Ecobat: Nightly Bat Activity Analysis

Authour: NA

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*The analyses are based on data supplied by the user to the Mammal Society’s Ecobat website. The outputs are designed to assist decision-making, but do not replace expert interpretation by the user.*

# Summary

Bat surveys were conducted on **71** nights between **2018-07-06** and **2018-09-17**, using **3** static bat detectors. Throughout this period **8** species were recorded.

# Sunrise and Sunset Times

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

|  |  |  |  |
| --- | --- | --- | --- |
| Night (y-m-d) | Sunset (hh:mm) | Sunrise (hh:mm) | Night Length (hours) |
| 2018-07-06 | 22:00 | 04:52 | 6.9 |
| 2018-07-07 | 21:59 | 04:53 | 6.9 |
| 2018-07-08 | 21:59 | 04:54 | 6.9 |
| 2018-07-09 | 21:58 | 04:55 | 7.0 |
| 2018-07-10 | 21:57 | 04:56 | 7.0 |
| 2018-07-11 | 21:56 | 04:58 | 7.0 |
| 2018-07-12 | 21:55 | 04:59 | 7.1 |
| 2018-07-13 | 21:54 | 05:00 | 7.1 |
| 2018-07-14 | 21:53 | 05:02 | 7.1 |
| 2018-07-15 | 21:51 | 05:03 | 7.2 |
| 2018-07-16 | 21:50 | 05:04 | 7.2 |
| 2018-07-17 | 21:49 | 05:06 | 7.3 |
| 2018-07-18 | 21:48 | 05:07 | 7.3 |
| 2018-07-19 | 21:46 | 05:09 | 7.4 |
| 2018-07-20 | 21:45 | 05:11 | 7.4 |
| 2018-07-21 | 21:43 | 05:12 | 7.5 |
| 2018-07-22 | 21:42 | 05:14 | 7.5 |
| 2018-07-23 | 21:40 | 05:15 | 7.6 |
| 2018-07-24 | 21:39 | 05:17 | 7.6 |
| 2018-07-25 | 21:37 | 05:19 | 7.7 |
| 2018-07-26 | 21:36 | 05:20 | 7.7 |
| 2018-07-27 | 21:34 | 05:22 | 7.8 |
| 2018-07-28 | 21:32 | 05:24 | 7.9 |
| 2018-07-29 | 21:30 | 05:26 | 7.9 |
| 2018-07-30 | 21:29 | 05:27 | 8.0 |
| 2018-07-31 | 21:27 | 05:29 | 8.0 |
| 2018-08-01 | 21:25 | 05:31 | 8.1 |
| 2018-08-02 | 21:23 | 05:33 | 8.2 |
| 2018-08-03 | 21:21 | 05:35 | 8.2 |
| 2018-08-04 | 21:19 | 05:36 | 8.3 |
| 2018-08-05 | 21:17 | 05:38 | 8.4 |
| 2018-08-06 | 21:15 | 05:40 | 8.4 |
| 2018-08-07 | 21:13 | 05:42 | 8.5 |
| 2018-08-08 | 21:11 | 05:44 | 8.5 |
| 2018-08-09 | 21:09 | 05:46 | 8.6 |
| 2018-08-10 | 21:07 | 05:48 | 8.7 |
| 2018-08-12 | 21:02 | 05:51 | 8.8 |
| 2018-08-13 | 21:00 | 05:53 | 8.9 |
| 2018-08-14 | 20:58 | 05:55 | 8.9 |
| 2018-08-15 | 20:56 | 05:57 | 9.0 |
| 2018-08-16 | 20:54 | 05:59 | 9.1 |
| 2018-08-17 | 20:51 | 06:01 | 9.2 |
| 2018-08-18 | 20:49 | 06:03 | 9.2 |
| 2018-08-19 | 20:47 | 06:04 | 9.3 |
| 2018-08-20 | 20:44 | 06:06 | 9.4 |
| 2018-08-21 | 20:42 | 06:08 | 9.4 |
| 2018-08-22 | 20:40 | 06:10 | 9.5 |
| 2018-08-23 | 20:37 | 06:12 | 9.6 |
| 2018-08-24 | 20:35 | 06:14 | 9.6 |
| 2018-08-25 | 20:32 | 06:16 | 9.7 |
| 2018-08-26 | 20:30 | 06:18 | 9.8 |
| 2018-08-27 | 20:28 | 06:19 | 9.9 |
| 2018-08-28 | 20:25 | 06:21 | 9.9 |
| 2018-08-29 | 20:23 | 06:23 | 10.0 |
| 2018-08-30 | 20:20 | 06:25 | 10.1 |
| 2018-08-31 | 20:18 | 06:27 | 10.2 |
| 2018-09-01 | 20:15 | 06:29 | 10.2 |
| 2018-09-02 | 20:13 | 06:31 | 10.3 |
| 2018-09-03 | 20:10 | 06:32 | 10.4 |
| 2018-09-04 | 20:08 | 06:34 | 10.4 |
| 2018-09-05 | 20:05 | 06:36 | 10.5 |
| 2018-09-06 | 20:03 | 06:38 | 10.6 |
| 2018-09-07 | 20:00 | 06:40 | 10.7 |
| 2018-09-08 | 19:58 | 06:42 | 10.7 |
| 2018-09-09 | 19:55 | 06:44 | 10.8 |
| 2018-09-11 | 19:50 | 06:47 | 11.0 |
| 2018-09-12 | 19:47 | 06:49 | 11.0 |
| 2018-09-13 | 19:45 | 06:51 | 11.1 |
| 2018-09-14 | 19:42 | 06:53 | 11.2 |
| 2018-09-16 | 19:37 | 06:57 | 11.3 |
| 2018-09-17 | 19:34 | 06:58 | 11.4 |

# Counts of Bat Passes

## All detectors

**The number of passes recorded for each species across all of the detectors.**

|  |  |  |
| --- | --- | --- |
| Species | Count (No) | Percentage of total (%) |
| Brown long-eared | 24 | 0.9 |
| Common pip | 103 | 3.7 |
| Leisler’s | 165 | 5.9 |
| Myotis spp. | 71 | 2.5 |
| Noctule | 261 | 9.3 |
| Nyctalus spp. | 835 | 29.6 |
| Pip spp. | 5 | 0.2 |
| Soprano pip | 1354 | 48.0 |
| Total | 2818 | 100.1 |

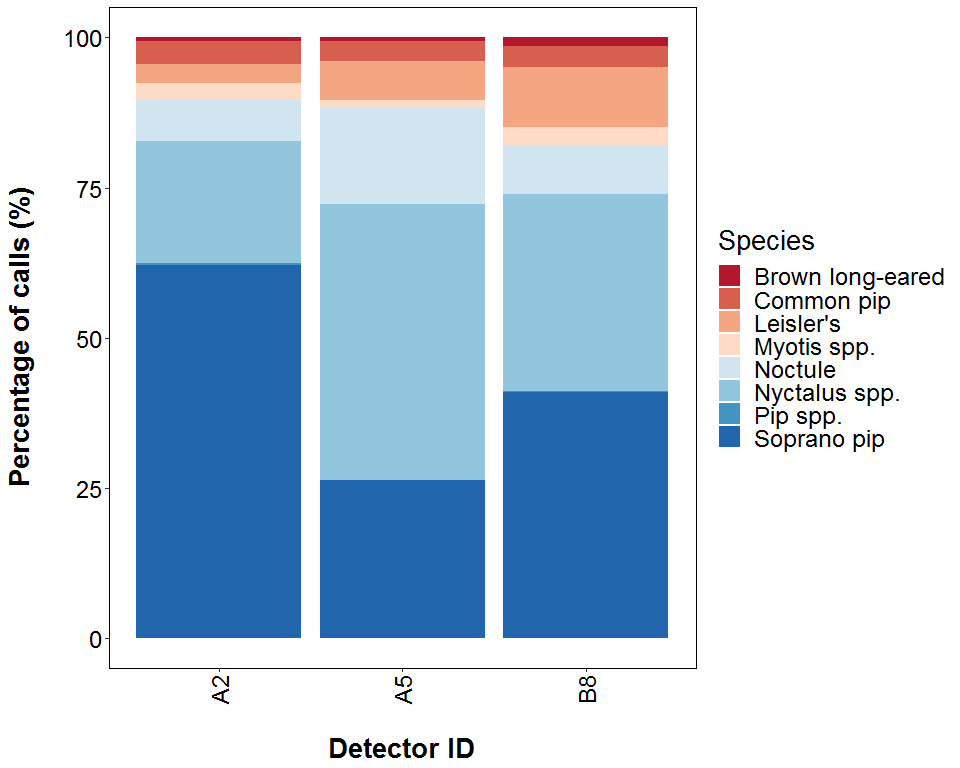
# Counts of Bat Passes

## Per Detector

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

|  |  |  |  |
| --- | --- | --- | --- |
| Species | Detector ID | Count (No) | Percentage by Detector (%) |
| Brown long-eared | A2 | 9 | 0.7 |
| Brown long-eared | A5 | 4 | 0.6 |
| Brown long-eared | B8 | 11 | 1.4 |
| Common pip | A2 | 54 | 3.9 |
| Common pip | A5 | 21 | 3.3 |
| Common pip | B8 | 28 | 3.5 |
| Leisler’s | A2 | 43 | 3.1 |
| Leisler’s | A5 | 41 | 6.5 |
| Leisler’s | B8 | 81 | 10.0 |
| Myotis spp. | A2 | 38 | 2.8 |
| Myotis spp. | A5 | 8 | 1.3 |
| Myotis spp. | B8 | 25 | 3.1 |
| Noctule | A2 | 95 | 6.9 |
| Noctule | A5 | 101 | 16.1 |
| Noctule | B8 | 65 | 8.0 |
| Nyctalus spp. | A2 | 281 | 20.3 |
| Nyctalus spp. | A5 | 288 | 45.9 |
| Nyctalus spp. | B8 | 266 | 32.9 |
| Pip spp. | A2 | 4 | 0.3 |
| Pip spp. | B8 | 1 | 0.1 |
| Soprano pip | A2 | 857 | 62.1 |
| Soprano pip | A5 | 165 | 26.3 |
| Soprano pip | B8 | 332 | 41.0 |
|  |  |  |  |

# Percentage of bat passes at each detector



# Bat Passes per Month

## Per Detector

**The total number of bat passes of each species in each month at each detector.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Species | Detector ID | Jul | Aug | Sep |
| Brown long-eared | A2 | 4 | 3 | 2 |
| Brown long-eared | A5 | 1 | 3 | 0 |
| Brown long-eared | B8 | 3 | 7 | 1 |
| Common pip | A2 | 17 | 18 | 19 |
| Common pip | A5 | 19 | 2 | 0 |
| Common pip | B8 | 11 | 13 | 4 |
| Leisler’s | A2 | 23 | 19 | 1 |
| Leisler’s | A5 | 31 | 10 | 0 |
| Leisler’s | B8 | 3 | 72 | 6 |
| Myotis spp. | A2 | 9 | 20 | 9 |
| Myotis spp. | A5 | 5 | 3 | 0 |
| Myotis spp. | B8 | 0 | 14 | 11 |
| Noctule | A2 | 42 | 47 | 6 |
| Noctule | A5 | 86 | 15 | 0 |
| Noctule | B8 | 41 | 24 | 0 |
| Nyctalus spp. | A2 | 111 | 147 | 23 |
| Nyctalus spp. | A5 | 224 | 64 | 0 |
| Nyctalus spp. | B8 | 122 | 141 | 3 |
| Pip spp. | A2 | 1 | 3 | 0 |
| Pip spp. | B8 | 1 | 0 | 0 |
| Soprano pip | A2 | 44 | 514 | 299 |
| Soprano pip | A5 | 139 | 26 | 0 |
| Soprano pip | B8 | 39 | 224 | 69 |

## Bat Passes per Month

# Survey Effort

**The number of survey nights per month.**

|  |  |
| --- | --- |
| Month | No of Survey Nights |
| Jul | 26 |
| Aug | 30 |
| Sep | 15 |

**The average number of bat passes of each species per night throughout each month. Calculated with (Number of passes each month) / (Number of survey nights each month). Values given to 3 significant figures.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Species | Detector ID | Jul | Aug | Sep |
| Brown long-eared | A2 | 0.150 | 0.100 | 0.130 |
| Brown long-eared | A5 | 0.038 | 0.100 | 0.000 |
| Brown long-eared | B8 | 0.120 | 0.230 | 0.067 |
| Common pip | A2 | 0.650 | 0.600 | 1.300 |
| Common pip | A5 | 0.730 | 0.067 | 0.000 |
| Common pip | B8 | 0.420 | 0.430 | 0.270 |
| Leisler’s | A2 | 0.880 | 0.630 | 0.067 |
| Leisler’s | A5 | 1.200 | 0.330 | 0.000 |
| Leisler’s | B8 | 0.120 | 2.400 | 0.400 |
| Myotis spp. | A2 | 0.350 | 0.670 | 0.600 |
| Myotis spp. | A5 | 0.190 | 0.100 | 0.000 |
| Myotis spp. | B8 | 0.000 | 0.470 | 0.730 |
| Noctule | A2 | 1.600 | 1.600 | 0.400 |
| Noctule | A5 | 3.300 | 0.500 | 0.000 |
| Noctule | B8 | 1.600 | 0.800 | 0.000 |
| Nyctalus spp. | A2 | 4.300 | 4.900 | 1.500 |
| Nyctalus spp. | A5 | 8.600 | 2.100 | 0.000 |
| Nyctalus spp. | B8 | 4.700 | 4.700 | 0.200 |
| Pip spp. | A2 | 0.038 | 0.100 | 0.000 |
| Pip spp. | B8 | 0.038 | 0.000 | 0.000 |
| Soprano pip | A2 | 1.700 | 17.000 | 20.000 |
| Soprano pip | A5 | 5.300 | 0.870 | 0.000 |
| Soprano pip | B8 | 1.500 | 7.500 | 4.600 |

## Median Bat Passes per Month

# Per Detector

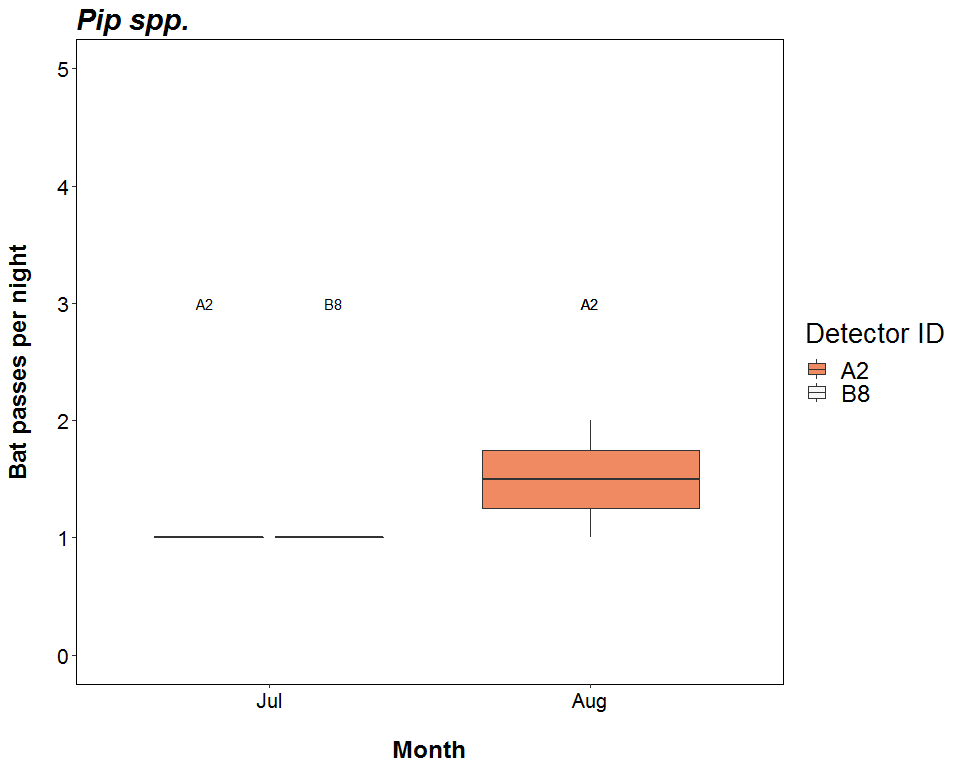
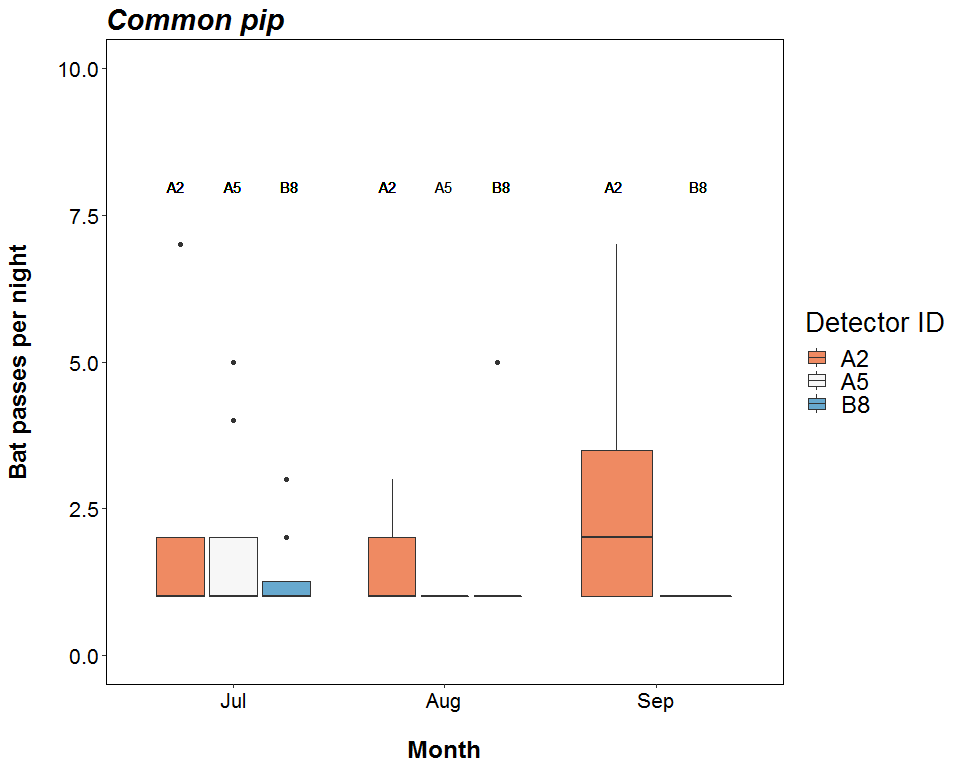
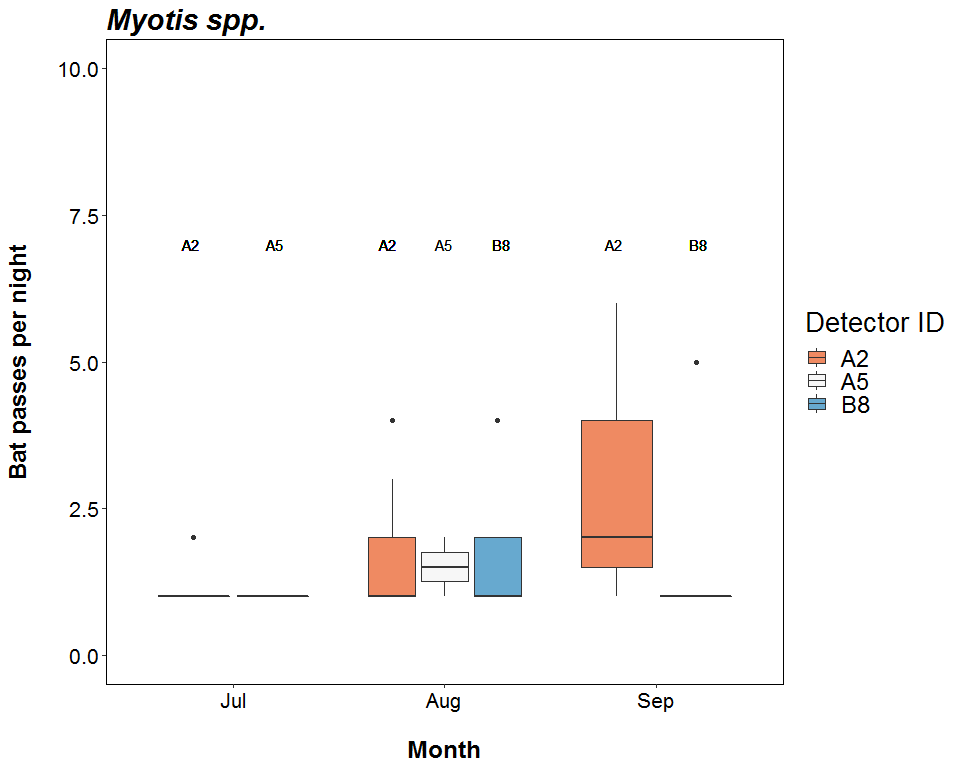
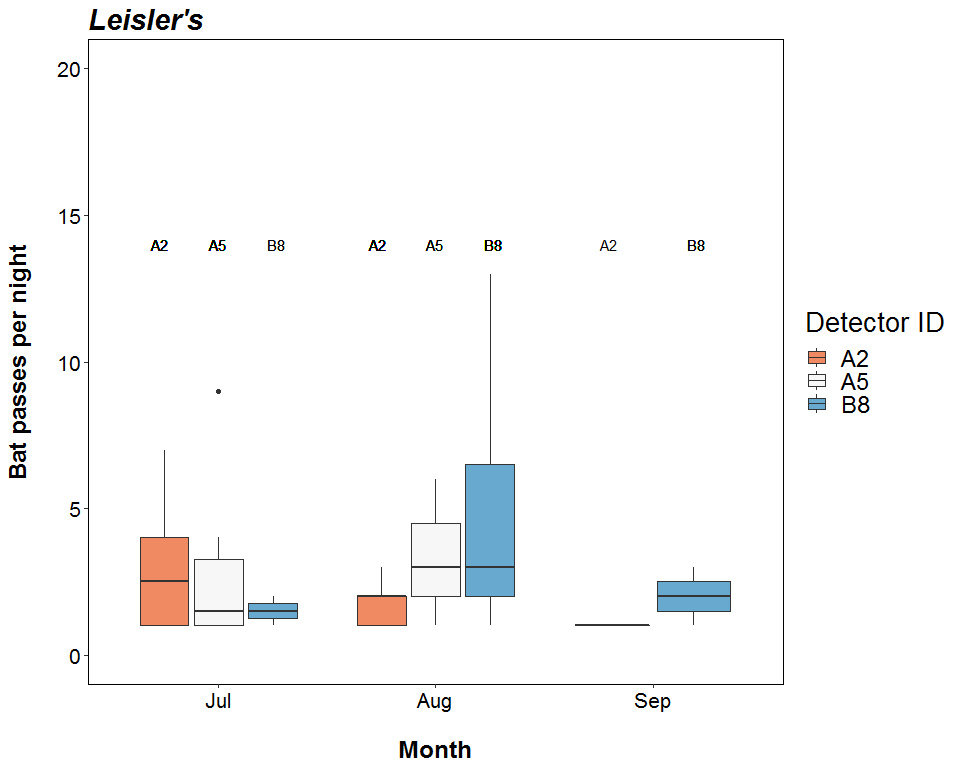
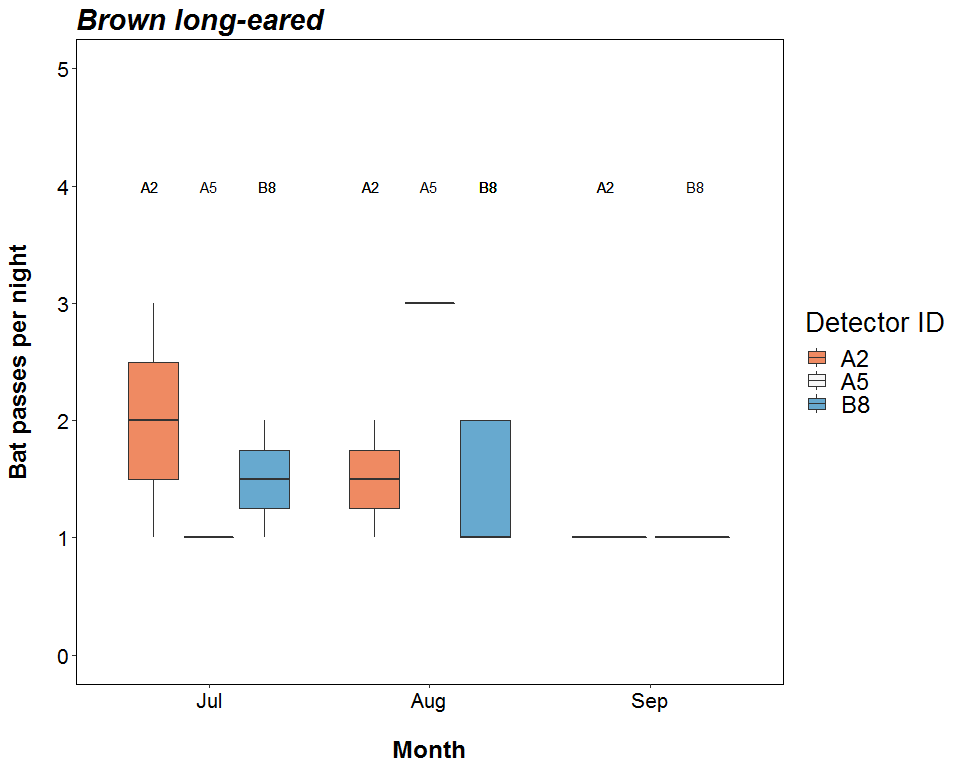
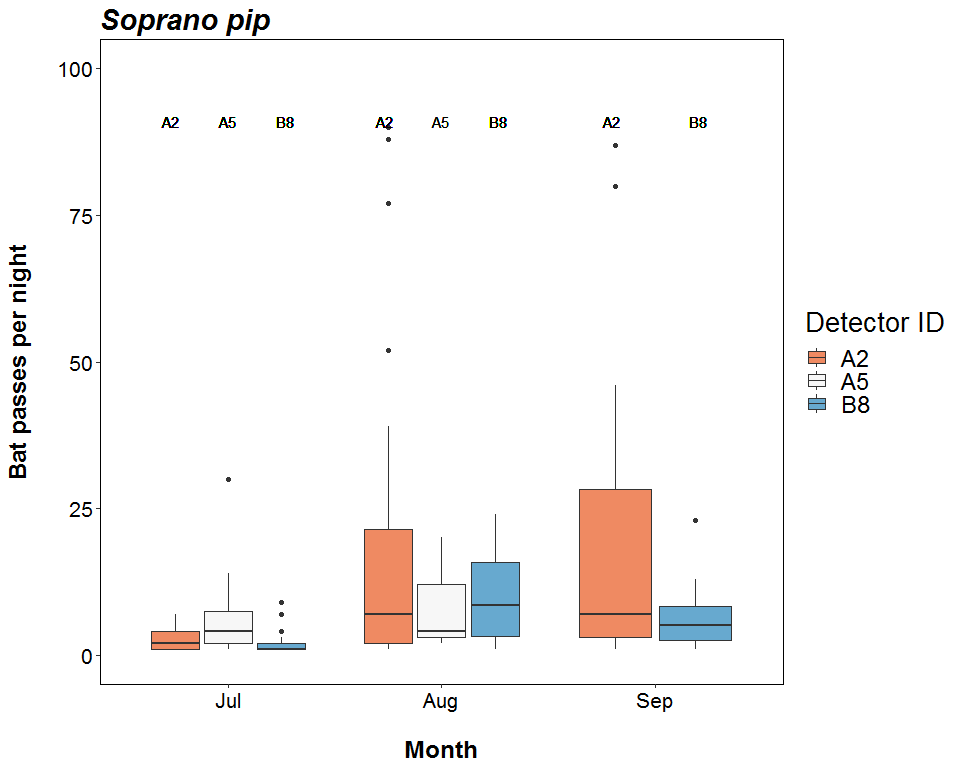
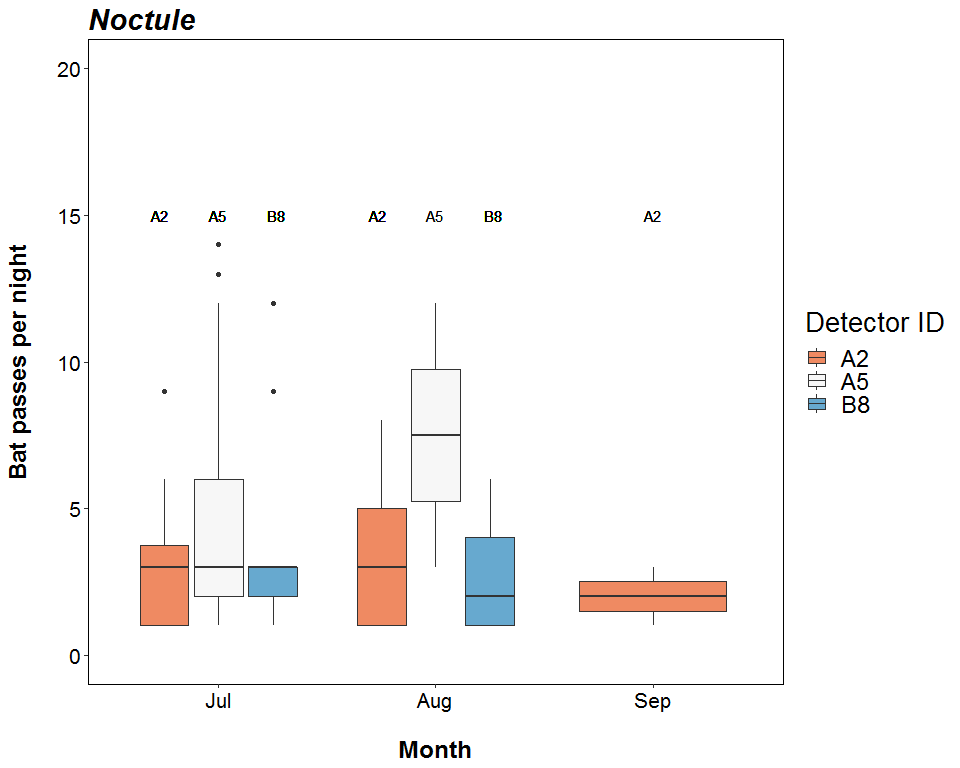
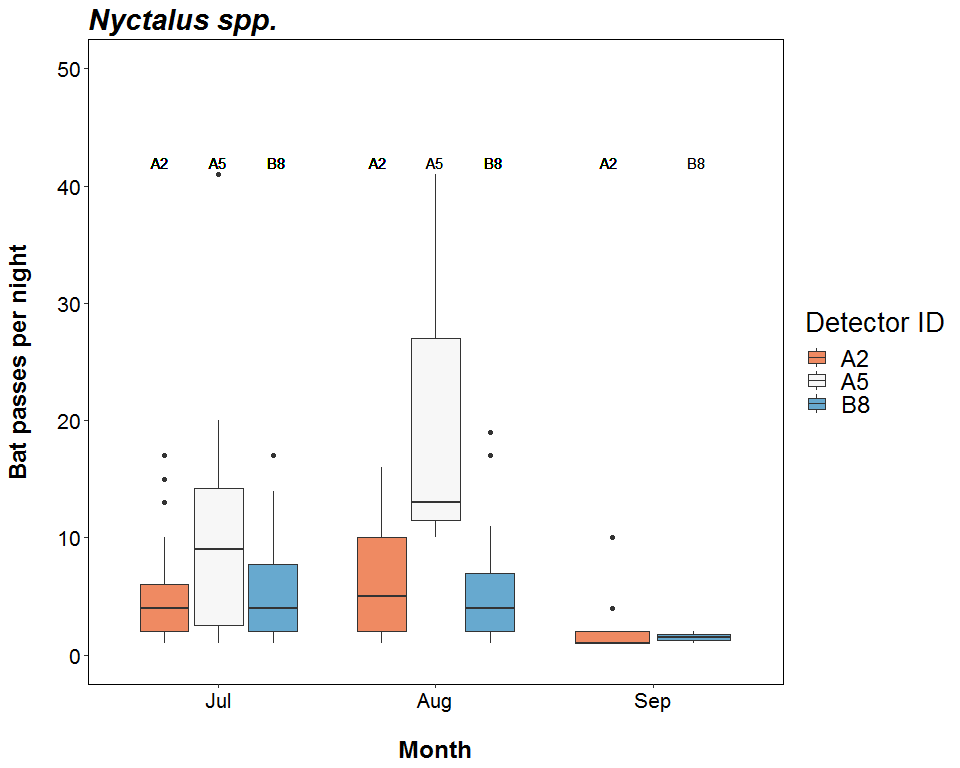
**The median number of bat passes of each species throughout each month. If NA, then no bat passes.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Species | Detector ID | Jul | Aug | Sep |
| Brown long-eared | A2 | 2.0 | 1.5 | 1.0 |
| Brown long-eared | A5 | 1.0 | 3.0 | NA |
| Brown long-eared | B8 | 1.5 | 1.0 | 1.0 |
| Common pip | A2 | 1.0 | 1.0 | 2.0 |
| Common pip | A5 | 1.0 | 1.0 | NA |
| Common pip | B8 | 1.0 | 1.0 | 1.0 |
| Leisler’s | A2 | 2.5 | 2.0 | 1.0 |
| Leisler’s | A5 | 1.5 | 3.0 | NA |
| Leisler’s | B8 | 1.5 | 3.0 | 2.0 |
| Myotis spp. | A2 | 1.0 | 1.0 | 2.0 |
| Myotis spp. | A5 | 1.0 | 1.5 | NA |
| Myotis spp. | B8 | NA | 1.0 | 1.0 |
| Noctule | A2 | 3.0 | 3.0 | 2.0 |
| Noctule | A5 | 3.0 | 7.5 | NA |
| Noctule | B8 | 3.0 | 2.0 | NA |
| Nyctalus spp. | A2 | 4.0 | 5.0 | 1.0 |
| Nyctalus spp. | A5 | 9.0 | 13.0 | NA |
| Nyctalus spp. | B8 | 4.0 | 4.0 | 1.5 |
| Pip spp. | A2 | 1.0 | 1.5 | NA |
| Pip spp. | B8 | 1.0 | NA | NA |
| Soprano pip | A2 | 2.0 | 7.0 | 7.0 |
| Soprano pip | A5 | 4.0 | 4.0 | NA |
| Soprano pip | B8 | 1.0 | 8.5 | 5.0 |

# Bat Passes per Month

## Per Detector - Figures

Figures show boxplots for the number of bat passes by detector each month. The ‘box’ shows the interquartlie range, which represents the middle 50% of the data. The line dividing the box is the median, the mid-point of the data. The ‘whiskers’ of the box represent data outside of the middle 50%, with outliers depicting by the dots.



# Hourly Bat Passes after Sunset

## All Detectors

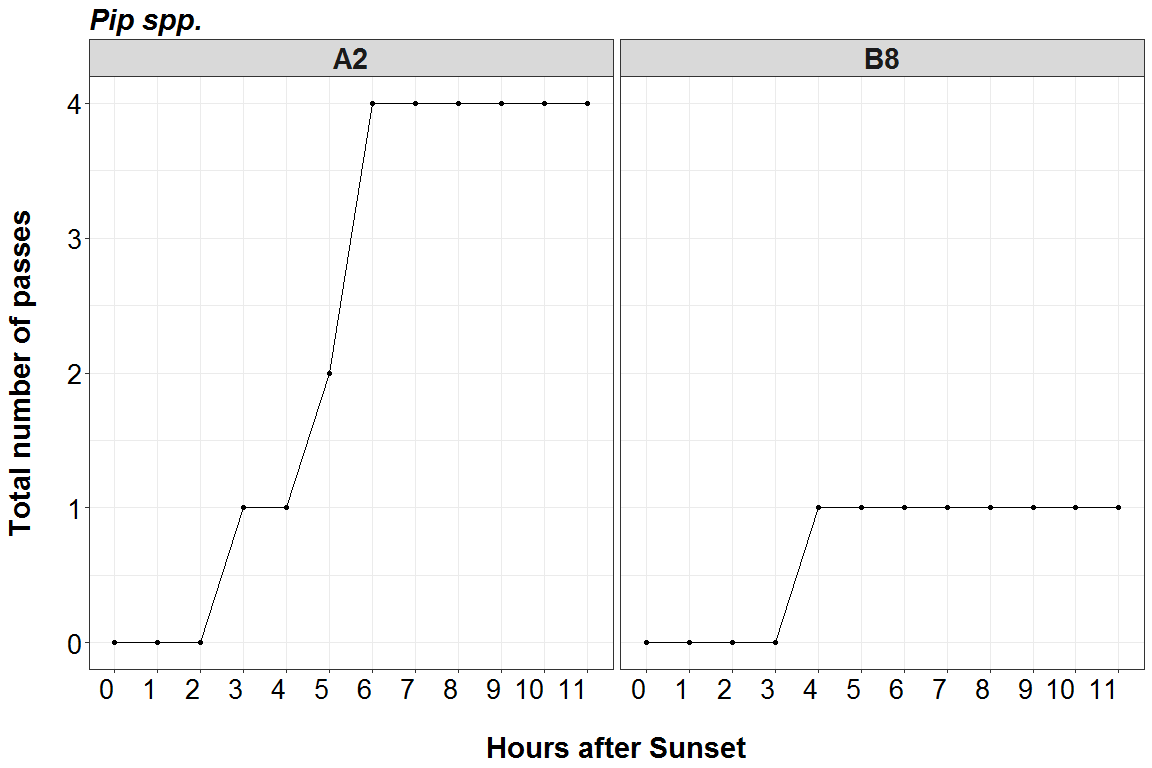
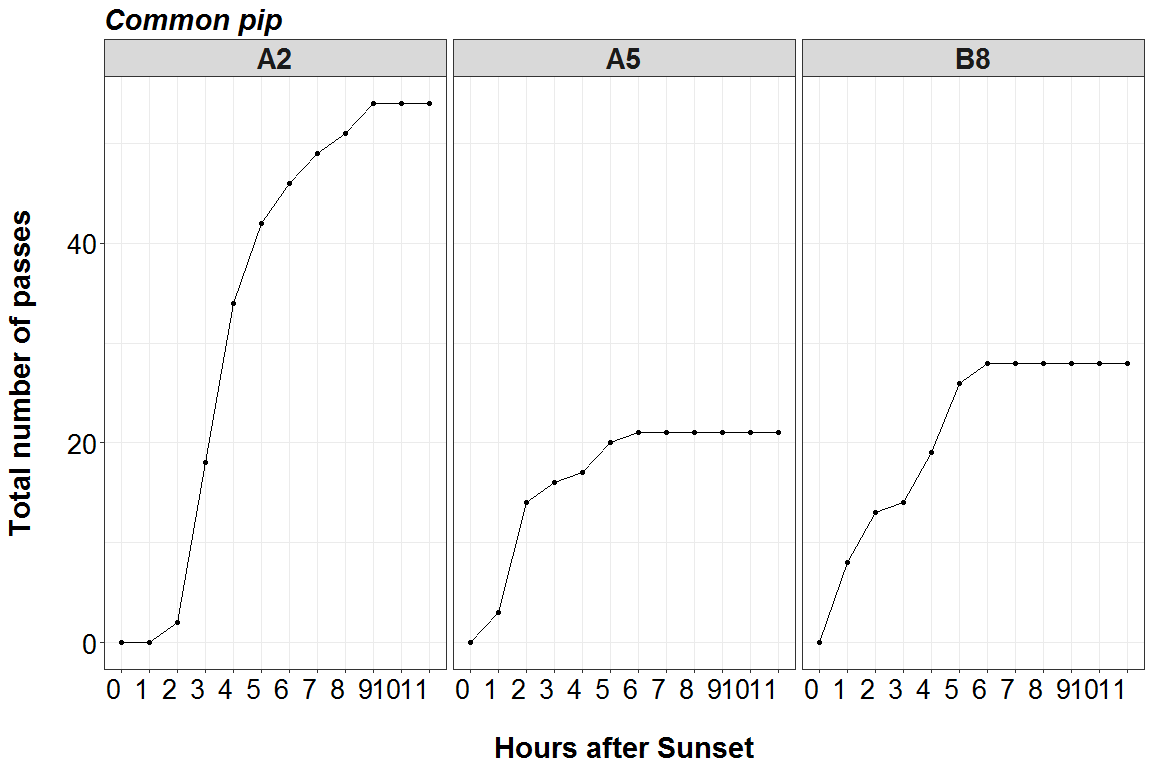
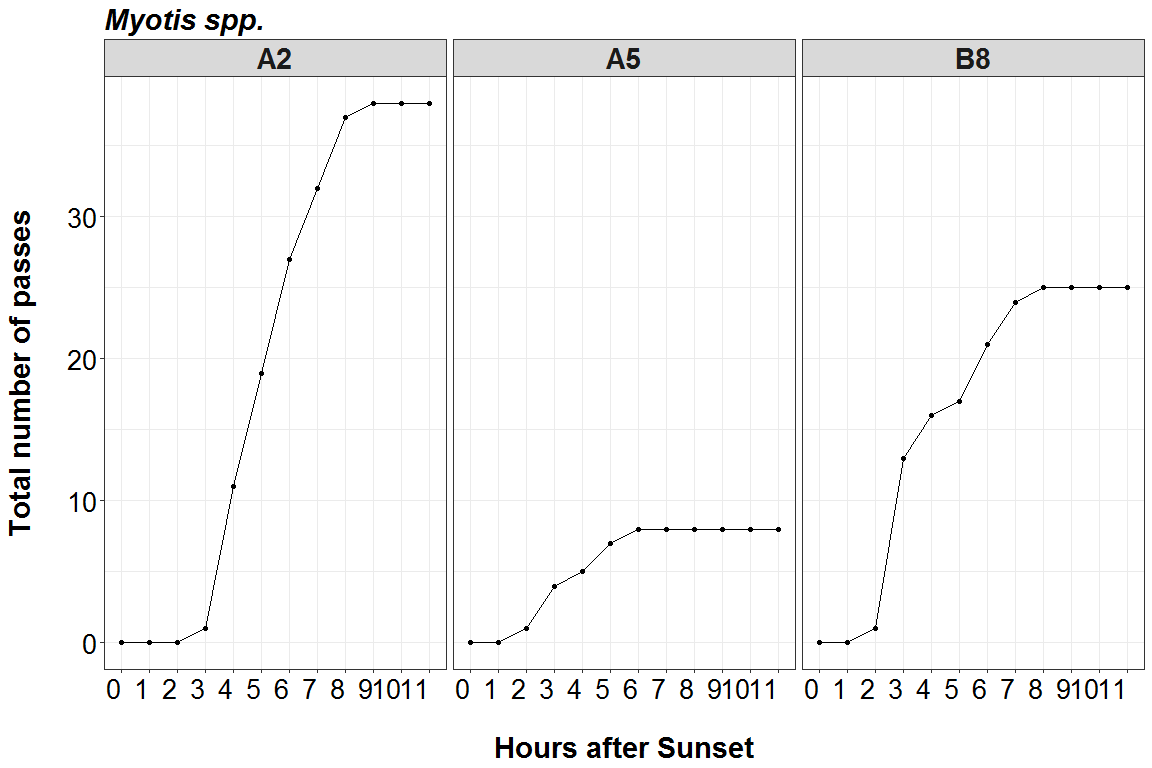
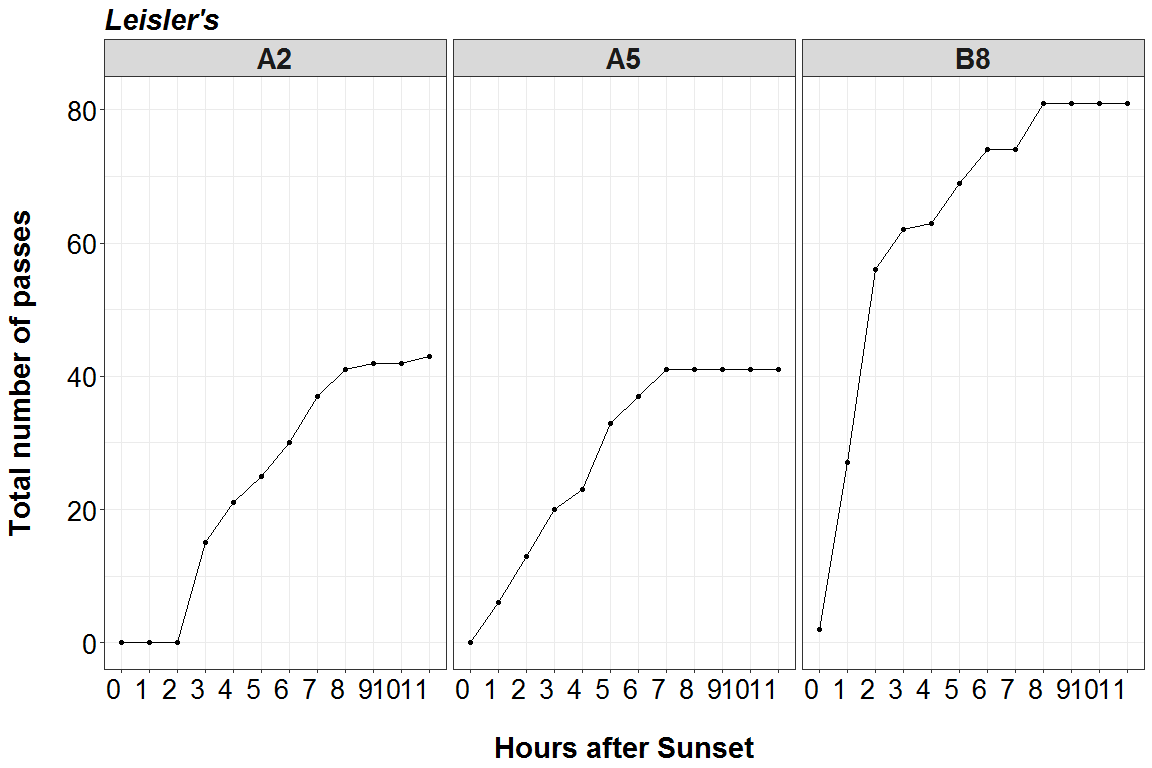
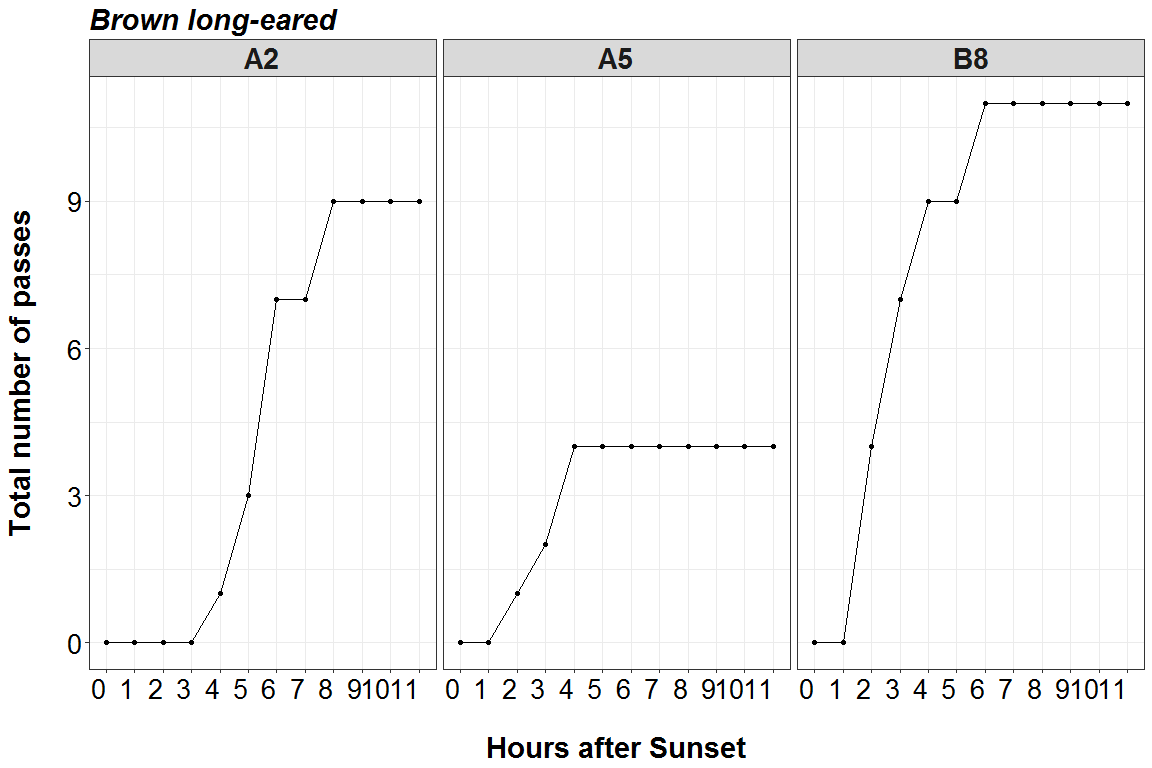
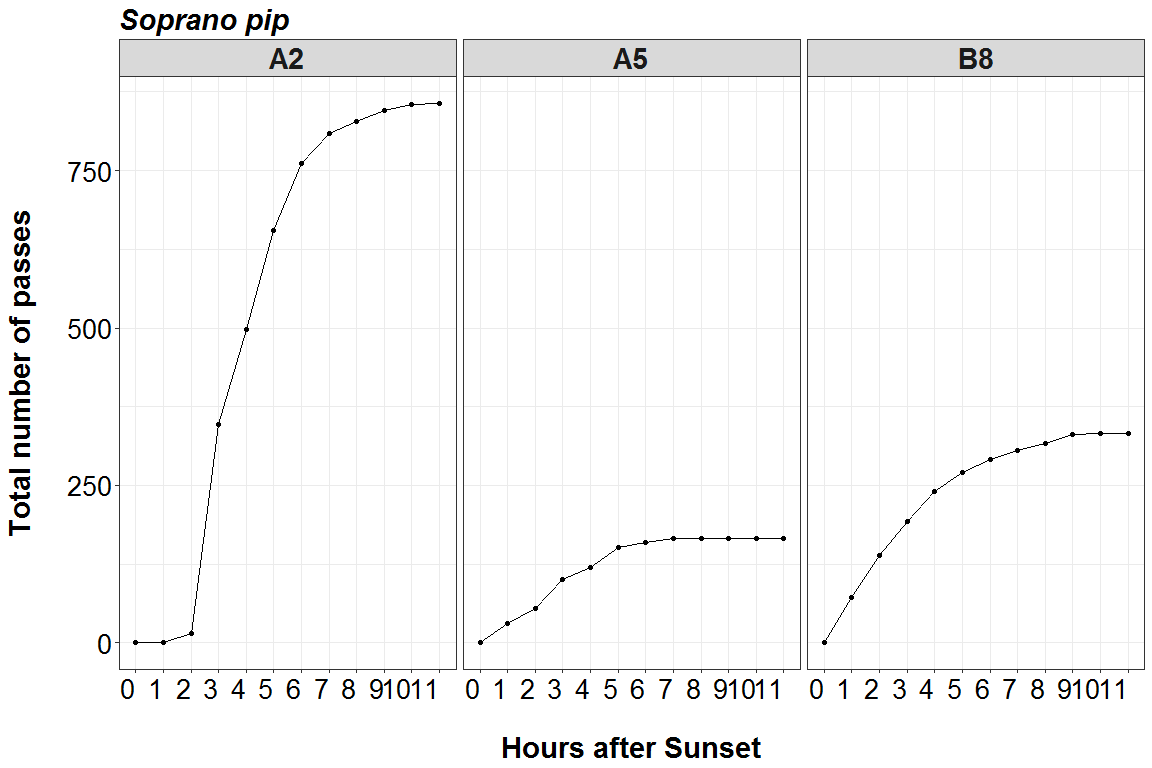
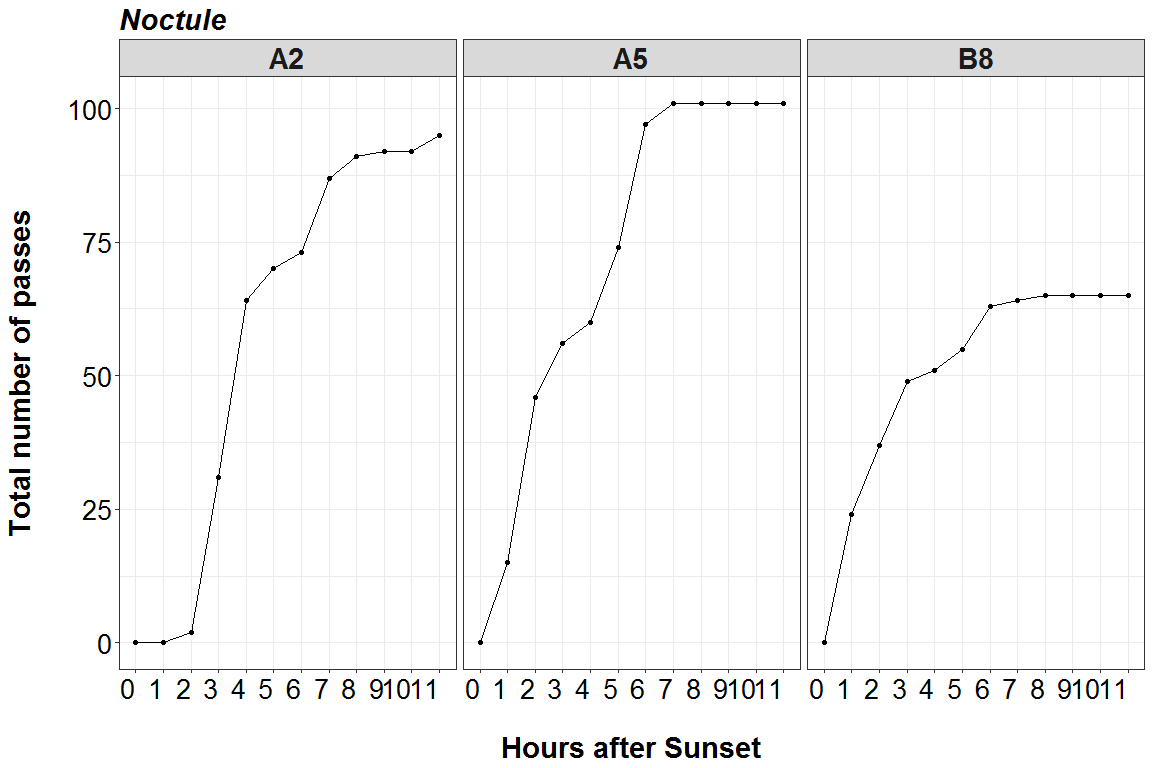
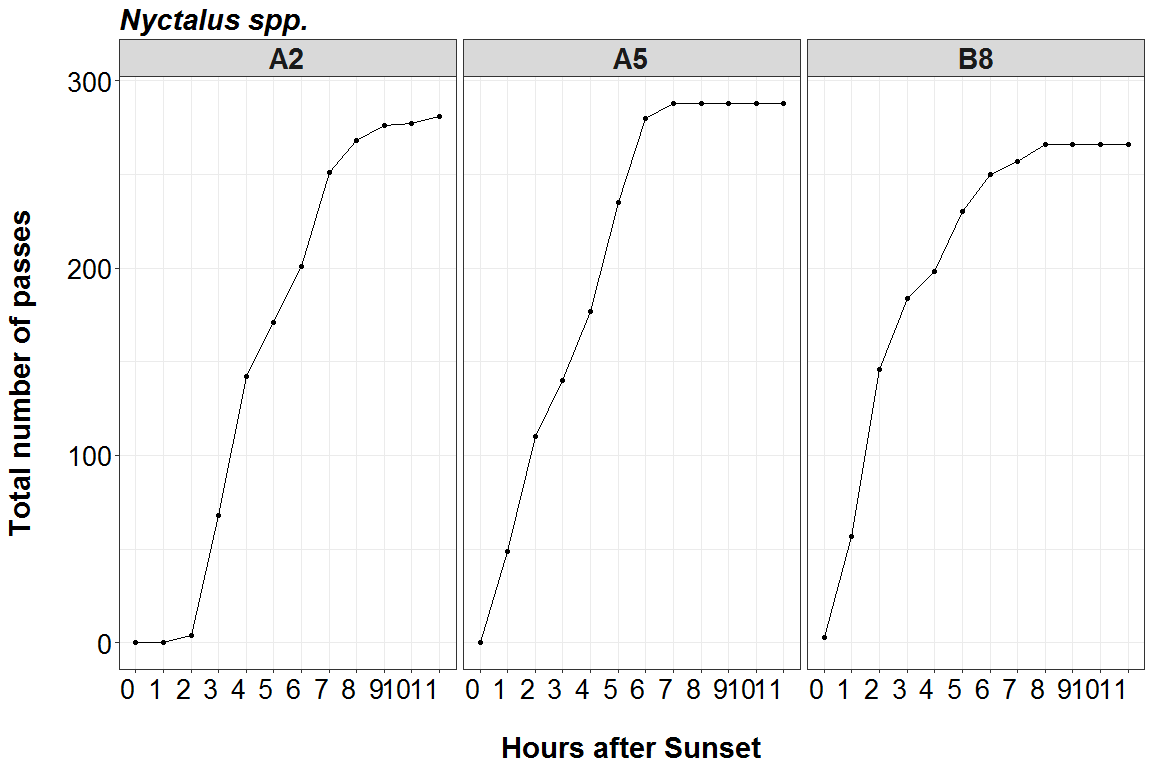
**The total number of bat passes occuring during each hour after sunset.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Species | Detector ID | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Brown long-eared | A2 | 0 | 0 | 0 | 0 | 1 | 2 | 4 | 0 | 2 | 0 | 0 | 0 |
| Brown long-eared | A5 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Brown long-eared | B8 | 0 | 0 | 4 | 3 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Common pip | A2 | 0 | 0 | 2 | 16 | 16 | 8 | 4 | 3 | 2 | 3 | 0 | 0 |
| Common pip | A5 | 0 | 3 | 11 | 2 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| Common pip | B8 | 0 | 8 | 5 | 1 | 5 | 7 | 2 | 0 | 0 | 0 | 0 | 0 |
| Leisler’s | A2 | 0 | 0 | 0 | 15 | 6 | 4 | 5 | 7 | 4 | 1 | 0 | 1 |
| Leisler’s | A5 | 0 | 6 | 7 | 7 | 3 | 10 | 4 | 4 | 0 | 0 | 0 | 0 |
| Leisler’s | B8 | 2 | 25 | 29 | 6 | 1 | 6 | 5 | 0 | 7 | 0 | 0 | 0 |
| Myotis spp. | A2 | 0 | 0 | 0 | 1 | 10 | 8 | 8 | 5 | 5 | 1 | 0 | 0 |
| Myotis spp. | A5 | 0 | 0 | 1 | 3 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| Myotis spp. | B8 | 0 | 0 | 1 | 12 | 3 | 1 | 4 | 3 | 1 | 0 | 0 | 0 |
| Noctule | A2 | 0 | 0 | 2 | 29 | 33 | 6 | 3 | 14 | 4 | 1 | 0 | 3 |
| Noctule | A5 | 0 | 15 | 31 | 10 | 4 | 14 | 23 | 4 | 0 | 0 | 0 | 0 |
| Noctule | B8 | 0 | 24 | 13 | 12 | 2 | 4 | 8 | 1 | 1 | 0 | 0 | 0 |
| Nyctalus spp. | A2 | 0 | 0 | 4 | 64 | 74 | 29 | 30 | 50 | 17 | 8 | 1 | 4 |
| Nyctalus spp. | A5 | 0 | 49 | 61 | 30 | 37 | 58 | 45 | 8 | 0 | 0 | 0 | 0 |
| Nyctalus spp. | B8 | 3 | 54 | 89 | 38 | 14 | 32 | 20 | 7 | 9 | 0 | 0 | 0 |
| Pip spp. | A2 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| Pip spp. | B8 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Soprano pip | A2 | 0 | 0 | 14 | 332 | 152 | 157 | 107 | 47 | 19 | 18 | 9 | 2 |
| Soprano pip | A5 | 0 | 31 | 23 | 46 | 20 | 32 | 7 | 6 | 0 | 0 | 0 | 0 |
| Soprano pip | B8 | 1 | 71 | 66 | 54 | 48 | 31 | 20 | 15 | 11 | 14 | 1 | 0 |

# Hourly Bat Passes after Sunset

## All Detectors

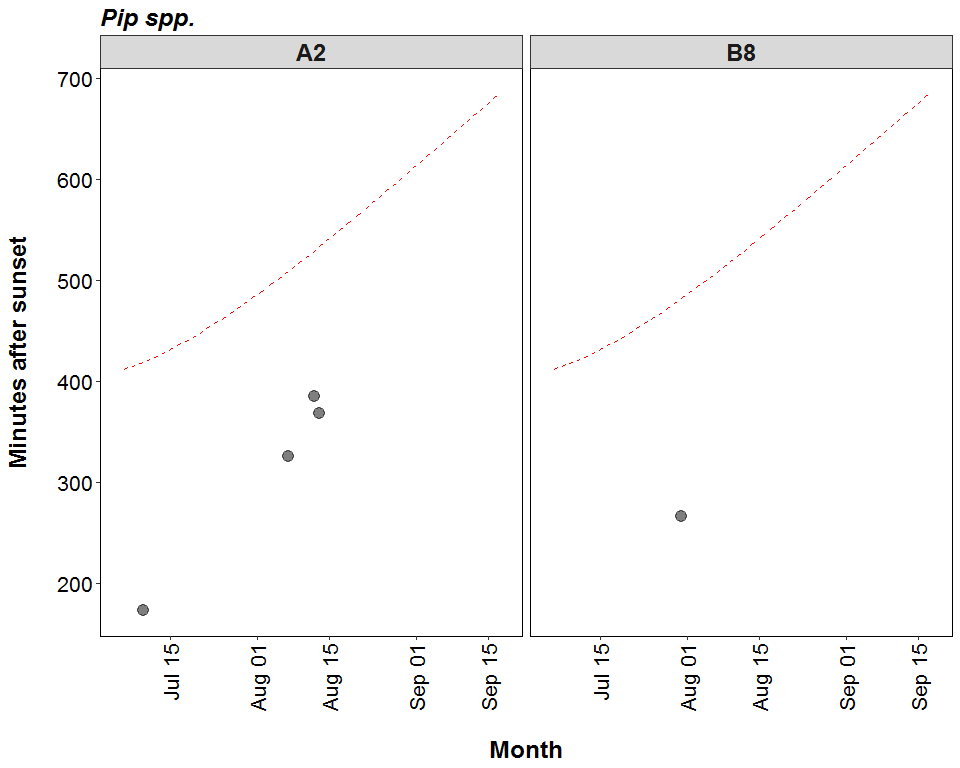
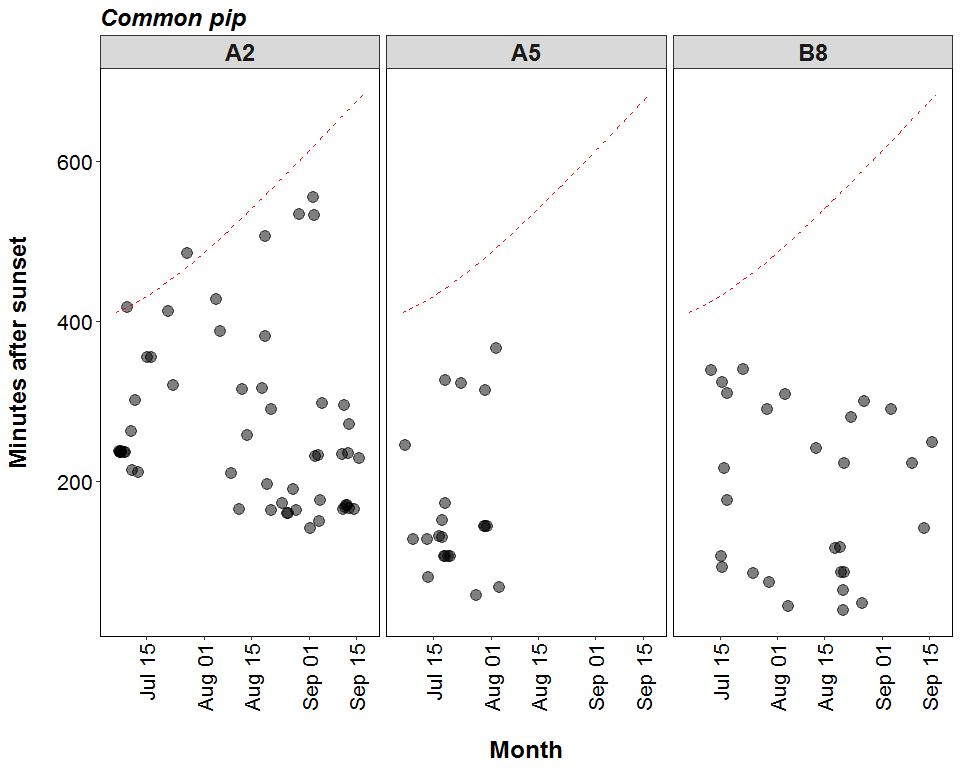
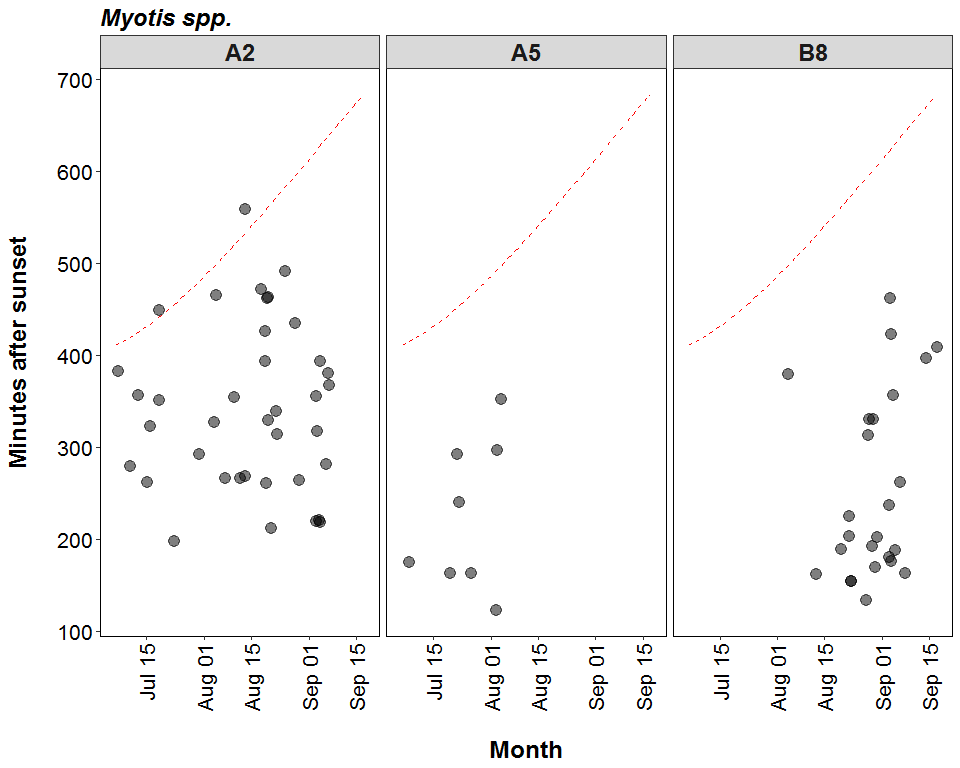
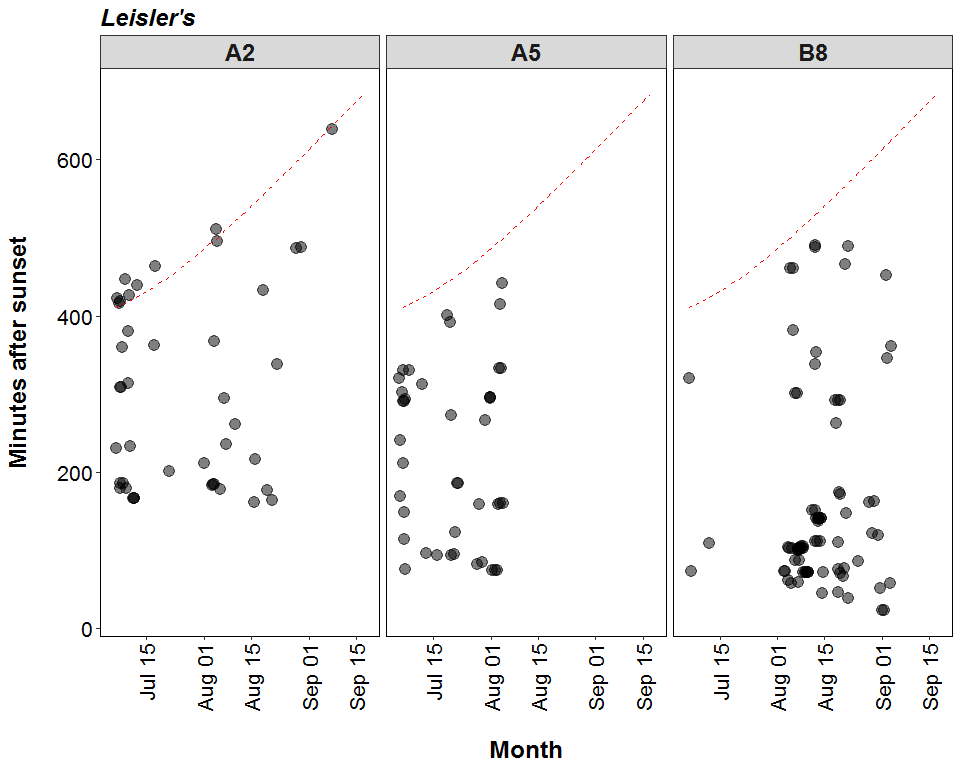
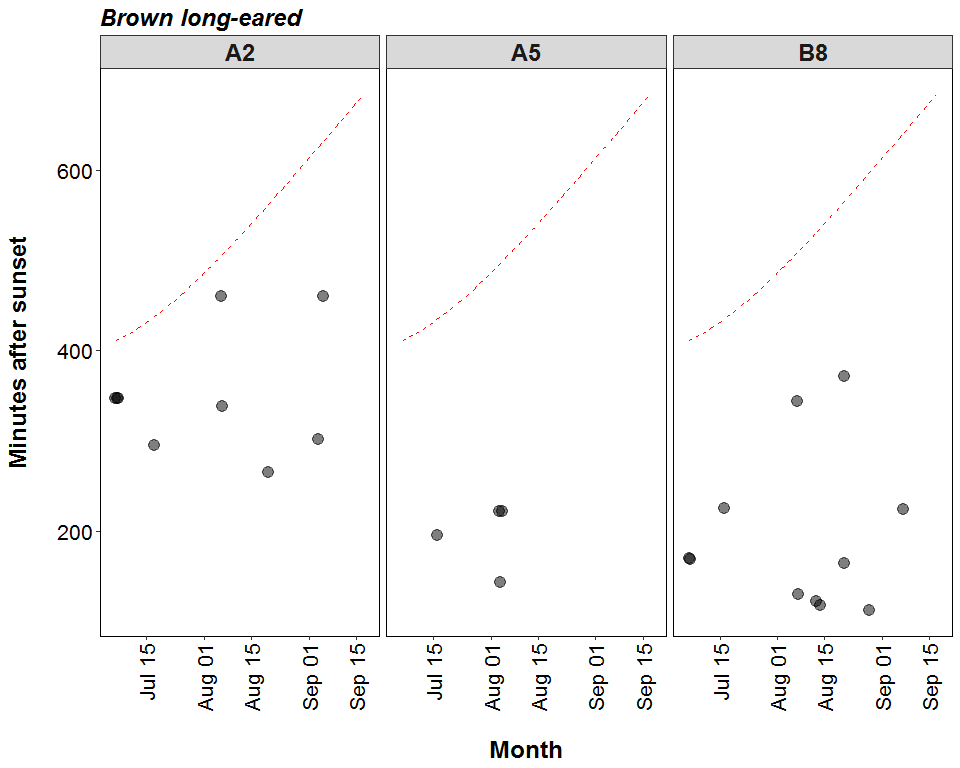
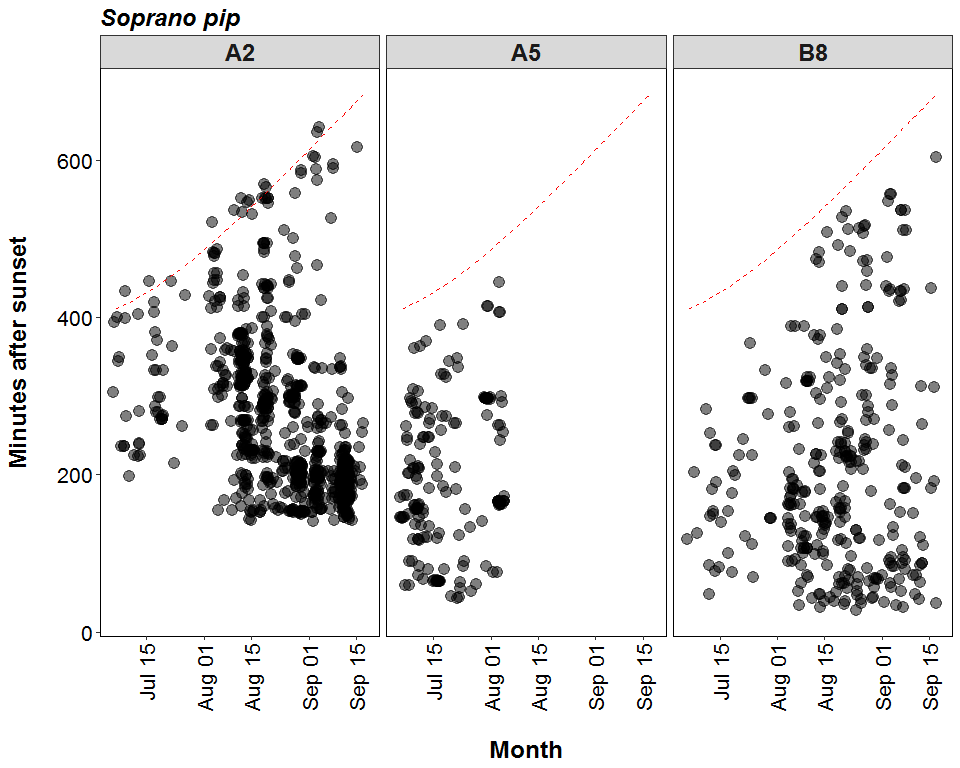
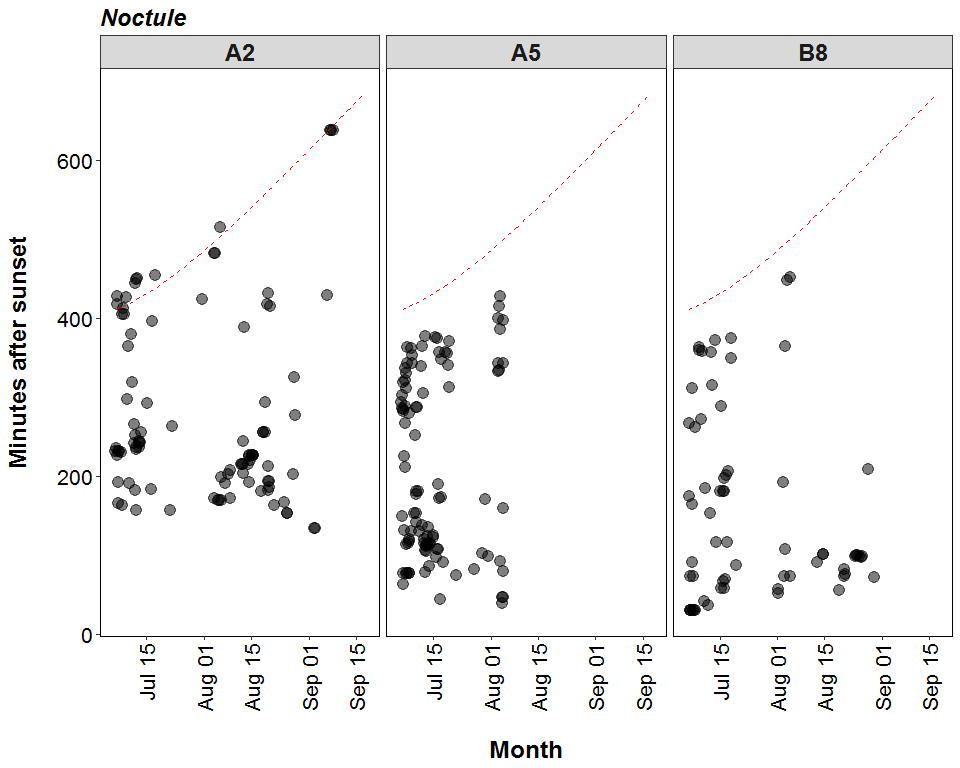
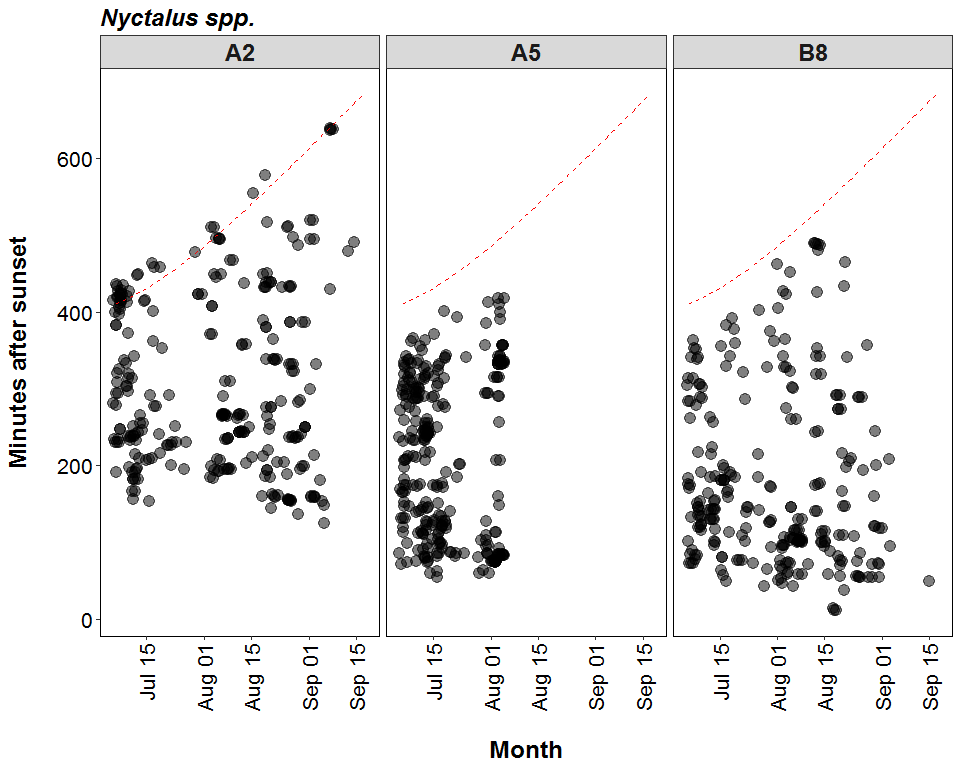
**Cumulative number of bat passes throughout the night.**



# Nightly Bat Activity

## Per Detector

**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.**



# Roost Emergence Time and Bat Observation

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

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

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

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

|  |  |  |  |
| --- | --- | --- | --- |
| Species | Detector ID | 2018-08-18 | 2018-08-25 |
| Nyctalus spp. | B8 | 3 | 0 |
| Soprano pip | B8 | 0 | 1 |

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

**Figures show 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 may potentially indicate the presence of a nearby roost.**

