

BERNWOOD ECOLOGY

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St Mary Magdalene Brampton Cambridgeshire

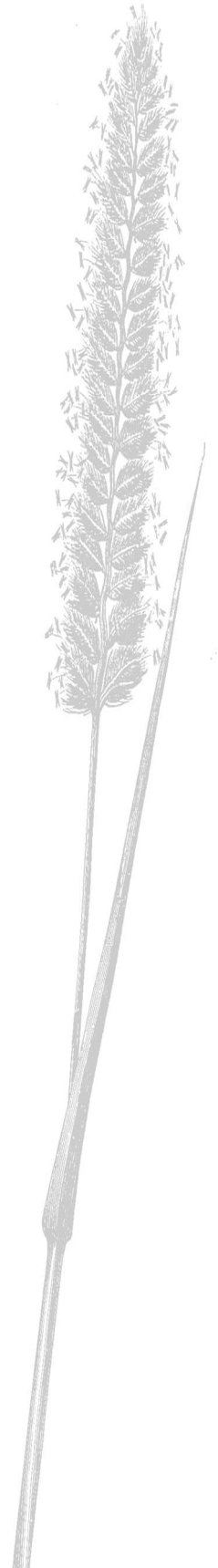


Bats in Churches: Bat Management Plan

DEFRA

26th October 2021

DEFRA-BiC-21.DEFRA12 (Issue 1)



Proud to be:



Hensmans Farm, Nearton End, Swanbourne, Buckinghamshire, MK17 0SL

Limitations

Ecological assessments can only assess a site at a particular time. This evidence can be used to draw conclusions as to the likely presence or absence of species (animals and plants), population size, use of the site by animals; it is neither definitive nor complete.

Any survey is a snapshot in time and should not be regarded as a complete study. Seasonality and weather conditions may also affect survey results.

The preparation of mitigation strategies, consultation exercise and submission of any licence applications cannot be relied upon until approved [licensed] in writing by third parties. Allowance must be made for both programme and financial change to projects as a result of application failure, amendment or refusal.

Every effort has been taken to provide an accurate assessment of the situation pertaining to this site and information available at the time of the preparation of this report, but no liability can be assumed for omissions, or subsequent changes to design and development.

Surveys have been based on anticipated work resulting from instruction and information supplied at the time of request. Additional works should be anticipated as surveys and proposals for the site progress.

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Quality Assurance

Version 1. 26th October 2021.

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Executive Summary

Bernwood Ecology have undertaken bat emergence and re-entry surveys at St Mary Magdalene, Brampton. The purpose of the surveys was to inform and find practical solutions to encourage co-existence between the church communities and the roosting bats through the preparation of a management plan.

Throughout the process, options for interventions based on scale of impacts resulting from the bats to the church and viability have been presented to the church community, the church architect and the Bats in Churches Project for discussion and refinement.

A light touch survey was undertaken by Bernwood Ecology on 24th August 2017 as part of the early engagement for the Bats in Churches Project. Updated building inspections were conducted before each bat emergence survey in 2021. The 2017 light touch survey identified two probable roost access points as well as evidence (droppings) of bats under the archway between the tower from the nave, underneath the archway between the chancel and the nave, and on the windowsills behind the altar at the east end of the chancel. The 2021 building inspections identified similar findings.

Three dusk emergence and one dawn re-entry survey of the church were conducted by Bernwood Ecology in 2021 to further study the bat roost(s) at the church and inform mitigation and management measures. The surveys concluded bat access points located in or around the chancel together with roosting points in the chancel, in the north aisle and the vestry.

Five options based on low, moderate and high cost interventions are presented, and their long-term viability for solving the issues are assessed:

- Management Option 1: Baffle/ Catch Boards at primary roost points
- Management Option 2: Sail (small scale baffles) at primary roost points
- Management Option 3: Boxing-in the nave bat access point (southeast corner – internal)
- Management Option 4: Closing up of the nave bat access point (southeast corner – external)
- Management Option 5: Box in chancel eaves including the chimney (south side)

Of the five options, only Option 1 presents an low-cost intervention that will potentially reduce the impact of bats on the church and church community, with a low impact on the architectural interest and a minor to moderate impact on the visual character of the church.

Option 2 is presented as a novel and untested intervention that would be subject to a separate design competition run by the Bats in Churches Project, in which it is hoped that a more generic low-cost and flexible solution to resolving, or at a minimum reducing, the conflict between bats and church communities which could be applied to other churches.

The remaining options may be looked at either individually or in combination but carry higher financial costs with uncertainty that they will deliver the community's desired outcome of entirely removing the bat impact. They do however offer opportunities to reduce the overall impact of bats while maintaining the bats' Favourable Conservation Status.

Acknowledgements

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1. Introduction and Objectives

- 1.1 Bernwood Ecology were instructed by DEFRA on 23rd April 2021 to work with St Mary Magdalene Church, Brampton, PE28 4PF (TL 21486 70715) to prepare a bat management plan including undertaking four bat emergence and re-entry surveys as part of the Bats in Churches project (Appendices 1 & 2).
- 1.2 St Mary Magdalene Church, Brampton is on the edge of the village, adjacent to the B1514 which links Huntingdon with the A1, making this church one of the only suburban churches in the Bats in Churches (BiC) project. The church fabric ranges from the 12th century up until the 20th century, however the building is mostly 15th century.
- 1.3 St Mary Magdalene Church, Brampton, consists of a post-reformation gothic tower where bell ringing continues to take place; the nave; south and north aisles where the congregation gathers for service; the chancel, which is the oldest section of the church; a storeroom; a vestry; south porch; and a boiler room located below ground level. Restoration work has been conducted on every part of the church over time, the most recent being the roof of the vestry, repaired after collapse in 2013.
- 1.4 The BiC project is a unique partnership between Natural England, the Church of England, the Bat Conservation Trust, the Churches Conservation Trust, and Historic England that was created to address the issues of bats (droppings, hygiene, damage to monuments and church fabric etc.) in churches while continuing to protect their roosts.
- 1.5 The project seeks to safeguard the future of protected bat roosts sheltered in England's churches, whilst reducing the negative impact on the fabric of these historic buildings and the people who use them.
 - Church Mission
 - Heritage
 - Historic Fabric
 - Ecology
 - Community
- 1.6 The aims of the emergence and re-entry surveys are to ascertain where bats are using the building for roosting, determine entry/ exit points, and classify the roost(s) through identification of species, numbers, and usage. Building inspections were undertaken prior to each emergence survey to ascertain where bats are using the building for roosting, actual and potential roost entry/ exit points, and the species, roost type and roost size will be estimated if bats, or evidence of bats, is found.

Previous Ecological Surveys

- 1.7 During a Light Touch Survey (LTS) by Bernwood Ecology on 24th August 2017, two bat access points were identified and dense accumulations of bat droppings were found underneath the archway between the tower and the nave, underneath the archway between the nave and the chancel, and on the windowsills behind the altar in the east end of the chancel (Appendix 3).

2. Legal Protection

- 2.1 The finding of this report represents the professional opinion of qualified ecologists and does not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this report.
- 2.2 The following information is a simplified summary of the legislation and the full text of the Wildlife & Countryside Act 1981 (as amended) (WCA 1981), the Conservation of Habitats and Species Regulations 2017 (2017 Regulations) and other legislation together with current published guidelines should be consulted.

European Protected Species

- 2.3 It is understood that 2017 Regulations will be further amended due to the departure of the UK from the EU on 31st January 2020. From that date the provisions in The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 will apply (see <https://www.legislation.gov.uk/uksi/2019/579/contents/made>). Existing protection for habitats and species including standards and assessment procedures will remain as they have been prior to the UK leaving the EU.
- 2.4 The 2017 Regulations and The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 should be read together until further clarification or changes are made available by the UK Government or legal case law.
- 2.5 All European Protected Species (EPS; great crested newts, bats, otter, white clawed crayfish, hazel dormice, etc.) are protected under the 2017 Regulations and the WCA 1981. It is an offence under section 41 of the 2017 Regulations to:
- deliberately capture, injure or kill any wild animal of a EPS;
 - deliberately disturb a EPS (including in particular any disturbance which is likely to impair their ability to survive, breed or reproduce, rear or nurture their young; or to hibernate or migrate; or which affects significantly the local distribution or abundance of the species);
 - deliberately take or destroy the eggs of a EPS;
 - damage or destroy a breeding site or resting place of a EPS; or,
 - possess, control, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal of a EPS, or any part of, or anything derived from a EPS.

- 2.6 Section 9(4) (b) and (c) of the WCA 1981 makes it an offence to:
- intentionally or recklessly disturb a EPS while it is occupying a structure or place which it uses for shelter or protection; or,
 - intentionally or recklessly obstruct access to any structure or place which any EPS uses for shelter or protection.
- 2.7 In order for otherwise illegal acts to proceed lawfully, an appropriate licence must be sought under the 2017 Regulations and WCA 1981. Licences are currently determined by Natural England and must include an appropriate mitigation and monitoring scheme to secure the “favourable conservation status” of the species in the local area.

Wild Birds

- 2.8 Wild birds are protected under the WCA 1981. The basic principle of the Act is that all wild birds, their nests and eggs are protected by law and some rarer species are afforded special protection. Wild birds are defined as those resident in or visitors to Great Britain, in a wild state (does not include poultry or game bird). Section 1(1) of the WCA 1981 states that it is an offence to intentionally or recklessly:
- kill, injure or take any wild bird;
 - take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
 - take or destroy an egg of any wild bird.
- 2.9 Section 1(2) of the WCA 1981 states that it is an offence to possess or control any live or dead wild bird or any part of or anything derived from a wild bird or an egg or part of an egg of a wild bird.
- 2.10 It is an offence under section 1(5) of the WCA 1981 to intentionally or recklessly:
- disturb any wild bird included in schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or,
 - disturb dependent young of such a bird.

3. Survey Methodology

Building Inspections

- 3.1 The objectives of the building inspections are to undertake a daytime inspection of the structure to assess where there are actual or potential bat roosts present by searching for evidence of bat use and assessing the suitability of the structure to support bat roosts. If evidence of bats is found, the assessment searches for evidence to indicate:
- which species are present;
 - an indicative roost size; and,
 - roost access point(s).

- 3.2 The building inspections were carried out by C. Damant (bat survey class licence levels 3 & 4 surveyor: 2015-12601-CLS-CLS/ 2015-12602-CLS-CLS); E. Dickins, MSc. (bat survey class licence levels 3 & 4 surveyor: 2016-27135-CLS-CLS/ 2016-27136-CLS-CLS); and J. Sowden, MSc. (bat survey class licence level 2 surveyor: 2016-24351-CLS-CLS); on 12th May 2021, 22nd June 2021 and 11th August 2021 following the WML-CL32 licence requirements and the Bat Conservation Trust (BCT) Good Practice Guidelines (Collins, 2016). The church was systematically searched internally and externally for evidence indicating the presence of roosting bats (live and dead bats, staining at potential roost entry points, feeding remains, droppings and urine marks).
- 3.3 Equipment available for use during the inspections included ladders, high-powered torches, endoscope, binoculars, and digital camera.

Bat Emergence and Re-entry Surveys

- 3.4 Three dusk bat emergence and one dawn re-entry surveys were undertaken on 12th May, 22-23rd June, and 11th August 2021 (Table 1). The survey was carried out by C. Damant, E. Dickins, J. Sowden, S. Sanchez, MSc., Z. Paraskevopoulou, MBiol., and T. Gearing, MRes., in line with WML-CL32 licence requirements and best practice guidelines (e.g., English Nature, 2004; Natural England, 2015; and Collins, 2016). Surveyors were positioned to cover all potential roost entry/ exit points (internally and externally) to determine bat use.
- 3.5 Surveys were conducted with Anabat Walkabout full spectrum handheld detectors, Echometer Touch 2 Pro full spectrum handheld detectors, and Petterson 240X time expansion handheld detectors recording to Tascam digital audio recorders. The surveys were supported by Petterson D500X remote bat detectors. Details of the remote bat detector settings used are included (Table 2). Night-shot video cameras Canon XA20, Canon XA30 Sony HDR SR5, and SANNCE 4CH 1080N Security Camera System, 1TB HDD+ 10.1" LCD Screen Monitor Built-in, 4X 2.0MP Outdoor CCTV Cameras System (with up to four cameras) paired with infrared lights, in addition to a Pulsar Helion thermal imaging scope and a FLIR Scion OTM266 thermal monocular camera, were used.

Table 1. Bat activity survey details.

Date	Start Time	End Time	Sunset/ Sunrise	Surveyor Initials	Weather Conditions
12/05/2021	20:30	22:15	20:45	ED, JS, SS, CD, TG	14.5°C, dry, 20% cloud cover, no wind
22/06/2021	21:09	22:56	21:26	ED, JS, CD, ZP, TG	15°C, dry, 100% cloud cover, light wind
23/06/2021	02:50	04:47	04:32	ED, JS, CD, ZP, TG	5.5°C, dry, 0% cloud cover, very light wind
11/08/2021	20:18	22:03	20:33	ED, JS, ZP, CD, TG	21°C, dry, 10% cloud cover, light breeze

Table 2. Pettersson D500X settings.

Settings	Standard (User 0)
Sample frequency	500
Pre trigger	Off
Record length	3
High pass filter	Yes
Auto record	Yes
Trigger sense	Very high
Input gain	45
Trigger level	36
Interval	5
Relative timers	
On/Off	-00:30/+00:30
Batteries	4 x AA 1.5v Alkaline

Biosafety and Biosecurity

- 3.6 All fieldwork is undertaken in line with the current government and professional (CIEEM, BCT, IUCN, etc.) COVID-19 guidelines at the time, maintaining physical distancing between surveyors, clients, and members of the public as appropriate.
- 3.7 Hygiene and biosecurity measures set out with Bernwood Ecology's COVID-19 Risk Plan are strictly adhered to, including regular thorough handwashing where possible and, where not, regular use of an appropriate viricidal hand sanitiser.

Data Analysis

- 3.8 All sonograms recorded using handheld bat detectors were analysed and manually verified with BatSound (version 3.3), SonoBat 4 or Kaleidoscope (version 5.4.2) by Bernwood Ecology to confirm identification.
- 3.9 All recordings from remote bat detectors were analysed using BatClassify; an automated call extraction and identification software by University of Leeds (Scott 2014; Scott & Altringham, 2014). The software analyses the recordings and returns a 'probability of occurrence' value (0-1) for each species (barbastelle *Barbastella barbastellus*, alcaholic *Myotis alcaholic*, Bechstein's bat *M. bechsteinii*, whiskered/Brandt's bat *M. mystacinus*/*M. brandtii*, Daubenton's bat *M. daubentonii*, Natterer's bat *M. nattereri*, brown long-eared bat *Plecotus auritus*, lesser *Rhinolophus hipposideros* and greater *Rhinolophus ferrumequinum* horseshoe, common *Pipistrellus pipistrellus* and soprano *P. pygmaeus* pipistrelle and large species of bats termed 'NSL' [noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, Leisler's bat *N. leisleri*]) to be present within a call sequence. The values highest to 1 indicate a higher likelihood of a species present within a call sequence. The presence of other species, including Nathusius's pipistrelle *P. nathusii*, are not considered by the software.
- 3.10 Scott & Altringham (2014) recommend a standard threshold of acceptance of ≥ 0.9 for all species. Bernwood Ecology have undertaken a number of verification exercises of sonograms and compared these to BatClassify, resulting in the following observations:
- Barbastelle results ≥ 0.8 are accurate, but as this is generally an under-recorded species, verification of any records is always undertaken.
 - Results for *Myotis* bats are occasionally above the recommended 0.9 threshold, possibly due to the similarities between call characteristics of bats within this genus. Bernwood Ecology found that *Myotis* sp. calls ≥ 0.5 were reliably emitted by a *Myotis* bat, but identification beyond genus to species was difficult, if not impossible. For this reason, the *Myotis* bats have been grouped and a threshold of ≥ 0.5 applied; however, this may result in the double-counting of *Myotis* and caution is advised when drawing conclusions on the abundance of this genus within a set of recordings.
 - 'NSL', common and soprano pipistrelle results appear to be accurate above ≥ 0.9 .
 - Brown long-eared bats are rarely recorded using remote bat detectors, even where high numbers of brown long-eared bats are known, resulting in an underrepresentation of this species on most sites. Verification of brown long-eared calls > 0.5 are mostly accurate but verification is required.

- Greater and lesser horseshoe bats have not been positively recorded at any sites where Bernwood Ecology has surveyed; therefore, the recommended threshold of ≥ 0.9 has been applied.

Roost Count

- 3.11 Roost emergence and re-entry count data has been entered into the Count Bat roost analysis application, created by the Mammal Society. This is a web-based tool that compares roost count data with a national database, looking at features such as structure type, time of year and breeding allocation, to provide national context regarding the size of roost. This new application has associated constraints, including sample size and survey effort bias, so some factors cannot be accurately assessed (Count Bat, <https://www.mammal.org.uk/countbat/>).

Scientific Consultation

- 3.12 In agreement with Conservation Evidence, Bernwood Ecology, as Evidence Champions, will:
- ensure that, where possible, the mitigation work is designed around a scientifically testable approach, observing the Conservation Evidence approach to critical assessment, study design, analysis and reporting;
 - build into project planning processes and reports a requirement for ecologists to check the Conservation Evidence website for relevant evidence, and describe the findings in the report; and,
 - where possible, publish results reporting on any tests of conservation interventions whether successful or otherwise in agreement with the client in the Conservation Evidence journal and other peer-reviewed journals.

4. Survey Constraints and Limitations

Safe Access

- 4.1 Part or all the site may be considered to be inaccessible following an assessment of risk and therefore the survey may be constrained. Risks that may limit the survey effort include structurally unsafe structure(s) (including roof joists), confined spaces and dangerous egress and ingress points, asbestos, sharps, livestock, and hostilities from members of the public. Details of any access constraints are provided within the results of the report.

Digital Mapping

- 4.2 Every effort is made to ensure mapping accuracy; however, the exact locations of features should not be relied upon.

Mobile Species

- 4.3 Bats are a highly mobile species and move throughout a landscape often using multiple roost sites (depending on the species) between and within the same year. Bats may be found in any suitable roosting cavity or void at any time of the year.

5. Survey Results

Building Inspections

- 5.1 No roof voids are present in the church. The chancel has exposed sarking below slate tiles. The aisles and nave roofs are leaded.
- 5.2 Evidence of bats can be seen across most of the church, with the densest accumulations of bat droppings in the corner of the nave under the truss end, as well as the windowsills, and the chancel, supporting previous findings from the LTS in 2017.
- 5.3 Through the building inspections, a potential emergence point in the eaves in the north eastern corner of the north aisle was identified (Figures 7 and 8).
- 5.4 Bees were observed using a potential bat access point during the 2017 Light Touch Survey where there is a broken cornice on the external south eastern corner of the nave (Figure 9) from June 2021 onwards. Their presence is likely to have effectively prevented its use by bats this year.
- 5.5 A summary plan of the findings of the building inspections is included in Appendix 4.



Figure 1. South eastern corner of the church eaves provide bat access points (red).



Figure 2. South eastern corner of the church, showing the raised roof tiles (yellow), possible Morris lead bat slate (blue) and a possible bat entry point in the cornice (red).



Figure 3. Southern aspect of the church, showing the south aisle, southern porch and the tower.



Figure 4. Eastern aspect of the church, showing the chancel and the eastern aspect of the vestry.



Figure 5. Northern aspect of the church, showing the roost access points in the north vestry and the chancel eaves.



Figure 6. The western aspect of the church, showing tower, and north and south aisles.



Figure 7. Walkway between the north vestry and the store. North vestry eaves provide roost access points (red).



Figure 8. North eastern corner of the church provide roost access points (red).



Figure 9. Cornice gap in the east nave wall.

Bat Emergence and Re-entry Surveys

- 5.6 Survey conditions were suitable for the dusk surveys to be considered valid under the WML-CL32 requirements and the BCT Good Practice Guidelines (Collins, 2016). The temperature of the re-entry survey (23rd June 2021) following the dusk survey (22nd June 2021) dropped to 5.5°C, despite the predicted suitable overnight temperatures. Surveyor positions provided adequate coverage of all aspects of the structure, assisted with high-quality technology (infrared cameras and thermal imaging scopes). The emergence and re-entry surveys were able to determine bat use with a high degree of confidence.
- 5.7 Across the four surveys, three species of bats have been recorded using the church for roosting: soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, and common pipistrelle *P. pipistrellus*. At least eight roosting points internally and externally on the church were recorded, mostly within the chancel (Table 3; Appendix 5). Details of the emergence and re-entry surveys can be found in Table 4, a plan of summarised bat activity in Appendix 6.
- 5.8 The remote bat detectors recorded a total of 207 passes across all surveys, 46 internally and 161 externally. Recorded internally were sixteen brown long-eared bat calls, twelve common pipistrelle calls, nine soprano pipistrelle calls and nine *Myotis* sp. calls. *Myotis* sp. calls were during the third re-entry survey, with eight calls recorded between 02:00 – 02:03 in the morning, and one call at 03:02 from inside the church. It remains possible this represents a single bat. Externally, there were 94 soprano pipistrelle calls, 36 'NSL' calls, 26 common pipistrelle calls, and five brown long-eared bat calls (Table 5). Details of the static detector recordings are in Appendix 7.
- 5.9 Roost emergence data from the first ($n = 35$ soprano pipistrelles), second ($n = 12$ soprano pipistrelles), and fourth ($n = 10$ soprano pipistrelles) emergence surveys inputted to the Mammal Society's Count Bat database indicate that St Mary Magdalene, Brampton is in the first quartile (q1) for soprano pipistrelle roosts listed in

the database, both year-round ($n = 447$ soprano pipistrelle roosts), and pre- and post-breeding periods ($n = 435$ and $n = 199$, respectively). The total soprano pipistrelle emergences during the first ($n = 35$ soprano pipistrelles), second ($n = 12$ soprano pipistrelles), and fourth ($n = 10$ soprano pipistrelles) (emergence) surveys are in the first quartile (q1) range of soprano pipistrelle emergence counts recorded in churches nationwide ($n = 25$) on the database. The full reports generated by the Count Bat tool are included in Appendix 8.

- 5.10 Although nesting birds were not observed, the church does provide nesting opportunities within the roof structure including at the eaves, and in the tower.

Table 3. Roost location and roost access point summary table.



Species	Roost Location	Access Point Locations	Peak Counts	Photo
Soprano pipistrelle	Southern wall of the chancel	Under the eaves on the south eastern corner of the chancel	35 bats on the first survey, twelve bats on the second survey and ten on the fourth survey	
		On the south eastern corner of the western gable	Seven bats on the fourth survey	

Table 3. Continued.



Species	Roost Location	Access Point Locations	Peak Counts/ Evidence	Photo
Soprano pipistrelle	Southwest corner of the chancel/ north eastern corner of south aisle	Under the southern eaves east of the chancel chimney	Four bats on the fourth survey	
		Gaps behind the marble statue in the corner of the south aisle	Droppings present during building inspection	

Table 3. Continued.



Species	Roost Location	Access Point Locations	Peak Counts	Photo
Soprano pipistrelle	Under the southern ridge rooftiles where the chancel meets the nave	Lifted rooftiles	Five and six bats on the second and fourth surveys, respectively	
Mixed species (common and soprano pipistrelle, and brown long-eared)	North vestry	In the eaves	Three common pipistrelles on the second survey, three soprano pipistrelles on the third survey and one brown long-eared bat on the fourth survey	

Table 3. Continued.



Species	Roost Location	Access Point Locations	Peak Counts	Photo
Brown long-eared bat	North western corner of the chancel	Corner between the north aisle and the chancel	Two bats in the fourth survey	
Brown long-eared bat	Western end of the north aisle	Gap in wooden beam	Droppings present during building inspection	
Pipistrelle (possible)	North aisle	The eastern window and the northern elevation of the north aisle	One bat from the first and third surveys	

Table 4. Summary of bat emergence survey results.

Time	Species	Description of activity
<i>Survey 1: 12/05/2021. Sunset: 20:45</i>		
20:53-21:00	Noctule, soprano pipistrelle	Social calls heard from the northern surveyor position. Two soprano pipistrelle passes were observed near the south eastern corner of the chancel.
21:02-21:03	Noctule	Foraging to the north of the tower.
21:05-21:12	Soprano pipistrelle	Foraging passes heard from the northern and western surveyor positions.
21:07-21:23	Soprano pipistrelle	Emergence of 35 bats from the south eastern corner of chancel.
21:10	Soprano pipistrelle	Entry into the chancel near the north aisle and north vestry.
21:10, 21:22	Brown long-eared bat	Pass heard from the northern surveyor position.
21:11	Pipistrelle sp.	Possible emergence from the north aisle.
21:22	Noctule	Pass from the north of the church towards south.
21:24	<i>Myotis</i> bat	Pass heard from the northern surveyor position.
21:24	Noctule	Two bats passed from the west of the chancel to the south.
21:24	Common pipistrelle	Several passes heard from the south eastern surveyor position.
21:30-21:38	Common pipistrelle, soprano pipistrelle	Occasional passes heard from the south eastern surveyor position.
21:43-22:05	Noctule, common pipistrelle	Pass heard from the northern surveyor position.
<hr style="border-top: 1px dashed #000;"/>		
<i>Survey 2: 22/06/2021. Sunset: 21:26</i>		
20:58	Unknown	Bat seen flying inside the south aisle- no echolocation.
21:22-21:43	Soprano pipistrelle	Chattering and social calling heard from inside the chancel.
21:36- 22:05	Common pipistrelle	Bats seen passing north of the church, both alongside and in and out of the treeline north of the church.

Table 4. Continued.

Time	Species	Description of activity
21:38-21:55	Soprano pipistrelle	Emergence of twelve bats from the south eastern corner of the chancel (exterior).
21:40	Soprano pipistrelle	Emergence of two bats from the southern side of the north aisle (exterior).
21:43-21:57, 22:15	Common pipistrelle	Call heard from within the church and seen flying up and down the nave.
21:44	Common pipistrelle	Possible emergence - bats seen flying between rafters in the south easternmost corner of the chancel.
22:06	Noctule	Pass heard from the northern surveyor position.
22:06	Common pipistrelle	Entry by three bats into the north vestry from the roof on the north westernmost corner of the north vestry.
22:10, 22:19	Common pipistrelle	Bats seen passing north of the church, both alongside and in and out of the treeline.
22:17	Brown long-eared bat	Seen around the north western corner of the north aisle (interior).
22:19, 22:28	Brown long-eared bat	Several passes heard from inside the church north west of the north aisle and the nave.
22:20	Soprano pipistrelle	Emergence of five bats from tiles below ridge of the chancel southern elevation.
<hr style="border-top: 1px dashed black;"/>		
<i>Survey 3: 23/06/2021. Sunrise: 04:32</i>		
03:00	Brown long-eared bat	Social calls heard from inside church.
03:02	<i>Myotis</i> bat	Call heard from surveyor position inside the church.
03:04	Possible <i>Myotis</i> bat	A couple of brief passes heard from inside the church.
03:46	Common pipistrelle	Possible emergence from the chancel above the north vestry.
04:01, 04:08	Common pipistrelle	Bat seen passing to the south-east of the church between the southern treeline and the eastern side of the chancel.

Table 4. Continued.

Time	Species	Description of activity
<i>Survey 4: 11/08/2021. Sunset: 20:33</i>		
20:45	Pipistrelle sp.	Emergence from the eaves of north vestry.
20:49-21:06	Soprano pipistrelle	Emergence of two bats from the corner between the south aisle and chancel and of four bats from east of the chimney on the southern aspect of the chancel.
20:50	Soprano pipistrelle	Possible emergence from the eastern window of the south aisle.
20:51-20:56	Soprano pipistrelle	Emergence of three bats from the eaves of the north vestry.
20:54, 21:06	Unknown	Emergence from the western side of the south aisle and re-entry through the same point.
20:54-21:53	Soprano pipistrelle	Emergence of seven bats from where the southern elevation meets the chancel's western gable and emergence of six bats from roof tiles on the southern pitch of the chancel.
20:57- 20:58, 21:10	Soprano pipistrelle, noctule	Occasional passes heard and seen to the north of the church.
20:58	Unknown	Emergence of a non-echolocating bat from the west side of the south aisle and the re-entry through the same point.
20:47-21:55	Common pipistrelle, soprano pipistrelle	Foraging, passing and social calls heard within the church and from both the southern and northern external survey positions.
21:03	Soprano pipistrelle	Emergence seen from the south eastern corner of the chancel.
21:05-21:40	Soprano pipistrelle	Emergence of ten bats from eaves between rafter of south eastern corner of chancel.
21:07, 21:23, 21:30	Brown long-eared bat	Emergence of two bats from the top corner between the north aisle and chancel and of one bat where the vestry meets the chancel.
21:08	Unknown	Entry by two bats out of the church next to first rafter from western gable in chancel.
21:10, 21:57	<i>Myotis</i> bat	Flew up chancel towards eastern gable and call heard from the northern surveyor position.
21:13	Soprano pipistrelle	Emergence from the eaves at the corner between chancel and north aisle.
21:14-21:53	Brown long-eared bat	Social calls and passes heard from bats in the nave, seen flying towards the tower and heard from the northern surveyor position.

Table 5. Summary of remote bat detecting results by species, genus, or group.

Species	Summary
Barbastelle	There were no recordings.
<i>Myotis</i> species	There were nine confirmed recordings in total, seven from the middle of the nave and two from inside the easternmost point of the chancel during the third survey.
'NSL' group	There were 36 recordings in total, all from exterior positions in the first survey. The majority of these calls were made from the north east of the north aisle.
Brown long-eared bat	There were 21 recordings made, 16 of which were recorded in the middle of the nave on the second and third surveys. The other five recordings were made around the exterior of the church.
Common pipistrelle	There were 38 recordings, 23 made on the first survey (twelve of these south of the tower).
Soprano pipistrelle	This was the most frequently recorded species, with 103 overall recordings. Most of these were recorded externally on the first night, with 39 calls recorded south of the church and 30 calls recorded south of the tower.

6. Statement of Significance

Architectural and Historical

- 6.1 St. Mary Magdalene plays an important role in the community of Brampton and has significant historical, cultural, social and ecological value. The church hosts services as well as secular events such as concerts and dramatic re-enactments.
- 6.2 The church is a Grade 1 listed building. A church is recorded in the Domesday Survey at Brampton; however, the oldest parts of St. Mary Magdalene church (chancel and part of the eastern vestry wall) date from the late 13th century, with some 12th century chevron-ornaments present on the tower walls. The original chancel, nave, aisles, and porches date from c.1440, and the tower (which probably replaced a 14th century structure) dates from 1635. The Royal Commission on the Historical Monuments of England (RCHM) considers the church to be of some architectural interest, notably the tower. The entire church was subject to a major restoration in 1877/78 and was extensively repaired in 1994 following a fire.
- 6.3 The interior of the church contains a range of historically and culturally important features spanning from the 14th century to the modern era. The chancel contains a five-light Jesse East stained glass window with blind arcades on the north and south

walls, with a further three stained glass windows in the south wall and one in the north wall. The chancel roof was restored after a fire in 1735. A 14th century piscena and oak stall are located at the eastern end of the south wall. The floor of the chancel contains white and grey marble crosses following the design of the sanctuary at Ypres Cathedral to reflect the WW1 memorial. The rood screen underneath the chancel arch dates from c.1370, and it is the only complete specimen of its design in Huntingdonshire, with the arcading and misericords being noteworthy. The curtain behind the 1916 altar was part of the hangings for the coronation of Queen Elizabeth II in 1953.

- 6.4 The nave dates from c.1440 and has an arcade of five bays on each side and a 15th century roof. A modern crucifix of Swedish design was installed in 1947. The current pews are modern, as well as the nave altar, prayer desks and lectern.
- 6.5 The north and south aisles date from the early 15th century. There are three stained glass windows on the north aisle (the central window is a WW1 war memorial) and three stained glass windows on the south aisle. The three-manual organ was installed in 1885. The bowl of the south aisle font dates from c.1400 and has a more modern covering. The Lady Chapel in the south aisle, installed as a memorial to the 9th Earl of Sandwich's mother, is enclosed by an oak screen depicting shields of the Montagu family, who have a long-standing connection to the church and local area. The altar within the Lady Chapel has a noteworthy 17th century Italian Renaissance painted wood panel. There is also a fine example of a statue memorial by William Kidwell in the south eastern corner dated to c.1690.
- 6.6 The current tower dates from 1635 and replaced the original built in the 14th century; the doorway is thought to be from the original construction. A memorial to Samuel Pepys, who had associations with Brampton, is present at the tower base. The bells within the tower date from the 16th, 18th, and 20th centuries. The south porch and vestry have been rebuilt and repaired several times and are now mostly modern.

Bats

- 6.7 All bat species, their breeding sites and resting places are fully protected by law as European Protected Species. Bat numbers are dramatically declining, attributed to the long-term loss of roosts through damage, destruction and/or disturbance, together with the loss of foraging habitat through landscape change. Indirect impacts from habitat fragmentation, loss of connectivity (flight lines) and increases in artificial lighting are also understood to be contributing factors.
- 6.8 A total of four bat species have been recorded using the interior and exterior of the church, including roosting soprano pipistrelle (peak count 35), roosting common

pipistrelle (peak count three), roosting brown long-eared bat (peak count three) and a probable single Natterer's bat (not seen but briefly recorded with remote bat detectors).

6.9 The general conservation status of the church for bats, based on the analysis of the 2021 survey data, the use of the Mammal Society's Count Bat database and *A review of the population and conservation status of British mammals* (Matthews, 2018) is:

- Soprano pipistrelle – peak count of 35: probable maternity roost of lower conservation significance. IUCN Least Concern. The Mammal Society's Count Bat report would suggest, based on the 2021 survey results, that the soprano pipistrelle roost at Brampton is of lower conservation status when compared to the available national data, both temporally and by structure type.
- Common pipistrelle – peak count of three: likely day roosting with occasional single bat recorded inside church; of lower conservation significance. IUCN Least Concern.
- Brown long-eared bat – peak count of two: likely day roosting with a single bat recorded inside the church; of lower conservation significance. IUCN Least Concern.
- Natterer's bat – a small number of recordings possibly indicating a single bat recorded inside church on one occasion; of lower conservation significance. Unlikely to be roosting. IUCN Least Concern.

7. Outline Proposals

Methodology

- 7.1 The intervention development through the presentation of proportional options is based on impact level and associated costs. Church communities can consider the merit of each option on its own or in combination with another. To assist with this approach, an assessment matrix is generated for each proposed option, where each option is categorised and the impact on individual receptors is assessed (Table 6). Additional assessment tables may be required should more than one option be brought forward, allowing a cumulative assessment of interventions.
- 7.2 For all interventions, consideration was given to addressing the need, its likelihood of success against cost (capital and maintenance) and viability (longevity of success). Interventions are broadly categorised in terms of anticipated costs (Appendix 9) together with impacts on the receptors, i.e., ecological (bat), historical, architectural, social and visual:
- Low Impact intervention
 - Where costs are anticipated to be <£5,000 and result in low or negligible impacts for all receptors.

- Examples may include the use of covers, voiles, off-the-peg bat boxes, or a small number of baffles/catch-boards, where impacts on bat roost can be avoided. Timing of installation must avoid impacts at sensitive times when bats are likely to be present, i.e., peak maternity and hibernation periods.
- Survey requirements: likely to need Light Touch Surveys only as no European Protected Species licence requirements (no impacts on bats or roosts) and no post-intervention monitoring are anticipated. Though, consideration may need to be given to surveys being undertaken through volunteer engagement i.e., local bat groups.

- Moderate Impact Intervention
 - Where costs are anticipated to be between £5,000 - £20,000 and result in moderate impacts on one or more receptors.
 - Low impact interventions affecting common species of bats and/ or their roosts of low conservation significance. European Protected Species licences may be required supported by detailed surveys and post intervention monitoring surveys.
 - Examples of interventions include more complex baffles/ catch boards, small-scale bespoke boxing-in of eaves, heated bat boxes, enhancement of towers or similar.
 - Small scale scaffolding/ scaffold towers may be required.
 - Faculty consents likely to be required.
 - Subject to separate design development, the use of small-scale sails may be included in this category.

- High Impact Interventions
 - Where costs are anticipated >£20,000 and result in high impacts on one or more receptors.
 - Complex sites and structures where detailed bespoke design is required.
 - Where working at height requires complex scaffolding.
 - High-cost mitigation e.g., two or more boxed-in eaves, bespoke heated bat boxes, false/ new ceilings, broad use of sails etc.
 - Faculty consents will be required together with European Protected Species licensing for moderate or high conservation significant roosts, as well as three or more years' post-intervention monitoring.

7.3 Where more than one bat species is present, each species is assessed separately due to their individual requirements, as interventions for one species may conflict with another. The requirements for a crevice-dwelling species, e.g., soprano pipistrelle, can

be very different to those for species that prefer larger open spaces, e.g., brown long-eared bat.

Cost Evaluation

- 7.4 To aid the church community's decision-making process and assist with future plans for taking forward potential solutions to resolve issues related to bats and churches, estimated costs, based on the BiC expenditure summaries are provided (Appendix 10).
- 7.5 Options are considered and first presented in isolation to each other and later combined (for example purposes) to give an indication of multiple option costs.
- 7.6 Please note that over the period of the initial phases of the BiC Project, several issues have been identified including:
- Brexit and/ or the COVID-19 pandemic, resulting in increased costs and limited material and labour availability.
 - In the unique and frequently experimental approach to delivering solutions under the project, some solutions are untested and may need additional follow-up work to secure positive results.
 - Existing bat surveys have a short period of validity before they need updating or repeating.
 - The condition of the churches varies, additional architectural work may be required.

Intervention Options

- 7.7 Five intervention options have been considered and put forward to the church community including the church architect for consideration and discussion. Full details of each option are included in Appendices 11 – 15.
- Option 1: Baffles/ Catch boards at primary roosting locations*
- 7.8 This intervention aims to collect bat droppings at concentration points and reduce unsightly accumulations. The use of cat litter would reduce the dampness and smell in these areas, and ongoing maintenance would require monthly cleaning during the peak summer activity period when bat droppings are at their worst.
- 7.9 This low-cost intervention is expected to have moderate visual and historical impacts, and no ecological impacts.
- 7.10 The effectiveness of this option is limited as it is reliant on bats continuing to use specific locations to roost. Furthermore, it will not reduce the spread of general faecal matter in other areas of the church including urine staining. Where the population of

bats remains small, this may be acceptable; but should numbers or diversity of bats increase, this option may have limited success.

Option 2: Sails (small-scale baffles) at primary roosting locations

7.11 This intervention aims to collect bat droppings at concentration points and reduce unsightly accumulations similar to Option 1, but over larger areas. Ongoing maintenance would require monthly cleaning during the peak summer activity period when bat droppings are at their worst.

7.12 The cost of this option remains unknown and subject to a separate design competition run by the BiC Project that allows for the development of a generic approach to separating the impacts of bats (faeces and urine) from historical monuments and people. It is likely to be a moderate-cost intervention, with moderate visual and historical impacts and low ecological impact.

7.13 While the costs of the scheme are not known it is anticipated that this may become a generic lower-cost option for some churches and be fairly effective. It will not reduce the spread of general faecal matter and urine from bats flying around the main body of the church. Where the population of bats remains small, this may be acceptable; but should numbers or diversity of bats increase, this option may have limited success.

Option 3: Bat box in the nave with external bat access only (south eastern corner, internal)

7.14 This intervention would allow bats to continue to use the existing bat access point (a gap in the masonry) to access a controlled, sealed roosting point that prevents bat from accessing the internal area of the church.

7.15 This is a high-cost intervention with the potential for the discovery of complex structural issues and with a risk of uncovering issues with timber and masonry.

7.16 It is anticipated to be highly likely to address the impact of bats at this roost access point. On its own, it will not address the issue of bats using the rest of the church, as additional bat access points are being used. This option may be used in conjunction with Option 5.

Option 4: Close up nave bat access point (south eastern corner, external)

7.17 This intervention would restrict bat access into the internal areas of the church.

7.18 This is a moderate-cost intervention with the potential for the discovery of complex structural issues and with a risk of uncovering issues with masonry.

7.19 It is anticipated to be highly likely to address the impact of bats at this roost point. On its own, it will not address the issue of bats using the church, as additional bat access points are being used. This option would need to be used in conjunction with Option 5.

Option 5: Bat box in the chancel eaves including the chimney (southern aspect)

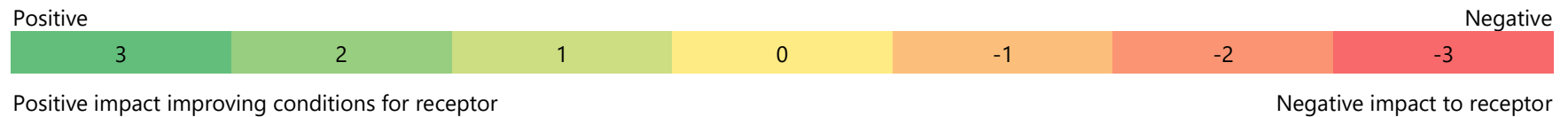
7.20 This intervention would allow bats to continue to use the existing bat access point (the south eastern corner and chimney area) to access a controlled, sealed roosting point that prevents bats from accessing the internal areas of the church.

7.21 This is a high-cost intervention with the potential for the discovery of complex structural issues and with a risk of uncovering issues with masonry.

7.22 It is anticipated to be highly likely to address the impact of bats at this roost point. On its own, it will not address the issue of bats using the church, as additional bat access points are being used. This option would need to be used in conjunction with Option 4 and may be used in conjunction with Option 3.

Table 6. Impact assessment matrix.

General Assessment Guide



Option 1: Baffle/ Catch boards at primary roost points

Receptor	Bat Populations	Heritage Assets	Architectural	Social	Visual
Intervention Scale					
Low Impact Intervention	0	0	0	1	-1
Moderate Impact Intervention					
High Impact Intervention					

Option 2: Sail (small scale baffles) at primary roost points

Receptor	Bat Populations	Heritage Assets	Architectural	Social	Visual
Intervention Scale					
Low Impact Intervention					
Moderate Impact Intervention	0	0	0	1	-2
High Impact Intervention					

Option 3: Box in Nave bat access (south east corner internal)

Receptor	Bat Populations	Heritage Assets	Architectural	Social	Visual
Intervention Scale					
Low Impact Intervention					
Moderate Impact Intervention	-1	-1	-1	3	0
High Impact Intervention					

Option 4: Block nave bat access (south east corner internal)

Receptor	Bat Populations	Heritage Assets	Architectural	Social	Visual
Intervention Scale					
Low Impact Intervention					
Moderate Impact Intervention	-3	0	0	3	0
High Impact Intervention					

Option 5: Box in Chancel Eaves including chimney

Receptor	Bat Populations	Heritage Assets	Architectural	Social	Visual
Intervention Scale					
Low Impact Intervention					
Moderate Impact Intervention	-1	-1	-1	3	0
High Impact Intervention					

8. Consultation Methodology

- 8.1 The St Mary Magdalene Church's Parochial Church Council (PCC) members and appointed architect have been consulted throughout the 2021 survey period, from the initial inception meeting on 13th April 2021, to a presentation of summary results and initial concept for interventions at an online meeting on 26th August 2021.

9. Consultation Constraints and Limitations

- 9.1 The current COVID-19 pandemic has limited conventional onsite face-to-face meetings which would otherwise involve a more personal interaction of ideas and the iterative collaborative process.

10. Consultation Results

Church Architect

- 10.1 The architect's response to the initial concept identified the following points:

On sails (Option 2) versus catch boards (Option 1)

- Sails may have greater visual impact than conventional baffle boards.
- Colour-matching options chosen can potentially reduce visual impacts.
- Catch boards can be more readily designed to close-fit surfaces and reduce the impacts of droppings.
- Further consideration needs to be given to ongoing management and maintenance.
- The Diocesan Advisory Committee (DAC) will be concerned about visual impacts as well as the impacts of fixtures and fittings on the building.

On a bat box in chancel eaves (Option 5)

- Visual impacts may be mitigated by careful design; however, changes in lead may result in a visual change.
- The removal of slate tiles may reduce the longevity of the slates.
- The bat box would need appropriate ventilation to avoid any impacts of condensation and moisture on timber.
- Exploration of the possibility of external bat boxes discreetly added to the structure.

11. Advice

- 11.1 The ecological mitigation hierarchy must be followed by all elements of the project, from design, to construction, to end use, to ensure there is a net gain to biodiversity on site and the Favourable Conservation Status (FCS) of protected species is maintained. The mitigation hierarchy follows:

- *Avoid*: avoid impacts as a priority.
 - *Minimise*: Minimise impacts that cannot be completely avoided, through alternations to design, use, scale, location, timing of phases, etc.
 - *Mitigate and compensate*: Undertake works which will have an impact by implementing safeguarding measures, such as using an Ecological Clerk of Works (ECoW) where there are risks to bats. Provide compensation to replace habitats that have been lost as a consequence of proposals.
 - *Enhance*: Provide additional habitats and features for bats to ensure biodiversity net gain.
- 11.2 The selection of appropriate intervention options will need to be considered both individually and in combination, where appropriate, to ensure that the FCS of individual species of bats can be met, including their Continued Ecological Functionality (CEF).
- 11.3 When considering the ecological mitigation hierarchy, consideration must be given to addressing the need for any intervention (Imperative Reasons of Overriding Public Interest and No Satisfactory Alternative), its likelihood of success against the costs, and its viability. Through this approach, alternative options for interventions will be considered and used to justify any proposals to church community, statutory authorities and external consultees that may be required throughout the process of securing support and consents.
- 11.4 Where possible, any interventions that address the needs of and avoid impacts on bats and their roosts should be favoured, particularly where they can reduce the burden of European Protected Species licensing and associated costs including further surveys, complex mitigation strategies, compensation and post-intervention monitoring surveys.
- 11.5 Where a European Protected Species licence is required, authorised actions must not be detrimental to the maintenance of the FCS in the natural range of populations of the species concerned. Post-intervention monitoring will be required to ensure that the FCS has been maintained; if it has not, remedial action will be required.

12. Conclusion

- 12.1 The surveys conducted at St Mary Magdalene, Brampton, have identified three bat species roosting at the church.
- 12.2 The following species of bats have been confirmed using the church, all of lower conservation significance:
- Soprano pipistrelle – peak count of 35: probable maternity roost.

- Common pipistrelle – peak count of three bats: likely day roosting.
- Brown long-eared bat – peak count of two: likely day roosting.
- Natterer’s bat – Unlikely to be roosting.

12.3 The five intervention options based on low, moderate, and high impact (cost) interventions are presented. These represent a range of ideas developed in consultation with PCC Members and the church architect. The decision to implement one, or a combination of, will require careful consideration of the ecological, financial, architectural, and visual impacts.

- 12.4 Any intervention is likely to require refinement in order to:
- assess and develop a detailed design;
 - understand the physical character and constraints of the building, and its architectural and historical fabric;
 - take account changes in species present and roost status; and,
 - ensure its effectiveness and the maintenance of FCS of roosting bats.

Age of the Survey Data

12.5 Bats are highly mobile species and can change their roosting behaviour between and within years. Surveys are only valid for short periods of time and will need updating in future years if interventions – are brought forward to implementation stage.

13. References and Further Reading

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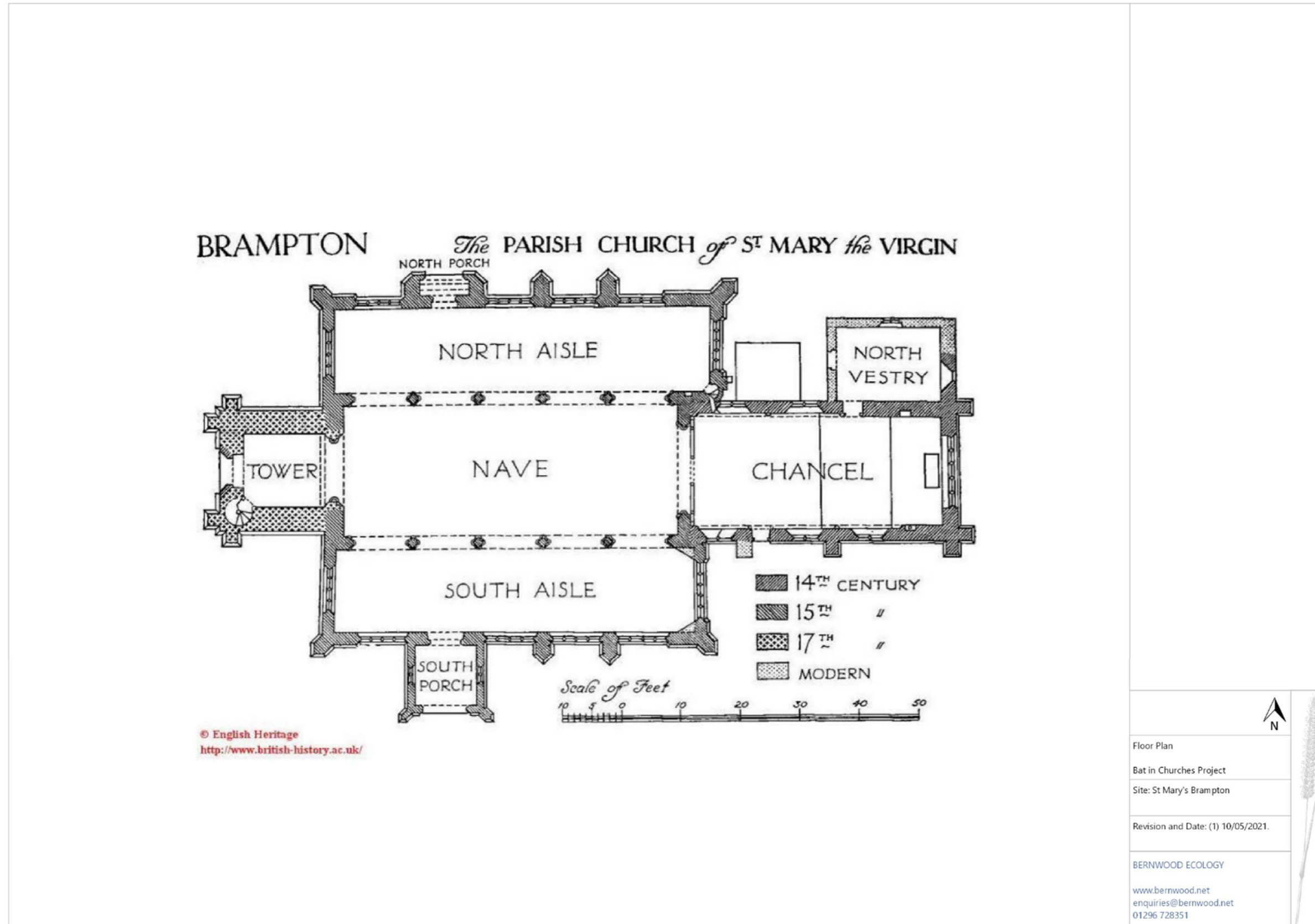
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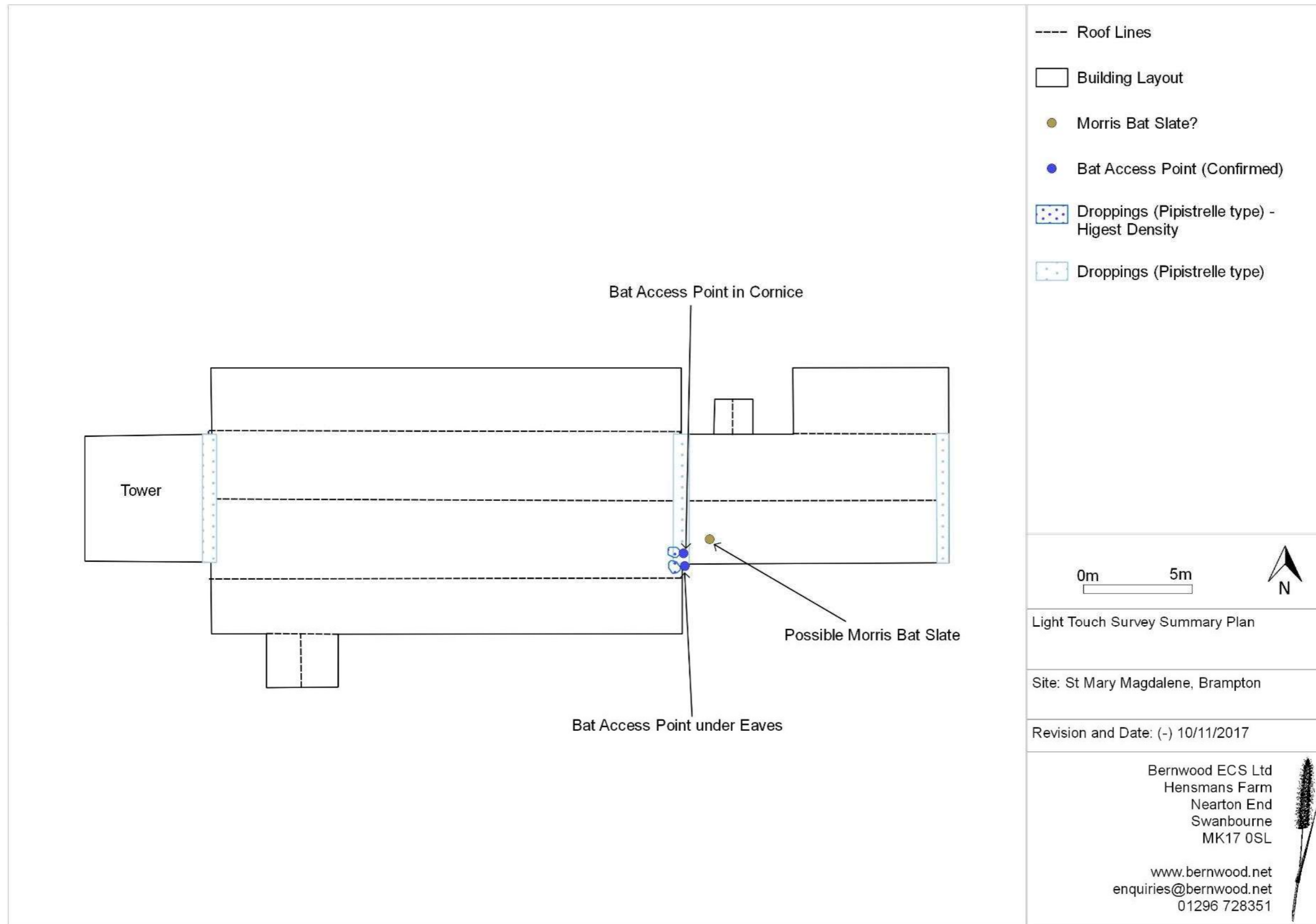
Appendix 1. Site location in relation to existing landscape.



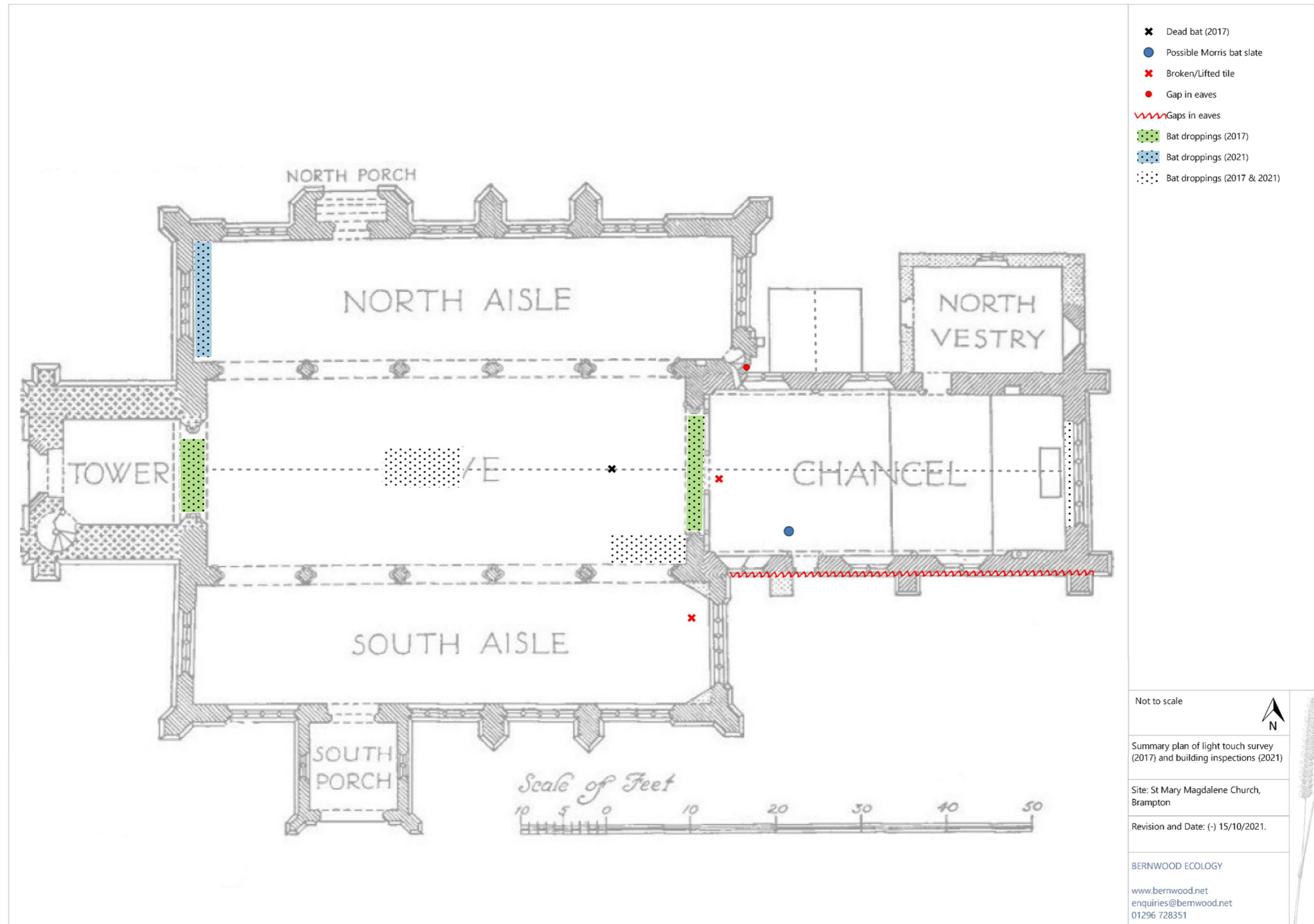
Appendix 2. Existing site layout.



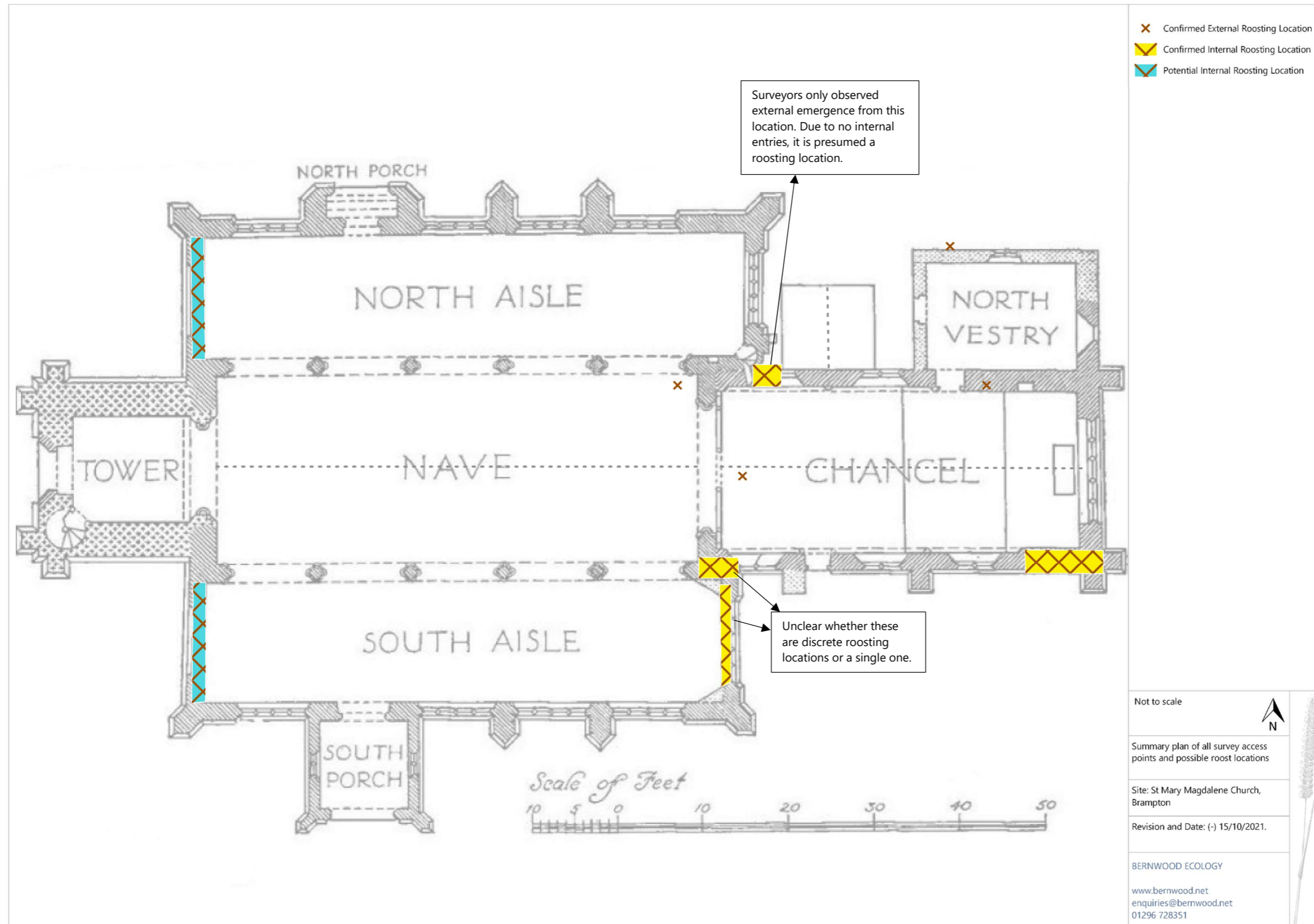
Appendix 3. Light Touch Survey summary plan (2017).



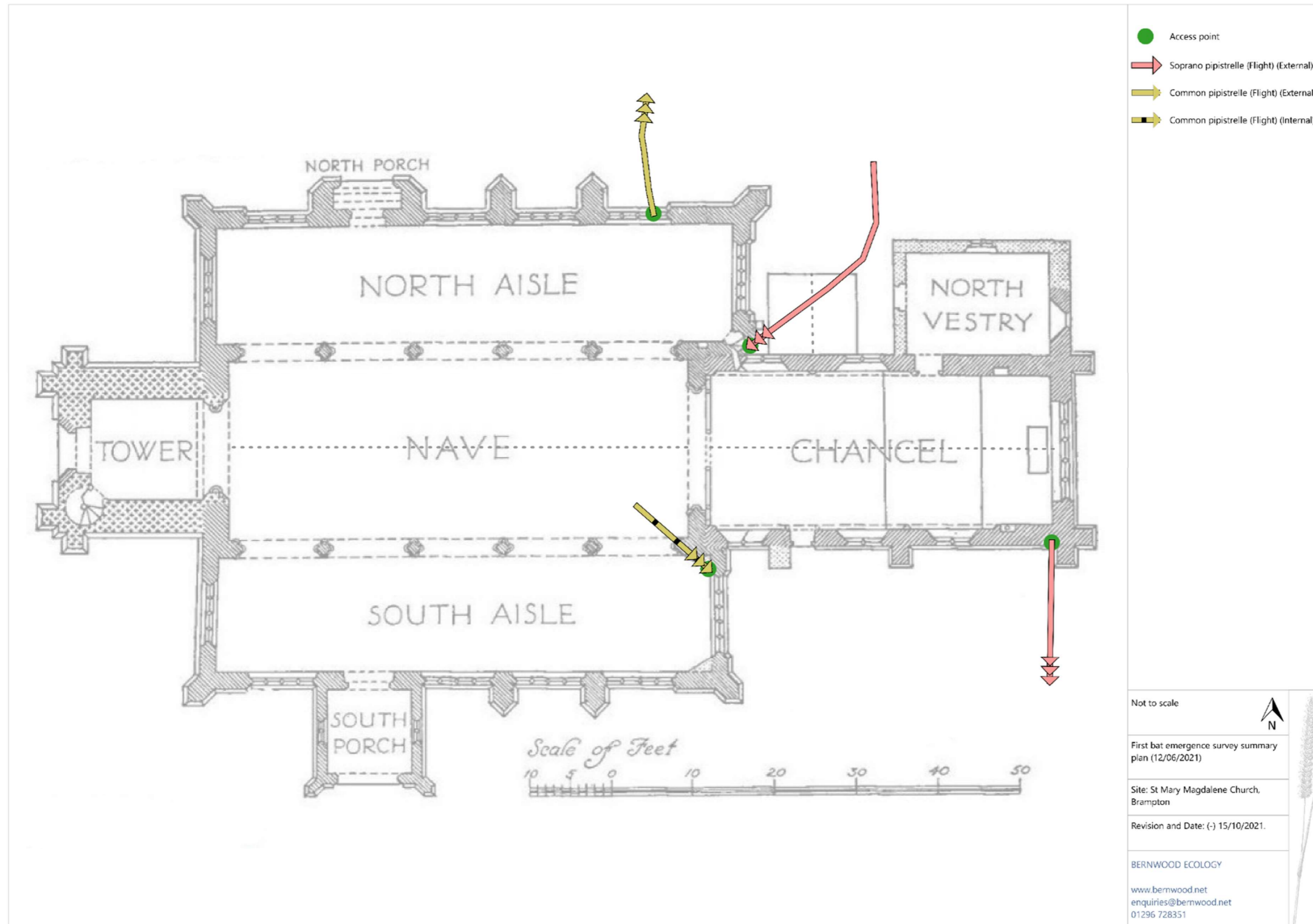
Appendix 4. Combined summary plan of Light Touch Survey (2017) and building inspections (2021).

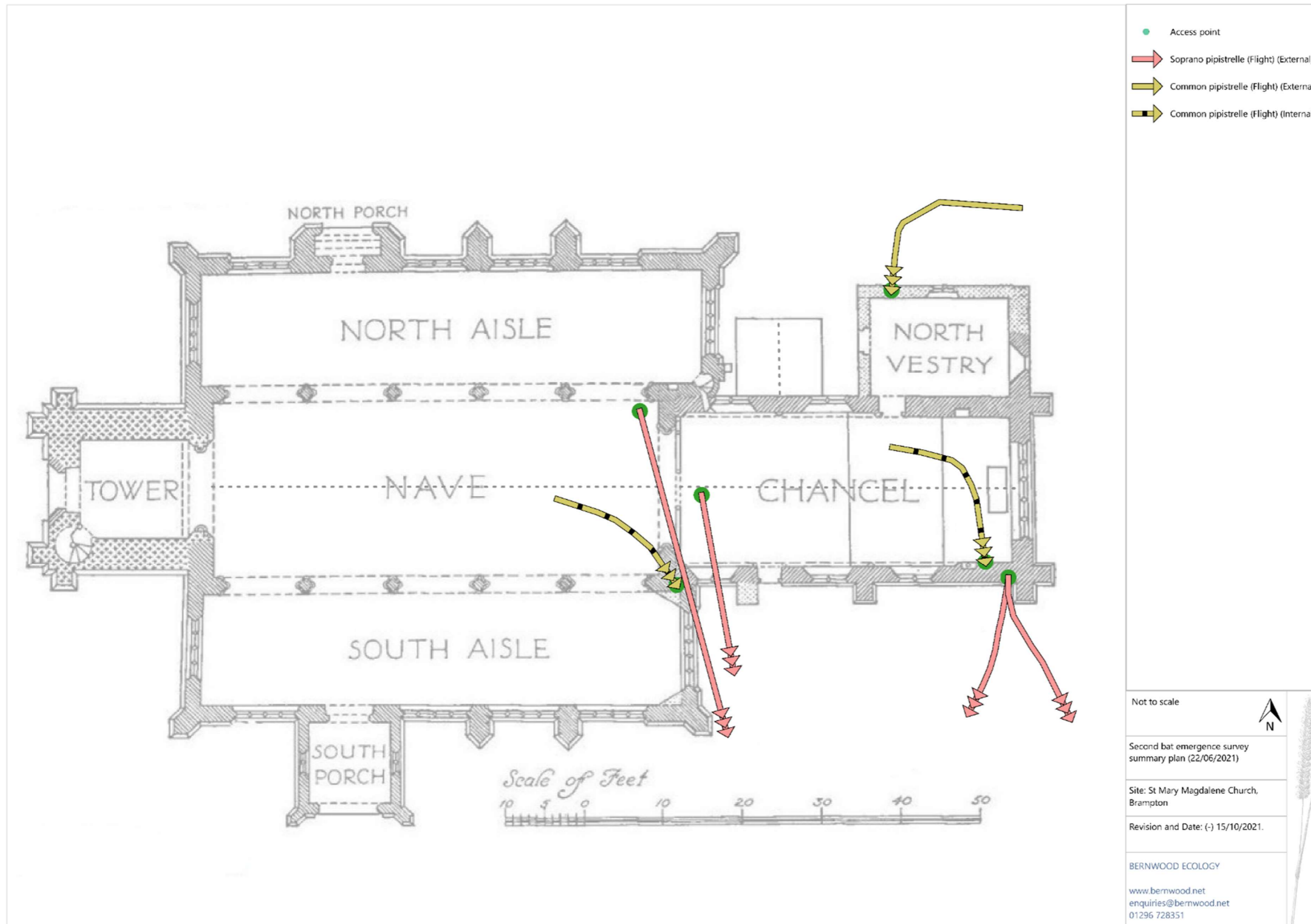


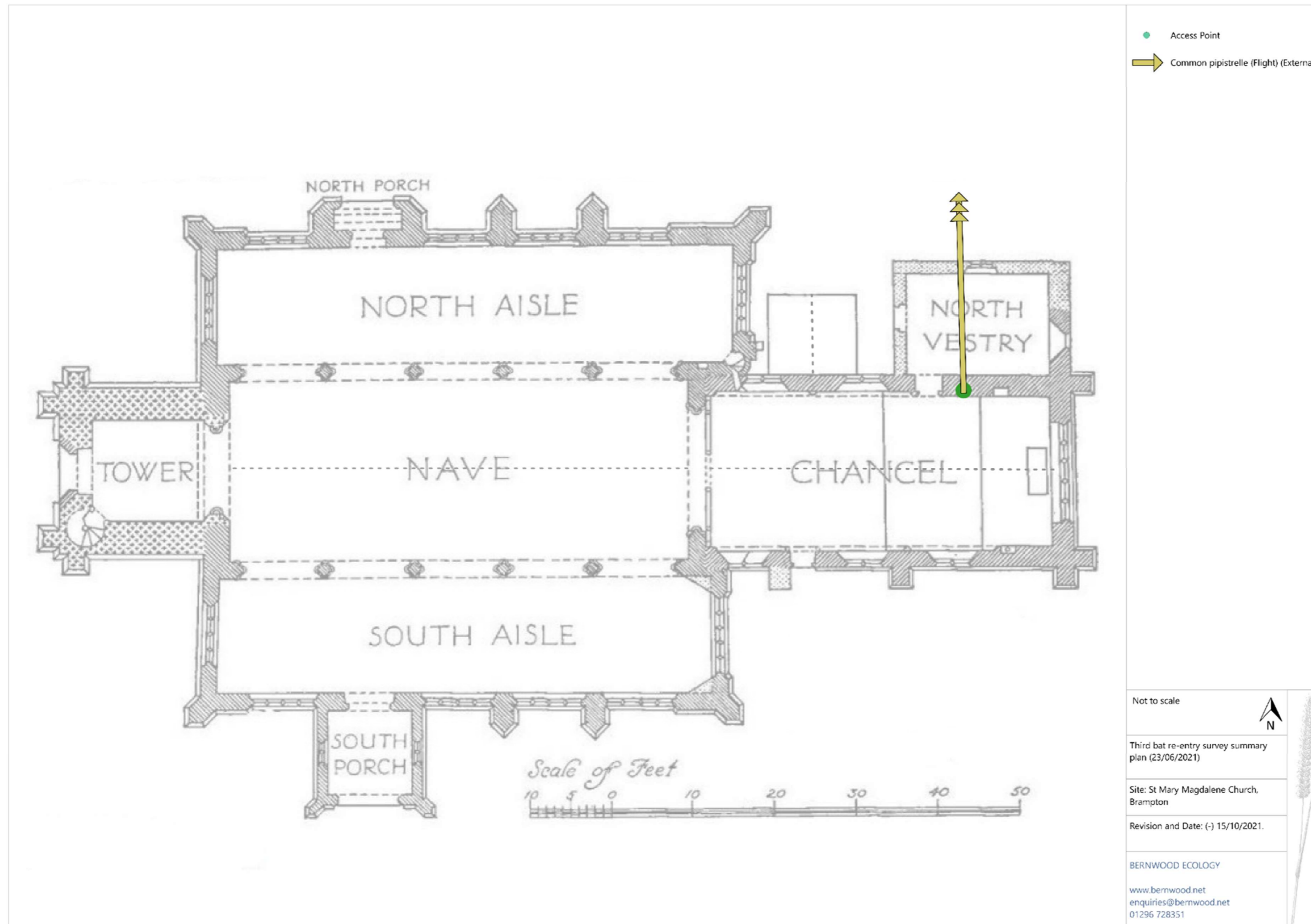
Appendix 5. Summary of roosting locations observed in 2021.

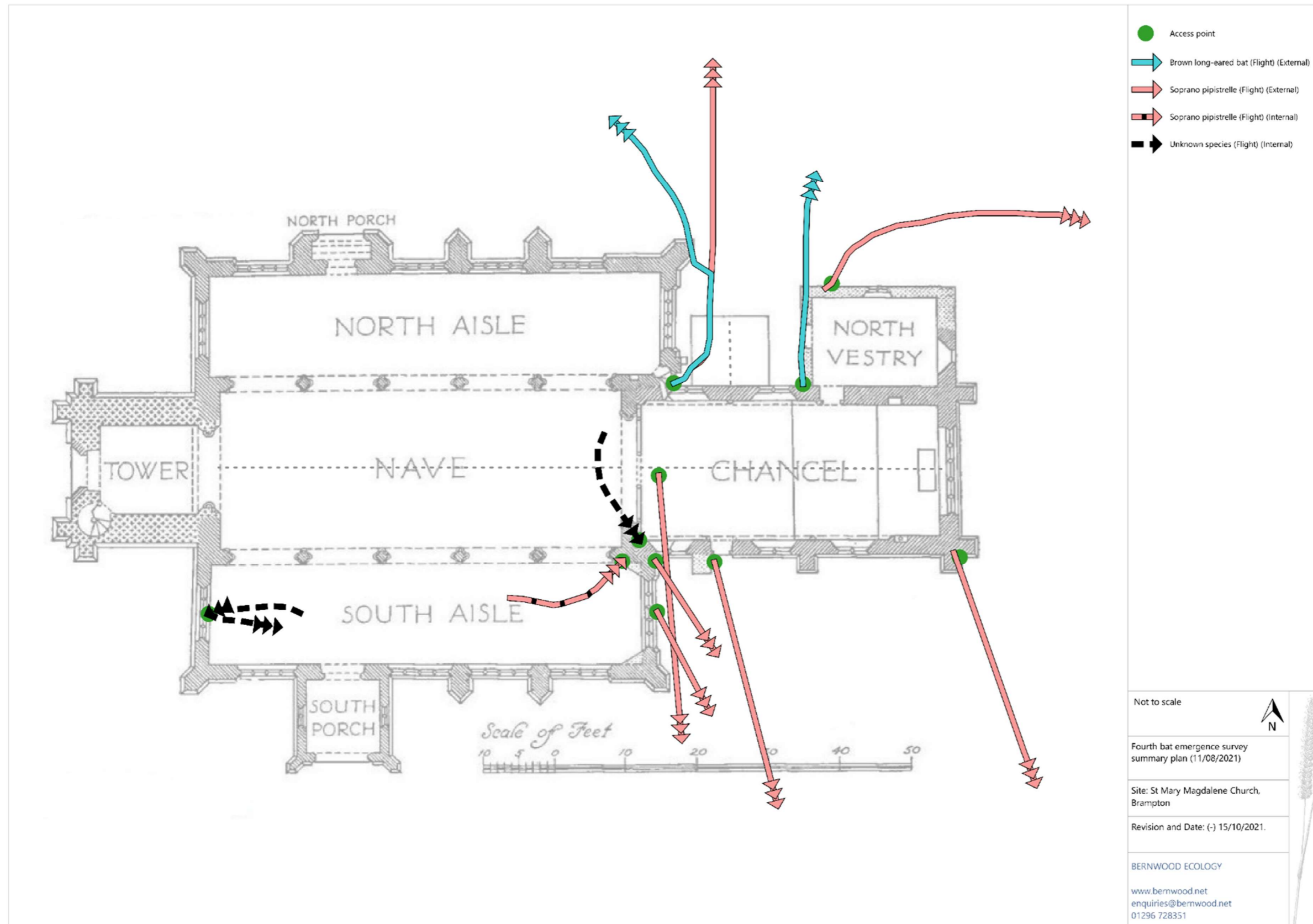


Appendix 6. Bat emergence and re-entry survey summary plans.









Appendix 7. Summary of remote bat detector recordings.

The quantity of recordings does not necessarily indicate levels of bat activity, as other noises may also be recorded. Most calls (barbastelle, *Myotis* sp., 'NSL' and long-eared bat) verified for accuracy.

Location	ID	Recording period	No. of recordings	Detection probability	Barbastelle	<i>Myotis</i> sp.	'NSL'	Long-eared bat	Common pipistrelle	Soprano pipistrelle
					>0.8	>0.5	>0.9	>0.5	>0.9	>0.9
Between south aisle and chancel (exterior)	D500X 888	12/05/2021 20:06-12/05/2021 22:11	97	No. of calls	0	0	8	2	6	39
North eastern corner of north aisle (exterior)	D500X 894	12/05/2021 20:35-12/05/2021 22:24	79	No. of calls	0	0	16	2	2	19
South of the tower (exterior)	D500X 1025	12/05/2021 20:32-12/05/2021 22:20	107	No. of calls	0	1 ¹	8	0	12	30
West of the north porch (exterior)	D500X 895	12/05/2021 20:31-12/05/2021 22:24	48	No. of calls	0	0	4	1	3	4
Easternmost point of the chancel (interior)	D500X 888	22/06/2021 20:30-23/06/2021 04:34	45	No. of calls	0	3 ¹	0	0	2	1
Middle of nave (interior)	D500X 894	22/06/2021 20:30-23/05/21 04:33	85	No. of calls	0	7	0	16 ³	9	4
North eastern corner of north aisle (exterior)	D500X 895	22/06/2021 Metadata Failure 23/06/2021 02:58-23/06/2021 04:44	33	No. of calls	0	0	0	0	0	0
North of the chancel (exterior)	D500X 888	11/08/2021 20:02-11/08/2021 22:06	61	No. of calls	0	0	1 ¹	0	3	2
Eastern side of chancel (interior)	D500X 894	11/08/2021 20:06-11/08/2021 22:12	75	No. of calls	0	0	2 ²	0	1	4

¹ One call confirmed as noise

² Both calls confirmed as noise

Appendix 8. Count Bat roost analysis reports comparing observed roost count size to national database.

Survey 1:

Count Bat

Site Name: St Mary Magdalene Church

Author: Chris Damant

2021-09-30 13:06:25

Your save selection for this data was: This is a new record, please save to database

Summary

A total count of **35 *Pipistrellus pygmaeus*** were found at a **Church** roost on **12/05/2021** in **Cambridgeshire, England East & North East, England**

Section 1: Roost Count Data

This section uses the roost count of each *Pipistrellus pygmaeus* record in the database. If the same location was recorded more than once, the highest total count for each year was taken and then the median across those years was used. This is the same for the subsets of breeding and structure type data.

The subset takes into account the breeding times:

- If you selected "Prebreeding" in the Assignment column, your data will be compared to counts from May and June
- If you selected "Postbreeding" in the Assignment column, your data will be compared to counts from July and August.

Boxplots are used to visualise data. For all boxplots in the report:

- The lower box line is the lower quartile, the bottom 25% of data lie below this line
- The top line of the box is the upper quartile, the top 25% of data lie above this line
- The median is the horizontal black line within the box
- Black dots are outliers
- The red dot shows your roost count

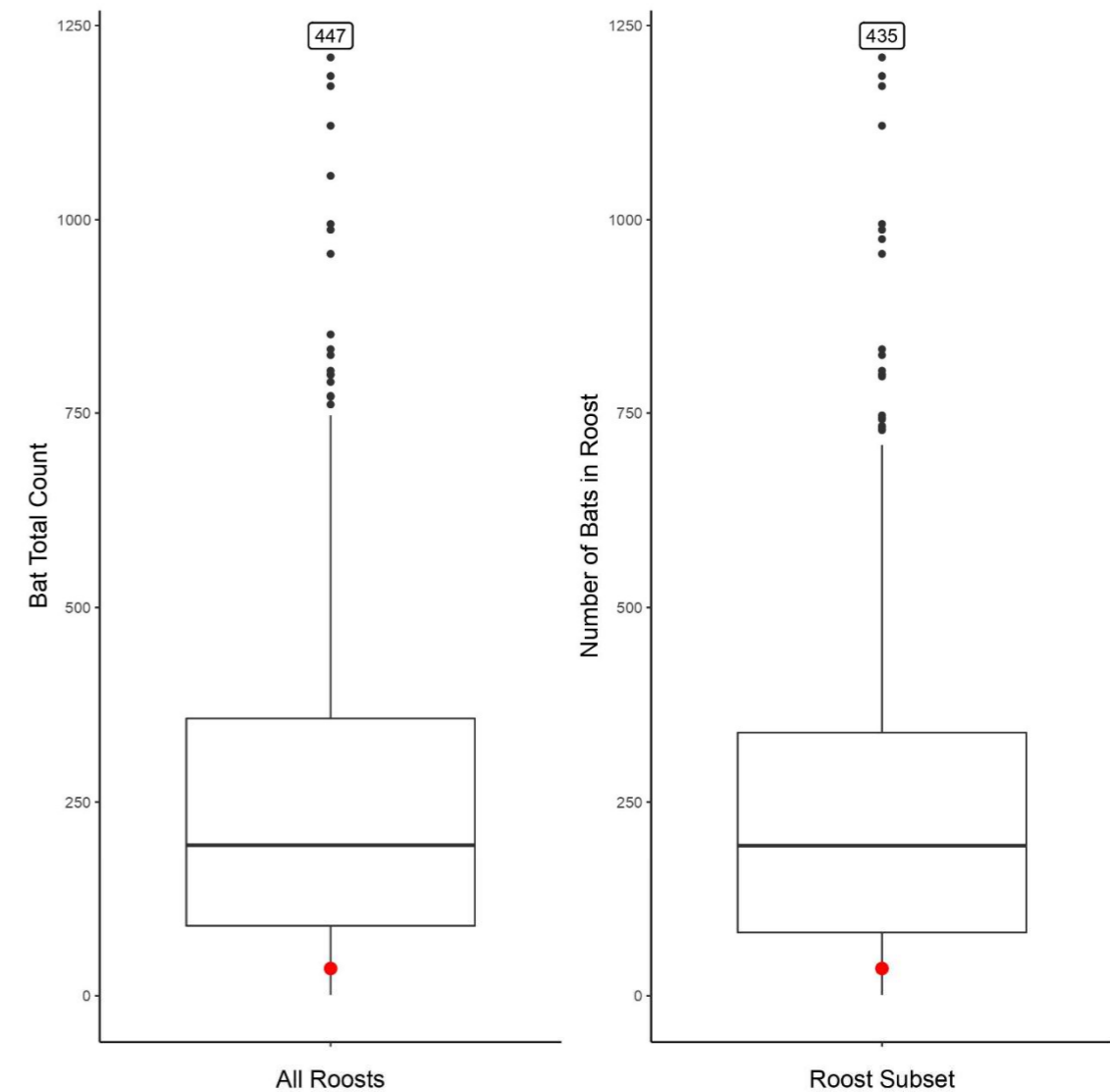


Figure 1: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) Your data is shown as the red dot.

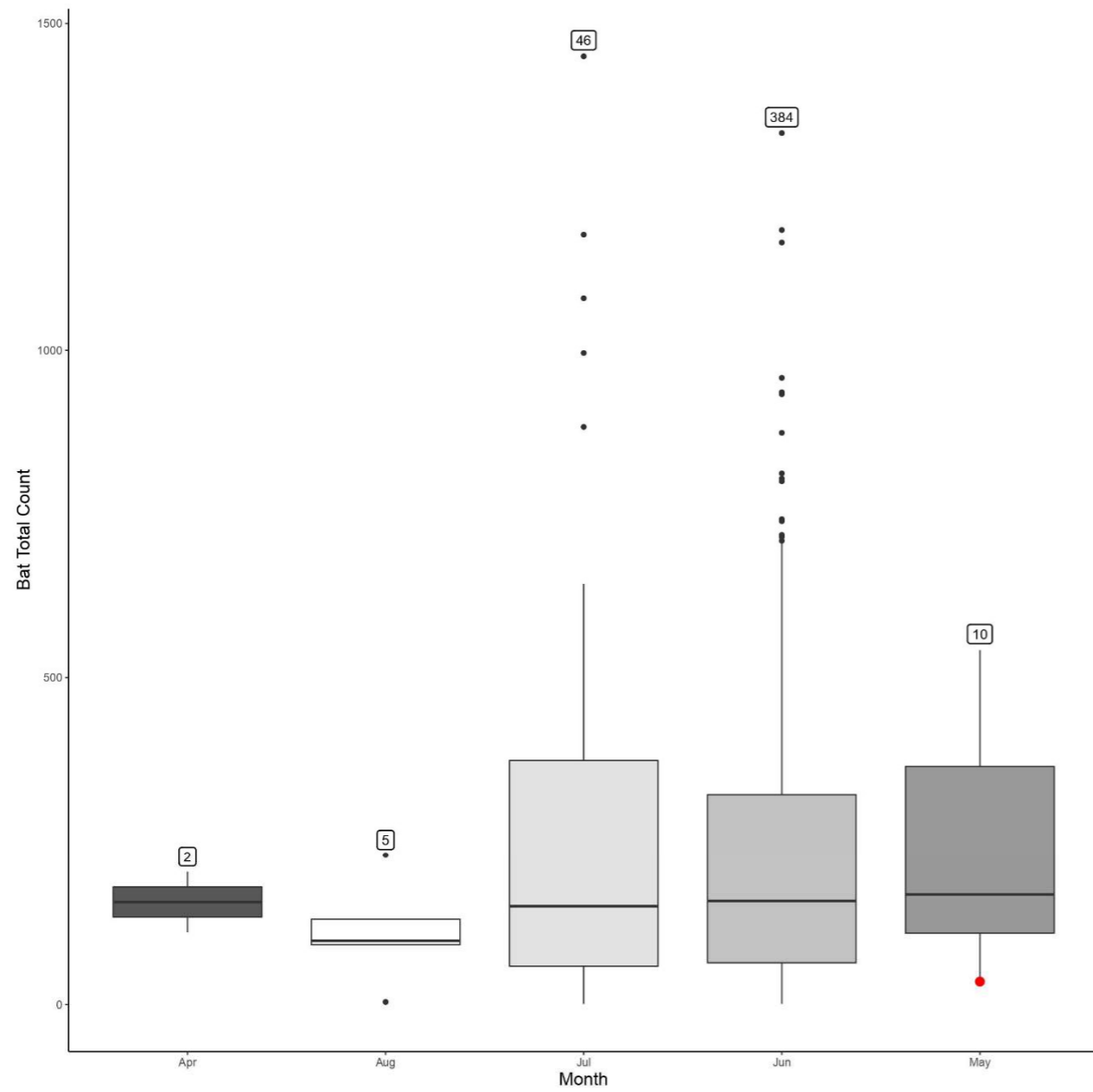


Figure 2: A boxplot showing total count of bats in roosts per month across all years. Your roost is shown as the red dot. The numbers above the boxplots represent the sample size used from the database.

3

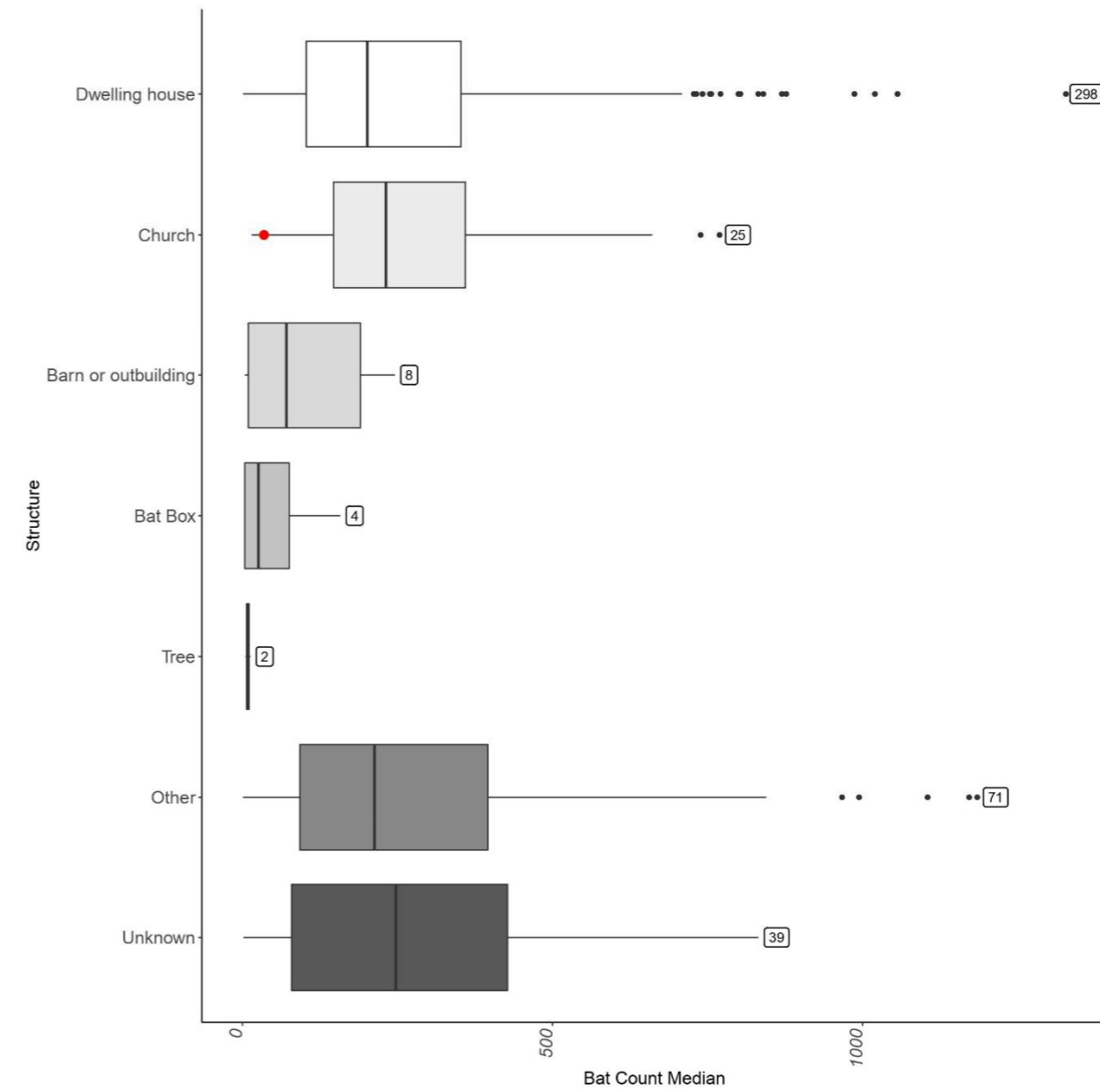


Figure 3: Boxplots of median bat counts in roosts split by structure type of the roost for all roosts in database. Your roost is shown as a red dot. Please note that counts tend to become more variable earlier and later in the season. The numbers alongside the boxplots represent the sample size used from the database.

4

Section 2: Percentiles Analysis

This analysis looks at the relative size of the *Pipistrellus pygmaeus* roost you recorded. We take your total count of *Pipistrellus pygmaeus* at the roost recorded and compare this to values in our reference database. We tell you what percentile your data falls at, and therefore what the relative size of that roost is.

The number of *Pipistrellus pygmaeus* in a roost is ranked based on where it sits in relation to all other roosts in the database.

- low (0-19th percentile)
- low/moderate (20-39th percentile)
- moderate (40-59th percentile)
- moderate/high (60-79th percentile)
- high (80-94th percentile)
- exceptional (95th+ percentile)

Please note that although percentiles are a useful guideline, they are not definitive and it is up to the user to interpret their ecological value.

All data: Your roost is the **12th percentile** when compared to the **447 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Pipistrellus pygmaeus*.

Roost subset: This takes into account breeding times in the same way that the subset of Figure 1 does.

Your roost is the **12th percentile** when compared to the **435 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Pipistrellus pygmaeus*.

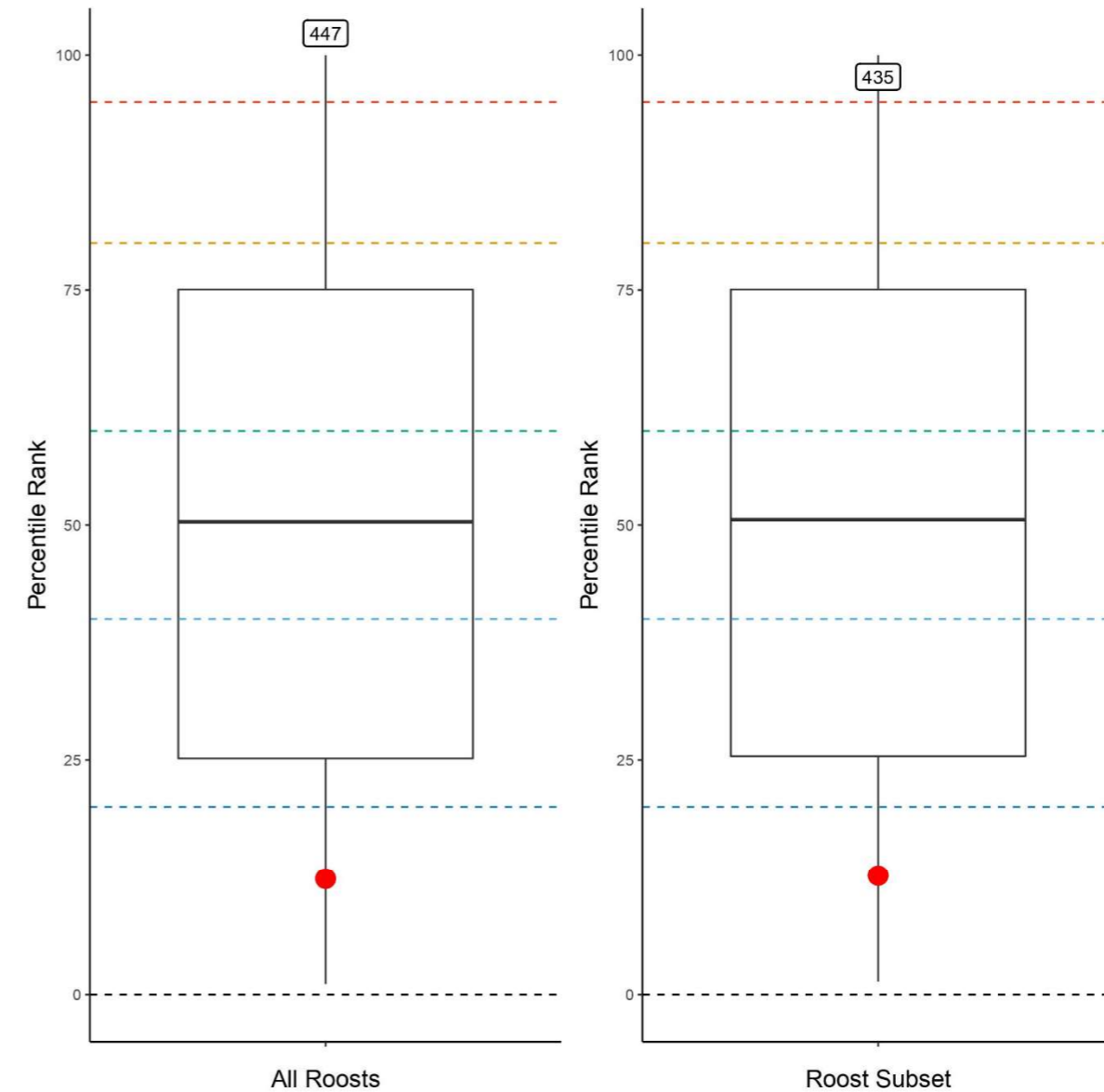


Figure 4: A boxplots showing where your data lies in relation to all other roost data (left) and in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. Database sample size is shown above each boxplot.

Section 3: Results filtered by Structure Type

The following section has subsetting data based on Structure Type. In this section your record has only been compared to roosts with the same structure as yours, as well as the same species. Your geographic and time filters will also still apply in this section. Graphs are provided for All Data and also a subset based on whether allocated to the Pre or Post breeding category.

All data: Your roost is the **12th percentile** when compared to the **447 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Pipistrellus pygmaeus*.

Roost subset: This takes into account breeding times in the same way that the subset of Figure 1 does.

Your roost is the **12th percentile** when compared to the **435 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Pipistrellus pygmaeus*.

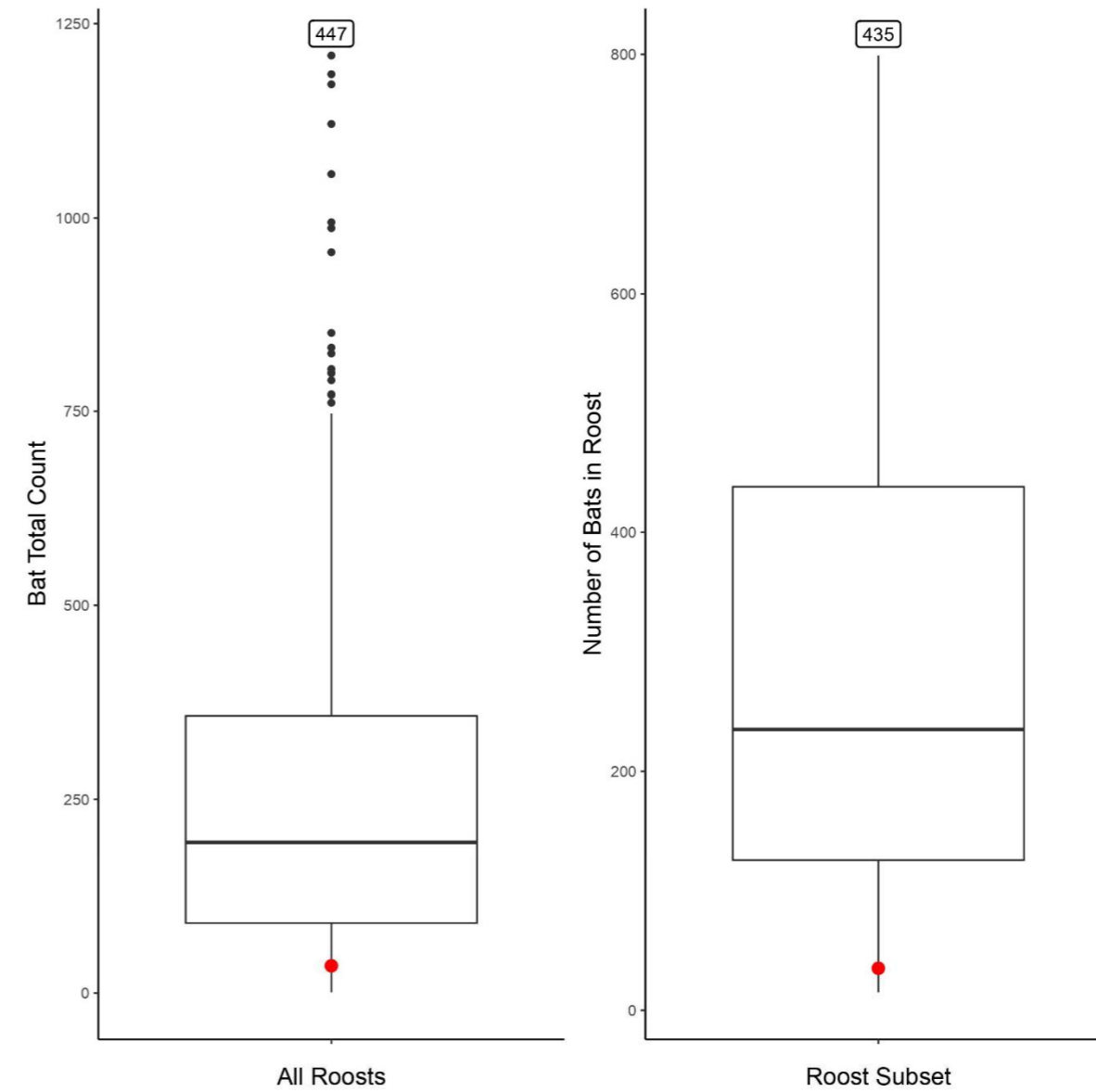


Figure 5: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) of the same structure type. Your data is shown as the red dot.

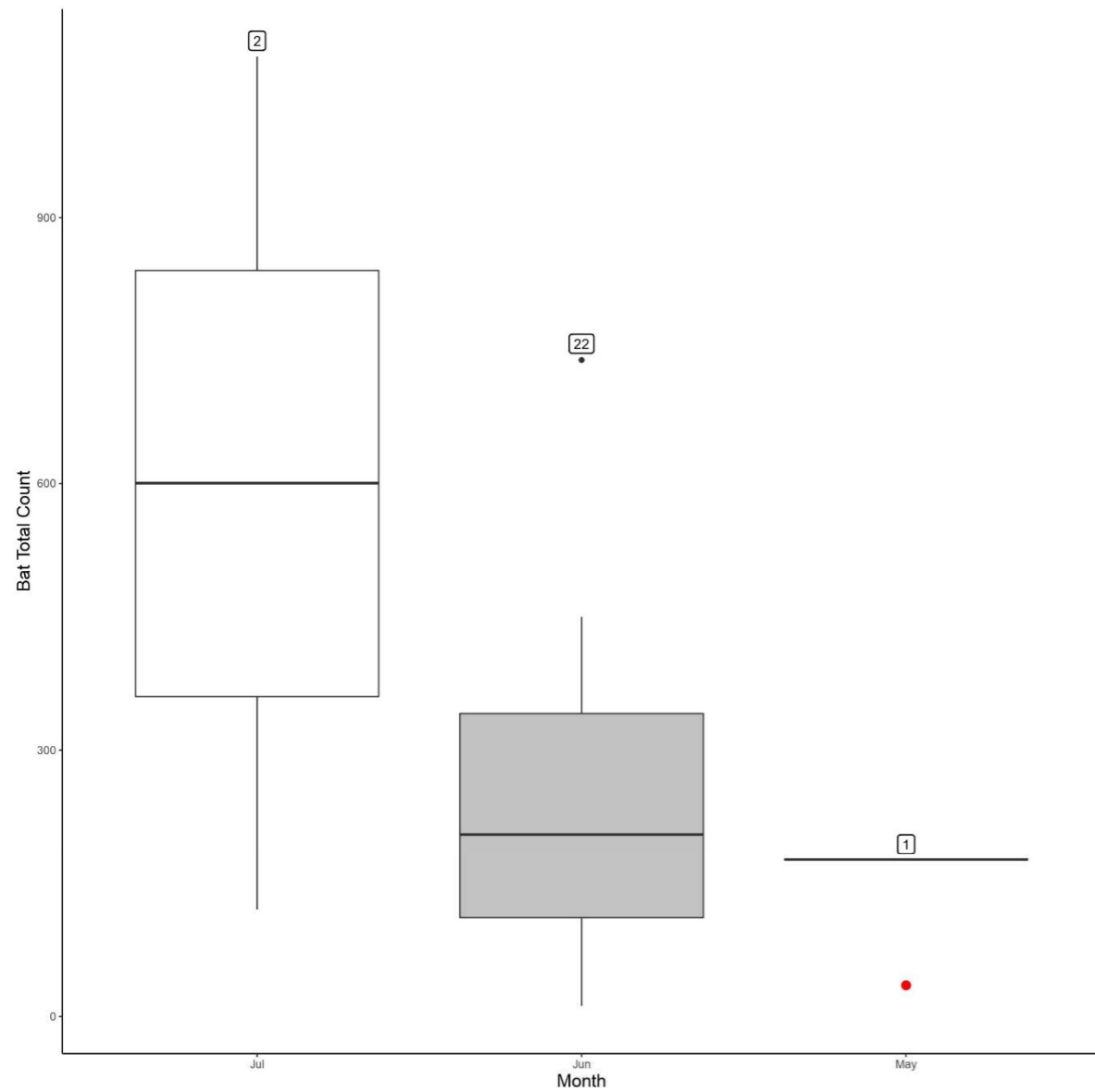


Figure 6: A boxplot showing total count of bats in roosts per month across all years for your roost's Structure Type. Your roost is shown as the red dot.

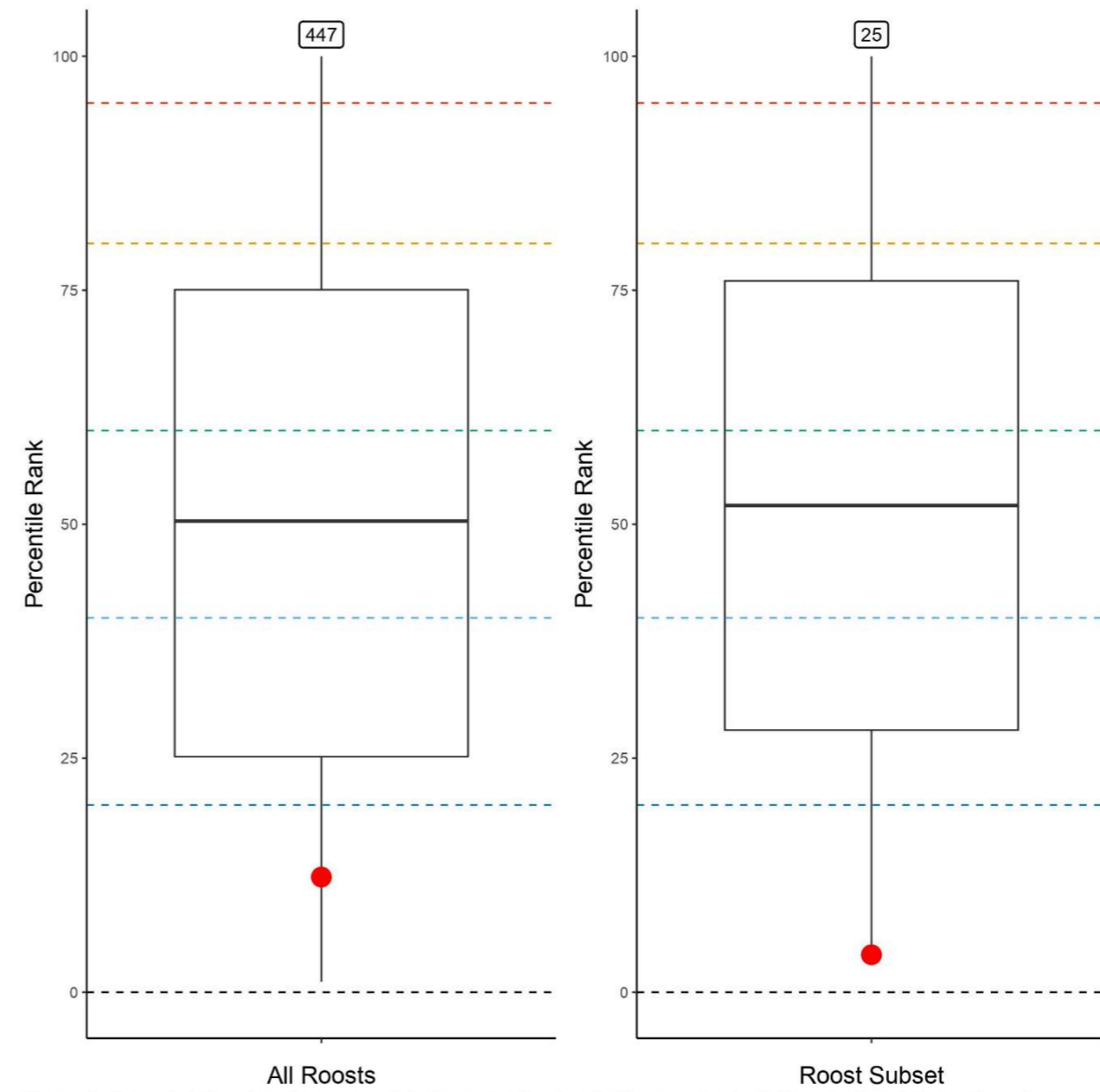


Figure 7: A boxplot showing where your data lies in relation to all other roost data (left) and a boxplot showing where your data lies in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. The numbers above the boxplots represent the sample size used for the database

Survey 2:

Count Bat

Site Name: St Mary Magdalene Church

Author: Chris Damant

2021-09-30 14:28:14

Your save selection for this data was: This is a new record, please save to database

Summary

A total count of **12** *Pipistrellus pygmaeus* were found at a **Church** roost on **22/06/2021** in **Cambridgeshire, England East & North East, England**

Section 1: Roost Count Data

This section uses the roost count of each *Pipistrellus pygmaeus* record in the database. If the same location was recorded more than once, the highest total count for each year was taken and then the median across those years was used. This is the same for the subsets of breeding and structure type data.

The subset takes into account the breeding times:

- If you selected "Prebreeding" in the Assignment column, your data will be compared to counts from May and June
- If you selected "Postbreeding" in the Assignment column, your data will be compared to counts from July and August.

Boxplots are used to visualise data. For all boxplots in the report:

- The lower box line is the lower quartile, the bottom 25% of data lie below this line
- The top line of the box is the upper quartile, the top 25% of data lie above this line
- The median is the horizontal black line within the box
- Black dots are outliers
- The red dot shows your roost count

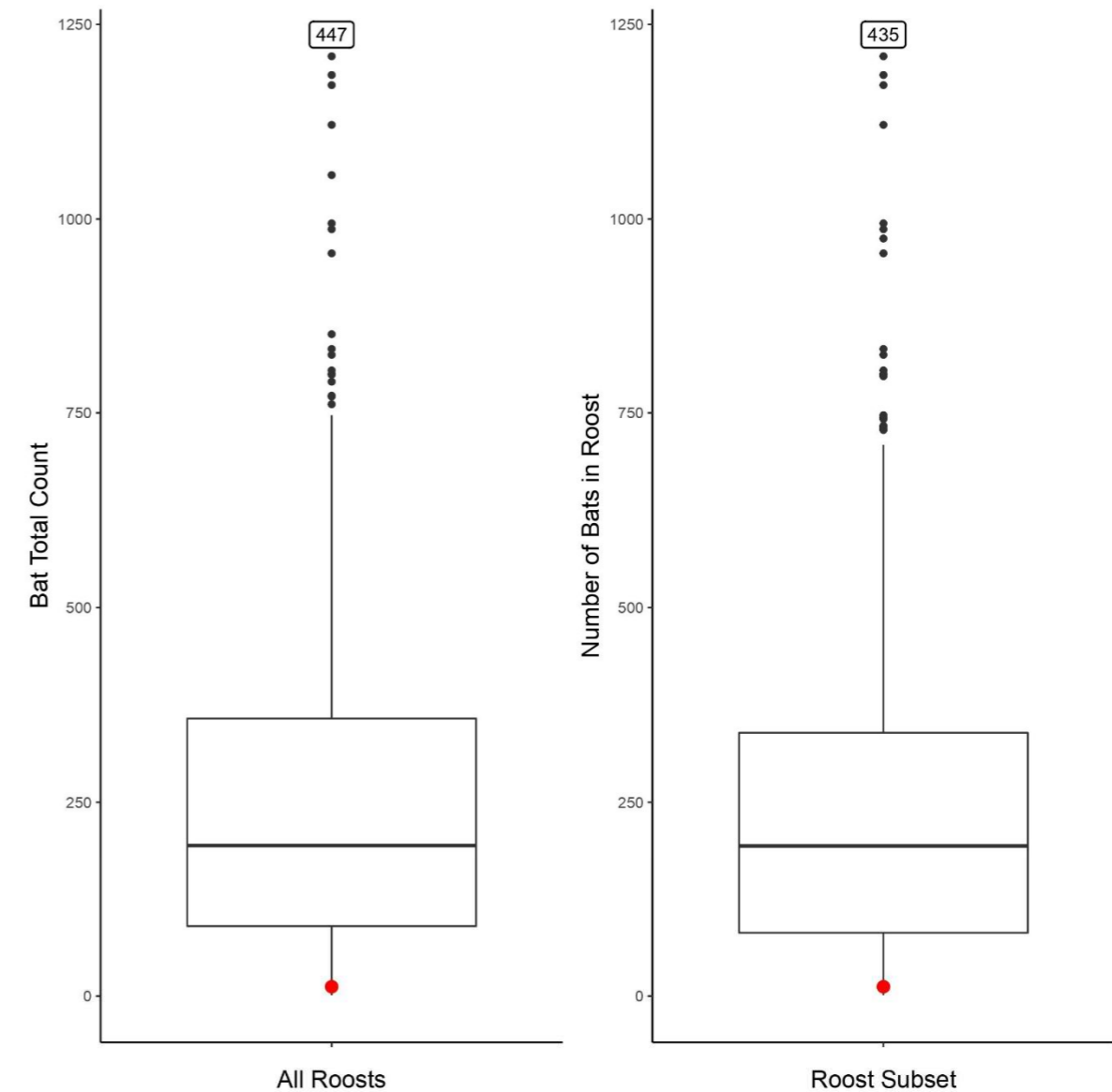


Figure 1: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) Your data is shown as the red dot.

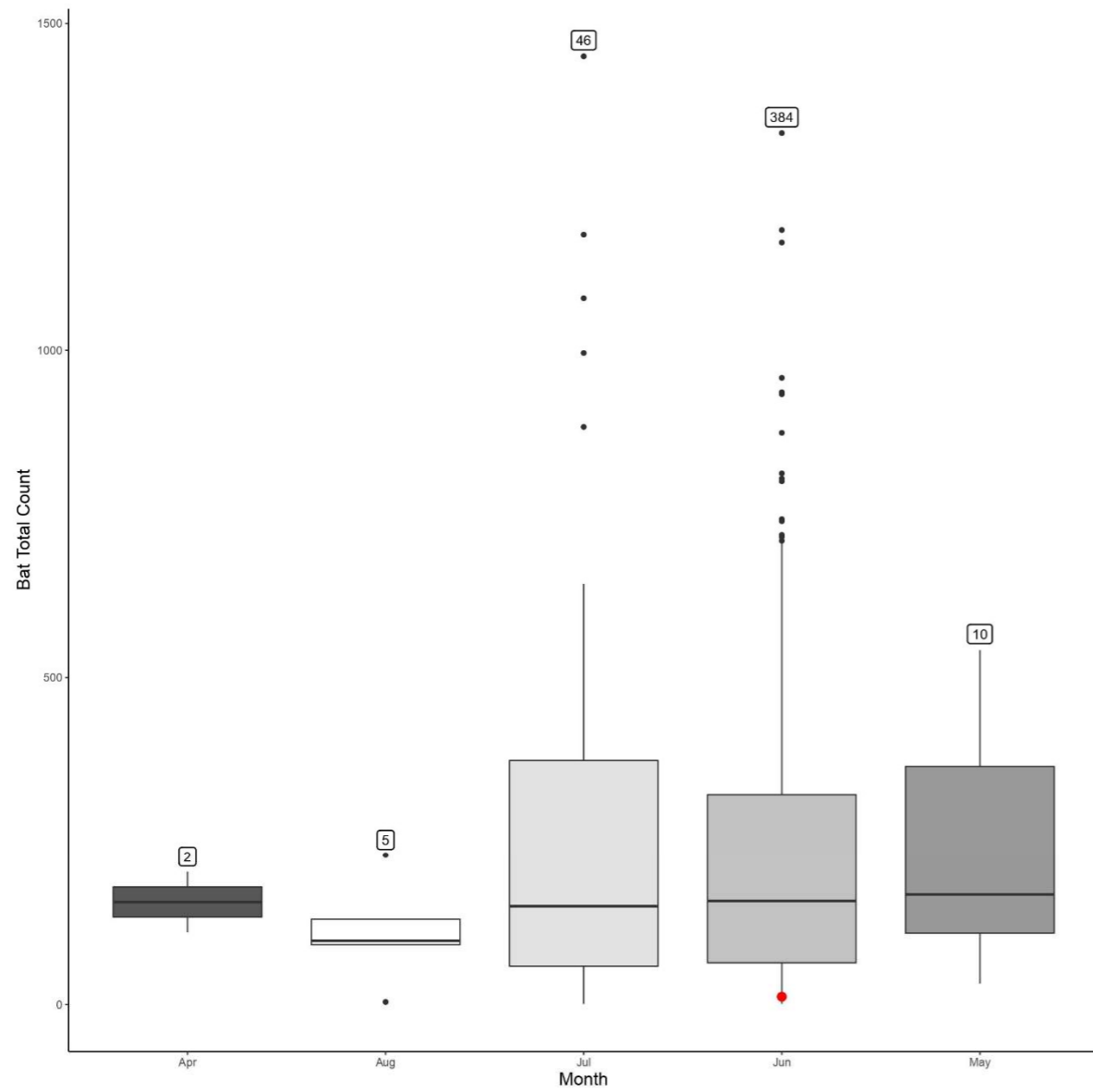


Figure 2: A boxplot showing total count of bats in roosts per month across all years. Your roost is shown as the red dot. The numbers above the boxplots represent the sample size used from the database.

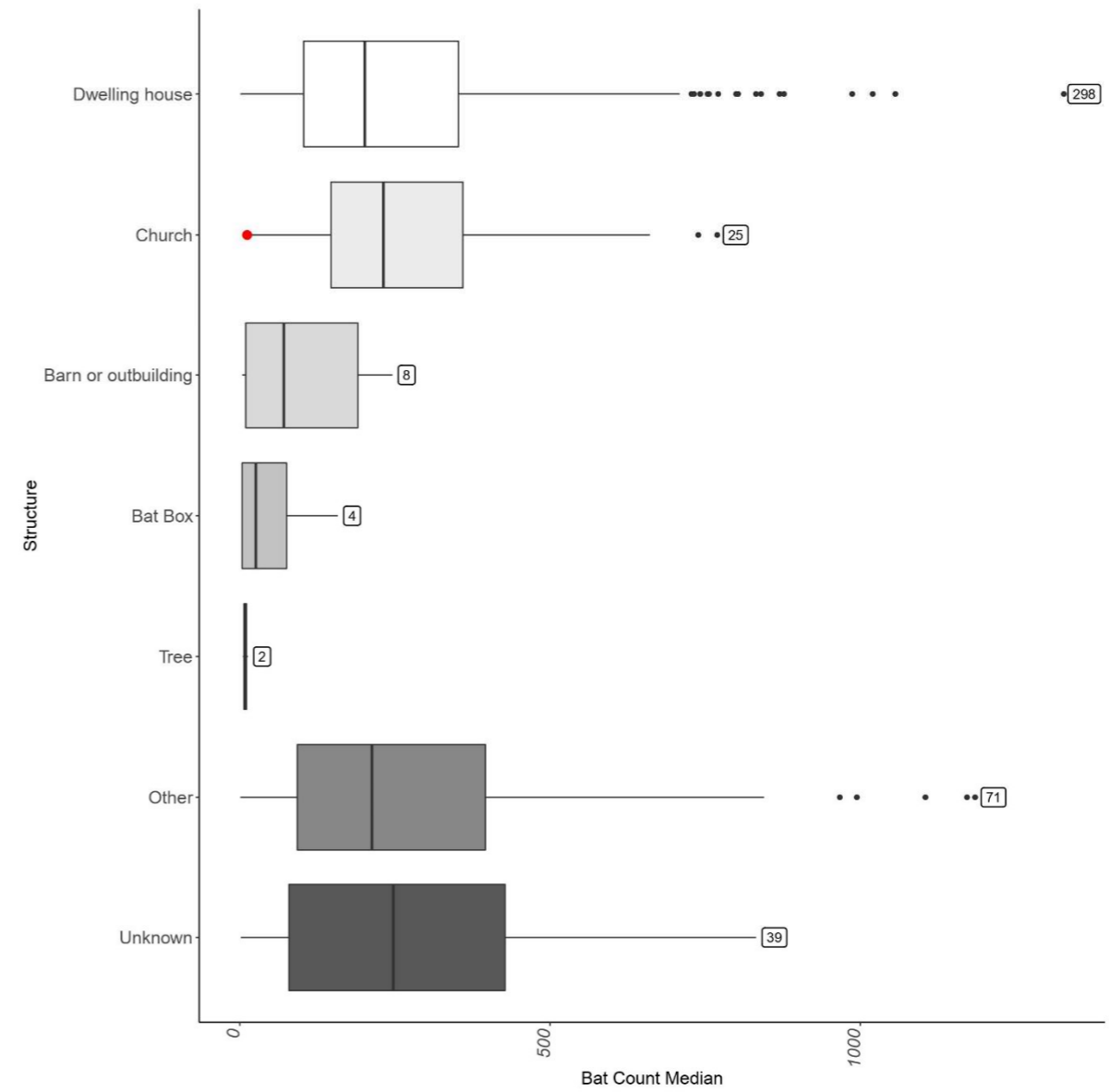


Figure 3: Boxplots of median bat counts in roosts split by structure type of the roost for all roosts in database. Your roost is shown as a red dot. Please note that counts tend to become more variable earlier and later in the season. The numbers alongside the boxplots represent the sample size used from the database.

Section 2: Percentiles Analysis

This analysis looks at the relative size of the *Pipistrellus pygmaeus* roost you recorded. We take your total count of *Pipistrellus pygmaeus* at the roost recorded and compare this to values in our reference database. We tell you what percentile your data falls at, and therefore what the relative size of that roost is.

The number of *Pipistrellus pygmaeus* in a roost is ranked based on where it sits in relation to all other roosts in the database.

- low (0-19th percentile)
- low/moderate (20-39th percentile)
- moderate (40-59th percentile)
- moderate/high (60-79th percentile)
- high (80-94th percentile)
- exceptional (95th+ percentile)

Please note that although percentiles are a useful guideline, they are not definitive and it is up to the user to interpret their ecological value.

All data: Your roost is the **8th percentile** when compared to the **447 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Pipistrellus pygmaeus*.

Roost subset: This takes into account breeding times in the same way that the subset of Figure 1 does.

Your roost is the **9th percentile** when compared to the **435 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Pipistrellus pygmaeus*.

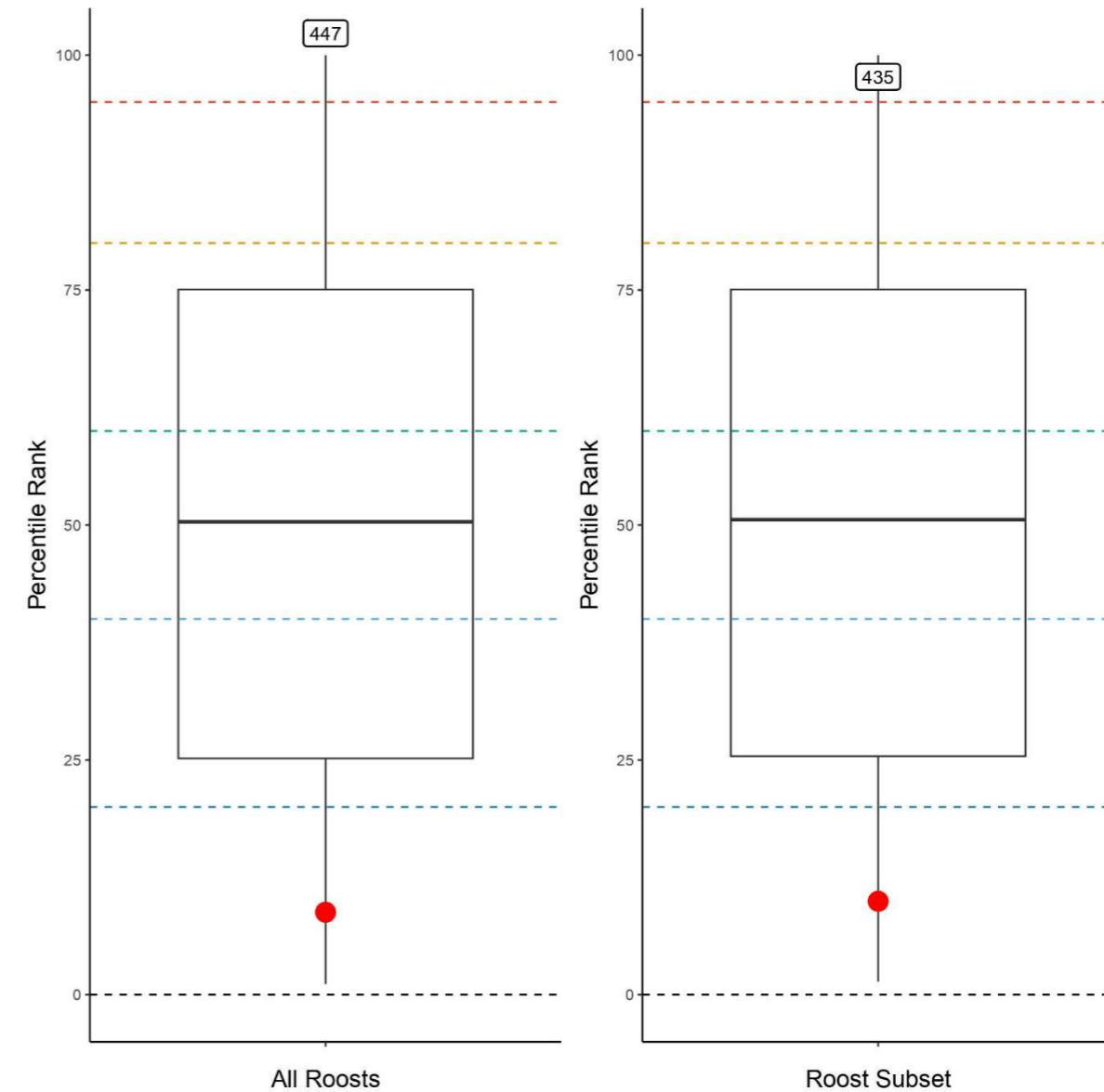


Figure 4: A boxplots showing where your data lies in relation to all other roost data (left) and in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. Database sample size is shown above each boxplot.

Section 3: Results filtered by Structure Type

The following section has subsetting data based on Structure Type. In this section your record has only been compared to roosts with the same structure as yours, as well as the same species. Your geographic and time filters will also still apply in this section. Graphs are provided for All Data and also a subset based on whether allocated to the Pre or Post breeding category.

All data: Your roost is the **8th percentile** when compared to the **447 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Pipistrellus pygmaeus*.

Roost subset: This takes into account breeding times in the same way that the subset of Figure 1 does.

Your roost is the **9th percentile** when compared to the **435 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **NA** number of *Pipistrellus pygmaeus*.

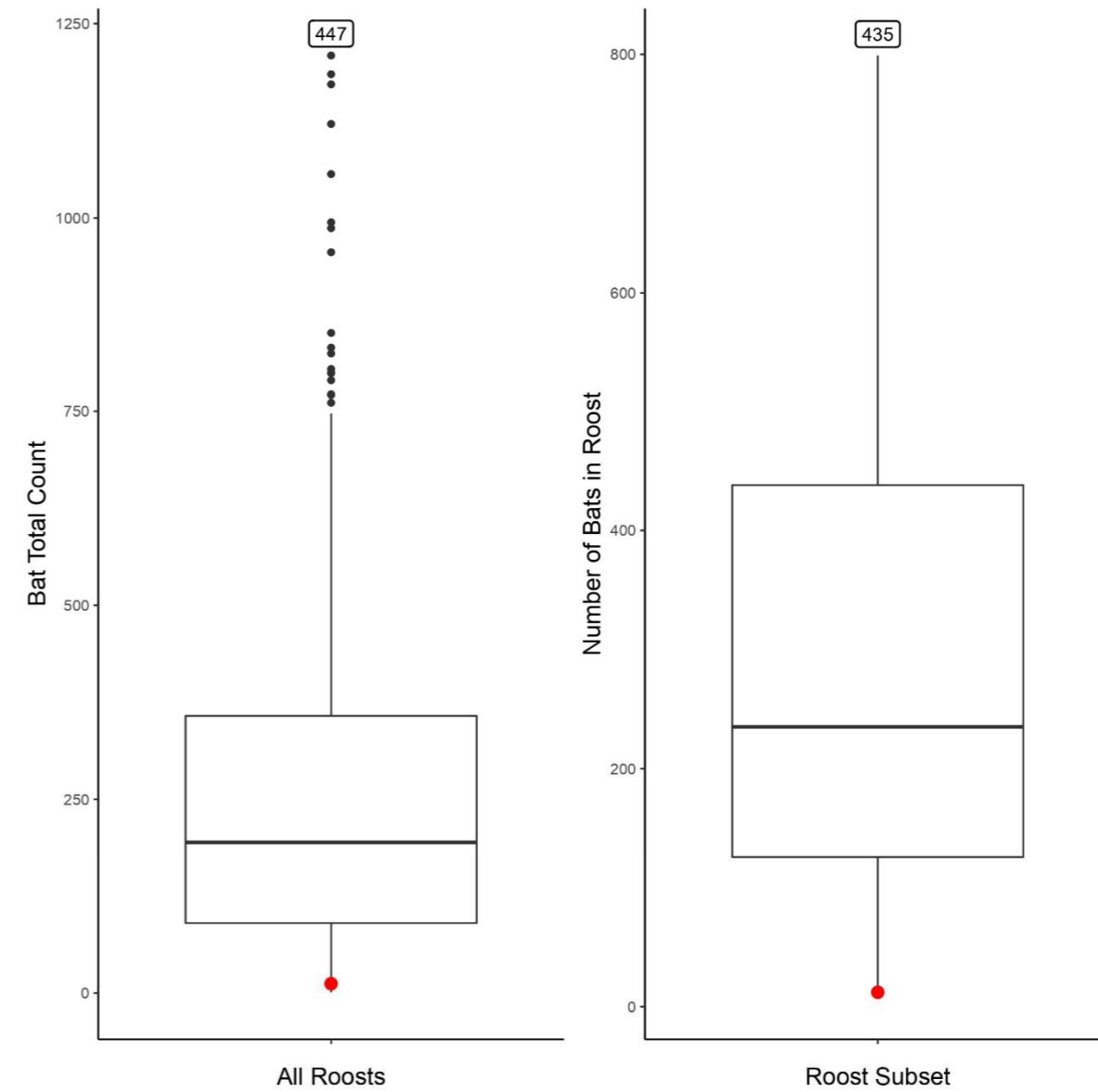


Figure 5: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) of the same structure type. Your data is shown as the red dot.

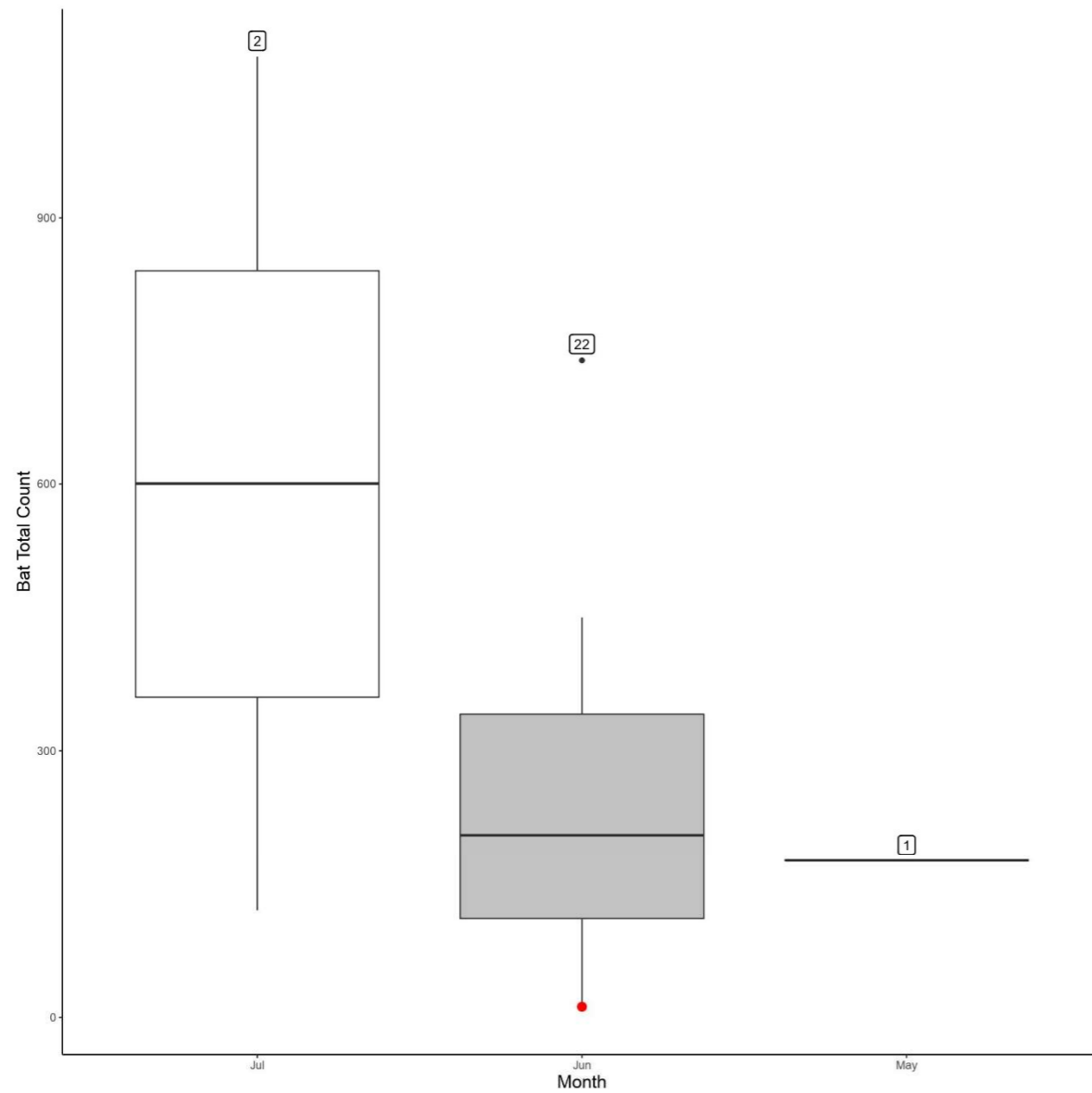


Figure 6: A boxplot showing total count of bats in roosts per month across all years for your roost's Structure Type. Your roost is shown as the red dot.

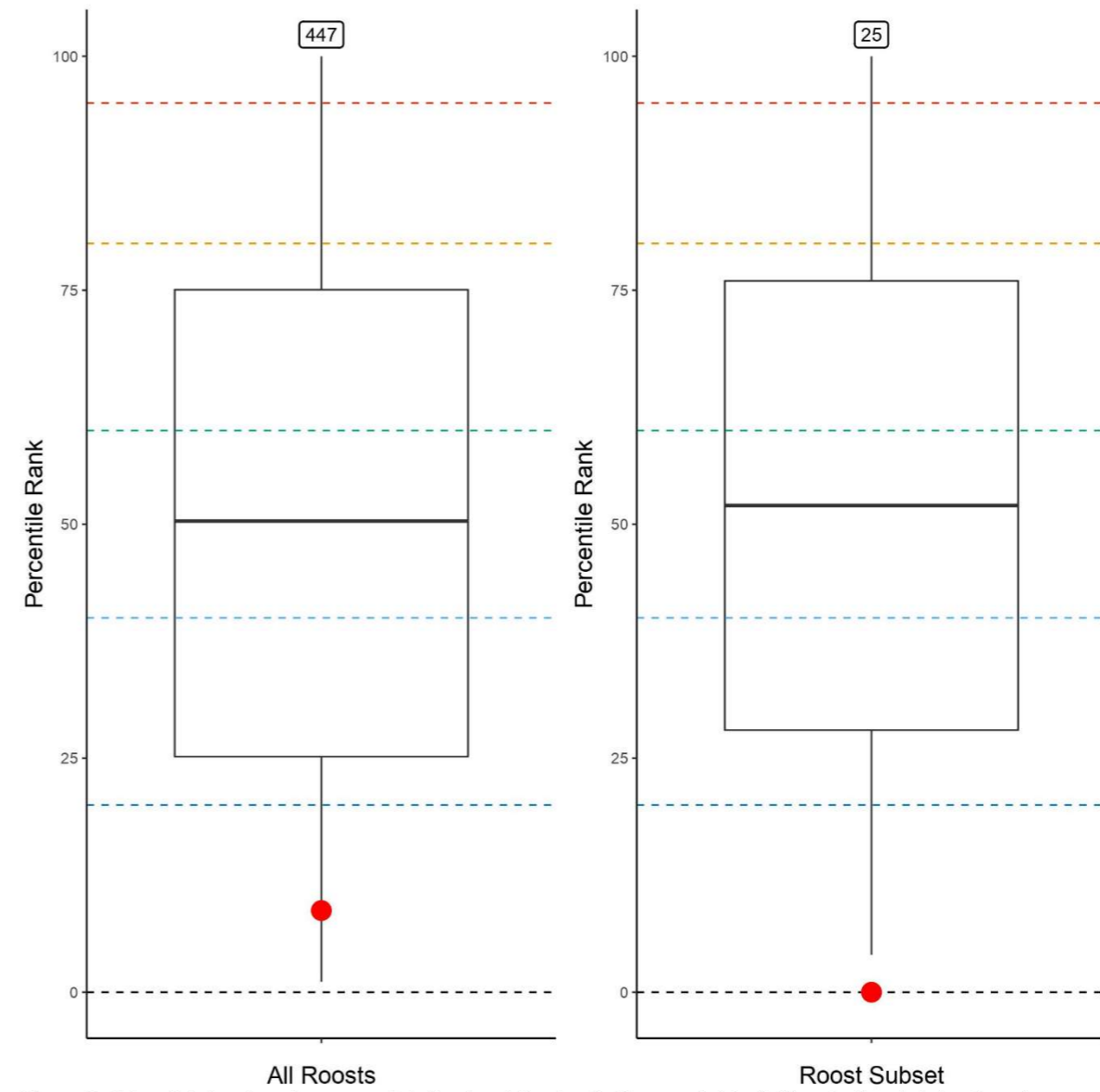


Figure 7: A boxplot showing where your data lies in relation to all other roost data (left) and a boxplot showing where your data lies in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. The numbers above the boxplots represent the sample size used for the database

Survey 3

Count Bat

Site Name: St Mary Magdalene Church

Author: Chris Damant

2021-09-30 14:41:08

Your save selection for this data was: This is a new record, please save to database

Summary

A total count of **10 *Pipistrellus pygmaeus*** were found at a **Church** roost on **11/08/2021** in **Cambridgeshire, England East & North East, England**

Section 1: Roost Count Data

This section uses the roost count of each *Pipistrellus pygmaeus* record in the database. If the same location was recorded more than once, the highest total count for each year was taken and then the median across those years was used. This is the same for the subsets of breeding and structure type data.

The subset takes into account the breeding times:

- If you selected "Prebreeding" in the Assignment column, your data will be compared to counts from May and June
- If you selected "Postbreeding" in the Assignment column, your data will be compared to counts from July and August.

Boxplots are used to visualise data. For all boxplots in the report:

- The lower box line is the lower quartile, the bottom 25% of data lie below this line
- The top line of the box is the upper quartile, the top 25% of data lie above this line
- The median is the horizontal black line within the box
- Black dots are outliers
- The red dot shows your roost count

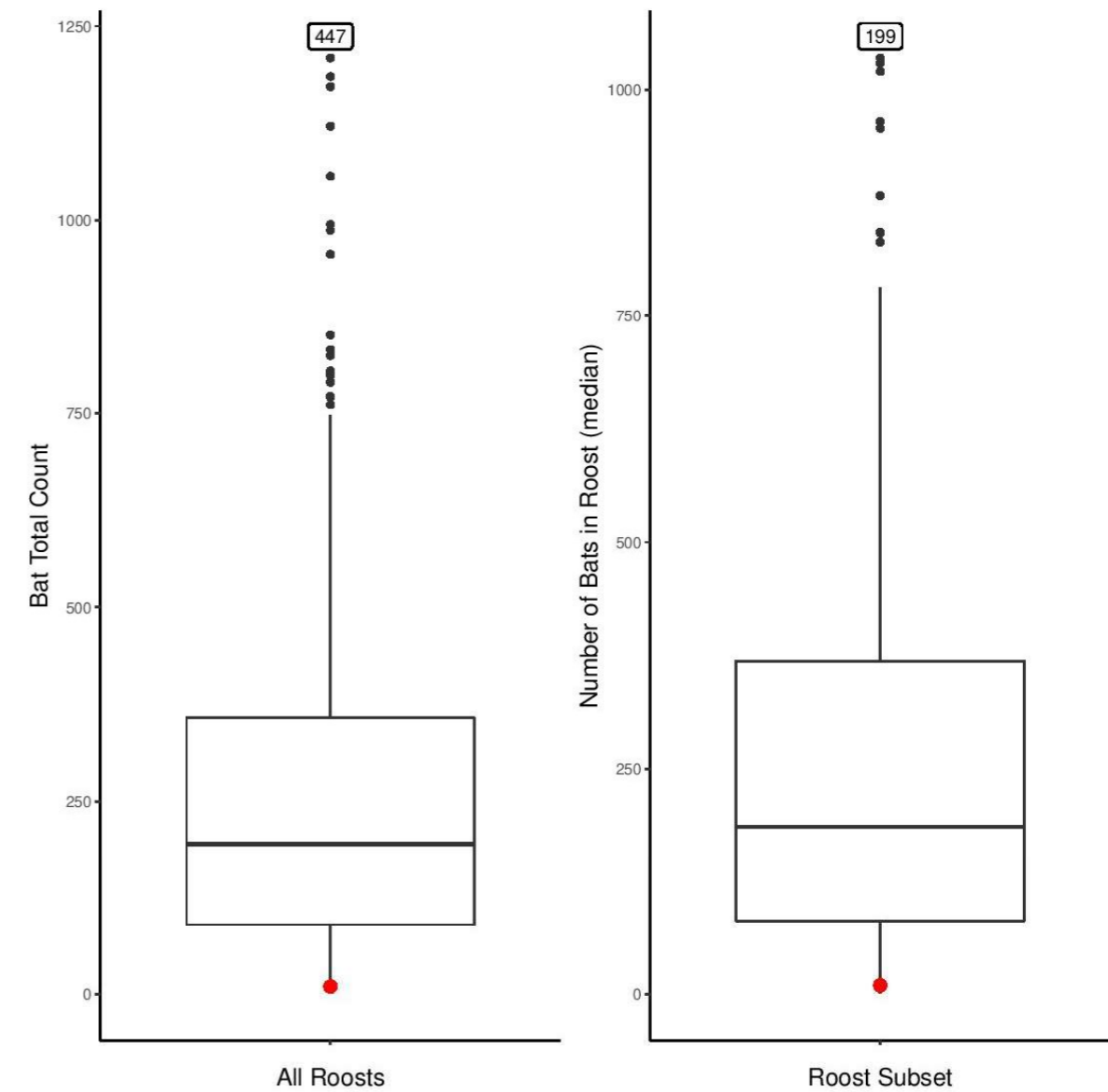


Figure 1: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) Your data is shown as the red dot.

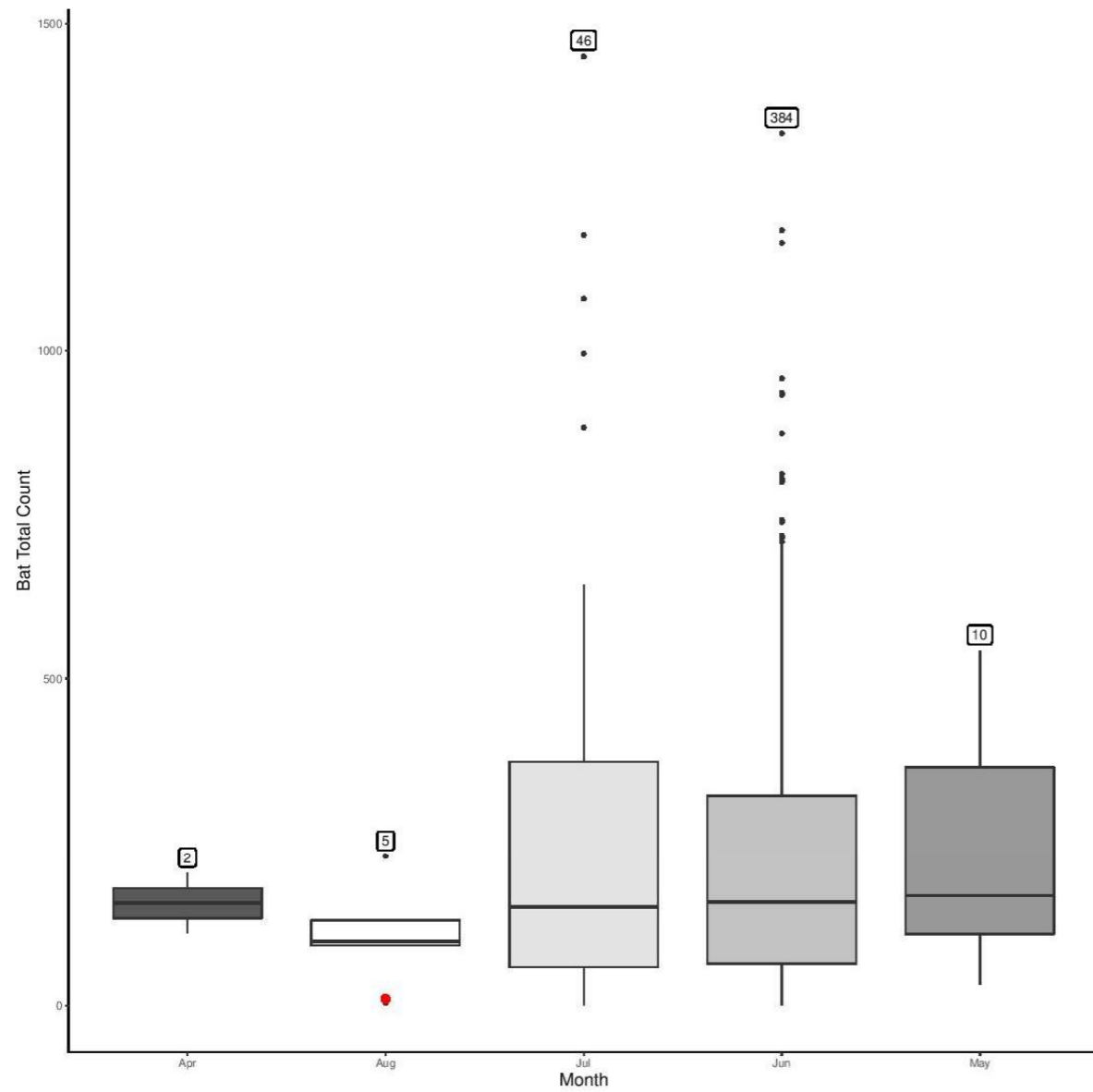


Figure 2: A boxplot showing total count of bats in roosts per month across all years. Your roost is shown as the red dot. The numbers above the boxplots represent the sample size used from the database.

3

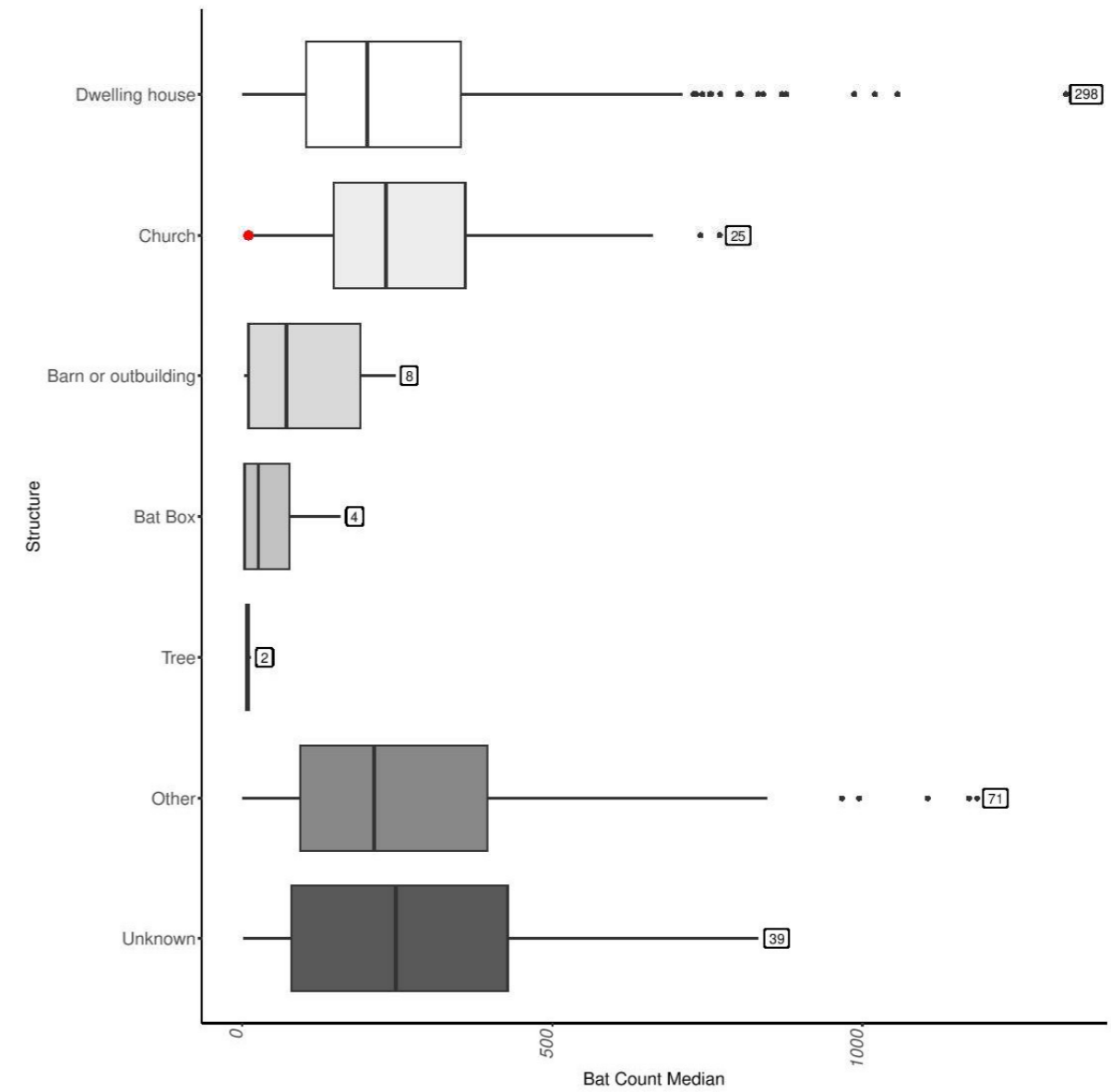


Figure 3: Boxplots of median bat counts in roosts split by structure type of the roost for all roosts in database. Your roost is shown as a red dot. Please note that counts tend to become more variable earlier and later in the season. The numbers alongside the boxplots represent the sample size used from the database.

4

Section 2: Percentiles Analysis

This analysis looks at the relative size of the *Pipistrellus pygmaeus* roost you recorded. We take your total count of *Pipistrellus pygmaeus* at the roost recorded and compare this to values in our reference database. We tell you what percentile your data falls at, and therefore what the relative size of that roost is.

The number of *Pipistrellus pygmaeus* in a roost is ranked based on where it sits in relation to all other roosts in the database.

- low (0-19th percentile)
- low/moderate (20-39th percentile)
- moderate (40-59th percentile)
- moderate/high (60-79th percentile)
- high (80-94th percentile)
- exceptional (95th+ percentile)

Please note that although percentiles are a useful guideline, they are not definitive and it is up to the user to interpret their ecological value.

All data: Your roost is the **7th percentile** when compared to the **447 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Pipistrellus pygmaeus*.

Roost subset: This takes into account breeding times in the same way that the subset of Figure 1 does.

Your roost is the **6th percentile** when compared to the **199 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Pipistrellus pygmaeus*.

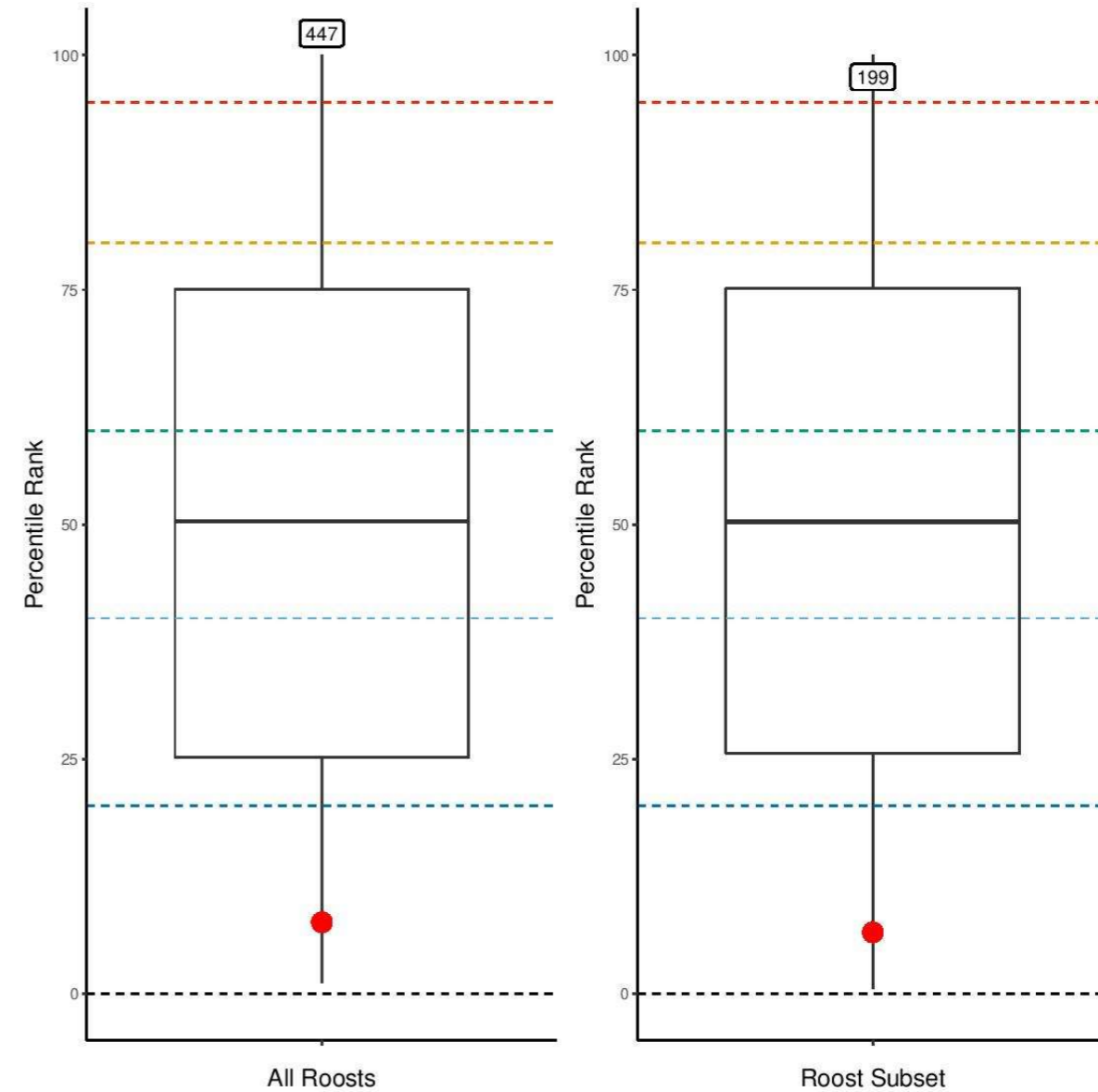


Figure 4: A boxplots showing where your data lies in relation to all other roost data (left) and in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. Database sample size is shown above each boxplot.

Section 3: Results filtered by Structure Type

The following section has subsetting data based on Structure Type. In this section your record has only been compared to roosts with the same structure as yours, as well as the same species. Your geographic and time filters will also still apply in this section. Graphs are provided for All Data and also a subset based on whether allocated to the Pre or Post breeding category.

All data: Your roost is the **7th percentile** when compared to the **447 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Pipistrellus pygmaeus*.

Roost subset: This takes into account breeding times in the same way that the subset of Figure 1 does.

Your roost is the **6th percentile** when compared to the **199 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **NA** number of *Pipistrellus pygmaeus*.

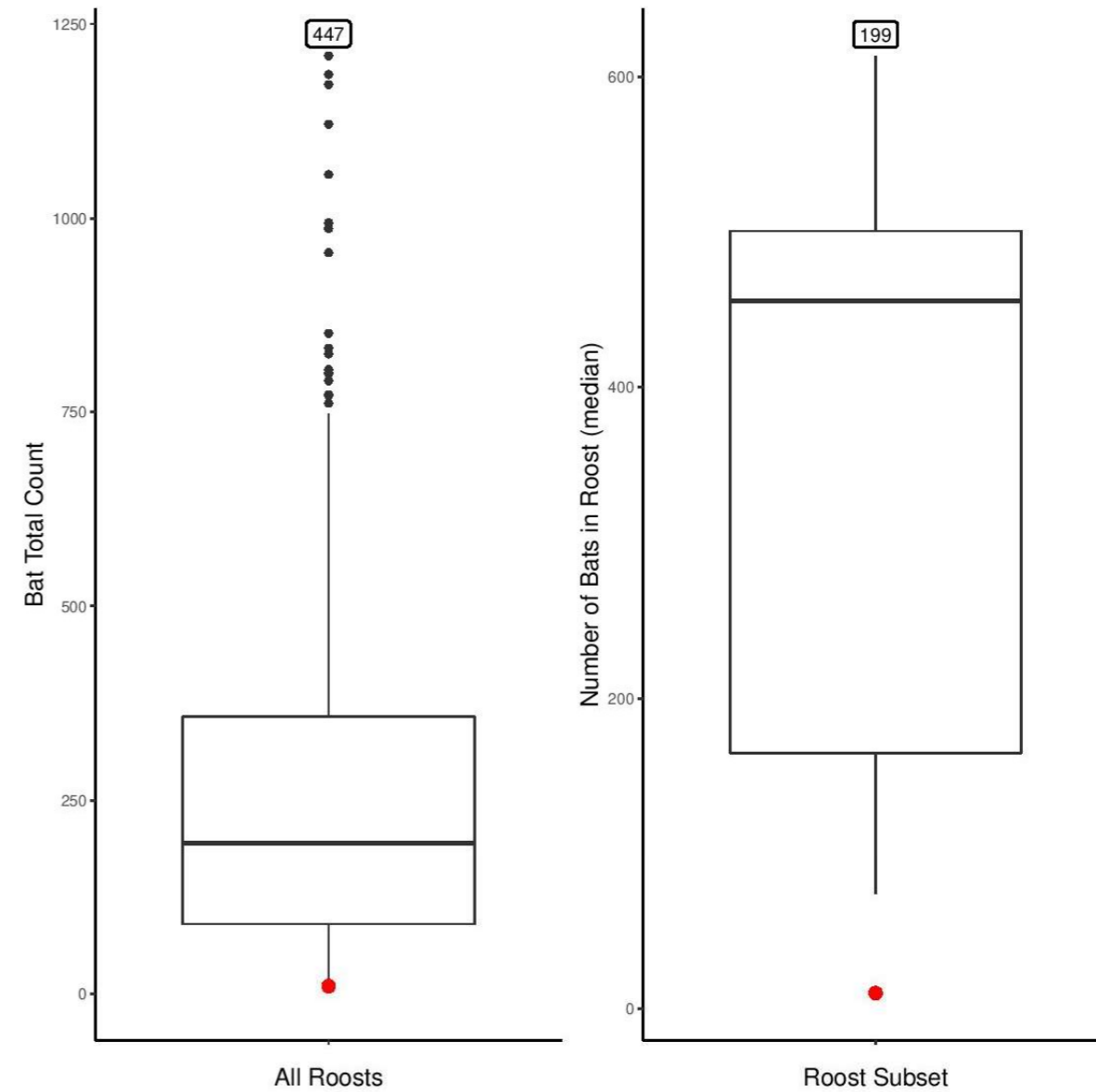


Figure 5: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) of the same structure type. Your data is shown as the red dot.

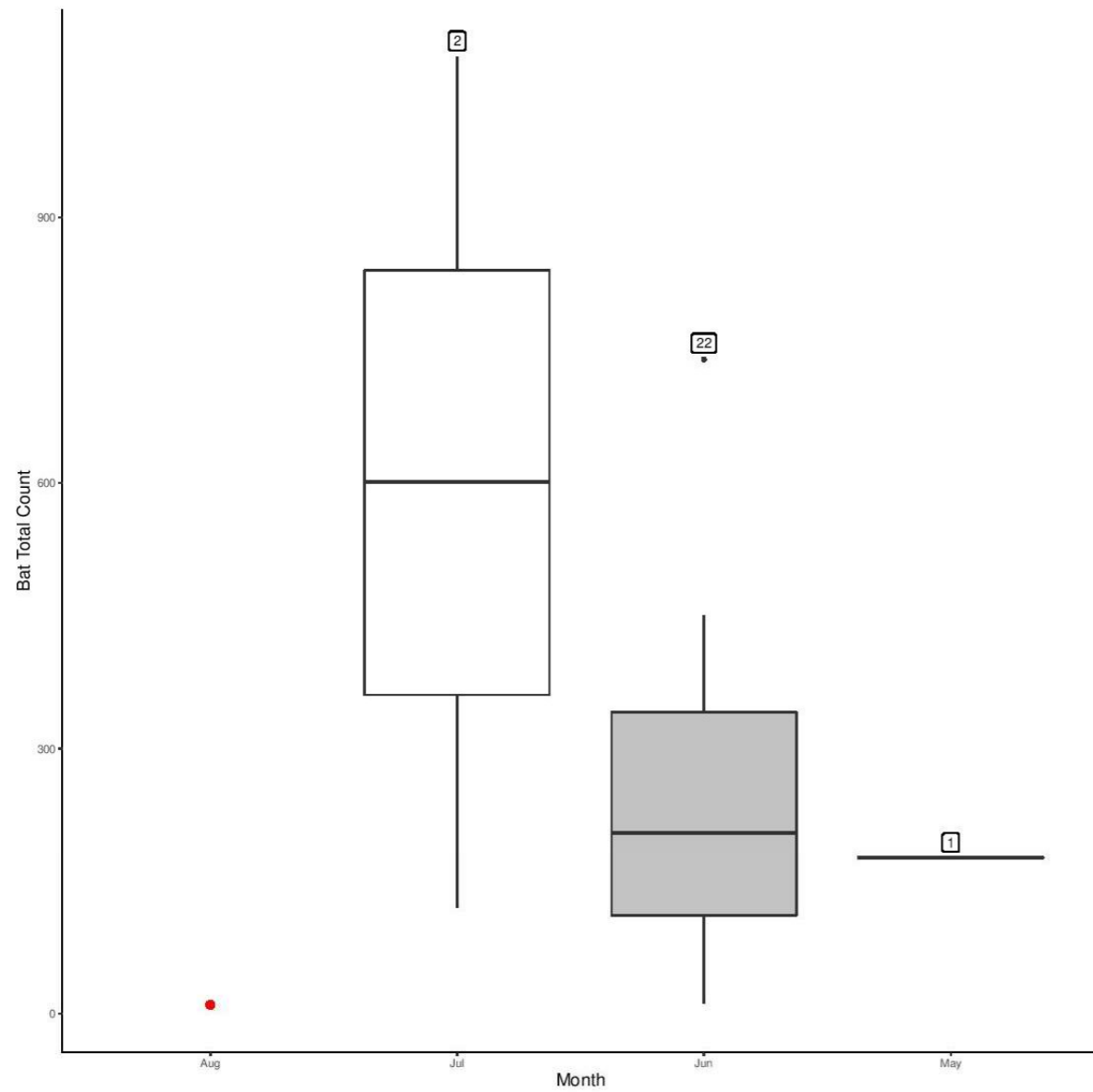


Figure 6: A boxplot showing total count of bats in roosts per month across all years for your roost's Structure Type. Your roost is shown as the red dot.

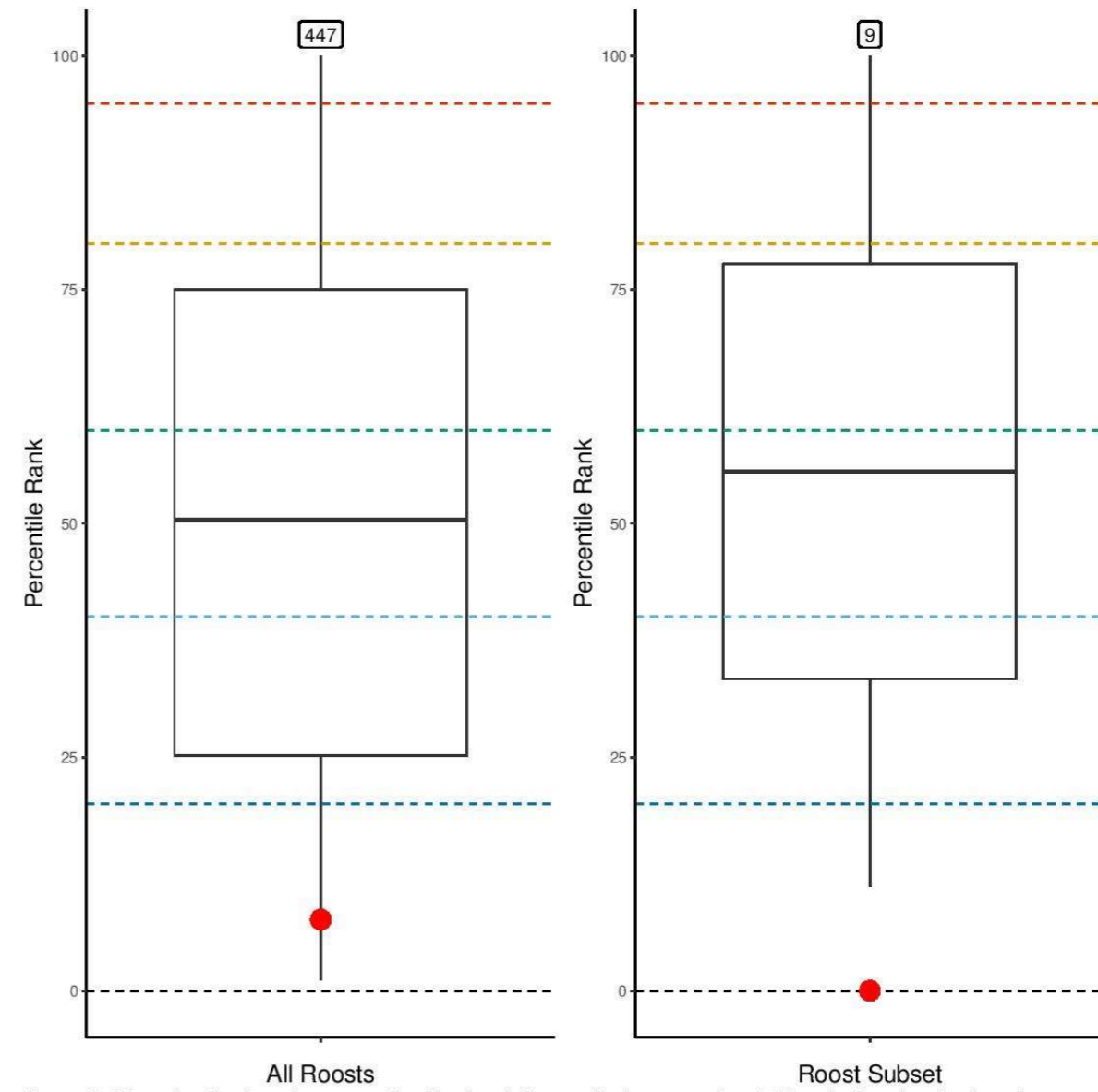


Figure 7: A boxplot showing where your data lies in relation to all other roost data (left) and a boxplot showing where your data lies in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. The numbers above the boxplots represent the sample size used for the database

Appendix 9. Current Bats in Churches project expenditure summary.

The following standard costs have been provided by the Bats in Churches Project (October 2021) based on their pilot, Tranche 1 and Tranche 2 works and have been used to inform Projected Options Cost Estimates (Appendices 11-15).

Statistical summary of costs across 29 Bats in Churches projects	
Total Capital Costs	£382,643.03
Number of churches	29
Median Value	£8,765.65
Average/Mean Value	£13,194.59
Max (complex large schemes including new ceilings)	£72,677.00
Min (simple cost – cameras)	£175.00

Summary of indicative costs (October 2021) for individual items

Work Type - Capital	Average Cost
Clean/check bat box	£80.00
Heaters	£266.00
Camera	£322.00
Porta loos	£500.00
Install external bat box/pole	£713.00
Electrician	£924.00
Only blocking up	£2,000.00
Baffle/Catch Boards	£2,160.00
Acoustic Deterrents	£2,299.00
Bat box	£2,878.00
Scaffolding	£3,238.00
Install Rafter Boxes	£4,522.00
Screen	£5,000.00
Install/extend Bat Roof Void	£5,850.00
Exclusion/Blocking up/building work	£6,403.00
Replace/repair ceiling	£43,039.00

Summary of professional/ other fees

Work Type - Professional Fees	Average cost
Architect cost per hour	£91.67
Architect cost average if going to faculty	£3,500.00
Ecologist cost per hour	£50.00
BiCCL licence registration	£500.00
Licence Return (survey data per year to NE)	£350.00
Production of a Bat Management Plan	£1,200.00
Dawn survey	£1,156.00
Dusk survey x 3	£3,515.00
Travel - T&S mileage @per mile	£0.45
Faculty costs	£250

Based on these total capital cost values per church and simplified professional fees, the proposals are broadly divided into three categories:

Low-cost impact solutions

£1 - £4,999

Simple schemes with little or no impact on bats, the architectural fabric or heritage assets of church and therefore do not include detailed professional bat surveys or post-intervention monitoring, licenses, design or contract specifications.

Moderate-cost impact solutions

£5,000 - £19,999

Moderate schemes where surveys, licence, basic design and specifications are required, together with minor ecological support. One- or two-year post-intervention monitoring required subject to species present, type of roost and impacts.

High-cost impact solutions

£20,000 and over

High-cost schemes where surveys are required and with multiple options including detailed design and contract specifications and requirement for greater ecological support. Multiple years post-intervention monitoring required subject to species present, type of roost and impacts.

Simplified Example Cost Breakdown		Value	Low Impact Scheme Example	Moderate Impact Schemes Example	High Impact Scheme Example
Professional fees – Ecologist	Light Touch Survey	£500	£499		
Professional fees – Ecologist	Activity Survey	£4,671		£4,671	£4,671
Professional fees – Ecologist	Design input low	£500	£500		
Professional fees – Ecologist	Design input moderate	£1000		£1000	
Professional fees – Ecologist	Design input high	£2000			£2000
Professional fees – Ecologist	BICCL Licence	£850		£500	£850
Professional fees – Ecologist	Ecological Clerk of works - major	£500		£500	
Professional fees – Ecologist	Ecological Clerk of works - minor	£2,000			£2,000
Professional fees – Ecologist	Post intervention monitoring - 1 year	£2,312		£2,000	
Professional fees – Ecologist	Post intervention monitoring - 3 years	£6,936			£6,000
Professional fees – Architect	Design/Faculty	£3,500	£500	£1,500	£3,500
Professional fees – Architect	Contract administration	£3,000		£1,500	£3,000
Fees	Faculty	£250	£250	£250	£250
Contract value	Low	<£4,999	£3,250		
Contract value	Moderate	£5,000 – £19,999		£8,000	
Contract value	High	>£20,000			£25,000
Total			£4,999	£19,921	£47,271

Note: No allowance is made for cost rises including inflation, the impact of Brexit or working during the COVID-19 pandemic.

Appendix 10. Projected Options Cost Estimates, based on current survey data (2021) which remains valid for one year in accordance with Bats in Churches Class Licence. Additional surveys will be required where time elapses between the survey and implementation of interventions.

Example Cost Breakdown		BiC Cost Values	Option 1: Baffle/Catch boards	Option 2: Sails (Cannot be costed)	Option 3: Bat box in nave w/ external access point only	Option 4: Close up chancel eaves	Option 5: Bat box in chancel eaves	Option 6: Option 3 & Option 5	Option 7: Option 4 & 5
Professional fees – Ecologist	Light Touch Survey	£500	£500	N/A					
Professional fees – Ecologist	Activity Survey	£4,671		N/A	£4,671	£4,671	£4,671	£4,671	£4,671
Professional fees – Ecologist	Design input low	£500	£500	N/A		£500			
Professional fees – Ecologist	Design input moderate	£1,000		N/A	£1,000		£1,000	£1,000	£1,500
Professional fees – Ecologist	Design input high	£2,000		N/A					
Professional fees – Ecologist	Licence	£850		N/A	£850	£850	£850	£850	£850
Professional fees – Ecologist	Ecological Clerk of works - major	£4,000		N/A					
Professional fees – Ecologist	Ecological Clerk of works - minor	£2,000		N/A	£3,000	£1,000	£3,000	£4,000	£3,000
Professional fees – Ecologist	Post intervention monitoring (1 year)	£2,312		N/A					
Professional fees – Ecologist	Post intervention monitoring (2 year)	£4,624		N/A	£4,624	£4,624	£4,624	£4,624	£4,624
Professional fees – Ecologist	Post intervention monitoring (3 years)	£6,936		N/A					
Professional fees – Architect	Design/Faculty	£3,500	£500	N/A	£3,500	£1,500	£3,500	£3,500	£3,500
Professional fees – Architect	Contract administration	£3,000		N/A	£3,000	£1,500	£1,500	£3,000	£3,000
Fees	Faculty	£250	£250	N/A	£250	£250	£250	£250	£250
Fees	Scaffold	£3,238		N/A	£3,238	£3,238	£3,238	£4,000	£3,238
Fees	Porta loos	£500		N/A	£500	£500	£500	£1,000	£1,000
Fees	Bat box	£2,000		N/A	£2,000			£2,000	
Fees	Masonry	£1,000		N/A		£1,000			£1,000
Fees	Eaves box	£13,000		N/A			£13,000	£13,000	£13,000
Contract value			£2,500	N/A	£5,988	£4,988	£16,988	£20,250	£18,488
Contingency	10% of contract value		£250.0		£598.80	£498.80	£1,698.80	£2,025.00	£1,848.80
Estimate values exclude inflation cost on professional fees		TOTAL:	£4,500	N/A	£27,232	£20,132	£37,832	£43,920	£41,482

*Note: Option 4 only to be used in combination with option 5.

Appendix 11. Intervention Option 1: Baffle/ Catch boards at primary roost points.

Description

The addition of baffle/ catch boards below main roost points within the church



Purpose

- To collect bat droppings at concentration points and reduce sight of unsightly accumulations.
 - Cat litter would reduce dampness and reduce smell.
 - Maintained by cleaning once a month during the peak summer activity period when bat droppings are obvious.

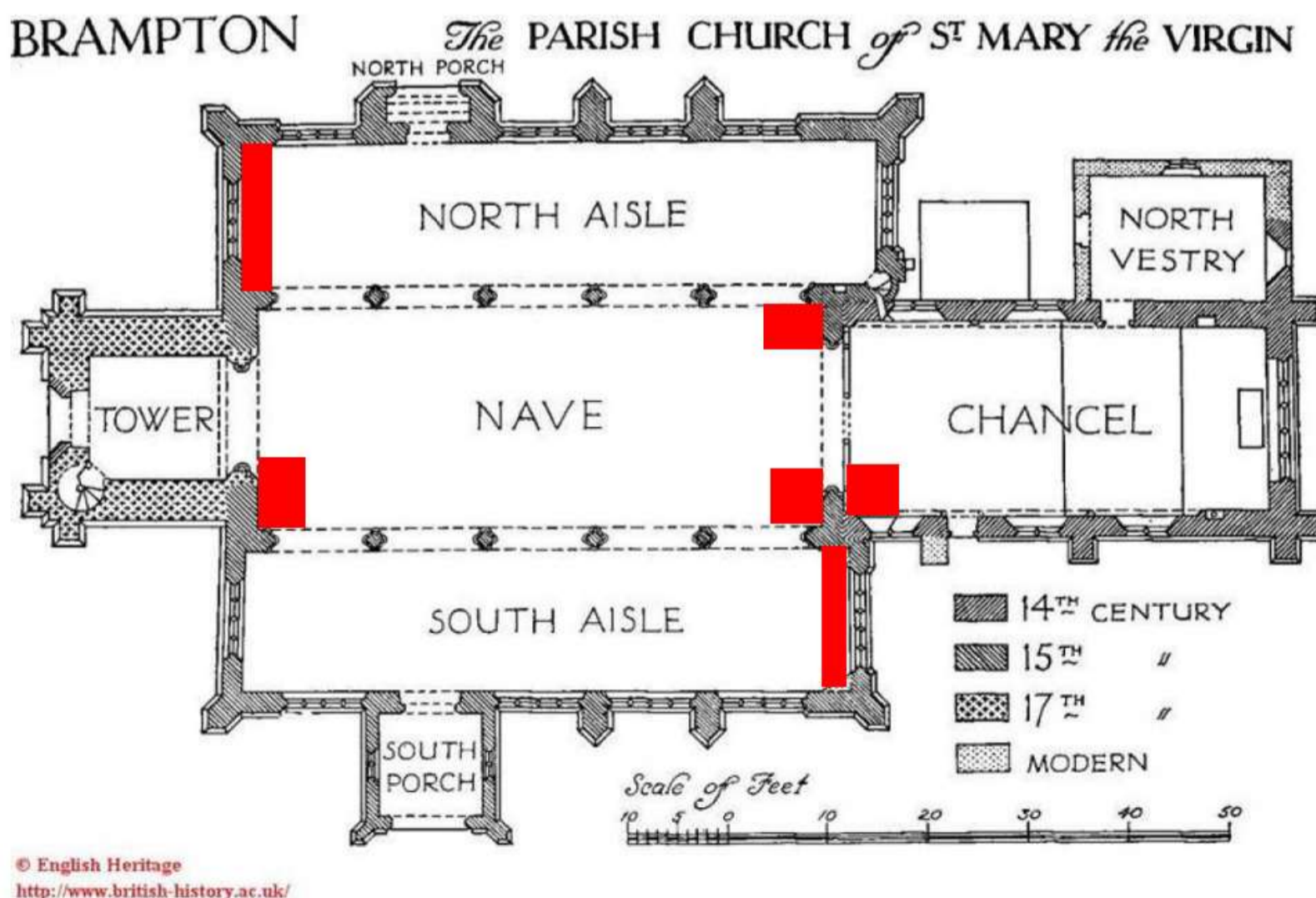
Nature of work

To erect six baffle/ catch boards above head height below known bat roost points (proposed locations in red below). Boards to be constructed of marine ply or similar and painted to match existing wall colour within the church. A lip of 50mm is to be added to reduce spillage of droppings.

The size of the baffle/catch boards will be determined by assessment the known roost points and history (coverage) of droppings, although it is recognized that to reduce visual intrusion, the scale and proportions of the baffle/ catch boards will need to be addressed. They must be of sufficient size to meet the 'need', i.e., control coverage of area covered by droppings.

The work will require 'working at height' and need for scaffolding will be determined by design and contractors appointed to carry out works.

Cleaning of baffle/ catch boards by volunteers may be possible if placed at sufficiently low level to safely work from a ladder or a mobile scaffold platform. Where baffle/ catch boards are placed at height, the ability to be regularly cleaned by volunteers will be limited. In this instance, the costs of cleaning and scaffold will need to be considered prior to installing baffle/ catch boards.



Address

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Facilities and Services

- Car parking:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF
- Access:
 - By arrangement with the PCC.
- Water:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF
- Electricity:
 - Yes
- Toilets:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF

Consultation

Historic England: N/A
Natural England: N/A
Local bat group: N/A
Bat Conservation Trust: N/A
Victorian Society:
Society for Protection of Ancient Buildings:
Church Monuments Society:
Other:

Consents

Faculty:
Faculty List A: (12) The installation of bat boxes as part of a bat management programme
Faculty List B: other items?
Planning consent:
Listed building consent:
Building regulations:
European Protected Species license (type):

- Not required where the provision of baffle/catch boards will not block bat access points or damage roosts.
- Consider possible disturbance offence if working close to any bat roosts.

Other:

Key personnel

PCC Chairperson:	Keith Wood keithgwood@btinternet.com
Church Representative:	Marrissa Harris marissa.harris@ntlworld.com
Church Architect:	Freeland Rees Roberts Architects Iain Frearson. if@frrarchitects.co.uk
Bats in Churches Engagement Officer:	Diana Spencer diana.spencer@churchofengland.org
Ecologist:	Bernwood Ecology Joshua Sowden Joshua@bernwood.net

Option Costs

Professional fees:

- Architect:
 - Design and contract specifications
 - Contract management to completion
- Ecologist:
 - Survey. Assessment of location of bat droppings and placement of baffle/ catch boards.
 - License Application through to license return. Not required.
 - Ecological Clerk of Works. N/A
 - Post-Intervention Monitoring. N/A
- Other (i.e., environmental monitoring, quantity survey, structural engineer): N/A

Contract Cost Forecast:

- Contractor's Work Programme:
 - Not required if intervention avoids impacts on bats including disturbance, damage or destruction of roosts.

Contractor's Health and Safety Plan

- Required prior to undertaking works.

Volunteer Opportunities:

- Survey
 - Record bat dropping locations and quantities prior to installation of baffle/ catch boards. Use information to accurately locate position of baffle/ catch boards.
- Monitoring
 - Desirable not essential for the installation of baffle/ catch boards
- Maintenance
 - Clean once a month during peak (summer) activity period
- Constraints
 - Cleaning at height

Management and Maintenance

Inspection:

- Weekly/monthly to determine cleaning programme.

Cleaning

- Anticipated once a month if carried out by volunteers. If working at height, restrictions prevent volunteer cleaning; a cleaning contract once a year at the end of the peak (summer) activity season is recommended.

Constraints

- Working at height
- Animal waste

Risk Register

Programme

- No restrictions to programme

Survey coverage and age of data

- Four surveys complying with current guidelines carried out in 2021

Consents

- Identify if Faculty consent is required or covered under list A/B exemption

Uptake of intervention

- Baffle/ catch boards will be located based on current knowledge of the location of main roost points, however roost location will vary over time. Baffle/ catch boards are unlikely to be sufficient in size to control droppings if large bat roosts are present or develop.
- Baffle/ catch boards will not control the random distribution of bat droppings or urine staining from bats flying around inside the church.

Late discoveries

- Bats: Not likely to be a significant risk as bat roosts and bat access points are not likely to be impacted by proposals.
- Architectural issues: Unlikely as baffle/ catch boards will be placed on open walls or corners. Architect to review.

Working methods

- Architectural specifications only subject to no roosts being damaged/destroyed or bat access points being impeded.

Material costs/ supply

- Current availability of building materials has been a recent issue following Brexit/ COVID-19 pandemic. Material costs have risen significantly and may continue to do so in the foreseeable future.

Assessments of Impacts

Receptor	Bat Populations	Heritage Assets	Architectural	Social	Visual
Intervention Scale					
Low Impact Intervention	0	0	0	1	-2
Moderate Impact Intervention					
High Impact Intervention					

Appendix 12. Option 2: Small scale temporary sails below roosts.

Description

The addition of temporary sails, present during summer months only (in place of fixed baffle boards) below main roost points within the church.



Can bat access point be retained and control droppings by placing catch board below (red) or sails (light blue)?

26/08/2021



Note creative use of design, scale and colouring may allow these features to add to the character and story of the church

Purpose

- To collect bat droppings at concentration points and reduce sight of unsightly accumulations.
 - Maintained by cleaning once a month during the peak summer activity period when bat droppings are obvious.

Nature of work

To erect up to six temporary sails below known bat roost points (proposed locations below in red).

Sails are:

- to be made of a cloth material, coloured as available and chosen by church community
- to be fixed in place a system of lines (sheets), cleats (wall fitted), blocks and/or pulleys that allow for the sails to be set in place or lowered by members of the church community
- designed in size to collect droppings that fall from main roost points but avoiding larger scale appearance that might otherwise dominate visual character of the building.
- Design influence may be used to allow for religious symbolism or add colour and character where in keeping with the church and/or church community.

The size of the sails will be determined by assessment of the known roost points and history (coverage) of droppings, although it is recognized that to reduce visual intrusion, the scale and proportions of the sails will need to be addressed. They must be of sufficient size to meet the 'need', i.e., control coverage of area covered by droppings.

Placement of fixtures and fittings will require working at height including the need for scaffolding, which will need to be determined by design and contractors appointed to carry out the initial fittings works. After that, apart from maintenance, no working at height will be required.

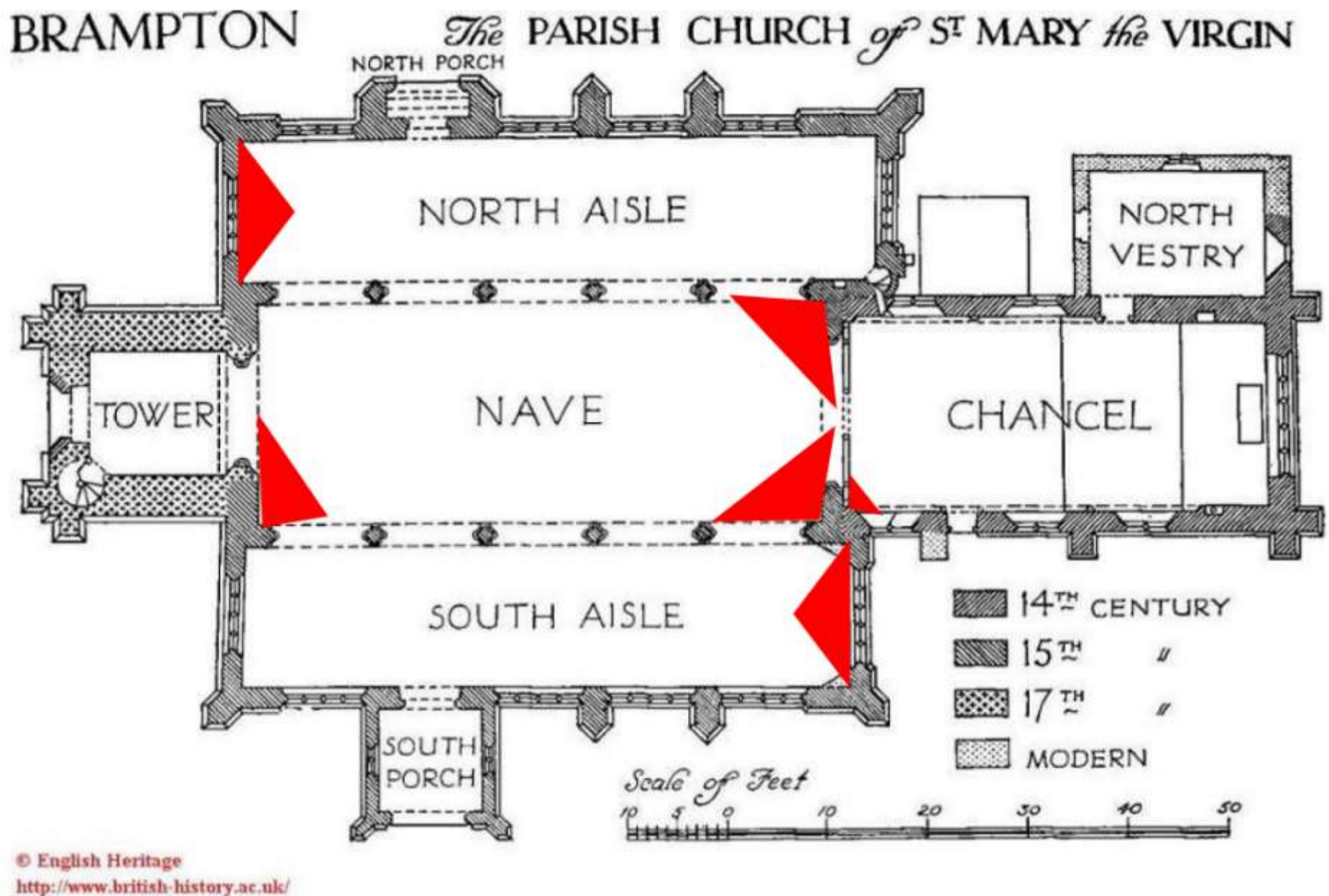
Cleaning of sails by volunteers will be possible if placed at sufficiently low level to safely work from a ladder or a mobile scaffold platform. The annual costs for cleaning sails will need to be considered subject to manufacturer's recommendations.

Address

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Facilities and Services

- Car parking:
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- Access:
 - By arrangement with the PCC.
- Water:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF
- Electricity:
 - Yes
- Toilets:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF



Consultation

Historic England:
Natural England: N/A
Local bat group: N/A
Bat Conservation Trust: N/A
Victorian Society:
Society for Protection of Ancient Buildings:
Church Monuments Society:
Other:

Consents

Faculty:
Faculty List A: (12) The installation of bat boxes as part of a bat management programme
Faculty List B: other items?
Planning consent:
Listed building consent:
Building regulations:
European Protected Species License (type):

- Not required where the provision of sails will not block bat access points or damage roosts.
- Consider possible disturbance offence if working close to any bat roosts.

 Other:

Key personnel

PCC Chairperson: Keith Wood
keithgwood@btinternet.com
Church Representative: Marrison Harris
marissa.harris@ntlworld.com
Church Architect: Freeland Rees Roberts Architects
Iain Frearson.
if@frrarchitects.co.uk
Bats in Churches Engagement Officer: Diana Spencer
diana.spencer@churchofengland.org
Ecologist: Bernwood Ecology
Joshua Sowden

Joshua@bernwood.net

Option Costs

Professional fees:

- Architect: N/A (subject to design competition)
 - Design and contract specifications
 - Contract management to completion
- Ecologist:
 - Survey. Assessment of location of bat droppings and placement of sails.
 - License Application through to license return. Not required.
 - Ecological Clerk of Works. N/A
 - Post-Intervention Monitoring. N/A
- Other (i.e., environmental monitoring, quantity survey, structural engineer): N/A

Contract Cost Forecast:

- Contractor's Work Programme:
 - Not required if intervention avoids impacts on bats including disturbance, damage or destruction of roosts.

Contractor's Health and Safety Plan

- Required prior to undertaking works.

Volunteer Opportunities:

- Survey
 - Record bat dropping location and quantities prior to installation of sails. Use information to accurately locate position of sail fixtures and fittings.
- Monitoring
 - Desirable not essential for the installation of sails
- Maintenance
 - Annual clean. Where manageable by local community consider basic cleaning once a month during peak (summer) activity period
- Constraints
 - Manageability of sails by local community

Management and Maintenance

Inspection:

- Monthly to determine cleaning programme.
- Annual inspection of fixtures and fittings.

Cleaning

- Anticipated once a month if carried out by volunteers.
- Annual sail cleaning contract once a year at the end of the peak (summer) activity season is recommended.

Constraints

- Animal waste

Risk Register

Design principles:

- Proposals are in principle and subject to design brief that considers:
 - Appearance
 - Fixtures and fittings - permanent on into walls or separate on poles and supports
 - Sail material; durability, impact of faeces and urine on material, staining.
 - Colour and use of decorative finish

Programme

- No restrictions where direct impact on roosts or avoidance of disturbance near to roosts can be controlled.

Survey coverage and age of data

- Four surveys complying with current guidelines carried out in 2021

Consents

- Identify if Faculty consent is required or covered under list A/B exemption

Uptake of intervention

- Sails will be located based on current knowledge of the location of main roost points, however roost location will vary over time. Small scale sails are unlikely to be sufficient in size to control droppings if large bat roosts are present or develop.
- Small scale sails will not control the random distribution of bat droppings or urine staining from bats flying around inside the church.

Late discoveries

- Bats: Not likely to be a significant risk as bat roosts and bat access points are not likely to be impacted by proposals.
- Architectural issues: Unlikely as sails will be placed on open walls or corners. Architect to review. Fixtures and fittings applied to wall may require appropriate faculty consent.

Working methods

- Architectural specifications only subject to no roosts being damaged/destroyed or bat access points being impeded.

Material costs/ supply

- The design and use of sails remain untested. A full design scheme will be required prior adaption of this approach.
- Current availability of building materials has been an recent issue following Brexit/ COVID-19 pandemic. Material costs have risen significantly and may continue to do so in the foreseeable future.

Assessments of Impacts

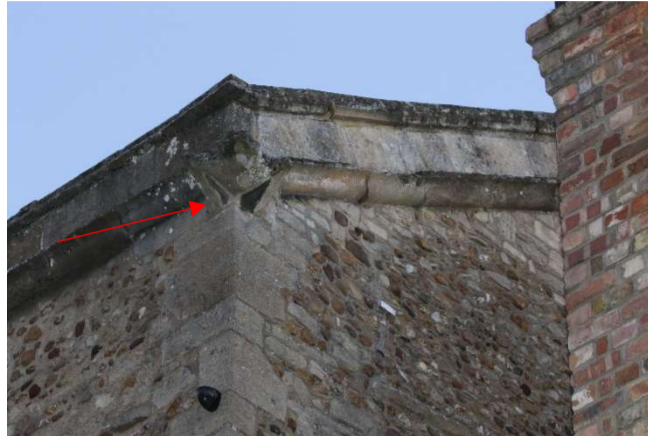
Receptor	Bat Populations	Heritage Assets	Architectural	Social	Visual
Intervention Scale					
Low Impact Intervention					
Moderate Impact Intervention	0	0	0	1	-3
High Impact Intervention					

Appendix 13. Option 3: Box in nave bat access (south eastern corner – internal).

Description

The light touch survey (2017) identified a gap in the stonework above the nave roof (eastern end of the southern side). In 2021, this gap was used by bees and created issues within the church throughout the summer.

It is proposed that subject to architectural issues with timber masonry and beams, together with decorative wooden finishes, a discrete sealed box unit using untreated oak and 5mm ply is created to allow bats to continue to use the existing gap (bat access point) in the masonry to access a controlled sealed roost that would prevent bats accessing the internal area of the church.



Purpose

To allow bats to continue to use the bat access point (existing gap in the masonry) to access a controlled sealed roost that prevents bat accessing the internal area of the church.

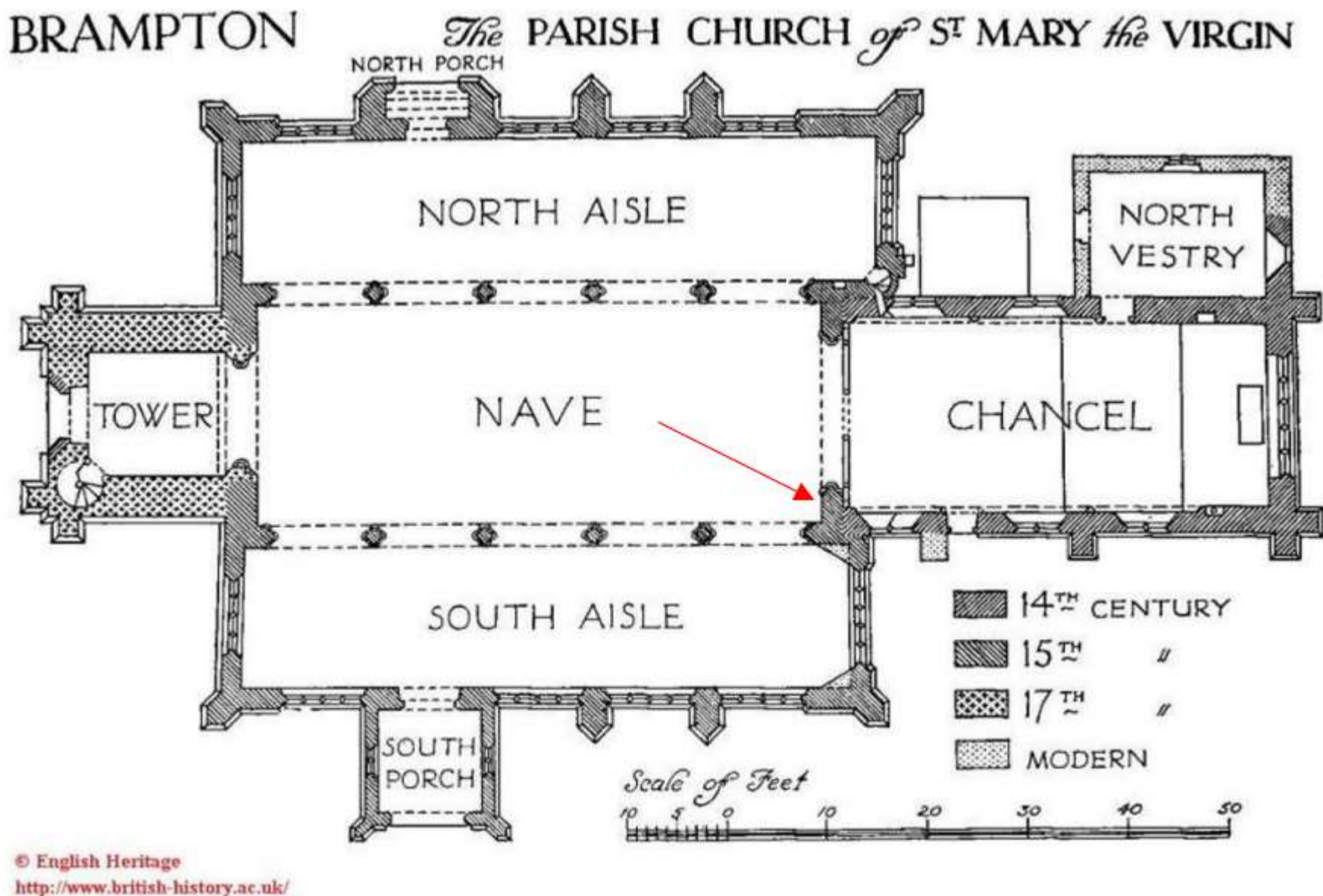
Nature of work

To create a sealed bat box between the roof timbers and masonry on the south eastern corner of the nave roof.

Works will need to take place either or both from inside the church and externally, working at height from scaffold platform.

- Internally, the works will need to seal up bat access into the internal area of the church, forming a discrete sealed bat box.
- Externally, the works may require the access by the removal and reconstruction of the masonry to gain access to area behind.

Materials to be used include untreated oak or 5mm ply to create sealed unit, ensuring bat access to the internal area of the church is fully sealed.



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- Access:
 - By arrangement with the PCC.
- Water:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF
- Electricity:
 - Yes
- Toilets:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF

Consultation

- Historic England:
- Natural England: Yes
- Local bat group: Yes
- Bat Conservation Trust: Yes
- Victorian Society:
- Society for Protection of Ancient Buildings:
- Church Monuments Society:
- Other:

Consents

Faculty:

Faculty List A: (12) The installation of bat boxes as part of a bat management programme

Faculty List B: other items?

Planning consent:

Listed building consent:

Building regulations:

European Protected Species License (type):

- Bats in Churches or Standard EPS License required.

Other:

Key personnel

PCC Chairperson:	Keith Wood keithgwood@btinternet.com
Church Representative:	Marrissa Harris marissa.harris@ntlworld.com
Church Architect:	Freeland Rees Roberts Architects Iain Frearson. if@frrarchitects.co.uk
Bats in Churches Engagement Officer:	Diana Spencer diana.spencer@churchofengland.org
Ecologist:	Bernwood Ecology Joshua Sowden Joshua@bernwood.net

Option Costs

Professional fees:

- Architect:
 - Design and contract specifications
 - Contract management to completion
- Ecologist:
 - Survey: Bat surveys will need to be maintained as up to date and cover the preceding years peak activity period.
 - License Application through to license return. Registration under the Bats in Churches Class license, following granting of all necessary consents including Faculty.
 - Ecological Clerk of Works. will be required to ensure compliance with license including pre-start briefing/toolbox talk, creation of bat box and bat access point
 - Post-Intervention Monitoring. will be required and comply with current guidance. This is likely to be two years post-intervention monitoring carried out after the peak maternity period but prior to the break-up of colonies. Monitoring surveys will ideally be carried out in the first and third year after completion of works
- Other (i.e., environmental monitoring, quantity survey, structural engineer): N/A

Contract Cost Forecast:

- Contractor's Work Programme:

- Works will need to be carried out in either the spring or autumn period to avoid the peak maternity and hibernation periods.

Contractor's Health and Safety Plan

- Required prior to undertaking works.

Volunteer Opportunities:

- Survey
 - N/A.
- Monitoring
 - Encourage volunteers to undertake long term monitoring following the licensed post-intervention monitoring period
- Maintenance
 - N/A
- Constraints
 - Height prevents long term inspection or maintenance

Management and Maintenance

Inspection:

- Review effectiveness as part of Quinquennial Review.

Cleaning

- N/A

Constraints

- Height prevents long term inspection or maintenance

Risk Register

Design principles:

- Proposals are in principle and subject to design brief that considers:
 - Practicality of implementation
 - Appearance – must not be visually intrusive

Programme

- Works will need to be carried out in either the spring or autumn period to avoid the peak maternity and hibernation periods

Survey coverage and age of data

- Four surveys complying with current guidelines carried out in 2021

Consents

- Identify if Faculty consent is required or covered under list A/B exemption

Uptake of intervention

- 2021 use of bat access point by bees may prevent use by bats

Late discoveries

- Bats: Presence of additional species using bat access.
- Architectural issues: Practicality of implementation. Site may not be suitable due to structural complexity. Condition of timbers and masonry once works start. May require additional works and incur further costs.

Working methods

- Subject to architectural specifications

Material costs/ supply

- The idea remains untested and requires at height inspection to check for viability.
- Current availability of building materials has been a recent issue following Brexit/ COVID-19 pandemic. Material costs have risen significantly and may continue to do so in the foreseeable future.

Assessments of Impacts

Receptor	Bat Populations	Heritage Assets	Architectural	Social	Visual
Intervention Scale					
Low Impact Intervention					
Moderate Impact Intervention	-1	-1	-1	3	0
High Impact Intervention					

Appendix 14. Option 4: Close up nave bat access (south eastern corner – external).

Description

The light touch survey (2017) identified a gap in the stonework above the nave roof (eastern end of the southern side). In 2021, this gap was used by bees and created issues within the church throughout the summer.

This option is not proposed in isolation and must be combined with the provision of alternative bat roost point(s) for soprano pipistrelle.

Closing up the bat access on east side of the nave to prevent bats and bees accessing the internal area of the church.



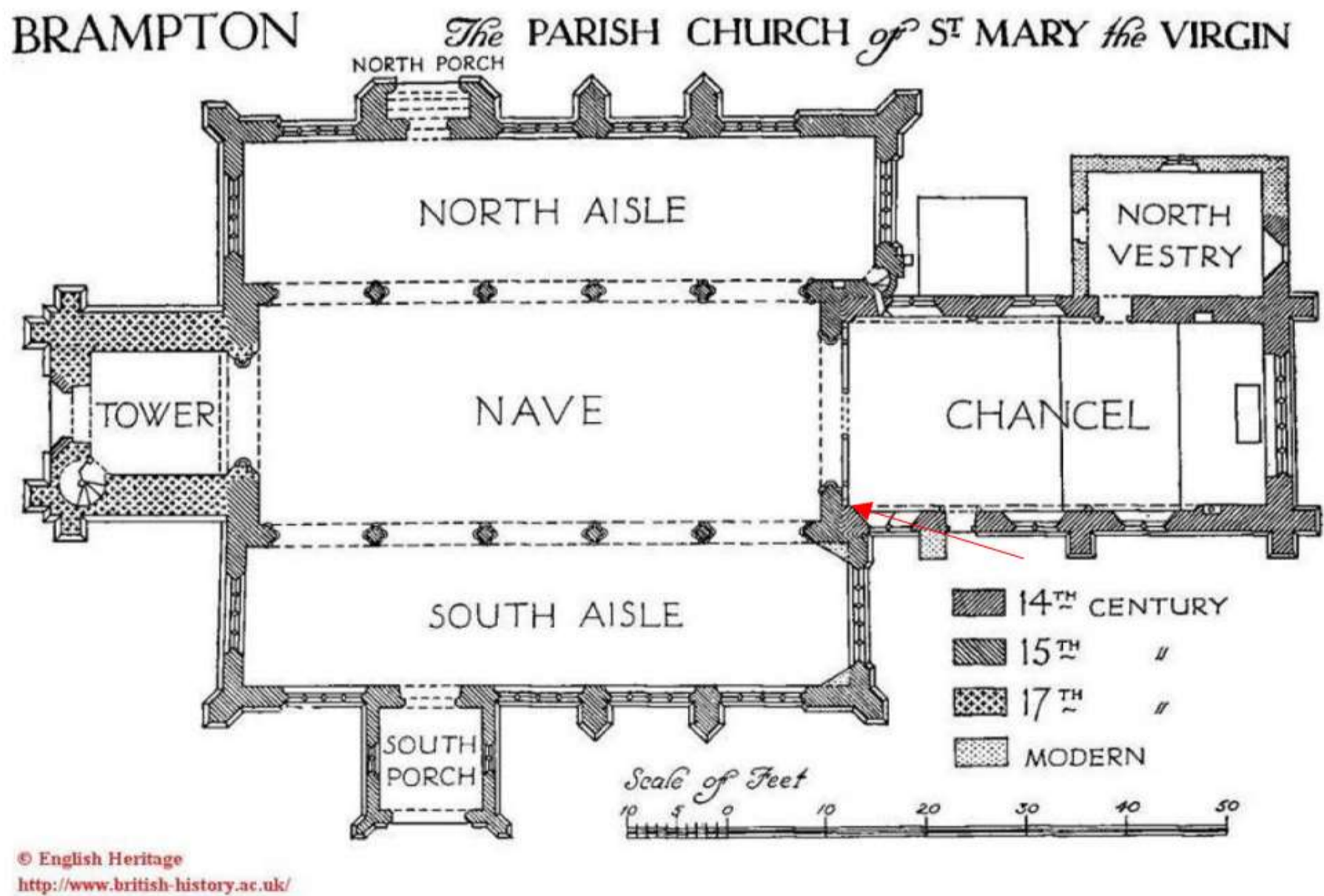
Purpose

To restrict bat and bee access to the internal area of the church.

Nature of work

To seal up the external masonry gap by using lime mortar (as directed by architect).

Works will need to take place from outside the church working at height from scaffold platform.



Address

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Facilities and Services

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- Access:
 - By arrangement with the PCC.
- Water:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF
- Electricity:
 - Yes
- Toilets:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF

Consultation

- Historic England:
- Natural England: Yes
- Local bat group: Yes
- Bat Conservation Trust: Yes
- Victorian Society:
- Society for Protection of Ancient Buildings:
- Church Monuments Society:
- Other:

Consents

Faculty:

Faculty List A: (12) The installation of bat boxes as part of a bat management programme

Faculty List B: other items?

Planning consent:

Listed building consent:

Building regulations:

European Protected Species License (type):

- A protected species licence will be required and alternative provision of bat access and roost point(s) will need to be considered.

Other:

Key personnel

PCC Chairperson:	Keith Wood keithgwood@btinternet.com
Church Representative:	Marrissa Harris marissa.harris@ntlworld.com
Church Architect:	Freeland Rees Roberts Architects Iain Frearson. if@frrarchitects.co.uk
Bats in Churches Engagement Officer:	Diana Spencer diana.spencer@churchofengland.org
Ecologist:	Bernwood Ecology Joshua Sowden Joshua@bernwood.net

Option Costs

Professional fees:

- Architect:
 - Design and contract specifications
 - Contract management to completion
- Ecologist:
 - Survey: Bat surveys will need to be maintained as up to date and cover the preceding years peak activity period.
 - License Application through to license return. Registration under the Bats in Churches Class license, following granting of all necessary consents including Faculty.
 - Ecological Clerk of Works. will be required to ensure compliance with license including pre-start briefing/toolbox talk, creation of bat box and bat access point
 - Post-Intervention Monitoring. will be required and comply with current guidance. This is likely to be two years post-intervention monitoring carried out after the peak maternity period but prior to the break-up of colonies. Monitoring surveys will ideally be carried out in the first and third year after completion of works
- Other (i.e., environmental monitoring, quantity survey, structural engineer): N/A

Contract Cost Forecast:

- Contractor's Work Programme:
 - Works will need to be carried out in either the spring or autumn period to avoid the peak maternity and hibernation periods.

Contractor's Health and Safety Plan

- Required prior to undertaking works.

Volunteer Opportunities:

- Survey
 - N/A.
- Monitoring
 - N/A
- Maintenance
 - N/A
- Constraints
 - Cannot be carried out in isolation to the requirements for the provision of additional bat access and roost points

Management and Maintenance

Inspection:

- N/A

Cleaning

- N/A

Constraints

- Cannot be carried out in isolation to the requirements for the provision of additional bat access and roost points

Register

Design principles:

- Proposals are in principle and subject to design brief that considers:
 - Practicality of implementation

Programme

- Works will need to be carried out in either the spring or autumn period to avoid the peak maternity and hibernation periods

Survey coverage and age of data

- Four surveys complying with current guidelines carried out in 2021

Consents

- Identify if Faculty consent is required or covered under list A/B exemption

Uptake of intervention

- N/A

Late discoveries

- Bats: Presence of additional species using bat access.
- Architectural issues: Practicality of implementation. Condition of masonry once works start. May require additional works and incur further costs.

Working methods

- Subject to architectural specifications

Material costs/ supply

- The idea remains untested and requires at height inspection to check for viability.
- Current availability of building materials has been a recent issue following Brexit/ COVID-19 pandemic. Material costs have risen significantly and may continue to do so in the foreseeable future.

Assessments of Impacts

Receptor	Bat Populations	Heritage Assets	Architectural	Social	Visual
Intervention Scale					
Low Impact Intervention					
Moderate Impact Intervention	-3	0	0	3	0
High Impact Intervention					

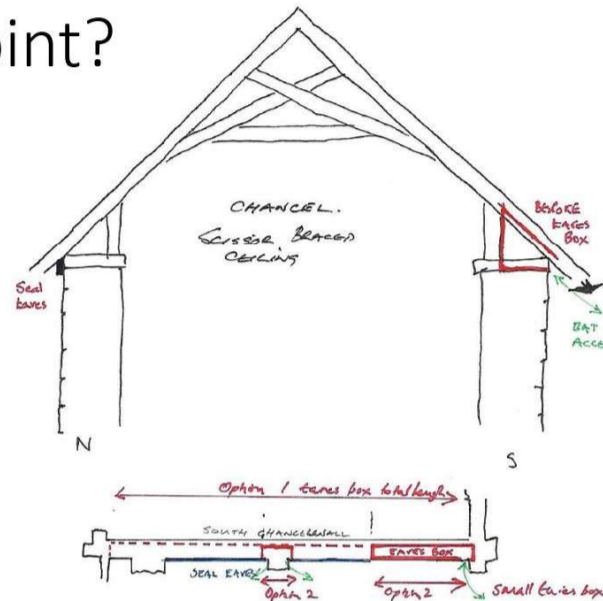
Appendix 15. Option 5: Bat box in chancel eaves including chimney (south side)

Description

Bats are accessing the church on the south side of the chancel eaves.

It is proposed that subject to architectural issues with timber masonry and beams, together with decorative wooden finishes, a discrete sealed eaves box is created on the south side of the internal scissors braced ceiling eaves using untreated oak and/or 5mm ply. Once created the bats can continue to the exiting gaps (bat access points) in the south eastern corner and in the vicinity of the discussed chimney. The sealed eaves box will need to prevent bats accessing the internal space of the church.

Option: Box in chancel eaves at bat access point?



26/08/2021

Bernwood



Bat access points via eaves on south side of chancel



Purpose

To allow bats to continue to use the bat access points (south eastern corner and chimney area) to access a controlled sealed roost that prevents bat accessing the internal area of the church.

Nature of work

To create a sealed bat box behind the roof timbers on the south side of the chancel.

Works will need to take place either or both from inside the church and externally, working at height from scaffold platform. Internally the work will need to seal up bat access into the internal area of the church, forming a discrete sealed bat box.

Materials to be used include untreated oak or 5mm ply to create sealed unit, ensuring bat access to the internal area of the church is fully sealed.

This option will need to be used in conjunction with either boxing in (Option 3) or closing up (Option 4) the existing bat access on eastern side of the nave (gap in masonry used by bees in 2021).

Address

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Facilities and Services

- Car parking:
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- Access:
 - By arrangement with the PCC.
- Water:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF
- Electricity:
 - Yes
- Toilets:
 - St Mary Magdalene Church Hall, Church Road, Brampton, Huntingdon. PE28 4PF

Consultation

- Historic England:
- Natural England: Yes
- Local bat group: Yes
- Bat Conservation Trust: Yes
- Victorian Society:
- Society for Protection of Ancient Buildings:
- Church Monuments Society:
- Other:

Consents

Faculty:

Faculty List A: (12) The installation of bat boxes as part of a bat management programme

Faculty List B: other items?

Planning consent:

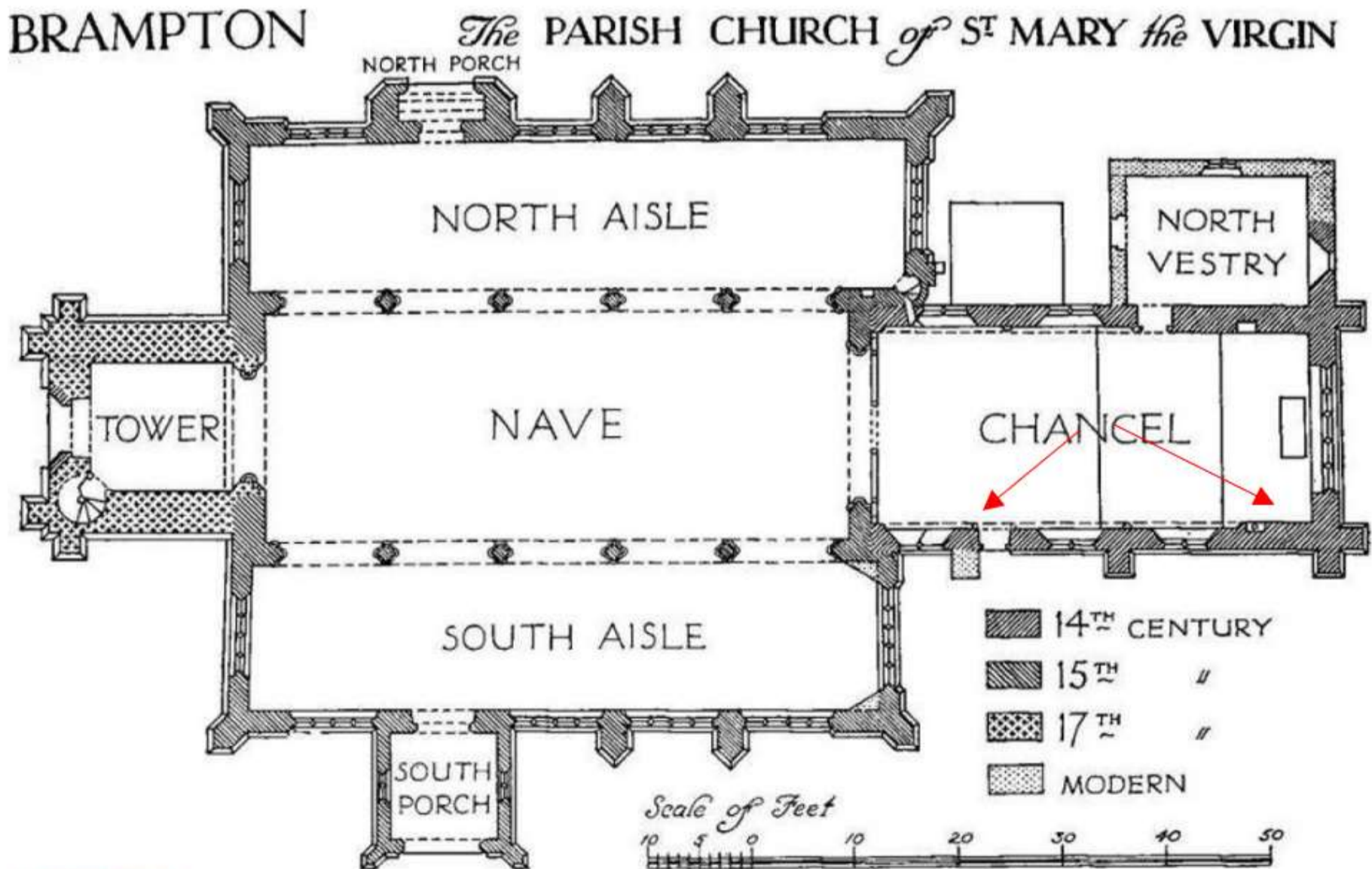
Listed building consent:

Building regulations:

European Protected Species License (type):

- Required as bat access to the main body of the church will be blocked resulting in the loss of bat roosts for soprano pipistrelle and brown long-eared bat.

Other:



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<http://www.british-history.ac.uk/>

Key personnel

PCC Chairperson: Keith Wood

Church Representative:	keithgwood@btinternet.com Marrissa Harris marissa.harris@ntlworld.com
Church Architect:	Freeland Rees Roberts Architects Iain Frearson. if@frrarchitects.co.uk
Bats in Churches Engagement Officer:	Diana Spencer diana.spencer@churchofengland.org
Ecologist:	Bernwood Ecology Joshua Sowden Joshua@bernwood.net

Option Costs

Professional fees:

- Architect:
 - Design and contract specifications
 - Contract management to completion
- Ecologist:
 - Survey: Bat surveys will need to be maintained as up to date and cover the preceding years peak activity period.
 - License Application through to license return. Registration under the Bats in Churches Class license, following granting of all necessary consents including Faculty.
 - Ecological Clerk of Works. will be required to ensure compliance with license including pre-start briefing/toolbox talk, creation of bat box and bat access point
 - Post-Intervention Monitoring. will be required and comply with current guidance. This is likely to be two years post-intervention monitoring carried out after the peak maternity period but prior to the break-up of colonies. Monitoring surveys will ideally be carried out in the first and third year after completion of works
- Other (i.e., environmental monitoring, quantity survey, structural engineer): N/A

Contract Cost Forecast:

- Contractor's Work Programme:
 - Works will need to be carried out in either the spring or autumn period to avoid the peak maternity and hibernation periods.
 - This option will need to be used in conjunction with either boxing in (Option 3) or closing up (Option 4) the existing bat access on east side of the nave (gap in masonry used by bees in 2021).

Contractor's Health and Safety Plan

- Required prior to undertaking works.

Volunteer Opportunities:

- Survey
 - Current surveys (2021) complying have been carried out.
- Monitoring
 - Encourage volunteers to undertake long-term monitoring following the licensed post-intervention monitoring period
- Maintenance
 - N/A
- Constraints
 - Height prevents long term inspection or maintenance

Management and Maintenance

Inspection:

- Review effectiveness as part of Quinquennial Review.

Cleaning

- N/A

Constraints

- Height prevents long term inspection or maintenance

Risk Register

Design principles:

- Proposals are in principle and subject to design brief that considers:
 - Practicality of implementation
 - Appearance – must not be visually intrusive
 - Will need to be used in conjunction with either boxing in or closing up the existing bat access on east side of the nave (gap in masonry used by bees in 2021)

Programme

- Works will need to be carried out in either the spring or autumn period to avoid the peak maternity and hibernation periods

Survey coverage and age of data

- Four surveys complying with current guidelines carried out in 2021

Consents

- Identify if Faculty consent is required or covered under list A/B exemption

Uptake of intervention

- Changes in bat access to the internal structure may negatively impact on bat uptake of the new eaves box

Late discoveries

- Bats: Presence of additional species using bat access.
- Architectural issues: Practicality of implementation. Site may not be suitable due to structural complexity. Condition of timbers and masonry once works start. May require additional works and incur further costs.

Working methods

- Subject to architectural specifications

Material costs/ supply

- The idea remains untested and requires at height inspection to check for viability.
- Current availability of building materials has been a recent issue following Brexit/ COVID-19 pandemic. Material costs have risen significantly and may continue to do so in the foreseeable future.

Assessments of Impacts

Receptor	Bat Populations	Heritage Assets	Architectural	Social	Visual
Intervention Scale					
Low Impact Intervention					
Moderate Impact Intervention	-1	-1	-1	3	0
High Impact Intervention					