



Bat Survey

Land at Bilsham Road

Yapton

West Sussex



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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 Ltd was commissioned by Gleeson Strategic Land to undertake bat activity surveys at Bilsham Lane, Yapton.
- 1.2 Section 2 of this report sets out the methodology of The Ecology Partnership's survey and the results in Section 3 and the implications discussed in Section 4. Conclusions are provided for in chapter 5 of this report.
- 1.3 The site is situated along the southern boundary of the West Sussex village of Yapton. The site is set within a semi-rural landscape surrounded by agricultural land as well as commuter towns and villages. The immediate surroundings consist of residential dwellings to the north and east, and arable fields with hedgerows to the south and west. The site is currently dominated by arable land, which at the time of survey, was covered by bare ground.
- 1.4 The development footprint was later extended to the west after the initial surveys were undertaken (Figure 1).



Figure 1: Approximate red line boundary of the site. Including the additional compartment added on to the west (blue).

Description of Proposed Development

- 1.5 The exact details of any proposed development are yet to be finalised. Any proposed master plan for the site will be informed by a number of surveys of which ecology is one.

2.0 Methodology

Bat Transect Activity Surveys

- 2.1 A total of four dusk transect activity surveys were carried out on 10th May, 25th July, 16th August and 5th September 2016. A total of four surveys were undertaken to accommodate the added compartment, to the west of the original red line boundary. The surveys followed BCT guidelines (2016). A predetermined transect route was agreed and 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 2 below displays the layouts of the transect route.

- 2.2 The surveys undertaken on the 25th July, 16th August and 5th September included the new compartment added onto the site to the west (Figure 1).
- 2.3 The dusk surveys started 30 minutes before sunset and observations were maintained until 2 hours after sunset. 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 2: Location of the transect routes outlined in yellow. The circle icons represent the locations of the remote bat detectors.

2.4 Surveyors were equipped with heterodyne and frequency division bat detectors.

2.5 Two/three Anabat Express remote recording devices were deployed over five

consecutive nights per season (Spring, Summer and Autumn). These were placed along hedgerows that were considered suitable for use by commuting or foraging bats in order to gauge activity levels and species diversity on site. The subsequent recordings from the Anabat Express device were analysed using Analook software.

- 2.6 The Anabat Express recording devices were established on site between 10th - 15th May, 21st – 25th July and 5th – 10th September 2016.

Limitations

- 2.7 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 Transect Surveys

- 3.1 Four bat activity transect surveys were carried out across the site in May, July, August and September 2016.
- 3.2 The bat surveyors followed the predetermined route illustrated in Figure 2. Activity levels, foraging and commuting behaviour were recorded and species were identified using bat detectors. Surveyors were on site 30 minutes before sunset until 2 hours after sunset.

10th May 2016

- 3.3 The first activity survey was conducted at dusk on 10th May 2016. Sunset was at 20.39 and the temperature was 14 degrees with some slight breeze and scattered clouds.

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- 3.5 The transect route undertaken within section 4 identified a common pipistrelle (*Pipistrellus pipistrellus*) was recorded at approximately 21:25 close to the northern corner of the field along the hedgerow. Shortly after, another common pipistrelle pass was recorded at 21:29, commuting northwest along the northeast site boundary, adjacent to a row of houses. A call from a *Myotis* species was recorded near the west corner of the transect at approximately 21:50, the call was distant and short in duration, and as such it was not possible to identify the species, this was also the last bat call recorded. Activity was restricted to the edges of the field, the field itself at this time of the year was limited to bare earth. No bats were recorded using the field or flying over the field.
- 3.6 In section 3, two common pipistrelles were recorded at 21.28 and again at 21.30. Both passes were brief and were located along the western hedgerow. No other bats were recorded during this survey within this section of the site.
- 3.7 Section 2 was not surveyed, as this compartment was not included within the red line boundary during the time of survey.
- 3.8 In section 1, two bats were recorded; both of which were common pipistrelle bats. The first was recorded at 21:12 at the north corner of the transect, adjacent to the housing estate. The second common pipistrelle was recorded at 21.20, midway along the north of the transect route. No further bats were recorded during this survey within this section of the site.

25th July 2016

- 3.8 The second survey was undertaken on the 25th July 2016. The temperature was 16 degrees and it was dry and clear evening. Sunset was at 20:57.

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- 3.9 No bats were recorded in section 4 during the transect survey. However, due to the high, dense corn growing within this section during the time of survey, areas of the transect were inaccessible.
- 3.9 In section 3, three species of bat were identified along the western boundary of the section. An individual common pipistrelle was identified at 21:28, followed by a noctule and serotine at 21:32 and finally by another common pipistrelle at 21:38.
- 3.10 In section 2, three species of bat were identified along the eastern, southern and western borders of the section. A noctule was initially observed at 21:26 in the north western corner. At 21:33 a common pipistrelle was heard, followed by a foraging serotine at 21:36 on the southern boundary. At 21:48 three common pipistrelle passes were recorded in the south east corner of the section. Three further common pipistrelle passes were recorded at 21:55 in the opposite corner. A common pipistrelle was later observed at 22:10 in along the southern boundary.
- 3.11 In section 1, four species of bat were mainly identified within the western end of the section. The first bat, which was heard but not seen, was a noctule at 21:26 in the western corner. A common and soprano pipistrelle were observed commuting shortly after at 21:35 and 21:44 respectively. At 21:49 a common pipistrelle and serotine were seen along the western boundary. A common and soprano pipistrelle were then observed foraging at 21:52 and 21:54 along the northern border.

16th August 2016

- 3.12 The third survey was undertaken on the 16th August 2016. The temperature was 17 degrees and it was dry and clear evening with a light breeze. Sunset was at 20:20. The survey was undertaken within section two of the site, as this compartment of the site had been added onto the site boundary post the July activity survey.

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- 3.13 The first bat, a *C. pipistrelle*, was identified at 21:11 flying along a hedgerow within section 3, to the west of section 2. Another *C. pipistrelle* was heard but not seen two minutes later in the centre of the western boundary. At 21:16 and 21:18 two *C. pipistrelle* bats were identified in the north west corner of the field, commuting south along the western tree line. Later in the evening at 21:32 and 21:38 two *C. pipistrelle* bats were heard but not seen within the south east section of the site.

5th September 2016

- 3.14 The fourth and final survey was undertaken on 5th September 2016. The temperature was 18 degrees and was dry and still, with approximately 45% cloud cover. Sunset was at 19:41. The survey was undertaken in sections 1, 2 and 3. Section 4 was not considered necessary due to the lack of bat activity recorded in previous surveys.
- 3.15 In section 3, two species and four individual bats were identified. The first two bats were identified as foraging noctule bats at 19:49 and 20:10. The second two bats were identified as common pipistrelle bats, which were observed foraging down the western boundary.
- 3.16 In section 2, three species were identified during the survey. Two noctule bats were observed at 19:53 and 20:04 along the western boundary of the section. Thirteen common pipistrelle bats were identified foraging and commuting along and across most of the boundaries between 20:04 and 20:59. Additionally, during that time-frame one soprano pipistrelle was observed commuting at 20:18 along the eastern boundary of the site.
- 3.17 In section 1, three species were identified during the survey. The first species was a common pipistrelle which was continually foraging along the western boundary of section 1 at 20:08. Another individual common pipistrelle was later observed at 20:16 foraging along the tree line between sections 1 and 2. At 20:30 a noctule was heard but

not seen and two common pipistrelle individuals were flying together within the same tree line.

Anabat Remote Recording

- 3.15 Anabat Express remote recording devices were deployed along the western boundary of section 1 and along the tree line between sections 2 and 3. After the addition of a compartment to the developments footprint a remote bat detector was deployed along the hedgerow between sections 1 and 2 (Figure 2).
- 3.16 Figures 3 and 4 show the bat call analysis of the remote bat detectors, which were positioned on-site in **May**.

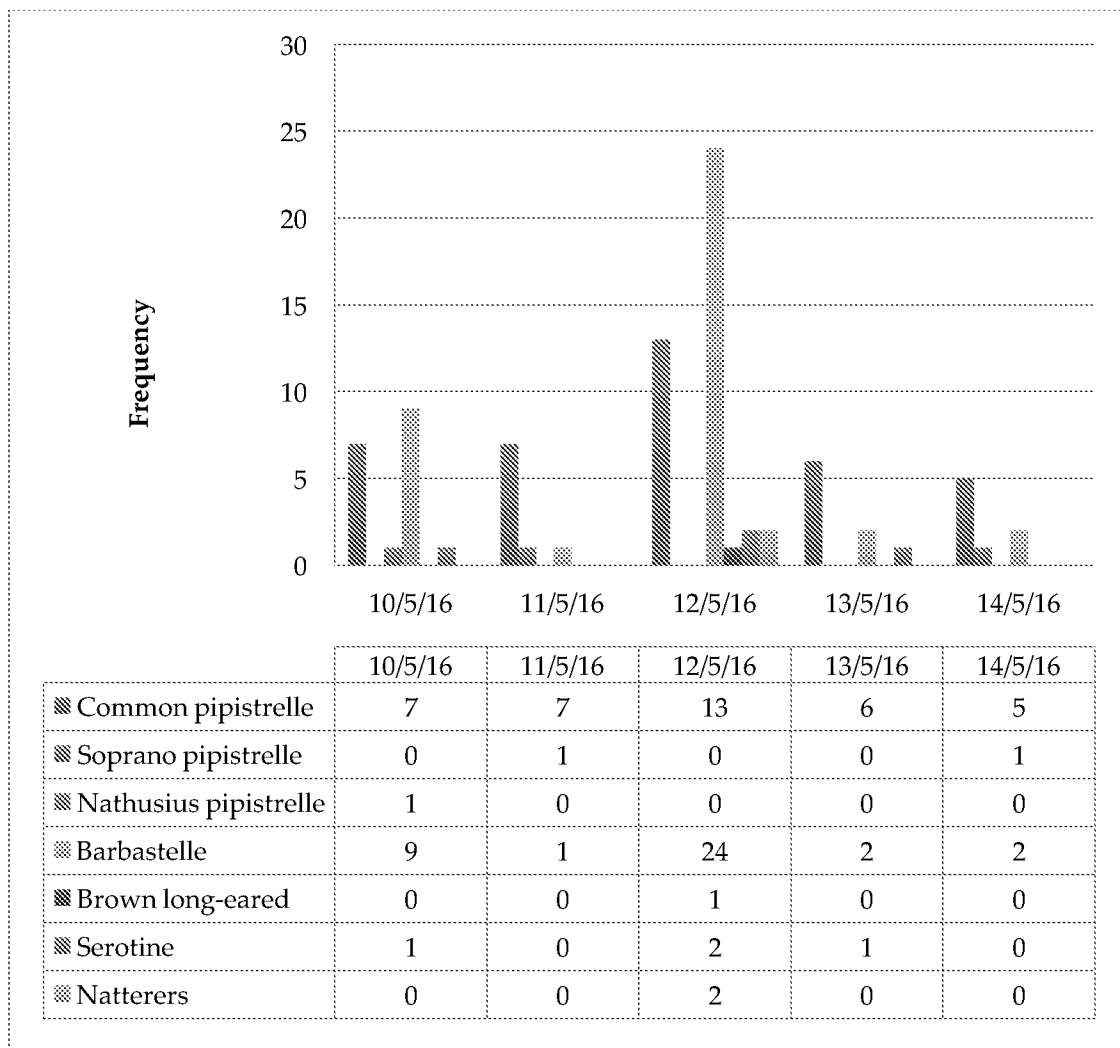


Figure 3: bat calls recorded on five consecutive nights (10th – 15th May) between sections 2 and 3 (Anabat 6).

3.17 Barbastelle bats were the most commonly recorded species using this section of the site.

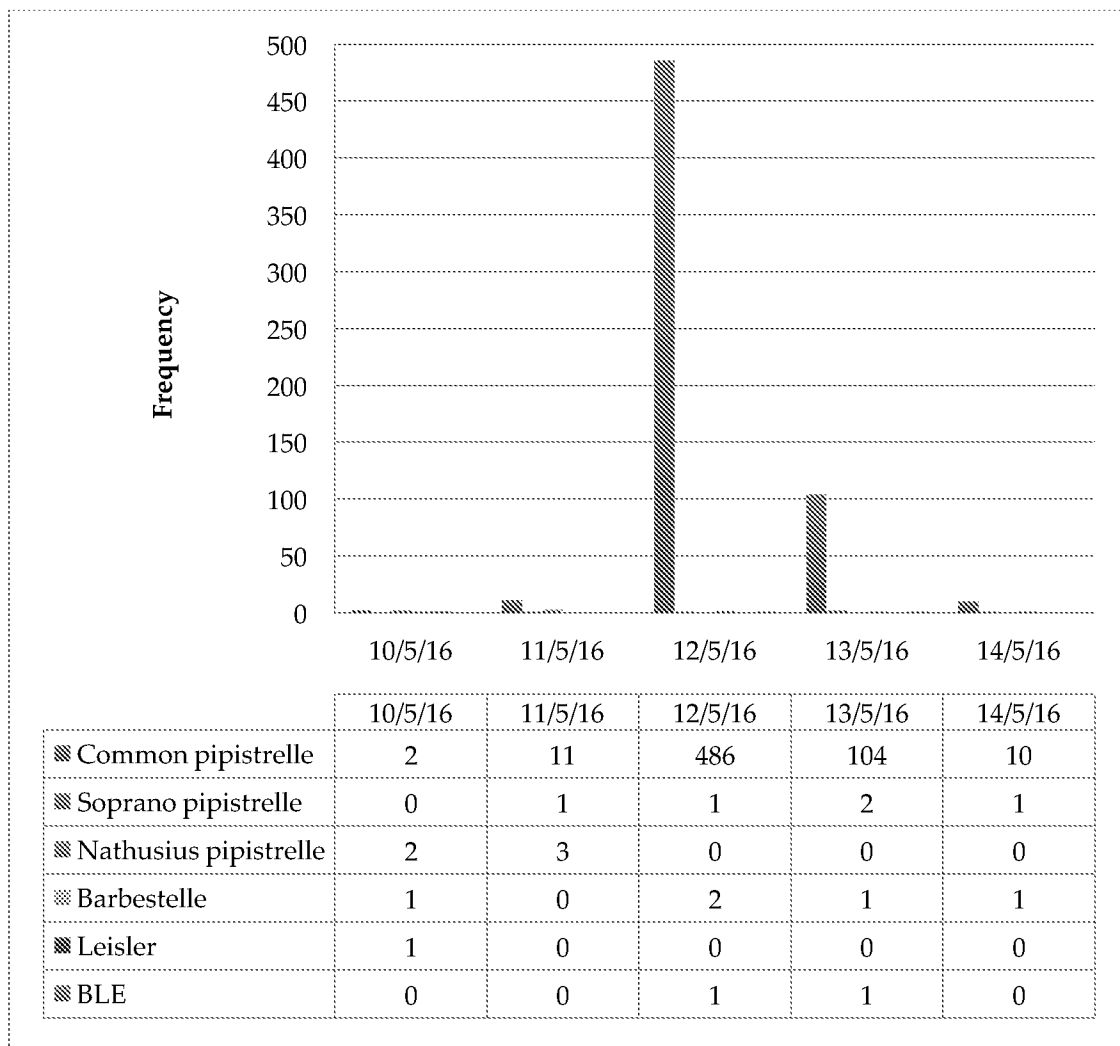


Figure 4: bat calls recorded over five consecutive days (10th – 15th May) on the north west boundary of the section 1 (Anabat 5).

3.18 Common pipistrelle bats were the most common species utilising this area of the site during the time of survey. Examples taken from the Anabat sound files are provided overleaf. These show the sound files from each of the species utilising the site between 10th – 15th May.

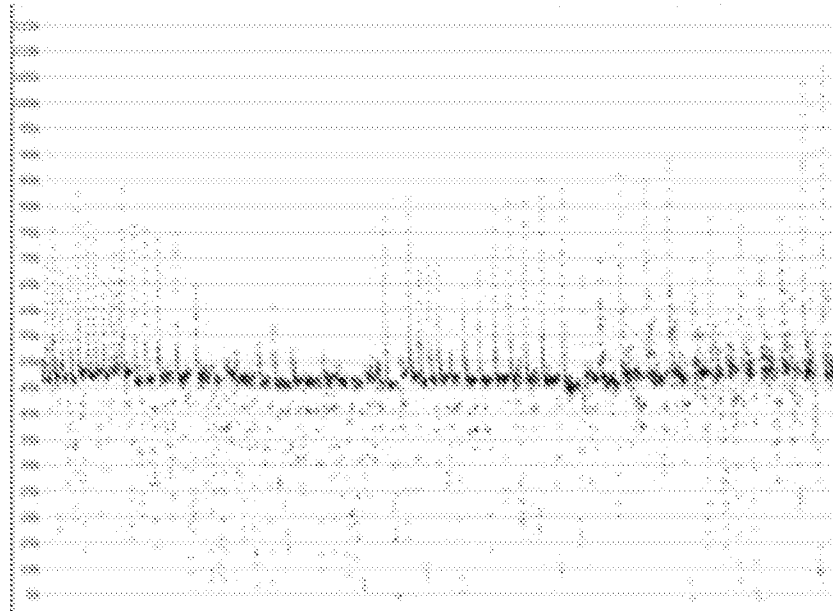


Figure 5: Common pipistrelle sound file

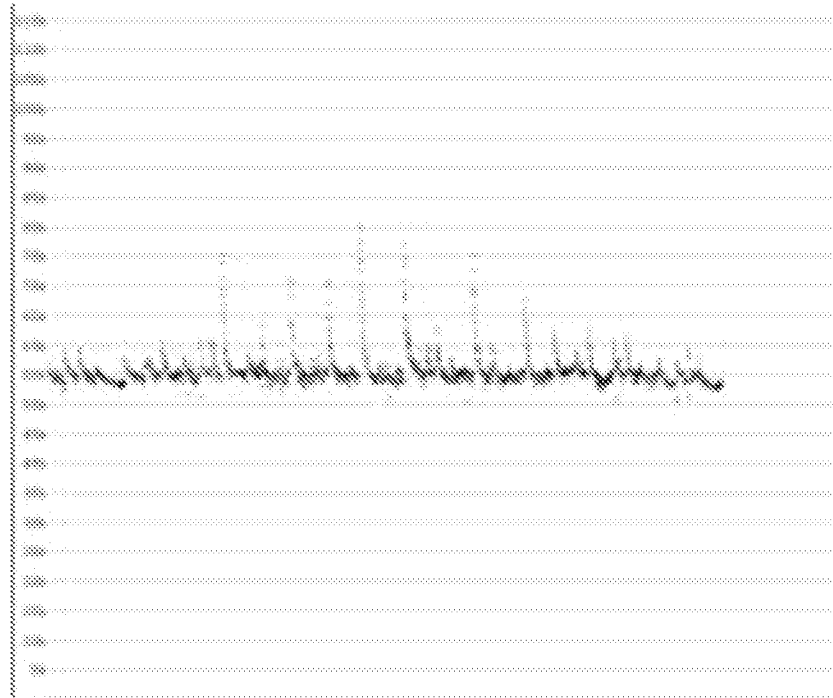


Figure 6: Sound file from a pass by Soprano pipistrelle species.

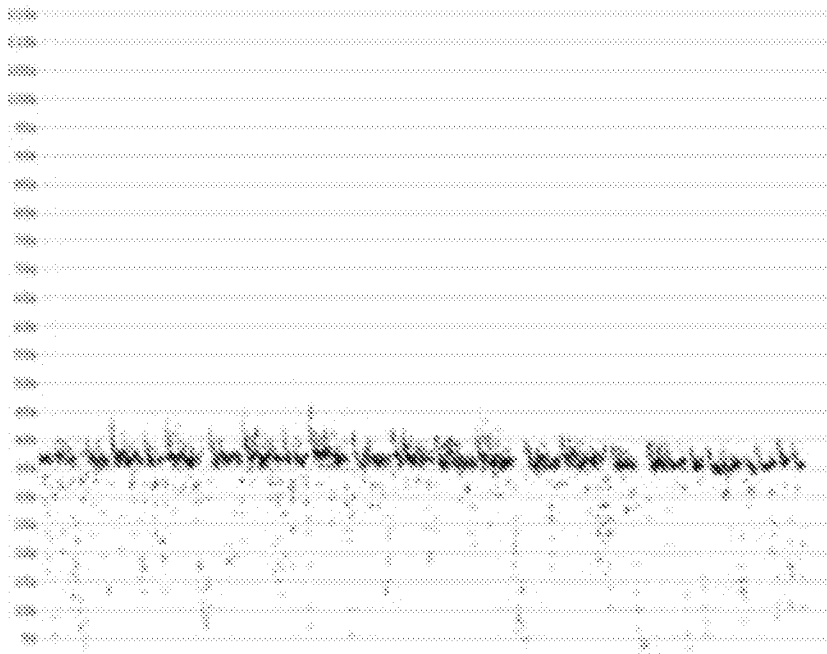


Figure 7: Showing a sound file from a pass by a *Nathusius pipistrelle*.

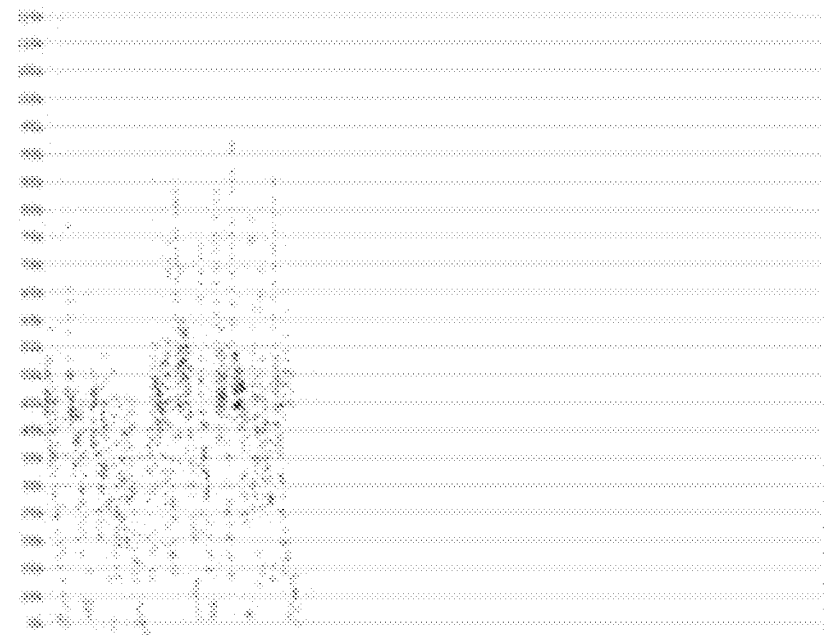


Figure 8: Showing a sound file from a pass by a *Myotis* species, considered to be a natterers bat

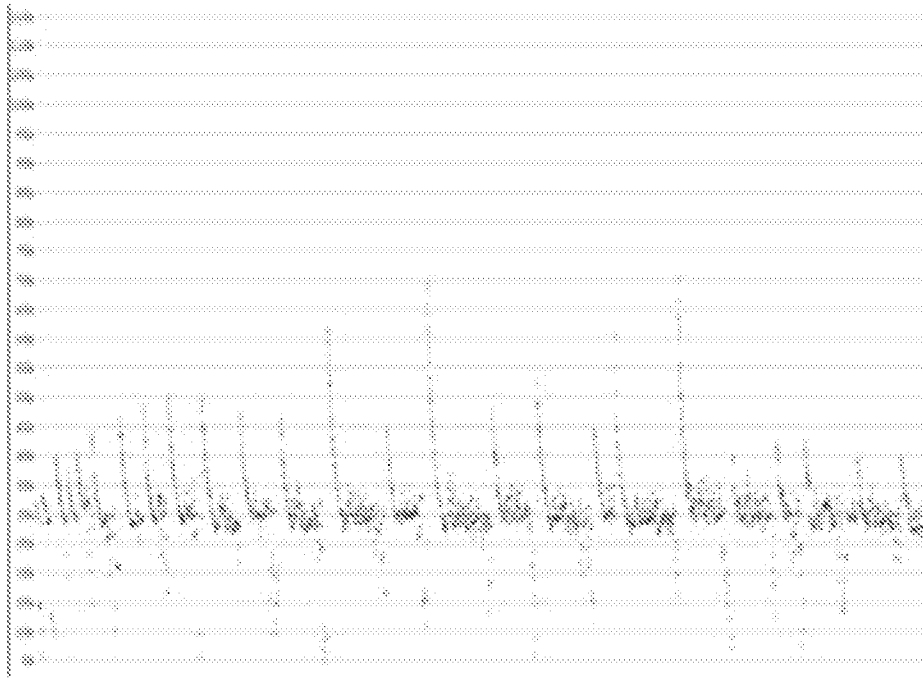


Figure 9: Showing a sound file from a pass by a serotine bat

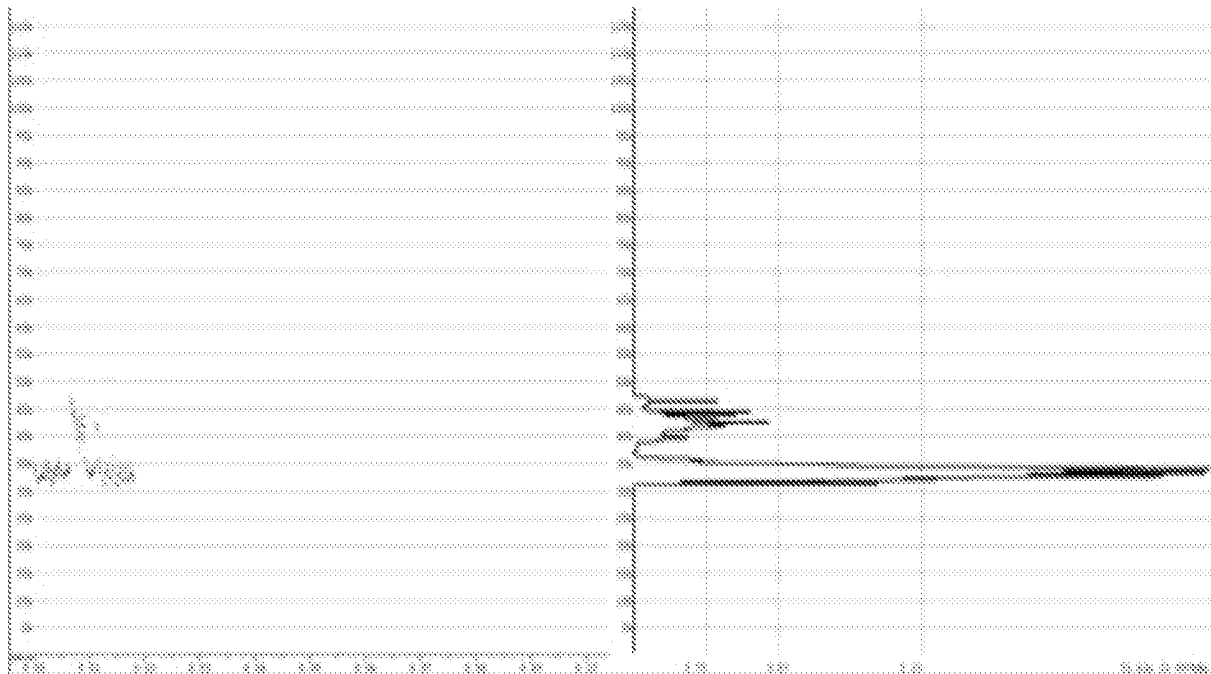


Figure 10: Showing a sound file from a pass by a barbastelle, featuring distinctive two-part call. The left window displays the frequency and duration of the call, and the right window displays the frequencies of maximum energy

3.19 Figures 5, 6 and 7 show the bat call analysis of the remote bat detectors, which were positioned on-site in **July**. A third remote detector was positioned within the additional compartment (section 2).

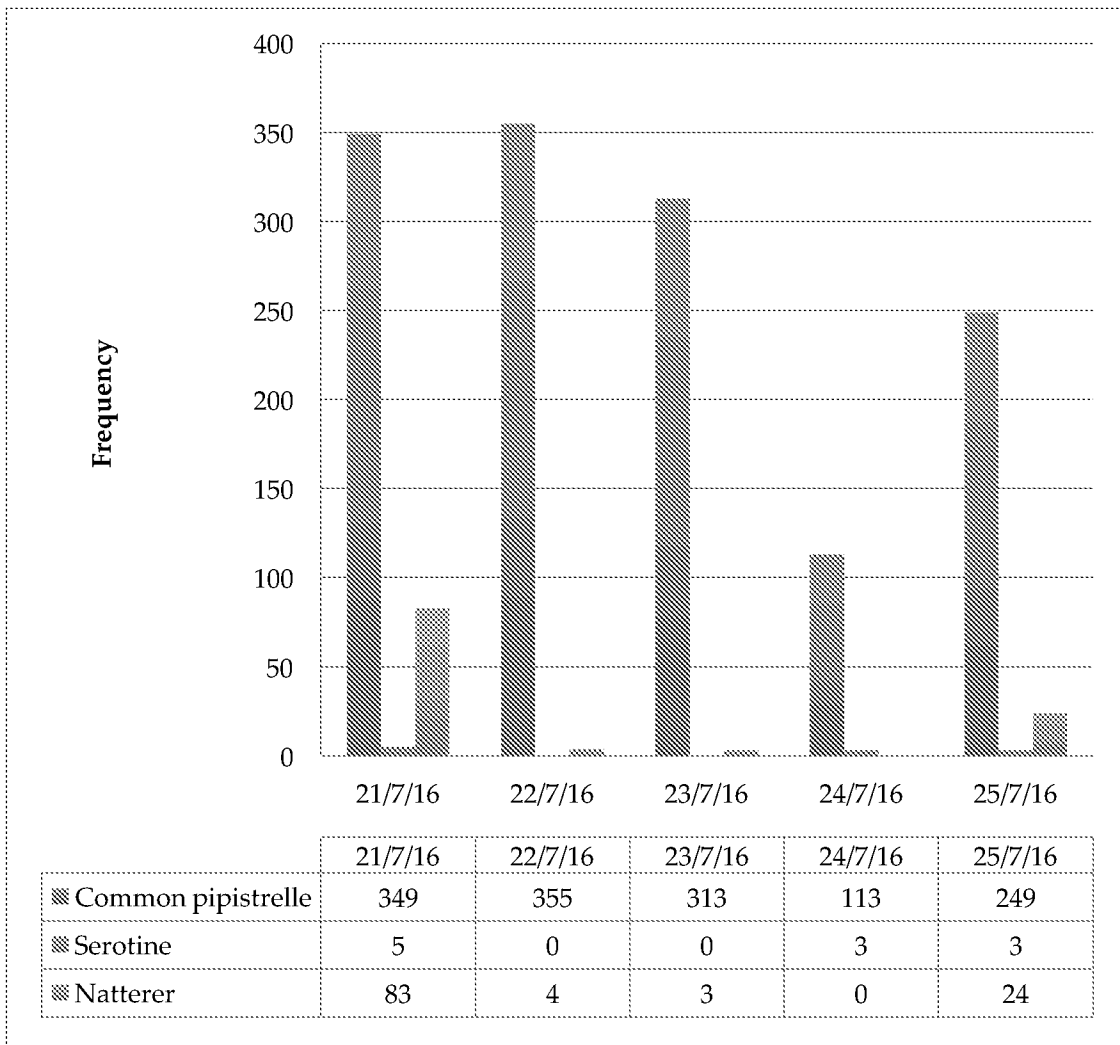


Figure 11: bat calls recorded over five consecutive days (21st – 25th July) on the hedgerow between sections 1 and 2 (Anabat 1).

3.20 Over the five nights between the 21st and 25th July common pipistrelle bats were the most frequent species, followed by natterer bats and a low number of serotine bats.

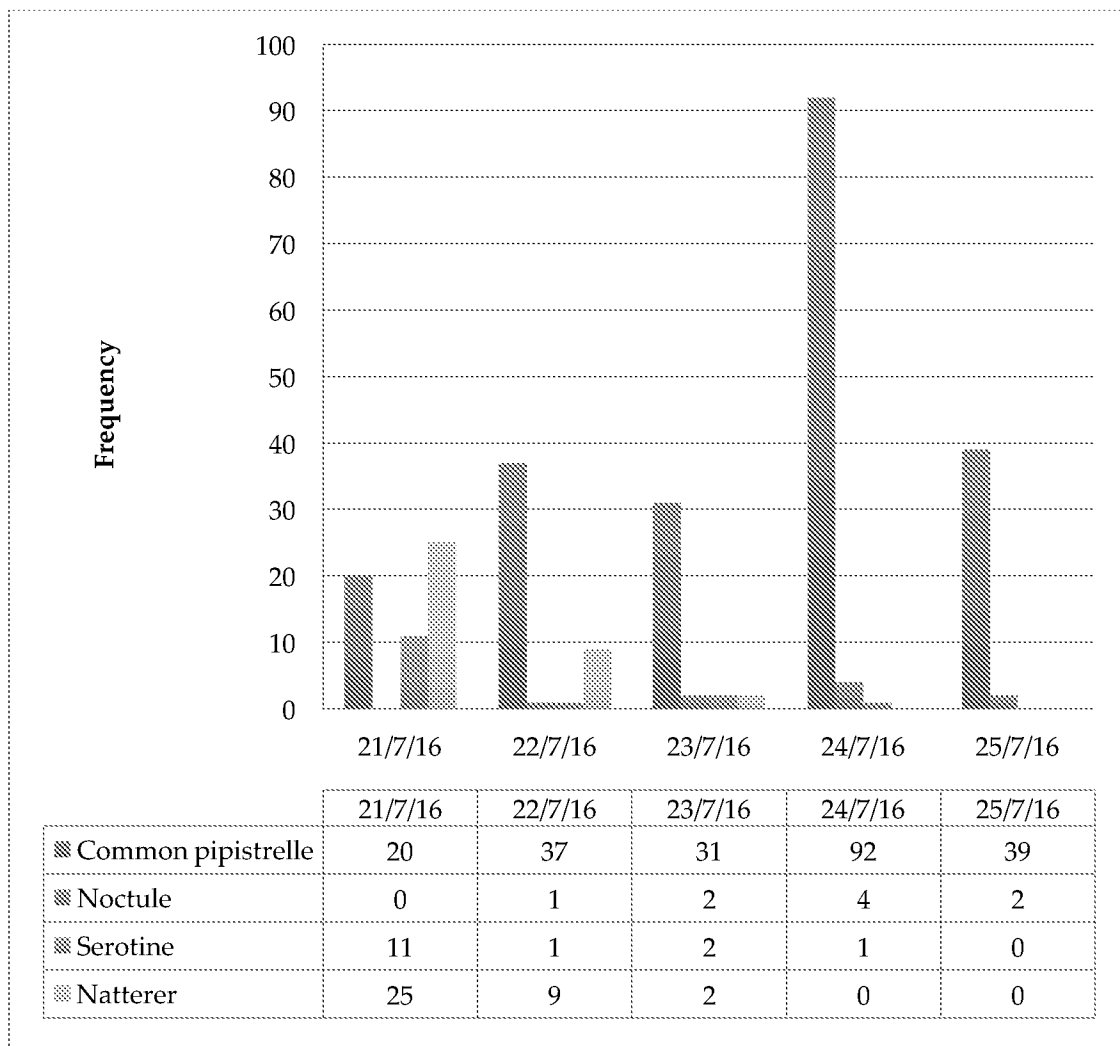


Figure 12: bat calls recorded over five consecutive days (21st – 25th July) on the hedgerow on the western boundary of section 1 (Anabat 7).

3.21 Common pipistrelle bats were most frequent followed by natterer bats. Serotine and noctule bats were recorded in low frequencies.

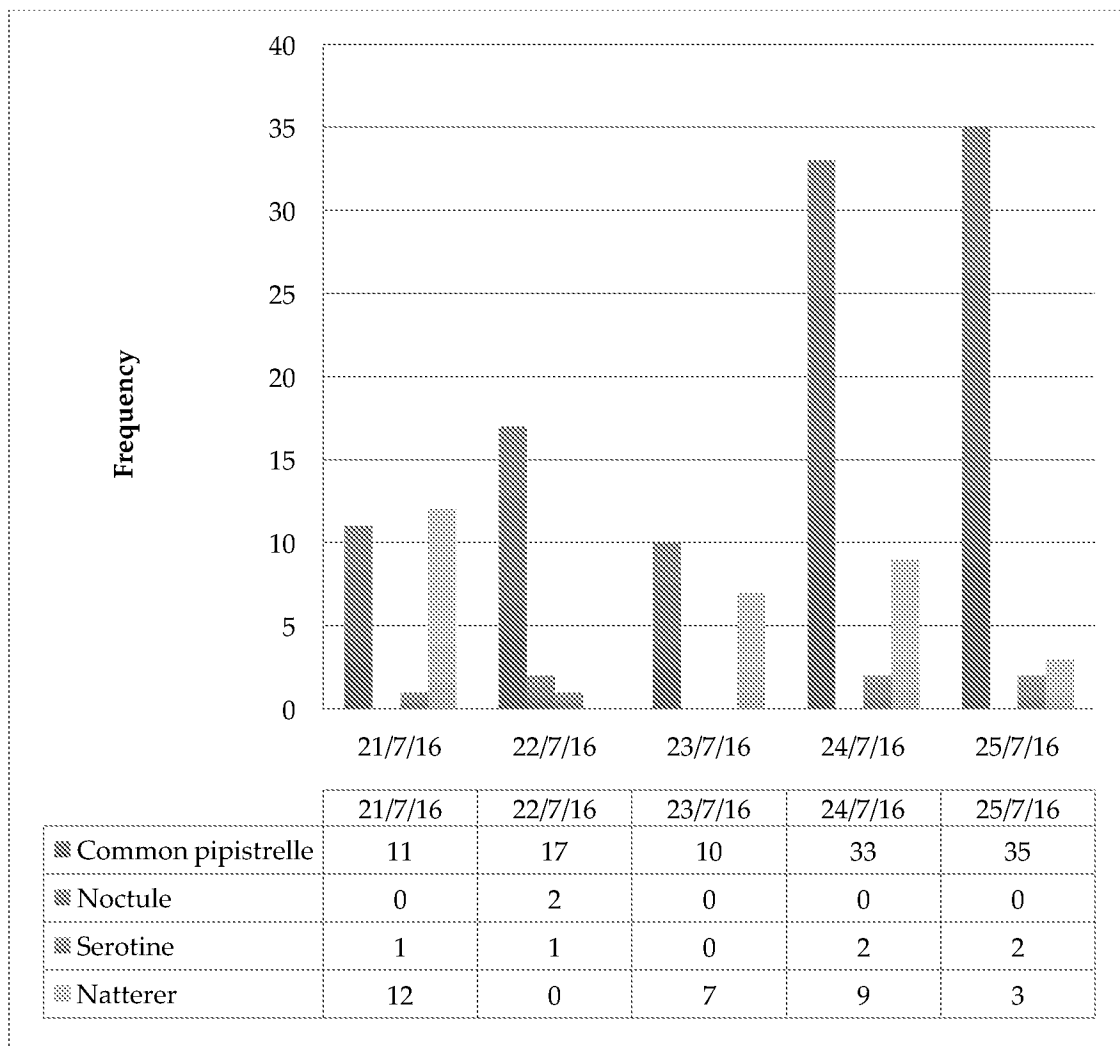


Figure 13: bat calls recorded over five consecutive days (21st – 25th July) on the tree line between sections 2 and 3 (Anabat 15).

3.22 Common pipistrelle bats were recorded in the highest frequency, followed by natterer, serotine and noctule bats.

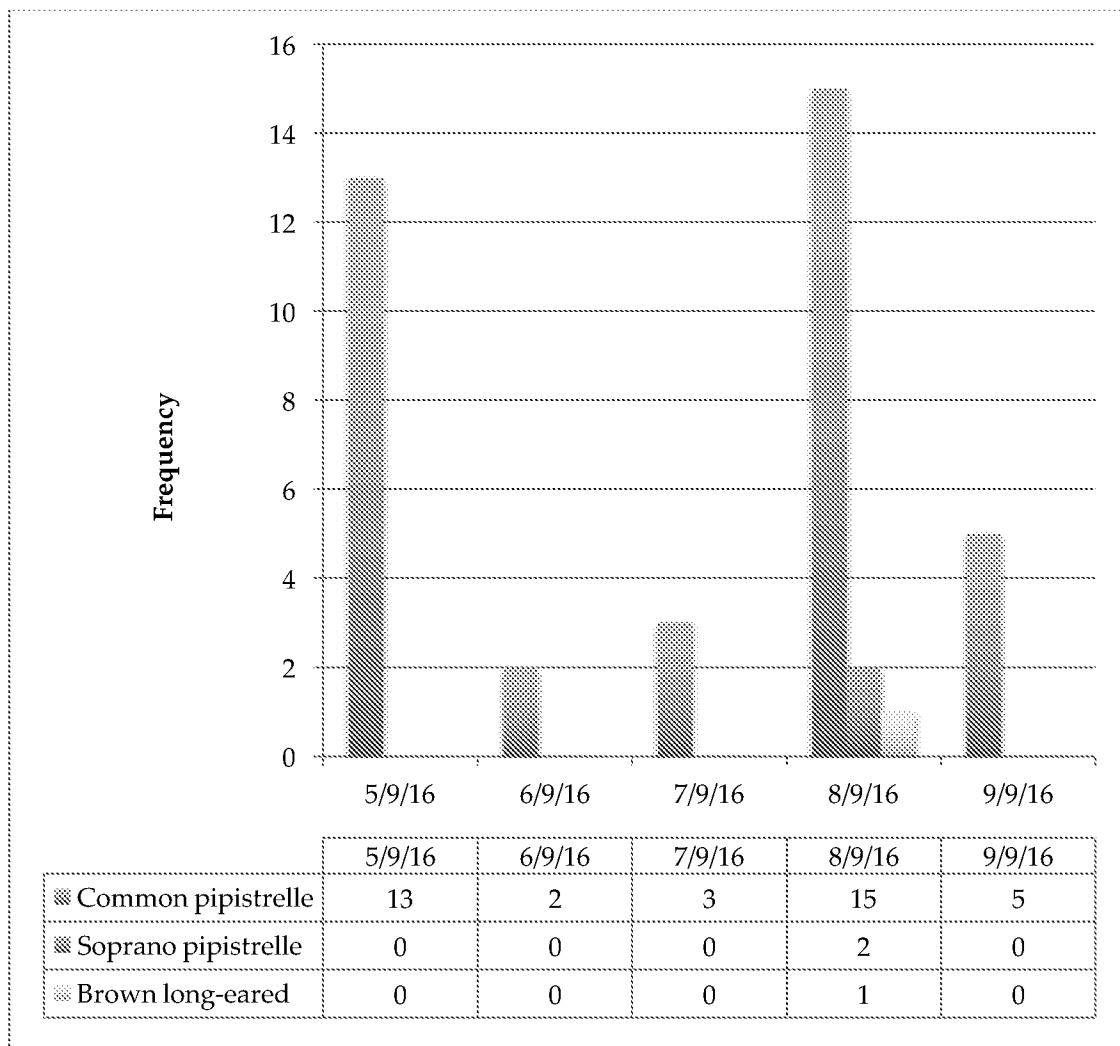


Figure 14: bat calls recorded over five consecutive days (5th – 9th September) on the tree line between sections 2 and 3 (Anabat 14).

3.23 Common pipistrelle bats were recorded in the highest frequency, followed by soprano pipistrelle and brown long-eared bats.

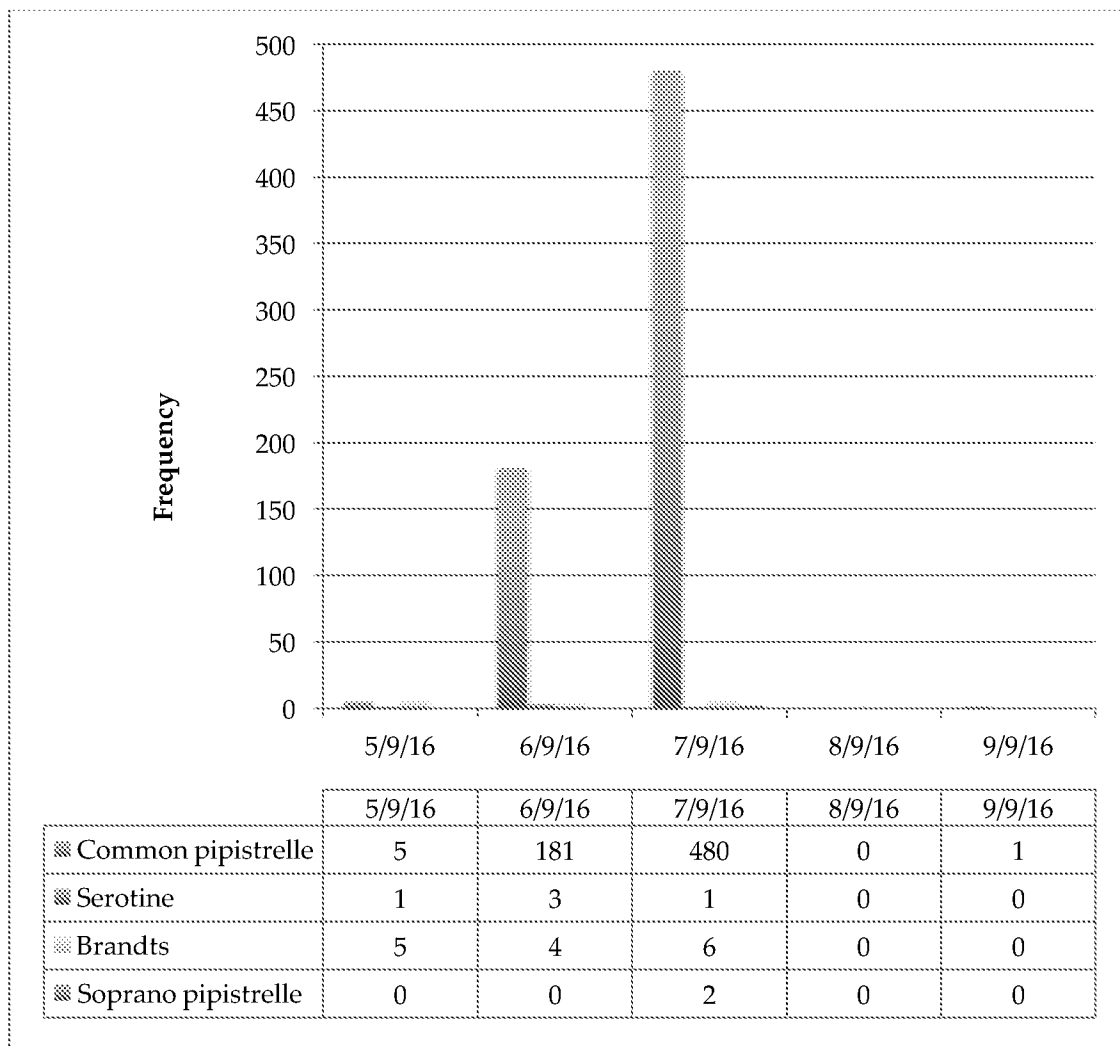


Figure 15: bat calls recorded over five consecutive days (5th – 9th September) on the tree line between sections 2 and 1 (Anabat 3a).

3.24 Common pipistrelle bats were recorded in the highest frequency, followed by brandts, serotine and soprano pipistrelle bats.

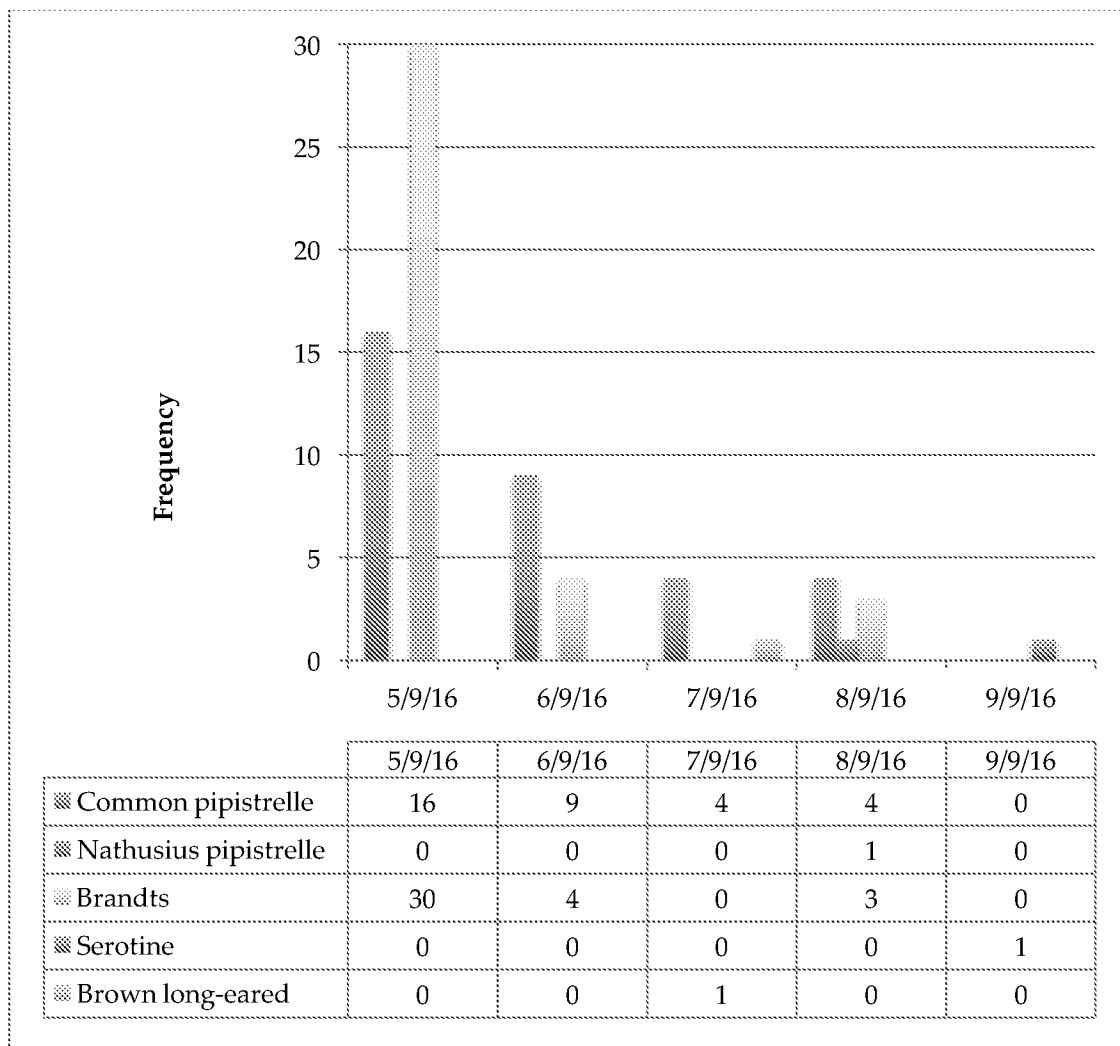


Figure 16: bat calls recorded over five consecutive days (5th – 9th September) on the tree line on the north west boundary of the site (Anabat 3).

3.25 Brandts bats were recorded in the highest frequency, followed by Common pipistrelle. Individual calls from nathusius pipistrelle, serotine and brown long-eared bats was also identified.

4.0 Discussion

Bat Species and Activity

- 4.1 The transect activity surveys covered the entire site across nights in May, July and September. The majority of bat passes were from common pipistrelles. Common pipistrelle are the most common and widespread species in the UK and these were observed commuting along the treelines and hedges bordering the site.
- 4.2 Lower levels of soprano pipistrelles, noctule, *Myotis spp.* and serotine activity was also observed by the surveyors. These species of bat were not considered to be utilising the site as key foraging or commuting areas.
- 4.3 Remote recorders, in the form of Anabat Express bat detectors, were deployed for five consecutive nights in May, July and September 2016. These give a good indicator of the level of use on-site by bat species.
- 4.4 The Anabat surveys displayed evidence of greater use of the site by bats than the activity transects suggest. A greater diversity of species were recorded within the Anabat surveys, as well as a significantly higher frequency of bat passes than the activity transects. The remote bat recording also indicated common pipistrelles as being the most dominant species, however there was also a high frequency of *Myotis spp.* passes on certain nights of recording. Soprano pipistrelle, nathusius pipistrelle, serotine, noctule and brown long-eared bat species were recorded in lower frequencies.
- 4.5 The May and July Anabat surveys showed evidence that bat use of the site varied between the north and south. Recorded activity was greatest in the north section of the site within sections 1 and 2. The southern section displayed a lower, more consistent level of bat activity across the May and July nights.

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- 4.6 In September, the Anabat surveys indicated a lower, more consistent level of bat activity between the northern and southern sections of the site. However, the tree line between sections 1 and 2 maintained a high frequency of common pipistrelle passes.
- 4.7 Barbastelles were recorded by both Anabats in May, with a greater abundance of passes recorded in the southern section of the site along the tree line between sections 2 and 3. Barbastelles are a BAP priority bat species that are recognised as having large home ranges and are able to travel up to 20km to reach suitable foraging areas. Due to the inconsistency of barbastelle passes across the three months of surveys, the individuals recorded in May were considered to be utilising the site for commuting purposes to reach potential foraging areas within the wider landscape.
- 4.8 It is considered that level of activity on-site is not unusual for agricultural land. With the exception of barbastelle bats recorded on the Anabats in May, the species on-site were considered to be largely common and widespread, native species. However, all UK bat species are strictly protected by European and UK legislation bats will need to be considered with regard to the design of the development.

Recommendations and Enhancements

- 4.9 A high frequency of bats were recorded along the tree lines and hedgerows in the northern section of the site. The linear features bordering sections 1 and 2 should be retained and enhanced to support any foraging or commuting bats. The development should also include a sensitive lighting plan to ensure these features are not illuminated unnecessarily post development.
- 4.10 Mature English oak trees were present within the tree lines and hedgerows surrounding sections 1, 2 and 3. The trees have the potential to support a range of invertebrates, indeed the oak tree provides habitats for more organisms than any other tree in the UK. It is recommended that the mature English oak trees are retained and

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- sensitively managed to ensure their longevity, as they are considered likely to support foraging bats.
- 4.11 Creating new tree line and hedgerow links within the red line boundary would be considered an appropriate strategy to ensure that bats would not be adversely effected by the proposals. Much of the habitat is species poor, and provides limited opportunities for biodiversity. It is considered that the use of enhanced planting, swales, hedgerow creation and wildlife mixtures would enhance habitats for foraging bats, as well as other species.
- 4.12 As bat species have been found utilising the hedgerows and tree lines on-site, it is recommended that a sensitive lighting scheme is conditioned as part of the permission. Lighting may affect bats in several different ways. As all bat species are nocturnal and tend to light sample prior to emerging from their roost, directing lighting onto a roost may disturb bats and cause them to desert the roost. Direct lighting onto the roost may also disrupt bat emergence times and therefore shorten the time available to them for foraging. Artificial lighting may also disrupt the feeding behaviour of bats. There are two aspects to this. One is the attraction that light from certain types of lamps has to a range of insects; the other is the presence of lit conditions. Furthermore, artificial lighting is thought to increase the chances of bats being preyed upon.
- 4.13 It is therefore considered that light should be directed away from linear features, which may be used by bats, such as trees around the site, maintaining these and 'dark corridors'. Indeed, The Bat Conservation Trust advises the following which should be considered as part of the proposals:
- The impact on bats can be minimised by the use of low-pressure sodium lamps or high-pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its uv filtration characteristics. Lighting should be directed to where it is needed and light spillage avoided.

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- This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only. Planting can also be used as a barrier or manmade features that are required within the build can be positioned so as to form a barrier.
- 4.14 When designs for the site are finalised and trees which are identified for removal should be re-checked for their suitability to support bats. If required further bat surveys should be undertaken to ensure that no roosts are present within the trees to be lost. Bats tend to emerge from their roosts close to sunset, with several bats recorded around this time during the surveys, this may indicate potential roost sites on site or in close proximity to the site. It is considered before any works to the trees that are to be removed that a full assessment for roosting bats is undertaken. Trees that are considered to have potential to support roosting bats should be surveyed either by endoscopic survey or dusk emergence/dawn return to roost surveys. This will show whether bats are using these trees and whether a licence for felling would be required by Natural England. Enhancements for bats have also been considered as part of this report.
- 4.15 To enhance the local bat population and provide roosting opportunities, it is recommended that boxes should be hung on retained mature trees and have clear flight paths. Recommended boxes include:
- Schwegler 2F Bat Box – these boxes are attractive to small bats and can be hung on any of the mature trees. Two should be erected on the mature trees along the site boundary, preferably in sections 1 and 2.
 - Schwegler 2FN Bat Box - Is slightly larger than the 2F and provide opportunities for the larger bats. Two should be erected on the mature trees along the site boundary, preferable in section 1 and 2.
 - Schwegler 1FS Bat Box – larger for colony species. One of these should be erected on the site, preferable in sections 1 or 2.

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- 4.16 Incorporating specially designed bat boxes onto mature trees on site can enhance the habitat on site for bats. Bat boxes will be erected on the trees prior to works starting on site. Schwegler boxes have been recommended as these are long lasting and require no maintenance.
- 4.17 It is recommended that species used within the planting scheme are native species. It is recommended that native trees are planted within the development. By incorporating a variety of native trees into the scheme this will increase the diversity and offer different niches for foraging bats.

5.0 Conclusions

- 5.1 During the transect surveys common pipistrelles were by far the most abundant bat species on-site and were recorded regularly using the mature trees, tree lines and hedgerows on-site for foraging and commuting purposes. In addition, soprano pipistrelles, *Myotis spp.*, serotine and noctule, were recorded in low frequencies.
- 5.2 Remote recording devices were set up in three locations on-site. The detector locations were alongside linear features considered most suitable for foraging and commuting bats. The devices recorded over five consecutive nights in May, July and September. Common pipistrelle were the most abundant species on-site, followed by a high number of *Myotis spp.* A low frequency of soprano pipistrelles, serotine, noctule and brown long-eared bat was also recorded.
- 5.3 The results highlight the use of several linear features by bats, notably the hedgerows and tree lines bordering sections 1 and 2 of the site (Figure 2, pp. 6). It is recommended that these features should be considered as part of the application and master planning.

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- 5.4 A sensitive lighting scheme should be included within the master plan to ensure no potential tree roosts or commuting/foraging flight paths are not negatively impacted upon.
- 5.5 Post development, the site can be enhanced to ensure local bats populations can still commute and forage across the site. New tree lines and hedgerows can be planted in areas which connect to other linear features within the surrounding landscape. The tree lines and hedgerows should be planted using native species.
- 5.6 The creation of new wildflower areas and SUDs would provide new opportunities for a range of invertebrates and therefore bats. As such there is potential for the site to increase its biodiversity interest post development.

6.0 References

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

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

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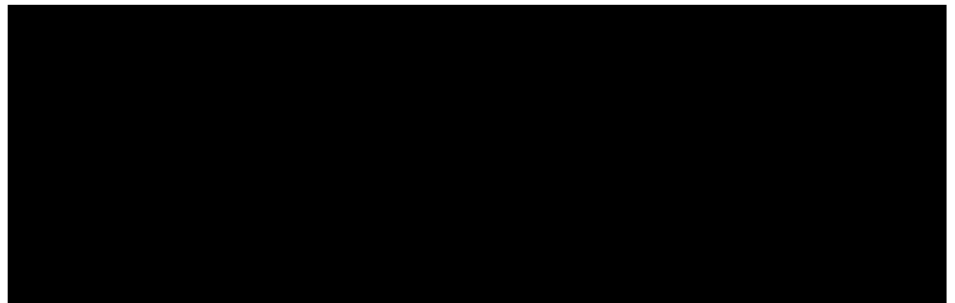
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Date: 07/10/2016

Re-issued 05/12/2017