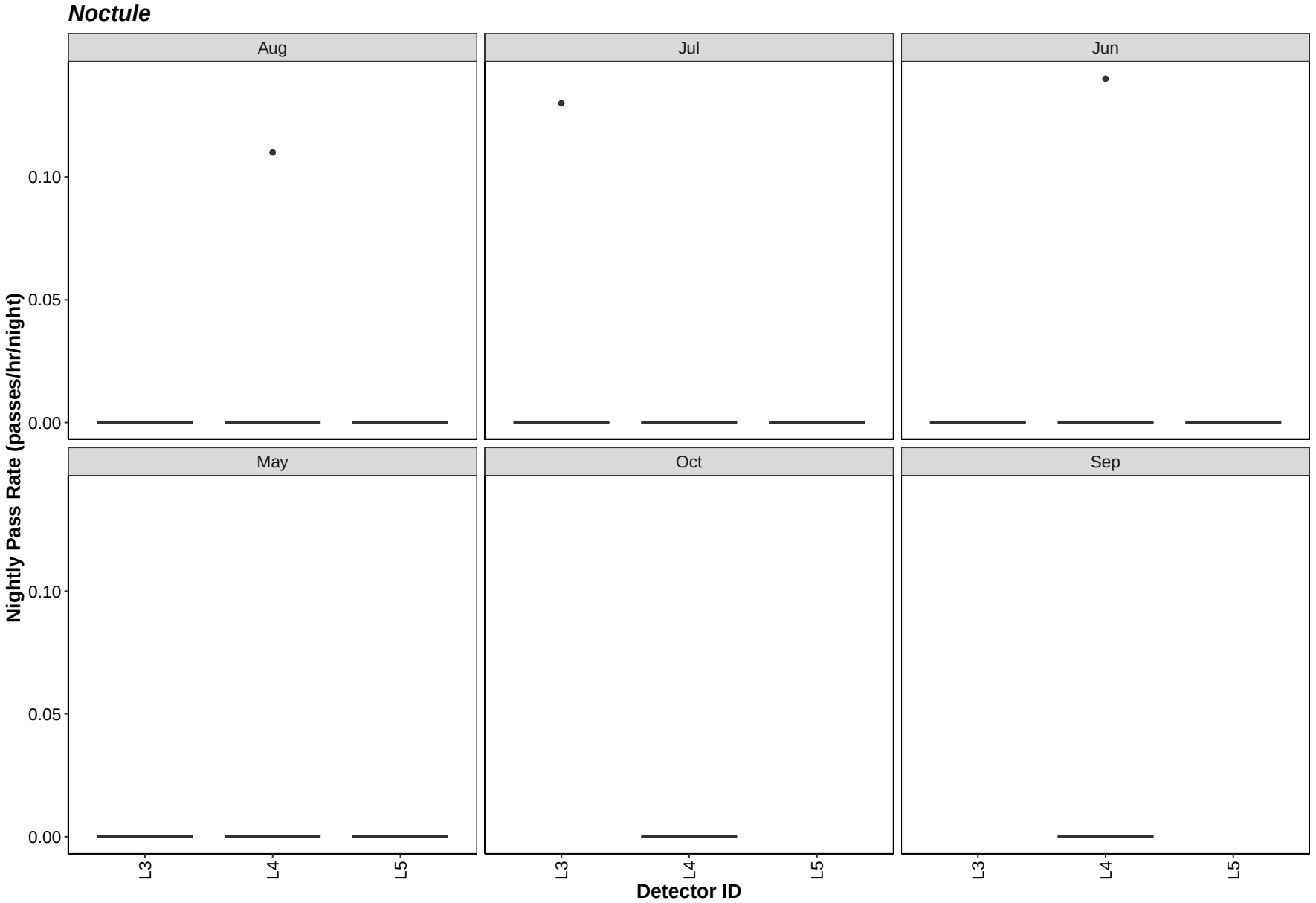

Greater horseshoe
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0.0
0.2
0.4
0.6
L3
L4
L5
Detector ID

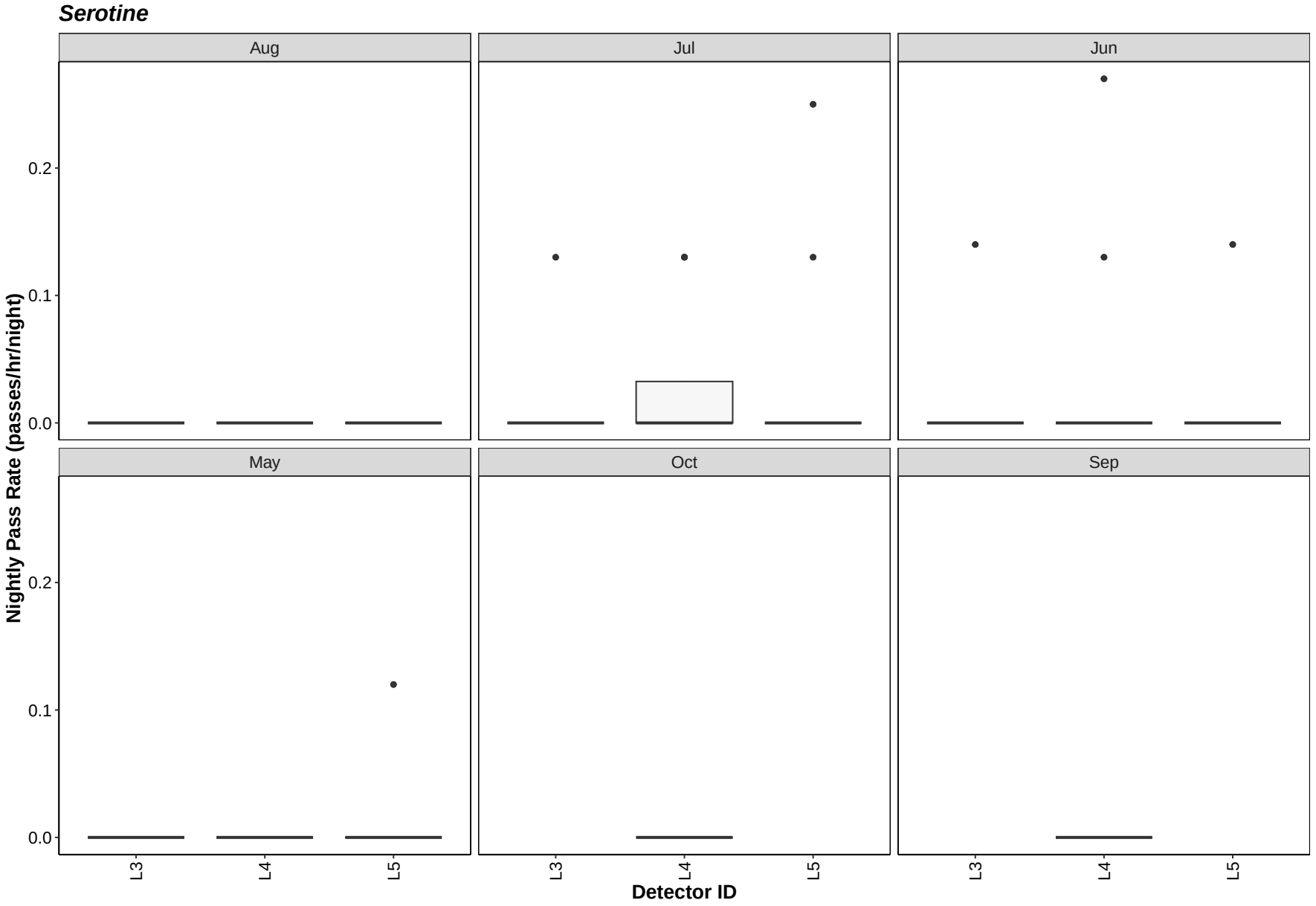

Leisler's
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0
5
10
15
L3
L4
L5
Detector ID

Lesser horseshoe

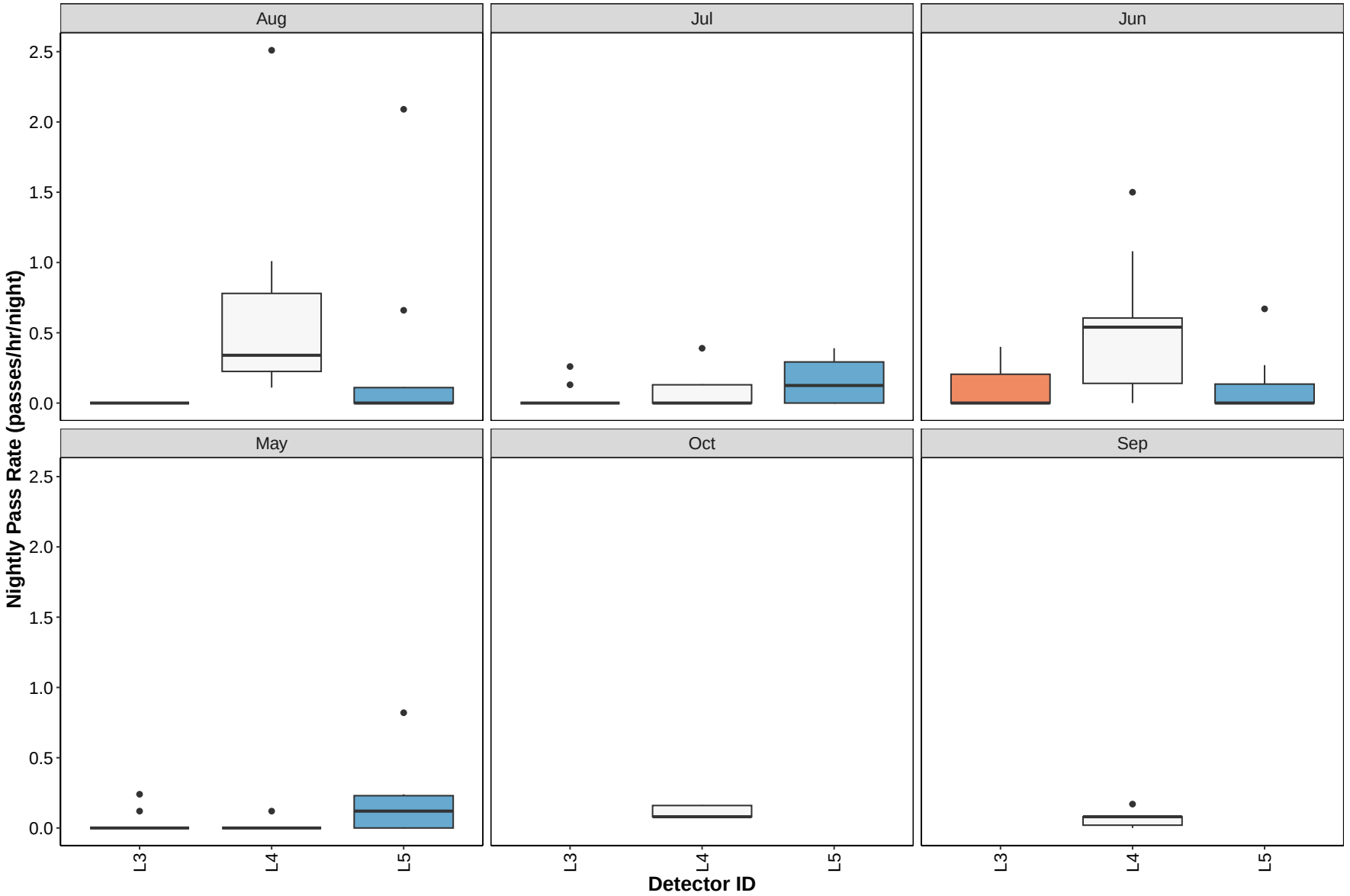



Myotis
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0.0
0.2
0.4
0.6
L3
L4
L5
Detector ID


Noctule
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0.00
0.05
0.10
L3
L4
L5
Detector ID


Serotine
Aug
Jul
Jun
May
Oct
Sep
Nightly Pass Rate (passes/hr/night)
0.0
0.1
0.2
L3
L4
L5
Detector ID

Soprano pipistrelle



Bat Activity per Detector Location

Figure 18. Detector ID reference:

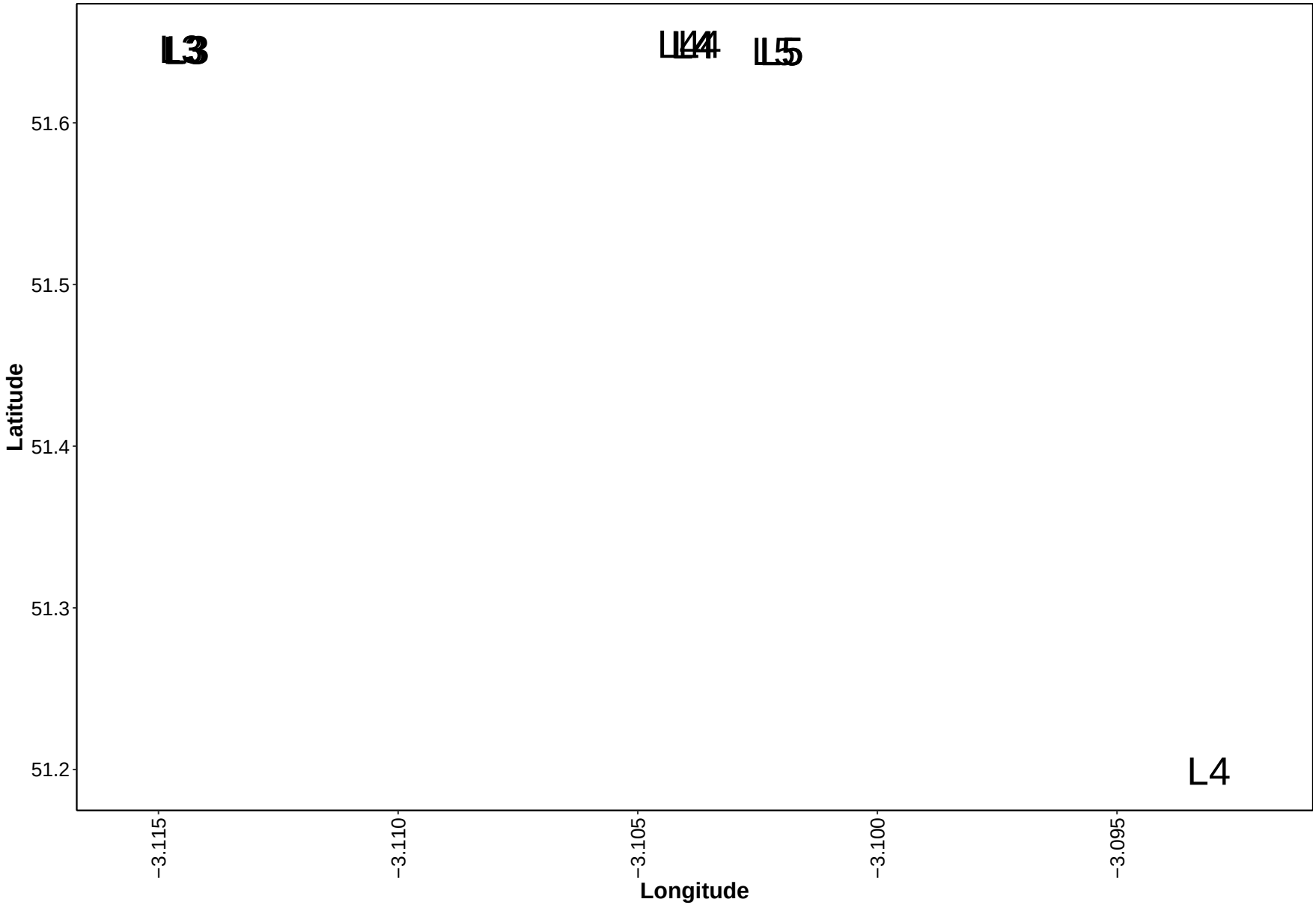
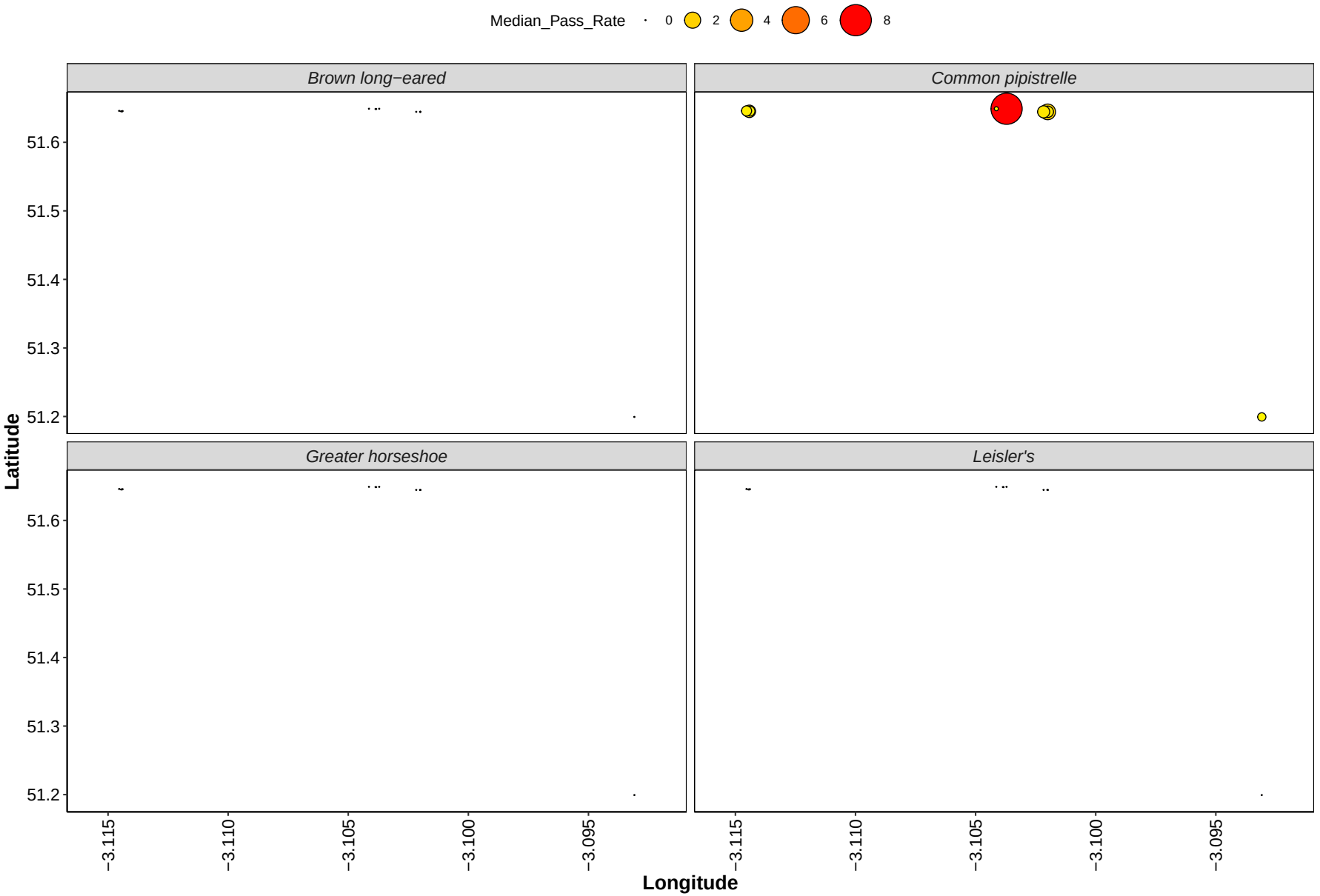

L3
L4
L5
L4
51.6
51.5
51.4
51.3
51.2
Latitude
−3.115
−3.110
−3.105
−3.100
−3.095
Longitude

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.


Median_Pass_Rate
0
2
4
6
8
Brown long−eared
Common pipistrelle
Greater horseshoe
Leisler's
Latitude
51.6
51.5
51.4
51.3
51.2
−3.115
−3.110
−3.105
−3.100
−3.095
Longitude

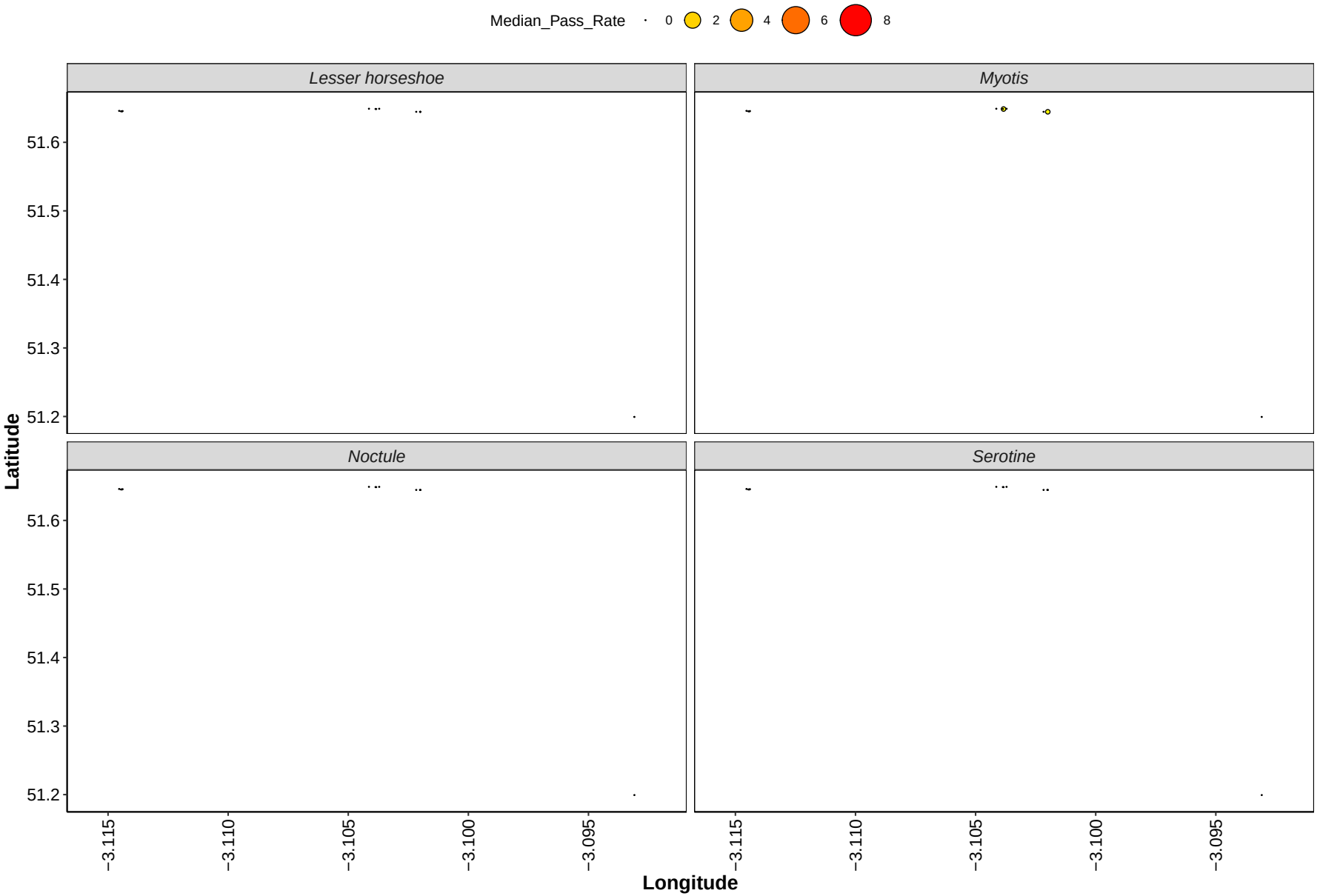
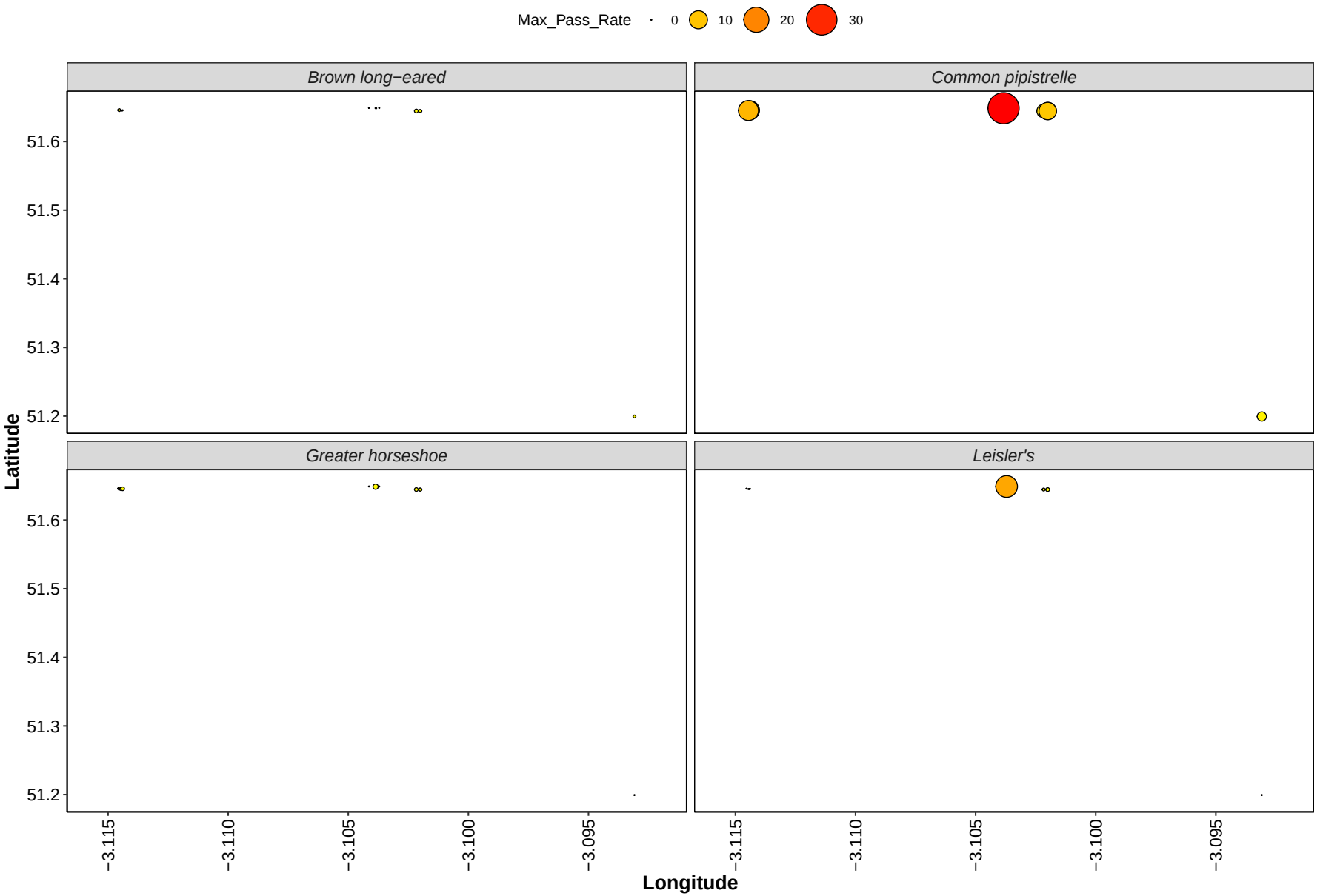
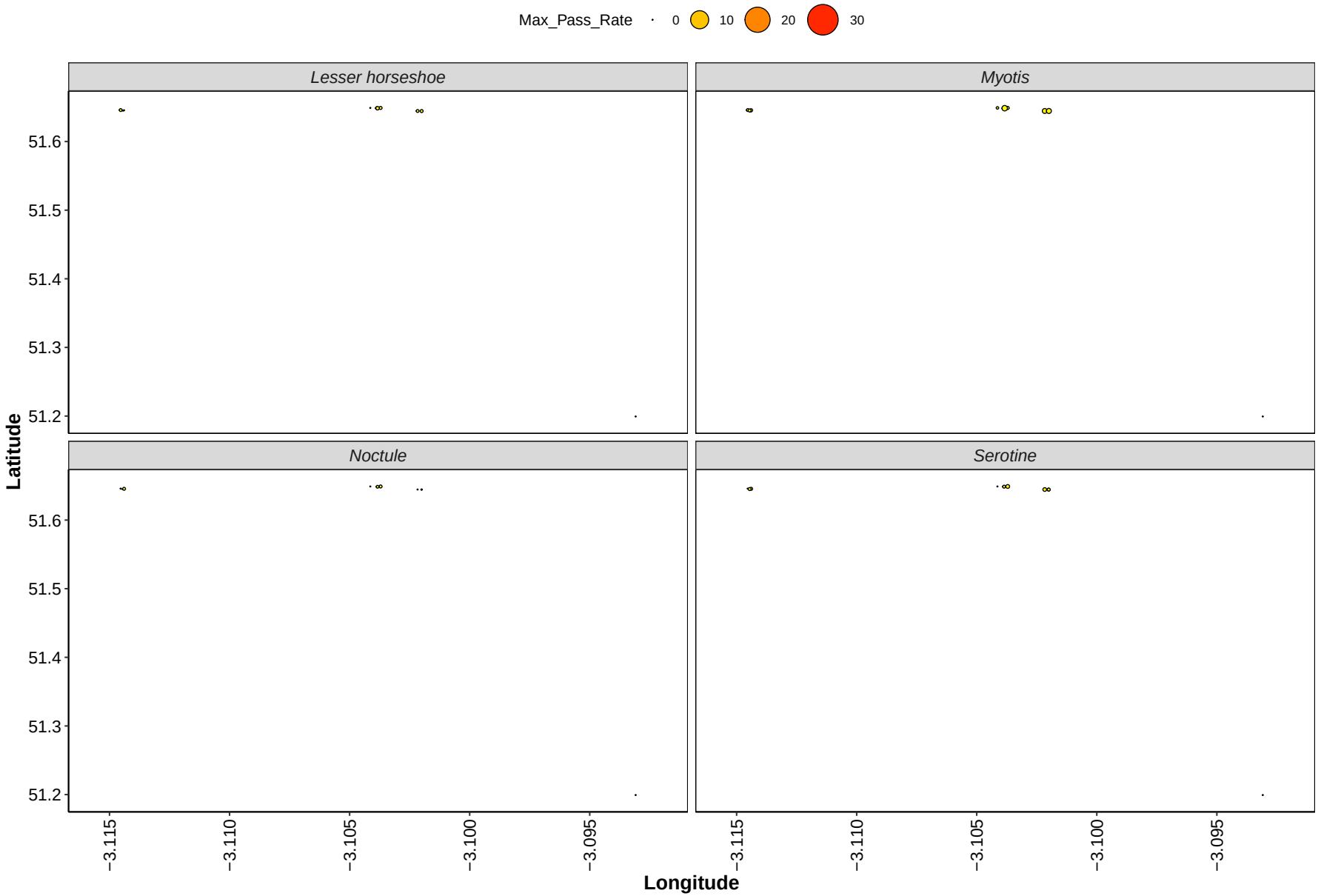

Median_Pass_Rate
0
2
4
6
8
Lesser horseshoe
Myotis
Noctule
Serotine
Latitude
51.6
51.5
51.4
51.3
51.2
−3.115
−3.110
−3.105
−3.100
−3.095
Longitude

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.

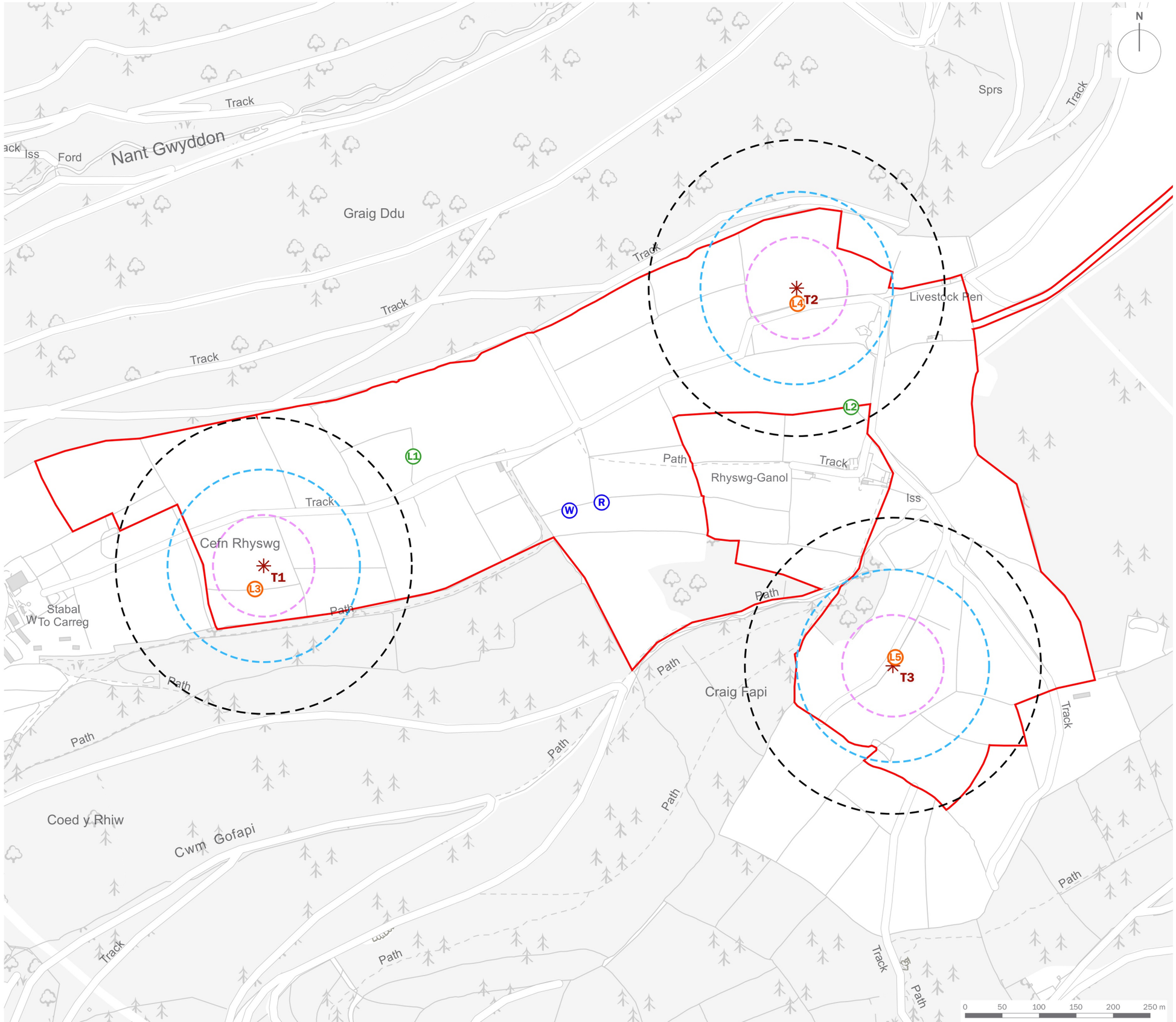

Max_Pass_Rate
0
10
20
30
Brown long−eared
Common pipistrelle
Greater horseshoe
Leisler's
Latitude
51.6
51.5
51.4
51.3
51.2
−3.115
−3.110
−3.105
−3.100
−3.095
Longitude


Max_Pass_Rate
0
10
20
30
Lesser horseshoe
Myotis
Noctule
Serotine
Latitude
51.6
51.5
51.4
51.3
51.2
−3.115
−3.110
−3.105
−3.100
−3.095
Longitude

Thank you for using Ecobat!

Plans

Plan EDP 1: Static Detector and Weather Station Locations (2020-2025)
(edp6611_d060 29 September 2025 JFr/RCD)



Site Boundary

Proposed Turbine Location (T1)

130m Turbine Buffer

200m Turbine Buffer

Required Distance of Turbine from Bat Habitat Features to Ensure a Minimum 50m Offset from Blade Tip (Buffer Size Calculated per Turbine)

Static Detector Locations (2020 - 2023)

Static Detector Locations (2024 - 2025)

Weather Station Location

Data Receiver Location

client

Pennant Walters

project title

Rhyswg Wind Farm

drawing title

Static Detector and Weather Station Locations (2020-2025)

date	**29 SEPTEMBER 2025**	drawn by	**JFr**
drawing number	**edp6611_d060**	checked	**RCD**
scale	**1:5,000 @ A3**	QA	**DJo**

the environmental dimension partnership

Registered office: 01285 740427 - www.edp-uk.co.uk - info@edp-uk.co.uk

edp | the environmental dimension partnership

CARDIFF
02921 671900

CHELTENHAM
01242 903110

CIRENCESTER
01285 740427

info@edp-uk.co.uk
www.edp-uk.co.uk

REGISTERED ORGANISATION CIfA

URBAN DESIGN GROUP REGISTERED PRACTICE

IEMA CORPORATE PARTNER

Landscape Institute
Registered practice