



Bat Survey

Land off Cote Lane, Thurgoland

Report reference: R-2524-02B

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Report Title:	Bat Survey Land off Cote Lane, Thurgoland
Report Reference:	R-2524-02B
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Summary Statement

A combination of walked transects and remote monitoring have found the Site to be used by low numbers of common and widespread species. The proposed development is unlikely to detrimentally impact local bat populations, but a precautionary approach to lighting should be adopted to minimise light spill on the eastern boundary.

Introduction

1. Subsequent to the recommendations made in Brooks Ecological's report (R-2524-01) detailed bat survey was commissioned by Berkeley DeVeer at land off Cote Lane, Thurgoland, South Yorkshire Grid ref: SE 29196 00607.
2. These surveys are required to provide evidence of the baseline use of the Site by the local bat population, which in turn will then enable mitigation and enhancement strategies to be devised, where required, to support a full planning application.
3. The scope of the survey has been devised based on an assessment of the habitats present. Surveys have also been devised to be in accordance with current best practice guidelines (BCT, 2016).

Local Status

4. The application site is within the natural range of species listed in Table 1 below:

Table 1: Bat species recorded within 100km of the application site

Species	National status
Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	widespread/common
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	widespread/common
Nathusius' Pipistrelle (<i>Pipistrellus nathusii</i>)	widespread/rare
Noctule (<i>Nyctalus noctula</i>)	widespread/frequent
Leisler's (<i>Nyctalus leisleri</i>)	widespread/rare
Brown long-eared (<i>Plecotus auritus</i>)	widespread/common
Natterer's (<i>Myotis nattereri</i>)	widespread/frequent
Daubenton's (<i>Myotis daubentonii</i>)	widespread/common
Whiskered/Brandt's (<i>Myotis mystacinus</i> and <i>M. brandtii</i>)	widespread/scarce
Alcathoe's (<i>Myotis alcathoe</i>)	local/unknown
Serotine (<i>Eptesicus serotinus</i>)	south restricted/uncommon

Box 1 Legal background

Bats are afforded full protection under The Wildlife and Countryside Act (1981) plus amendments, and the Conservation of Habitats and Species Regulations 2010. Under these Acts it is an offence among others, to recklessly kill, injure or disturb bats. It is also an offence to destroy or obstruct a roost even if bats are not in occupancy at the time of the action.

There are no defences against contravention of the Conservation of Habitats and Species Regulations 2010 which means that it is important for detailed and well designed bat surveys to be carried out, prior to carrying out activities that may impact upon bat roosts such as demolition of buildings or removal of trees.

Where bats are found within a potential development site, a license from Natural England may need to be secured if works that could otherwise contravene legislation are to be carried out. These licences are only issued where Natural England is satisfied that works are unavoidable and would not have a negative impact on the favourable conservation status of bats. A Natural England license requires that the potential development site has full planning permission and that bats were a material consideration of the planning permission.

Box 2 Bat roosts

Bats roost in buildings and trees in different locations depending upon time of year and environmental factors such as position of the sun, proximity to heat sources and feeding grounds. The following types are commonly referred to:

Transitional roosts:

Bats frequently gather early in the season (March to April) before dispersing to summer roosts. Bats can be found in high numbers in these roosts for a very short period. Transitional roosts can also be found shortly before hibernation in August to October when bats (depending upon species) can gather in roosts not used earlier in the season.

Maternity roosts:

These are among the most important roosts and are normally occupied from May to August. Depending on the species involved, some maternity roosts can contain a very significant proportion of the local population.

Summer (non-breeding) roosts:

Small groups of non-breeding female and male bats can gather in these roosts or bats from a local population may choose to roost individually. There are normally a large number of suitable locations for summer non-breeding roosts and these may be routinely used or used only on an occasional basis. Irregularly used summer roosts can be very hard to find without unreasonable survey effort.

Mating roosts:

Around September bats will gather in roost to mate; these are often in different locations than summer or breeding roosts.

Hibernation roosts:

As bats in hibernation roosts are highly vulnerable to disturbance and bats can be present in large numbers these are considered to be among the most important bat roosts. Many species of bats roost in large and nationally important hibernation roosts associated with underground sites, many of which are well known and protected. However, the most common bat in the UK (the common pipistrelle) is largely unaccounted for in winter but thought to disperse and roost individually or in small groups in thermally stable cracks and crevices in thick walls or trees.

Method

5. The objective of the survey was to characterise how local bat populations currently make use of the Site, so that an accurate assessment of the potential impacts of development could be made. Transect and remote monitoring surveys were carried out to collect the following data (BCT survey guidelines 2016):
 - The assemblage of bat species using the site;
 - The relative frequency with which the site is used by different species;
 - The nature of activity for different bat species, for example foraging, commuting and roosting.

Transects

6. The transects began around sunset and continued up to 2 hours after when all bats were thought to have emerged, and thus were actively foraging and commuting. Conditions and dates are summarised in the table below.
7. The transect was walked by a single surveyor, equipped with a heterodyne detector as well as a Titley Scientific Anabat Express, used to track the transect route and aid

species identification. Notes taken during the survey were then used to produce the activity 'heat map' seen in the below figures.

Table 2: Transect survey summary

Survey	Date	Weather	Invertebrate activity
Summer	23.08.18	17-14°C, clear sky Beaufort 3 WSW	Low
Autumn	10.10.18	19-16°C, 5% cloud, Beaufort 2 ESE	Low
Spring	29.04.19	9-7°C, 5% cloud, Beaufort 1 SE	Low

Remote monitoring

8. To supplement data collected during each of the walked transects, a static monitoring devices (Wildlife Acoustic SM4's) was deployed in a strategic location around the Site prior to the start of each survey; their approximate locations can be seen in the below figures. These were then left to run for a minimum of five consecutive nights.
9. Data collected during the periods of remote monitoring has been run through Kaleidoscope Pro software, which can identify bat calls down to species level (except for myotis). Identification is generally correct when using this software; however, results are double checked to ensure accurate data analysis.
10. Every effort is made to split up myotis calls down to species level. This is done by analysing calls on Analook software and looking at parameters such as inter-pulse interval, call duration, slope and maximum / minimum / peak call frequency. However, this can often be difficult when registrations are short in duration, faint or distorted by cluttered environments.
11. Survey and assessment was directed by Sam Kitching BSc (Hons) Grad CIEEM. Sam has over 6 years experience of carrying out bat surveys in a professional capacity and is registered to use the Class Survey Licence WML CL18 (Bat Survey Level 2).

Limitations

12. Static monitoring can only reliably provide information on what species of bat are regularly making use of a site. More detailed information on bat activity, such as frequency of bats, nature of activity (foraging, commuting, flight path), etc. can only be gleaned through walked transects. The frequency of calls recorded can, to some extent, suggest whether activity on site is low, moderate or high, by comparing data collected with that of similar sites that have been surveyed.
13. A single registration can account for up to 15 seconds of continuous bat call. Large batches of registrations can be interpreted in several different ways, i.e. a single bat foraging continuously for only an hour can result in many hundreds of registrations

being logged; similarly, many hundreds of bats commuting quickly past the detector can result in the same number of registrations.

Results

Summer 2018

Walked transect

14. The transect began at the field entrance on Cote Lane, marking the Site's western boundary and then proceeding around the field boundaries in an anticlockwise direction. The scale of the Site allowed for appraisal of activity over the entire area from this route. Three laps of the Site were walked.
15. Activity was noted on the first pass of the Site's eastern boundary; up to 3 common pipistrelles were seen foraging along the woodland edge. This activity continued for the entire time the surveyor walked this boundary during the first lap, amounting to approximately 10 minutes of observation. By the second pass of this boundary activity had ceased in this area. No further activity was noted over the course of the transect.

Figure 1 Summary of bat activity recorded during summer



Static monitoring

16. Monitoring ran for 6 days through the summer period, returning registrations of common and soprano pipistrelle, brown long eared bat, noctule and a myotis species; sonogram analysis suggests these are attributable to whiskered bats.
17. As is typical, common pipistrelle make up the bulk of the recorded registrations, accounting for over 75% of calls. Whiskered bats contribute the second most abundant number of registrations, though these come in sporadic blocks over the monitoring period suggesting that a single bat has, on occasion, foraged in close proximity to the microphone.

Table 3: Summary of summer monitoring

Species	23.08.18	24.08.18	25.08.18	26.08.18	27.08.18	28.08.18
Common pipistrelle	87	106	317	7	420	213
Myotis (whiskered)	0	0	5	0	99	48
Brown long eared	1	0	0	0	2	1
Noctule	3	5	6	3	43	34
Soprano pipistrelle	1	0	11	7	47	15

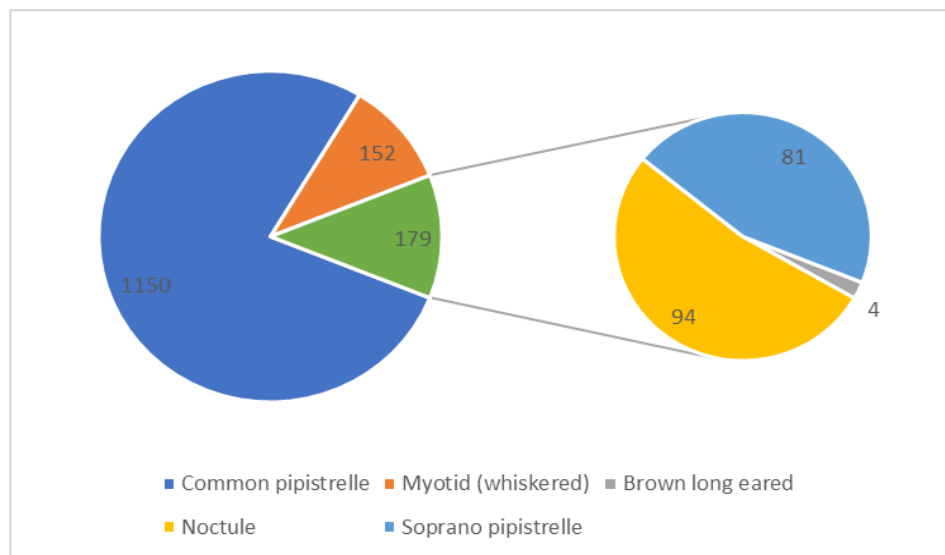


Figure 2

Proportion of registrations attributed to each species recorded.

18. Noctule registrations are all short, and considerably distorted suggesting these calls are being made some way from the monitoring device, unlikely to be within the open expanse of the Site.
19. Plotting the cumulative common pipistrelle registrations recorded over the week shows clear spikes in activity just after sunset and before dawn. This suggests that bats are moving through the Site shortly after leaving, and before returning, to a

roost. There are no potential roost features within the Site, implying roosts are located in existing housing to the north or south, or woodland to the east. Although the number of common pipistrelle registrations is seemingly high, this number of calls could easily be made by a small number of bats remaining in the area around the microphone for an extended period of time.

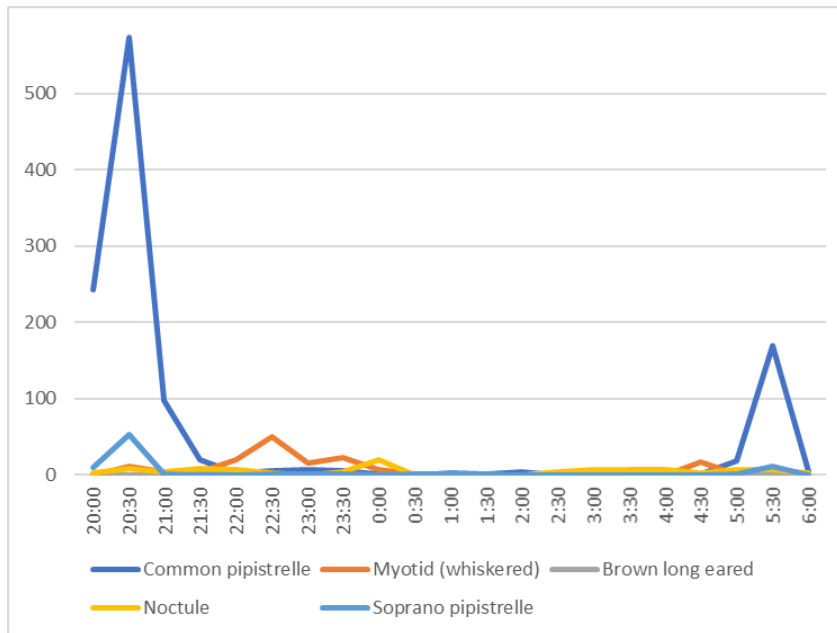


Figure 3

Time of registration of each species over the week.

Autumn 2018

Walked transect

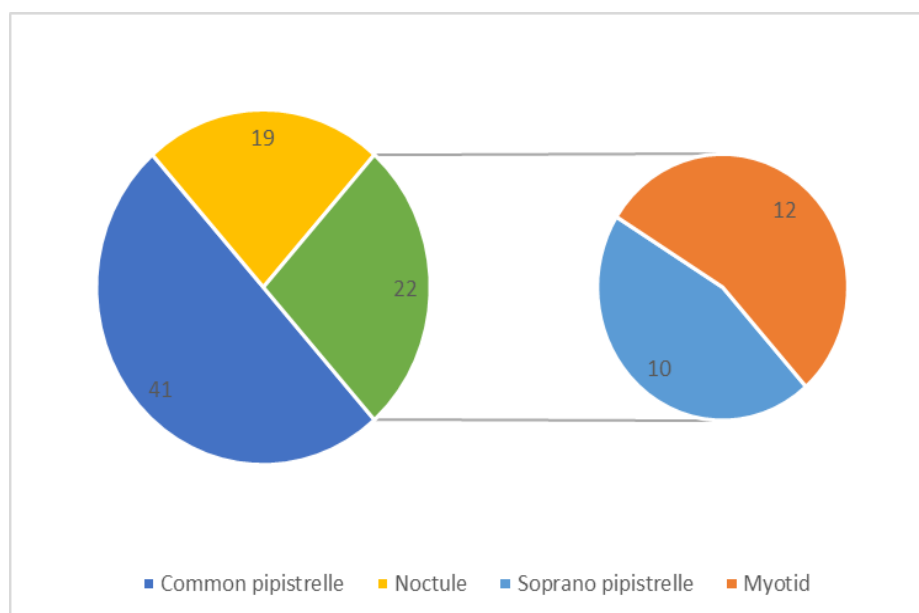
20. The same route as walked during the summer transect was repeated during this survey.
21. Only a single, brief registration was recorded, this being a brief pass by a myotis species bat close to the north western corner of the Site, almost 1 hour after sunset.

Static monitoring

22. Following six days of monitoring during the autumn period, a far smaller number of registrations have been recorded, as would be expected at a Site of this nature. Four species have been recorded; brown long eared bats being absent when compared to the summer monitoring.
23. Again, common pipistrelle make up the majority of calls, though registrations returned of each species is vastly reduced compared to that seen during summer.

Table 4: Summary of autumn monitoring

Species	09.10.18	10.10.18	11.10.18	12.10.18	13.10.18	14.10.18
Common pipistrelle	0	25	11	0	2	3
Noctule	3	11	3	0	1	1
Soprano pipistrelle	0	6	2	0	0	2
Myotis	0	6	2	0	2	2

**Figure 4**

Proportion of registrations attributed to each species recorded.

24. The number of registrations returned is assessed as being very low, and indicates that the Site is of little importance to local bat populations during the Autumn period.
25. The plot of registration times over the 6 days of monitoring shows very little pattern, demonstrating that activity is spread fairly evenly over the course of the night, and further evidences that local bat populations have no dependence on habitat within the Site during the autumn period.

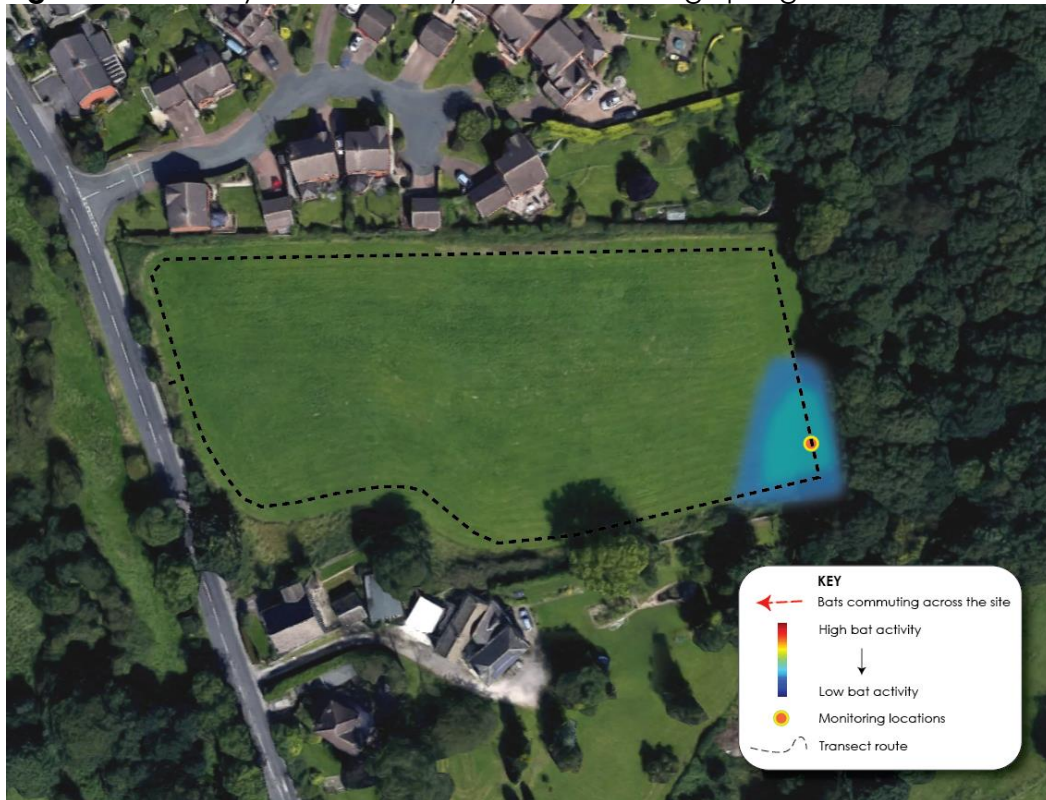
Spring 2019

Walked transect

26. The same route as walked during the previous transects was repeated during this survey.

27. Low level foraging by up to two common pipistrelles was recorded in the sites south eastern corner, extending approximately one third of the way up the eastern boundary. This was recorded on the second and third circuit of the Site.
28. No other activity was noted at any point during the survey.

Figure 5 Summary of bat activity recorded during Spring



Static monitoring

29. Static monitoring returned no registrations of bat calls throughout the entire monitoring period. The presence of a large number of noise files indicate the equipment was functioning and it can thus be concluded that the absence of registrations reflects a paucity of bats. Inclement weather over the monitoring period is likely to be the main factor, though very low levels of activity seen across the three seasonal transects indicate these results are commensurate to what would be expected.

Evaluation & Recommendations

30. Bat activity observed and recorded at the Site over all three survey seasons is assessed as being very limited and restricted to a range of common and widespread species. Common pipistrelle were the only species recorded in any significant numbers, and even this is assessed as being relatively low.
31. Activity observed during the summer and spring transects suggests the woodland edge to the east of the Site provides the focus for both foraging and commuting bats, as would be expected. Though activity here is still limited when compared to other site's which provide similar habitat.
32. Based on information gathered to date it is concluded that the proposed development is unlikely to detrimentally impact local bat populations. Though precautions should be put in place with regard to lighting the eastern boundary to minimise impacts.
33. A lighting plan will need to be designed to show how the eastern boundary will remain darkened following development. The use of landscaping should be explored to minimise light spill.

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