



Bat Report and Activity Surveys 2023

Land South-East of Chalcroft Business Park

West End, Hampshire

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LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living creatures are capable of migration and whilst protected species may not have been located during the survey duration, their presence may be found on a site at a later date.

The views and opinions contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

- 1.1 The Ecology Partnership was commissioned by Strutt and Parker to undertake a series of bat activity surveys and emergence surveys on the land south-east of Chalcroft Business Park, West End, Hampshire, SO30 2HH. This follows a Preliminary Ecology Appraisal (PEA) undertaken on the site in March 2023 by The Ecology Partnership which identified habitat suitable for foraging and commuting bats and a mature oak tree with potential roost features.
- 1.2 This report presents the results of The Ecology Partnership's surveys on site, which aim specifically to determine bat roosting and foraging activity on site over the course of the 2023 survey season. Implications for development and appropriate mitigation and enhancement recommendations are also detailed.
- 1.3 The site (SU 48750 15962) is located south-east of Chalcroft Business Park and consists primarily of areas of grassland with some scattered trees. The wider area consists of woodland to the north and west, grassland fields to all aspects, railway tracks to the south and the town of Hedge End to the south-east.
- 1.4 The site boundary and its immediate surroundings are shown in Figure 1.



Figure 1: Approximate red line boundary of the site.

Description of Proposed Development

- 1.5 The proposed development is for an outline application for up to development of up to 3,410m² of commercial floorspace (Use Classes E(g)(ii), E(g)(iii) and B8) to include farm shop (Use Class E(a)) of up to 325m², parking and yard areas (including accessible spaces), landscape buffers and acoustic mitigation. Formation of vehicular and pedestrian access to Estate road (access not a reserved matter).

Legislation

- 1.6 All UK bat species and their roosts are protected by law within The Wildlife and Countryside Act 1981 and the Habitats Directive Annex IV. This means it is a criminal offence to:
- Deliberately capture, injure or kill a bat;

- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat;
- Intentionally or recklessly obstruct access to a bat roost.

2.0 Methodology

Emergence surveys

- 2.1 The dusk emergence surveys were carried out on the mature oak tree at the centre of the site on 21st June, 2nd August, and 6th September 2023. The surveys followed BCT guidelines (Collins, 2016). A surveyor was positioned in such a way in order to cover the hole in the tree with bat roosting potential, in addition to recording any flyovers and activity around the tree (see Figure 2).
- 2.2 The dusk surveys started 15 minutes before sunset and observations were maintained until 1.5 hours after sunset. Bats tend to emerge about twenty minutes after sunset depending on the species, light level, weather conditions and time of year. Peak activity will normally last for about 1.5 to 2 hours after sunset, during times of peak insect activity.
- 2.3 Surveyors were equipped with either Elekon Batlogger detectors or an Echo Meter Touch 2 with iPad. The surveyed tree and the approximate positioning of the surveyor is shown in Figure 2. Surveyors were accompanied by an infrared (IR) camera and associated high-powered IR lamps to ensure footage quality.



Figure 2: Surveyor position (green star) and IR camera position (orange star).

Activity Surveys

- 2.4 Six dusk activity surveys were carried out on 24th May, 21st June, 20th July, 2nd August, 6th September and 4th October 2023; constituting one survey per month. The surveys followed BCT guidelines (Collins, 2016). A predetermined transect route (Figure 3) was followed for the duration of the survey, during which bat flyovers and activity were recorded. The route was designed to follow linear features such as hedgerows and tree lines which bats are known to use as commuting corridors. These habitats also provide the most suitable habitat on site for foraging. Figure 3 shows the layout of the transect route.
- 2.5 The surveys started at sunset and observations were maintained until 1.5-2 hours. This follows BCT guidelines (Collins, 2016). Bats usually emerge about twenty minutes after sunset depending on the species, light level, weather conditions and time of year. Peak activity will normally last for about two hours after sunset, during times of peak insect activity.



Figure 3: Location of the transect route (yellow dotted line) within the red line boundary, and the locations of the remote Anabat detectors (orange dots).

- 2.6 Surveyors were equipped with Elekon Batlogger and/or Echometer Touch bat detectors.
- 2.7 Two Anabat Express remote recording devices were deployed before or during each transect survey and remained on site for at least five consecutive nights. These were placed within boundary features considered most suitable for foraging and commuting bats to gauge activity levels and species diversity on site. These locations are shown in Figure 3: the entrance to the site at the northern boundary hedgerow, and along the south-western boundary. The subsequent recordings from the Anabat Express devices were analysed using Anabat Insight software.

Limitations

- 2.8 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment.

3.0 Results

Bat Emergence Surveys

Survey 1: 21st June 2023

- 3.1 On this date sunset was at 21:23, with the survey commencing at 21:08. The temperature was 18°C falling to 17°C by the end of the survey, with no wind (Beaufort 0), and 100% cloud cover.
- 3.2 No bats were seen to emerge from the feature on the tree during the survey. Overall activity around the tree was considered to be low and dominated by common and widespread species.
- 3.3 The first bats recorded were two noctule (*Nyctalus noctula*) passes at 21:43. A single common pipistrelle (*Pipistrellus pipistrellus*) pass was recorded at 22:07 and the final pass was a noctule recorded at 22:15.

Survey 2: 2nd August 2023

- 3.4 On this date sunset was at 20:50, with the survey commencing at 20:35. The temperature was 17°C falling to 16°C by the end of the survey, with a light breeze (Beaufort 1), and 50% cloud cover.
- 3.5 No bats were seen to emerge from the tree during the survey. Overall activity around the building was considered to be very low and dominated by common and widespread species.
- 3.6 The first bat recorded was a common pipistrelle pass at 21:16. Another common pipistrelle pass was recorded at 21:30, followed by a noctule pass at 20:39. The final pass of the night was a Daubenton's bat (*Myotis daubentonii*) recorded at 22:08.

Survey 3: 6th September 2023

- 3.7 On this date sunset was at 19:40, with the survey commencing at 19:25. The temperature was 27°C falling to 25°C by the end of the survey, with no wind (Beaufort 0), and 100% cloud cover.

- 3.8 No bats were seen to emerge from the tree during the survey. Overall activity around the tree was considered to be very low, dominated by common and widespread species.
- 3.9 Two bats recorded were recorded during this survey including a soprano pipistrelle (*Pipistrellus pygmaeus*) pass at 20:08, and a common pipistrelle pass at 20:29.

Bat Transect Surveys

24th May 2023

- 3.10 The first activity survey commenced at sunset which was at 20:58 on the 24th of May 2023. The temperature was 19°C, dropping to 17°C by the end of the survey. Conditions were dry, with no cloud cover and no wind.
- 3.11 The first bat was recorded at 21:35, when a noctule was seen foraging in the north-east corner of the grassland field. Another faint noctule call was recorded at 21:38. A soprano pipistrelle was recorded commuting along the northern hedgerow on site at 21:55, followed by a common pipistrelle which was seen foraging in the northern section of the grassland field at 21:59. A serotine (*Eptesicus serotinus*) was seen continuously foraging in the south-western corner of the field between 22:04 - 22:08. A brown long-eared bat (*Plecotus auritus*) was recorded commuting along the western boundary of the site at 22:09. The final activity recorded on site was a common pipistrelle commuting along the northern hedgerow at 22:12.
- 3.12 No other bat species were recorded using the site during this transect activity survey.

21st June 2023

- 3.13 The second survey commenced at sunset which was at 21:23 on the 21st of June 2023. The temperature was 18°C falling to 17°C by the end of the survey, with no wind (Beaufort 0), and 100% cloud cover.
- 3.14 The first bats recorded at 21:43 were two noctules commuting high over the site. A species of myotis (*Myotis sp.*) was recorded at 22:25 and another was seen foraging in the southern section of the grassland at 22:41. Two brown long-eared bat passes were recorded at 22:30 in the centre of the site and later at 22:54 in the south-west corner of

the site. The remaining calls recorded were made by common pipistrelles commuting through the southern section of the site with the last activity recorded at 22:56.

20th July 2023

3.15 The third activity survey was conducted at sunset which was at 21:05 on the 20th of July 2023. The temperature was 23°C throughout the survey, with a light breeze (Beaufort 2) and 50% cloud cover.

3.16 The first bat was a common pipistrelle recorded at 21:27 commuting along the northern hedgerow, followed by a noctule in the north-eastern corner of the site at 21:34. A soprano pipistrelle was recorded commuting in the south-western corner of the site at 21:57, followed by a serotine at 22:01. The remaining calls recorded were made by common pipistrelles commuting in the north-eastern and south-western corners of the site, with the final activity recorded at 22:27.

2nd August 2023

3.17 The fourth activity survey commenced at sunset which was at 20:50 on the 2nd of August 2023. The temperature was 17°C, dropping to 16°C by the end of the survey. Conditions were dry, with 50% cloud cover and a light breeze (Beaufort 1).

3.18 The first bat was a noctule recorded at 20:56, followed by a soprano pipistrelle recorded foraging along the woodland edge in the south-western corner of the site at 20:58. The remaining calls recorded were all made by common pipistrelles foraging and commuting through the site with the final activity recorded at 22:24.

6th September 2023

3.19 The fifth activity survey commenced at sunset which was at 19:40 on the 6th of September 2023. The temperature was 17°C, dropping to 16°C by the end of the survey. Conditions were dry, with 50% cloud cover and a light breeze (Beaufort 1).

3.20 The first bat was a noctule recorded at 19:45. A soprano pipistrelle was recorded continuously foraging around the tree at the centre of the site at 20:08. A brown long-eared bat was recorded at 20:30 foraging along the southern boundary of the site. The

rest of survey consisted of a number of common pipistrelles recorded foraging along the eastern boundary and in the south-western corner of the site, with the final activity being a brown long-eared bat recorded at 21:11 in the south-western corner of the site.

4th October 2023

- 3.21 The sixth and final activity survey commenced at sunset which was at 18:40 on the 4th of October 2023. The temperature was 16°C throughout the survey. Conditions were dry, with 50% cloud cover and no wind (Beaufort 0).
- 3.22 The only activity recorded during this survey were two common pipistrelle passes at 19:33 along the northern hedgerow on site. No other bat species were recorded using the site during this transect activity survey.

Anabat Remote Recording

- 3.23 Anabat Express remote recording devices were deployed on site at locations shown previously in Figure 3; in the northern boundary hedgerow at the entrance to the site and on the chain-link fencing along the southern boundary of the site. These were in place for 5 days following or leading up to each transect survey.
- 3.24 In total, **1141** bat passes were recorded over the survey period, comprising at least eight different species. The most frequently recorded species was the common pipistrelle, accounting for *c.* 78.4% of all passes. The next most frequently recorded species were myotis species which accounted for *c.* 14.1% of all passes. The remaining *c.* 7.5% of passes were made up of soprano pipistrelle *c.* 3.1%, serotine *c.* 2.4%, noctule *c.* 0.6, brown long-eared bats *c.* 0.8%, barbastelle *c.* 0.4% and Nathusius' pipistrelle *c.* 0.4%. Bats of the *Myotis* genus have been grouped together owing to difficulties in identifying calls to species level. Tables 1-3 summarise the results based on species, percentage total and location of anabat.

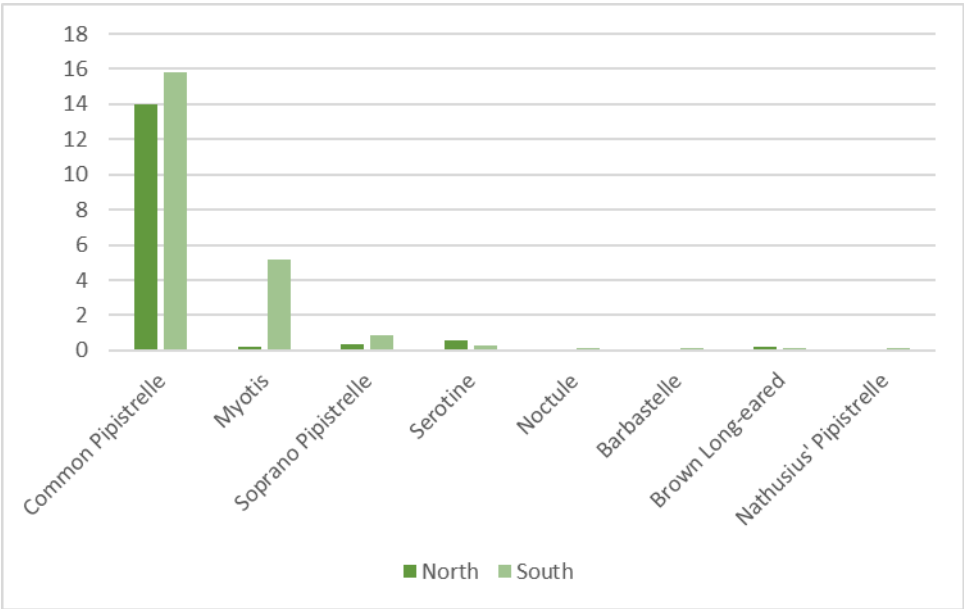


Figure 4: Average number of passes per night recorded by each anabat for each species across the site.

Table 1: Total number of bat passes on site recorded by species

Bat Species	Total Recordings	% of total
Common Pipistrelle	894	78.4
Myotis	161	14.1
Soprano Pipistrelle	35	3.1
Serotine	27	2.4
Noctule	7	0.6
Barbastelle	4	0.4
Brown Long-eared	9	0.8
Nathusius' Pipistrelle	4	0.4

Table 2: Number of calls made at each Anabat location

Anabat Location	Number of Passes per Month					
	May	June	July	August	September	October
North	4	143	132	37	143	5
South	93	4	78	19	258	225

Table 3: Number and percentage of calls made by each species at each Anabat location

Bat Species	Northern Anabat		Southern Anabat	
	Total Recordings	% of Total	Total Recordings	% of Total
Common Pipistrelle	419	90.3	475	70.2
Myotis	7	1.5	154	22.7
Soprano Pipistrelle	10	2.2	25	3.7
Serotine	18	3.9	9	1.3
Noctule	2	0.4	5	0.7
Barbastelle	1	0.2	3	0.4
Brown Long-eared	6	1.3	3	0.4
Nathusius' Pipistrelle	1	0.2	3	0.4
Total	464		677	

4.0 Discussion

- 4.1 The dusk emergence surveys carried out in 2023 found that there were no active bat roosts present in the mature oak tree at the centre of the site at the time of the surveys. Overall bat activity was low with common pipistrelle and noctule dominating the results. The IR camera recorded a number of slugs emerging from the hole suggesting that the hole supports damp conditions and would likely be unsuitable as a bat roost. No further surveys are recommended.
- 4.2 In general, low levels of bat activity was recorded during the transect surveys. The highest amount of activity was recorded along the northern hedgerow and in the south-west corner adjacent to the woodland off-site. Activity was dominated by common pipistrelle, with low numbers of soprano pipistrelle, serotine, noctule, myotis and brown long-eared bat recorded during the course of the survey period.
- 4.3 Higher levels of bat activity were recorded across the site on the Anabat detectors in comparison with the walked transect surveys, with the highest levels of activity overall being recorded in September. However, it must be noted that remote recording does not distinguish between a single individual making numerous passes whilst foraging

around a particular feature, and between more numerous individual bats commuting across the landscape. As such, walked transects provide a good understanding of how a particular feature is being used.

- 4.4 At least 8 species of bat were recorded on site by the static recording devices including, common and soprano pipistrelle, myotis species, noctule, serotine, brown long-eared bats, barbastelle and Nathusius' pipistrelle. The highest level of activity was recorded by the southern anabat (22.6 average passes/night), with the least activity recorded by the northern anabat (15.5 average passes/night).

- 4.5 With the above considered, it is recommended that the site boundaries are retained and protected, as within the proposed scheme, as far as possible. A sensitive lighting scheme should also be implemented along these boundaries to maintain dark corridors in these areas. If these recommendations are adhered to, as within the current proposals, it is considered that the favourable conservation status of the common and widespread bat species will be maintained, as well as the others recorded on site.

Mitigation Recommendations and Enhancements

- 4.6 Despite no active roosts being found at the time of the survey, it is still considered that the mature oak tree at the centre of the site has a low potential to support roosting bats. This tree is now to be retained. As such, it is recommended that this tree and its root protection area are sufficiently protected during construction.

Additional roosting provision

- 4.7 To provide a sufficient enhancement for roosting bats, it is recommended that at least two large chamber bat boxes are installed on retained mature trees in the south-east of the site. This should be hard-wearing Woodstone boxes, or similar. The boxes should be positioned on a south or west facing aspect at least 3m above ground.

Additional Measures

- 4.8 Any proposed lighting scheme as part of the development will have to consider bats in the surrounding area as well as on site. All bat species are nocturnal, resting in dark conditions in the day and emerging at night to feed. Bats are known to be affected by light levels which can affect both their roosting behaviour as well as their foraging behaviour. This needs to be considered through the implementation of a sympathetic lighting scheme around the edges of the development, with a particular focus on the western boundary hedgerow, the southern boundary of the site adjacent to the woodland off-site and all mature oaks on site.
- 4.9 Recommendations include:
- Lighting should only be installed if there is a significant need;
 - Lighting should be avoided near woodland and tree-lines, with light angled away from these areas, bats use linear features such as hedgerows to commute across the landscape to forage;
 - Lights should have focussed luminance on their target area, preventing light spill and pollution into other areas of the site and local area.
 - Dark buffer zones can be used as a good way to separate habitats or features from lighting by forming a dark perimeter around them. Buffer zones rely on ensuring light levels within a certain distance of a feature do not exceed certain defined limits;
 - Light levels should be kept low. All luminaires should lack UV elements when manufactured and metal halide, fluorescent sources should not be used. LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming
- 4.10 Any newly created areas of ornamental planting within the development can be designed to provide ecological opportunities for a number of species. Sweet nectar and protein-rich pollen, especially night-scented flowers, are excellent to encourage insects, a food source for bats. These species should be incorporated into the development where possible. It is recommended that any ornamental planting on site post-development

should follow the 'RHS Plants for Pollinators' guidelines (www.rhs.org.uk/plantsforpollinators) regarding the most suitable native and non-native plants to encourage pollinating insects.

5.0 Conclusions

- 5.1 As part of the PEA carried out in 2023, a mature oak tree at the centre of the site was assessed as having 'moderate' bat potential, owing to its size, complexity of structure and the presence of a hole.
- 5.2 The Ecology Partnership undertook emergence surveys in June, August and September 2023 of the aforementioned tree with an IR camera targeting the hole. These surveys did not identify any bats emerging from the tree. Bat activity recorded around the trees was dominated by low frequency common pipistrelles and noctules foraging. As such, a bat roost is considered likely absent from these trees and no further surveys are required.
- 5.3 This tree will now be retained, and as such, it and its root protection area should be sufficiently protected from construction activities on site, through appropriate protective fencing.
- 5.4 To provide an enhancement for roosting bats it is recommended that two large chamber bat boxes are installed on retained mature trees in the south-east of the site.
- 5.5 Relatively low levels of bat activity were recorded during the transect surveys carried out between May-October. These surveys have identified key areas of habitat with the highest level of use by bats including the northern hedgerow and the south-western corner adjacent to the off-site woodland.
- 5.6 Activity on site was largely dominated by common pipistrelle which accounted for c. 78.4% of all passes. The remaining passes were made up of myotis species c. 14.1%, soprano pipistrelle c. 3.1%, serotine c. 2.4%, noctule c. 0.6, brown long-eared bats c. 0.8%, barbastelle c. 0.4% and Nathusius' pipistrelle c. 0.4%. The numbers of all bat species were considered to be of site value only.

- 5.7 It is recommended that boundary features be retained and enhanced as far as possible, as within the current proposed scheme. A sensitive lighting will be implemented with a particular focus on the western hedgerow and southern boundary adjacent to the off-site woodland to ensure commuting/foraging flight paths are not impacted.
- 5.8 The site can be enhanced post-development to improve conditions on site for local bat populations who use the site for commuting and foraging purposes. Recommendations such as night-scented flower planting can improve the area within the development for bats as well as contribute to a net gain in biodiversity on site.

6.0 References

Bat Conservation Trust (2018). *Bats and artificial lighting in the UK – Bats and the built environment series, (Guidance Note 08/18)*. Bat Conservation Trust, London.

Bat Conservation Trust (2016). *Bat Surveys – Good Practice Guidelines Second Edition*. Bat Conservation Trust, London.

Mitchell-Jones, A.J. (2004) *Bat Mitigation Guidelines*. English Nature, Peterborough.

Google Earth: www.earth.google.co.uk

Appendix 1: Raw Anabat Data

MAY						
North						
Species	24/05/2023	25/05/2023	26/05/2023	27/05/2023	28/05/2023	Total
Common Pipistrelle	0	1	0	2	0	3
Soprano Pipistrelle	0	1	0	0	0	1
Total	0	2	0	2	0	4
South						
Species	24/05/2023	25/05/2023	26/05/2023	27/05/2023	28/05/2023	Total
Myotis	9	8	5	26	2	50
Common Pipistrelle	18	0	8	8	3	37
Soprano Pipistrelle	0	0	0	1	0	1
Serotine	1	2	0	1	1	5
Total	28	10	13	36	6	93
JUNE						
North						
Species	21/06/2023	22/06/2023	23/06/2023	24/06/2023	25/06/2023	Total
Common Pipistrelle	22	42	8	44	25	141
Soprano Pipistrelle	0	0	1	0	0	1
Serotine	0	0	1	0	0	1
Total	22	42	10	44	25	143
South						
Species	21/06/2023	22/06/2023	23/06/2023	24/06/2023	25/06/2023	Total
Myotis	0	0	1	0	3	4
Total	0	0	1	0	3	4
JULY						
North						
Species	20/07/2023	21/07/2023	22/07/2023	23/07/2023	24/07/2023	Total
Common Pipistrelle	102	7	0	15	3	127
Serotine	0	0	0	3	2	5
Total	102	7	0	18	5	132
South						
Species	20/07/2023	21/07/2023	22/07/2023	23/07/2023	24/07/2023	Total
Myotis	0	3	3	2	3	11
Common Pipistrelle	4	5	49	8	1	67
Total	4	8	52	10	4	78

AUGUST						
North						
Species	02/08/2023	03/08/2023	04/08/2023	05/08/2023	06/08/2023	Total
Common Pipistrelle	7	12	4	4	3	30
Soprano Pipistrelle	0	1	0	0	0	1
Serotine	0	0	1	0	5	6
Total	7	13	5	4	8	37
South						
Species	02/08/2023	03/08/2023	04/08/2023	05/08/2023	06/08/2023	Total
Myotis	2	2	2	1	1	8
Noctule	0	0	1	0	0	1
Common Pipistrelle	1	1	1	3	0	6
Serotine	0	0	3	0	1	4
Total	3	3	7	4	2	19
SEPTEMBER						
North						
Species	06/09/2023	07/09/2023	08/09/2023	09/09/2023	10/09/2023	Total
Barbastelle	0	1	0	0	0	1
Brown Long-eared	2	1	2	1	0	6
Myotis	2	2	0	0	1	5
Nathusius' Pipistrelle	1	0	0	0	0	1
Noctule	0	0	0	1	0	1
Common Pipistrelle	26	28	20	25	17	116
Soprano Pipistrelle	1	3	1	0	2	7
Serotine	3	0	1	1	1	6
Total	35	35	24	28	21	143
South						
Species	06/09/2023	07/09/2023	08/09/2023	09/09/2023	10/09/2023	Total
Barbastelle	1	0	2	0	0	3
Brown Long-eared	1	1	0	1	0	3
Myotis	6	2	8	2	3	21
Nathusius' Pipistrelle	1	0	1	0	1	3
Noctule	1	2	0	0	1	4
Common Pipistrelle	22	18	14	8	155	217
Soprano Pipistrelle	0	0	3	1	3	7
Total	32	23	28	12	163	258

OCTOBER						
North						
Species	05/10/2023	06/10/2023	07/10/2023	08/10/2023	09/10/2023	Total
Myotis	0	1	0	1	0	2
Noctule	0	0	1	0	0	1
Common Pipistrelle	0	1	0	0	1	2
Total	0	2	1	1	1	5
South						
Species	05/10/2023	06/10/2023	07/10/2023	08/10/2023	09/10/2023	Total
Myotis	14	9	23	13	1	60
Common Pipistrelle	25	117	4	1	1	148
Soprano Pipistrelle	0	11	1	3	2	17
Total	39	137	28	17	4	225

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