

Gun Room in Wentworth Castle Gardens

Bat Survey Report

7th May 2025



Prepared by:

Middleton Bell Ecology, School House, Green Moor, Sheffield, S35 7DQ

Document ref: MBE/BAT/2025/011/02				
Purpose and Description	Originated	Checked	Reviewed	Date
For Planning	R Bell MCIEEM <i>R Bell</i>	P Middleton MCIEEM <i>P Middleton</i>	R Bell MCIEEM <i>R Bell</i>	07/05/2025

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1. Summary

- 1.1.1 A preliminary roost assessment of the Gun Room in Wentworth Castle Gardens was commissioned by David Rankine of the National Trust on 10th February 2025. A single nocturnal survey of the building was commissioned on 12th March 2025.
- 1.1.2 The survey was undertaken to inform roof replacement on the Grade II* listed Gun Room.
- 1.1.3 The bat survey works carried out comprise a preliminary roost assessment, undertaken on 17th February 2025 and a single nocturnal survey carried out on 2nd May 2025.
- 1.1.4 No historic bat records were received for the Gun Room, although a common pipistrelle day roost was recorded in 2020 from the adjoining building.
- 1.1.5 No evidence of bats was recorded during the internal and external inspection, however, the main roof of the Gun Room was considered to display a low level of bat roost suitability, with the wider building displaying moderate roost suitability.
- 1.1.6 The single nocturnal survey undertaken showed the probable absence of roosting bats from the roof of the Gun Room. No evidence of bird nesting was recorded from the Gun Room.
- 1.1.7 Given the bat roost suitability of the Gun Room roof, no further bat survey is considered necessary providing works commence within 24 months of the survey date. If works commence after this time, then Middleton Bell Ecology should be contacted to determine the requirement for update survey works to be undertaken.
- 1.1.8 Bats have been shown to regularly become entangled and die in the component filaments of standard modern woven roofing membranes (Appendix 2). For this reason, given the number of bat roosts known from the wider site, it is strongly recommended that any new roofing membrane to be fitted should be bat safe.
- 1.1.9 If roof replacement is to occur during the main bird nesting period (March to August inclusive), then works should be preceded by a nesting bird check, to be undertaken by an ecologist.

2. Introduction

- 2.1.1 A preliminary roost assessment of the Gun Room in Wentworth Castle Gardens was commissioned by David Rankine of the National Trust on 10th February 2025. A single nocturnal survey of the building was commissioned on 12th March 2025.
- 2.1.2 The survey was undertaken to inform roof replacement on the Grade II* listed Gun Room.
- 2.1.3 The bat survey works carried out comprise a preliminary roost assessment, undertaken on 17th February 2025, and a single nocturnal survey carried out on 2nd May 2025.
- 2.1.4 The Gun Room was located 50 m northwest of Wentworth Castle, within the estate of this former stately home, situated in Stainborough, approximately 3.7 km southwest of Barnsley town centre.

3. Habitat Assessment

- 3.1.1 The Gun Room was situated within the centre of the Wentworth Castle Gardens site (see Figure 1 & Plate 1). The Gun Room was located adjacent to the end of a mature treeline (Lady Lucy's Walk) which connected to the formal garden and an area of mixed woodland.
- 3.1.2 The local area supported an extensive coverage of prime bat foraging habitats and the area was known to support a high density of bats belonging to a wide range of species.

Table 1. Location and habitat table

Name and address: Gun Room, Wentworth Castle Gardens, Stainborough, Barnsley, S73 3ET			
OS Grid Ref. SE 31943 03228		Altitude. 166 m	
Local Planning Authority: Barnsley Council			
Features on site and adjacent to site			
Feature	On site	Adjacent	Comments
Buildings	✓	✓	Located adjacent to other traditional buildings.
River			
Standing water			Various ponds in grounds of Wentworth Castle, with closest pond 380 m southwest
Bridges tunnels and culverts			Serpentine Bridge 530 m east of site. Rockley Tunnel 1.5 km southeast of site.
Trees		✓	Located at end of treeline (Lady Lucy's Walk) which connects to mixed woodland.
Woodland		✓	
Grassland	✓	✓	Lawn to west of building.

Figure 1. Site location, with building outlined in red



Plate 1. Aerial view of Gun Room (outlined in red)



3.2 Aims

3.2.1 The survey was conducted to help determine the following:

- The presence/absence of roosting bats.
- Bat roosting areas and access/egress points into the structure.
- The presence/absence of nesting by birds.
- The level of bat roost potential associated with the structure.
- The number and species of bat roosting within the structure.
- Identify further survey work or mitigation requirements.

4. Methodology

4.1 Data Consultation

4.1.1 Bat records for locations within 2km of the site were obtained from South Yorkshire Bat Group.

4.2 Field Survey

Preliminary Roost Assessment

4.2.1 The following personnel conducted the preliminary roost assessment on 17th February 2025:

- Robert Bell (MCIEEM; Bat Survey Class License WML-A34-Level 4, 2016-25236-CLS-CLS)

4.2.2 The following activities were carried out during the surveys in compliance with relevant Bat Survey Guidelines (Collins, 2023):

- A brief inspection and assessment of the site and habitats present to within 300 m.
- An extensive examination of all parts of the building both inside and out to record structural features and condition and to record features that may be suitable for roosting bats. Particular attention was paid to any crevices or gaps in walls, lintels, gaps between beams and joists and to the possibility of finding droppings stuck to walls, floors or other surfaces, or insect remains below beams, among a number of other factors. All signs indicative of a bat roost presence including live or dead bats, droppings, feeding remains, scratch marks and staining were recorded.
- An assessment of the building's bat roost potential (negligible, low, moderate, high or confirmed roost).

4.2.3 In addition, signs of bird nesting were recorded, where seen.

4.2.4 The following equipment was used or at hand during the survey:

- Clulight
- Binoculars
- Endoscope
- Ladders
- Camera
- Drone

Nocturnal Survey

4.2.5 One nocturnal survey was undertaken on the 2nd May 2025 in accordance with the relevant Bat Survey Guidelines (Collins, 2023). The dusk emergence survey continued from 15 minutes prior to sunset until 1.5 hours after this time. All potential roost features were covered by the surveyors and night vision aids, with surveyors positioned at opposite corners of the building.

4.2.6 The following personnel conducted the nocturnal survey:

- Robert Bell
- Amanda Murphy (Qual CIEEM, Bat Survey Class License WML-A34-Level 2, 2020-47913-CLS-CLS)

4.2.7 The following equipment was used during the surveys:

- Wildlife Acoustics EM Touch bat detectors and iPad/iPod recorders.
- Two night vision aids were used, comprising a Canon XA10 (with external lights) and a Guide TK612 thermal sight.

4.2.8 Only sections of video footage relating to potential or confirmed roosting bats were watched back from the night vision aids.

4.3 Survey Limitations

4.3.1 The main roof void could not be safely accessed for direct inspection. A large hole was present in the ceiling, with the void also of fairly low height (c. 1.2 m). No droppings were present within the room beneath, or visible through the gap in the ceiling. A lack of access to the roof void was not considered a significant survey constraint in this instance. This was due to the partial visibility afforded by the missing ceiling, and the lack of flight space in the void.

5. Results

5.1 Data Consultation

- 5.1.1 South Yorkshire Bat Group provided 678 bat records. Species positively identified in the records comprise brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Natterer's bat *Myotis nattereri*, whiskered bat *Myotis mystacinus*, Daubenton's bat *Myotis daubentonii*, noctule *Nyctalus noctula* and Leisler's bat *Nyctalus leisleri*. Of these species, all but Leisler's bat have been recently recorded roosting in the local area.
- 5.1.2 No bat records were received in relation to the Gun Room, however, a single common pipistrelle bat was recorded in 2020, roosting behind a fascia board on the northeast elevation of the adjoining Old Coach House. The roost location was only c.2 m from the surveyed building.
- 5.1.3 Bat roosts recorded in recent years (within last 10 years) Wentworth Castle Gardens site are shown in Appendix 1. Several higher value maternity and hibernation roosts have been documented. Lower conservation status day roosts have also been recorded from a higher number of locations, including both buildings and trees. A maternity roost of brown long-eared bat (peak count 33 bats) was last recorded in 2023 from Stainborough Castle, located c.440 m northwest of the site, with hibernating brown long-eared bat, Natterer's bat and noctule also recorded using this structure.
- 5.1.4 Bat boxes installed across the Wentworth Castle Gardens site have also been recorded as used by up to 25 pipistrelle bats, with these bats using the boxes heavily during the hibernation period. A number of trees are also used by hibernating pipistrelle bats.
- 5.1.5 Other notable bat roosts present in the local area, include a Natterer's bat transitional roost of approximately 40 bats, recorded from Rockley Tunnel which is located 1.5 km southeast of the site. A Natterer's bat maternity roost of approximately the same size is also known from Rockley Engine House, which is located approximately 2.1 km southeast of the site. In addition, Rockley Tunnel comprises one of South Yorkshire's largest bat hibernation roosts, used by Natterer's bat, Daubenton's bat and brown long-eared bat. Rockley Engine House also supports a noctule and Natterer's bat hibernation roost.
- 5.1.6 The wider Wentworth Castle site has a well-documented early history of bat studies, with surveys undertaken by Arthur Whitaker in the early 1900s, during which time at least seven bat species were confirmed as present on site (Whitely, 1987). Most of the roost locations recorded from trees by Mr Whitaker are untraceable, however, others such as Rockley Tunnel still support roosting bats (Middleton & Bell, 2017).

5.2 Preliminary Roost Assessment

- 5.2.1 No evidence of bat roosting was recorded from the Gun Room. This building was considered to display a moderate level of suitability to support roosting bats, although the roof covering was considered to display no more than a low level of suitability.
- 5.2.2 No evidence of historic bird nesting was recorded from the Gun Room.

Description

- 5.2.3 The Gun Room includes both the Grade II* listed building, a wrap-around open-fronted veranda and a small store known as 'Daisy Cottage', present on the northeast side of the main building (see Plate 2). Although all sections are classed as the Gun Room in this report, for the purposes of building description these sections will be discussed separately in places.
- 5.2.4 The main building, parts of which date back to the mid-18th Century, was single storey and constructed from a mix of brick and stone, with decorative masonry on the façade (southwest elevation)(Plate 3). The Welsh slate covered roof was multi-pitched, with sheet lead covered ridge, hips and wall tops. A single chimney was present on the northwest elevation. The windows were single paned and wood framed with the door also wooden. Guttering was cast iron, where present.
- 5.2.5 The veranda section of the building was single storey, supported on wooden pillars and open-sided, with a single-pitch Welsh slate covered roof and sheet lead covered hips (Plates 2-6). This section of the building, together with Daisy Cottage, with which it shares a roof, had been recently re-roofed. Guttering was cast iron.
- 5.2.6 Daisy Cottage comprised a stone and brick built single storey extension. Daisy Cottage shared a recently renewed single pitched and Welsh-slate covered roof with the veranda (Plates 2 & 5-6). A single paned wood-framed window was present, together with a wooden door. Guttering was cast iron.

Plate 2. Sections of the Gun Room

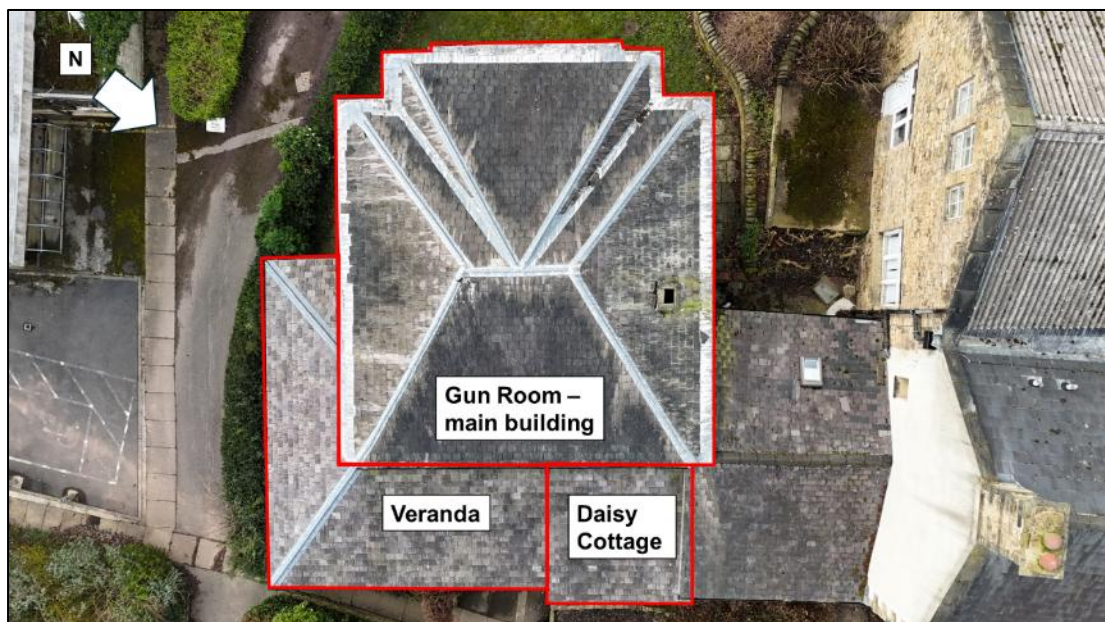


Plate 3. Southern corner of Gun Room



Plate 4. Veranda on southeast elevation of Gun Room



Plate 5. Daisy Cottage and veranda on northeast elevation of Gun Room



Plate 6. Gun Room, viewed from northeast



External inspection

5.2.7 No droppings were recorded from any exterior of the Gun Room. Potential roost locations and/or bat access points on the exterior of this building comprised the following:

- Various sections of lifted flashing on the hips, ridge and wall tops of the main roof (Plate 7).
- Some missing and slipped slates on the roof of the main house (Plate 7).
- An open joint (c.2 cm x c. 5 cm) between decorative stone blocks on wall top of southwest elevation (Plate 8).
- Gaps, up to 3 cm in width, between the wooden fascia board and masonry on the northeast elevation of Dairy Cottage (Plate 9).

Plate 7. Missing slates and lifted flashing on main roof



Plate 8. Open joint on southwest elevation of main building



Plate 9. Gap behind fascia board on northeast elevation of Daisy Cottage



Internal inspection

- 5.2.8 The main roof was lined with hessian-backed Type 1F bituminous felt and suspended on a ridge beam, rafters, purlins and battens. A roof void c.1.2 m high was present, with the ceiling having partially failed. The ceiling within the interior of the main building was supported with scaffold, with plaster remaining on internal walls. No signs of bats were recorded from any area within the interior of this building (Plate 10).
- 5.2.9 The roof of the Dairy Cottage section of the building was also lined with hessian-backed Type 1F bituminous felt, suspended on rafters and battens and had a very shallow roof void (c.0.5 m high). A loft hatch had been left open, so this space could be partially viewed. The interior was used for storage with no signs of bats present.
- 5.2.10 The veranda roof was lined with hessian-backed Type 1F bituminous felt as well as wooden sarking, suspended on rafters and purlins (Plate 11). In two places, gaps were

present at the top of the wooden sarking. In one of these locations, this opening would allow bats access behind the flashing at the junction of the veranda roof and the wall of the main section of the building. No signs of bats were however recorded from any section of the veranda.

Plate 10. Interior of Gun Room



Plate 11. Interior of veranda roof



Plate 12. Gap at top of sarking on underside of veranda roof, potentially allowing bats access to crevice space behind flashing.



Nocturnal Survey

2nd May 2025 – dusk emergence survey

- 5.2.11 The temperature at the beginning of monitoring was 14 °C, with a light breeze (Beaufort Scale Force 2) and four oktas (4/8) of cloud. The temperature dropped to 12 °C, with the wind ceasing and the cloud decreasing to one okta. The weather was dry throughout. Sunset was at 20:38.
- 5.2.12 No bat roosting activity was recorded from the surveyed building. The first bat recorded comprised a soprano pipistrelle, which commuted west to east at 20:57 (19 minutes after sunset). This was followed at 21:06 by a common pipistrelle, which was heard by both surveyors. Intermittent common pipistrelle activity was recorded by both surveyors thereafter.

6. Assessment

6.1 Summary and Evaluation of Findings

- 6.1.1 No historic bat records were received for the Gun Room, although a common pipistrelle day roost was recorded in 2020 from the adjoining building.
- 6.1.2 No evidence of bats was recorded during the internal and external inspection, however, the main roof of the Gun Room was considered to display a low level of bat roost suitability, with the wider building displaying moderate roost suitability.
- 6.1.3 The single nocturnal survey undertaken showed the probable absence of roosting bats from the roof of the Gun Room.
- 6.1.4 No evidence of bird nesting was recorded from the Gun Room.

6.2 Legislation and Policy Guidance

Bats

- 6.2.1 Bats receive protection under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and the Wildlife and Countryside Act 1981 (as amended).
- 6.2.2 It is an offence to:
 - Deliberately capture (or take), injure or kill a bat.
 - Intentionally or recklessly disturb bats whilst they are occupying a structure or place used for shelter or protection or obstruct access to any such place.
 - Damage or destroy the breeding or resting place (roost) of a bat.
 - Possess a bat (live or dead), or any part of a bat.
 - Intentionally or recklessly obstruct access to a bat roost.
 - Sell (or offer for sale) or exchange bats (dead or alive), or parts of parts.
- 6.2.3 The Convention on Biological Diversity, signed in Rio de Janeiro, Brazil in 1992, requires member states to develop national strategies and to undertake a range of actions aimed at maintaining or restoring biodiversity. The UK Biodiversity Strategy was produced in response to the Convention.
- 6.2.4 In England & Wales, the Natural Environment and Rural Communities (NERC) Act, 2006 imposes a duty on all public bodies, including local authorities and statutory bodies, in exercising their functions, “to have due regard, as far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”. It notes that “conserving biodiversity includes restoring or enhancing a population or habitat”. Barbastelle *Barbastella barbastellus*, Bechstein’s *Myotis bechsteinii*, brown long-eared, greater horseshoe *Rhinolophus ferrumequinum*, lesser horseshoe *Rhinolophus hipposideros*, noctule and soprano pipistrelle bats are included as priority species within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. At a more local level there are Local Biodiversity Action Plans for smaller geographical areas which may cover a greater or lesser range of bat species.
- 6.2.5 The National Planning Policy Framework for England was revised in 2024. This document states that plans should ‘promote the conservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of

priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity’.

Birds

6.2.6 All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000), which makes it illegal (subject to exceptions) to:

- Intentionally kill, injure or take any wild bird.
- Take, damage or destroy the nest (whilst being built or in use) or eggs of any wild bird.

6.3 Further Survey, Recommendations and Enhancements

Bats

6.3.1 Given the bat roost suitability of the Gun Room roof, no further bat survey is considered necessary providing re-roofing works commence within 24 months of the survey date. If works commence after this time, then Middleton Bell Ecology should be contacted to determine the requirement for update survey works to be undertaken.

6.3.2 Bats have been shown to regularly become entangled and die in the component filaments of standard modern woven roofing membranes (Appendix 2). For this reason, given the number of bat roosts known from the wider site, it is strongly recommended that any new roofing membrane to be fitted should be bat safe.

Birds

6.3.3 If roof replacement is to occur during the main bird nesting period (March to August inclusive), then works should be preceded by a nesting bird check, to be undertaken by an ecologist.

6.4 Conclusions

6.4.1 No historic bat records were received for the Gun Room. No signs of bat presence were recorded during the inspection, with the building considered to display a moderate level of bat roost suitability, although the main roof displayed only a low level of roost suitability.

6.4.2 The single nocturnal survey undertaken did not record evidence of bat roosting and showed the probable absence of roosting bats from the Gun Room roof. No further bat survey is considered necessary providing works commence within 24 months of the survey date

6.4.3 Works should proceed with caution and vigilance for unexpected bat presence, as single bats can roost almost anywhere. If bats are subsequently discovered, work should cease, and further advice sought without delay.

6.4.4 No evidence of current or historic bird nesting was recorded, however, if roof replacement is to occur during the main bird nesting period (March to August inclusive), then works should be preceded by a nesting bird check, to be undertaken by an ecologist.

7. References

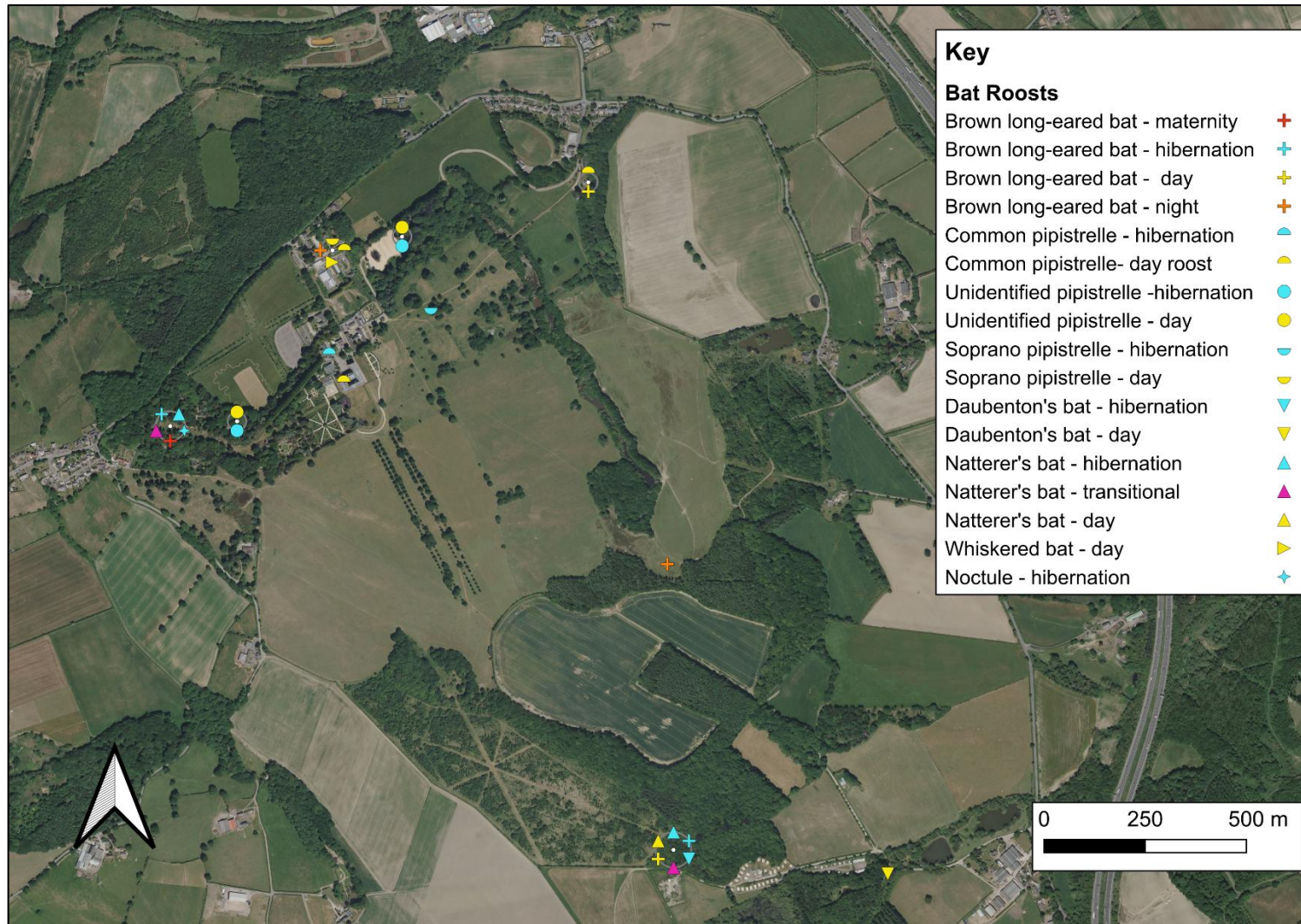
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Slack, G (2019) South Yorkshire Bat Status. *Northern Bats*, Volume 4.

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Appendix 1. Recently Recorded Roosts Across Wentworth Castle Gardens



Appendix 2. Bats and Roofing Membranes

Standard roof membranes can cause the death of significant numbers of bats. Traditional bitumen coated roofing felt is recommended where roosting bats are expected to be present.

The problem

Standard non-bitumen coated membranes (including almost all breathable membranes) used below roof slates and tiles present a significant problem for bats. Over time, strands are pulled away from the surface of these materials as bats crawl over them. These fuzzy strands are very strong and can tangle and trap bats, sometimes causing the death of bats over multiple years¹.

One example we have encountered comprised a pipistrelle roost which formed in a building extension constructed in 2009. Over the course of just 13 years the roofing felt degraded to the extent that it trapped and killed more than 10 bats. Fortunately, the problem in this roost was identified and remedial work was undertaken to replace the roofing membrane in 2022.

Plate A2.1. Four dead pipistrelles tangled in breathable roofing membrane



Although a new roof might be considered to lack potential bat access points, that is often not the case. Roofs covered with stone slates almost always have gaps large enough to be accessed by bats, this is often also the case where imitation stone slates are used. On older buildings the uneven roof timbers and/or building design also often results in gaps on wall tops and between slates. Even on new builds it is often possible for bats to access potential roosts via features such as dry verge capping. Some bats can access a space no wider than a biro pen, therefore it is not surprising that they can find their way into most buildings.

Safe roofing membranes (and membranes behind cladding)

From a bat perspective, the best membrane option for areas where roosts are expected comprises traditional hessian-backed Type 1F bituminous felt. This product has been widely and safely used as a secondary weather barrier since approximately the 1950s/1960s. Wooden sarking has also been used for many decades and if appropriately treated, is safe for

¹ Wearing S. Essah E., Gunnel K. & Bonser R. (2013) Double jeopardy: the potential for problems when bats interact with breathable roofing membranes in the United Kingdom. Architecture and Environment

use in bat roosts. Wooden sarking also has the benefit of providing adding additional insulation and it is usually breathable.

At the time of writing (and to our knowledge) two products have passed the ‘snagging propensity’ test; consequently these products are approved by Natural England for use in bat roosts. This test attempts to replicate the wear and tear which results from bats crawling over the membrane. The approved products are: TLX BatSafe^{2,3} and SIGA Majcoat 350. Although they have passed this test, it is unclear how these membranes will degrade in the medium-long term, particularly in larger bat roosts. Therefore we do not recommend that they are used for roosts with multiple bats, and particularly for large (maternity roosts). A third product, SIGA Majcoat 200 SOB Diffusion, passed the test for its upper surface only. This product should not be used in known bat roosts or locations where bat mitigation is to be installed. Although none of these products are considered to be as safe as traditional Type 1F bituminous felt, they may provide an option for roofs where future bat use cannot be ruled out, and a breathable solution is required.

Additional considerations

In recent years a fairly substantial proportion of the lofts we have surveyed which had existing breathable felt, were found to have been damaged by wasps (Plate A3.2). The wasps appear to have chewed holes in the felt and formed nests. This doesn’t appear to be a problem associated with traditional bitumen coated roofing felt. Any holes within roofing felt are likely to significantly reduce its functionality as a secondary weather barrier. Where bats or birds come into contact with breathable roofing membranes, they can also damage it causing it to leak, they can also significantly reduce the breathability of the felt in that location.

Plate A2.2. Damage to a breathable roofing membrane adjacent to a wasp nest



Traditional bituminous Type 1F roofing felt is a non-breathable product and therefore ventilation is required. Sufficient ventilation can be usually be achieved, even in buildings with vaulted ceilings, however, some consideration during the design stage is required. Products to increase the ventilation within roofs where bituminous Type 1F felt has already been installed are also available.

² <https://www.gov.uk/government/publications/bats-apply-for-a-mitigation-licence#full-publication-update-history~:text=Use%20of%20safe%20roofing%20membranes>

³ TLX BatSafe requires all joints and cut edges to be taped in order to prevent the fraying of bare edges.

Appendix 3. Bat Records

In accordance with best practice and the requirements of bat licensing, bat records collected during surveys are supplied to the relevant biological record centres and bat groups. The records to be supplied in accordance with this survey are shown below. House names/numbers are not given out by record holding organisations except under very particular circumstances. Please let us know if you object to the distribution of these records.

Date	Species	Site Address	OS Grid Reference	Notes
02/05/2025	Common pipistrelle	Wentworth Castle Gardens, Stainborough, Barnsley	SE 31943 03228	Foraging
02/05/2025	Soprano pipistrelle	Wentworth Castle Gardens, Stainborough, Barnsley	SE 31943 03228	Pass