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Rooaunalaghta Green Energy Project

Appendix 6-4

Bat Survey Results Report

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BUILT ON KNOWLEDGE

Rooaunalaghta Green Energy Ltd.

Chapter 6 Biodiversity

Appendix 6-4: Bat Survey Results Report – 2024 & 2026 Active Bat Season

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1. INTRODUCTION

Woodrow APEM Group (Woodrow) were commissioned by Rooaunalaghta Green Energy Ltd. to carry out a programme of bat surveys and prepare an associated bat survey report to support the application of a proposed wind farm development Rooaunalaghta Wind Farm (hereafter referred to as the "Proposed Project").

For the purposes of this baseline report "the Proposed Project" refers to all aspects of the project including the proposed wind farm site itself, the turbine delivery route (TDR) and grid connection route (GCR). The "proposed wind farm site" only to the area within the Planning Boundary (incorporating the potential development area) as displayed in Figure 1.

1.1. Background

Rooaunalaghta Green Energy Ltd. are applying for planning consent for the Proposed Project which is located in Co. Mayo.

This bat report provides a summary of the methods used to survey the bat species present within the Proposed Project, along with presenting the results and providing discussion of the results for further assessment. It provides details of methodologies and survey effort for the suite of bat surveys conducted, including tabulated results, maps and charts, as well as reports from roost suitability surveys, bat activity surveys and seasonal static bat detector surveys.

Baseline surveys for bats are aimed to identify the species occurring within the Proposed Project, and to provide an understanding of how local bat populations utilise the area in terms of density of use for foraging, roosting (maternity and hibernation), social interactions, and commuting.

1.2. Summary of the Proposed Project

The proposed development consists of 13 no. wind turbines with a tip height of up to 150 m, access tracks, hardstanding areas at each turbine location, temporary compounds, borrow pit, deposition areas, drainage works, GCR and TDR. See Figure 1 for the proposed wind farm site layout and turbine locations.

1.3. Site description

The Proposed Project is approximately 2.5 km south-west of Shrule, Co. Mayo. The proposed wind farm site is located in the townlands of Cloghmoyne, Carrowoughteragh, Toorard, Rooaunalaghta, Brodullagh South and Kinlough, close to the border between Co. Mayo and Co. Galway and centred on Irish grid reference: M 23637, 49790.

Habitats within the lands mainly comprise improved grassland, limestone pavement, stone walls, hedgerows and scrub woodland. The area is characterised by large open fields and low field boundaries with smaller pockets of low scrub and woodland. The proposed wind farm site is primarily grazed by sheep, but fewer areas of cattle grazing.

1.4. Legal protection of bats

Bats are protected by law in the Republic of Ireland under the Wildlife Act 1976 and subsequent amendments (2000 and 2010). The latest is the wildlife amendment Act 2023.

Under the Wildlife Acts, it is an offence to intentionally disturb, injure or kill a bat or disturb its resting place. The Wildlife Acts also make it an offence to unintentionally kill or injure bats or to unintentionally destroy or interfere with bat roosts as part of any construction or engineering works.

National Parks and Wildlife Service (NPWS) (2021a and 2021b) guidelines outline further legal protection afforded to species listed on Annex IV off the Habitats Directive (92/43/EEC), as required by Articles 12, 13 and 16. The Habitats Directive is transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations, 2011-2021 (Habitats Regulations) and this legislates for requirements in relation to strict protection of species listed on Annex IV of the Habitats Directive, which are set out in Regulation 51, with Regulation 54 pertaining to derogation licences, including Regulation 54 A, when the Minister is applying for a derogation.

All bat species fall under Annex IV of the EU Habitats Directive (1992). The system of Strict Protection is applied across the entire natural range of Annex IV species, even outside of protected sites. As set out in Regulation 51, carrying out of any work with the potential to capture or kill any specimen of a Strictly Protected species, or to disturb these species, and for which a derogation licence has not been granted, may constitute an offence under Regulation 51 of the Habitats Regulations. Furthermore, any action resulting in damage to, or destruction of, a breeding or resting place of an animal may constitute an offence unless a derogation licence has been granted. This action does not need to be deliberate to constitute an offence, i.e., places onus on demonstrating due diligence. Breeding and resting places are protected even when the animals are not using them, once there is a high probability that they will return. Planning authorities may refuse planning permission solely on grounds of the predicted impact on protected species like bats.

Lesser horseshoe bat (*Rhinolophus hipposideros*) is listed in Annex II of the EU Habitats Directive 1992 and are currently only known to occur in Counties Cork, Kerry, Limerick, Clare, Mayo, and Galway (NPWS, 2019). The greater level of protection offered to the lesser horseshoe bat means that areas important for this species are designated as Special Areas of Conservation (SACs). The foraging range (core sustenance zone) for lesser horseshoe bats from maternity roosts is approximately 2.5 km and seasonal movements between summer and winter roosts reported as 5 km to 10 km (Collins *et al*. 2016). The proposed wind farm site falls within the current known distribution of lesser horseshoe bat.

For all other bat species occurring in Ireland, EU legislation requires that they are strictly protected. Among Ireland's obligations under the Habitats Directive is the obligation to maintain favourable conservation statuses of Annex-listed species.

Under the EU Nature Restoration Law (Regulation (EU) 2024/1991), Member States are required to implement restoration measures for habitats of species listed under the Habitats Directive, which includes all bat species occurring in Ireland. The regulation mandates ecosystem-specific restoration targets, including terrestrial and freshwater habitats, to ensure the long-term survival of species such as bats. Restoration efforts must improve habitat quality and connectivity, prevent deterioration, and contribute to favourable conservation status. These obligations complement existing protections and reinforce Ireland's duty to restore and maintain bat habitats as part of its national restoration plan.

Ireland has also ratified the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983). This convention was instigated to protect migrant species across all European boundaries, which covers certain species of bat.

1.5. Compliance

In order to comply with the requirements of the EU Habitats Directive (1992) and the European Communities (Birds and Natural Habitats) Regulations 2011, wind farm applications in Ireland are required to be assessed for their potential impacts on bat populations. To inform the impact assessment, a range of bat surveys were undertaken including a desk-based study and field surveys. In the absence of statutory Irish guidance for establishing baseline conditions for bat impact assessment at wind farm developments, the recommended methodological approach for the Proposed Project is Bats and Onshore Wind Turbines: Survey, Assessment, and Mitigation. (Scottish Natural Heritage (SNH) *et al.*, 2019, as updated NatureScot *et al.*, 2021). Hereafter these guidelines will be referenced as NatureScot *et al.* (2021). Although Bat Conservation Ireland published guidance in 2026, the survey scope and assessment were completed prior to its release and remain consistent with NatureScot *et al*. (2021).

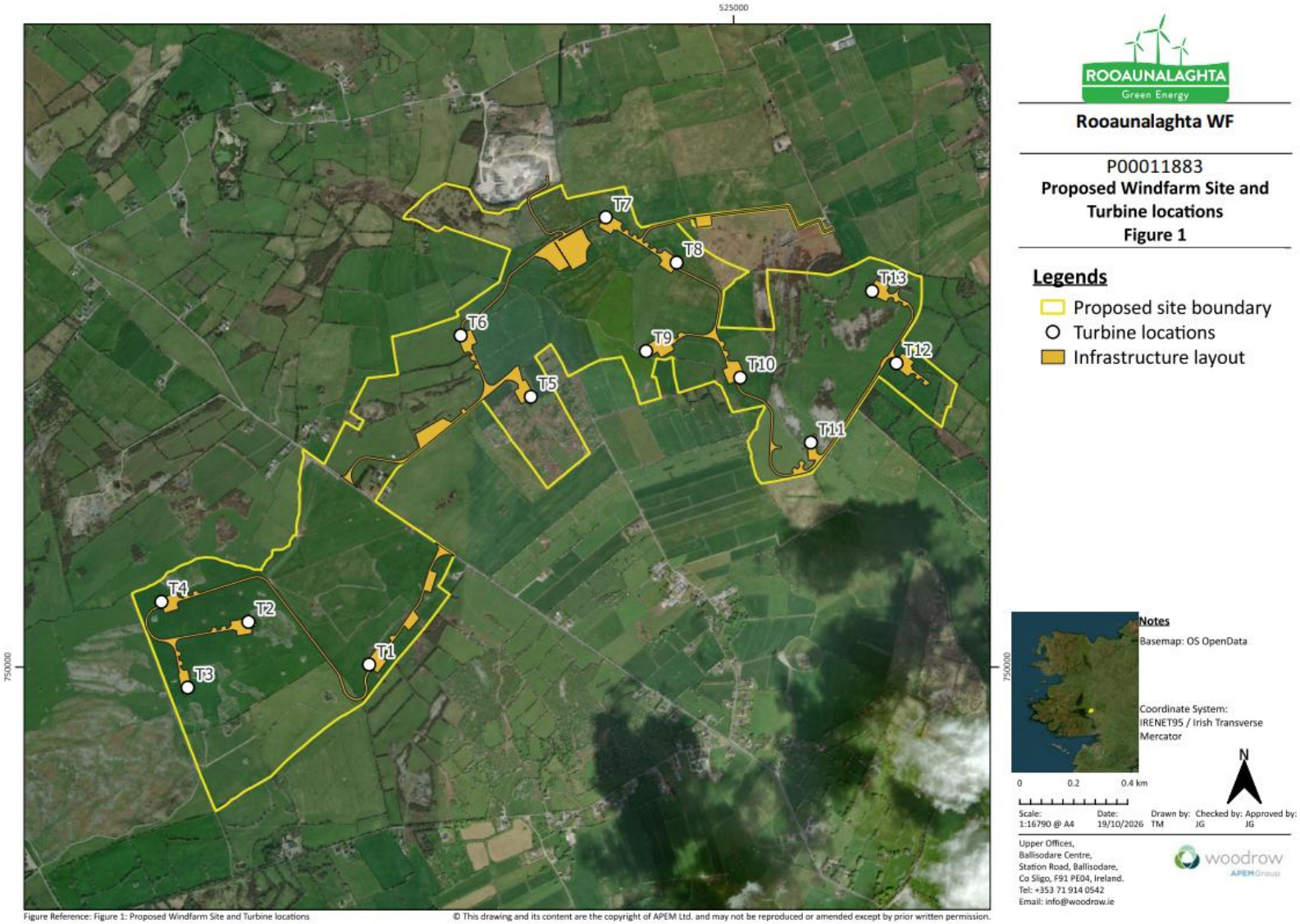


Figure 1: Proposed wind farm site including turbine locations

2. METHODOLOGY

2.1. Desk study

A desk-based review of habitat suitability within the proposed wind farm project, and available third-party bat data, was used to inform the scope of the field surveys required. As recommended by both BCI (2012 and 2026) and NatureScot *et al*. (2021), the area covered by the desk-based review was conducted to a radius of 10 km from the proposed wind farm project. The desk-based study included:

- A review of Natura 2000 sites designated for bats.
- Examining aerial imagery, historic maps, and 6-inch maps to identify potential bat foraging and roosting habitats e.g., subterranean features such as caves, souterrains.
- Lundy *et al*. (2011) as displayed on Biodiversity Maps, provides a high-level assessment of potential habitat suitability for different species of bat occurring in Ireland.
- Data received from BCI within 10 km of the proposed wind farm site centre for species and known roosts.
- National Biodiversity Data Centre (NBDC, 2026) for the 10 km squares covering the proposed wind farm site [M25], including species recorded and known roosting sites.
- Bristol University Caves Database and Geological Survey of Ireland data to identify local caves and souterrains for potential hibernation roosts.

2.2. Field Survey Methodology:

2.2.1. Bat Habitat Suitability and Preliminary Roost Assessment

Bat field surveys were conducted by Patrick Power, Bruno Mels, and Kevin O'Reilly during the 2024 and by Damien McAndrew during the 2026 active bat seasons in accordance with NatureScot (2021), Collins (2023), and Marnell *et al.* (2022). The most recent guidelines recommend that "… *features that could support maternity roosts and significant hibernation and/or swarming sites (both of which may attract bats from numerous colonies from a large catchment) within 200 m plus rotor radius of the site should be subject to further investigation*". The guidance allows the survey extent to be adapted using professional judgement to reflect site conditions and potential changes during the design process. Refer to Appendix 11 for statement of competence.

Turbine specifications and locations can change during the design phase. Accordingly, as a precaution, preliminary roost assessment (PRA) and ground-level tree assessment surveys were undertaken to a radius of 300 m from the turbine locations, exceeding the guideline distance of 200 m plus the proposed rotor radius of 68 m. For reporting and assessment, the survey results were subsequently filtered to the guideline-based 268 m buffer around the proposed turbine locations. PRA and foraging habitat assessment of the proposed wind farm site was undertaken on 24 January 2024 to identify potential roost features (PRFs) and areas of potential foraging and commuting importance. The surveys in 2026 reaffirmed the roosts F.1-F.7 remained present in substantially unchanged condition.

Surveyors utilised the assessment criteria described in Collins (2023), which provides guidelines for assessing potential suitability of habitat features as bat roosts and features for foraging and commuting bats. This allows surveyors to assign PRF as having a roosting potential classification of:

'none', 'negligible', 'low', 'moderate', or 'high'. This classification is summarised in **Table 1**. Alternatively, for trees they are assessed using the categorisation in **Table 2**.

Table 1: Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgment[1]

Suitability	Description Roosting Habitats	Commuting and Foraging Habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e., a complete absence of crevices/suitable shelter at all grounds /underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e., no habitats that provide continuous lines of shade/protection for flight-lines or generate/shelter insect populations available to foraging bats).
Negligible [a]	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[b] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e., unlikely to be suitable for maternity and not a classic cool/stable hibernation site but could be used by individual hibernating bats[c]).	Habitat that could be used by small numbers of commuting bats such as a hedgerow or unvegetated stream, but isolated, *i.e.,* not very well connected to the surrounding landscape by another habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions, and/or surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland, or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat. These structures have the potential to support high conservation status roosts e.g., maternity or classic cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, treelined watercourses and grazed parkland. Site is close to and connected to known roosts.

[1] Collins, J. (ed.) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edition). The Bat Conservation Trust, London.

Suitability	Description Roosting Habitats	Commuting and Foraging Habitats
a. Negligible is defined as so small or unimportant as to be not worth considering, insignificant. This category may be used where there are places that a bat could roost or forage (due to one attribute) but it is unlikely that they actually would (due to another attribute). b. For example, in terms of temperature, humidity, height above ground level, lights levels or levels of disturbance. c. Evidence from the Netherlands shows mass swarming events of common pipistrelle (*Pipistrellus pipistrellus*) bats in autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2016 and Jansen *et al.*, 2022) Common pipistrelle swarming has been observed in the UK (Bell, 2022 and Tomlinson, 2020) and winter hibernation of numbers of this species has been detected at Seaton Hall in Northumberland (National Trust, 2018). This phenomenon requires some research in the UK, but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in prominent buildings in the landscape, urban or otherwise.		

The categorisation presented in Table 1 does not apply to features found in trees, and it is best to categorise trees as per **Table 2**.

Table 2: Classification of tree PRFs (Collins, 2023; Bat Tree Habitat Key, 2023)

Suitability	Description
NONE	Either no PRFs in the tree or highly unlikely to be any.
FAR	Further assessment required to establish if PRFs are present in the tree e.g., survey at height
PRF-I	A tree feature only suitable for individual bats or very small numbers of bats, either due to size or lack of suitable surrounding habitats.
PRF-M	A tree feature suitable for multiple bats and may therefore be used by a maternity colony.

This categorisation of trees uses two categories (PRF-I or PRF-M). Further to this if a woodland/treeline is made up of multiple PRF-I's this area is best categorised as a roost resource. Appropriate compensation for all PRF-I's in advance of works and a Precautionary Working Method Statement (PWMS) for works is required.

Based on the features present and the location of the trees or other structures, the potential use of the feature can also be considered, and classified as per Hundt (2012):

- Maternity (breeding roost).
- Summer/transitional (to include transitional, occasional, satellite, night and day roosts); and Hibernation roost.

Surveyors initially inspect using non-invasive external and internal techniques for any building encountered. All trees encountered were assessed from the ground level.

2.2.2. TDR and GCR surveys

A PRA was also conducted along the TDR and the GCR on 14 April 2026 to identify any roost features or important bat habitat features that may be impacted by proposed activities along the TDR and GCR. These involved surveyors walking and driving along the proposed routes to identify any PRFs or

important habitat features such as broadleaf woodland, watercourses, etc. Refer to Figure 2 for the TDR and GCR.

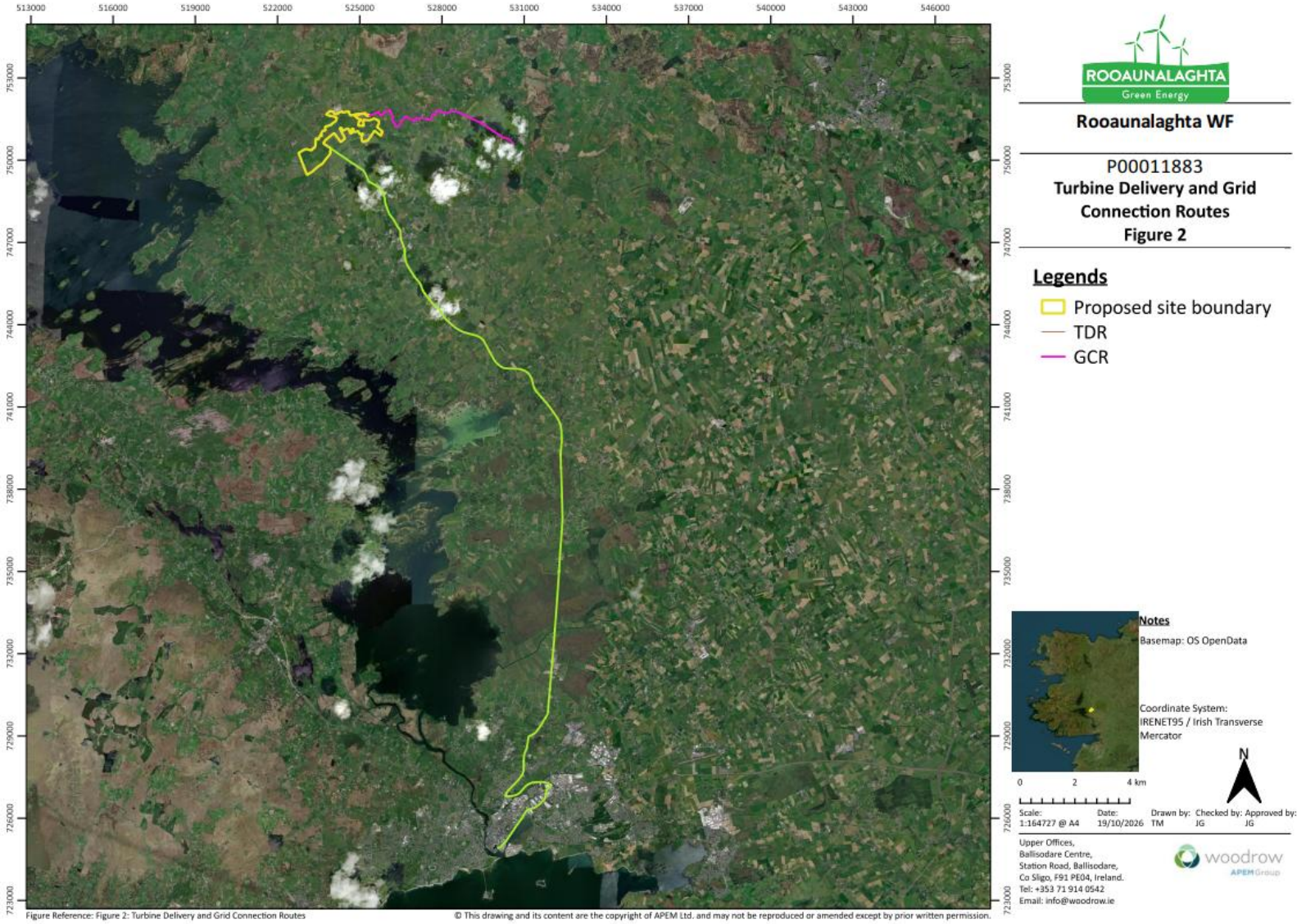


Figure 2: Grid connection route and turbine delivery route

2.2.3. Roost Emergence Surveys

Dusk emergence surveys were completed on buildings comprising moderate PRFs identified within the proposed wind farm site during the active bat season from April to June 2024 and April and June 2026. Refer to Appendix 6 for pictures of the locations. For buildings/structures, Collins (2023) recommends that:

- High PRFs receive three dusk emergence surveys carried out between May and September, with at least two of the surveys between May and August.
- Moderate PRFs receive two dusk emergence surveys carried out between May and September, with at least three weeks in between surveys and with at least one emergence survey carried out between May and August.
- Low PRFs receive one dusk emergence survey carried out between May and August.

Two PRF-M tree features (F.5 and F.6) and one building (F.7) were surveyed in June 2026. No roost features were identified as being removed as part of the proposed project. The PRA surveys in 2026 reaffirmed the roosts F.1-F.7 remained present in substantially unchanged condition. No further surveys were undertaken on F.1 – F.4 in 2026

As detailed in Collins (2023), dusk emergence surveys commenced 15 minutes before sunset and concluded 1.5 - 2 hours after sunset. Surveys were conducted within prescribed favourable weather conditions, including a temperature of at least 10°C at sunset, a maximum ground level wind speed <5 m/s, and no or very light periodic precipitation. These surveys were undertaken using Elekon Batlogger M2 bat detectors to collect geo-referenced records of bat activity, which were then analysed using BatExplorer to identify species or genus. In addition, infra-red (IR) and/or thermal cameras, set to face the PRF of interest, were employed as a night-vision aid during emergence surveys and improve survey accuracy when counting emergences of bat and ensure that any late emergence is captured, especially when light to aiding surveyor visibility becomes limited.

Survey effort including details on survey type, dates, times, and conditions are provided in **Table 3**.

Table 3: Summary of roost survey effort

Date	Feature ID	Start time	Sunset time	End time	Distance from nearest turbine	Survey type	Weather conditions
03 April 2024	F.1	20:03	20:18	20:47	245 m – T3 310 m – T2	Emergence	Temp: 12°C Wind: 1 m/s Precipitation: showers getting heavier as the survey went on.
22 April 2024	F.2 and F.3	20:30	20:45	22:15	360 m – T6	Emergence	Temp: 10°C Wind: 2 m/s Precipitation: dry
29 May 2024	F.1	21:30	21:45	23:15	245 m – T3 310 m – T2	Emergence	Temp: 11°C Wind: 3 m/s Precipitation: dry
06 June 2024	F.2 F.4 F.5 F.6	21:45	22:00	23:30	360 m – T6 100 m – T13 160 m – T8 350 m – T3	Emergence	Temp: 15°C Wind: 0 m/s Precipitation: dry
14 April 2026	F.7	20:24	20:39	22:10	630 m – T5	Emergence	Temp: 15°C Wind: 3 m/s Precipitation: light rain
14 June 2026	F.5 F.6 F.7	21:50	22:08	23:45	160 m – T8 350 m – T3 630 m – T5	Emergence	Temp: 13°C Wind: 4 m/s Precipitation: dry

2.2.4. Hibernation roost surveys

Hibernation roost surveys were undertaken in accordance with NatureScot *et al*. (2021), which recommends inspection of potential hibernation roosts located within 200 m plus rotor radius of 68 m. The survey approach followed published guidance from Collins (2023) and the Bat Mitigation Guidelines for Ireland (Marnell *et al*., 2022).

Winter hibernation roost inspections were undertaken at five potential roost features (PRFs) within the proposed wind farm site: F.1, F.2, F.4, F.5 and F.6 (see **Figure 4** for indicative locations and **Appendix 7** for pictures). These features had been identified during the preliminary roost assessment as having structural characteristics that could potentially provide suitable conditions for hibernating bats, including sheltered internal spaces and potential crevices or cavities.

Inspections were carried out on 24 January 2024 during suitable weather conditions in the core hibernation period (November–March) using torches and an endoscopic camera (Rigid Micro CA-350X), where appropriate, to assess potential roosting features for signs of hibernating bats. All work was carried out by surveyors holding appropriate NPWS licences.

2.2.5. Nighttime Bat Walkover (NBW) Surveys

A NBW survey was conducted in accordance with guidance provided in Collins (2023) and the Bat Mitigation Guidelines for Ireland (Marnell *et al*., 2022). The NBW survey was carried out during suitable weather conditions on 22 April 2024 after the completion of an emergence survey, targeting a period of peak bat activity (i.e., warm, dry evening with low wind speeds). The aim of the NBW survey was to provide supplementary, site-contextual information to support the interpretation of static detector and roost survey data, by recording bat activity and habitat use along a targeted route within the wind farm site. The NBW was not intended to provide quantitative coverage of bat activity across the site, but to inform understanding of species composition and activity patterns in relation to key habitats. Surveyors walked a prescribed route across the site recording bat activity along the route using Batlogger M2 (Elekon) detectors. Data was later analysed using BatExplorer software (Elekon) to determine species composition and activity levels along the route.

2.2.6. Static Detector Surveys

Static detector surveys were undertaken using Wildlife Acoustics Song Meter 4 Wildlife Acoustics Full Spectrum detectors (SM4BAT–FS) equipped with SMM-U2 ultrasonic microphones, thirteen of which were deployed to cover each of the proposed turbine location as required by NatureScot *et al*. (2021).

Detectors were deployed on three occasions covering spring, summer, and autumn.

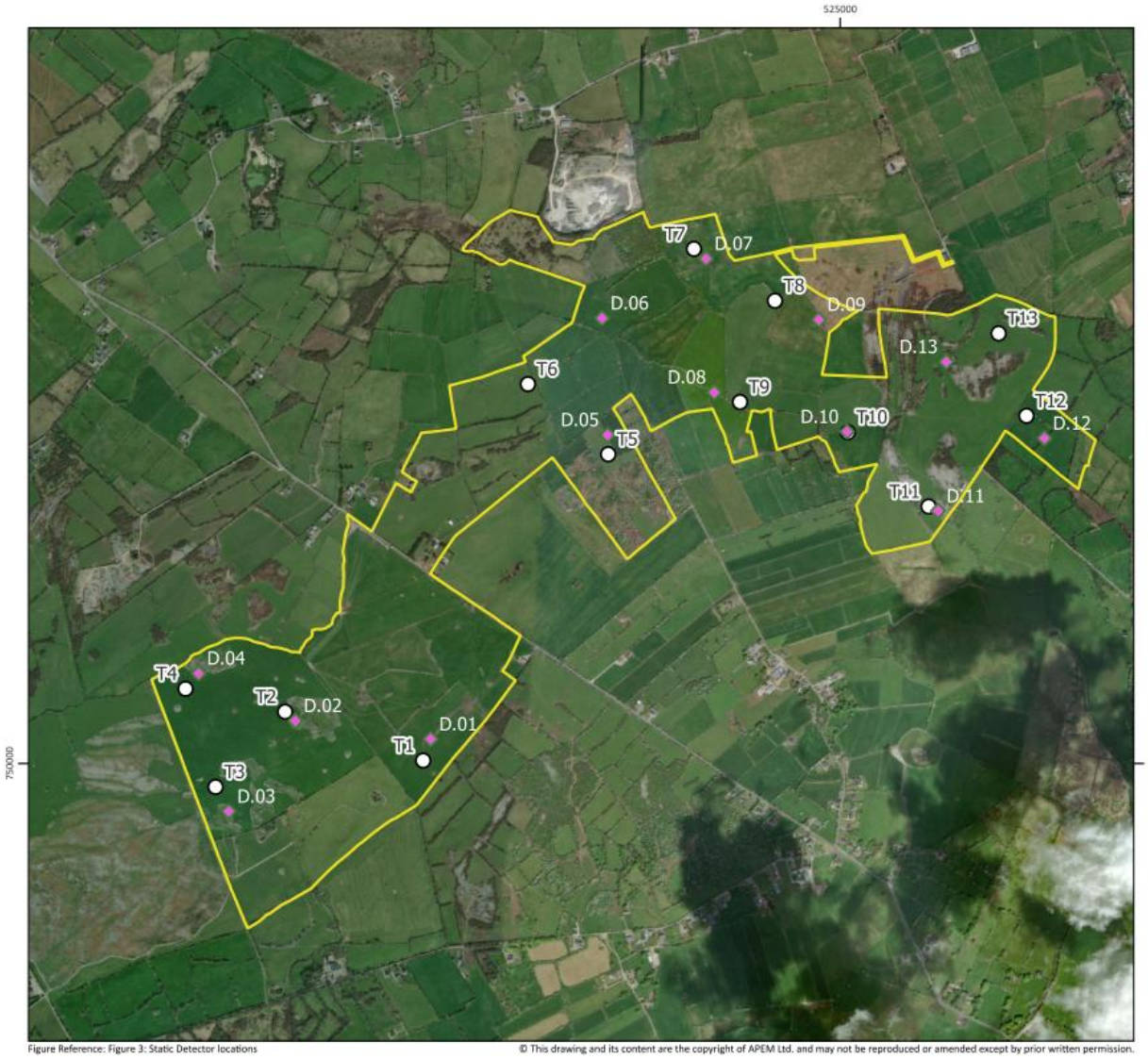


Figure 3 shows the locations of static deployments and Appendix 5 show pics of the deployment's. To distinguish turbine locations from deployment locations, the deployment locations have the prefix of D.No (e.g., D.01).

A sampling rate of 384 kHz (Barataud and Tupinier, 2015) was set for detectors to ensure that species that echolocate at higher frequencies were recorded (e.g., lesser horseshoe bat), and recording was scheduled to be continuous subject to triggering from 30 minutes before sunset until 30 minutes after sunrise, for a minimum of 10 weather-compliant nights.

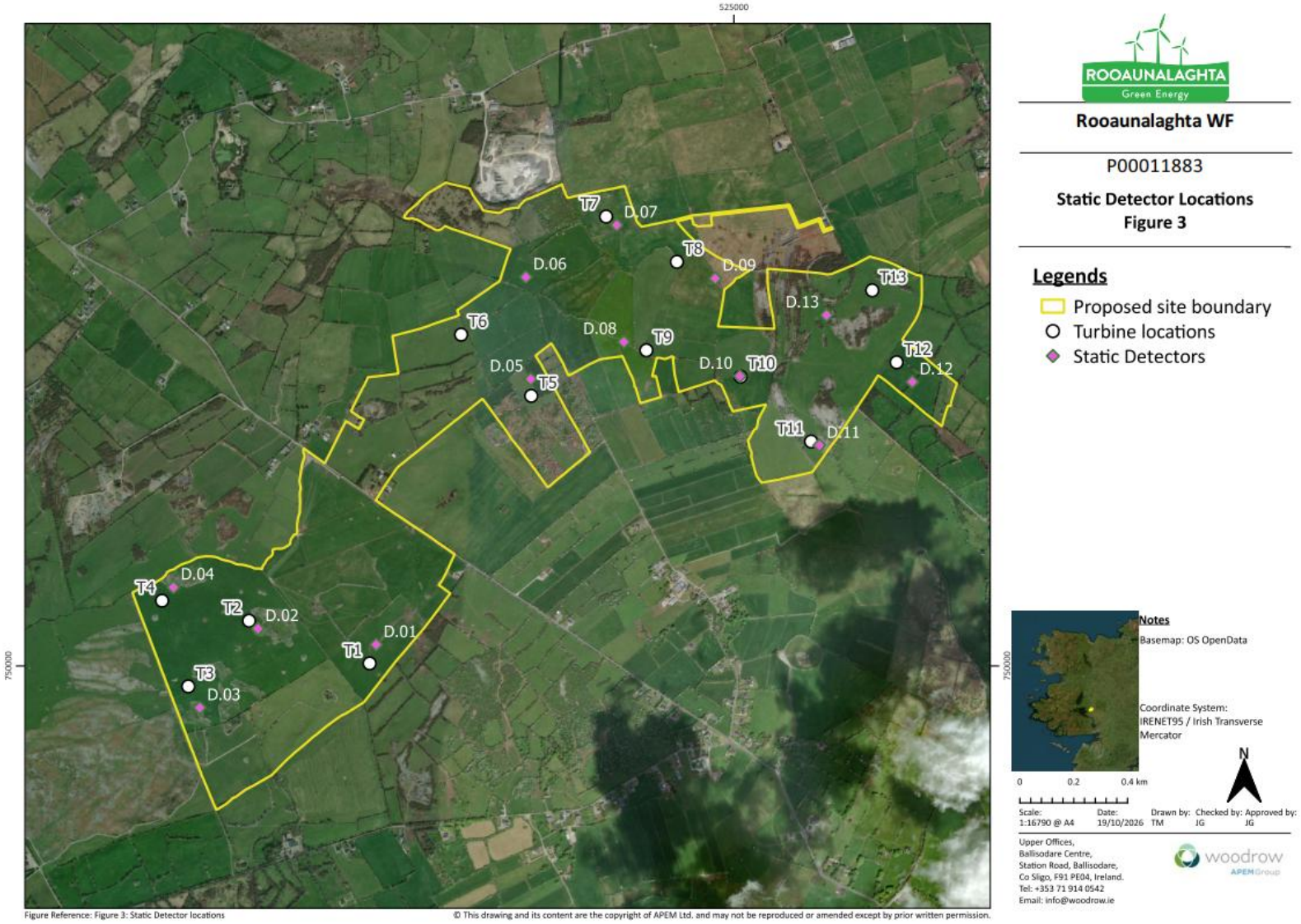


Figure 3: Static detector deployment locations 2024

Table 4 shows date ranges of each static deployment. The location of each static deployment and run-time of all static detectors for each deployment is shown in **Appendix 4**. **Appendix 3** shows the weather conditions during the three deployments.

Table 4: Static detector deployment dates for each season

Season	Deployment date	Collection date
Spring	02 April 2024	22 April 2024
Summer	06 June 2024	25 June 2024
Autumn	02 September 2024	17 September 2024

2.3. Data Processing and Supporting Methods

2.3.1. Calibration and Testing of Recording Equipment

Calibration and testing of recording equipment is required by the NatureScot *et al.* (2021), and as a standard operating procedure Woodrow has a stringent schedule of testing all bat recording equipment prior to spring deployments and between summer and autumn deployments. Equipment checks are logged in a Microsoft Excel database, providing an audit trail to ensure that all data is accurate, and form a robust and traceable dataset. Unique numbering of static detectors and microphones allows for tracing, if any issues arise, e.g., following a microphone or detector failure. Checks undertaken include pre-deployment device setting including battery charge levels, firmware, and configuration and pre-/post-deployment microphone sensitivity tests. Static detectors are checked in-field on collection to ascertain whether a technical fault has occurred, and detectors are redeployed if necessary to ensure there are no data gaps.

2.3.2. Data Analysis

For data collected using Song Meter 4 BAT Full Spectrum (SM4BAT-FS) detectors, analysis of sound recordings was undertaken using Kaleidoscope software to confirm species, or genus for *Myotis* species and pipistrelle species social calls, and exact number of bat passes for each transect survey or static deployment. For data collected using the Batlogger M (Elekon) detectors, analysis of sound recordings was undertaken using BatExplorer software. This analysis aimed to confirm species (or genus for *Myotis* species) and bat activity (exact number of bat passes) for each deployment and transect survey. All sound files were run through Kaleidoscope Pro's auto-identification (Version 5.6.3), and then manual verification was undertaken by Woodrow operatives. Russ (2012), Middleton *et al*. (2014), and Middleton *et al*. (2022) were used to aid in the species identification of bat calls during data analysis.

Recordings of common and soprano pipistrelles for which Kaleidoscope determined a match ratio of 100% (meaning every recorded call matched the known species call parameters) were deemed accurate to a degree that did not necessitate manual verification. Nevertheless, all other automatically identified bat species were subjected to manual check, which is above the recommended 10% manual verification outlined in SNH *et al*. (2019) and NatureScot *et al*. (2021).

Recordings automatically identified as noise were determined to fall outside of the recording parameters for the survey and were classified as noise. Any calls showing up as "NoID," in which the software cannot identify any species, were also checked and manually identified.

Bat activity was measured by the number of bat passes recorded. Bat passes are commonly used as a metric for bat activity and determine species presence (Kerbiriou *et al*., 2018). Therefore, a bat pass was defined as the detection of one or more bat calls from a single species within a 15-second sound file. Recordings in which multiple species (or individuals) were recorded were split into separate bat passes. The number of bat passes was considered synonymous with registrations, as defined by commonly accepted practice, which refers to species presence within a 15-second sound file.

Geographical and temporal context for activity levels was then examined through internal comparative analysis. Woodrow have developed an in-house analysis for static data collected. Mean and median bat passes per hour were generated using statistical software R. In order to provide an appropriate test of activity within the site, Woodrow analysis compares activity levels with other wind farm developments from its own database to provide comparative activity levels.

Bat activity was quantified using average bat passes per hour (bp/h), calculated by dividing the total number of species-specific bat passes by the total detector recording duration (expressed in hours), based on actual recorded deployment minutes across the spring, summer and autumn survey periods.

Activity levels are assessed using the criteria applied by Mathews *et al.* (2016). This study examines the risk of European bat species to wind energy developments in the UK. Woodrow have adapted the Mathews *et al.* (2016) scale of activity per night to a scale of bat passes per hour for resident species of Ireland. This adaptation uses an average of 10 hours per night across the active bat season to determine the cut-off of high activity. **Table 5** shows the adapted activity levels classifications. The output is then converted to show the mean and median activity levels that can then be used to determine a risk assessment in relation to bat activity. It should be noted that presenting mean activity levels can be highly misleading where the data are highly skewed, as is frequently the case with bat activity at wind turbines (Lintott and Mathews, 2018), therefore the assessment has used median values.

The results are presented at both local level (per detector) and site scale to allow assessment of activity across the Development.

Table 5: Activity level classification as per Mathews *et al*. 2016 adapted to hourly activity levels

Classification	Bat passes per hour
Low	<1.99
Medium	2 – 4.99
High	≥5

2.3.3. Location-based Weather Monitoring

Monitoring weather conditions was undertaken through the deployment of a location-based fully automated weather station with 3G connectivity.

The Davis Vantage Vue is a wireless integrated sensor suite weather station and was deployed to provide data on a real-time basis. This allows weather station functionality to be checked daily during

the survey season and for action to be taken if a station fails or there are concerns regarding the data. The location-based weather station collected the full range of weather data, including temperature, wind speed and rainfall, which allows surveyors to determine whether deployment nights were compliant with the prescribed weather parameters (≥8°C at dusk, max. ground level wind speed of 5 m/s and minimal rainfall) as per the NatureScot *et al.*, (2021) guidance on weather data.

Deployment periods can then be adjusted to ensure a minimum of 10 nights of compliant data are captured. In addition, site specific weather data can be useful for investigating the recorded patterns of site usage by bats. Notwithstanding the compliance requirements, it is considered insightful to gather bat activity data during inclement weather conditions to observe how bats might use the site during such conditions.

Weather data for the three deployment periods has been extracted and shown graphically in **Appendix 3**.

2.4. Survey Limitations

Genetic analysis of droppings collected from the farm shed at F.2 was inconclusive due to sample degradation. Additional samples were not collected. Therefore, based on the precautionary approach, this location has been treated as a roost for the report and following assessment.

During spring, due to an error, detectors at D.02 and D.08 recorded for only eight nights instead of the recommended ten nights as per NatureScot *et al.* (2021). The data was still analysed to identify species present and to assess nightly activity at these locations for the duration.

The detector at D.01 failed to record during summer (refer to Table 13) and was redeployed on 22 June 2024, after which it recorded successfully for 22 nights, all of which were included in the assessment.

The detector at D.04 was relocated approximately 80 m to the north-west for the summer and autumn survey periods (refer to Table 4) due to livestock access constraints at the original position. The revised location was situated in a more sheltered area with scattered trees, compared to the previously more open setting. This change represents a variation in habitat context between survey periods and may have influence recorded bat activity and species assemblage. As such, direct comparison of activity data between spring and subsequent survey periods at this location have been interpreted with caution. The relocation remained within the same general area and broader habitat mosaic, allowing continued characterisation of bat activity within the wider survey area.

One roost emergence survey on 03 April 2024 at F.1 was started and cancelled mid -way due to weather. This feature, classed as moderate roosting potential, requires two roost emergence surveys, however, only one emergence survey was completed, which did confirm a transitional roost. Therefore, using the precautionary approach, this location has been treated as a roost for the report and following assessment.

One Nighttime Bat Walkover (NBW) survey was undertaken, rather than the three surveys (one per season) recommended in Collins (2023). In this instance, the NBW formed a supplementary element of the survey programme, with seasonal variation in bat activity adequately characterised through static detector deployments and the wider survey dataset.

Given the level of survey effort already undertaken across the site, including multiple detector locations and seasonal coverage, it was considered that a single NBW survey was sufficient to verify habitat use along the selected route and to ground-truth findings from other survey methods.

3. SURVEY RESULTS

3.1. Desk study

A summary of the desk study results including existing ecological records, ad hoc records, Habitats Directive classifications, Irish Red List status, and modelled habitat suitability for each species are shown in **Table 6**. The NBDC bat habitat suitability maps grid square M25 classed the site as low (Lundy *et al*., 2011) bat habitat suitability overall.

A data request was submitted to Bat Conservation Ireland (BCIreland) in early 2023 and resubmitted in September 2026 for known roost records within 10 km of the proposed wind farm site. A total of 27 bat records were provided, 19 of which were lesser horseshoe bat roosts from within known SACs (refer to **Section 3.1.1**) (See **Appendix 1**). However, the closest known roost is a brown long-eared bat roost approximately 6.8 km from the proposed wind farm site. The closest lesser horseshoe bat roost is 8.58 km from proposed wind farm site. The foraging range for lesser horseshoe bats from roosts is approximately 2.5 km, while winter/summer roost migrations can be up to 10 km in distance (BCT/BMT Cordah Limited, 2005). No hibernation roosts are identified within the BCIreland data.

Refer to **Table 6** for information on species conservation status and NBDC habitat suitability index[2].

Table 6: Bat species records within 10 km search radius

Species name	Roost records within 10 km	Habitats Directive	Irish Red List Status	NBDC habitat suitability index (level)
Common pipistrelle	X	Annex IV	Least concern	High (39)
Soprano pipistrelle (*Pipistrellus pygmaeus*)	X	Annex IV	Least concern	Very High (43)
Nathusius's pipistrelle (*Pipistrellus nathusii*)	X	Annex IV	Least concern	Very Low (6)
Leisler's bat (*Nyctalus leisleri*)	X	Annex IV	Least concern	Very High (46)
Brown long eared bat (*Plecotus auritus*)	✓	Annex IV	Least concern	Very High (44)
Daubenton's bat (*Myotis daubentonii*)	X	Annex IV	Least concern	High (34)
Natterer's bat (*Myotis nattereri*)	X	Annex IV	Least concern	Very High (40)
Whiskered bat (*Myotis mystacinus*)	✓	Annex IV	Least concern	Very Low (10)
Lesser horseshoe bat (*Rhinolophus hipposideros*)	✓	Annex II Annex IV	Least concern	Moderate (26)

[2] It should be noted that the habitat suitability classifications are the output of a statistical model from 2009 to indicate potential habitat suitability and may not reflect the actual current on-site data and need to be considered in the context of the field surveys.

These records demonstrate the presence of a diverse bat community in the wider area, with several species of conservation concern known to be roosting within the 10 km radius of the proposed wind farm site.

3.1.1. Designated Sites

A search of the Natura 2000 network identified a number of SACs in proximity to the Proposed Project, including the wind farm site, GCR and TDR.

The closest SAC to the wind farm site for which Lesser Horseshoe Bat [1303] is listed as a qualifying interest (QI) is Lough Corrib SAC (IE0000297), located approximately 150 m away.

A further SAC, Kildun Souterrain SAC (IE002320), is located approximately 7.5 km from the proposed wind farm site.

No SACs are located in close proximity to the GCR. Sections of the TDR pass within the wider landscape associated with Lough Corrib SAC; however, the TDR does not intersect with, or occur in close proximity to, habitats associated with the qualifying interests of the SAC.

All Natura 2000 sites associated with the wind farm site, GCR and TDR are considered further in the field survey results and subsequent impact assessment sections.

In addition, sites designated at national level were identified within the study area. Cloughmoyne proposed Natural Heritage Area (pNHA) (000479) is adjoining the western boundary of the wind farm site, and Rostaff Turlough pNHA (000385) lies approximately 800 m to the south-east. No Natural Heritage Areas (NHAs) are located within 10 km of the proposed wind farm.

3.2. Field survey results

3.2.1. Habitat suitability assessment

The proposed wind farm site comprises improved grassland grazed by sheep, limestone pavement, and exposed calcareous rock/oak-ash-hazel woodland habitat, dense bracken/dry calcareous and neutral grassland/dry calcareous heath mosaic habitat and oak-ash-hazel woodland/scrub mosaic habitat areas which had low hazel, silver birch and holly species present. Tree cover is limited and there are few well-developed linear features. Field boundaries are defined primarily by a network of dry-stone walls, approximately 1.5 to 2.0 m in height, with occasional crevices and voids within the stonework. Hedgerows are sparse and, where present, are typically associated with these stone walls.

The dry-stone wall network provides some degree of linear connectivity and may be used by bats for commuting and foraging; however, due to the generally open nature of the landscape, limited tree cover and low structural complexity of boundary features, connectivity across the proposed wind farm site is considered limited overall and of relatively low suitability compared to more well-developed hedgerow or woodland edge habitats. Table provides a description of the habitat surrounding each deployment location. **Table 7** provides the habitat assessment for each detector location based on **Table 1**.

Table 7: Bat habitat classified in accordance with Collins (2023)

Turbine	Bat habitat classification for commuting and foraging
T1	Low
T2	Low
T3	Low
T4	Low
T5	Moderate
T6	Low
T7	Moderate
T8	Low
T9	Low
T10	Moderate
T11	Moderate
T12	Moderate
T13	Moderate

3.2.2. Preliminary Roost Assessment

Thirty PRF-I and three PRF-M trees along with four buildings with moderate roosting potential were identified within the Site. Refer to Table 8 and **Figure 4** for the PRF locations identified within 268m of the turbine locations, as per NatureScot (2021). **Appendix 2** shows pictures of the building and PRF-M locations.

Table 8 Roost potential within 268 m of turbine location

Turbine	Roost potential within c. 268 m of turbine location
T1	There are three tree PRF-I's and three low buildings, none of which are proposed to be removed
T2	There are three tree PRF-Is . One of the PFR-Is will be removed as part of the bat exclusion buffer for this turbine location. The remaining 2 will not be removed.
T3	F1is present and has been identified and confirmed as a day/ transitional roost, based on the number of bats recorded during the emergence survey effort (refer to Section 3.2.4). A further four buildings with low roosting potential and two PFR-I trees are also present. None of the buildings or trees are proposed for removal.
T4	There is one PRF-I present. This is not proposed to be removed.
T5	There are two PRF-I's present. Neither are proposed for removal.
T6	There are one PRF-I present. This is not proposed for removal.
T7	There are two PRFs present, one PRF-I and one PRF-M. Neither are proposed for removal
T8	There are two PRFs present, these overlap with the 268m buffer of T7.
T9	There are no PRFs present,
T10	There are three PRF-I's present. , none of which are proposed to be removed
T11	There are three tree PRF-I's. One of the PFR-Is will be removed as part of the bat exclusion buffer for this turbine location. The remaining 2 will not be removed. A large pile of rocks has

Turbine	Roost potential within c. 268 m of turbine location
	also identified as moderate roosting potential, however, this will not be impacted by the proposed development.
T12	There are two PRF-I's present, neither of which are proposed to be removed.
T13	There are four PRF-I's present, two of which will be removed as part of the bat exclusion butter. The reining two will not be removed.

The four buildings were selected for further investigation, refer to Table 9. No PRF-M trees were subject to additional survey as these are not proposed for removal , as per Collins (2023) recommendations.

The farm shed located at F.2 contained bat droppings. A sample was collected and submitted for genetic analysis. However, results were inconclusive due to the degraded condition of the sample.

Table 9: List of PRF features identified within the proposed wind farm site

Feature ID	Feature description	Distance from nearest turbine(s)	PRF suitability
F.1	Lambing shed	245 m – T3; 310 m – T2	Moderate
F.2	Dry-stone farm shed	360 m – T6	Moderate
F.3	Large barn	360 m – T6	Moderate
F.4	Willow tree with crevice	100 m – T13	PRF-I
F.5	Dead hazel tree with crevice	160 m – T8	PRF-M
F.6	Hollow branch on elder tree	350 m – T3	PRF-M
F.7	Derelict house	630 m – T5	Moderate

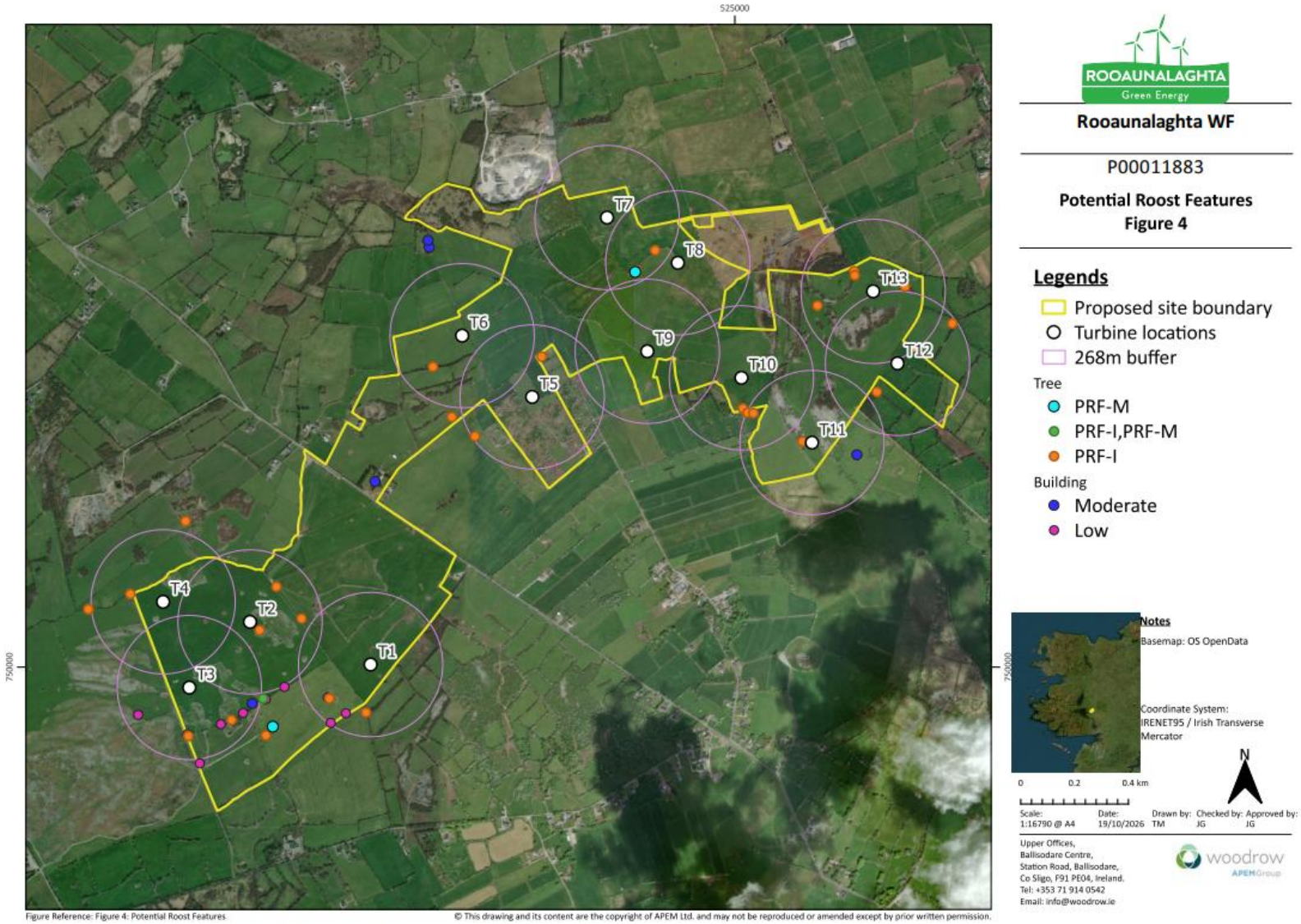


Figure 4: Potential roost features identified within the proposed wind farm site

3.2.3. TDR and GCR roost assessment

No PRFs or other bat roosting habitat features were identified along the TDR or GCR that would be affected by the proposed works. While limited vegetation and hedgerow trimming may be required at locations along the TDR to facilitate turbine component delivery, no tree felling is proposed and no identified PRFs will be affected. Trees adjacent to the route are generally located outside the works footprint, typically beyond approximately 30-50 m from excavation areas. No direct habitat loss is anticipated along the GCR. Construction works will take place within the existing road network, including trench excavation and cable laying. The remaining works areas are located within high-traffic environments that are already subject to regular vehicle movement and associated disturbance. No roost features are expected to be impacted, therefore further survey effort was not required.

3.2.4. Roost Emergence Surveys

Roost surveys established the existence of a transitional soprano pipistrelle roost (2 individual bats) at F.1 (refer to **Table 10**) and a transitional roost at F.7 (4 unidentified individual bats, however based on activity in the area at the time, assumed common pipistrelle). No other roosts were confirmed present. Soprano pipistrelles were foraging within F.3 making this feature a potential feeding station. No roosts will be removed or disturbed as part of the Proposed Project. Roost locations have been provided in accompanying **CONFIDENTIAL Appendix 12**.

There are numerous PRFs within trees across the proposed wind farm site classed as PRF-I and PRF-M features; no emergence surveys were completed on them. However, bats may still use these PRFs intermittently. Hinds and Davidson-Watts (2022) note that tree-roosting bats exhibit fission–fusion behaviour, frequently switching between roosts or aggregating in a single roost. Roost selection is influenced by factors such as microclimate, seasonal variation, and parasite avoidance, meaning that absence of evidence during surveys does not confirm absence of use.

Table 10: Summary of emergence surveys and results at each PRF location.

Feature ID	Feature	PRF classification	Distance to nearest turbine	Survey type and dates	Conclusion
F.1	Lambing shed	Moderate	245m to T3	03 April 2024	No emergence observed. The building is not subject to direct loss or modification as part of the proposed wind farm layout.
F.2 and F.3	Dry-stone farm shed and large barn	Moderate	360m to T6	22 April 2024	No emergence observed. Soprano pipistrelle foraging within large barn. The building is not subject to direct loss or modification as part of the proposed wind farm layout.
F.1	Lambing shed	Moderate	245m to T3	29 May 2024	Emergence observed – soprano pipistrelle (2).

Feature ID	Feature	PRF classification	Distance to nearest turbine	Survey type and dates	Conclusion
					The building is not subject to direct loss or modification as part of the proposed wind farm layout.
F.2	Dry-stone farm shed	Moderate	360m to T6	06 June 2024	No emergence observed. The building is not subject to direct loss or modification as part of the proposed wind farm layout.
F.4	Willow tree with crevice	PRF-I	100 m – T13	06 June 2024	No emergence observed. The feature is not subject to direct loss or modification as part of the proposed wind farm layout
F.5	Dead hazel tree with crevice	PRF-M	160 m – T8	06 June 2024	No emergence observed. The feature is not subject to direct loss or modification as part of the proposed wind farm layout
F.6	Hollow branch on elder tree	PRF-M	350 m – T3	06 June 2024	No emergence observed. The feature is not subject to direct loss or modification as part of the proposed wind farm layout
F.7	Derelict house	Moderate	630m to T6	14 April 2026	Emergence observed –four individuals. No works proposed in this area. The building is not subject to direct loss or modification as part of the proposed wind farm layout.
F.5	Dead hazel tree with crevice	PRF-M	160 m – T8	14 June 2024	No emergence observed. The feature is not subject to direct loss or modification as part of the proposed wind farm layout
F.6	Hollow branch on elder tree	PRF-M	350 m – T3	14 June 2024	No emergence observed. The feature is not subject to direct loss or modification as part of the proposed wind farm layout
F.7	Derelict house	Moderate	630m to T6	14 June 2026	No emergence observed. The building is not subject to direct loss or modification as part of the proposed wind farm layout.

3.2.5. Hibernation Roost Surveys

No hibernating bats or evidence of hibernation use were recorded during the winter internal inspections. The inspected features were reassessed as having low suitability for hibernation, primarily due to their exposed nature and the apparent absence of stable microclimatic conditions identified during the winter survey effort.

No additional features with potential for hibernation roosting were identified during the surveys.

3.2.6. Static Detector Surveys

3.2.6.1. Spring

Each of the 13 detectors recorded bat activity during the spring 2024 survey period, with the majority achieving the target of approximately 20 nights' deployment (c. 13,321 minutes).

A total of 5,871 bat passes were recorded across the 13 detectors during the spring survey period (refer **Table 11**). Activity was dominated by soprano pipistrelle, accounting for 51% of all passes. Leisler's bat represented 28% of passes, followed by common pipistrelle at 18%. The remaining species (Myotis spp., Nathusius' pipistrelle, brown long-eared bat and lesser horseshoe bat) collectively accounted for approximately 3% of recorded passes. Bat activity recorded by static detectors is expressed as bat passes per hour (bp/h), calculated as the total number of bat passes divided by the total survey effort (in hours) for each detector location and survey period.

Mean activity levels across the proposed wind farm site (refer to **Table 12**) show that all species show low mean activity at all detector locations, with the exception of detector D.13 showing higher activity for Soprano pipistrelle (refer to **Appendix 10** for full mean figures).

In contrast, Leisler's bat activity was recorded throughout the night, with detections present across all time periods (see **Figure 5**) This distribution of activity indicates sustained use of the site for foraging, rather than activity associated with discrete emergence peaks, which is consistent with the emergence patterns presented in **Appendix 8**.

Table 11: Total number of bat passes recorded at each detector location for each species in spring

Location	*Myotis Spp.*	Leisler's bat	Nathusius pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat	Total
D.01	9	203	0	69	92	7	0	380
D.02	3	6	0	10	12	0	0	31
D.03	4	50	0	52	94	1	0	201
D.04	4	123	0	46	66	3	0	242
D.05	8	163	4	73	184	2	2	436
D.06	9	243	1	43	86	10	0	392
D.07	4	187	0	51	82	3	0	327
D.08	1	4	1	11	14	1	1	33
D.09	4	104	4	119	185	8	8	432
D.10	6	137	1	54	88	3	0	289
D.11	9	129	5	84	183	8	1	419
D.12	15	121	1	152	440	1	14	744
D.13	11	185	0	297	1444	8	0	1945
Total	87	1655	17	1061	2970	55	26	5871

Table 12: Mean number of bat passes per hour at each detector location for each bat species[3]

Location	*Myotis spp.*	Leisler's bat	Nathusius' s pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat
D.01							
D.02							
D.03							
D.04							
D.05							
D.06							
D.07							
D.08							
D.09							
D.10							
D.11							
D.12							
D.13							

[3] Colours correspond to activity levels as per Table 5.

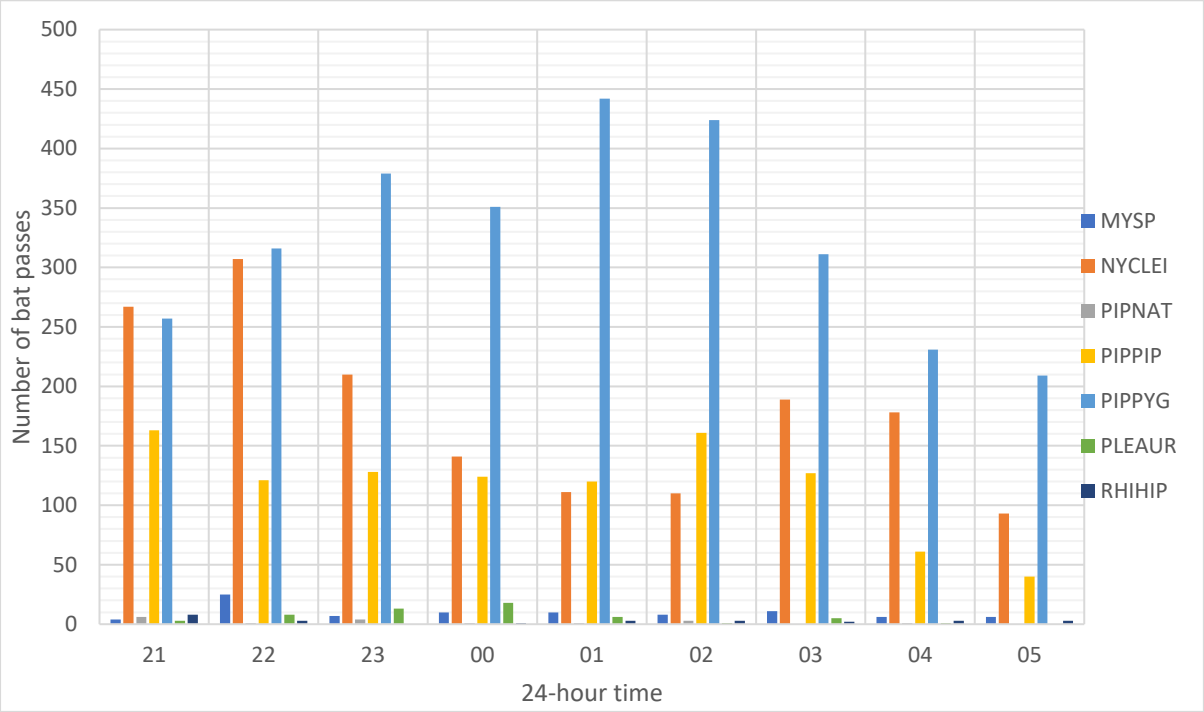


Figure 5: Total number of bat passes per hour per species for spring for all detector locations

3.2.6.2. Summer

Each of the 13 detectors recorded bat activity between 06 June 2024 and 25 June 2024, comprising 19 survey nights and a total of 9,446 minutes of recording time.

A total of 24,788 bat passes were recorded during the summer deployment (refer to **Table 13**). Activity was dominated by Leisler's bat , which accounted for 61% of all passes. Common pipistrelle accounted for 20%, followed by soprano pipistrelle at 15%. The remaining species (*Myotis spp*., brown long-eared bat, Nathusius' pipistrelle and lesser horseshoe bat) collectively accounted for approximately 2% of recorded passes.

Mean activity levels across the proposed wind farm site (refer to Table 14) indicate that common and soprano pipistrelle activity was unevenly distributed, with notably higher levels recorded at specific detector locations, particularly D.09, D.12 and D.13.

Leisler's bat also exhibited elevated activity at several locations (e.g., D.01, D.06, D.07 and D.13), although lower levels were recorded at D.02 and D.03, indicating spatial variation in activity across the Site. (refer to **Appendix 10** for full mean figures)

Although patterns displayed in **Figure 6** may suggest the presence of nearby roosting activity for Leisler's bat and common pipistrelle, **Appendix 8** indicates that no species exhibited activity within their known emergence windows at any detector location. This suggests that no roosts are likely to be located in the immediate vicinity of the detectors; however, given typical detection ranges (c. 40–100 m for Leisler's bat), the presence of roosts elsewhere within the wider study area cannot be ruled out.

Bats tended to exhibit earlier activity at locations adjacent to habitat features such as woodland and scrub (Appendix 8). By contrast, detectors located in more open habitats (e.g., D.07) generally recorded activity later in the night.

Table 13: Total number of bat passes recorded at each detector location for each species in summer

Location	Myotis Spp.	Leisler's bat	Nathusius' s pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat	Total
D.01	145	1859	3	499	757	107	3	3373
D.02	1	263	3	34	15	1	0	317
D.03	2	258	1	42	47	2	0	352
D.04	1	375	1	28	30	2	1	438
D.05	15	967	4	704	658	11	5	2364
D.06	6	820	9	104	9	3	0	951
D.07	12	718	14	299	58	7	0	1108
D.08	5	800	20	563	265	12	2	1667
D.09	9	542	14	851	785	5	9	2215
D.10	54	1900	13	694	327	41	0	3029
D.11	41	1152	2	244	151	19	7	1616
D.12	58	448	3	266	277	10	13	1075
D.13	21	5129	24	686	340	81	2	6283
Total	370	15231	111	5014	3719	301	42	24788

Table 14: Mean number of bat passes per hour at each detector location for each bat species.

Location	Myotis spp.	Leisler's bat	Nathusius' s pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat
D.01							
D.02							
D.03							
D.04							
D.05							
D.06							
D.07							
D.08							
D.09							
D.10							
D.11							
D.12							
D.13							

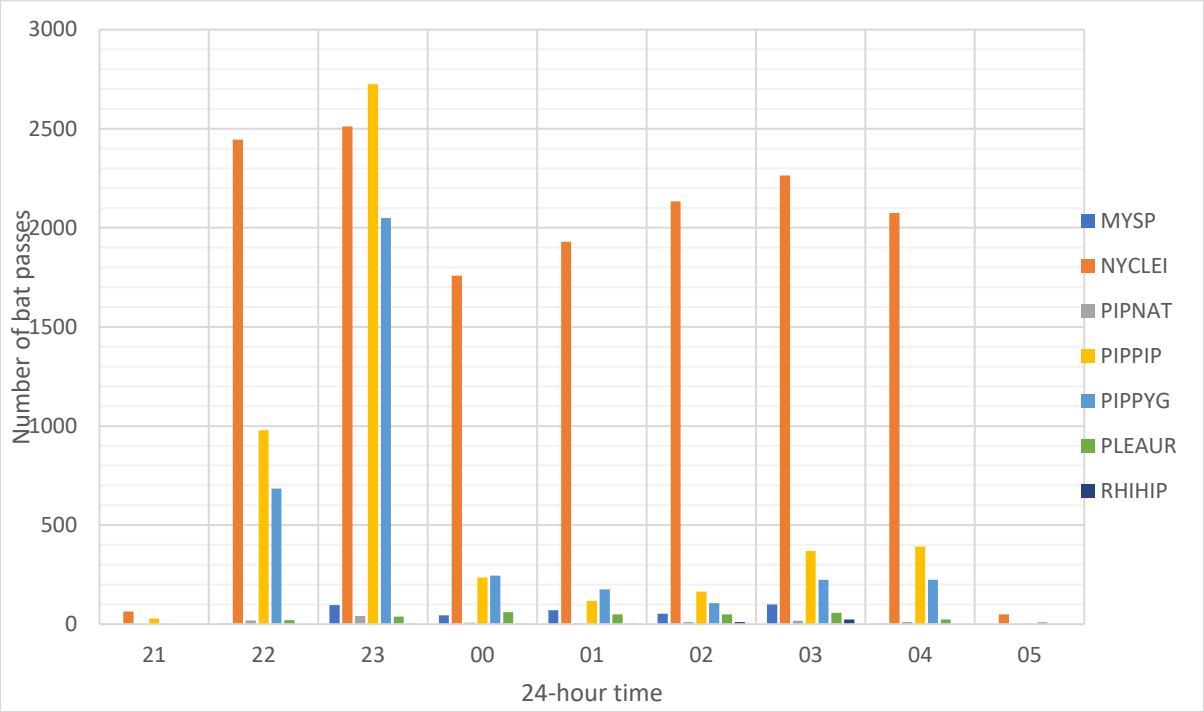


Figure 6: Total number of bat passes per hour per species for summer for all detector locations.

3.2.6.3. Autumn

Each of the 13 detectors recorded bat activity between 02 September 2024 and 17 September 2024, comprising 15 survey nights and a total of 11,442 minutes of recording time. The deployment period meets the minimum survey requirements, and overall detector coverage across the site is considered adequate.

A total of 28,268 bat passes were recorded during the autumn deployment (refer to **Table 15**) Activity was dominated by common pipistrelle, which accounted for 37% of all passes. Soprano pipistrelle and Leisler's bat each accounted for approximately 29% of passes. The remaining species (*Myotis spp*., brown long-eared bat, Nathusius' pipistrelle and lesser horseshoe bat) collectively accounted for approximately 5% of recorded passes.

Mean activity levels across the site (refer to **Table 16**) show a concentration of activity at a limited number of detector locations, with D.08, D.12 and D.13 consistently supporting the highest levels of pipistrelle activity. (refer to **Appendix 10** for full mean figures)

In contrast, Leisler's bat activity was more variable, with elevated activity recorded at several locations (e.g., D.01, D.05 and D.06), rather than being concentrated at one single location. This spatial pattern is consistent with activity patterns observed in preceding survey periods.

Figure 7 shows that bat activity was already present at 19:00, prior to the main period of nightly activity. Soprano pipistrelle activity increased to a peak at approximately 20:00, declined gradually to approximately 23:00, and remained relatively consistent throughout the remainder of the night.

Both common pipistrelle and Leisler's bat also exhibited increased activity from 19:00 into the early evening period, with peaks occurring around 20:00, followed by a gradual decline through the night.

Although these activity patterns may suggest proximity to potential roosting locations, figures presented in **Appendix 8** indicate that no species exhibited activity within their known emergence windows at any detector location. The static detector data shows no indication of roosts in close proximity to the survey points.

Table 15: Total number of bat passes for each species at each detector location for the autumn deployment period

Location	Myotis Spp.	Leisler's bat	Nathusius' s pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat	Total
D.01	73	1718	4	242	486	94	2	2619
D.02	65	359	1	130	388	63	0	1006
D.03	32	283	0	132	346	52	2	847
D.04	17	681	0	190	267	20	0	1175
D.05	28	1349	0	243	281	16	5	1922
D.06	81	1371	11	144	150	120	0	1877
D.07	30	411	0	130	155	50	0	776
D.08	42	797	0	3723	1863	20	19	6464
D.09	13	313	1	381	414	21	10	1153
D.10	36	292	0	136	183	65	1	713
D.11	34	224	0	203	242	72	9	784
D.12	5	150	0	4338	2575	26	23	7117
D.13	12	258	0	455	971	116	3	1815
Total	**468**	**8206**	**17**	**10447**	**8321**	**735**	**74**	**28268**

Table 16: Mean number of bat passes per hour at each detector location for each bat species.

Location	Myotis spp.	Leisler's bat	Nathusius' s pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat
D.01							
D.02							
D.03							
D.04							
D.05							
D.06							
D.07							
D.08							
D.09							
D.10							

Location	Myotis spp.	Leisler's bat	Nathusius' s pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat
D.11							
D.12							
D.13							

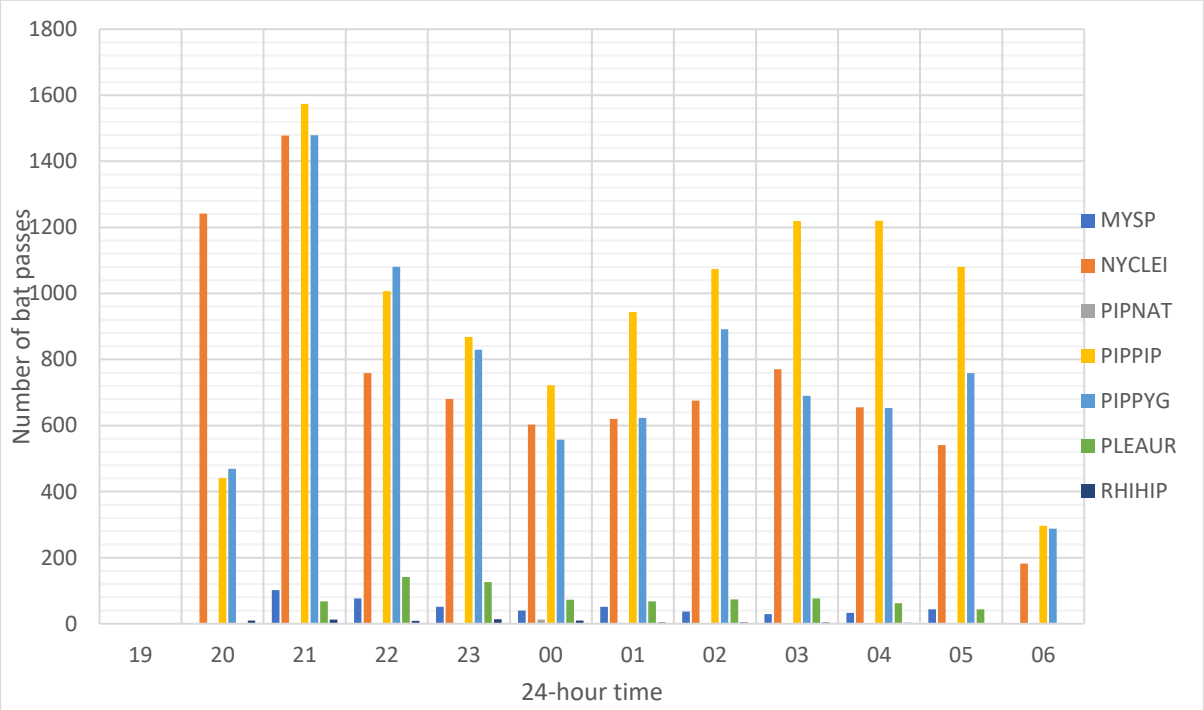


Figure 7: Total number of bat passes per hour per species for autumn for all detector locations.

3.2.6.4. 2024

Across all survey seasons, the highest levels of bat activity were consistently recorded at D.13, followed by D.12 and D.08 (refer to **Figure 8**). These locations exhibited substantially higher levels of activity than all other detector locations, particularly during the summer and autumn survey periods (refer to **Table 13** and **Table 15**). These detectors are located adjacent to vegetated habitats which are likely to provide favourable foraging and commuting conditions for bats.

Seasonal variation in activity was evident across the site and is likely influenced by prevailing weather conditions during the survey periods. Spring activity levels were generally low across most detector locations (refer to **Table 11**), with higher activity largely confined to D.13. In contrast, activity increased during summer and autumn, with the highest levels recorded at detectors located adjacent to habitat features such as woodland edges and areas of denser vegetation.

Detectors located in more open habitats (e.g., D.02, D.03 and D.04) recorded consistently low levels of activity across all survey periods, reflecting expected patterns for these habitat types. By comparison, D.13 recorded high activity during both summer (6,283 passes) and autumn (1,815 passes), with soprano and common pipistrelle dominating, alongside substantial Leisler's bat activity in summer. Similarly, D.12 and D.08 recorded very high levels of common and soprano pipistrelle

activity during autumn (7,117 and 6,464 passes respectively), indicating these locations represent key areas of bat activity within the site.

In the southern section of the site, detectors such as D.05, D.06 and D.07 showed moderate to high levels of activity during the summer survey period (refer to Table 12), suggesting the presence of potential commuting routes through this area. These detectors recorded comparatively lower levels of activity during spring and autumn, indicating seasonal variation in habitat use.

Analysis of bat activity in relation to wind speed (refer to **Appendix 9**) indicates that a large proportion of activity across detector locations occurred during periods of relatively low wind speeds (generally below 3 m/s). While this pattern was observed across the survey period, it reflects conditions during a single survey year and should be interpreted with caution, particularly given that 2024 was characterised by generally low wind conditions. As such, the relationship between wind speed and bat activity at the site may vary between years. On a precautionary basis, the implementation of curtailment measures during periods of low wind speed and suitable temperatures in summer and autumn would be expected to reduce potential collision risk.

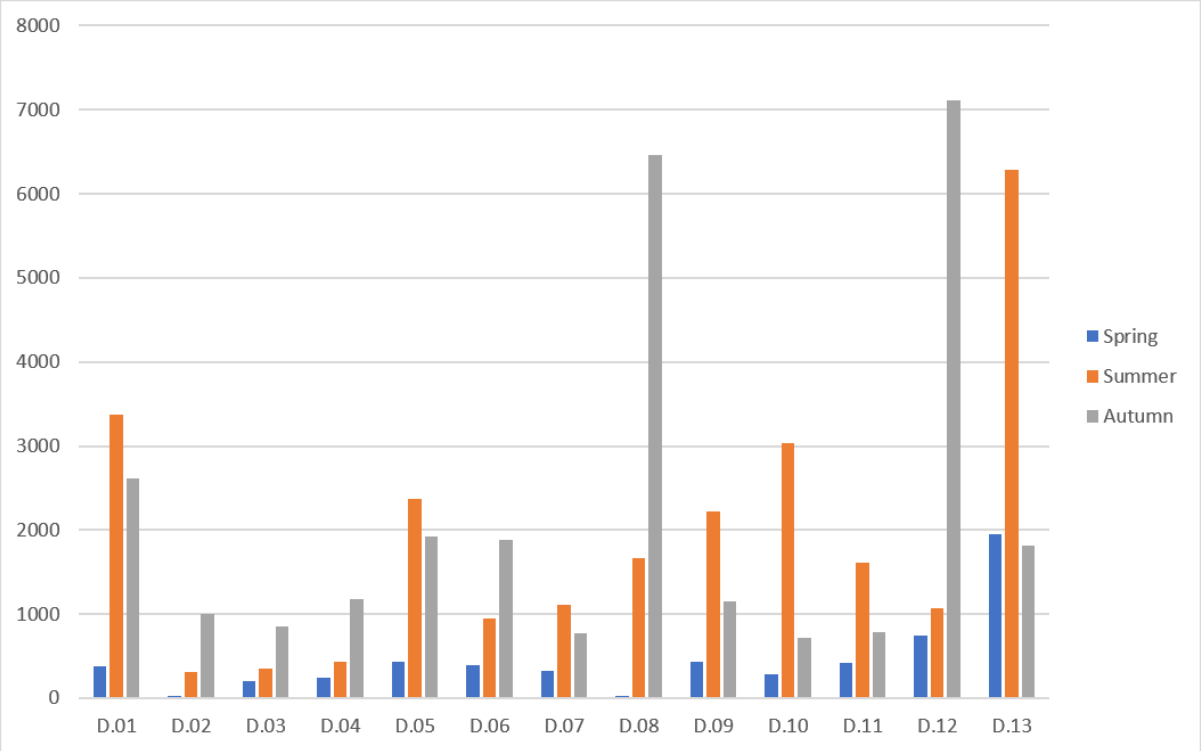


Figure 8: Total number of bat passes per season per species for all detector locations

3.2.7. Nighttime Bat Walkover Survey

A walked transect survey was conducted at the proposed wind farm site on 22 April 2024. The survey covered a route approximately 3 km in length within the north-western portion of the site, in the vicinity of turbines T5 and T6. The transect included areas surrounding identified PRFs(refer to **Figure 4**). The transect survey recorded common pipistrelle, soprano pipistrelle, Leisler's bat and Myotis spp. Activity was primarily recorded in association with habitat features, including hedgerows and scrub, with comparatively fewer passes recorded in more open sections of the site.

This pattern is illustrated in **Figure 9**, which shows the spatial distribution of recorded bat passes along the transect route.

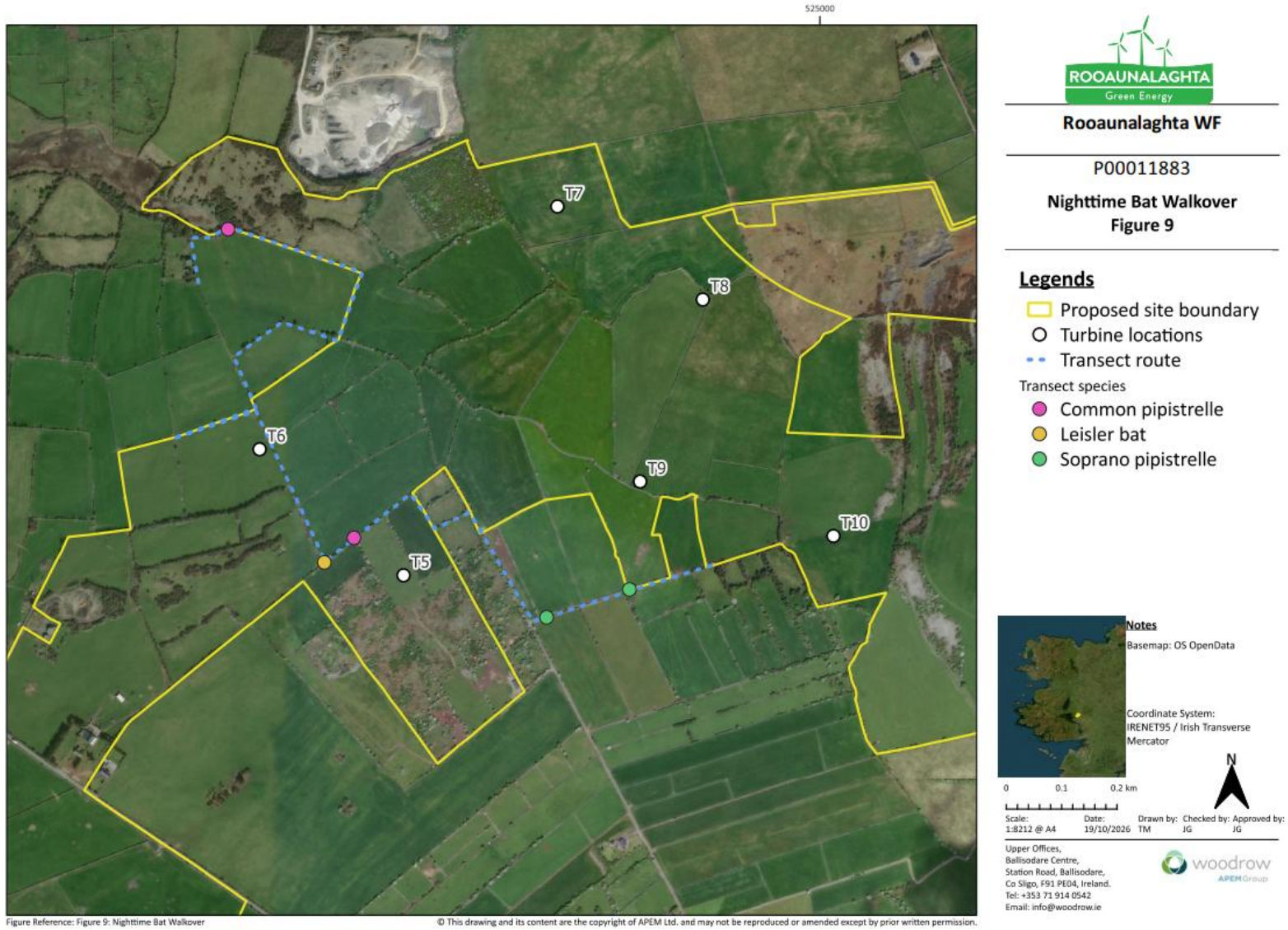


Figure 9: Transect activity survey route

3.3. Association of bat activity with habitat features

While not all static detectors were located at the exact positions of finalised proposed turbine locations, detectors were strategically positioned to provide a representative sample of bat activity across turbine locations and associated habitats. Deployment followed a stratified approach, with detectors distributed in relation to key habitat features and topographical variation across the Site (refer to

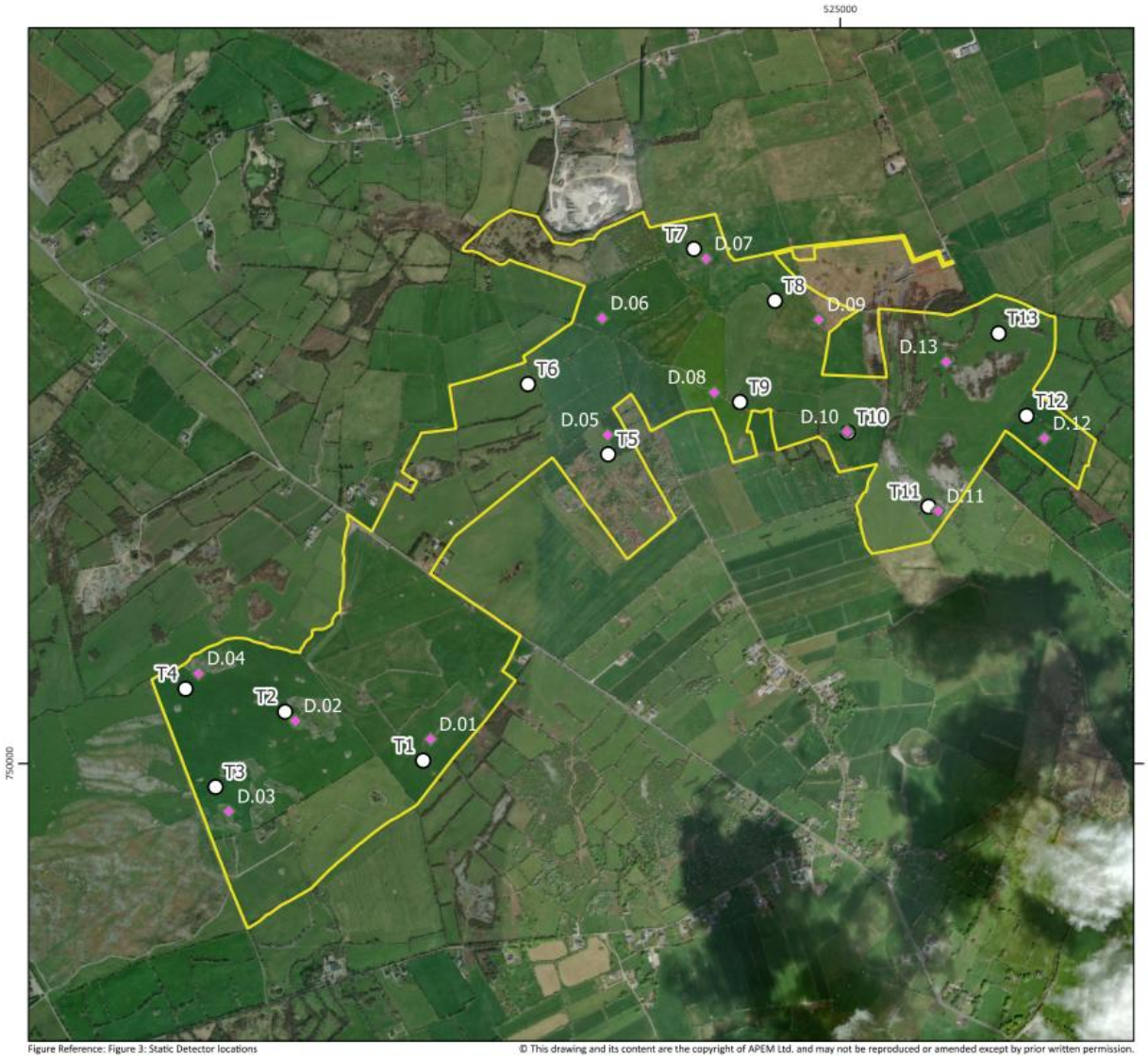


Figure 3).

This approach enables comparison between activity levels recorded at turbine locations and those associated with nearby habitat features, supporting interpretation of spatial patterns in bat activity and potential risk.

Table 17 identifies each detector location, the associated habitat, and the extent to which recorded activity is considered either site-specific (i.e., recorded at the exact turbine location) or representative (i.e., derived from comparable habitat within the Site).

This methodology is consistent with NatureScot (2021) guidance, which supports the use of representative sampling where direct placement at all turbine locations is not feasible. It is also aligned with Bat Conservation Ireland (2026), which emphasises the use of proportionate survey design and multiple lines of evidence to inform interpretation of bat activity.

Table 17 should be read in conjunction with **Figure 8**, which presents total bat activity (all species) recorded at each detector location across all survey periods.

Table 17: Foraging and commuting habitat surrounding detector locations in 2024

Proposed Turbine	Detector Location Accurate (A)	Detector Location Representative (R)	Closest Detector	Rationale
T1	D.01	D.02 D.03 D.04	D.01	D.01 is the closest detector to T1 (c. 75 m) and is located on a tree within open improved grassland, with the open space being consistent with the turbine location. Detectors D.02, D.03 and D.04 are also located on individual trees within the same open habitat type and are also considered representative.
T2	D.02	D.01 D.03 D.04	D.02	D.02 is located on a tree within open improved grassland, c. 44 m of the turbine location, with the open space being consistent with the turbine location. Detectors D.01, D.03 and D.04 are also located on individual trees within the same open habitat type and are considered representative.
T3	D.03	D.01 D.02 D.04	D.03	D.03 is the closest detector to T3 (c. 90 m) and is located on a tree within open improved grassland, with the open space being consistent with the turbine location. Detectors D.01, D.02 and D.04 are also located on individual trees within the same open habitat type and are considered representative.
T4	D.04	D.01 D.02 D.03 D.04	D.04	D.04 is the closest detector to T4 (c. 65 m) and is located on a tree within open improved grassland, with the open space being consistent with the turbine location. Detectors D.01, D.02 and D.03 are also on individual trees within the same open habitat type and are considered representative.
T5	D.05		D.05	D.05 is located at c. 65 m, along the hedgerow with scrub habitat of the eastern boundary of the field comprising turbine location T5 (in centre of the improved grassland field). Due to the width of this field being approx. narrow at 65m, the data is representative of this turbine location.
T6		D.02 D.03 D.04 (supplementary)	D.05	D.05 is the closest static detector to T6 (approximately 320 m); it is also located along a hedgerow. T6 while situated within open improved grassland is within 20m of the closest field boundary (eastern field boundary). While D.05 does not appear to be associated with the same immediate linear habitat feature as T6. It does represent activity along a linear feature within distance of a turbine location, therefore, the data is representative of turbine T6 location. Detectors D.02, D.03 and D.04 are located within comparable open improved grassland habitats, but at substantially greater distances (approximately 1.3–1.6 km). Therefore, D.02, D.03 and D.04 provide supplementary information on activity within

Proposed Turbine	Detector Location Accurate (A)	Detector Location Representative (R)	Closest Detector	Rationale
				similar open grassland habitats. None of these detector locations directly measures bat activity at T6, and this limitation is acknowledged when interpreting the results.
T7	D.07		D.07	D.07 is the closest detector to T7 (c. 50 m) and is located within open improved grassland, consistent with the turbine location.
T8		D.08 D.09	D.09	D.09 is the closest detector to T8 (c. 155 m) and is located along a stone wall with scattered vegetation, consistent with the turbine location. D.08 is also located within a similar habitat and is considered representative.
T9		D.08 D.09	D.08	D.08 is the closest detector to T9 (c. 90 m) and is located along a stone wall with scattered vegetation, consistent with the turbine location. D.09 is also located within a similar habitat and is considered representative.
T10	D10		D.10	D.10 is located at the turbine location (T10) within open improved grassland.
T11	D.11		D.11	D.11 is located adjacent to scrub habitat c. 30m east of T11 in open improved grassland. While the habitat types are different the data is considered representative of the turbine location.
T12		D.12	D.12	D.12 is located along a hedgerow of the southern boundary of the field approximately 90 m south of T12, which lies within open improved grassland adjacent to a smaller hedgerow (c. 15 m to eastern boundary). Due to the shared habitat context and proximity, D.12 is considered representative.
T13		D.11 D.13	D.13	D.13 is located within scrub woodland c. 195 m west of T13. While T13 is located within open improved grassland, it has scrub woodland within 70 m to the north, west and south. Therefore D.13 is considered representative of this turbine location. D.11 is located adjacent to scrub habitat, albeit of poorer condition and considered representative of similar habitat conditions.

Table 18: Total numbers of bat passes for each species at each detector location for all seasons

Location	*Myotis Sp*.	Leisler's bat	Nathusius's pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat	Total
D.01	227	3780	7	810	1335	208	5	6372
D.02	69	628	4	174	415	64	0	1354
D.03	38	591	1	226	487	55	2	1400
D.04	22	1179	1	264	363	25	1	1855
D.05	51	2479	8	1020	1123	29	12	4722
D.06	96	2434	21	291	245	133	0	3220
D.07	46	1316	14	480	295	60	0	2211
D.08	48	1601	21	4297	2142	33	22	8164
D.09	26	959	19	1351	1384	34	27	3800
D.10	96	2329	14	884	598	109	1	4031
D.11	84	1505	7	531	576	99	17	2819
D.12	78	719	4	4756	3292	37	50	8936
D.13	44	5572	24	1438	2755	205	5	10043
Total	**925**	**25092**	**145**	**16522**	**15010**	**1091**	**142**	**58927**

4. DISCUSSION

Bat surveys undertaken at the proposed wind farm site identified a diverse assemblage of bat species typical of agricultural landscapes in western Ireland. Activity was dominated by Leisler's bat, soprano pipistrelle and common pipistrelle throughout the survey period, with these species accounting for the vast majority of recorded bat passes. Similar assemblages are frequently reported from agricultural landscapes containing a mixture of grassland, scrub, hedgerows and small woodland patches, where structural habitat diversity provides suitable foraging and commuting resources for a range of bat species (Roche et al., 2014; Collins, 2023).

The survey results indicate that the proposed wind farm site supports relatively limited roosting resources. One confirmed soprano pipistrelle roost was recorded within the site, comprising a low-status day or transitional roost at F.1 where two bats were observed emerging during surveys. No evidence of maternity roosts, significant summer roosts or hibernation roosts was identified. Collins (2023) notes that transitional roosts are commonly associated with temporary or seasonal use and generally support relatively small numbers of bats compared to maternity or hibernation roosts. The low number of bats recorded, combined with the absence of evidence for breeding or hibernation activity, indicates that roosting habitat is unlikely to represent the primary ecological value of the site (Collins, 2023).

A further structure, F.7, was surveyed during the April and June 2026 programme and a transitional roost was identified based on the emergence of four unidentified bats during survey effort. However, this feature is located approximately 630 m from the nearest turbine location and no works are proposed in this area. Whilst the survey results provides evidence that bats utilise the wider landscape surrounding the Proposed Project, the feature lies well beyond the area subject to direct effects and does not indicate the presence of an important roost resource within the areas subject to direct effects from the development.

While a number of tree Potential Roost Features (PRFs) were identified during surveys, no tree roosts were confirmed. Nevertheless, occasional use of these features cannot be entirely excluded. Tree-roosting bat species often display fission-fusion social behaviour, frequently moving between multiple roosts within the wider landscape in response to changing environmental conditions, predator avoidance, parasite load and reproductive requirements (Willis and Brigham, 2004; Reckardt and Kerth, 2007; Ruczyński and Bartoń, 2020). The presence of PRF-I features therefore contributes to the wider ecological resource available to bats locally, although there is no evidence that these features support roosts of elevated conservation importance within the site.

Several PRF-I features are proposed for removal within turbine exclusion buffers; however, no evidence of bat occupancy or roosting activity was identified within these features during survey effort, and no confirmed bat roosts will be removed as part of the Proposed Project. In addition, no PRF-M features are proposed for removal. Whilst the occasional use of PRF-I features by individual bats cannot be entirely ruled out, the survey results indicate that these features principally contribute to the wider availability of roosting habitat within the landscape rather than functioning as confirmed roost sites.

The strongest pattern emerging from the survey programme was the clear spatial relationship between bat activity and habitat structure. The highest activity levels were consistently recorded at

detector locations D.08, D.12 and D.13, all of which were associated with scrub, hedgerows, woodland edge habitats or vegetated stone-wall networks. Conversely, detector locations situated within open improved grassland recorded substantially lower activity levels. Bats are known to preferentially utilise linear and structurally diverse habitats because they provide shelter from wind, increased prey abundance and navigational features that facilitate movement through the landscape (Froidevaux et al., 2019; Collins, 2023). The activity patterns recorded during surveys are therefore consistent with established understanding of bat habitat selection within agricultural environments.

Leisler's bat was the most frequently recorded species across the survey programme and represented the dominant component of bat activity at several detector locations. Activity was recorded throughout much of the night rather than being concentrated solely around emergence periods, indicating that the site is used extensively for foraging activity. Leisler's bat is recognised as a highly mobile aerial hawking species capable of exploiting large foraging ranges across farmland, woodland edge and semi-open habitats (Boston et al., 2020). The widespread distribution of Leisler's activity across the site is therefore consistent with the known ecology of the species and suggests that the site forms part of a broader foraging landscape rather than functioning as a focal roosting area (Boston et al., 2020; Collins, 2023).

The activity patterns recorded for common and soprano pipistrelle similarly indicate extensive use of habitat features throughout the site for foraging and commuting. Both species are known to exploit hedgerows, woodland edge habitats and other connected landscape features, and are often associated with areas of increased insect abundance (Froidevaux et al., 2019; Collins, 2023). Elevated levels of activity recorded at D.08 and D.12 during autumn suggest that these locations provide particularly favourable foraging conditions and may form part of locally important movement corridors within the site.

Analysis of activity timing provides little evidence for previously unidentified roosts occurring in close proximity to detector locations. Activity generally occurred outside expected emergence periods and was more indicative of foraging and commuting behaviour than direct emergence from nearby roosts. Thomas and Jacobs (2013) demonstrated that emergence timing can provide an important indicator of roost proximity, with concentrations of activity occurring close to species-specific emergence windows often associated with nearby roost locations. The patterns recorded during the present surveys do not indicate the widespread presence of such roost-related activity around turbine locations (Thomas and Jacobs, 2013).

Seasonal patterns were evident throughout the survey programme, with activity levels generally increasing from spring into summer and autumn. Such variation is typical of bat populations and reflects seasonal changes in energetic requirements, reproductive behaviour and the recruitment of juveniles into populations later in the active season (Russ, 2012; Collins, 2023). The greatest levels of activity recorded during summer and autumn were concentrated around vegetated habitat features, reinforcing their ecological importance within the site.

The relationship between bat activity and weather conditions observed during the surveys is also consistent with published evidence from wind farm studies. Activity across the site was greatest during periods of relatively low wind speed, particularly for Leisler's bat and pipistrelle species.

Overall, the survey results indicate that the proposed wind farm site supports a bat assemblage typical of the wider agricultural landscape, with localised areas of elevated activity associated primarily with

scrub, woodland edge and vegetated boundary features. Roosting resources within the site are limited, with one confirmed low-status soprano pipistrelle transitional roost identified at F.1 and a transitional roost identified at F.7, which lies outside the area subject to direct effects from the Proposed Project. However, the survey programme did not identify any maternity roosts, important summer roosts or hibernation roosts within areas subject to direct effects from the Proposed Project. The baseline surveys demonstrate that the principal ecological importance of the site for bats relates to its use by actively foraging and commuting bats, particularly Leisler's bat and pipistrelle species. Consequently, the key impact pathway requiring consideration within the assessment is collision risk associated with turbine operation rather than impacts on important roosting habitat (Mathews et al., 2016; NatureScot et al., 2021).

5. CONCLUSIONS

Bat surveys undertaken in 2024 and 2026 identified a diverse bat assemblage typical of agricultural landscapes in western Ireland. Seven bat species or species groups were recorded, with activity dominated by Leisler's bat, soprano pipistrelle and common pipistrelle throughout the survey programme.

The site supports limited roosting resources. One confirmed soprano pipistrelle day/transitional roost was identified at F.1. A transitional roost was also identified at F.7 based on the emergence of four unidentified bats during the 2026 survey programme; however, this feature is located approximately 630 m from the nearest turbine and lies outside areas subject to direct effects from the Proposed Project. No maternity roosts, significant summer roosts or hibernation roosts were identified. Although a number of tree Potential Roost Features (PRFs) were recorded, there was no evidence that these support roosts of elevated conservation importance.

Bat activity was concentrated around scrub, woodland edge, hedgerows and vegetated boundary features, with the highest activity recorded at detector locations D.08, D.12 and D.13. In contrast, open grassland areas consistently supported lower levels of activity. These results demonstrate the importance of structurally diverse habitats for foraging and commuting bats within the site.

Leisler's bat was the most frequently recorded species and, together with common and soprano pipistrelle, represents the principal ecological consideration for the Proposed Project. Activity patterns, combined with the limited evidence of roosting use, indicate that the site is used predominantly for foraging and commuting rather than supporting important roosting resources.

Overall, the baseline surveys indicate that the principal bat-related impact pathway requiring assessment is collision risk to actively foraging and commuting bats, particularly Leisler's bat and pipistrelle species, rather than impacts on roosting habitat. The results provide a robust basis for the subsequent impact assessment and identification of appropriate mitigation measures.

6. REFERENCES

Arnett, E.B., Huso, M.M.P., Schirmacher, M.R. & Hayes, J.P. (2011). Altering turbine speed reduces bat mortality at wind-energy facilities. Frontiers in Ecology and the Environment, 9(4), 209-214.

Barataud, M. & Tupinier, Y. (2015). *Acoustic Ecology of European Bats: Species Identification, Study of Their Habitats and Foraging Behaviour*. 1st ed. BIOTOPE.

Bat Conservation Ireland (2012). *Wind Turbine/Wind Farm Development Bat Survey Guidelines*. Version 2.8, December 2012. Bat Conservation Ireland.

Bat Conservation Ireland (2026). *Bat Survey, Assessment and Mitigation Guidelines for Onshore Wind Turbines in Ireland*. Bat Conservation Ireland, Ireland.

Bat Conservation Trust & BMT Cordah Ltd. (2005). *Bat Surveys for Wind Farm Developments: Good Practice Guidance*. Bat Conservation Trust.

Bat Tree Habitat Key (2023). *Part 1 of 3: Guide to the Formation and Identification of Potential Roost Features (PRFs) and Classification of Wooded Habitat*. Version 1. Available at: https://drive.google.com/file/d/1JOInSbUM_nk_3dy__WQlT-RY3IcuKEPB/view (accessed 08/06/2026).

Berthinussen, A. & Altringham, J. (2012). The effect of a major road on bat activity and diversity. *Journal of Applied Ecology*, 49(1), pp. 82–89.

Boston, E.S.M., Dechmann, D.K.N. & Ruczyński, I. (2020). Leisler's noctule *Nyctalus leisleri* (Kuhl, 1817). In: Hackländer, K. & Zachos, F.E. (eds.), *Handbook of the Mammals of Europe*. Springer, Cham.

Collins, J. (ed.) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 4th edition. Bat Conservation Trust, London.

Froidevaux, J.S.P., Boughey, K.L., Hawkins, C.L., Broyles, M. & Jones, G. (2019). Managing hedgerows for nocturnal wildlife: do bats and their insect prey benefit from targeted agri-environment schemes? *Journal of Applied Ecology*, 56(7), pp. 1610–1623.

Hinds, J. & Davidson-Watts, I. (2022). *Tree-Roosting Bats: Understanding Dynamic Roosting Behaviour*. Bat Conservation Trust.

Hundt, L. (2012). *Bat Surveys: Good Practice Guidelines*. 2nd edition. Bat Conservation Trust, London.

Kerbiriou, C., Bas, Y., Lorrilliere, R., Mougnot, J. & Julien, J.F. (2018). Potential of bat pass duration measures for studies of bat activity. *Bioacoustics*, 28(2), pp. 177–192.

Kruszynski, C., Bailey, L.D., Bach, L., Bach, P., Fritze, M., Lindecke, O., Teige, T. & Voigt, C.C. (2022). High vulnerability of juvenile Nathusius' pipistrelle bats (*Pipistrellus nathusii*) at wind turbines. *Ecological Applications*, 32(2), e2513.

Lundy, M.G., Aughney, T., Montgomery, W.I. & Roche, N. (2011). *Landscape Conservation for Irish Bats*. Bat Conservation Ireland.

Marnell, F., Kingston, N. & Looney, D. (2009). *Ireland Red List No. 3: Terrestrial Mammals*. National Parks and Wildlife Service, Dublin.

Marnell, F., Kelleher, C. & Mullen, E. (2022). *Bat Mitigation Guidelines for Ireland*. Version 2. Irish Wildlife Manuals No. 134. National Parks and Wildlife Service.

Mathews, F., Richardson, S., Lintott, P. & Hosken, P. (2016). *Understanding the Risk to European Protected Species (Bats) at Onshore Wind Turbine Sites to Inform Risk Management*. University of Exeter report for RenewableUK and the Department of Energy & Climate Change.

Mathews, F. & Mullen, E. (2018). Reviewing the evidence on mitigation strategies for bats in buildings: informing best practice for policy makers and practitioners.

Middleton, N., Froud, A. & French, K. (2022). *Social Calls of the Bats of Britain and Ireland*. 2nd edition.

National Biodiversity Data Centre (2026). *Biodiversity Maps*. Available at: https://maps.biodiversityireland.ie/Map (accessed 08/06/2026).

NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, University of Exeter & Bat Conservation Trust (2021). *Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation*.

Northern Ireland Environment Agency (NIEA) (2023). *Guidance on Bat Surveys, Assessment and Mitigation for Onshore Wind Turbine Developments in Northern Ireland*.

NPWS (2019). *The Status of EU Protected Habitats and Species in Ireland*. Volume 3: Species Assessments. National Parks and Wildlife Service (unpublished).

NPWS (2021a). *Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland*. NPWS Guidance Series 1.

NPWS (2021b). *Strict Protection of Animal Species: Guidance for Public Authorities on the Application of Articles 12 and 16 of the Habitats Directive*. NPWS Guidance Series 2.

Reckardt, K. & Kerth, G. (2007). Roost selection and roost switching of female Bechstein's bats (*Myotis bechsteinii*) as a strategy of parasite avoidance. *Oecologia*, 154, pp. 581–588.

Roche, N., Aughney, T., Marnell, F. & Lundy, M. (2014). *Irish Bats in the 21st Century*. Bat Conservation Ireland, Cavan.

Rodrigues, L., Bach, L., Dubourg-Savage, M.J., Karapandza, B., Kovač, D., Kervyn, T., Dekker, J., Kepel, A., Bach, P., Collins, J., Harbusch, C., Park, K., Micevski, B. & Minderman, J. (2015). *Guidelines for Consideration of Bats in Wind Farm Projects*. EUROBATS Publication Series No. 6. UNEP/EUROBATS Secretariat, Bonn.

Ruczyński, I. & Bartoń, K.A. (2020). Seasonal changes and the influence of tree species and ambient temperature on the fission–fusion dynamics of tree-roosting bats. *Behavioral Ecology and Sociobiology*, 74, 63.

Russ, J.M., Hutson, A.M., Montgomery, W.I., Racey, P.A. & Speakman, J.R. (2001). The status of *Pipistrellus nathusii* in the British Isles. *Journal of Zoology*, 254(1), pp. 91–100.

Russ, J. (2012). *British Bat Calls: A Guide to Species Identification*.

Russ, J. (2022). Nathusius' pipistrelle *Pipistrellus nathusii* (Keyserling & Blasius, 1839). In:

Hackländer, K. & Zachos, F.E. (eds.), *Handbook of the Mammals of Europe*. Springer, Cham.

Rydell, J., Bach, L., Dubourg-Savage, M.J., Green, M., Rodrigues, L. & Hedenström, A. (2010). Bat mortality at wind turbines in north-western Europe. *Acta Chiropterologica*, 12, pp. 261–274.

Thomas, A.J. & Jacobs, D.S. (2013). Factors influencing the emergence times of sympatric insectivorous bat species. *Acta Chiropterologica*, 15(1), pp. 121–132. https://doi.org/10.3161/150811013X667920

Voigt, C.C., Popa-Lisseanu, A.G., Niermann, I. & Kramer-Schadt, S. (2012). The catchment area of wind farms for European bats: a plea for international regulations. Biological Conservation, 153, pp. 80–86.

Wellig, S.D., Cryan, P.M., Barros, J.M.S., Bontadina, F. & Krauel, J.J. (2018).Bat activity at rotor-swept heights suggests high vulnerability of bats to wind turbines. Journal of Applied Ecology, 55(1), pp. 407–415.

Willis, C.K.R. & Brigham, R.M. (2004). Roost switching, roost sharing and social cohesion in forest-dwelling bats. Animal Behaviour, 68(3), pp. 495–505.

Wray, S., Wells, D., Long, E. & Mitchell-Jones, T. (2010). Framework for valuing bats in ecological impact assessment. CIEEM In Practice, 70, pp. 23–25.

Zeale, M.R.K., Davidson Watts, I. & Jones, G. (2012). Home range use and habitat selection by barbastelle bats (Barbastella barbastellus): implications for conservation. Journal of Mammalogy, 93(4), pp. 1110–1118.

Appendix 1: BCIreland data

Table A1-1: List of roost data from BCIreland for 10 km from M2475251090[4]

Name	Distance from centre of site (km)	Species observed
Roost 1	6.82	*Plecotus auritus*
Roost 2	8.58	*Rhinolophus hipposideros*
Roost 3	8.64	*Rhinolophus hipposideros*
Roost 4	8.84	*Rhinolophus hipposideros*
Roost 5	9.12	*Myotis mystacinus, Pipistrellus pygmaeus, Plecotus auritus, Rhinolophus hipposideros*
Roost 6	9.24	*Rhinolophus hipposideros*
Roost 7	9.26	*Rhinolophus hipposideros*
Roost 8	10.14	*Rhinolophus hipposideros*
Roost 9	10.40	*Rhinolophus hipposideros, Nyctalus leisleri*
Roost 10	10.40	*Pipistrellus pygmaeus*
Roost 11	10.40	*Rhinolophus hipposideros*
Roost 12	10.46	*Rhinolophus hipposideros*
Roost 13	10.48	*Myotis daubentonii, Rhinolophus hipposideros*
Roost 14	10.53	*Rhinolophus hipposideros, Pipistrellus pygmaeus, Myotis daubentonii, Plecotus auritus*
Roost 15	10.56	*Rhinolophus hipposideros, Myotis daubentonii*
Roost 16	10.61	*Plecotus auritus, Myotis mystacinus/ brandtii*
Roost 17	10.62	*Rhinolophus hipposideros, Myotis spp.*
Roost 18	10.81	*Plecotus auritus, Nyctalus leisleri, Pipistrellus pipistrellus, Pipistrellus pygmaeus*
Roost 19	10.87	*Myotis natterreri, Pipistrellus nathusii, Pipistrellus pipistrellus, Myotis daubentonii, Pipistrellus pygmaeus*
Roost 20	10.94	*Myotis daubentonii, Pipistrellus pygmaeus*
Roost 21	11.27	*Rhinolophus hipposideros*
Roost 22	11.41	*Rhinolophus hipposideros*
Roost 23	11.41	*Rhinolophus hipposideros*
Roost 24	11.86	*Rhinolophus hipposideros*
Roost 25	12.07	*Myotis natterreri*
Roost 26	12.69	*Plecotus auritus,* *Common pipistrelle*
Roost 27	12.97	*Rhinolophus hipposideros*

[4] Roost names have been numbered to protect the sensitive locations of these roosts.

Appendix 2: Photographs of PRFs identified within the site



Plate A2-1: Feature F.1



Plate A2-2: Feature F.2



Plate A2-3: Feature F.3



Plate A2-4: Feature F.4



Plate A2-5: Feature F.5



Plate A2-6: Feature F.6



Plate A2-7: Feature F.7

Appendix 3: Weather data for each static deployment period

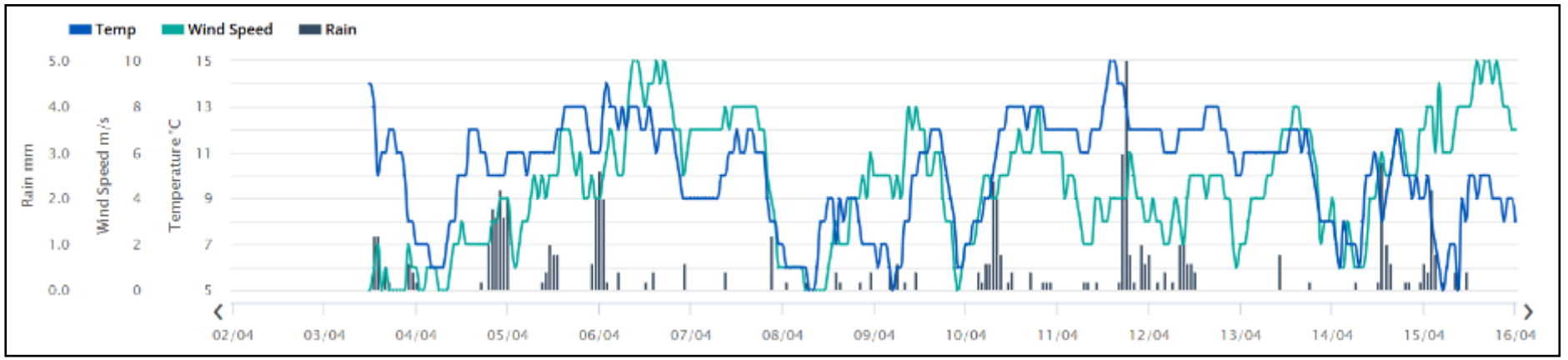


Figure A3-1: Chart of onsite mean hourly weather data for the Spring period (3 April 2024 – 16 April 2024).

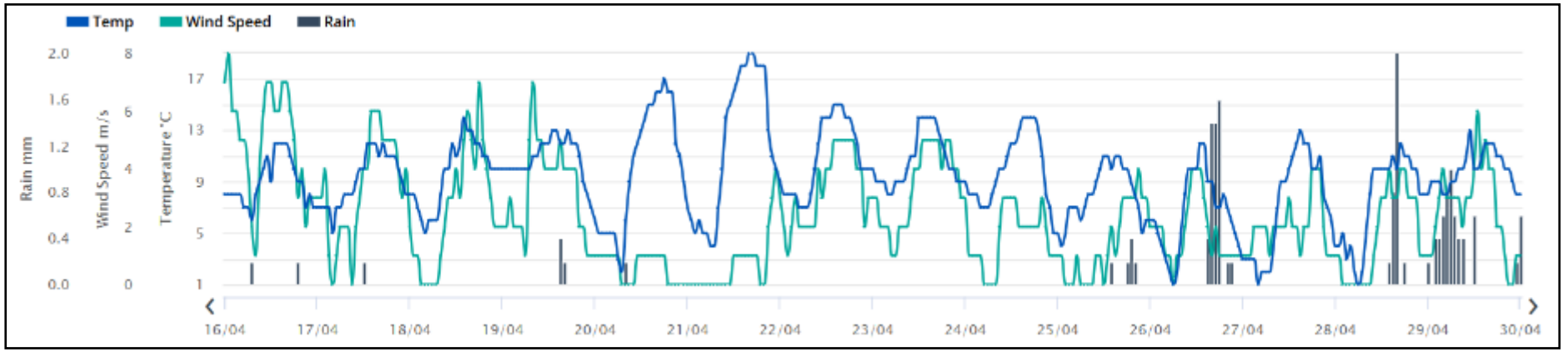


Figure A3-2: Chart of onsite mean hourly weather data for the Spring period (16 April 2024 – 30 April 2024).

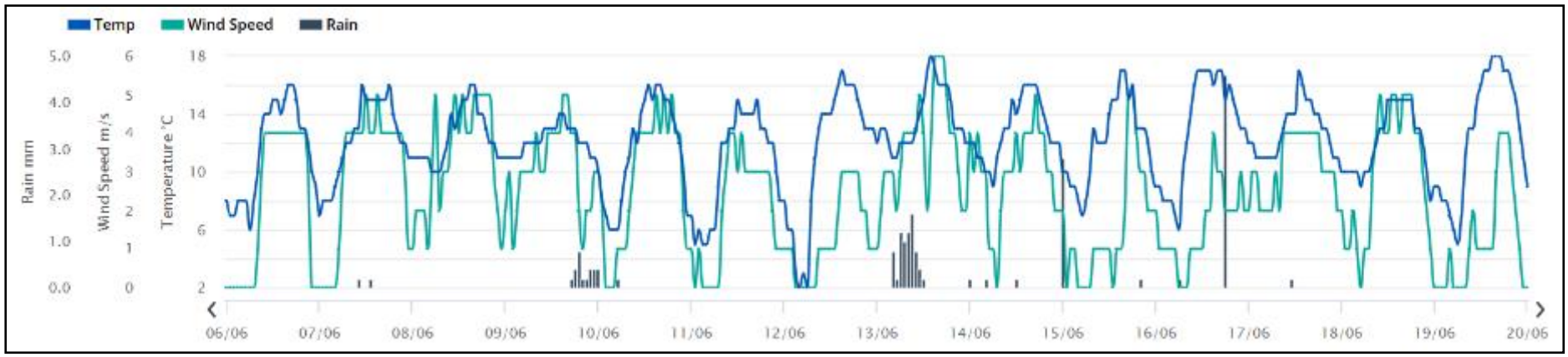


Figure A3-3: Chart of onsite mean hourly weather data for the Summer deployment period (6 June 2024 – 20 June 2024).

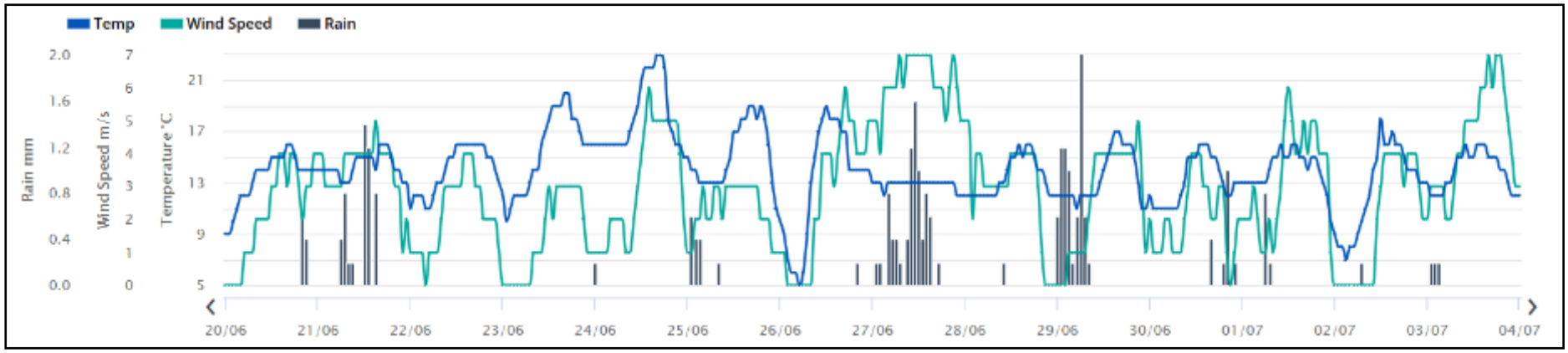


Figure A3-4: Chart of onsite mean hourly weather data for the Summer deployment period (20 June 2024 – 4 July 2024).

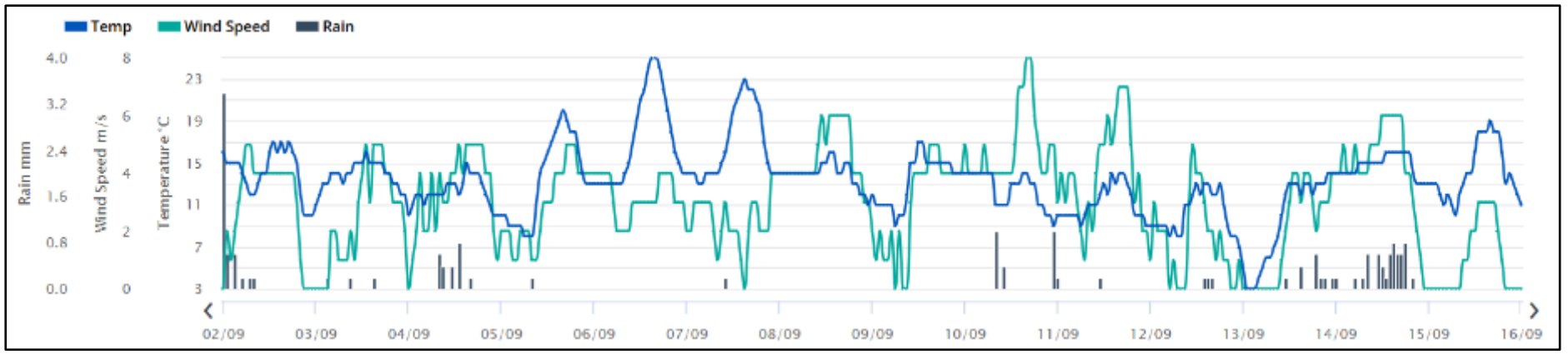


Figure A3-5: Chart of onsite mean hourly weather data for the Autumn deployment period (02 September 2024 – 16 September 2024).

Appendix 4: Survey effort for Static deployment surveys 2024

Map ID	Location (Lat., Long.)	Closest Turbine (Dist.)	Associated feature	Spring Deployment		Summer Deployment		Autumn Deployment	
				Unit	Run time	Unit	Run time	Unit	Run time
D.01	53.49518, -9.150338	T1 (73 m)	Open - hawthorn tree in field of improved grassland grazed by cattle	WSS030	20 nights 13,321 mins	WSS024	22 nights 27,920 mins	WSS100	24 nights 17,640 mins
D.02	53.495648, -9.156975	T2 (44 m)	Open - hawthorn tree in open field	WSS083	8 nights 5,527 mins	WSS030	20 nights 9,632 mins	WSS052	16 nights 11,492 mins
D.03	53.492978, -9.160153	T3 (89 m) T2 (370 m)	Open - field next to limestone pavement.	WSS076	20 nights 13,321 mins	WSS070	20 nights 9,632 mins	WSS027	16 nights 11,492 mins
D.04	53.496983, -9.16174	T4 (65 m)	Open - pasture (spring), on hawthorn in open improved grassland with karst limestone features (summer, autumn).	WSS082	20 nights 13,321 mins	WSS079	20 nights 9,632 mins	WSS037	16 nights 11,492 mins
D.05	53.50413, -9.141933	T5 (62 m)	On hawthorn hedgerow between fields of improved grassland grazed by cattle	WSS037	20 nights 13,321 mins	WSS058	20 nights 9,632 mins	WSS061	16 nights 11,492 mins
D.06	53.507535, -9.142292	T6 (320 m)	Open - Improved grassland field	WSS031	20 nights 13,321 mins	WSS040	20 nights 9,632 mins	WSS033	16 nights 11,492 mins
D.07	53.509318, -9.137252	T7 (50 m)	Open - Improved grassland field	WSS025	20 nights 13,321 mins	WSS053	20 nights 9,632 minutes	WSS038	16 nights 11,492 mins
D.08	53.505423, -9.136745	T9 (155m)	On dead tree along stone wall between two fields of improved grassland	WSS032	8 nights 5,527 mins	WSS078	20 nights 9,632 mins	WSS063	16 nights 11,492 mins
D.09	53.50759, -9.131688	T8 (90m)	On hawthorn along stone wall between improved grassland and semi natural grassland	WSS024	20 nights 13,321 mins	WSS057	20 nights 9,632 mins	WSS098	16 nights 11,492 mins
D.10	53.50434, -9.130223	T10 (3 m)	Open - Improved grassland field with sheep	WSS059	20 nights 13,321 mins	WSS094	34 nights 16,143 mins	WSS102	11 nights 7,786 mins

Map ID	Location (Lat., Long.)	Closest Turbine (Dist.)	Associated feature	Spring Deployment		Summer Deployment		Autumn Deployment	
				Unit	Run time	Unit	Run time	Unit	Run time
D.11	53.502072, -9.125708	T11 (34 m)	On hawthorn between improved grassland and limestone pavement	WSS053	20 nights 13,321 mins	WSS032	20 nights 9,632 mins	WSS025	16 nights 11,492 mins
D.12	53.504238, -9.120565	T12 (93 m)	Hawthorn on hedgerow between improved grassland pasture	WSS070	20 nights 13,321 mins	WSS025	20 nights 9,632 mins	WSS031	16 nights 11,492 mins
D.13	53.50642, -9.125425	T13 (193 m)	On low hazel between karst area and pasture	WSS077	20 nights 13,321 mins	WSS031	20 nights 9,632 mins	WSS099	16 nights 11,492 mins

Appendix 5: Static detector locations 2024



Plate A5-1: Location of D.01



Plate A5-1: Location of D.02



Plate A5-2: Location of D.03



Plate A5-3: Location of D.04



Plate A5-4: Location of D.05



Plate A5-5: Location of D.06



Plate A5-6: Location of D.07



Plate A5-7: Location of D.08



Plate A5-8: Location of D.09



Plate A5-9: Location of D.10



Plate A5-10: Location of D.11



Plate A5-11: Location of D.12



Plate A5-12: Location of D.13

Appendix 6: Photographs of roost survey locations



Plate A6-1: Dry-stone farm shed (F.2)



Plate A6-2: Dry-stone farm shed (F.2) rear, and large barn (F.3)



Plate A6-3: Lambing shed (F.1)



Plate A6-4: Derelict house (F.7)

Appendix 7: Photographs of hibernation inspection



Plate A7-1: Internal view of F.1 inspected during hibernation survey



Plate A7-2: Heartwood rot cavity on willow tree (F.4) inspected internally during hibernation survey



Plate A7-3: Cavity on hazel tree (F.5) inspected internally during hibernation inspection



Plate A7-4: Elder tree with dead hollow branch (F.6) inspected internally during hibernation survey

Appendix 8: R graphs of activity time in relation to sunset

Spring

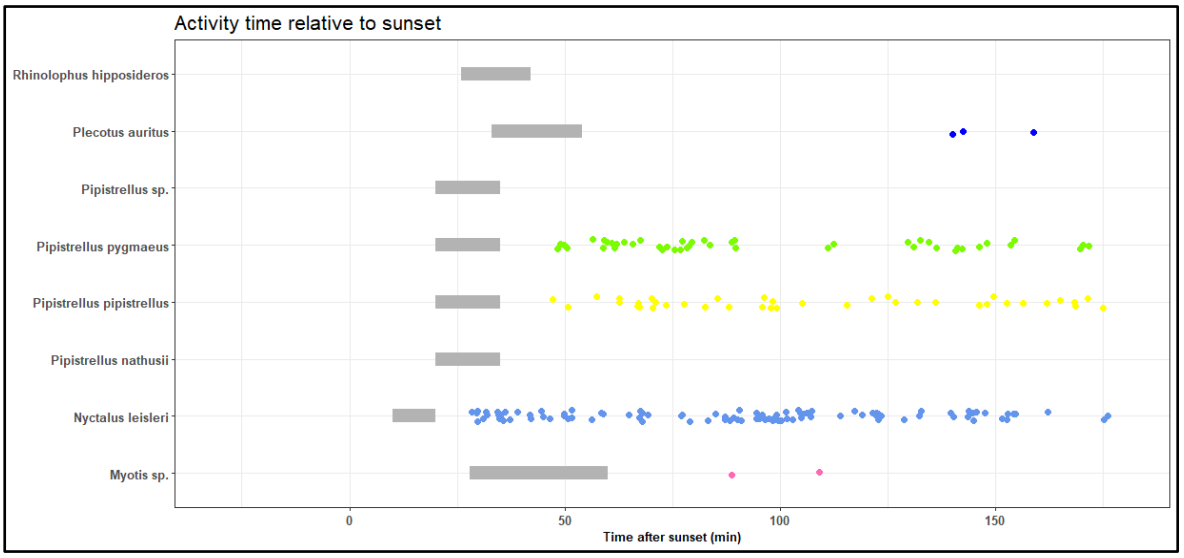


Figure A8-1: Activity of bat species relative to sunset times and typical emergence window at D.01 in Spring

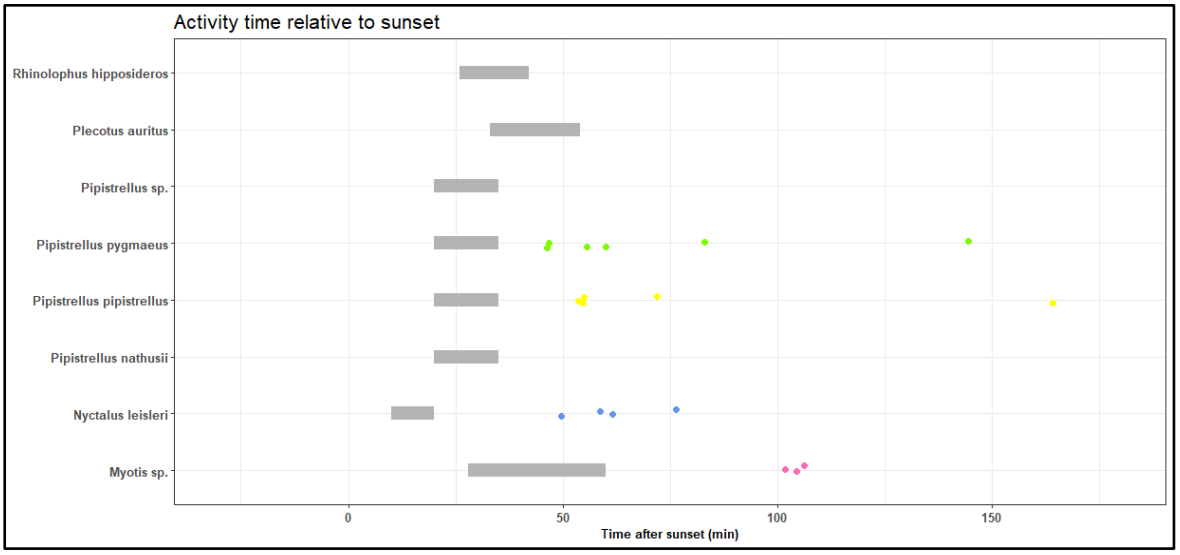


Figure A8-2: Activity of bat species relative to sunset times and typical emergence window at D.02 in Spring

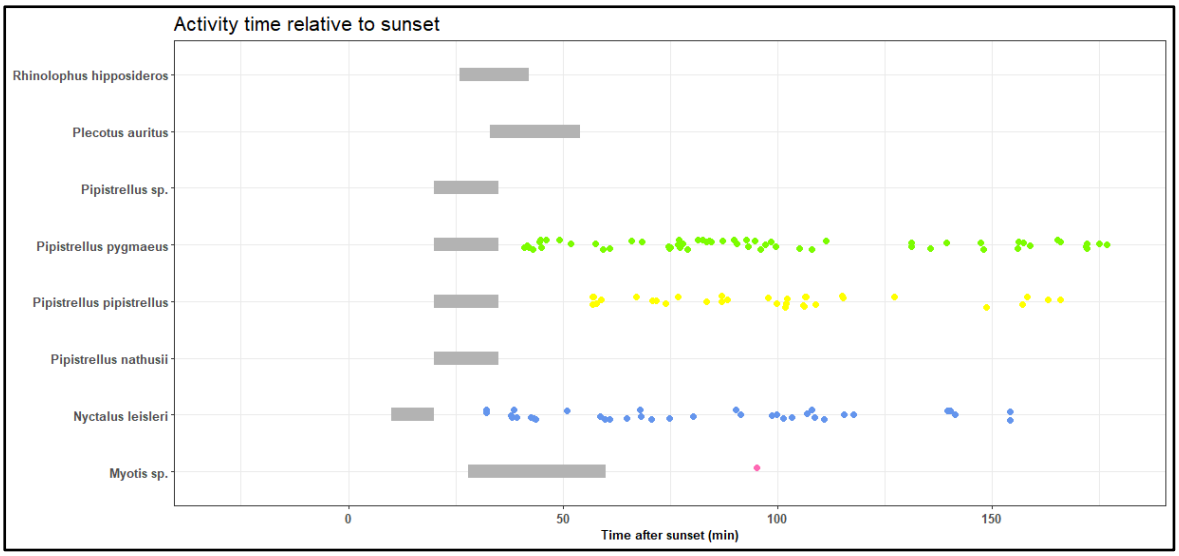


Figure A8-3: Activity of bat species relative to sunset times and typical emergence window at D.03 in Spring

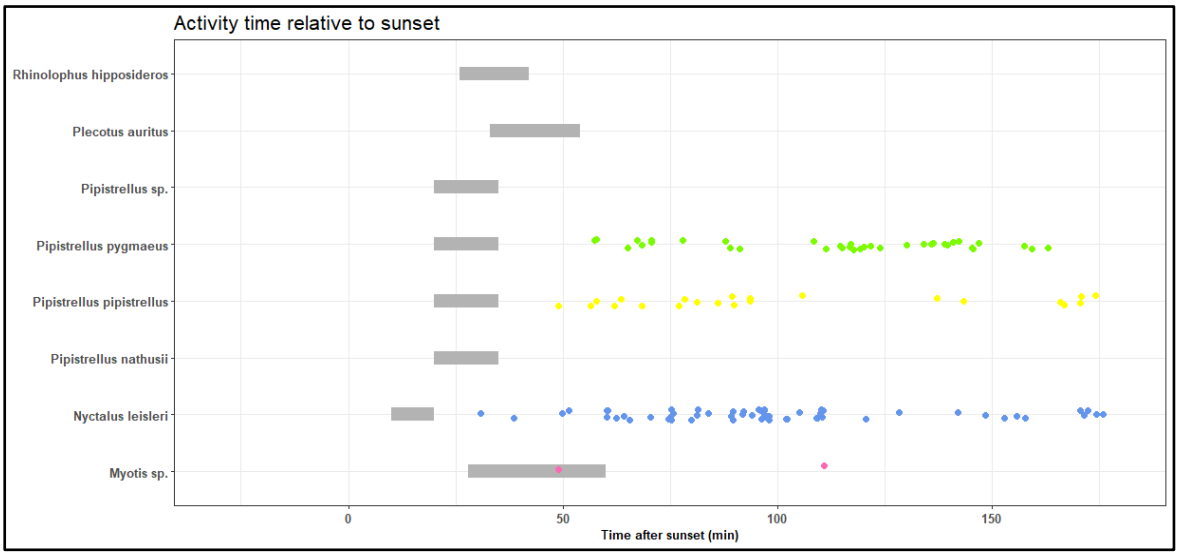


Figure A8-4: Activity of bat species relative to sunset times and typical emergence window at D.04 in Spring

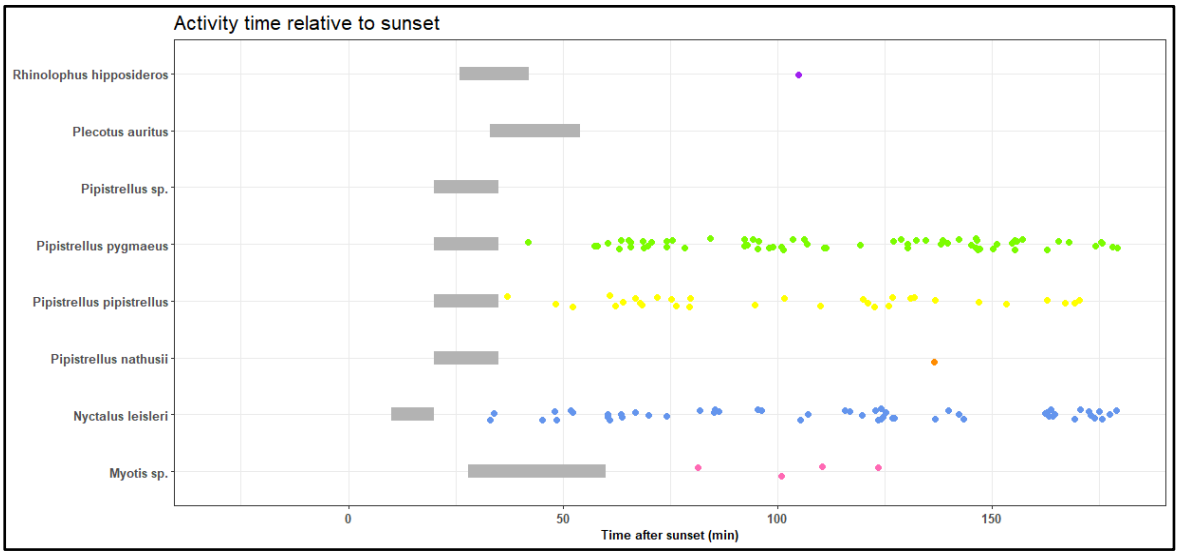


Figure A8-5: Activity of bat species relative to sunset times and typical emergence window at D.05 in Spring

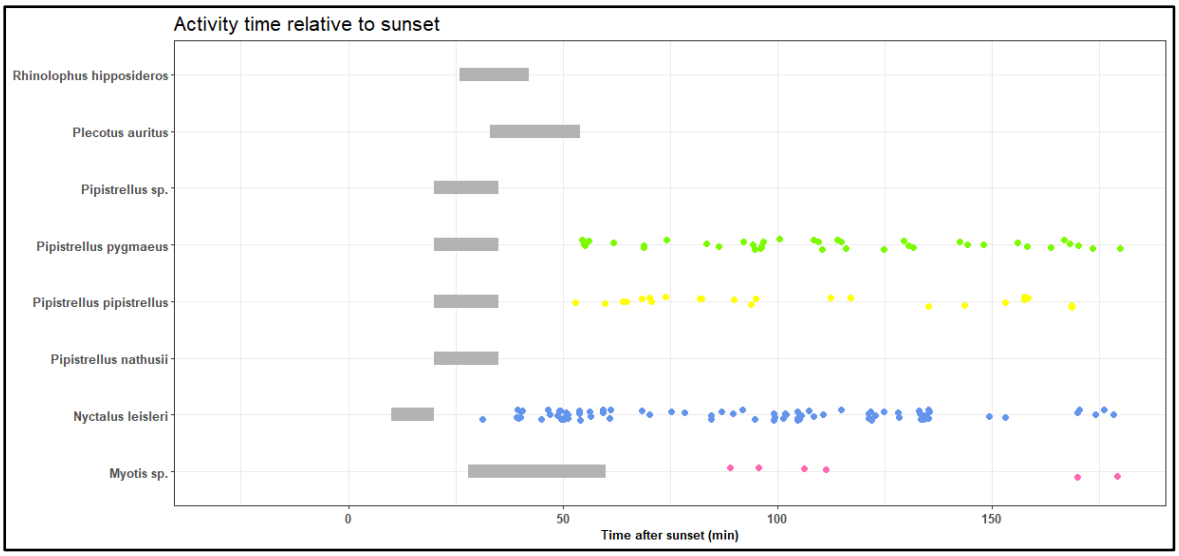


Figure A8-6: Activity of bat species relative to sunset times and typical emergence window at D.06 in Spring

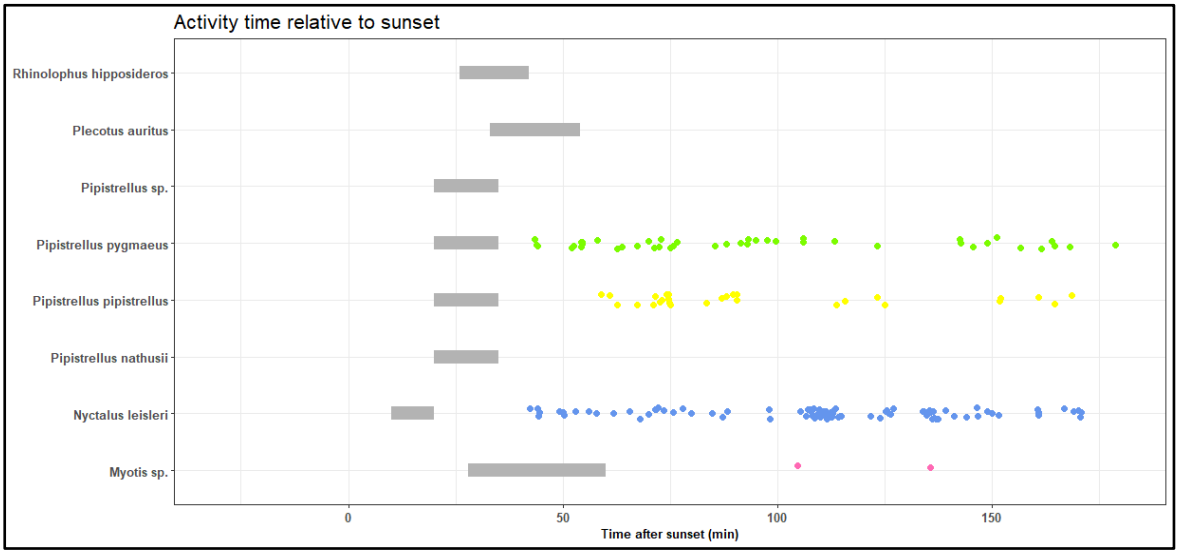


Figure A8-7: Activity of bat species relative to sunset times and typical emergence window at D.07 in Spring

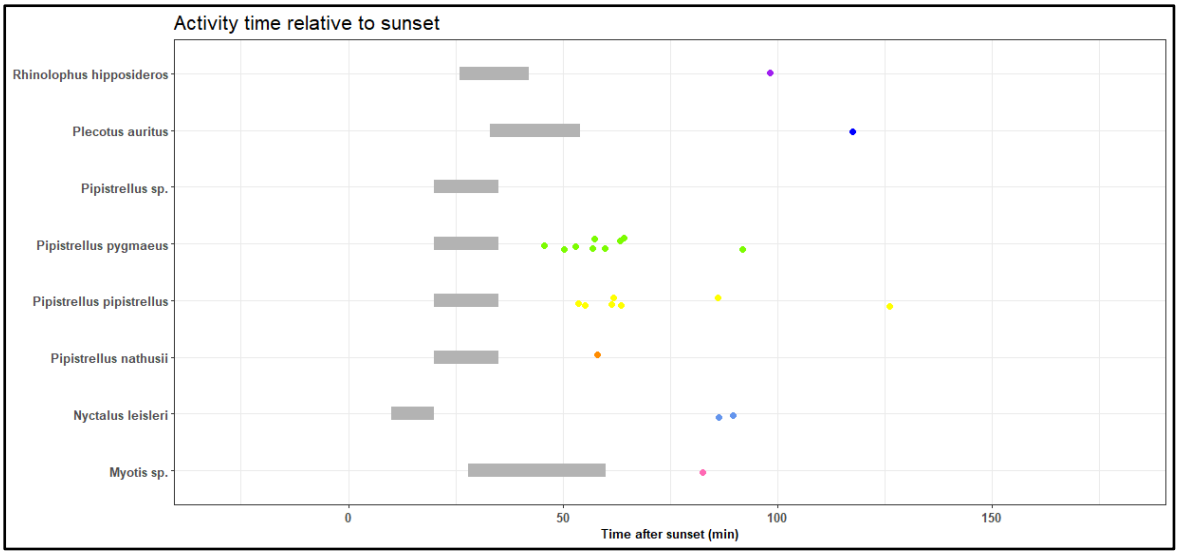


Figure A8-8: Activity of bat species relative to sunset times and typical emergence window at D.08 in Spring

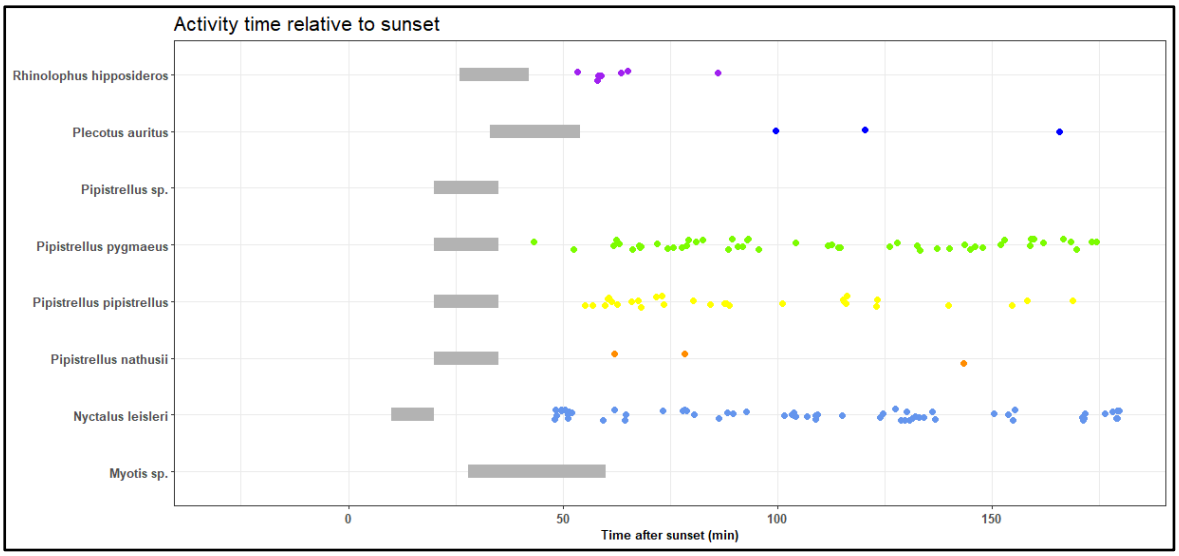


Figure A8-9: Activity of bat species relative to sunset times and typical emergence window at D.09 in Spring

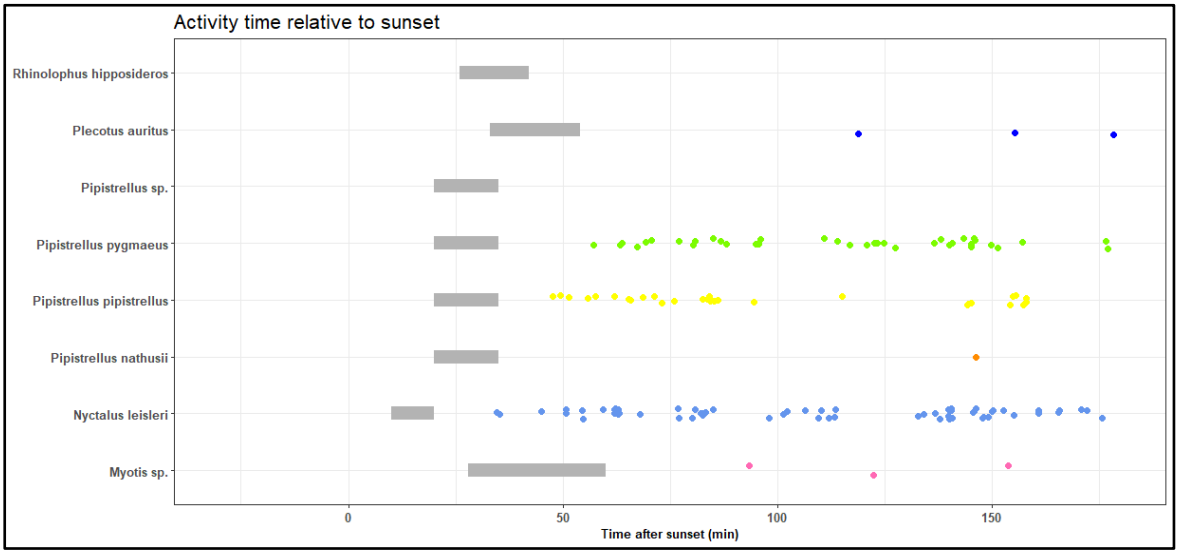


Figure A8-10: Activity of bat species relative to sunset times and typical emergence window at D.10 in Spring

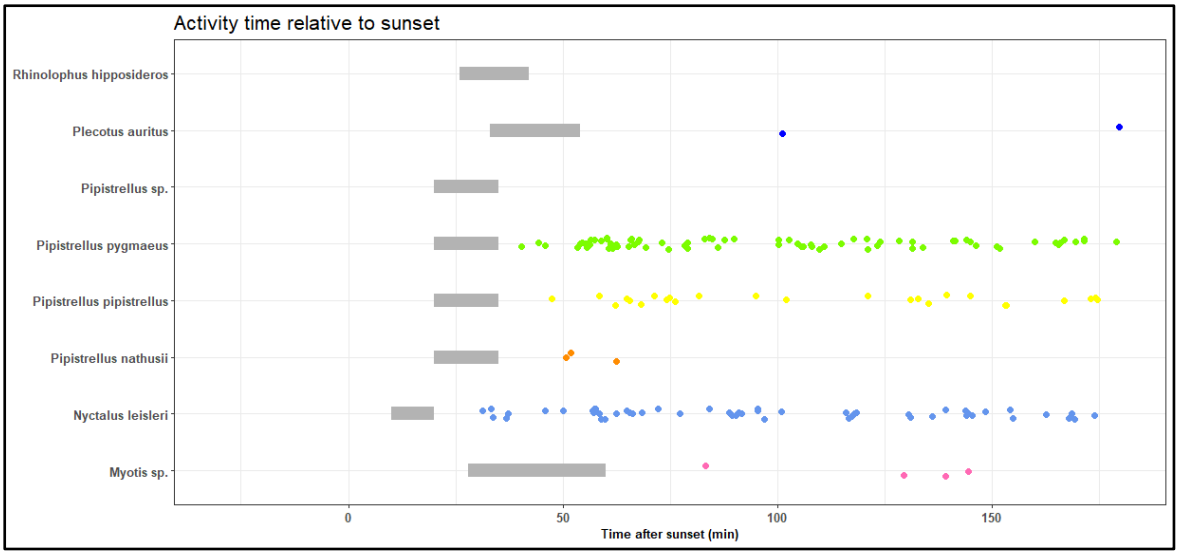


Figure A8-11: Activity of bat species relative to sunset times and typical emergence window at D.11 in Spring

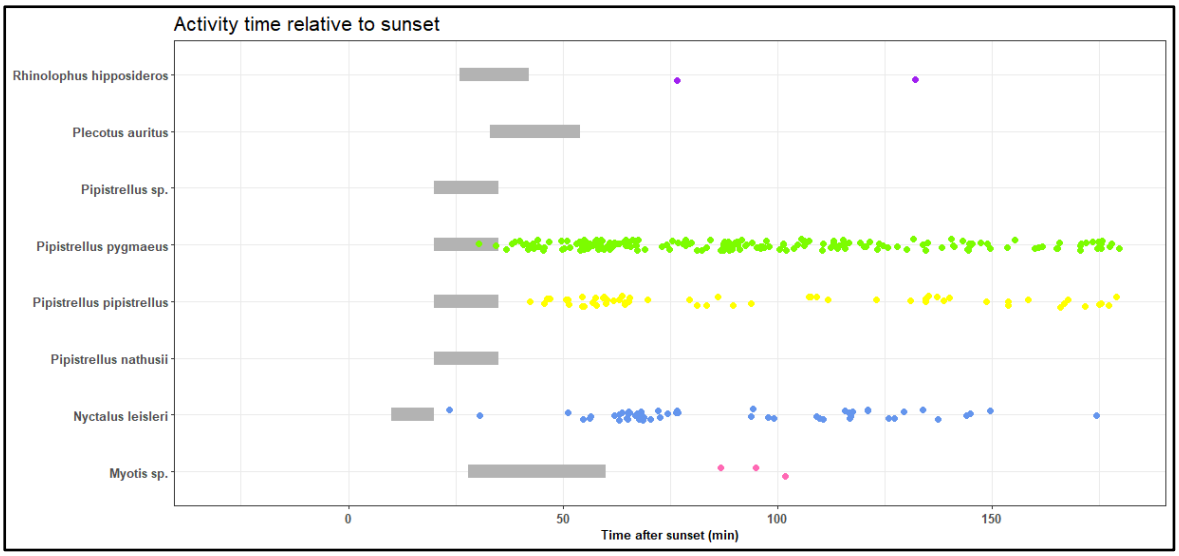


Figure A8-12: Activity of bat species relative to sunset times and typical emergence window at D.12 in Spring

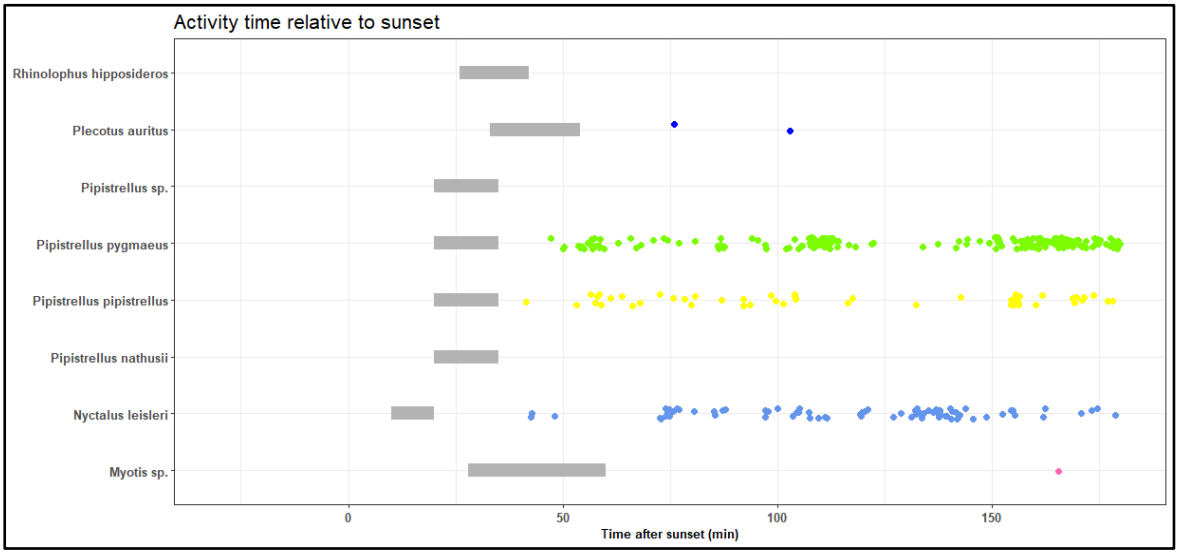


Figure A8-13: Activity of bat species relative to sunset times and typical emergence window at D.13 in Spring

Summer

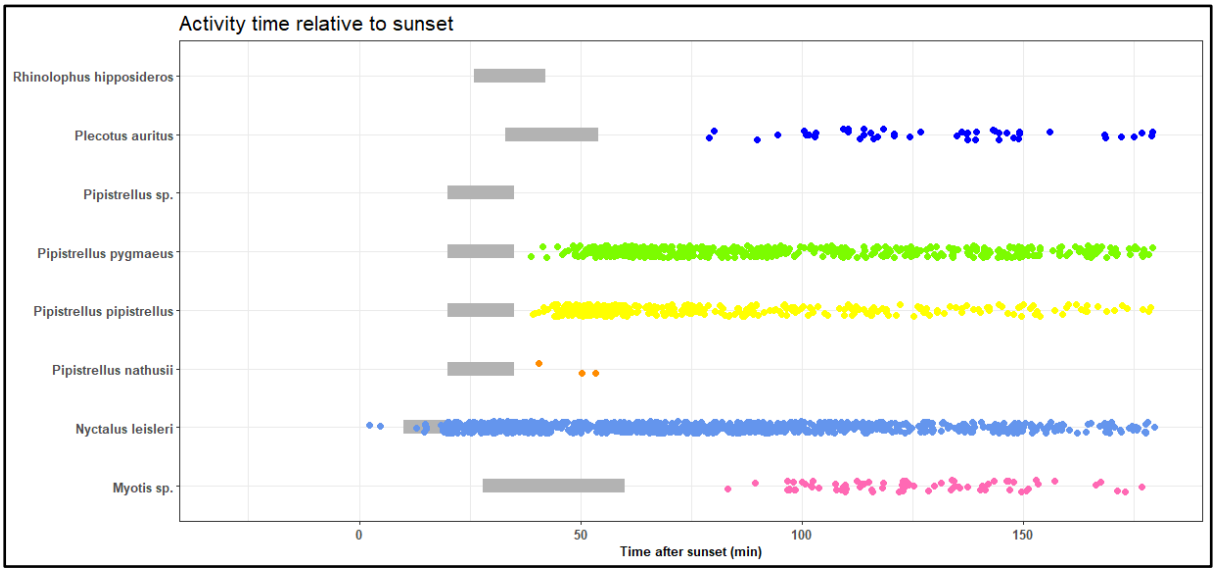


Figure A8-14: Activity of bat species relative to sunset times and typical emergence window at D.01 in Summer

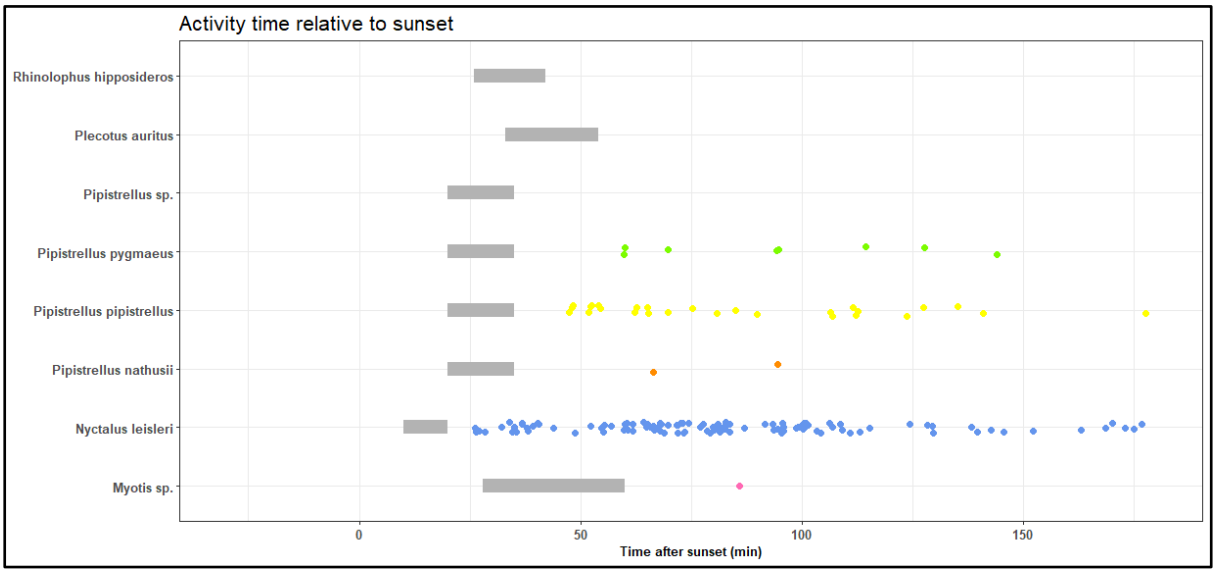


Figure A8-15: Activity of bat species relative to sunset times and typical emergence window at D.02 in Summer

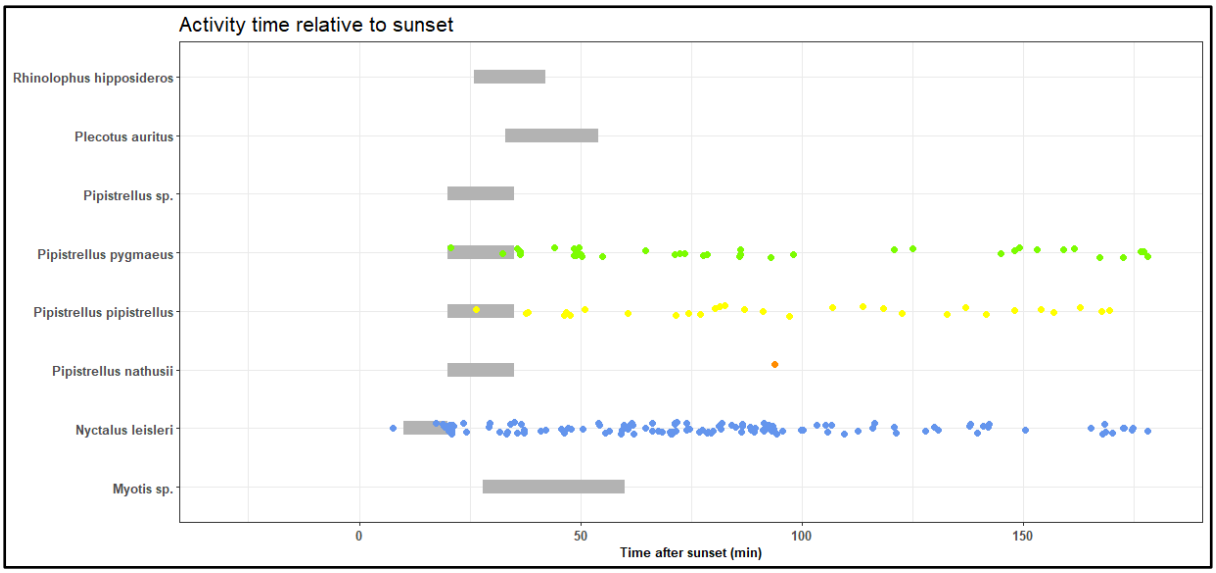


Figure A8-16: Activity of bat species relative to sunset times and typical emergence window at D.03 in Summer

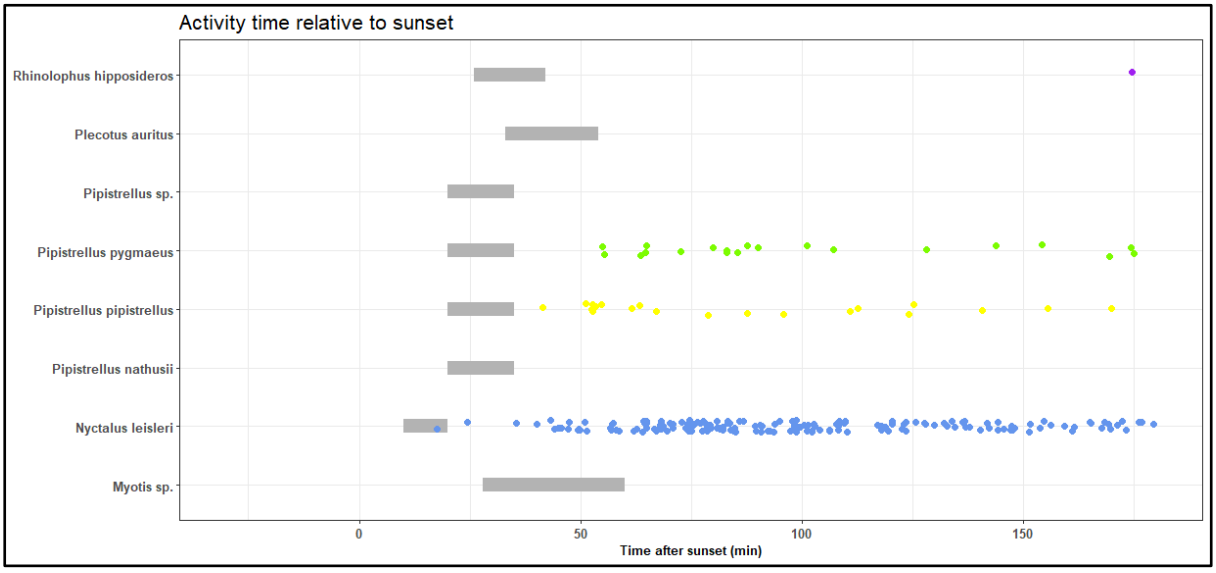


Figure A8-17: Activity of bat species relative to sunset times and typical emergence window at D.04 in Summer

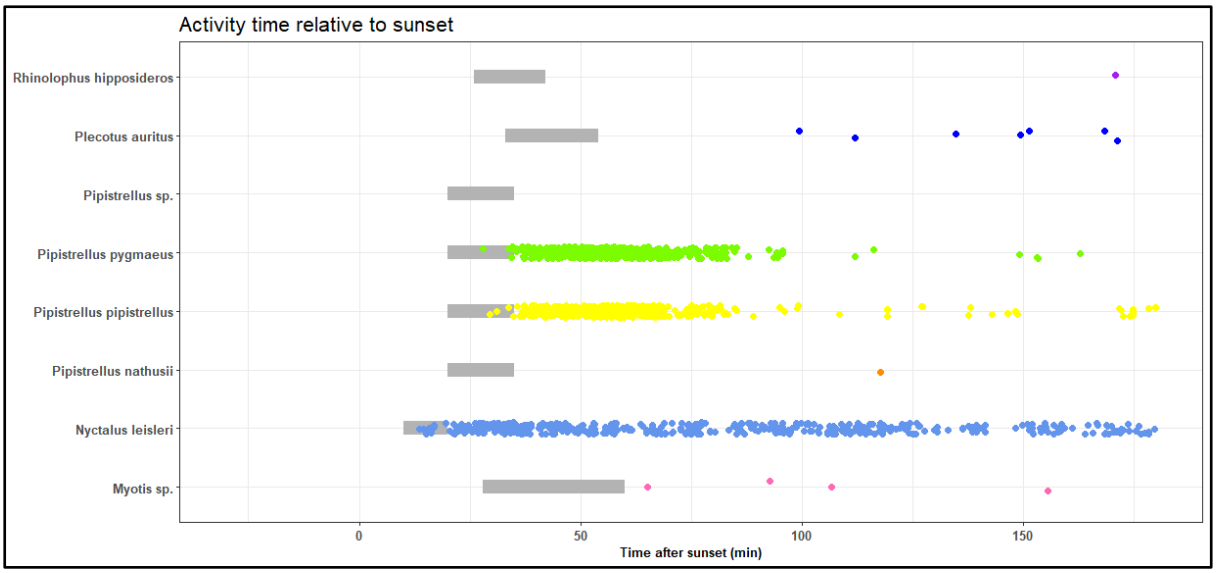


Figure A8-18: Activity of bat species relative to sunset times and typical emergence window at D.05 in Summer

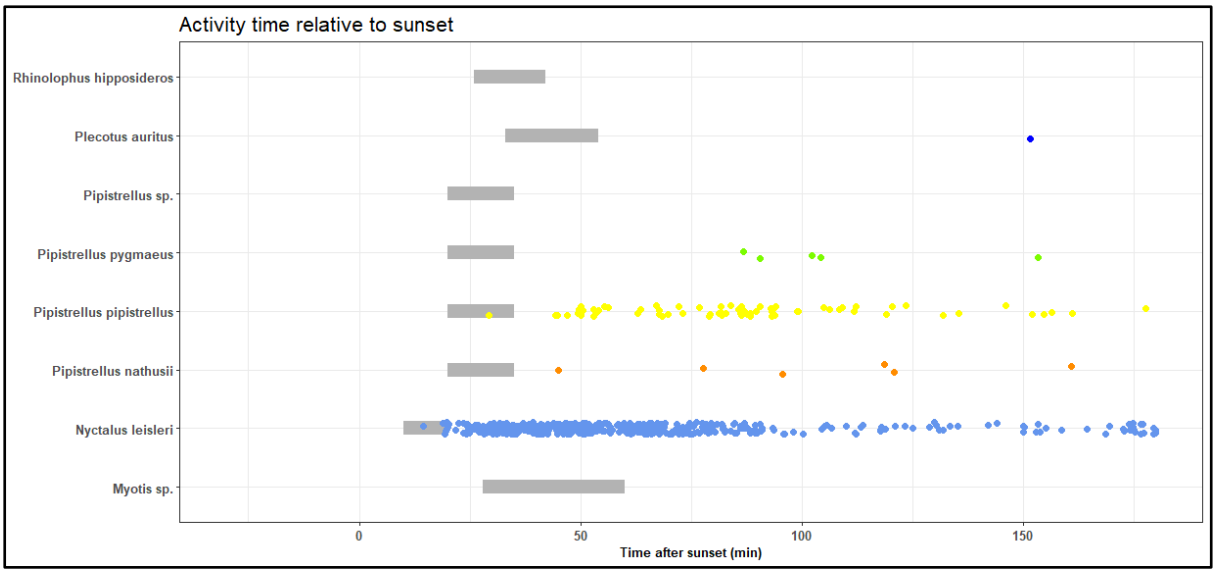


Figure A8-19: Activity of bat species relative to sunset times and typical emergence window at D.06 in Summer

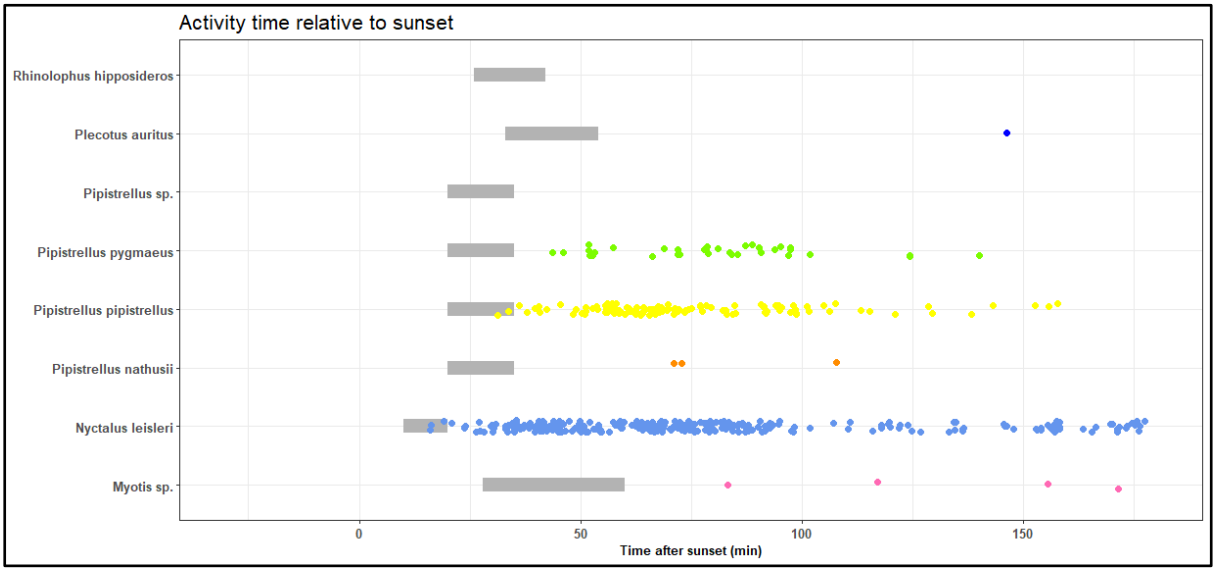


Figure A8-20: Activity of bat species relative to sunset times and typical emergence window at D.07 in Summer

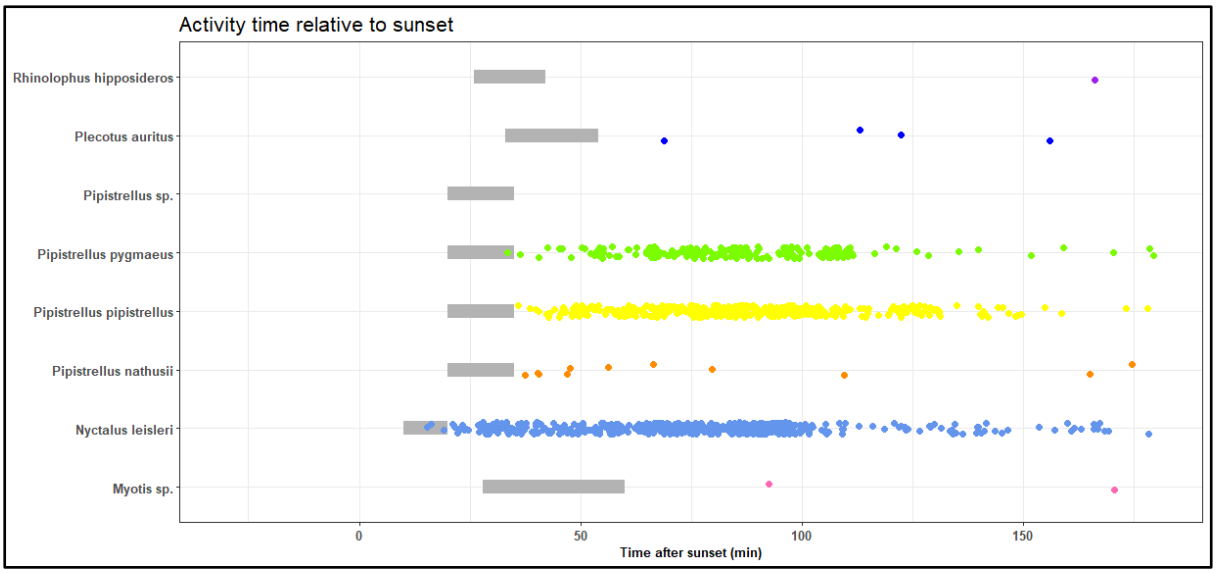


Figure A8-21: Activity of bat species relative to sunset times and typical emergence window at D.08 in Summer

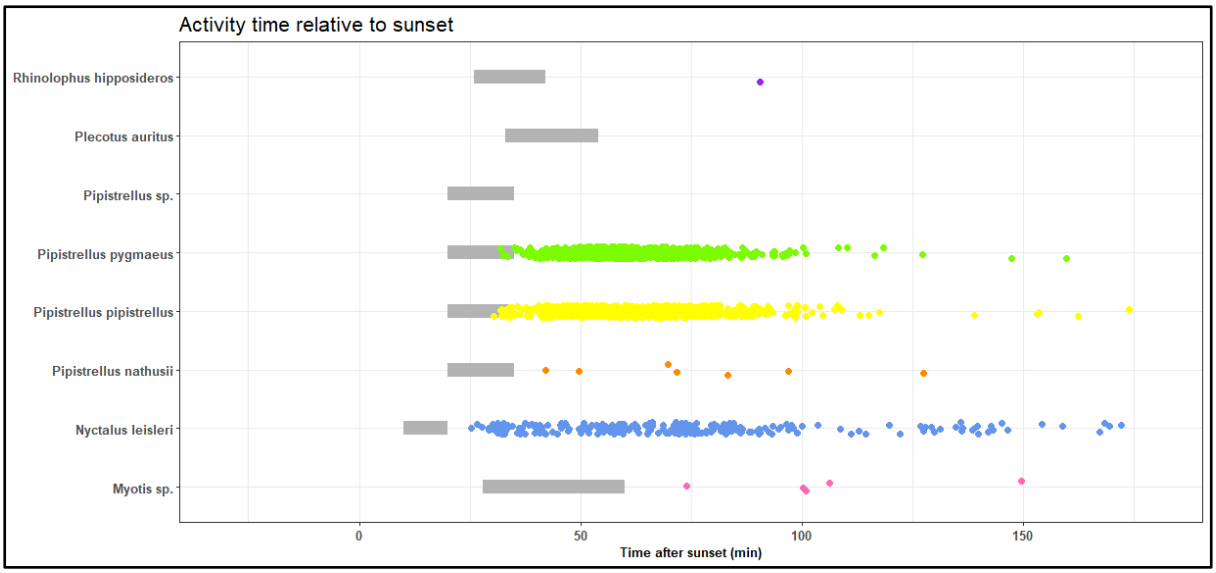


Figure A8-22: Activity of bat species relative to sunset times and typical emergence window at D.09 in Summer

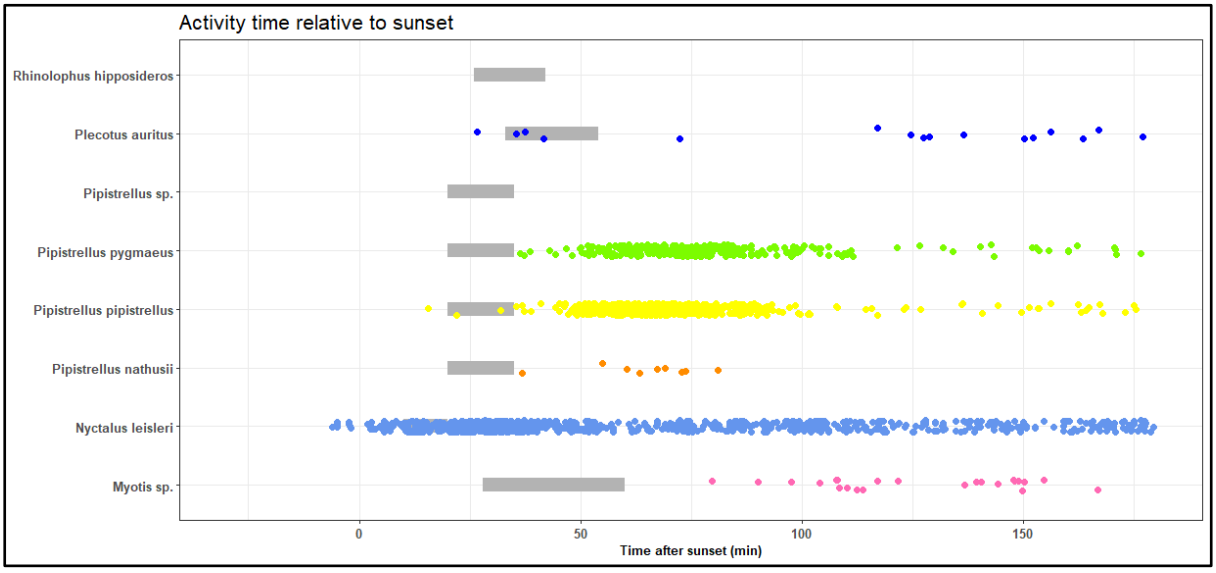


Figure A8-23: Activity of bat species relative to sunset times and typical emergence window at D.10 in Summer

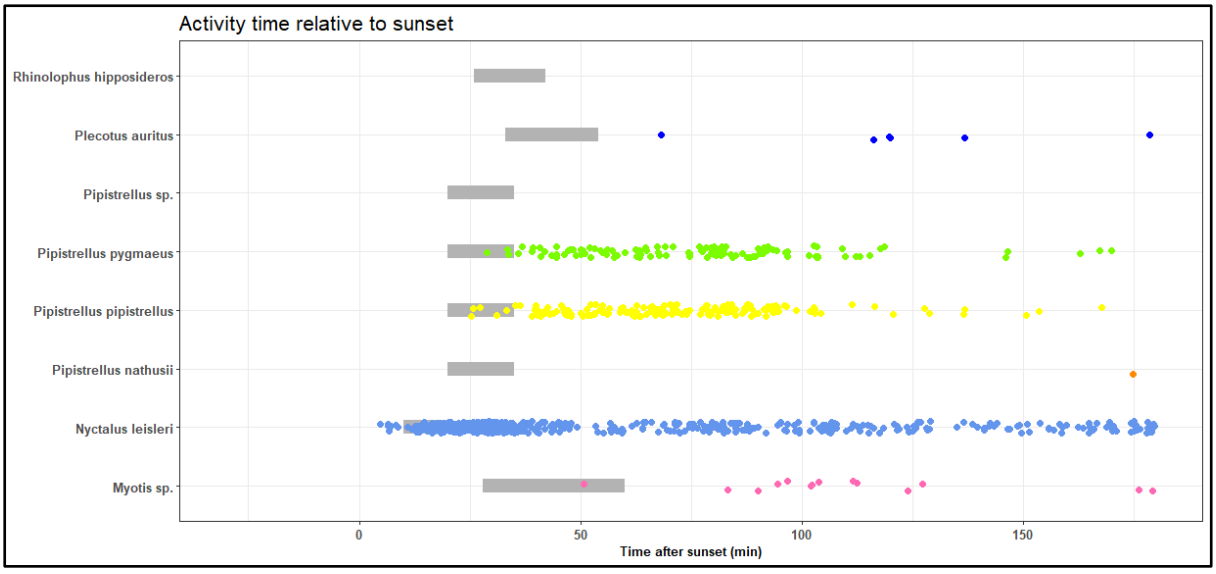


Figure A8-24: Activity of bat species relative to sunset times and typical emergence window at D.11 in Summer

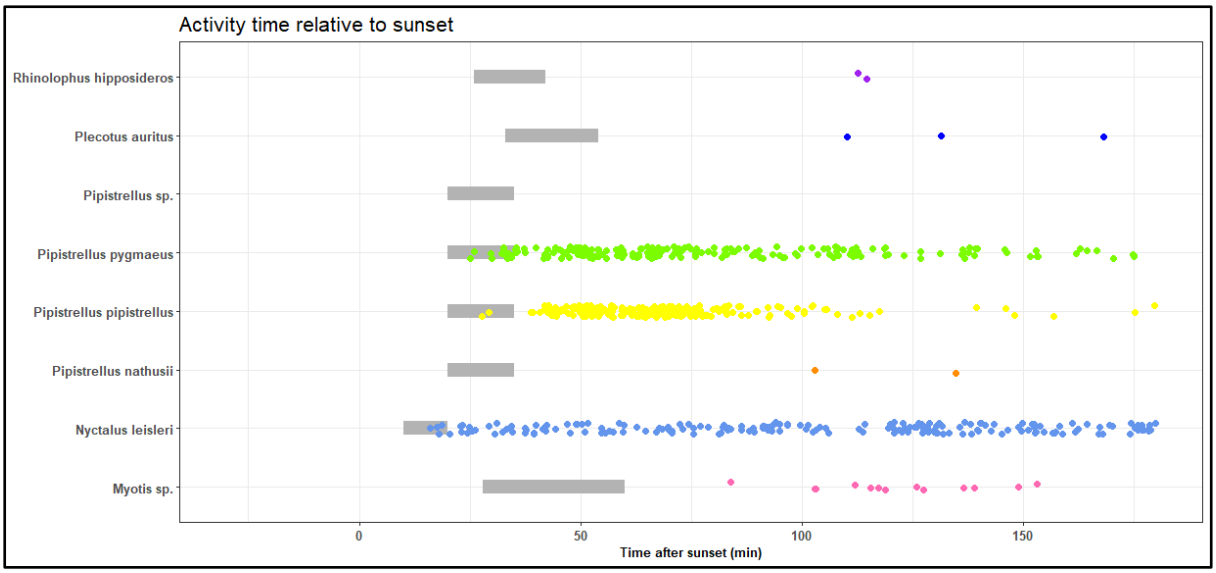


Figure A8-25: Activity of bat species relative to sunset times and typical emergence window at D.12 in Summer

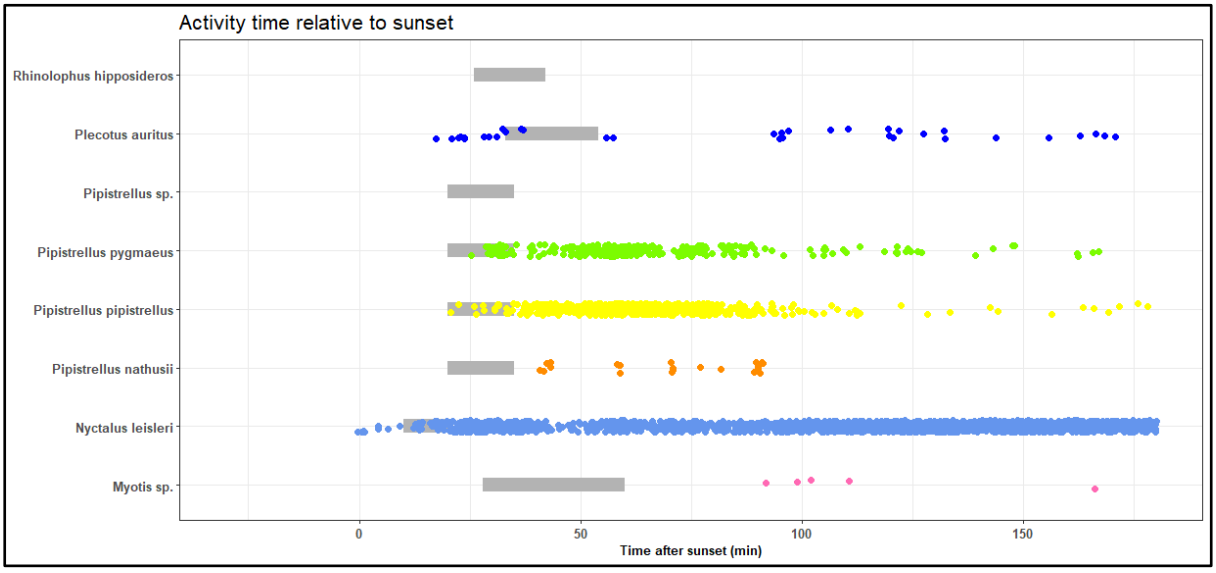


Figure A8-26: Activity of bat species relative to sunset times and typical emergence window at D.13 in Summer

Autumn

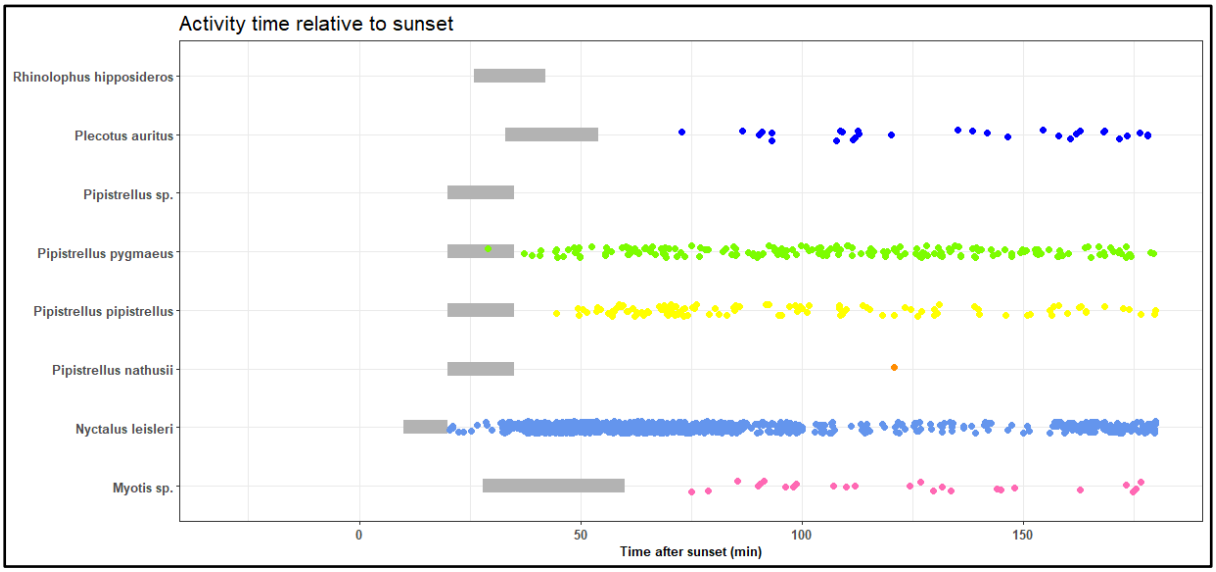


Figure A8-27: Activity of bat species relative to sunset times and typical emergence window at D.01 in Autumn 1

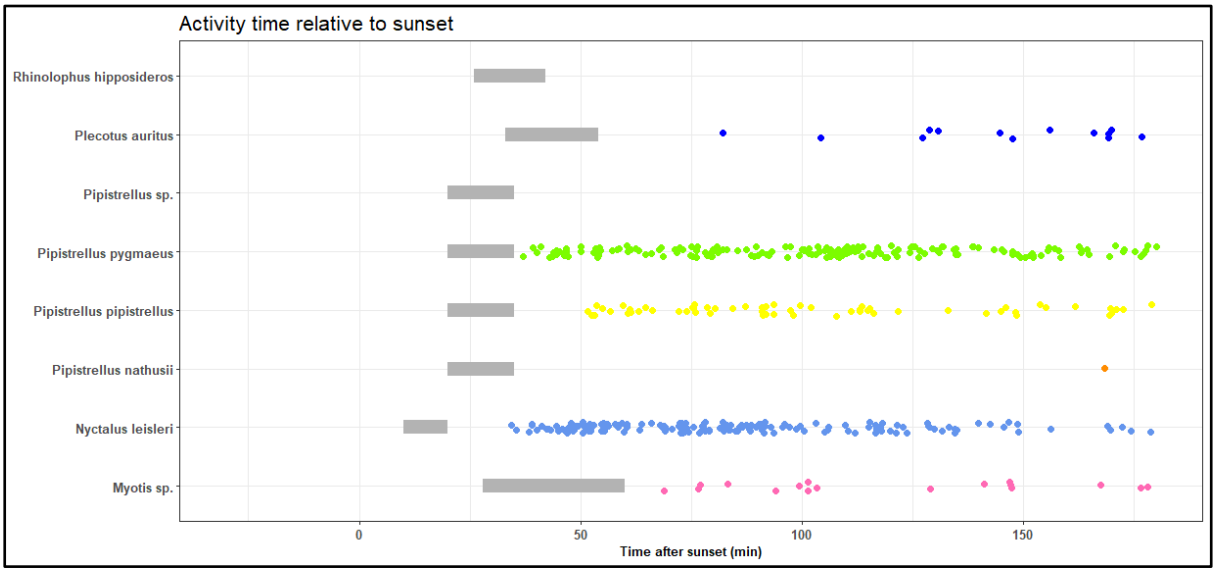


Figure A8-28: Activity of bat species relative to sunset times and typical emergence window at D.02 in Autumn

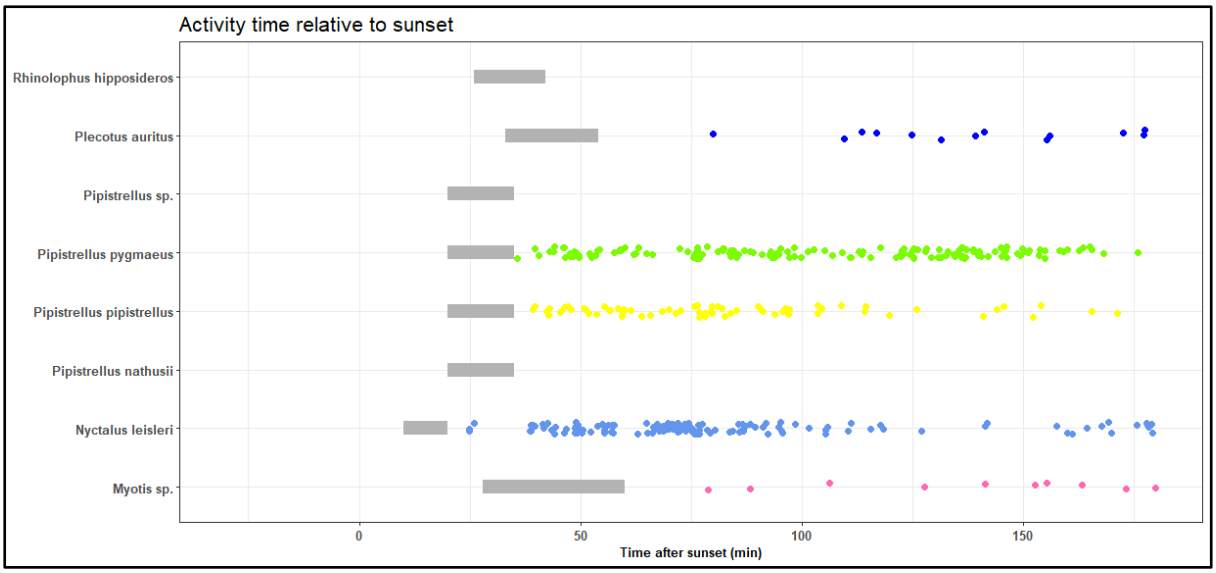


Figure A8-29: Activity of bat species relative to sunset times and typical emergence window at D.03 in Autumn

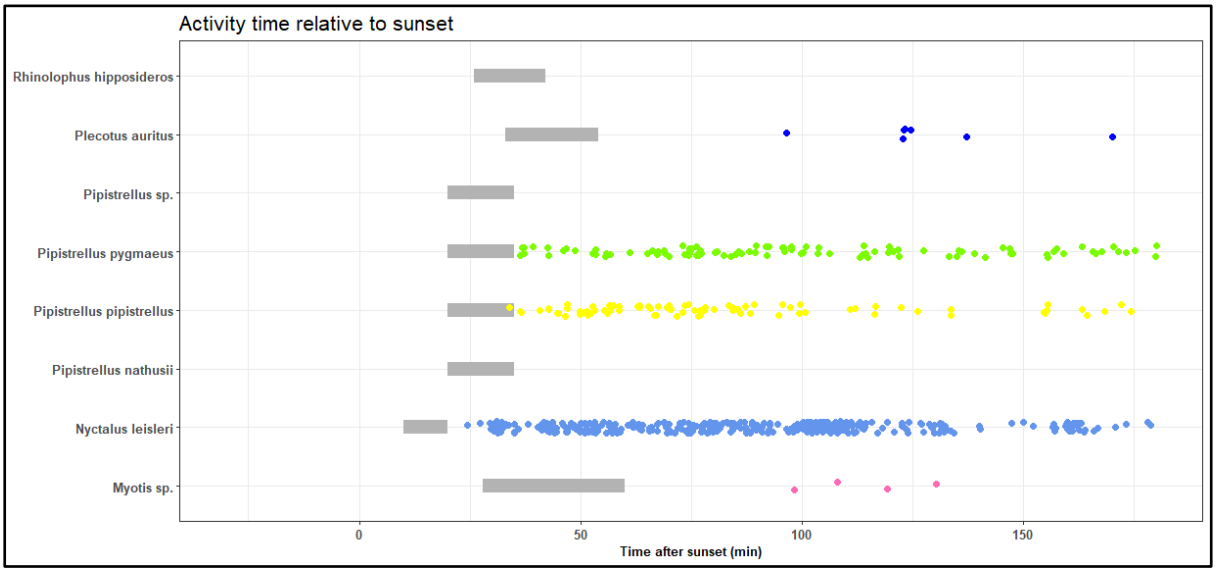


Figure A8-30: Activity of bat species relative to sunset times and typical emergence window at D.04 in Autumn

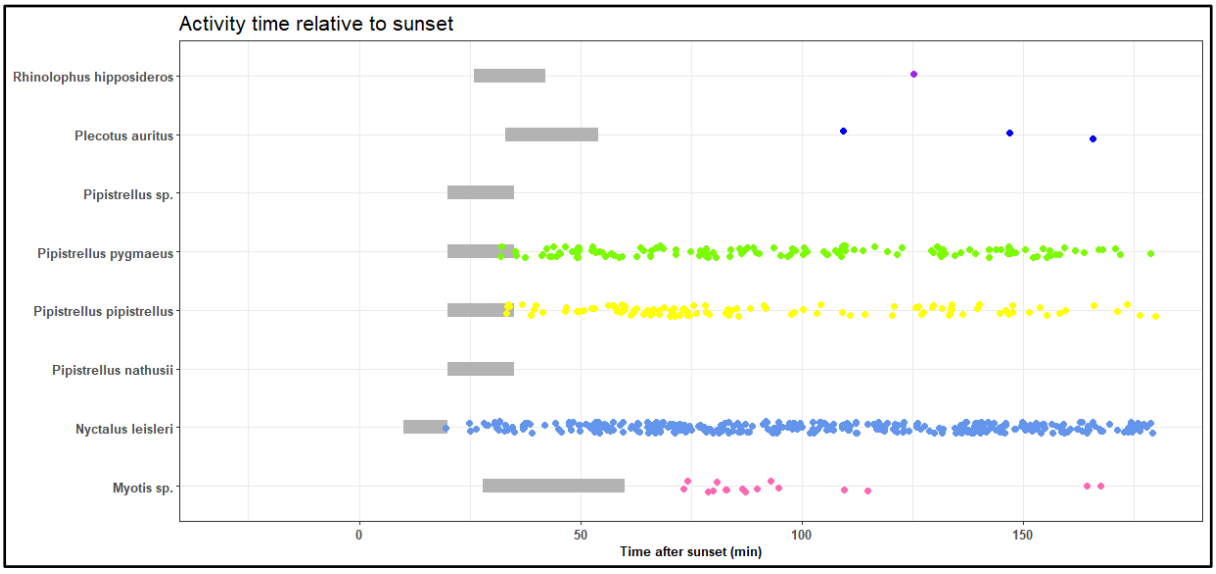


Figure A8-31: Activity of bat species relative to sunset times and typical emergence window at D.05 in Autumn

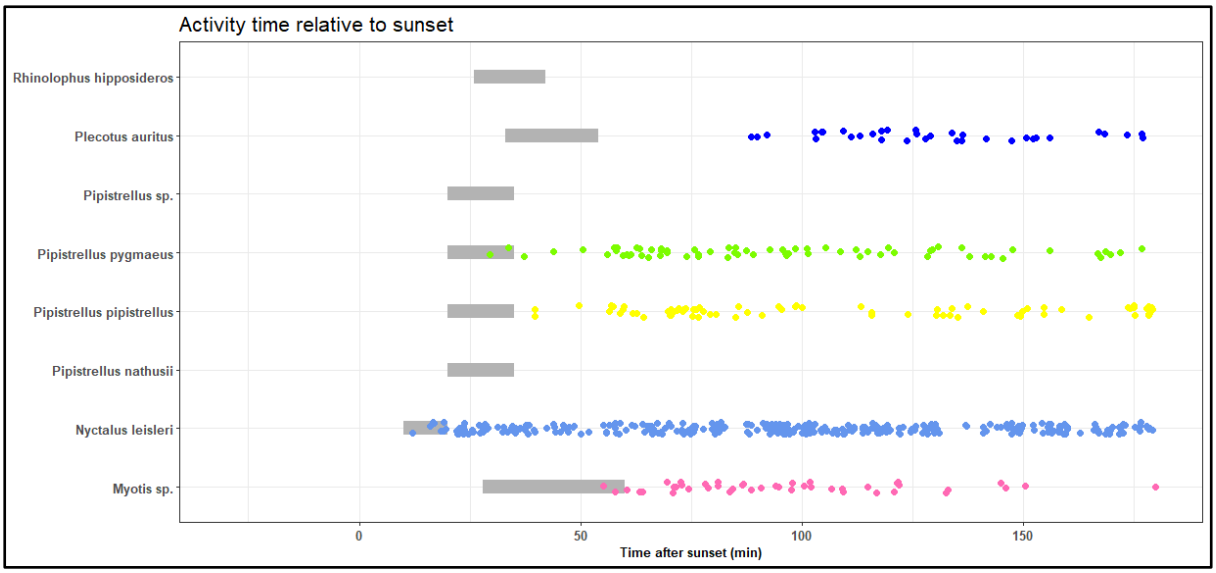


Figure A8-32: Activity of bat species relative to sunset times and typical emergence window at D.06 in Autumn

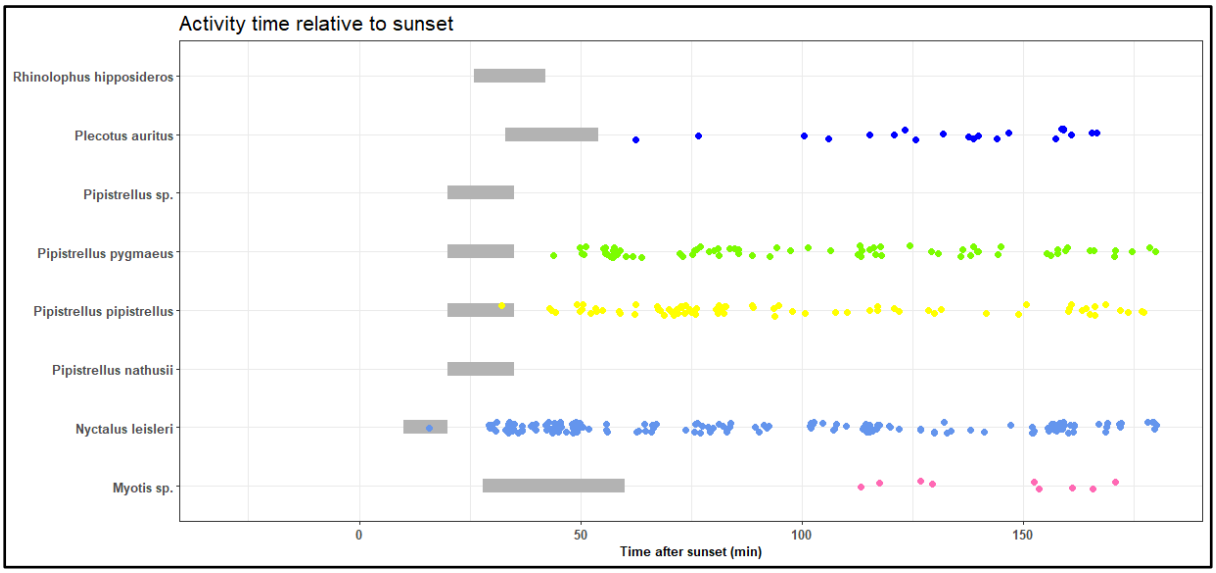


Figure A8-33: Activity of bat species relative to sunset times and typical emergence window at D.07 in Autumn

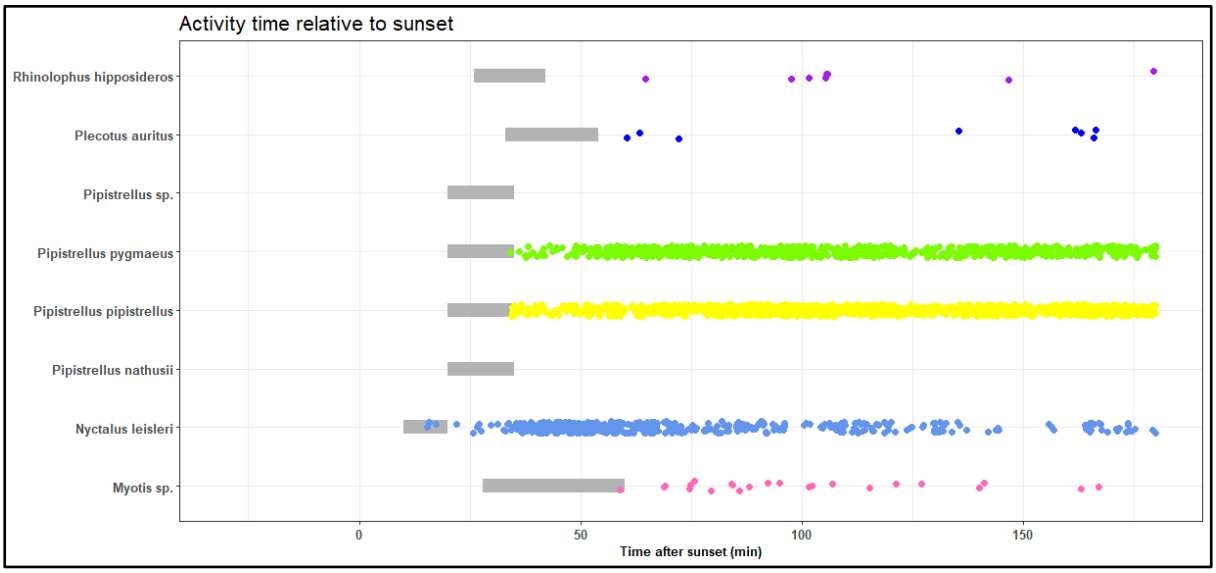


Figure A8-34: Activity of bat species relative to sunset times and typical emergence window at D.08 in Autumn

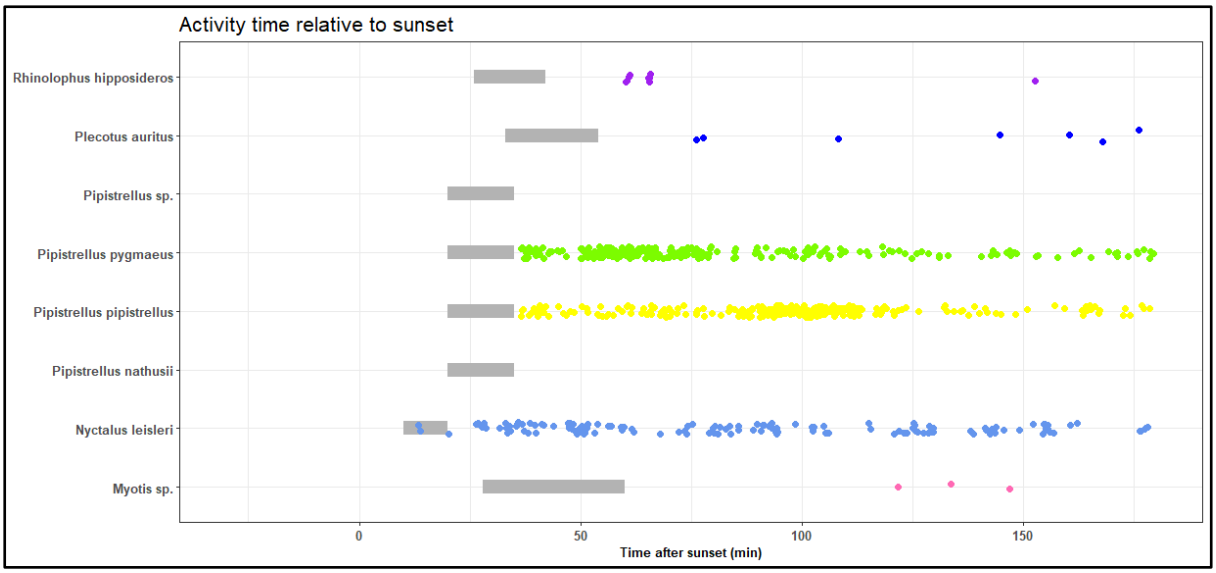


Figure A8-35: Activity of bat species relative to sunset times and typical emergence window at D.09 in Autumn

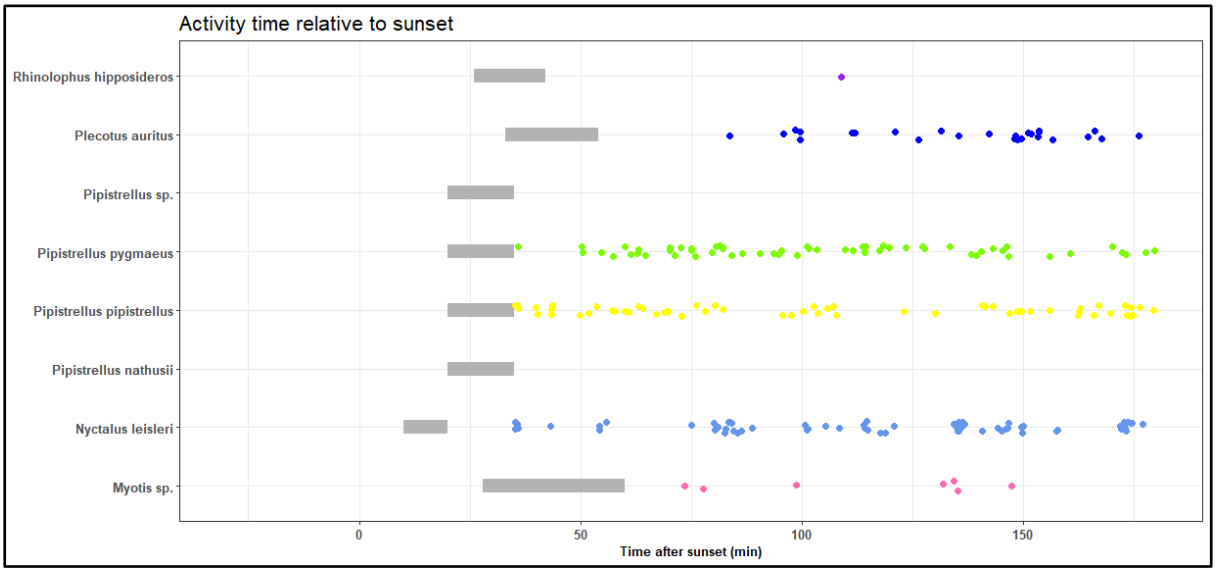


Figure A8-36: Activity of bat species relative to sunset times and typical emergence window at D.10 in Autumn

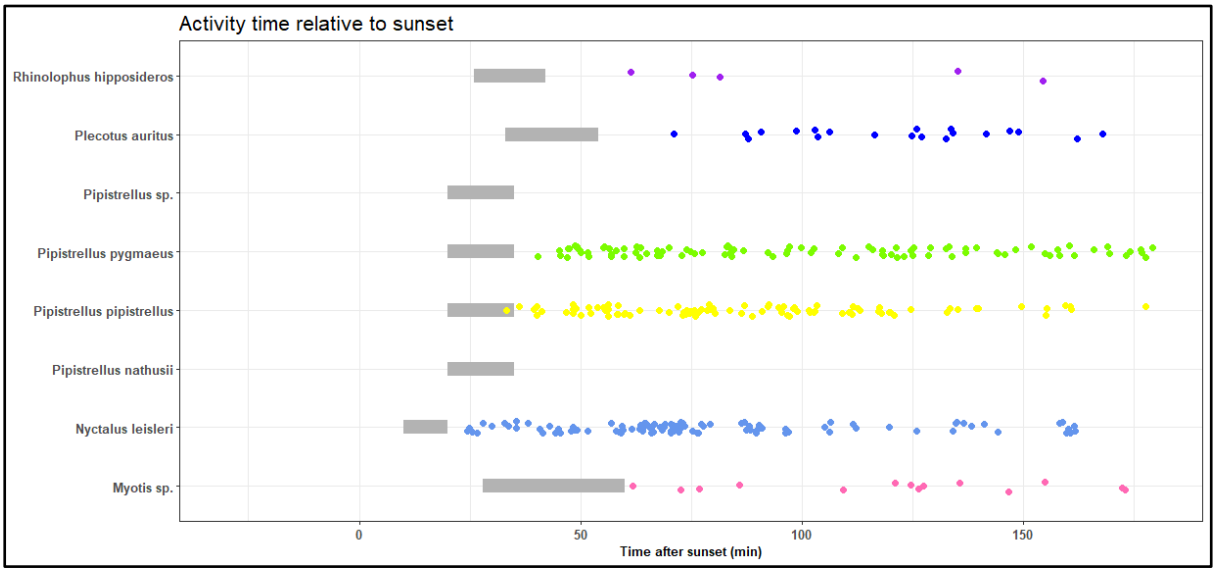


Figure A8-37: Activity of bat species relative to sunset times and typical emergence window at D.11 in Autumn

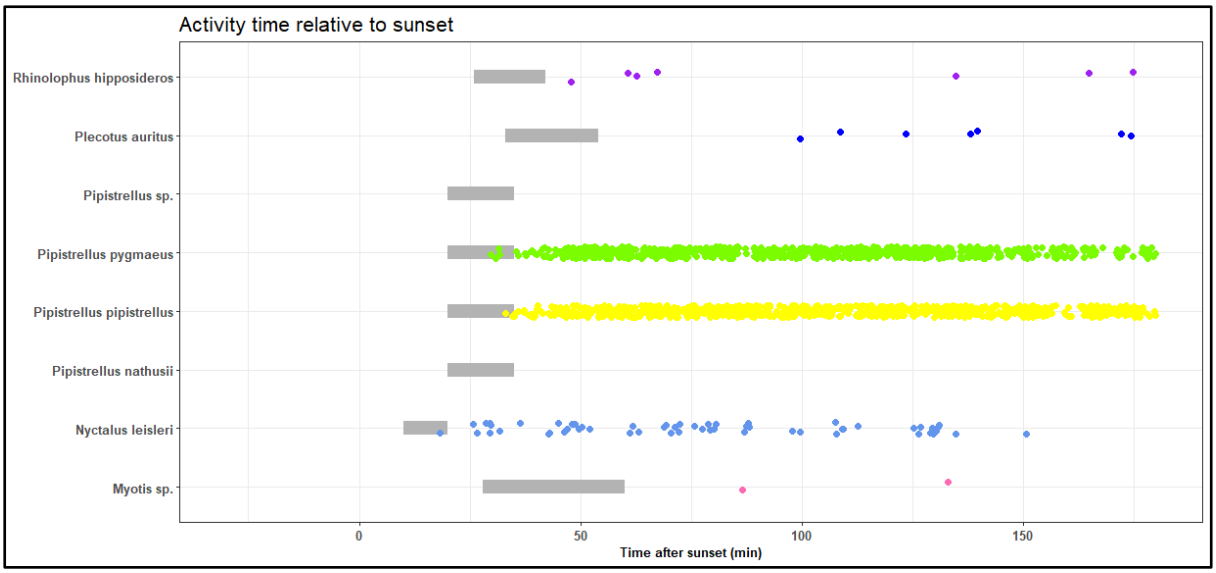


Figure A8-38: Activity of bat species relative to sunset times and typical emergence window at D.12 in Autumn

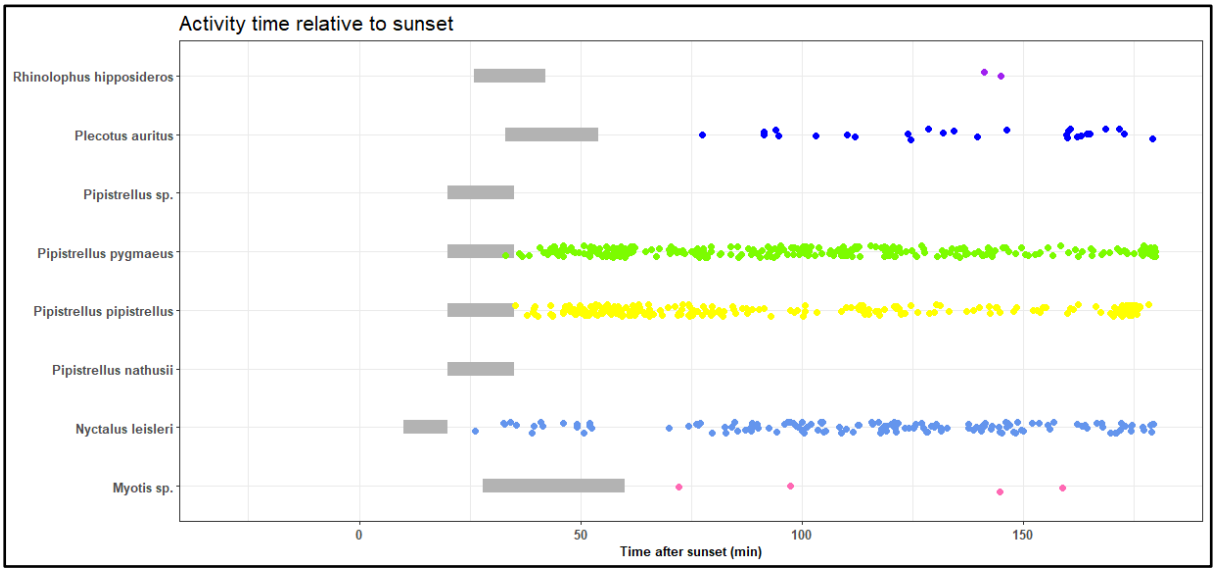


Figure A8-39: Activity of bat species relative to sunset times and typical emergence window at D.13 in Autumn

Appendix 9: Activity plots relative to wind speed and temperature

Spring

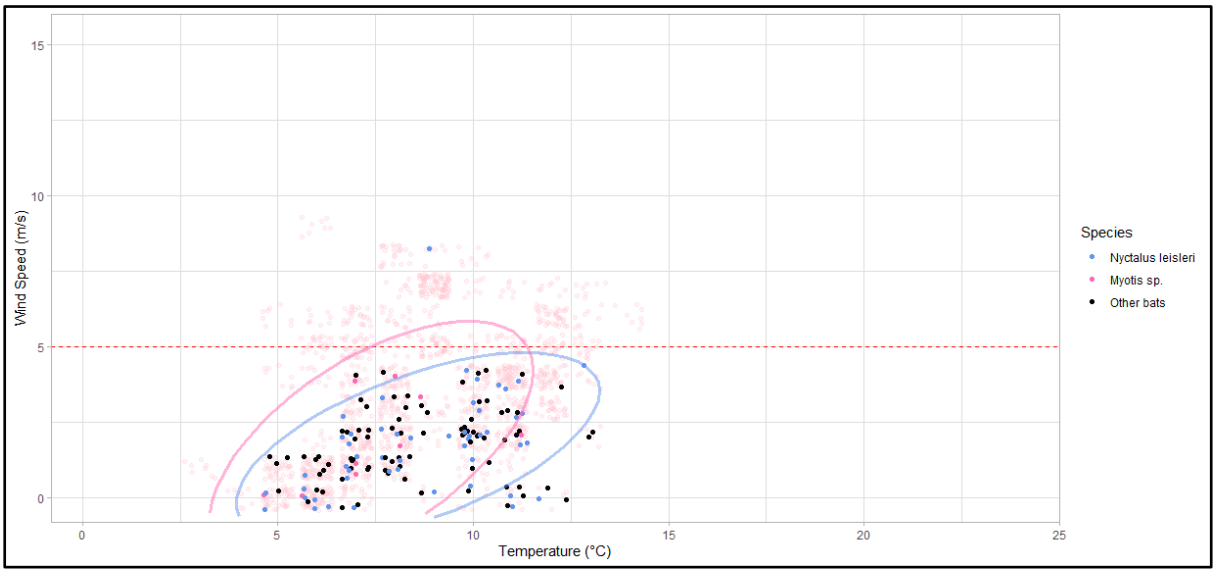


Figure A9-1: Bat passes in relation to temperature and wind speed at D.01 in Spring.

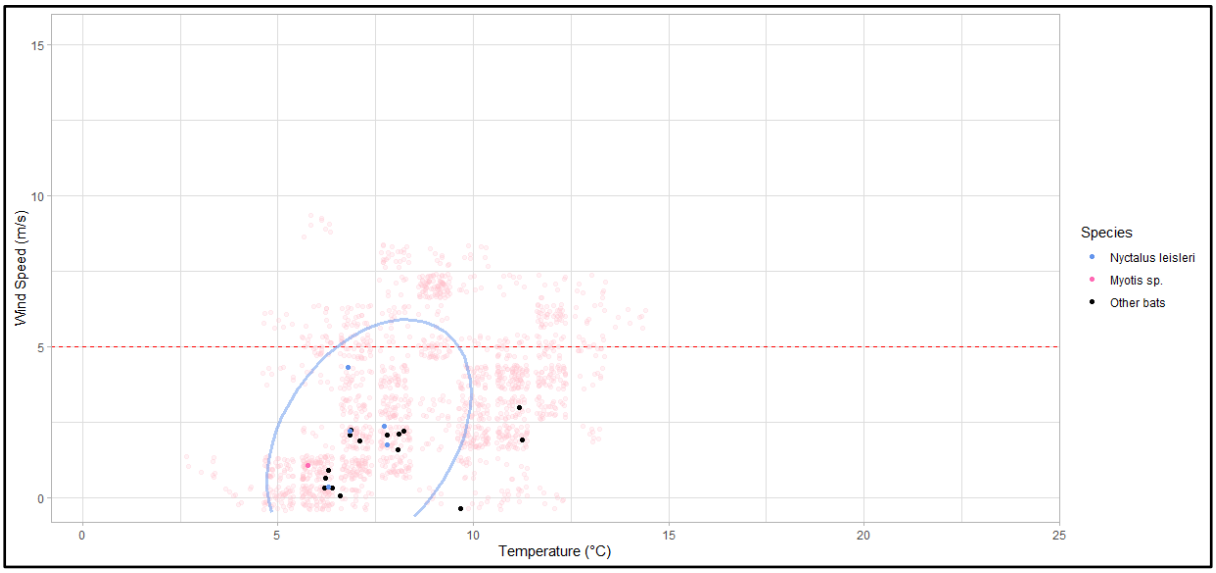


Figure A9-2: Bat passes in relation to temperature and wind speed at D.02 in Spring.

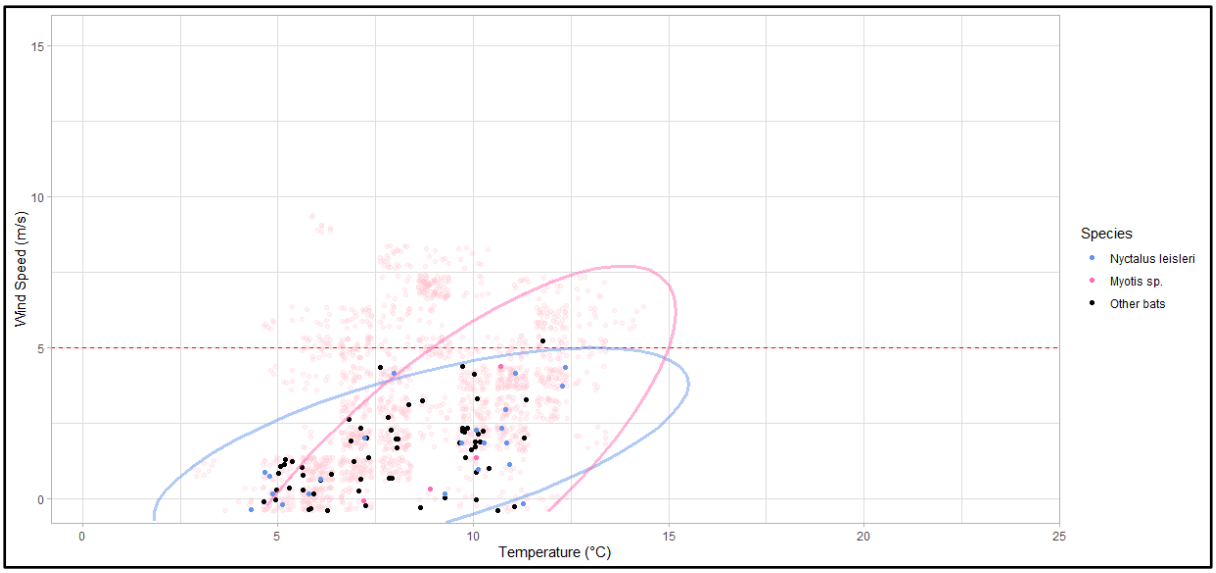


Figure A9-3: Bat passes in relation to temperature and wind speed at D.03 in Spring.

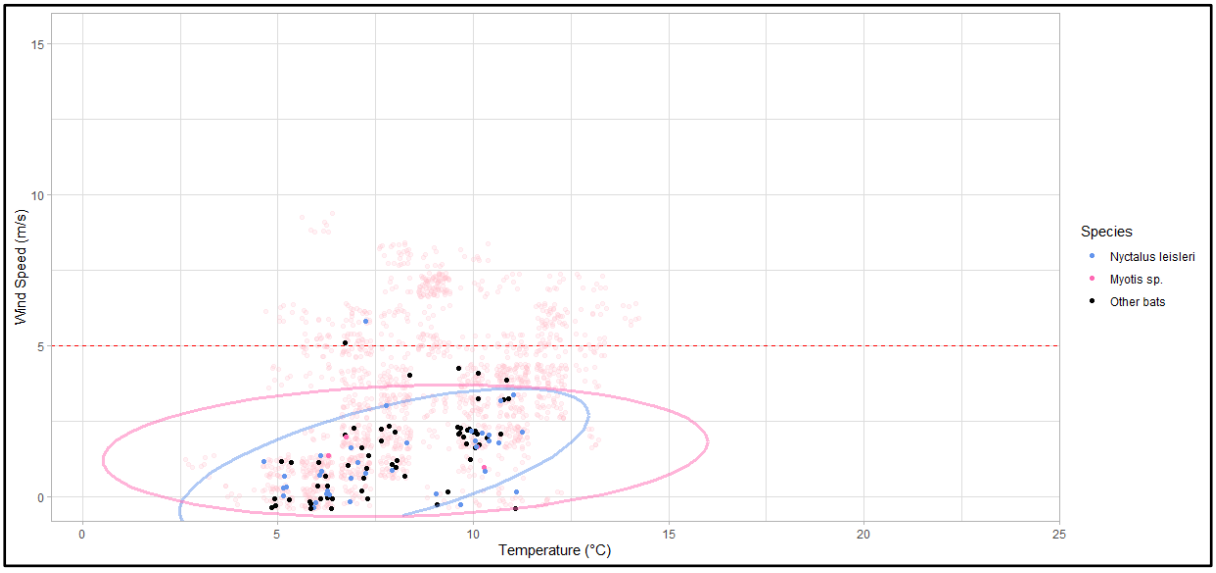


Figure A9-4: Bat passes in relation to temperature and wind speed at D.04 in Spring.

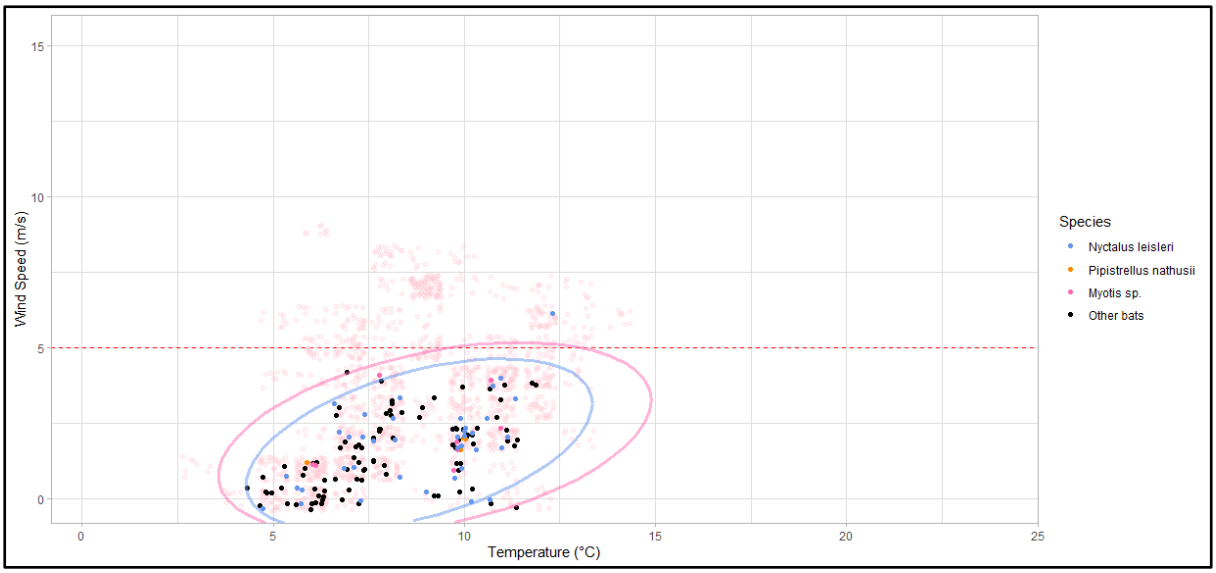


Figure A9-5: Bat passes in relation to temperature and wind speed at D.05 in Spring.

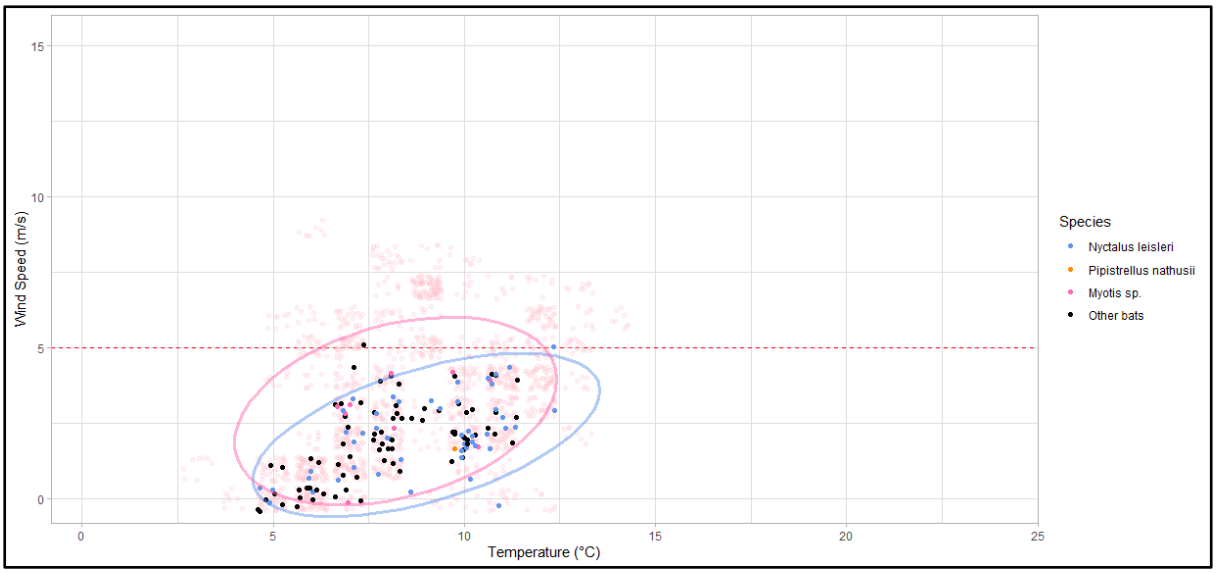


Figure A9-6: Bat passes in relation to temperature and wind speed at D.06 in Spring.

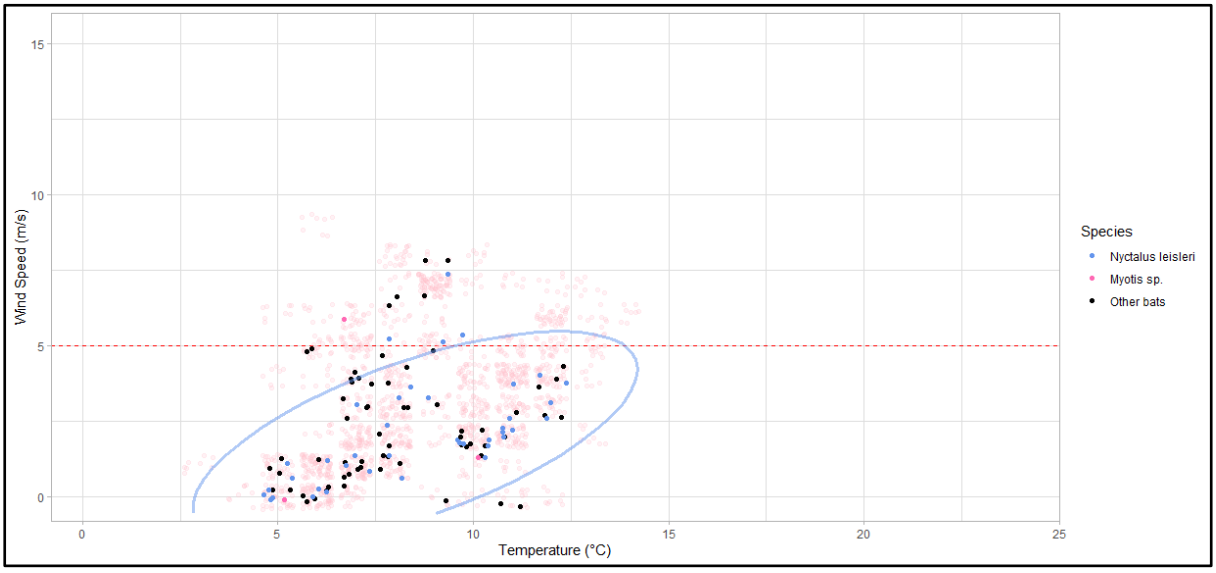


Figure A9-7: Bat passes in relation to temperature and wind speed at D.07 in Spring.

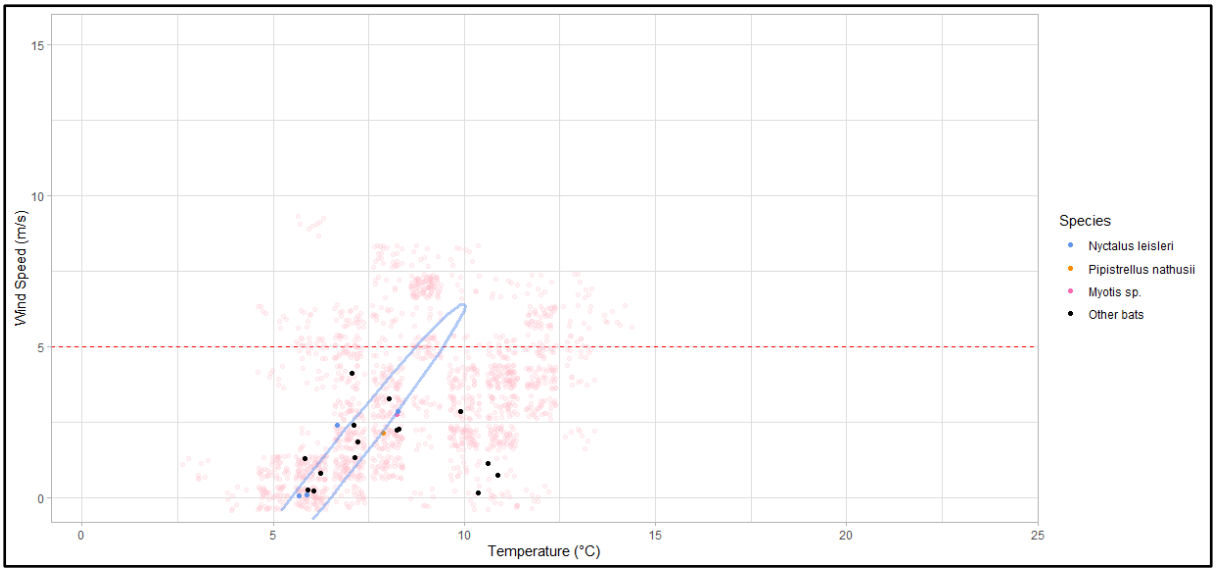


Figure A9-8: Bat passes in relation to temperature and wind speed at D.08 in Spring.

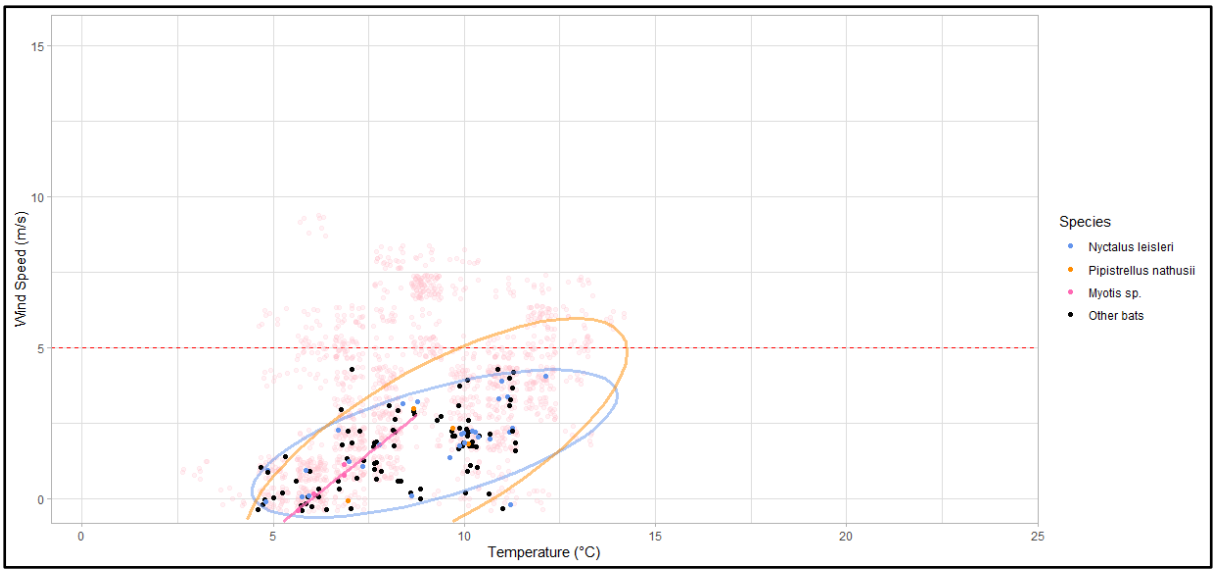


Figure A9-9: Bat passes in relation to temperature and wind speed at D.09 in Spring.

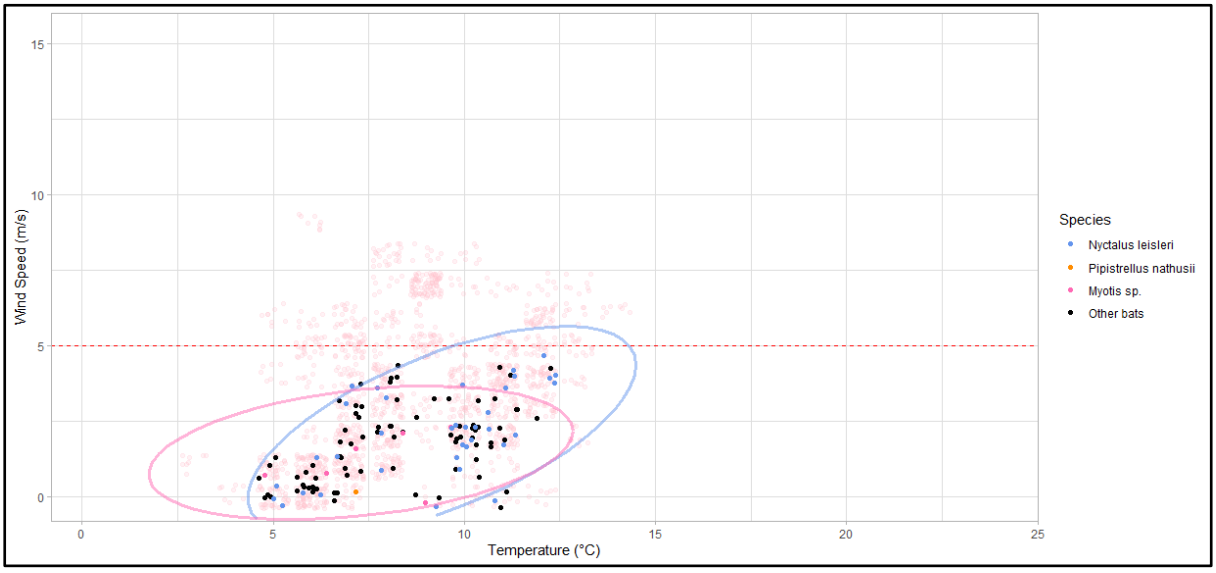


Figure A9-10: Bat passes in relation to temperature and wind speed at D.10 in Spring.

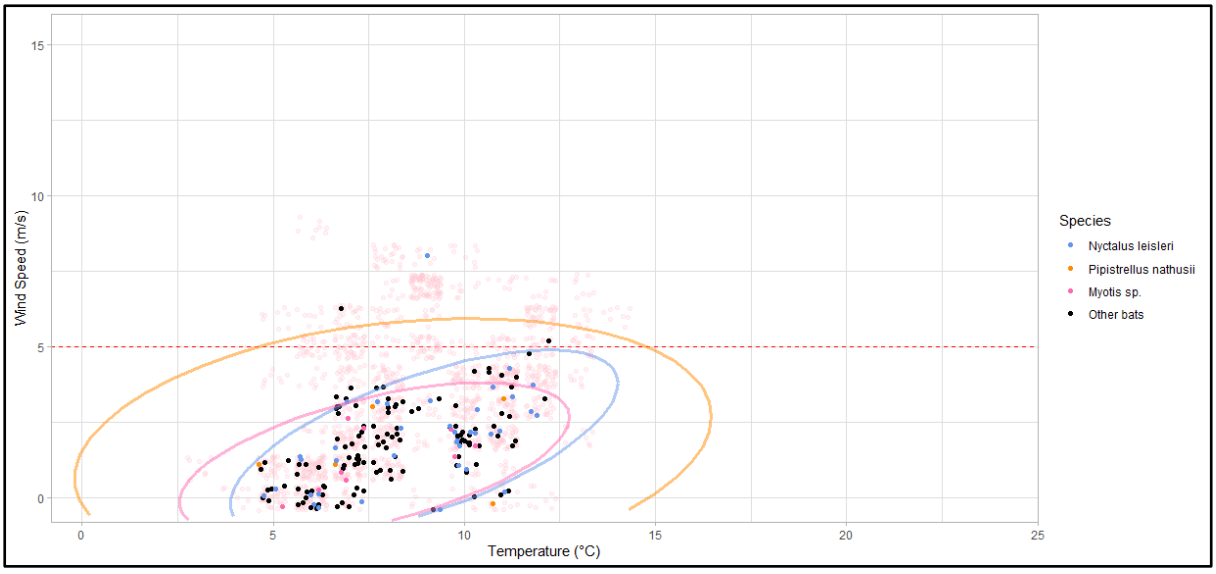


Figure A9-11: Bat passes in relation to temperature and wind speed at D.11 in Spring.

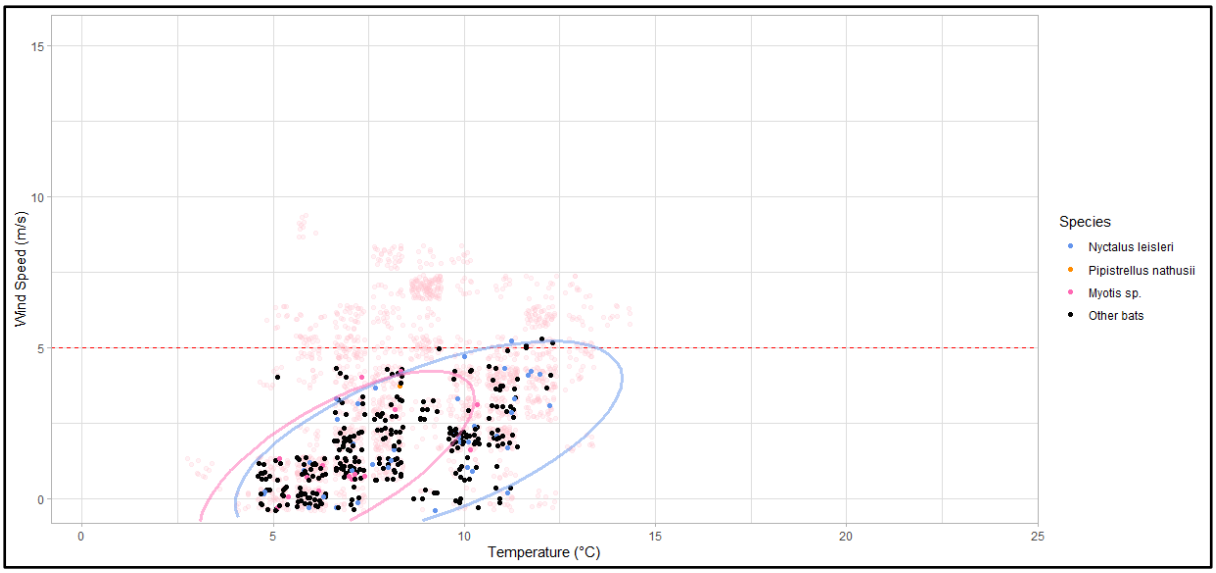


Figure A9-12: Bat passes in relation to temperature and wind speed at D.12 in Spring.

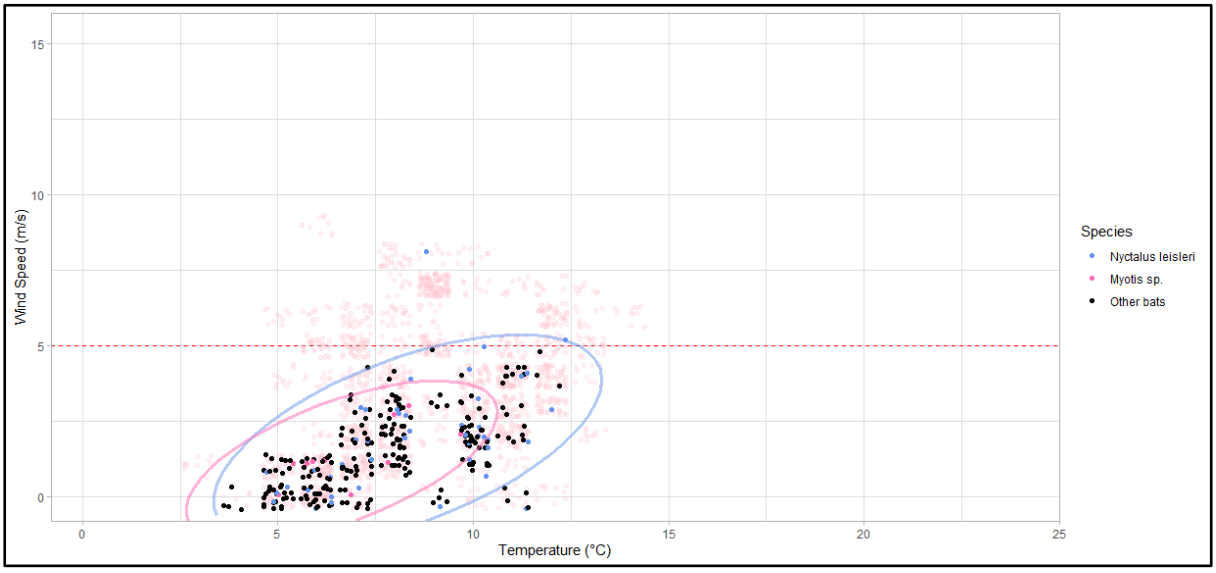


Figure A9-13: Bat passes in relation to temperature and wind speed at D.13 in Spring.

Summer

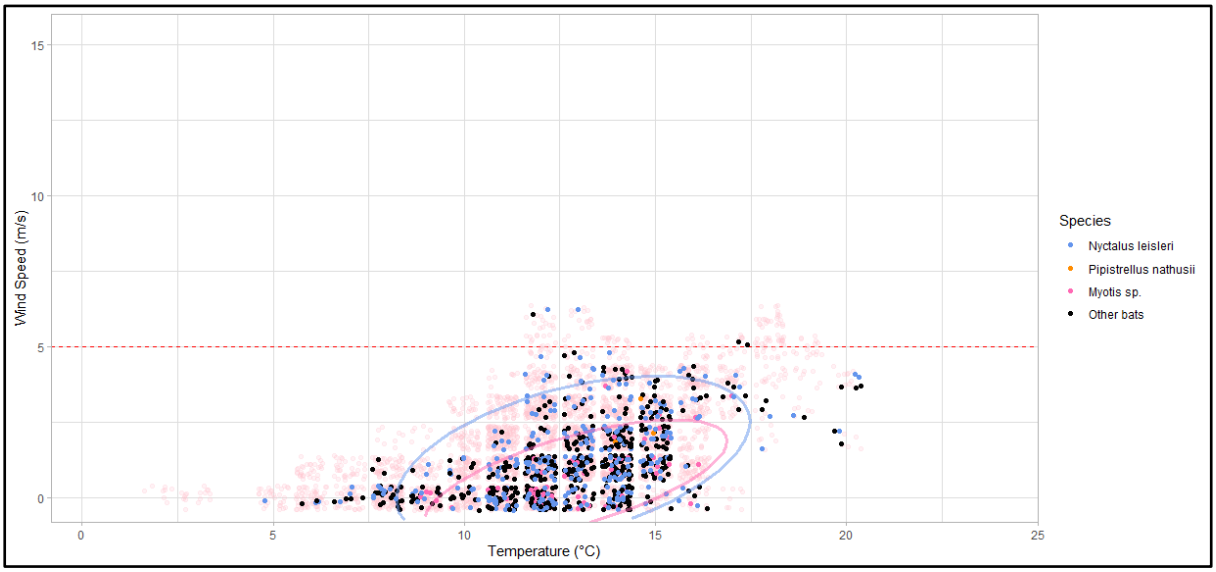


Figure A9-14: Bat passes in relation to temperature and wind speed at D.01 in Summer

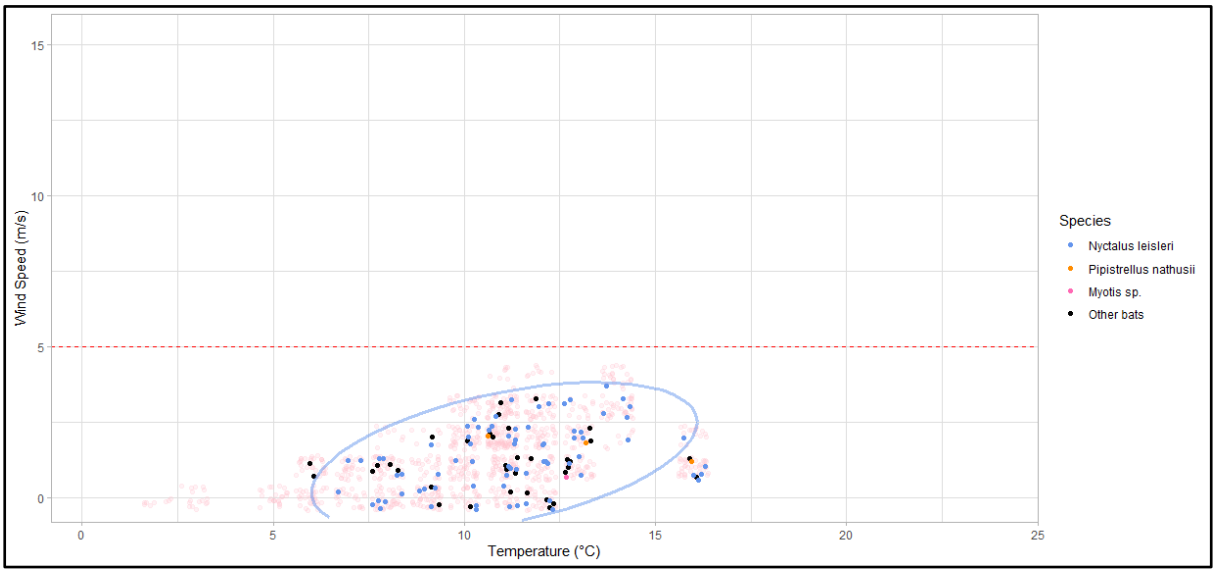


Figure A9-15: Bat passes in relation to temperature and wind speed at D.02 in Summer.

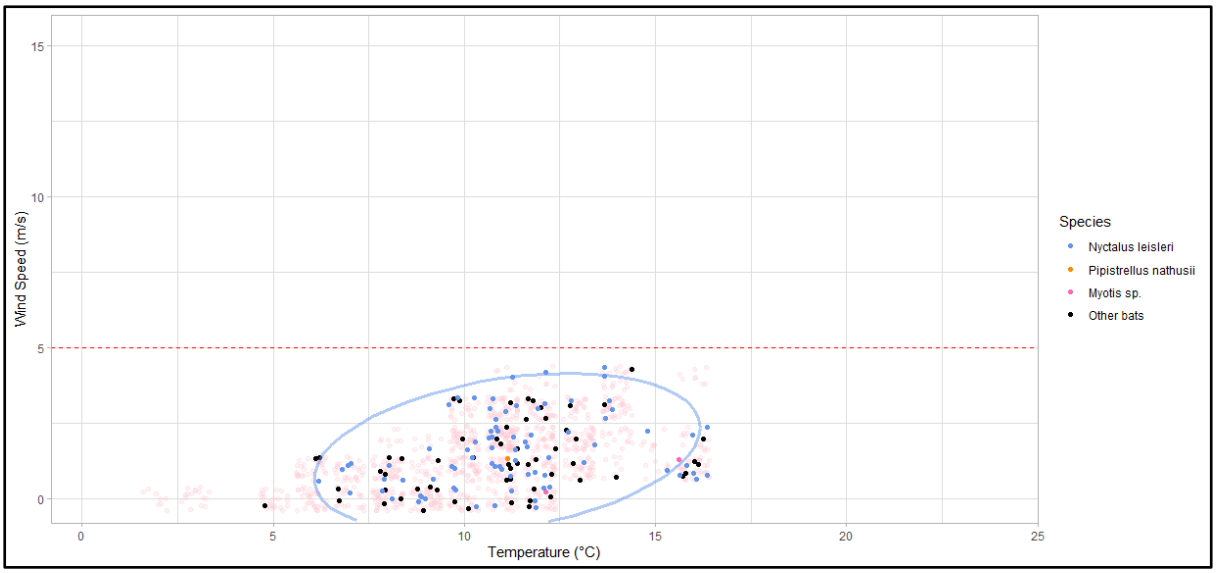


Figure A9-16: Bat passes in relation to temperature and wind speed at D.03 in Summer.

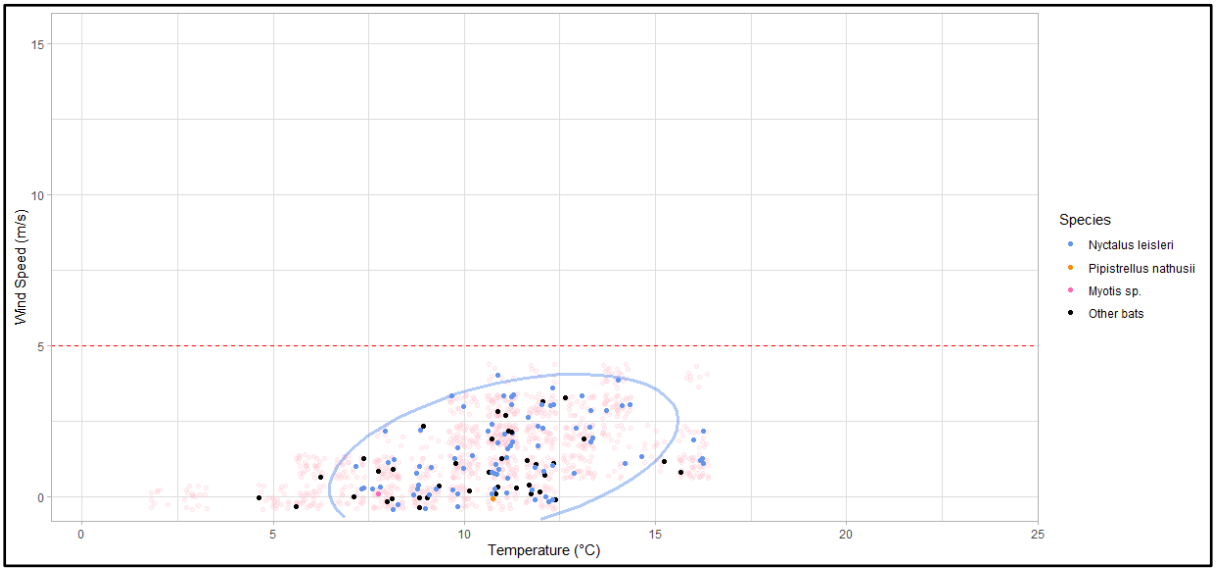


Figure A9-17: Bat passes in relation to temperature and wind speed at D.04 in Summer.

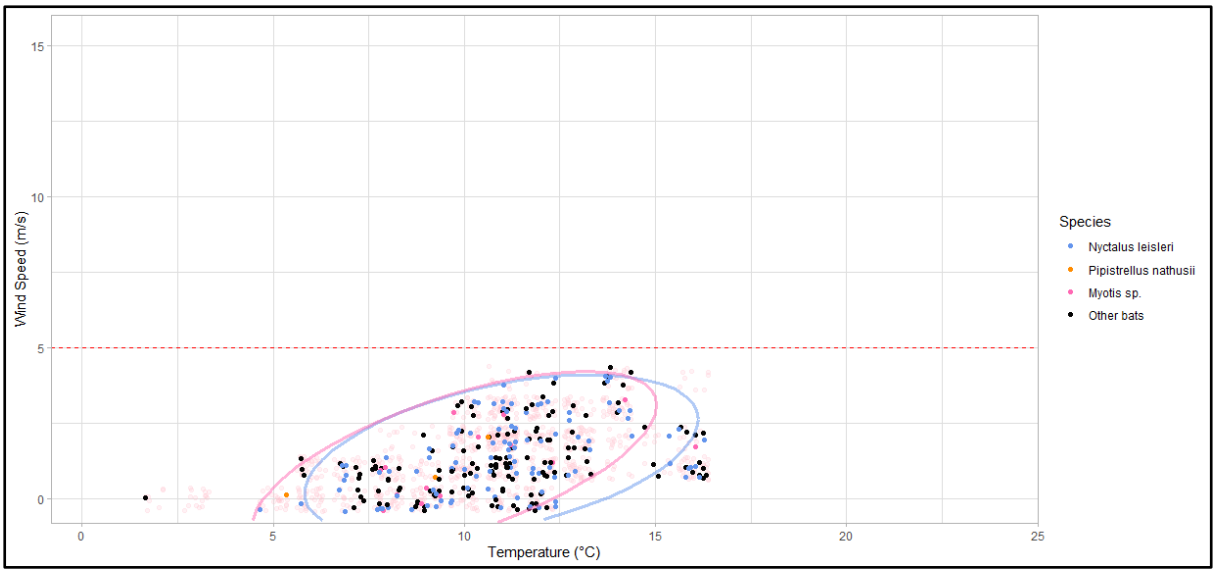


Figure A9-18: Bat passes in relation to temperature and wind speed at D.05 in Summer.

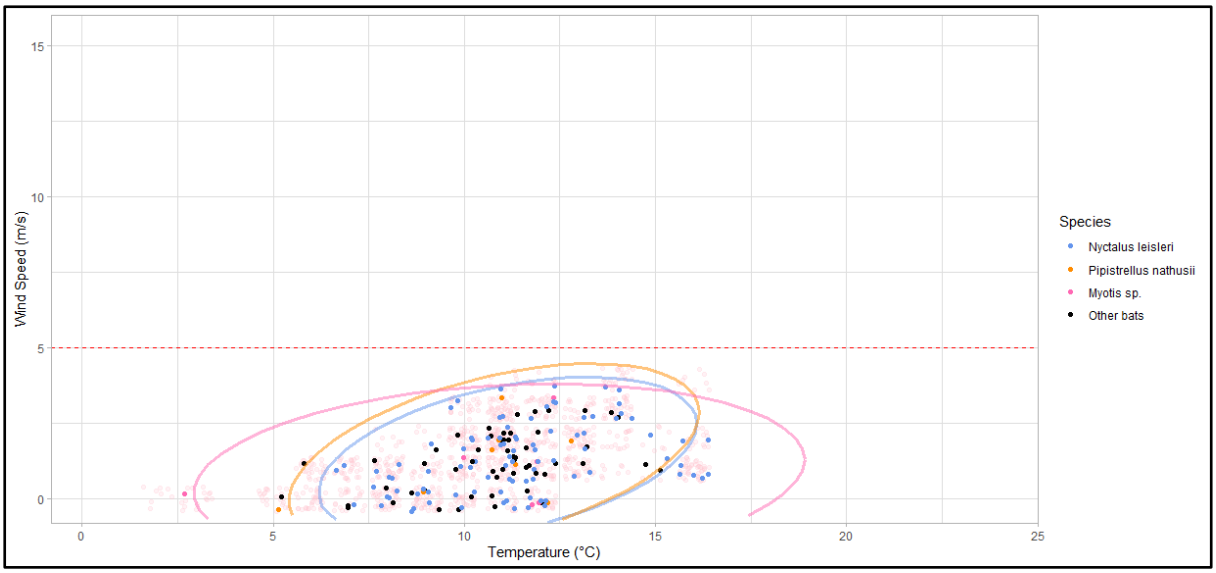


Figure A9-19: Bat passes in relation to temperature and wind speed at D.06 in Summer.

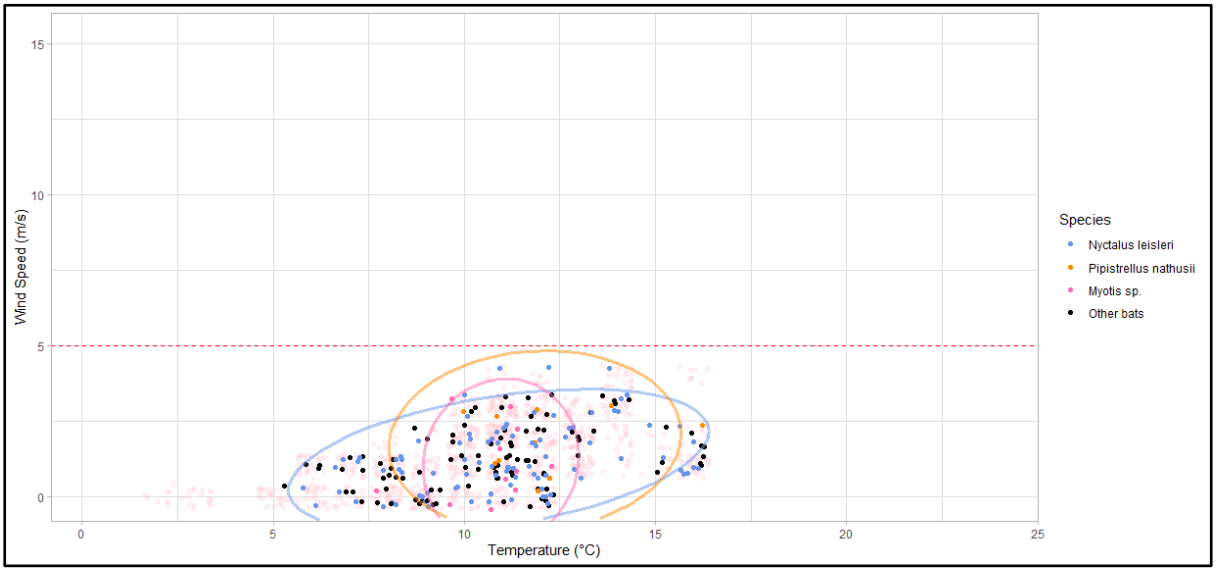


Figure A9-20: Bat passes in relation to temperature and wind speed at D.07 in Summer.

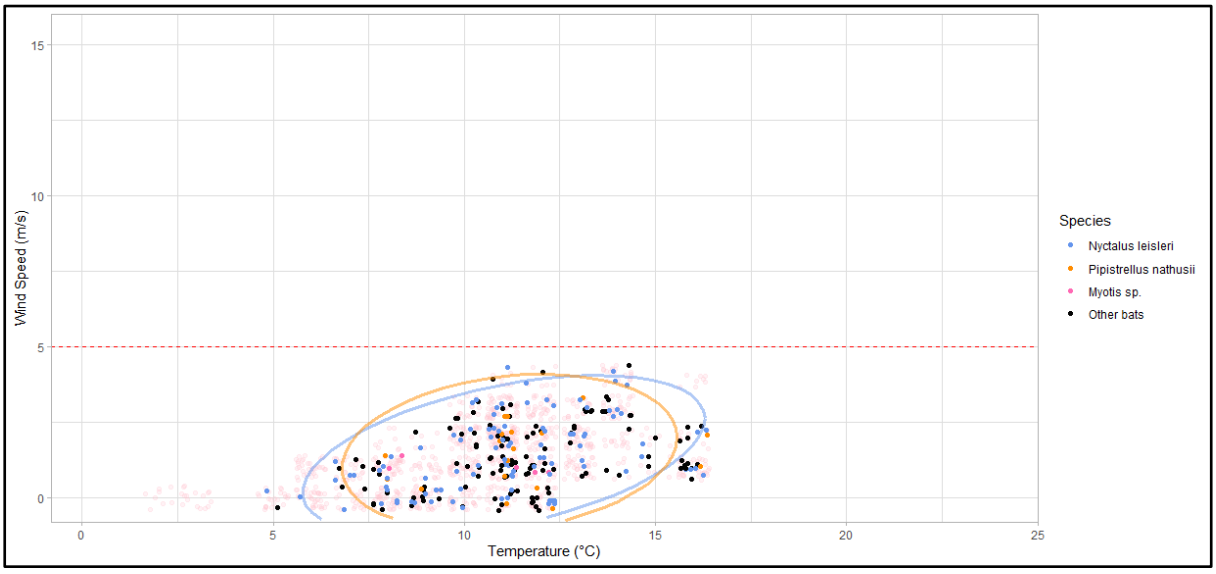


Figure A9-21: Bat passes in relation to temperature and wind speed at D.08 in Summer.

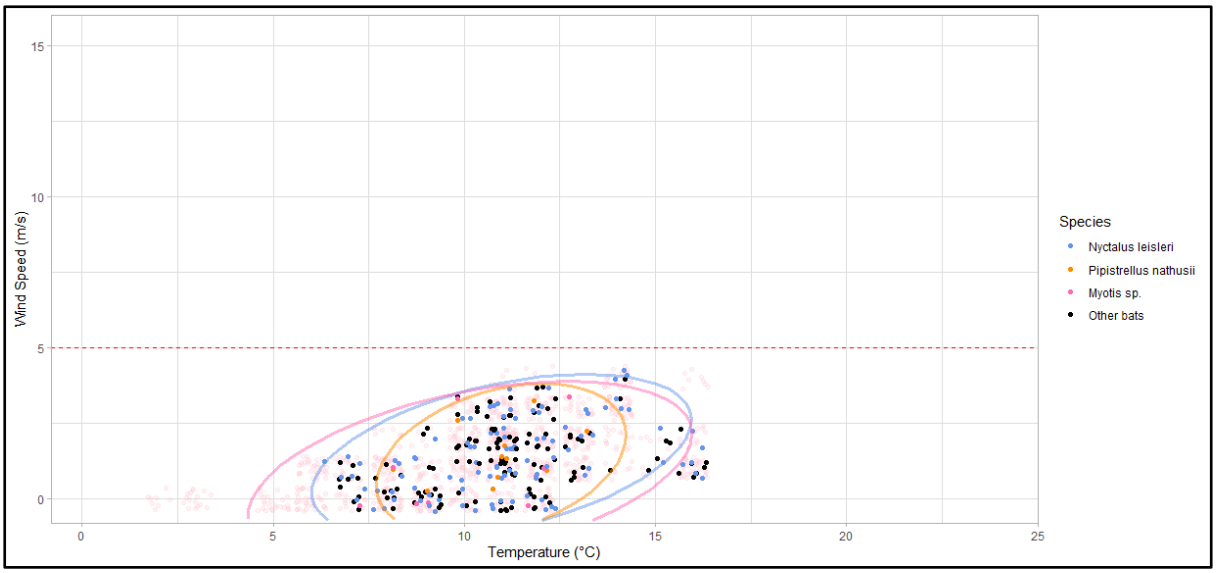


Figure A9-22: Bat passes in relation to temperature and wind speed at D.09 in Summer.

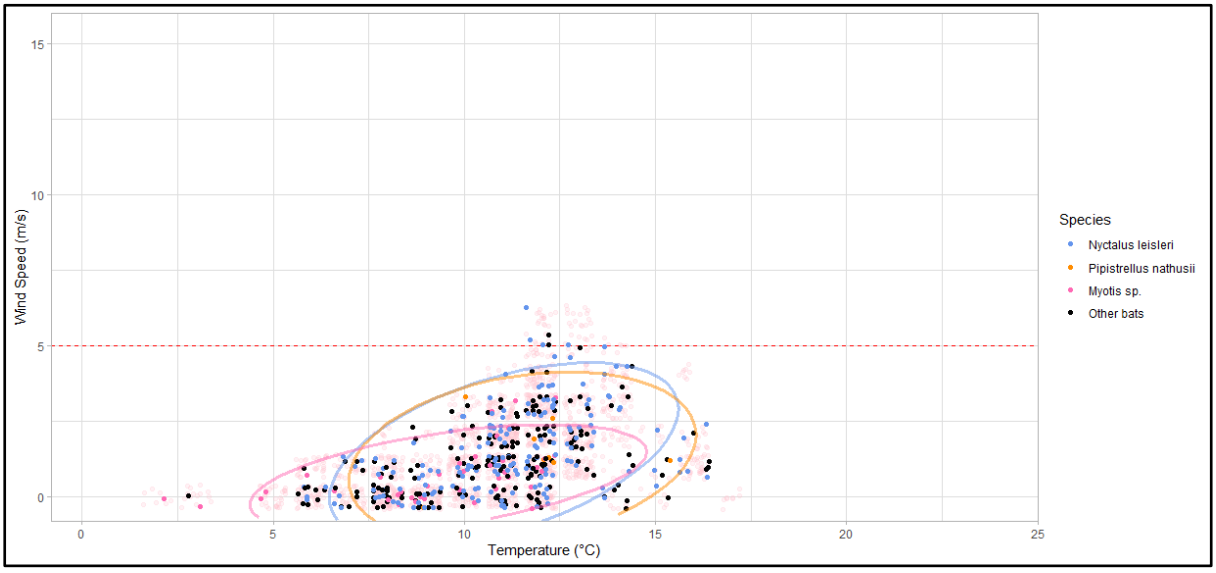


Figure A9-23: Bat passes in relation to temperature and wind speed at D.10 in Summer.

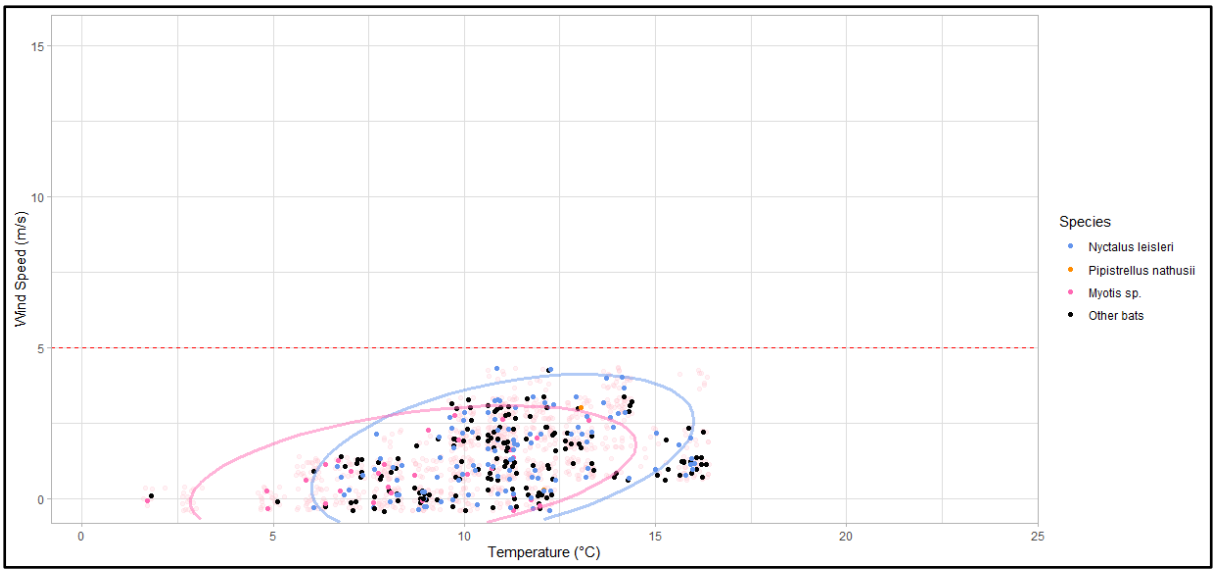


Figure A9-24: Bat passes in relation to temperature and wind speed at D.11 in Summer.

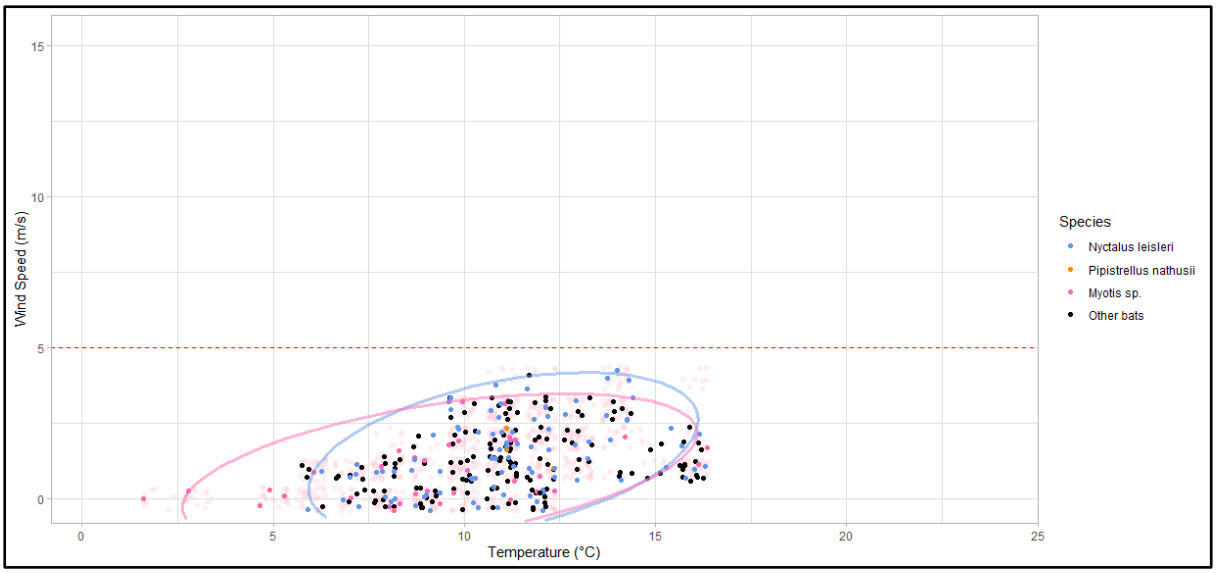


Figure A9-25: Bat passes in relation to temperature and wind speed at D.12 in Summer.

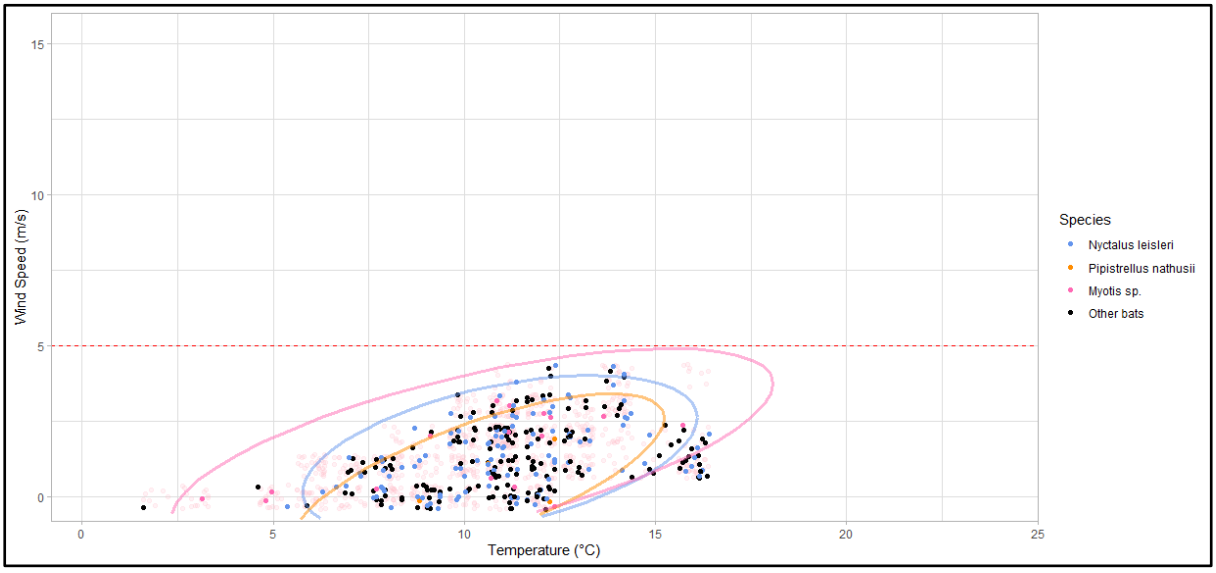


Figure A9-26: Bat passes in relation to temperature and wind speed at D.13 in Summer.

Autumn

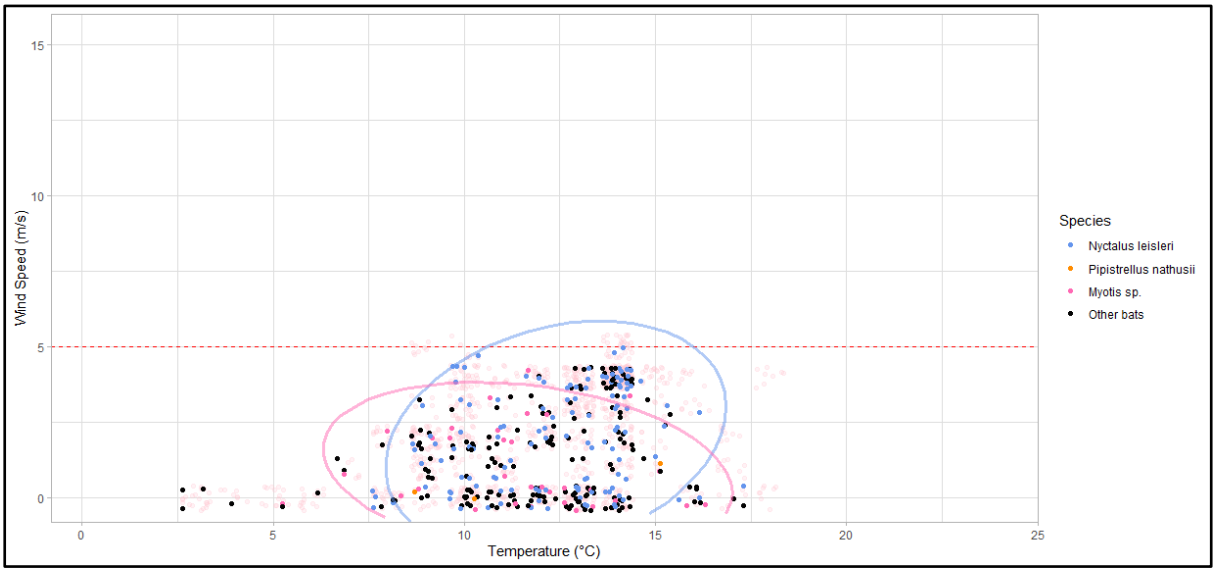


Figure A9-27: Bat passes in relation to temperature and wind speed at D.01 in Autumn.

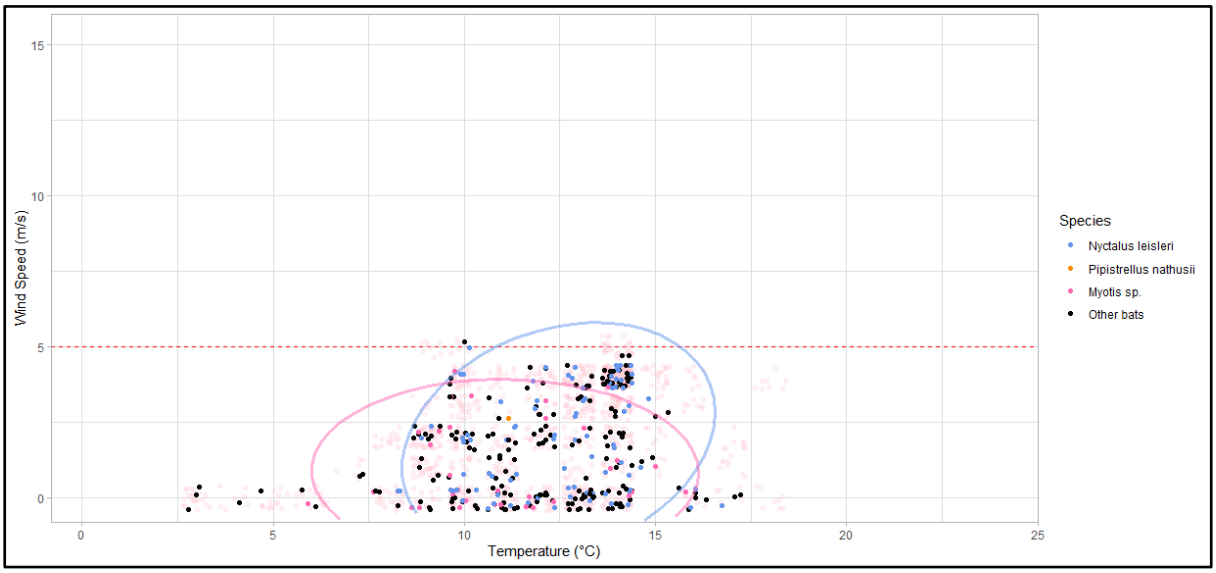


Figure A9-28: Bat passes in relation to temperature and wind speed at D.02 in Autumn.

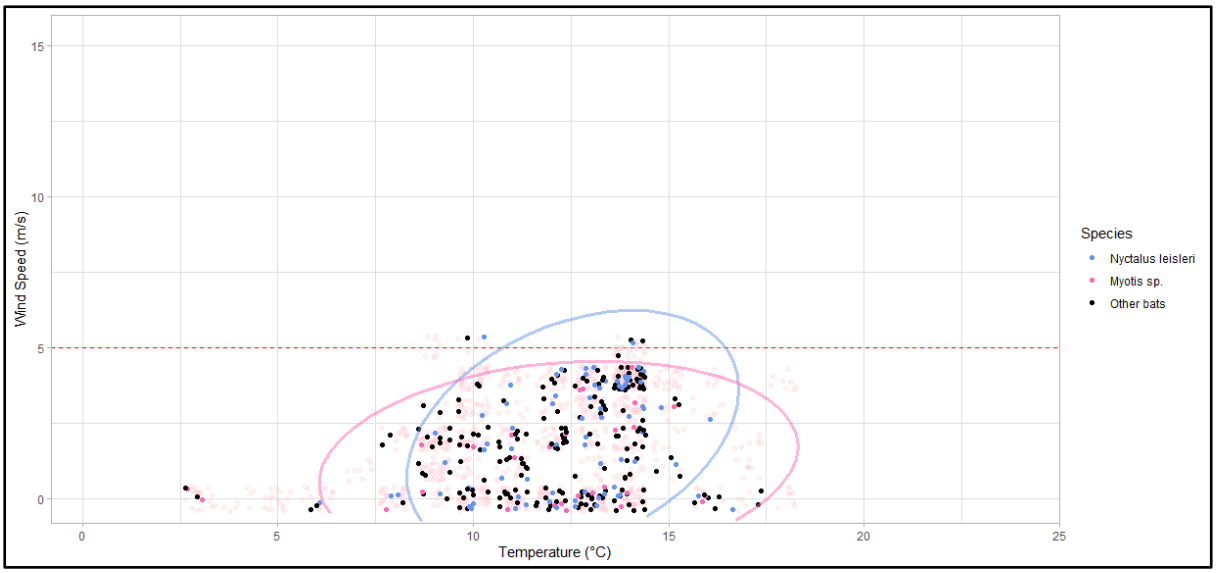


Figure A9-29: Bat passes in relation to temperature and wind speed at D.03 in Autumn.

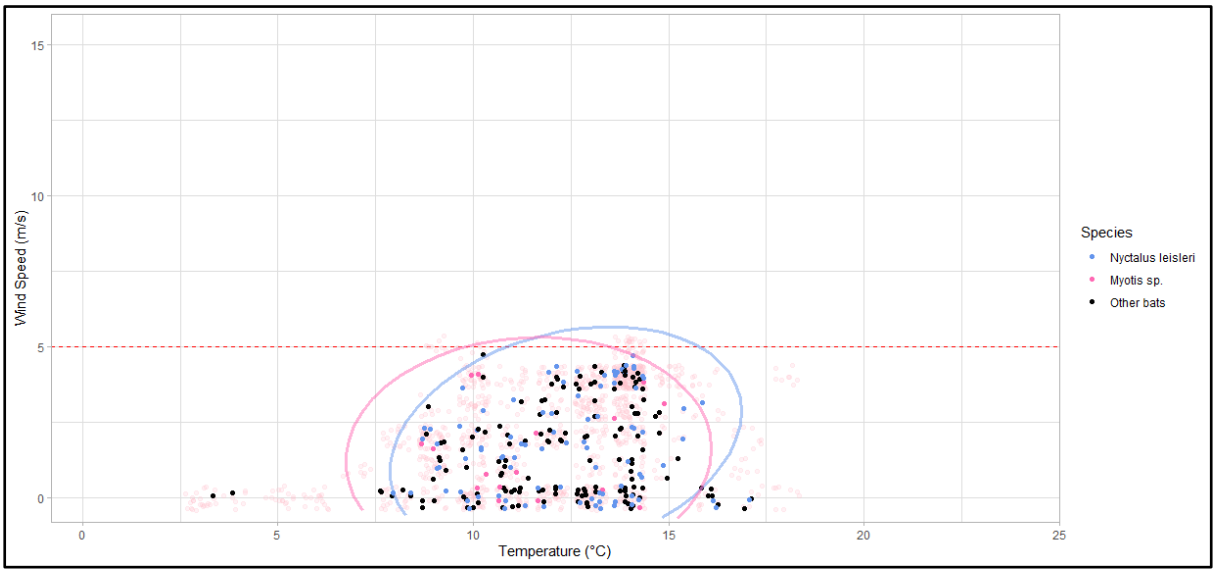


Figure A9-30: Bat passes in relation to temperature and wind speed at D.04 in Autumn.

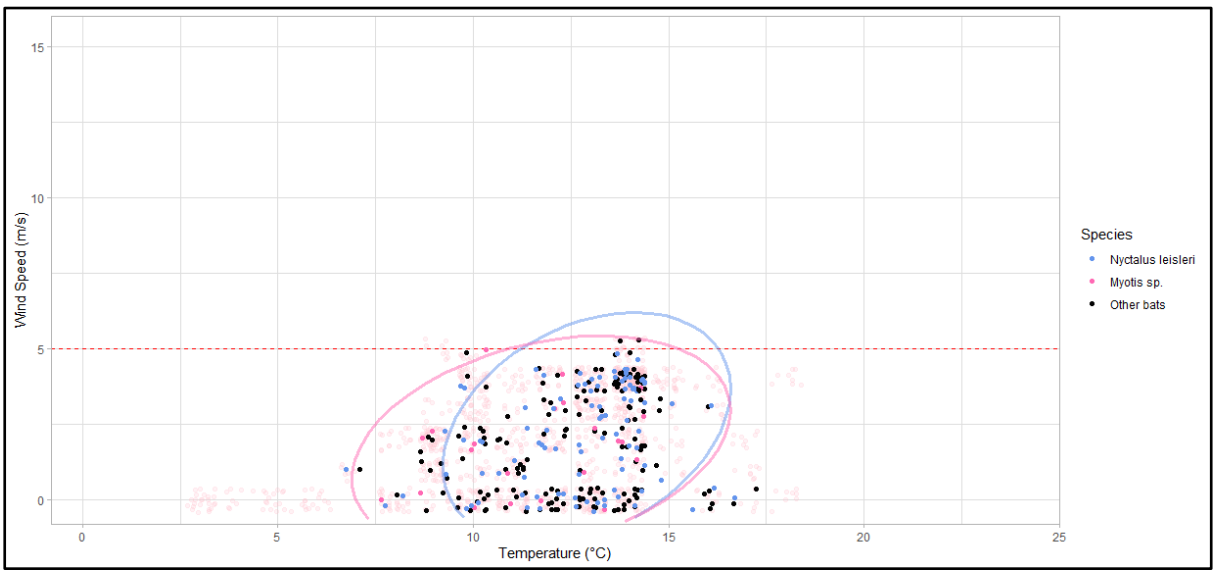


Figure A9-31: Bat passes in relation to temperature and wind speed at D.05 in Autumn.

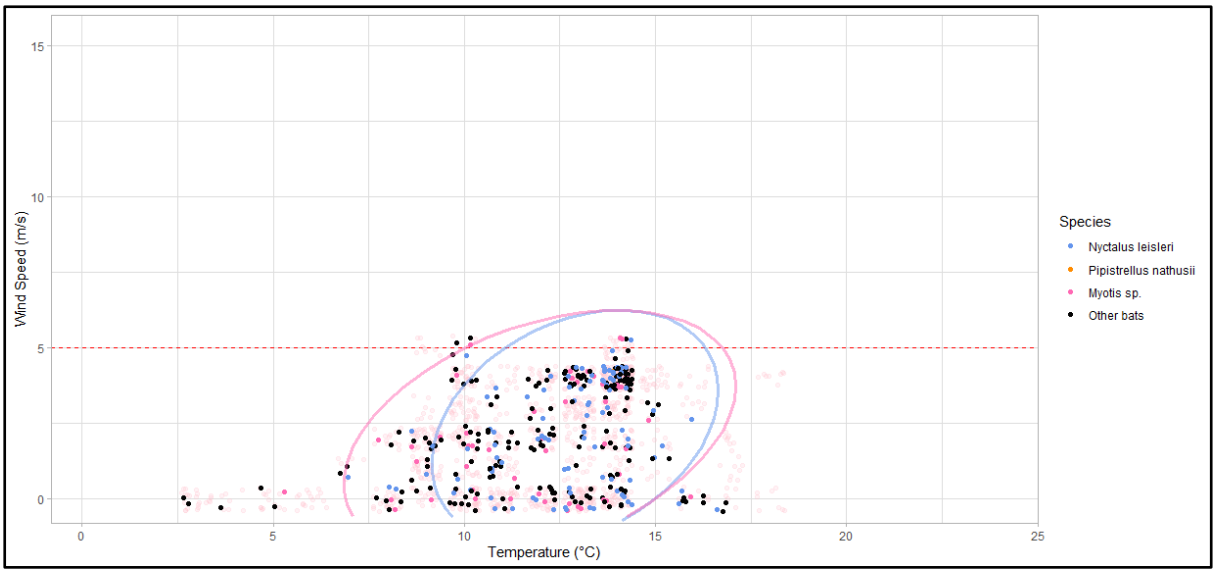


Figure A9-32: Bat passes in relation to temperature and wind speed at D.06 in Autumn.

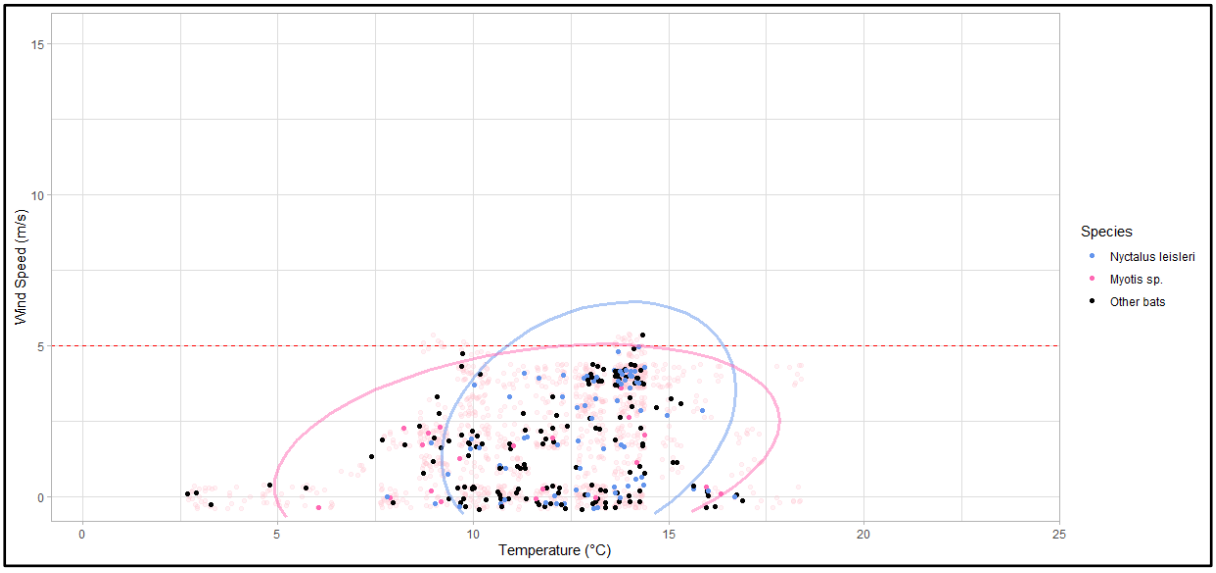


Figure A9-33: Bat passes in relation to temperature and wind speed at D.07 in Autumn.

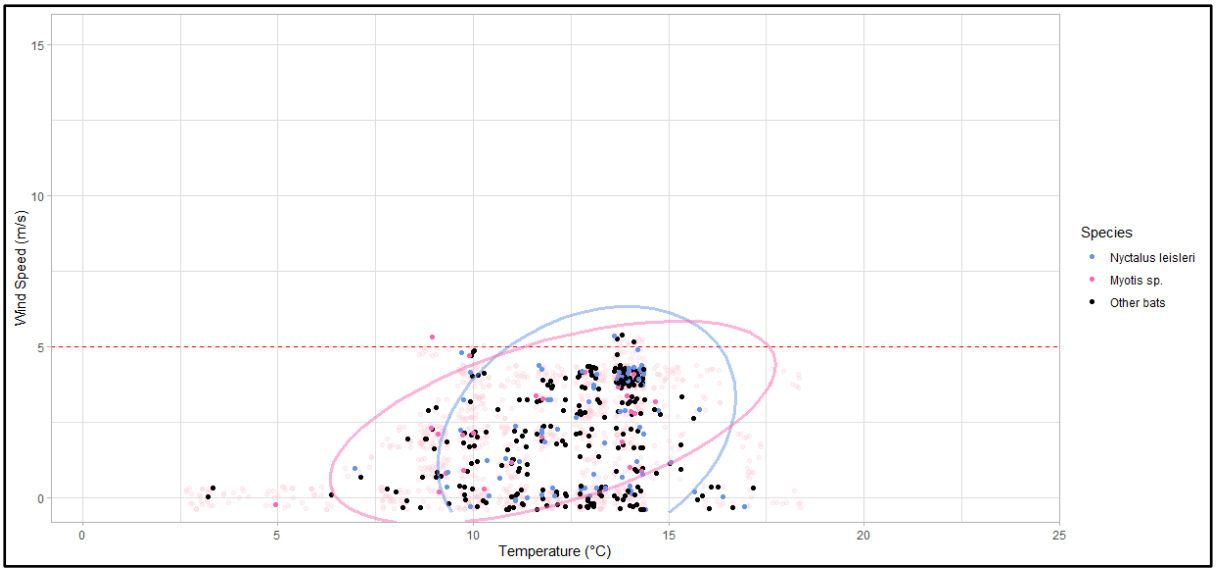


Figure A9-34: Bat passes in relation to temperature and wind speed at D.08 in Autumn.

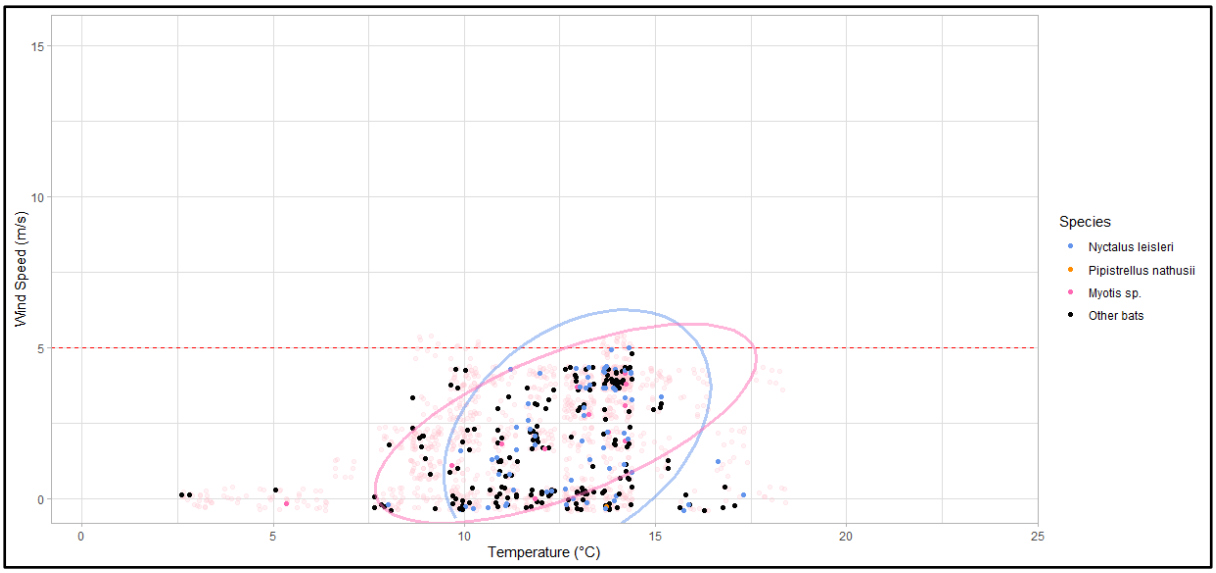


Figure A9-35: Bat passes in relation to temperature and wind speed at D.09 in Autumn.

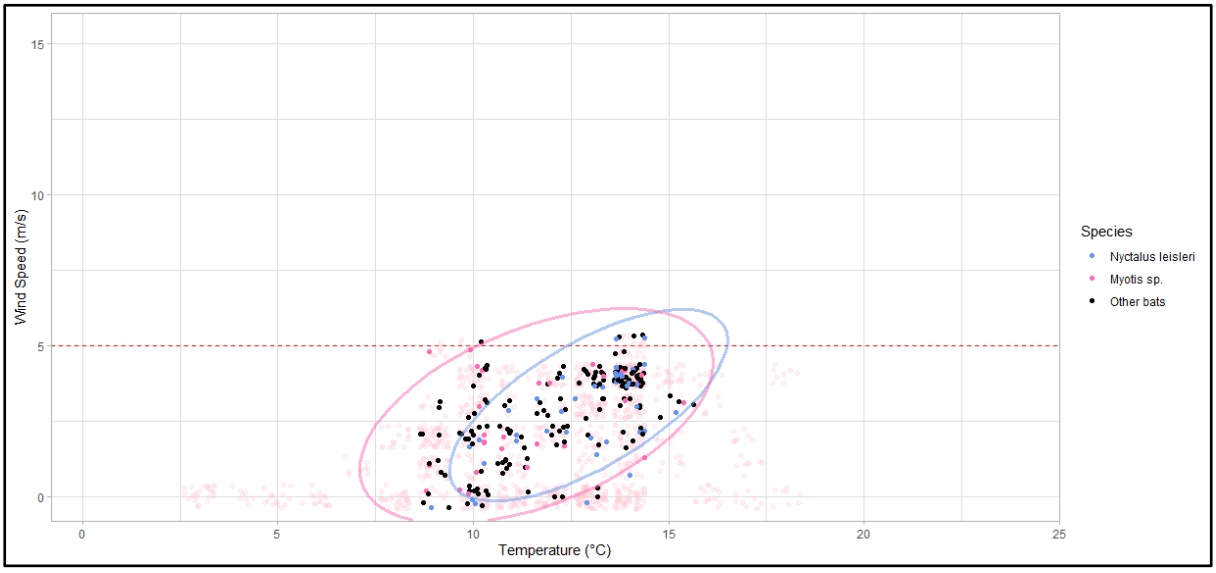


Figure A9-36: Bat passes in relation to temperature and wind speed at D.10 in Autumn.

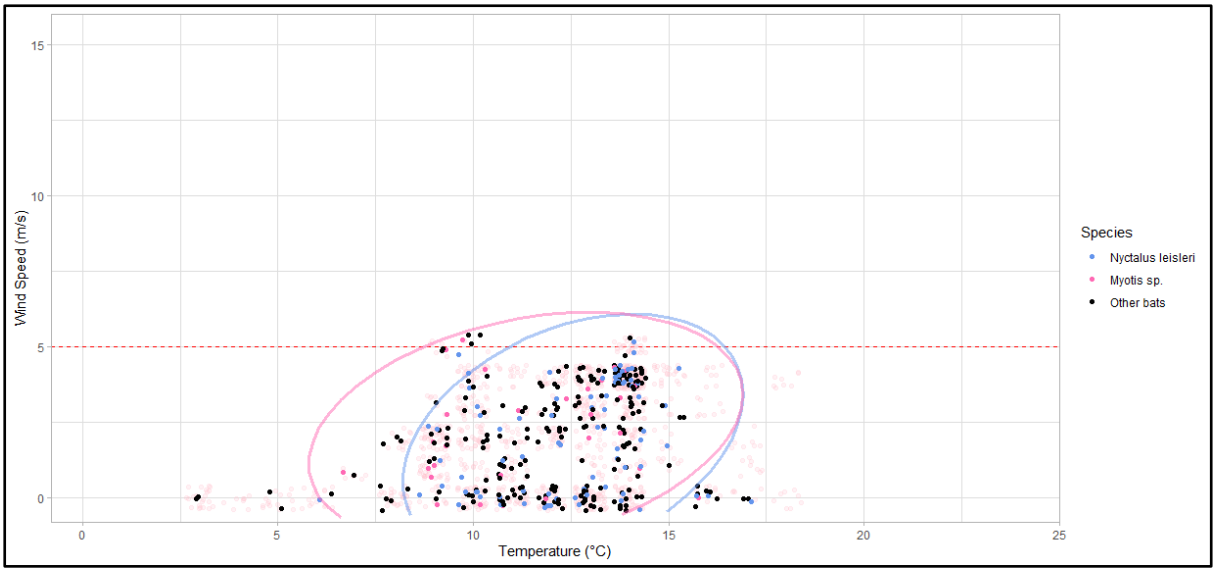


Figure A9-37: Bat passes in relation to temperature and wind speed at D.11 in Autumn.

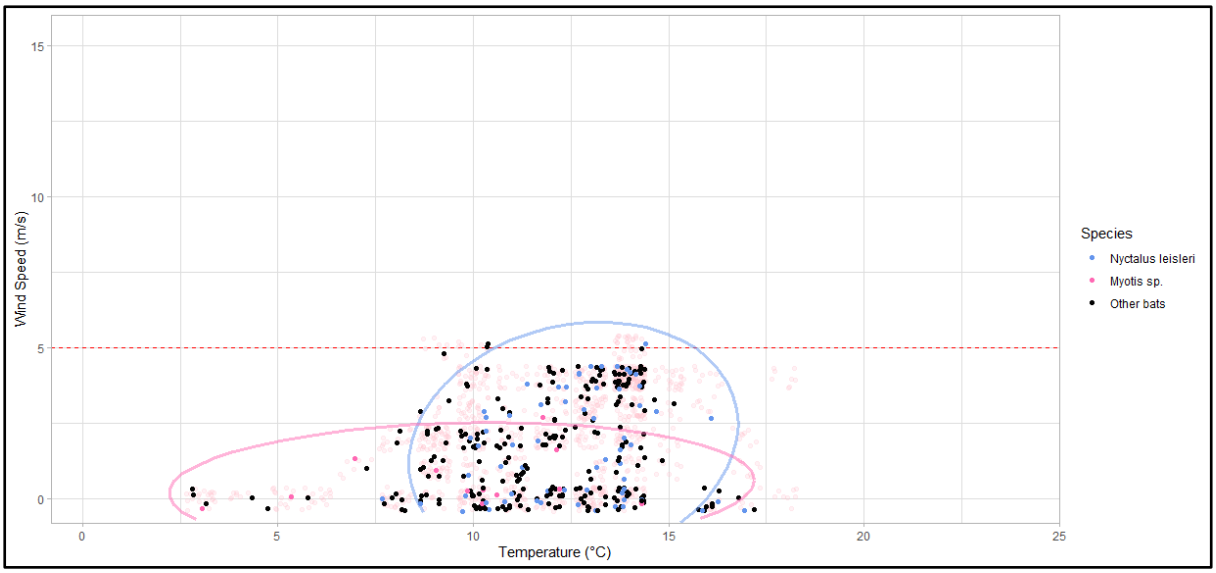


Figure A9-38: Bat passes in relation to temperature and wind speed at D.12 in Autumn.

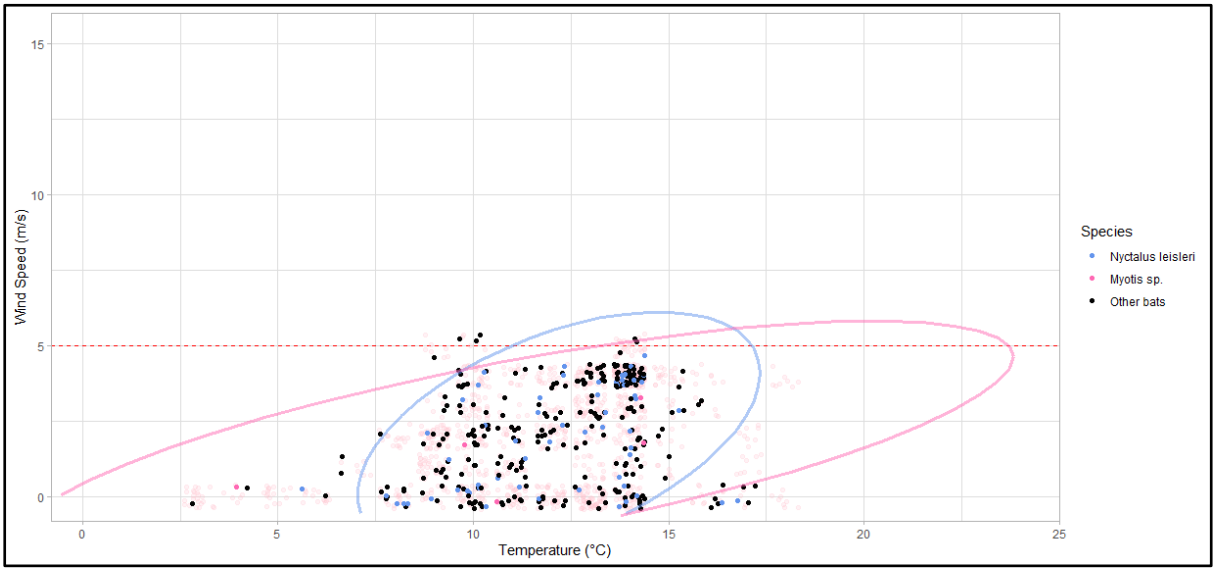


Figure A9-39: Bat passes in relation to temperature and wind speed at D.13 in Autumn.

Appendix 10: Mean Bat Activity (bp/h) per Detector and Species

Table A10-1: Mean Bat Activity (bp/h) per Detector and Species – Spring

Detector	*Myotis spp.*	Leisler's bat	Nathusius' s pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat
D.01	0.04	0.96	0	0.33	0.44	0.03	0
D.02	0.01	0.03	0	0.05	0.06	0	0
D.03	0.02	0.24	0	0.25	0.45	0	0
D.04	0.02	0.58	0	0.22	0.31	0.01	0
D.05	0.04	0.77	0.02	0.35	0.87	0.01	0.01
D.06	0.04	1.15	0	0.2	0.41	0.05	0
D.07	0.02	0.89	0	0.24	0.35	0.01	0
D.08	0	0.02	0	0.05	0.07	0	0
D.09	0.02	0.49	0.02	0.56	0.88	0.04	0.04
D.10	0.03	0.65	0	0.26	0.42	0.01	0
D.11	0.04	0.61	0.02	0.4	0.87	0.04	0
D.12	0.07	0.57	0	0.72	2.09	0	0.07
D.13	0.05	0.88	0	1.41	6.84	0.04	0

Table A10-2: Mean Bat Activity (bp/h) per Detector and Species – Summer

Detector	*Myotis spp.*	Leisler's bat	Nathusius' s pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat
D.01	0.24	3.06	0	0.82	1.25	0.18	0
D.02	0.01	1.77	0.02	0.24	0.1	0.01	0
D.03	0.01	1.7	0.01	0.28	0.31	0.01	0
D.04	0.01	2.47	0.01	0.18	0.2	0.01	0.01
D.05	0.1	6.36	0.03	4.63	4.33	0.07	0.03
D.06	0.04	5.39	0.06	0.68	0.06	0.02	0
D.07	0.08	4.72	0.09	1.97	0.38	0.05	0
D.08	0.03	5.26	0.13	3.7	1.74	0.08	0.01
D.09	0.06	3.57	0.09	5.6	5.16	0.03	0.06

Detector	*Myotis spp.*	Leisler's bat	Nathusius' s pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat
D.10	0.2	7.2	0.05	2.63	1.24	0.16	0
D.11	0.27	7.58	0.01	1.61	0.99	0.13	0.05
D.12	0.38	2.95	0.02	1.75	1.82	0.07	0.09
D.13	0.14	33.74	0.16	4.51	2.24	0.53	0.01

Table A10-3: Mean Bat Activity (bp/h) per Detector and Species – Autumn

Detector	*Myotis spp.*	Leisler's bat	Nathusius' s pipistrelle	Common pipistrelle	Soprano pipistrelle	Brown long-eared bat	Lesser horseshoe bat
D.01	0.21	7.31	0.02	0.64	1.49	0.33	0
D.02	0.36	1.96	0.01	0.71	2.12	0.34	0
D.03	0.17	1.55	0	0.72	1.89	0.28	0.01
D.04	0.09	3.72	0	1.04	1.46	0.11	0
D.05	0.15	7.37	0	1.33	1.54	0.09	0.03
D.06	0.44	7.49	0.06	0.79	0.82	0.66	0
D.07	0.16	2.25	0	0.71	0.85	0.27	0
D.08	0.23	4.36	0	20.34	10.18	0.11	0.1
D.09	0.07	1.71	0.01	2.08	2.26	0.11	0.05
D.10	0.2	1.6	0	0.74	1	0.36	0.01
D.11	0.19	1.22	0	1.11	1.32	0.39	0.05
D.12	0.03	0.82	0	23.7	14.07	0.14	0.13
D.13	0.07	1.41	0	2.49	5.31	0.63	0.02

Appendix 11: Statement of Authority and Evidence of Competence

The 2024 bat surveys were carried out by Kevin O'Reilly, Damien McAndrew, Bruno Mels, and Patrick Power. This report was written by Kevin O'Reilly, Tanushree Mundra, Damien McAndrew and Louise Gannon. This report was reviewed by Jason Guile.

Kevin O'Reilly – Bat Ecologist – Bat Surveys | Report Author (Bats)

Kevin O'Reilly worked with APEM Group Woodrow until October 2025. He holds a First-Class Honours degree in Business and Law from University College Dublin and qualified as a Solicitor with the Law Society of Ireland. In 2024, he completed a Master's research project in Environmental Management and GIS at Ulster University, focused on bats and street lighting.

During his time with Woodrow, Kevin undertook bat surveys including static detector deployment and roost surveys and contributed to several large-scale development projects. He is a Qualifying Member of CIEEM and holds a full bat derogation licence issued by NPWS.

Qualifications: BBL Bachelor of Business and Law, Professional Practice Courses I & II – The Law Society of Ireland, MSc Environmental Management with GIS.

Bruno Mels – Ecologist – Data Analysis

Bruno Mels is an Ecologist and Data Coordinator with Woodrow. He has extensive experience in GIS mapping using ArcGIS and QGIS, data management, and ecological modelling. His work includes habitat suitability modelling and statistical analysis using R, Maxent and Stella.

Bruno provides survey support, data management and analytical support for bat surveys and reporting associated with this project.

Qualifications: BSc in Biology, MSc in Biology: Biodiversity, Conservation & Restoration.

Tanushree Munda – Ecologist – Data Analysis

Tanushree has an International Master of Science in Marine Biological Resources (IMBRSea), based on research focused on life history strategies in marine mammals. She has since specialised in freshwater ecology and has undertaken macrobenthic surveys in India, as well as working with freshwater turtles, dolphin, and crocodile. She has been involved in various EIA projects in India, particularly in mangrove and wetland ecosystems. Her work with Woodrow focuses on bat acoustic data analysis, and fieldwork.

Qualifications: BSc (Hons) Environmental Science, MSc (Hons) Ecology & Environment Studies, International Master of Science in Marine Biological Resources (IMBRSea), Cum laude.

Patrick Power – Bat Ecologist – Bat Surveys

Patrick Power is an Ecologist with Woodrow, and has completed a BSc in Forestry, BSc (Hons) in Land Management in Forestry with Waterford Institute of Technology and a PGCert in Wildlife Biology and Conservation with Edinburgh Napier University. His work with Woodrow is focused on bat data analysis including bat call identification and bat roost/habitat suitability surveys. Patrick has developed a high level of proficiency with Kaleidoscope and BatExplorer, the analysis software used to assess bat calls and activity. Patrick currently has a licence to survey bat roosts from the Department of Housing, Local Government and Heritage.

Qualifications: BSc in Forestry, BSc (Hons) in Land Management in Forestry, PG Certificate in Wildlife Biology and Conservation, CIEEM Student Membership, BCIreland.

Damien McAndrew – Bat Ecologist – Bat Surveys | Report Author and Surveyor

Damien McAndrew is an Ecologist and Bat Specialist with Woodrow. Damien holds an Honours Degree in Environmental Science, and his work is primarily focused on bat ecology and bat impact assessment for large-scale development projects, including wind energy schemes. He has undertaken a wide range of bat surveys, including habitat and roost suitability assessments, dusk and dawn emergence and re-entry surveys, and static detector deployment and analysis. His work includes the assessment of collision risk and the development of mitigation measures such as turbine micro-siting, buffer assessments, operational curtailment and habitat enhancement. Damien currently holds a licence to survey bat roosts issued by the Department of Housing, Local Government and Heritage.

Qualifications: BSc (Hons) Environmental Science.

Louise Gannon – Bat Ecologist – Report Author

Louise Gannon is an ecologist with Woodrow. Louise has completed a B.Sc. in Environmental Science. Her main experience lies in carrying out protected species surveys for bats (PRAs, emergence/re-entry surveys and activity transect surveys) as well as the deployment of static bat detectors and reporting on the same. She also carries out bat call analysis using Kaleidoscope and BatExplorer, the analysis software used to assess bat calls and activity. She also has experience in carrying out otter, badger and red squirrel surveys. She has volunteered in various surveys such as the BCI All Ireland Daubenton's bat survey, the Countryside bird survey and is a seal rescue volunteer. Louise is a licenced bat surveyor and a Qualifying member of CIEEM. She has also gained invaluable experience in various reports such as technical appendices, EcIAs and AA reports.

Qualifications: BSc (Hons) Environmental Science.

Jason Guile – Associate Director - Report QA

Jason is an Associate Director with over 15 years' experience specialising in bat ecology within Environmental Impact Assessment and Appropriate Assessment for major infrastructure and renewable energy projects across Ireland and the UK.

He has extensive experience leading bat survey strategy, impact assessment and mitigation design, including application of evolving guidance and case law within EIAR and Natura Impact Statement preparation.

Jason has led ecological inputs to multidisciplinary assessments, particularly in relation to complex bat impact pathways such as collision risk, disturbance and lighting, supporting robust and defensible consenting outcomes. He has also contributed to national best practice through sole technical authorship of Bat Conservation Ireland guidance on bats and wind energy (2026).

Qualifications: BSc in Marine Biology/Oceanography | HND in Coastal Conservation with Marine Biology.