B E R N W O O D E C O L O G Y

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All Saints Church

Wetheringsett

Suffolk

Bats in Churches: Bat Management Plan

DEFRA

29th October 2021

DEFRA-BiC-21.DEFRA14 (Issue1)

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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No responsibility will be accepted for changes or alterations made to this report following submission to Bernwood Ecology client.

Bernwood Ecology, its employees and associates reserve the right to report on any incidents or actions [deliberate or reckless] that result in a breach of licence conditions or are in contravention of existing legislation.

Quality Assurance

Version 1. 29th October 2021.
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Executive Summary

Bernwood Ecology have undertaken bat emergence and re-entry surveys at All Saints Church, Wetheringsett. The purpose of the surveys was to find practical solutions to encourage co-existence between the church communities and the roosting bats through the preparation of a management plan for bats at the church.

Through the process, options for interventions based on scale of impacts and viability have been developed and then 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 Geosphere Environmental in 2017, identifying two roosting locations in the south aisle (common pipistrelle and brown long-eared bat) and possible roosting locations in the open porch and the tower (serotines). Two dead common pipistrelles were found beneath the main pipistrelle roost in south aisle. Access into the church was via gaps around the doorway from the tower into the nave. An emergence survey in 2019 by the Suffolk Bat Group found additional bat access points in an overstorey window in the south aisle, a tower window, the porch and chancel roofs, and the south aisle eaves.

Building inspections were conducted before each bat emergence survey in 2021.These found significant quantities of droppings in the south aisle where the roof meets the nave wall. Other accumulations of droppings were present below timber joints in the north aisle, below the ridge between the nave and chancel, and on the ground floor of the tower.

Three dusk emergence and one dawn re-entry survey of the church were conducted by Bernwood Ecology in 2021 to determine roosting bat use of the church and inform proposed mitigation and management measures. The surveys identified multiple roost locations within the church interior, principally in the nave and south and north aisles, and two through-accesses used by multiple species. Eight roosts were identified externally.

Seven options based on low, moderate and high impact (cost) interventions are presented and their long-term viability assessed.

- Management Option 1: Covers (pews) and voiles (monuments)
- Management Option 2: Baffle/ catch boards at primary roost points
- Management Option 3: Temporary sail (west end of nave)
- Management Option 4: Small-scale sails (north and south aisles)
- Management Option 5: Box-in aisle (north and south aisles)
- Management Option 6: Chancel ceiling
- Management Option 7: Tower enhancements (belltower)

Of the seven options, only Option 2 present a 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.

Options 3 and 4 are presented as novel and untested interventions that would be subject to a separate design competition, in which it is hoped that a more generic low-cost and flexible solution to resolving, or at a minimum reducing, the tension between bats and church communities.

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

Acknowledgements

Church Representative:	Rosemary Foulger
	Cathy Smith
Church Architect:	Nick Jacob
Suffolk Bat Group:	Sue Hooton
Bats in Churches Engagement Officer:	Honor Gay
	Rachel Arnold
	Judith Milne
	Kate Jones

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1. Introduction and Objectives

1.1 Bernwood Ecology were instructed by DEFRA on 27th April 2021 to work with All Saints Church, Wetheringsett, Suffolk, IP14 5PH (TM 12735 66848), 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 All Saints Church, Wetheringsett, is a Grade 1 listed building, characteristically faced in knapped flint. It is set within a conservation area, on the High Street of the small village, making this church one of the few suburban churches in the Bats in Churches (BiC) project. It is a perfect example of a late-Medieval East Anglian church dating from the second half of the 15th century, with a substantial tower, lofty aisles and a clerestory.

1.3 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.

1.4 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

1.5 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

1.6 A Light Touch Survey (LTS) was carried out in 2017 by Geosphere Environmental found evidence of common pipistrelle *Pipistrellus pipistrellus* (dead bats and faeces), brown long-eared *Plecotus auritus* (faeces) and serotine *Eptesicus serotinus* (faeces) bats in the church. The common pipistrelle and brown long-eared bat were recorded roosting in the south aisle, using timbers with gaps above the door providing bat

access into the church. The serotines were reported to be using the tower/ porch for roosting, with gaps above the door again providing bat access into the church (Appendix 3).

1.7 The Suffolk Bat Group carried out an activity survey on 29th June 2019. Soprano and common pipistrelles, together with a barbastelle *Barbastella barbastellus*, were recorded flying inside the church. Soprano pipistrelle *P. pygmaeus* emergence was confirmed from the junction between the tower and the western end of the south aisle. Primary bat access points identified were a window at the eastern end of the overstorey (i.e., a missing windowpane), the internal tower door, and points in the porch roof, eaves at the eastern end of the south aisle, a gap at the south aisle eaves junction with the tower, and the chancel roof.

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;
- roost access point(s).

3.2 The building inspections were carried out by C. Damant, MCIEEM (bat survey class licence levels 3 & 4 surveyor: 2015-12601-CLS-CLS/ 2015-12602-CLS-CLS); C. Whiting, MSc., MCIEEM (bat survey class licence level 2 surveyor: 2015-14745-CLS-CLS); S. Lambiase, MRes. MSc. MCIEEM (bat survey class licence levels 3 & 4 surveyor: 2015-11812-CLS-CLS/ 2015-11813-CLS-CLS); J. Parden, BSc. (bat survey class licence level 2 surveyor: 2015-14697-CLS-CLS); and D. Sweeting, MCIEEM (bat survey class licence level 2 surveyor: 2015-14745-CLS-CLS) on 20th May 2021, 24 June 2021, and 26th July 2021, following the WML-CL32 licence requirements and the Bat Conservation Trust (BCT) Good Practice Guidelines (Collins, 2016) (Table 1). 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, binoculars, digital camera, and sample jars (for collecting droppings for subsequent DNA analysis if required).

Bat Emergence and Re-entry Surveys

3.4 Three dusk bat emergence and one dawn re-entry surveys were undertaken on the 20th May 2021, 24th June 2021, and 26-27th July 2021 (Table 1). The surveys were carried out by C. Damant; C. Whiting; S. Lambiase; J. Parden; J. Wylie, BSc. ACIEEM; L. Washington, BSc.; and A. Gregory, in conjunction with Suffolk Bat Group volunteers, in line with the WML-CL32 licence requirements and best practice guidelines (e.g., English Nature, 2004; Natural England, 2016; 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 Pettersson 240X time expansion handheld detectors recording to Tascam digital audio recorders, Elekon Batlogger M full spectrum

handheld detectors, and Echometer Touch 2 Pro full spectrum handheld detectors. The surveys were supported by Elekon Batlogger A+ and AudioMoth remote bat detectors. Details of the remote bat detector settings used are included (Tables 2 & 3). Night-shot video cameras Canon XA20, Canon XA30, Sony HDR SR5, and a 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 Pulsar Helion thermal imaging scope and FLIR Scion OTM266 thermal monocular cameras, were used.

Table 1. Bat activity survey details.

Date	Start Time	End Time	Sunset/ Sunrise	Surveyor Initials	Weather Conditions
20/05/2021	20:35	22:55	20:52	CD, CW, SL, AG, LW, JW	12.8°C, dry, 50% cloud cover, light wind
24/06/2021	21:05	23:15	21:21	CW, SL, AG, LW, JP	19.3°C, dry, 90% cloud cover, no wind
26/07/2021	20:40	22:45	20:56	CD, CW, AG, JP, LW	21.1°C, dry, no wind
27/07/2021	03:00	05:35	05:09	CD, CW, AG, JP, DS	18°C, dry, no wind

Table 2. Elekon Batlogger A+ settings.

Settings	Standard (User 0)
Firmware	FW2-6-2.BA
Sample frequency	500
Pre trigger (ms)	500
Post trigger (ms)	1000
Auto trigger max time (ms)	20000
Auto record	Yes
Mode	CrestAdv
Interval	5
Recording period	-00:15 Sunset +2 hours

Table 3. AudioMoth settings.

Settings	Standard (User 0)
Firmware	AudioMoth-Firmware-Basic (1.4.2)
Time zone	UTC+1
Sample rate (Hz)	256000
Gain	High
Sleep duration (s)	5
Recording duration (s)	55
Active recording periods	1
Recording period 1	19:00 - 21:00 (UTC) (May vary depending on sunset & sunrise times together with survey objectives)
Filter	None
Amplitude threshold	None
Enable LED	True
Enable low-voltage cut-off	True
Enable battery level indication	True

Biosafety and Biosecurity

3.5 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.

3.6 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

3.7 All sonograms recorded using handheld bat detectors were analysed and manually verified with BatExplorer Pro (version 2.1) by MHE Consulting Ltd (on behalf of Bernwood Ecology) and SonoBat (version 4) to confirm identification.

3.8 Recordings made with AudioMoth remote bat detectors were manually verified using Sonobat (version 4).

3.9 Recordings from the Elekon Batlogger A+ 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, alcathoe *Myotis alcathoe*, 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 *R. 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). Bats may be found in any suitable roosting cavity or void at any time of the year.

5. Survey Results

Building Inspections

5.1 The inspections confirmed the bat access points via a missing pane of glass in the easternmost (W1) overstorey window (Figures 1 and 2) and gaps around the internal tower door (Figure 3) originally identified by the Suffolk Bat Group in 2019. Missing flints in the tower walls also provide potential bat roosting features (Figure 4).

5.2 Evidence of bats can be seen across most of the church, with accumulations of bat droppings concentrated within the south aisle where the roof structure meets the nave wall, notably in the south western corner (Figures 5 and 6). Droppings were also recorded in the north aisle below the aisle roof braces and at the eastern end of the nave (Figures 7 and 8).

5.3 Very few droppings were present within the chancel (Figure 9) which has a small roof void above a decorative timber-panelled ceiling. Numerous gaps were noted in the panelling (Figure 10), which could allow bats access into the roof void. A whiskered bat *Myotis mystacinus* was found in a blind stairway to a former rood screen at the south western end of the chancel during an inspection (31st August 2021).

5.4 Externally, potential bat access points exist on the north aisle such as gaps around the windows, on the south aisle, and on the southern and northern elevations of the chancel (Figures 11 and 12). Where slate tiles are missing, the nave and chancel roofs provide potential bat access points.

5.5 Two bat droppings samples were sent for DNA analysis to confirm species through sequencing, one from the western end, and one from eastern end of the north aisle. The western sample was confirmed to be from Natterer's bat, and the eastern sample was from common pipistrelle.

5.6 A summary plan of the building inspection findings can be found in Appendix 4.

Figure 1. South aisle exterior. Overstorey windows with missing pane of glass used as a primary bat access into church interior.

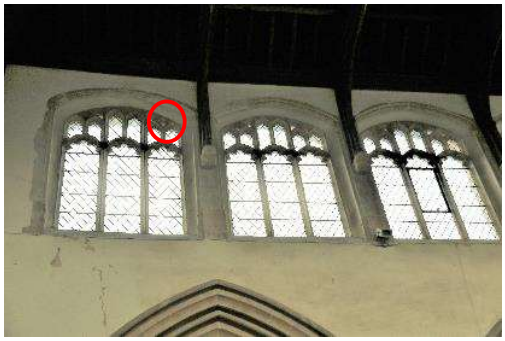
Figure 2. Overstorey window (W1) in south aisle with missing glass pane marked.

Figure 3. A gap around the frame of the tower door is used by bats as a primary access into the church.

Figure 4. Tower with missing flints.

Figure 5. Pipistrelle roost in a gap between timbers and walls (red) in the south western corner of the south aisle.

Figure 6. Pipistrelle roost within a gap between aisle roof and nave wall (red).

Figure 7. Western end of north aisle where droppings characteristic of *Myotis* (confirmed by DNA) were below a brace (red). Large masonry crack (blue).

Figure 8. North aisle looking east. Droppings characteristic of *Myotis. Myotis* recorded below braces (red).

Figure 9. View of chancel with decorative panelled ceiling (Figure 10).

Figure 10. Decorative panelled ceiling with gaps which could allow bats into the church.

Figure 11. Gap (red) by the window on the eastern wall of north aisle and gaps (blue) under eaves of northern chancel wall.

Figure 12. Fascia board (red) with gap behind on south aisle eastern wall and gaps under eaves (blue) of southern chancel wall.

Bat Emergence and Re-entry Surveys

5.7 Survey conditions were suitable for the dusk and dawn surveys to be considered valid under the WML-CL32 requirements and the BCT Good Practice Guidelines (Collins, 2016). 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.

5.8 Across the four surveys, six species of bats have been recorded using the church for roosting: soprano pipistrelle *Pipistrellus pygmaeus*, common pipistrelle *P. pipistrellus*, brown long-eared *Plecotus auritus*, Natterer's *Myotis nattereri*, serotine *Eptesicus serotinus* and whiskered *M. mystacinus*. At least twenty roosting points internally (seven) and externally (13) on the church were recorded (Table 3; Appendix 5). Internally, a soprano maternity roost exists in the south aisle with common pipistrelle roosting also likely, with common pipistrelle also possibly roosting in the north aisle. Three Natterer's bat roosts exist in the north aisle and one at the east end of the nave. A whiskered bat roost exists in the blind staircase of the chancel. Externally, roosts exist under the eaves on the north aisle (north side), chancel (north and south), south aisle (east wall), vestry eaves (north), and the tower (south side). Details of the

emergence survey can be found in Table 5, a plan of summarised bat activity in Appendix 6.

5.9 Two primary accesses (e.g., easternmost overstorey window above south aisle and tower door) exist which are used by multiple species during all the surveys.

5.10 The remote bat detectors recorded a total of 6578 passes across all surveys; 2494 internally within the church and 4084 within the tower porch which will have recorded passing bats foraging along the tree line and minor watercourse to the west. Recorded internally were four serotine calls, four brown long-eared calls, 126 common pipistrelle calls, 945 soprano pipistrelle calls, and 531 *Myotis* calls (Table 6). Recorded within the tower porch were one barbastelle call, three serotine calls, six brown long-eared calls, 848 Myotis calls, 985 common pipistrelle calls and 2241 soprano pipistrelle calls. Details of the static detector recordings are in Appendix 7.

5.11 Roost emergence data from the first, second, and third surveys for soprano pipistrelles and Natterer's bats were inputted to the Mammal Society's Count Bat database. Comparison with the national database indicates that both the soprano pipistrelle roost and the Natterer's bat roost at All Saints Church are in the lower quartiles (q1 & q2) of the database. This could be interpreted that these roosts, in isolation, are of lower (soprano pipistrelle) to low/ moderate (Natterer's bat) conservation significance. However, the combination of multiple species roosting presence increases the conservation significance of All Saints Church for bats. The other species recorded roosting at All Saints were not included in this analysis due to their low counts. The full reports generated by the Count Bat tool are included in Appendix 8.

5.12 Swifts *Apus apus* were recorded entering gaps under the chancel eaves on the south elevation during the June and July surveys, indicating likely nesting. Further nesting opportunities exist under the eaves, in the tower and where slates are missing in the nave and chancel.

Table 4. Roost location and roost access point locations summary table.

Species	Roost Location	Access Point Locations	Peak Counts	Photo
Soprano pipistrelle	South aisle – a gap exists where the roof meets the nave wall. Most activity was in the south western corner with bats emerging in the first survey above the central arches.	Bats exit the roost and fly within the church (mostly the nave) before exiting mostly through a missing glass pane (W1) in the easternmost overstorey window. Some bats also exit over the tower door. One bat was also seen emerging from the fourth window (W4).	20 bats on the first survey, 95 bats on the second and 74 on the third survey.	 

Table 4. Continued.

Species	Roost Location	Access Point Locations	Peak Counts	Photo
Soprano pipistrelle	North eastern corner of the north aisle	Under the eaves	Five bats during the fourth (dawn) survey. Potentially a through access for bats into the church.	
Soprano pipistrelle	Southern wall of the chancel	Under the eaves	One bat emerged on the first (dusk) survey and one bat re-entered a roost during the fourth (dawn) survey	

Table 4. Continued.

Species	Roost Location	Access Point Locations	Peak Counts	Photo
Soprano pipistrelle	Southern chancel roof	Under slate tiles	One bat emerged (red) during the third survey.	
Soprano pipistrelle	Nave east gable end	Gap by parapet wall	One bat emerged (blue) during the first survey.	
Common pipistrelle	North aisle	Under the eaves	Five bats entered during the fourth survey	

Table 4. Continued.

Species	Roost Location	Access Point Locations	Peak Counts	Photo
Common pipistrelle	Chancel – north eastern corner	Eaves	Two bats entered during the fourth survey	
Mixed species (common & soprano pipistrelle)	South aisle – eastern wall	Gap behind fascia board	One soprano pipistrelle emerged during the first survey. One common pipistrelle entered roost during fourth survey.	

Table 4. Continued.

Species	Roost Location	Access Point Locations	Peak Counts	Photo
Natterer's bat	North aisle – west end	Brace/wall junction		
Natterer's bat	North aisle – towards east end	Brace/tie beam		

Table 4. Continued.

Species	Roost Location	Access Point Locations	Peak Counts	Photo
Natterer's bat	North aisle – east end	Brace/wall junction		
Brown long-eared bat	North western corner of the chancel	Corner between the north aisle and the chancel	Three bats entered in the fourth survey	

Table 4. Continued.

Species	Roost Location	Access Point Locations	Peak Counts	Photo
Brown long-eared bat	Vestry roof	Under eaves	Two bats entered during the fourth survey	
Whiskered bat	Chancel – stairs to former rood screen	In brick/ flint fill on stairs	One bat present during an inspection (31/08/21). Bat located inside where lime mortared flint fill caps the blind staircase.	

Table 5. Summary of bat emergence and dawn swarming survey results.

Time	Species	Description of activity
Survey 1: 20/05/21. Sunset: 20:52.		
20:56 – 21:18	Soprano pipistrelle	**Emergence of five bats** from eaves on the south side of the chancel, **of one bat** from the apex of the nave, and **of one bat** from the eaves on the southern side of the chancel.
		Emergence of five bats from overstorey window W1 on the south aisle roof, before foraging around the tower and northern tree line.
		Emergence of 18 bats via gaps around the tower porch door into nave, where some bats light-sampled briefly before emerging.
20:57	Pipistrelle	**Probable emergence** from overstorey – flew along south aisle roof, around the tower, then north along tree line.
21:14	Noctule	Single pass north east of the church.
21:15	Common pipistrelle	**One bat emerged** from overstorey window W1 above the south aisle.
21:17-21:32	Common & soprano pipistrelles	One to two common pipistrelles foraging within churchyard heard from the south western surveyor positions. Several soprano pipistrelles were recorded foraging within the graveyard to the north of the church with social calls.
22:06	Brown long-eared bat	Single pass in churchyard heard from the south eastern surveyor position.
22:14, 22:18	Natterer's bat	Two passes heard from the south eastern surveyor position.
Survey 2: 24/06/21 Sunset: 21:21		
21:15-21:23	Soprano pipistrelle	Five plus bats were seen flying within the nave and south aisle.
21:20 – 21:48	Soprano pipistrelle	**Emergence of 79 bats** from overstorey window W1 above the south aisle, and **of 15 bats** over the tower door. **One bat emerged** from the overstorey window W4 above the south aisle.

Table 5. Continued.

Time	Species	Description of activity
21:32, 21:42	Noctule	One bat seen high over church flying north.
21:40-21:53	Common pipistrelle	Foraging in the churchyard north of the church and by the southern tree line, as well as between the vestry and the north aisle, and east of the chancel.
21:46	Unknown bat	**One non-echolocating bat emerged** from eaves on north nave wall.
21:48, 21:53	Serotine	A single registration heard from the south western surveyor position.
21:53, 21:57	Barbastelle	One pass heard from the south western surveyor position.
21:59-22:43	Natterer's bat	Several bats seen flying within the nave and occasionally swarming by the overstorey window, before **35 bats emerged** through overstorey window W1.
22:04	Brown long-eared bat	**Emergence of one bat** from the northern eaves of chancel.
22:15	Soprano pipistrelle	**Re-entry by one bat** into roost in the south western corner of south aisle.
22:17-22:19	Soprano pipistrelle	Several bats flying within the church after re-entering, social calls recorded.
22:23	Brown long-eared bat	A single registration heard from the south western surveyor position.
22:56	Soprano pipistrelle	**Re-entry by one bat** into the south western corner of south aisle.
Survey 3: 26/07/21. Sunset: 20:56		
20:46	Common pipistrelle	**One bat emerged** out of the tower porch after light sampling.
20:48	Pipistrelle	**One bat emerged** from overstorey window W1 above south aisle.

Table 5. Continued.

Time	Species	Description of activity
20:54-21:20	Soprano pipistrelle	**Emergence of 18 bats** over the tower door and out the tower porch, **of four bats** from the overstorey window W1 above south aisle, and **of 29 bats** from overstorey window W1 above the south aisle. **Seven bats emerged** from roost at the western end of south aisle, **24 bats emerged** from overstorey window W1 above the south aisle, and **one bat emerged** from slate roof of chancel.
21:06	Common pipistrelle	**One bat emerged** from overstorey window W1 above south aisle.
20:59-21:00, 21:12	Pipistrelle	**Four bats emerged** from overstorey window W1, followed by **one bat** twelve minutes later.
21:18 – 21:29	Common pipistrelle	**Emergence of three bats** over the tower door and out the tower porch, and **of one bat** from overstorey window W1 above south aisle.
21:30-21:37	Serotine	Two bats briefly chasing to the south of the church, along with several passes along the southern side of the church and southern trees.
21:35, 21:36, 21:42	Brown long-eared bat	**One bat emerged** over the tower door and out the tower porch and passes recorded at the eastern survey positions.
21:39-21:53	Natterer's bat	**Emergence of three bats** from overstorey window W1, and **of seven bats** over the tower door and out the tower porch
21:44	Brown long-eared bat	**One bat emerged** over the tower door and out the tower porch
21:53	Unknown	**Two bats emerged** via a gap in the window frame on eastern wall of north aisle.
21:56	Brown long-eared bat	A single registration heard from the north eastern surveyor position.
22:12	Natterer's bat	Two bats flying within the tower porch.

Table 5. Continued.

Time	Species	Description of activity
Survey 4: 27/07/21. Sunrise: 05:09		
03:00-03:53	Soprano pipistrelle, common pipistrelle, & serotine	Soprano pipistrelle, serotine and common pipistrelle periodically recorded foraging in the tower porch.
03:15	Serotine	Recorded briefly flying in the church.
03:15	Soprano pipistrelle	Several bats flying within the church.
03:27	Natterer's bat	Several bats flying within the church.
03:34, 03:38, 03:47	Serotine	Two bats chasing in church after **one entered** through the overstorey window W1; bat observed outside main porch; **One bat exited** via the overstorey window W1 (observed on thermal scope)
03:50	*Myotis*	Brief swarming by louvred window on tower indicated readiness to enter but then flew away
03:50-04:19	Soprano pipistrelle	**Five bats entered** roost in south aisle.
03:56-04:28	Soprano pipistrelle, common pipistrelle, & Natterer's bat	Several bats seen swarming by overstorey window W1.
03:56-04:53	Pipistrelle	**Entry by 71 bats** through overstorey window W1 above the south aisle
03:56, 04:05	Brown long-eared bat	**Entry by three bats** under the chancel eaves by the north aisle east wall, and **by two bats** in the eaves of the vestry north wall.
03:56-04:53	*Myotis*	**Entry by 27 bats** entered through the overstorey window W1.
04:07-05:03	Soprano pipistrelle	Minimum of three bats continuously (with a brief period of inactivity) foraging in the tower porch
04:35-04:55	Common pipistrelle	**Entry by one bat** behind fascia board on eastern wall of south aisle, **by five bats** under the northern eaves of the north aisle, **by two bats** under the chancel eaves in north western corner, and **by one bat** under the chancel eaves, south side; 8th rafter along from south aisle

Table 5. Continued.

Time	Species	Description of activity
04:49, 05:03	Soprano pipistrelle	**Entry by five bats** under the north aisle eaves in the north western corner, and **by six bats** over the tower door.

Table 6. Summary of remote bat detecting results by species, genus, or group.

Species	Summary
Barbastelle	Four recordings made during dusk / dawn survey (26th - 27th July 2021), one from inside the tower and three outside in the graveyard.
Myotis species	*Myotis* species were recorded during all surveys with lower quantities in the first survey (20th May 2021), increasing prior to and post the peak maternity period. It is not possible to give certainty of the species of *Myotis* recorded based on audio recordings alone, but sonograms suggest that Natterer's bat was present.
'NSL' group	Serotine bats were recorded during all four surveys in low numbers, with peak activity recorded outside in the graveyard. This corresponds with visual observations of up to three bats flying inside the church during the dusk/dawn survey, where chasing activity, interacting with *Pipistrellus* sp. was noted.
Brown long-eared bat	Low numbers of brown long-eared bats were recorded during all four surveys with a peak of five bats observed entering roosts during the dawn survey (27th July 2021).
Common pipistrelle	Low numbers of common pipistrelle were recorded during the initial survey periods, with an increase in activity in late July, which could indicate increased post-maternity activity and late formation of roosts or possible roost movement to the church.
Soprano pipistrelle	Moderate numbers of soprano pipistrelle were recorded during the initial survey, with increases in activity in late June and late July, which could indicate increased activity post-maternity and formation of roosts or possible increased roost numbers at the church.

Table 7. Roost emergence/re-entry count data – soprano pipistrelle data.

Date	Survey Type	Peak Count at All Saints Church	Comparison with All Database Peak Count Records (*n* = 447)	Comparison will All Pre-Maternity Peak Count Records (*n* = 435)	Comparison with All Post-Maternity Peak Count Records (*n* = 199)	Comparison with Pre-Maternity Peak Count Records within a Church (*n* = 25)	Comparison with Post-Maternity Peak Count Records within a Church (*n* = 9)
20/05/2021	Dusk	30	11th percentile	12th percentile	-	5th percentile	-
24/06/2021	Dusk	95	26th percentile	27th percentile	-	12th percentile	-
26/07/2021	Dusk	75	21st percentile	-	24th percentile	-	11th percentile

Table 8. Roost emergence/re-entry count data – Natterer's bat data.

Date	Survey Type	Peak Count at All Saints Church	Comparison with All Database Peak Count Records (*n* = 229)	Comparison will All Pre-Maternity Peak Count Records (*n* = 209)	Comparison with All Post-Maternity Peak Count Records (*n* = 72)	Comparison with Pre-Maternity Peak Count Records within a Church (*n* = 97)	Comparison with Post-Maternity Peak Count Records within a Church (*n* = 35)
24/06/2021	Dusk	35	48th percentile	49th percentile	-	42nd percentile	
26/07/2021	Dusk	18	18th percentile	-	12th percentile	-	13th percentile

NOTE: Percentiles are interpreted as the percent of the database records that fall below the recorded peak count (e.g., being in the 11th percentile indicates that All Saints Church has a roost count that is larger than 11% of the soprano pipistrelle records in the database).

Where the number of records from the database (indicated by n*) is low, the results have limited power of interpretation (e.g., where there are nine records for bats, it is not possible to ascertain whether the peak count at All Saints Church is sizeable or not, because there are only nine records with which to compare).*

6. Statement of Significance

Architectural and Historical

6.1 The church is of high archaeological, architectural and historical significance. The present church of All Saints, Wetheringsett, dates largely from the 13th century, with significant remodelling and extension in the 15th century and major restoration and refurnishing in the 19th century.

6.2 From the late 13th century dates the nave arcade, chancel arch and the north and south doors to the aisles. The chancel and aisles are also likely to be of 13th century date, with later windows and roofs. Apart from the 14th century west window in the south aisle, which has reticulated tracery, the rest of the church is largely 15th century. Also belonging to the late medieval remodelling and enlargement is the nave clerestory, with eight large, closely set three-light windows. The church was restored in the 1850s, including the chancel and new timber panelled ceiling (and in all likelihood a new roof structure: the rendering of the nave east gable and the slating of the roofs may also belong to this phase). The north vestry also probably dates from this time. Restoration of the nave followed in 1857 and included the renewal of the clerestory (to a new window design).

6.3 The church has no outstanding monuments and no visible wall paintings. The main areas of high and moderate-high significance being damaged by bat droppings and urine-spotting are the horizontal surfaces, notably the benches (of high significance) and ledger slabs (moderate significance). There is no reported damage to the organ (moderate significance), but it is close to the roosts in the south aisle, where there is much evidence of droppings and urine damage.

6.4 Full details of the historical and architectural importance of the church can be found within the Statement of Significance.

Bats

6.5 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.

6.6 A total of seven bat species have been recorded using the interior and exterior of the church: roosting soprano pipistrelle (peak count 95), roosting common pipistrelle (peak count ten), roosting brown long-eared bat (peak count five), roosting Natterer's

bat (peak count 35), roosting serotine (peak count three), roosting whiskered bat (peak count one), and a single flying barbastelle.

6.7 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:

- Whiskered bat – peak count of one: unknown roost type. IUCN: Data Deficient.
- Natterer's bat – peak count of 35: maternity roost. IUCN Least Concern.
- Common pipistrelle – peak count of ten: possible maternity roost of lower conservation significance. IUCN Least Concern.
- Soprano pipistrelle – peak count of 95: 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 All Saints is of lower conservation status when compared to the available national data.
- Serotine – peak count of three: unknown roost type. IUCN Vulnerable.
- Barbastelle – a single individual flying in the church, unknown if roosting in the church. Assume low numbers if present. IUCN Vulnerable.
- Brown long-eared bat – peak count of five: possible maternity roost; of lower conservation significance. 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 to be >£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

7.9 Seven intervention options have been considered and put forward to the church community including church architect for consideration and discussion. Full details of each option are included in Appendices 11-17.

Option 1: Cover pews and use voiles

7.10 This intervention aims to protect pews and monuments by covering with linen cloth covers and voiles. Fabric and linen to be used rather than plastic sheeting to allow woodwork and masonry / stone to breath and reduce the build-up of condensation that otherwise would result in damage. Ongoing maintenance would require weekly cleaning during the peak summer activity period when bat droppings, staining and/or smell is obvious. This option maybe combined with other options such as sails, where the continued presence of bats (emergence and re-entry swarming) is accepted as part of the intervention approach adopted.

7.11 This low-cost intervention is expected to have moderate visual and historic impact with no impact on bats.

7.12 While the costs of the scheme are anticipated to be relatively low, the effectiveness will be limited as it is reliant on the church community to accept and manage the build of faecal matter and urine during the peak summer bat activity period.

Option 2: Baffle / Catch Boards

7.13 This intervention aims to collect bat droppings at concentration points and reduce sight of unsightly accumulation. 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 obvious. This option maybe combined with other options such as sails, where the continued presence of bats (emergence and re-entry swarming) is accepted as part of the intervention approach adopted.

7.14 This low-cost intervention is expected to have moderate visual and historic impacts, and no ecological impacts.

7.15 While the costs of the scheme are anticipated to be relatively low, the effectiveness will be limited as it is reliant on bats continuing to use specific locations to roost and will not reduce the spread of general faecal matter and urine from bats flying around the main body of the church.

Option 3: Temporary sail at west end of church including nave and community areas

7.16 Located over a large open community area at the west end of the church the temporary sail aims to collect bat droppings at concentration points and reduce the sight of unsightly accumulations of bat faeces and urine associated with the open dawn swarming and dusk socializing of bats throughout the church. The sail is to be present during summer months only, to reduce the burden of cleaning bat urine and faeces. This option maybe combined with other option 1, where the continued presence of bats (emergence and re-entry swarming) is accepted as part of the intervention approach adopted.

7.17 By using a temporary sail the visual character of the church the ample overstorey and nave roof will be maintained. Maintenance would require monthly cleaning during the peak summer activity period when bat droppings are obvious.

7.18 The cost of this option remains unknown and subject to separate design competition that allows for the development of a generic approach to separating the impacts of bats (faeces and urine) from historic monuments and people. Likely to be a moderate cost intervention with moderate visual and historic impact and a low ecological impact.

7.19 While the costs of the scheme are not known it is anticipated that this may become a lower cost generic option for appropriate churches and is anticipated to have relatively moderate effectiveness. The approach is reliant on bats continuing to use the same bat access points and specific location within the church to roost and will only reduce the spread of general faecal matter and urine at scale.

Option 4: Small scale temporary sails above south and north aisle community (kitchen) area.

7.20 This intervention aims to collect and control bat droppings and reduce impacts of bat faeces and urine in community and kitchen area that are below a soprano pipistrelle bat maternity roost point. Maintenance would require monthly cleaning during the peak summer activity period when bat droppings are obvious.

7.21 The cost of this option remains unknown and subject to separate design competition that allows for the development of a generic approach to separating the impacts of bats (faeces and urine) from historic monuments and people. Likely to be a moderate cost intervention with moderate visual and historic impact and a low ecological impact. This option maybe combined with other option 1, where the continued presence of bats (emergence and re-entry swarming) is accepted as part of the intervention approach adopted.

7.22 While the costs of the scheme are not known it is anticipated that this may become a lower cost generic option for appropriate churches and is anticipated to have relatively moderate effectiveness. This approach is reliant on bats continuing to use the same bat access points and specific location within the church to roost and will only reduce the spread of general faecal matter and urine at scale.

Option 5: Create new artificial bat boxes at west end of south aisle and east end of north aisle with external bat access.

7.23 This intervention subject to architectural issues with masonry and timber beams aims to create two new discrete sealed bat boxes above both chapels, one at the east end of the north aisle, the other at the west end of the south aisle. The bat boxes will require the creation of new external bat access points.

7.24 The creation of new access points will need to be combined with at least a one-year habituation period to allow the bats to continue to use current roost points but also allow for discovery of new bat access points. This remains a high-risk strategy as it requires a degree of discovery and learning prior to decommissioning any old access points.

7.25 The sealed bat boxes could be used in combination with allowing continued bat access through existing access points in the hope that bats adapt and change

behaviour and reduce the internal impacts of large numbers of bats in flight at dawn and dusk, however this is considered unlikely to work as there would be no reason (driver) for bats to change behaviour unless perhaps combined with acoustic deterrents.

7.26 This option will combine the high costs of bat survey and licensing, together with architectural support and bespoke design solutions, and a high contract cost including provision for external and internal scaffolding.

7.27 The creation of new bat access points means that the proposals will be vulnerable to take up by bats. Bats will need to discover new access points and a habituation period of a least one peak activity period will be required. Evidence of bat access points being used will be required. Given the high costs that are likely, particularly for surveys and licensing the viability of this option needs careful consideration.

Option 6: Repairs to Chancel ceiling to seal up roof space

7.28 This intervention aims to allow bats to use the void above the chancel ceiling including eaves bat access points and control bats accessing the internal area of the church. It is proposed subject to architectural issues with timber boarding and decorative wooden finishes to seal decorative chancel ceiling boards to prevent bats accessing the internal area of the church. Bat access appears to be through the eaves of the chancel.

7.29 This option will need to be used in conjunction with other options (see Option 7) and is intended to assist with maintaining suitable habitat for brown long-eared bats if bat access to the internal area of the church is blocked.

7.30 This option combines the high costs of bat survey and licensing, together with architectural support and high contract cost including provision for internal scaffold.

7.31 On its own this option will not resolve the issues around bats utilising the internal space of the church but in combination with other options will secure adequate roof void space without internal access to the church for brown long-eared bats.

Option 7: Enhancement of belltower for bats

7.3.2 Carry out enhancements to belltower to provide improved roost opportunities for bats (my not be appropriate where bell ringing is a regular activity). Scope of works could include:

- creating a false suspended ceiling with void for bats below the existing first floor ceiling

- where bells are no longer rung, close the belltower windows with baffle boards incorporating small bat access points to create dark void space with stabilized temperatures (reduced draft from prevailing winds).

7.33 This intervention aims to provide alternative enhanced roost opportunities for bats as part of an overall mitigation strategy that may include Options 5, 6 and 7.

7.34 Low impact scheme where generic boarding is used behind existing bell window screens and/or louvres.

7.35 Low impact proposals with unknown effectiveness with potential to provide alternative roost points for bats in underutilised space away from people. Consider potential impacts on bells (minor).

Table 6. Impact assessment matrix.

General Assessment Guide

Positive						Negative
3	2	1	0	-1	-2	-3
Positive impact improving conditions for receptor						Negative impact to receptor

Option 1: Cover pews and monuments

Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelle	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention	0	0	0	0	0	0	0	-1
Moderate Impact Intervention								
High Impact Intervention								

Option 2: Baffle Boards at primary roost points

Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelle	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention	0	0	0	0	-1	0	1	-2
Moderate Impact Intervention								
High Impact Intervention								

Option 3: Sail across west end of nave, south and north aisle

Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelle	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention								
Moderate Impact Intervention	0	0	0	0	0	0	2	-2
High Impact Intervention								

Option 4: Small scale sails south & north aisle

Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelle	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention								
Moderate Impact Intervention	0	0	0	0	0	0	1	-1
High Impact Intervention								

Option 5: Artificial bat box north and south aisle roof and close bat access (nave/tower door & nave overstorey window(s))

Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelle	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention								
Moderate Impact Intervention								
High Impact Intervention	-3	-3	-3	-3	-1	-1	3	0

Option 6: Repairs to chancel ceiling to seal up roof space

Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelle	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention								
Moderate Impact Intervention	0	1	0	0	0	0	0	0
High Impact Intervention								

Option 7: Enhance belltower for bats

Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelle	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention								
Moderate Impact Intervention	1	1	1	1	-1	-1	1	0
High Impact Intervention								

8. Consultation Methodology

8.1 The All Saints Church's PCC members and appointed architect have been consulted throughout the 2021 survey period, from the initial inception meeting on 20th April 2021, to a presentation of summary results and initial concept for interventions presented at an online meeting on 10th August 2021, to a follow-up site meeting on 31st 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

10.1 The consultation and site meetings identified that the PCC, in the long-term would, like to increase the potential for diversifying the use of the church by developing the current community areas, providing toilets, a new kitchen and possibly clearing a more open area at the west end of the church by removing some of the pews. The current issues resulting from the abundance of bats, their faecal matter and urine, in the church are an important consideration in this. Although there is a clear intention that the community want to develop a way of living with the bats some friction arises from the burden of cleaning and concerns about hygiene.

10.2 The options considered were discussed including:

- Option 1: Cover pews and use voiles on monuments. Simple and effective in reducing some of the burden of cleaning however does not resolve the issues around community use (children/play school) and kitchen areas.
- Option 2: Baffle / Catch Boards. Simple and effective in reducing some of the burden of cleaning however does not resolve the issues around community use (children/play school) and kitchen areas.
- Option 3: Temporary sails at west end of church including nave and community areas and Option 4: Small scale temporary sails above south and north aisle community (kitchen) area. Both these options are intended to, subject to separate design brief, to explore if a degree of separation between community areas and open space for bats can significantly reduce (not remove) the burden of bat faecal matter and urine in community areas including kitchen. The church architect provided a outline sketch of how a sail may appear at the west end of the church.
- Option 5: Create new artificial bat boxes at east ends of south and north aisles with external bat access. Concern regarding overall costs and impacts, together with viability of approach in successfully reducing the impacts of bats inside the church.

- Option 6: Repairs to Chancel ceiling to seal up roof space. Simple solution but will not resolve overall issues unless combined with other high impact intervention options.
- Option 7: Enhancement of belltower for bats. Simple solution and may reduce impacts but will not resolve overall issues unless combined with other high impact intervention options.

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 of protected species is maintained. The mitigation hierarchy follows:

- *Avoid*: avoid impacts on biodiversity 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 wildlife. Provide compensation to replace habitats that have been lost as a consequence of proposals.
- *Enhance*: Provide additional habitats and features for wildlife to ensure biodiversity net gain. Habitat offsetting may be required where net biodiversity gain cannot be secured within the site boundary.

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 All Saints Church, Wetheringsett, have confirmed six bat species roosting at the church, and identified a seventh species also possibly roosting:

- Whiskered bat – peak count of one bat: unknown roost type
- Natterer's bat – peak count of 35 bats: maternity roost
- Common pipistrelle – peak count of ten: possible maternity roost
- Soprano pipistrelle – peak count of 95: maternity roost
- Serotine – peak count of three; unknown roost type
- Barbastelle – a single individual flying in the church, unknown if roosting in the church. Assume low numbers if present. IUCN Vulnerable
- Brown long-eared bat – peak count of five: possible maternity roosting

12.2 The seven 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.

12.3 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

12.4 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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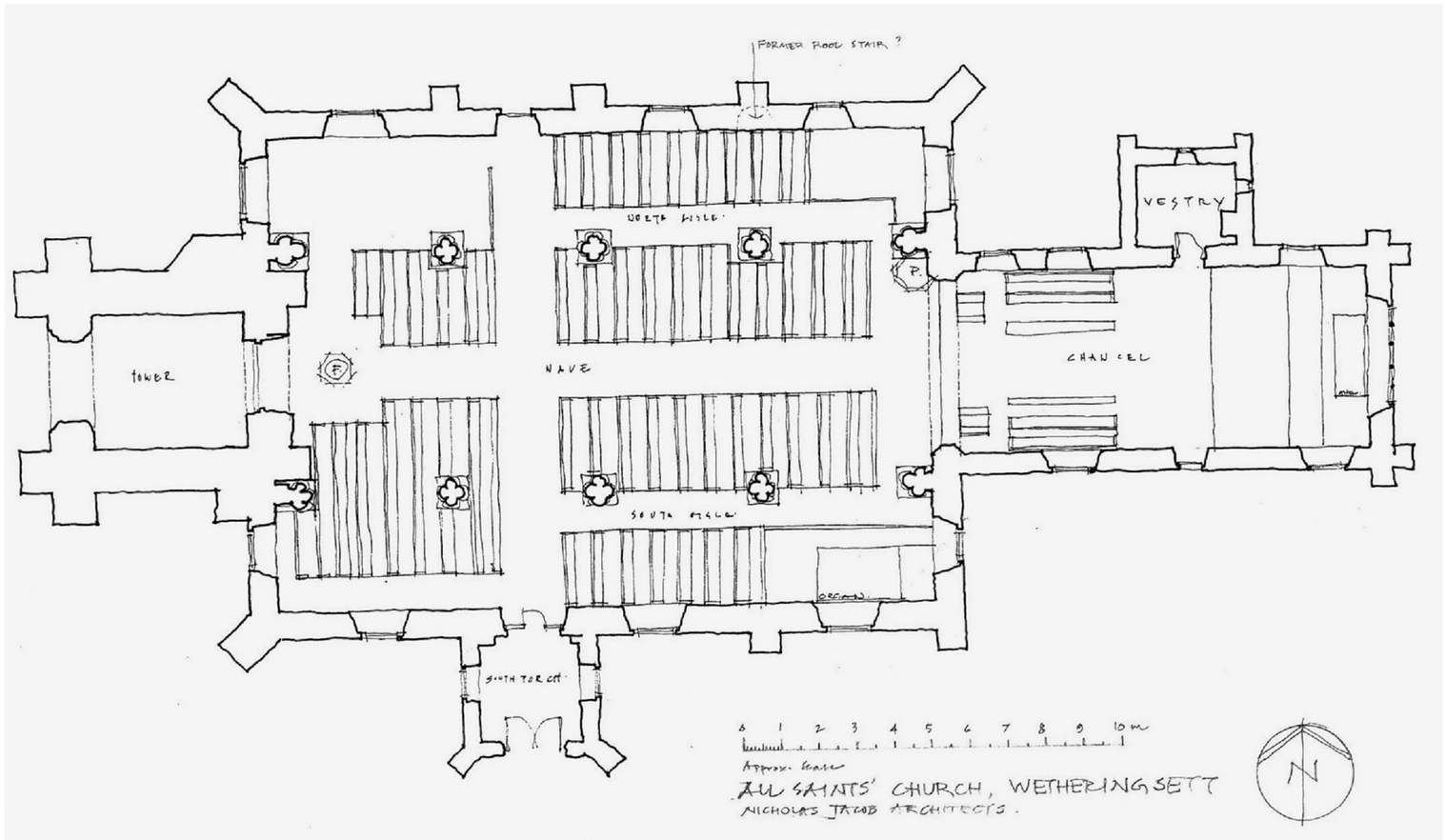
Appendix 1. Site location in relation to existing landscape.

Appendix 2. Existing site layout.



N

Floor Plan

Bats in Churches Project

Site: All Saints Church, Wetheringsett

Revision and Date: 29/10/2021

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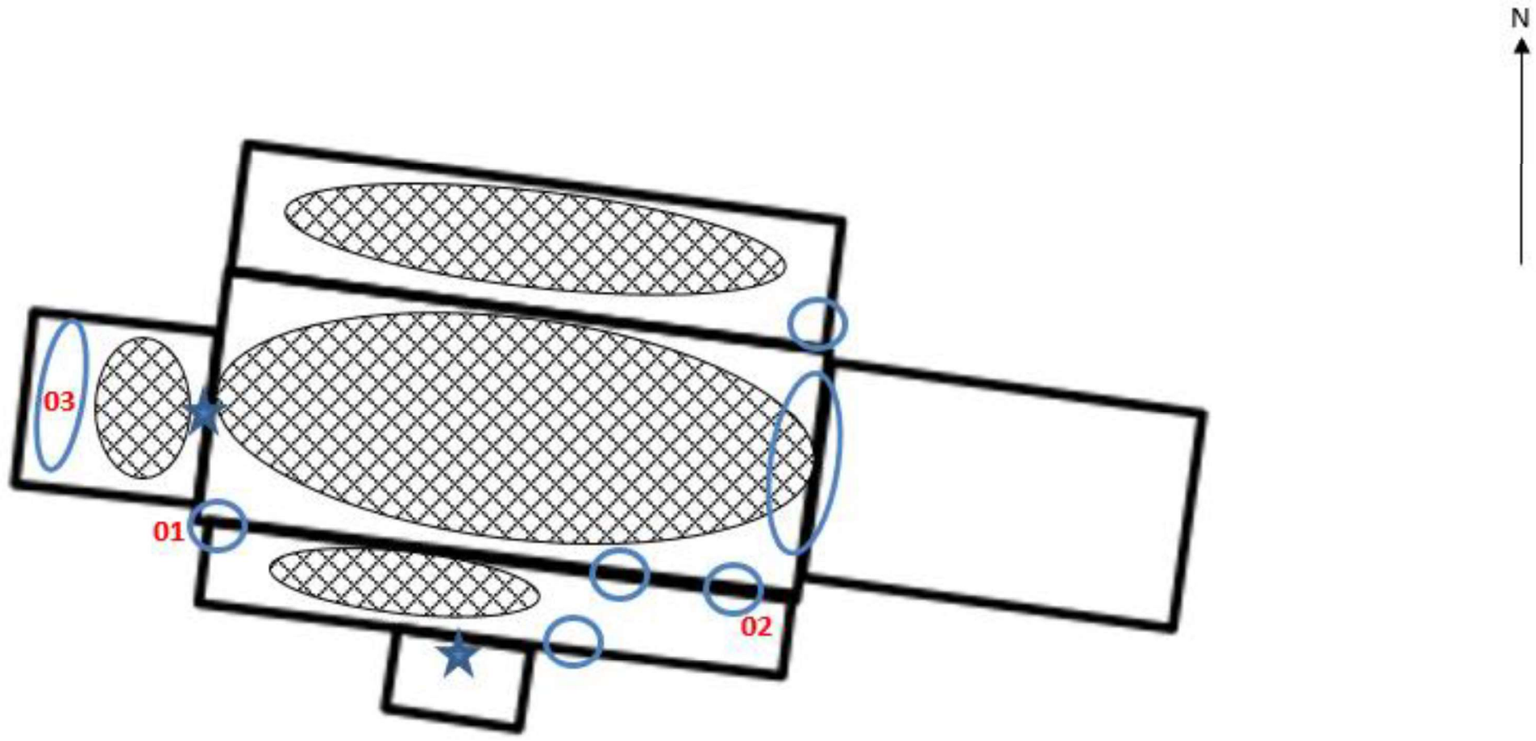
Appendix 3. Light Touch Survey plan (2017) by Geosphere Environmental.

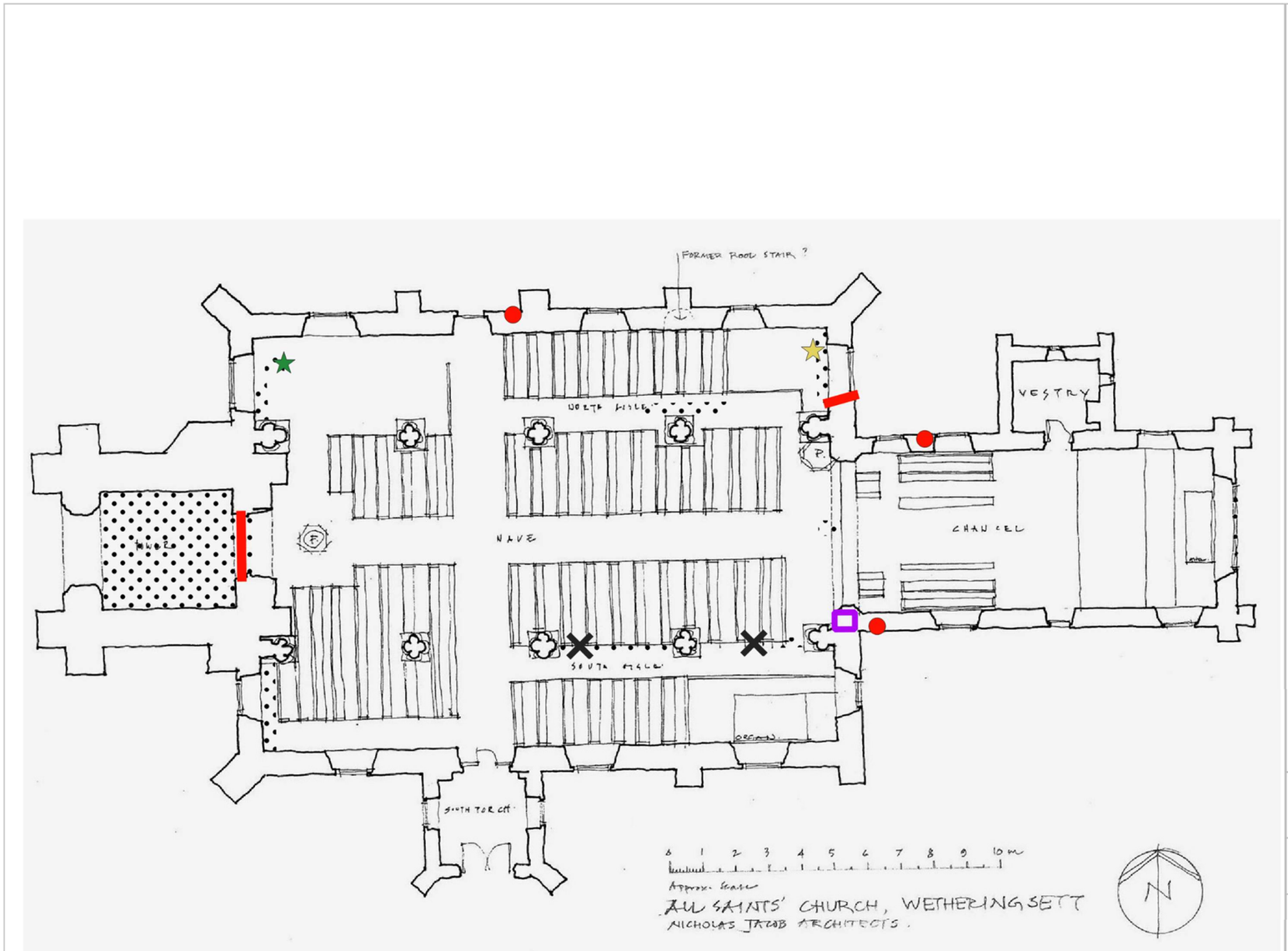


Legend

- 01 — Location of Roosts (including extensive droppings underneath roost sites)
- Church Entry Point
- Location of droppings away from roost sites

geosphere environmental ltd
Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ
T 01603 298 076 E info@geosphere-environmental.co.uk

Appendix 4. Summary plan building inspections (2021) results.



Features

- Gap in eaves
- Missing pane of glass
- Features (line)
- Droppings
- Roosting whiskered bat
- Common pipistrelle droppings (eDNA)
- Natterer's droppings (eDNA)

Not to scale

N

Internal inspection summary plan

Site: All Saints Church, Wetheringsett

Revision and Date: 29/10/2021

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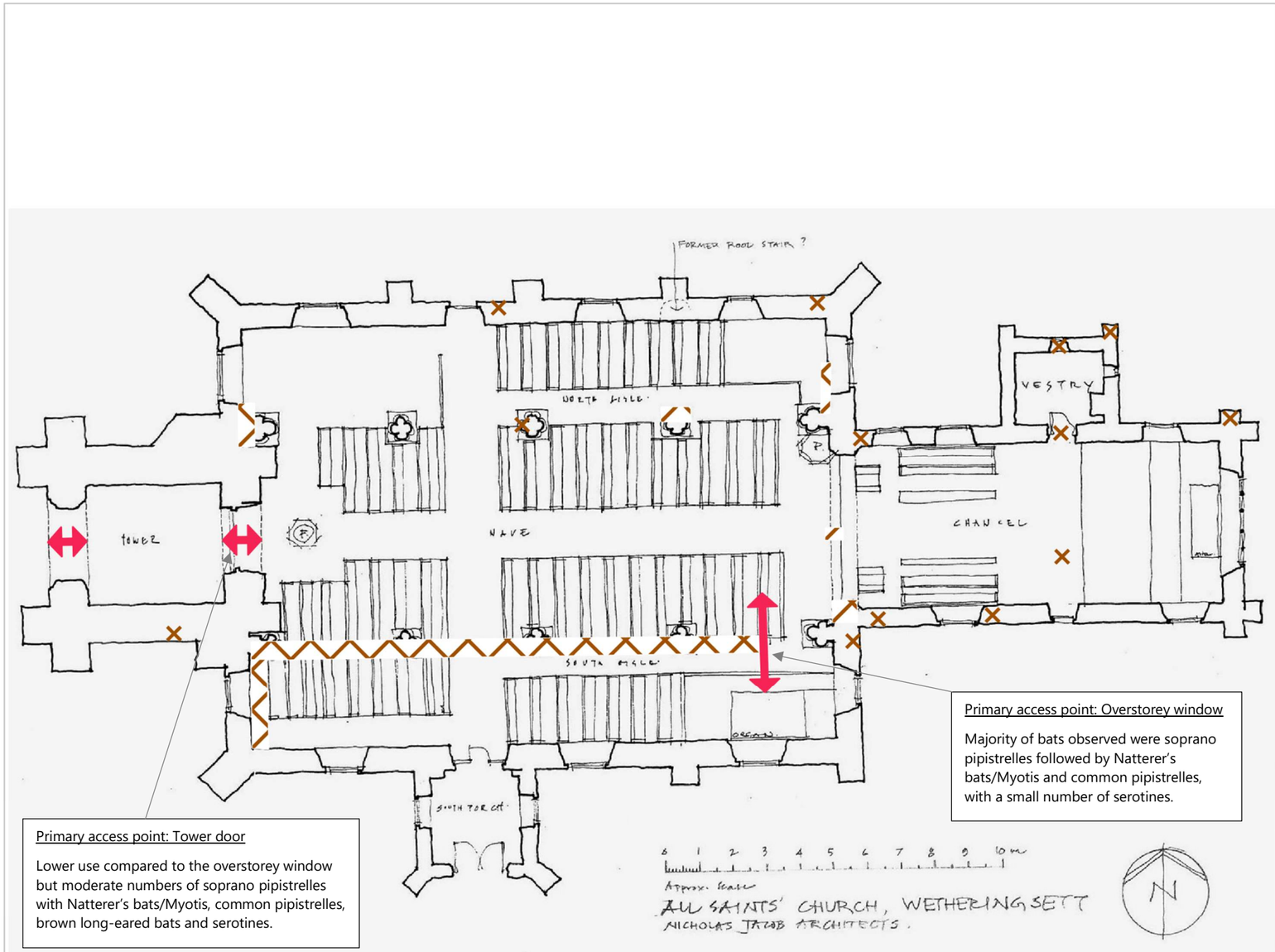
Appendix 5. Summary of all roost access points and roost locations observed in 2021.



Access and Roosts

- External roosting locations
- Multi-species through access
- Internal roosting locations

Not to scale

N

Access points and roost locations

Site: All Saints Church, Wetheringsett

Revision and Date: 29/10/2021

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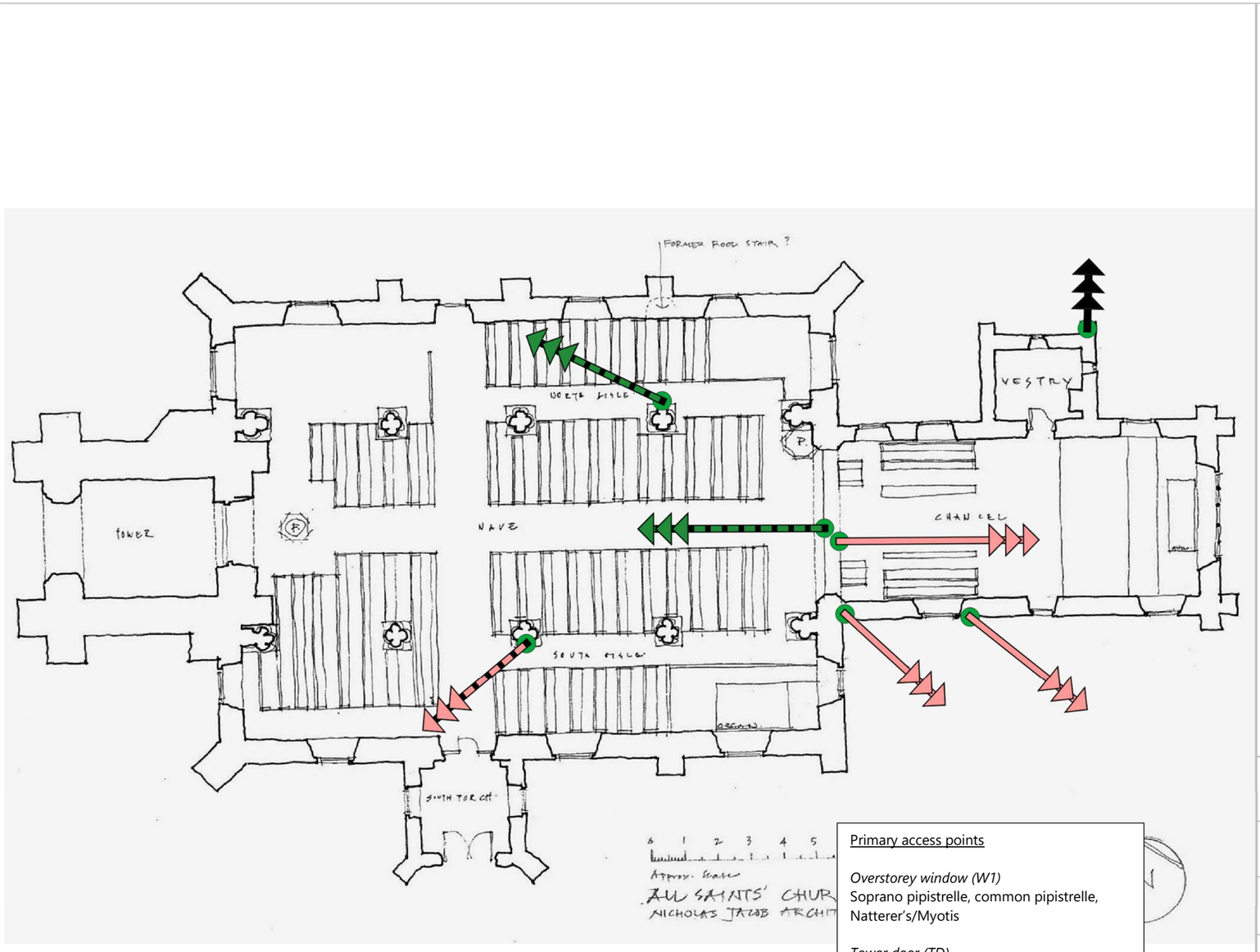
Appendix 6. Bat emergence and re-entry survey summary plans.



Access point
Natterer's bat (Flight) (Internal)
Soprano pipistrelle (Flight) (External)
Soprano pipistrelle (Flight) (Internal)
Unknown bat (Flight) (External)

Primary access points

Overstorey window (W1)
Soprano pipistrelle, common pipistrelle, Natterer's/Myotis

Tower door (TD)
Soprano pipistrelle, common pipistrelle, Natterer's and BLE

Not to scale

N

First bat emergence survey summary plan (20/05/2021)

Site: All Saints Church, Wetheringsett

Revision and Date: 29/10/2021

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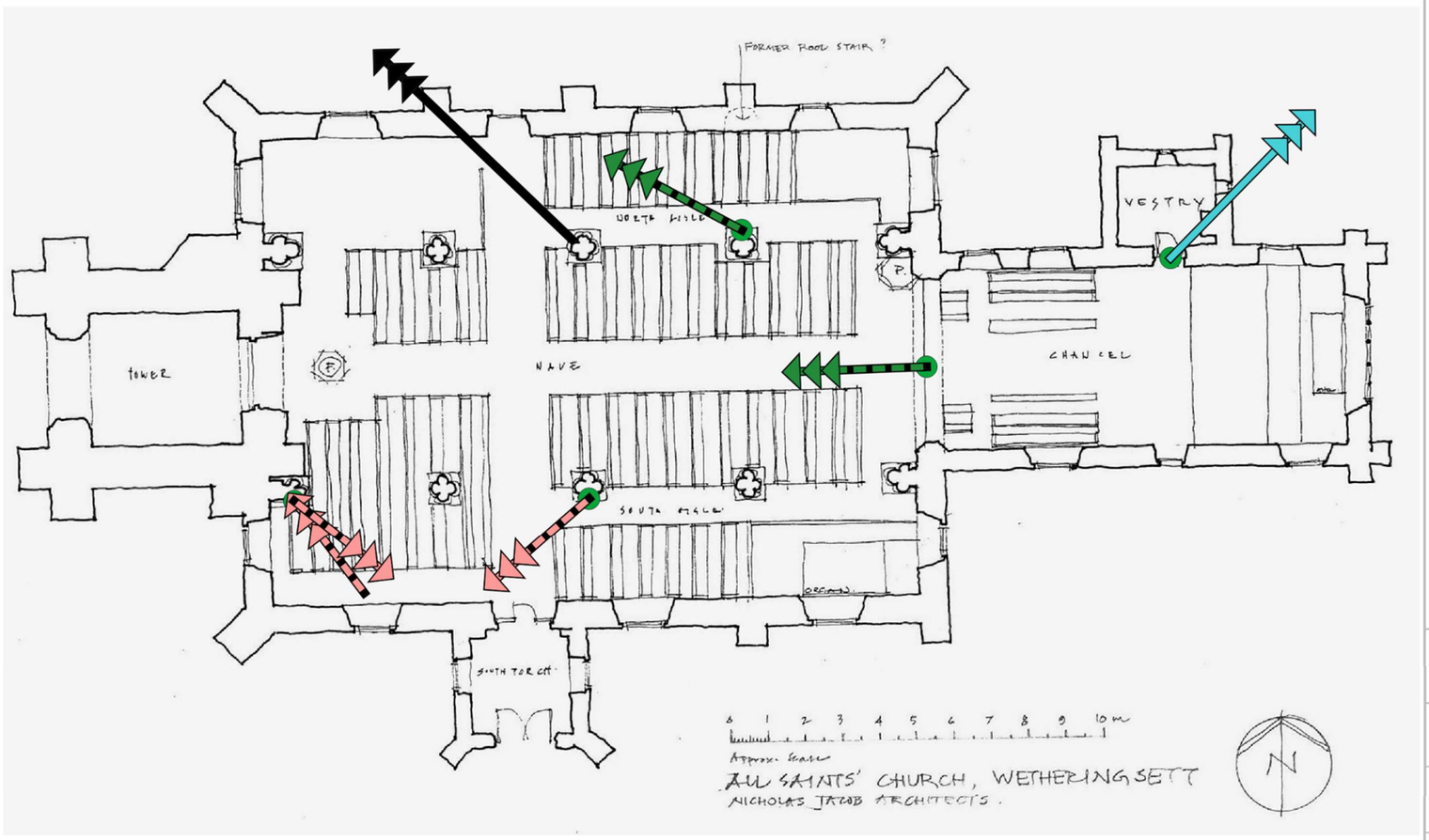

- Access point
- Brown long-eared bat (Flight) (External)
- Natterer's bat (Flight) (Internal)
- Soprano pipistrelle (Flight) (External)
- Soprano pipistrelle (Flight) (Internal)
- Unknown bat (Flight) (External)

Not to scale

N

Second bat emergence survey summary plan (24/06/2021)

Site: All Saints Church, Wetheringsett

Revision and Date: 28/10/2021

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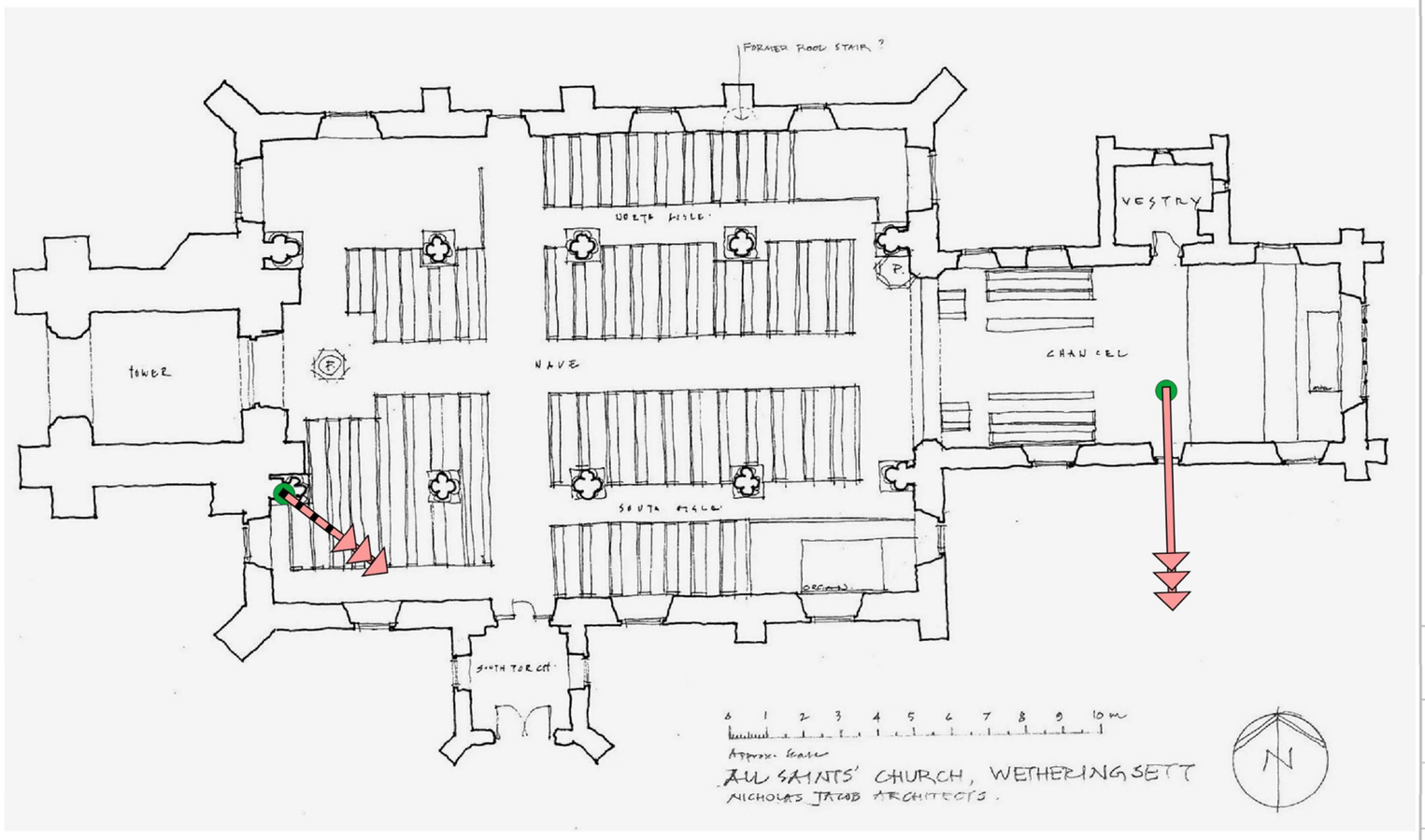

Access point

Soprano pipistrelle (Flight) (External)

Soprano pipistrelle (Flight) (Internal)

Not to scale

N

Third bat emergence survey summary plan (26/07/2021)

Site: All Saints Church, Wetheringsett

Revision and Date: 28/10/2021

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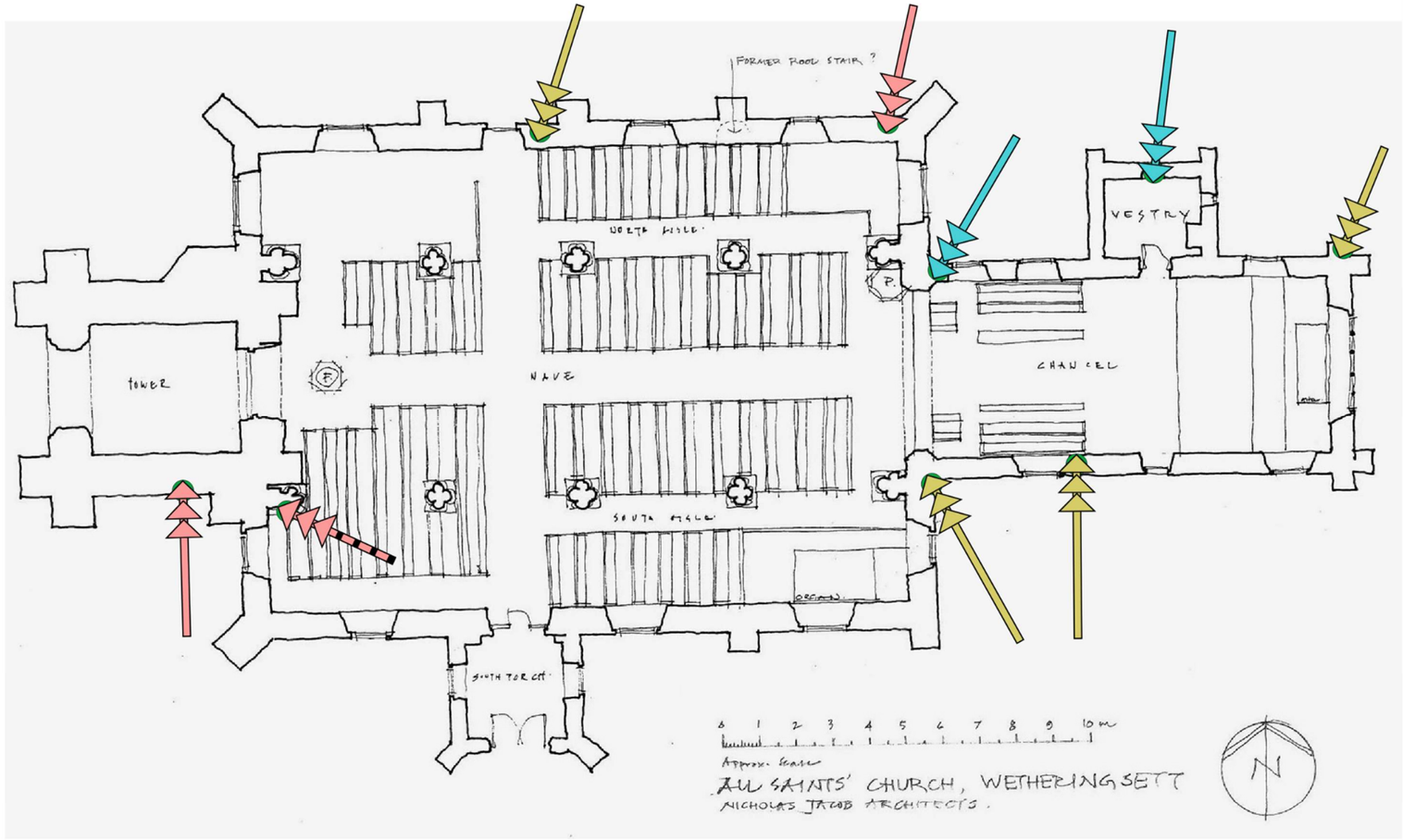

Access point
Brown long-eared bat (Flight) (External)
Common piipstrelle (Flight) (External)
Soprano pipistrelle (Flight) (External)
Soprano pipistrelle (Flight) (Internal)

Not to scale

N

First bat re-entry survey summary plan (27/07/2021)

Site: All Saints Church, Wetheringsett

Revision and Date: 28/10/2021

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Appendix 7. Summaries 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.

Manually verified Elekon A+/M recordings using BatExplorer Pro

Location	ID	Recording period	No. of recordings	Barbastelle	*Myotis* sp.	'NSL'	Long-eared bat	Common pipistrelle	Soprano pipistrelle
Tower ground level	Elekon A+	20/05/2021 20:52 – 22:58	133	0	1	0	0	2	130
Inside church (CW)	Elekon M	20/05/2021 20:52 – 22:58	266	0	50	2	0	9	205
Tower ground level	Elekon A+	24/6/2021	289	0	184	0	0	2	103
Inside church (CW)	Elekon M	24/6/2021	518	0	178	0	0	52	288
Tower ground level	Elekon A+	*26-27/7/2021	3662	1	663	3	6	981	2008
Mobile	Elekon M	*26-27/7/2021	1656	3	414	41	14	219	965

* Dusk through to dawn survey

Manually verified Audiomoth recording using Sonobat

Location	ID	Recording period	No. of recordings	Verification	Barbastelle	*Myotis* sp.	'NSL'	Long-eared bat	Common pipistrelle	Soprano pipistrelle
South aisle, west end	AM01	20/05/2021 20:52 – 22:58	254	Manual	0	34	0	0	9	71
South aisle, east end	AM02	20/05/2021 20:52 – 22:58	253	Manual	0	56	1	4	14	67
Chancel, east end	AM03	20/05/2021 20:52 – 22:58	Failed	Manual	-	-	-	-	-	-
North aisle, east end	AM04	20/05/2021 20:52 – 22:58	240	Manual	0	62	1	0	5	69
Norh aisle, west end	AM05	20/05/2021 20:52 – 22:58	241	Manual	0	51	0	0	15	73
Nave, west end	AM06	20/05/2021 20:52 – 22:58	238	Manual	0	46	0	0	`7	71
Tower	AM07	20/05/2021 20:52 – 22:58	238	Manual	0	2	0	0	2	43
Nave, east end	AM08	20/05/2021 20:52 – 22:58	246	Manual	0	52	0	0	13	58

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

Survey 1: Soprano pipistrelle

Count Bat

Site Name: All Saints Wetheringsett

Author: Chris Damant

2021-10-27 12:59:22

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

Summary

A total count of **30 *Pipistrellus pygmaeus*** were found at a **Church** roost on **20/05/2021** in **Suffolk, East Anglia, 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

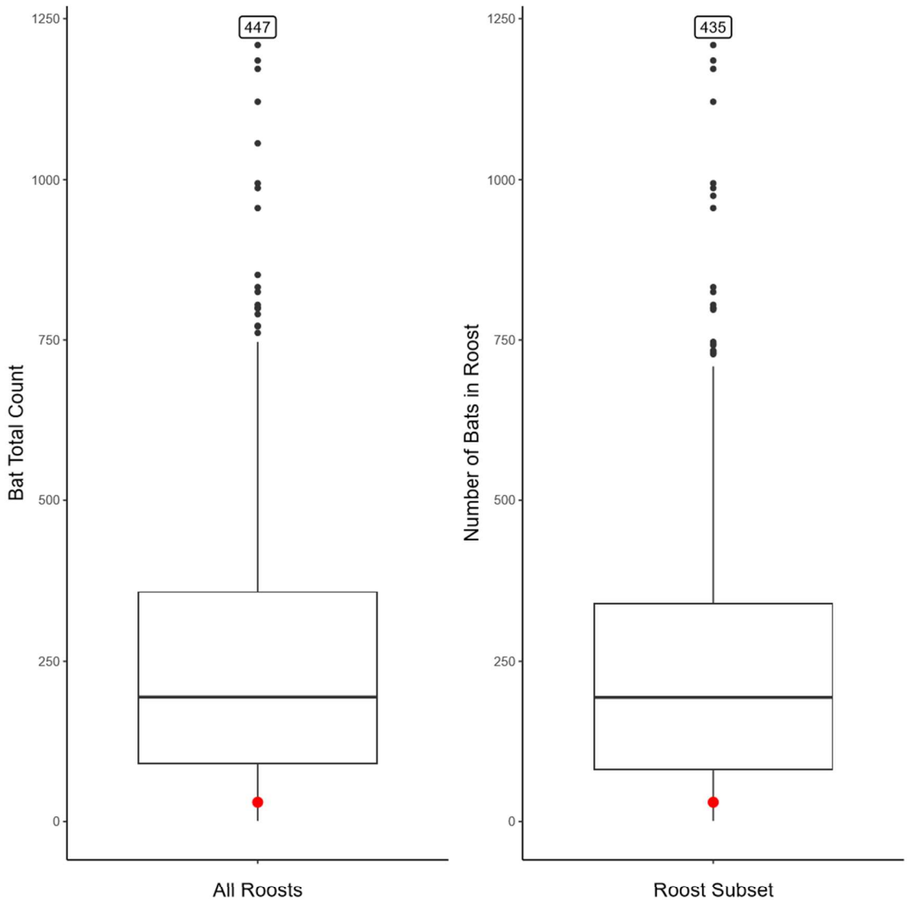

Figure 1: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) Your data is shown as the red dot.

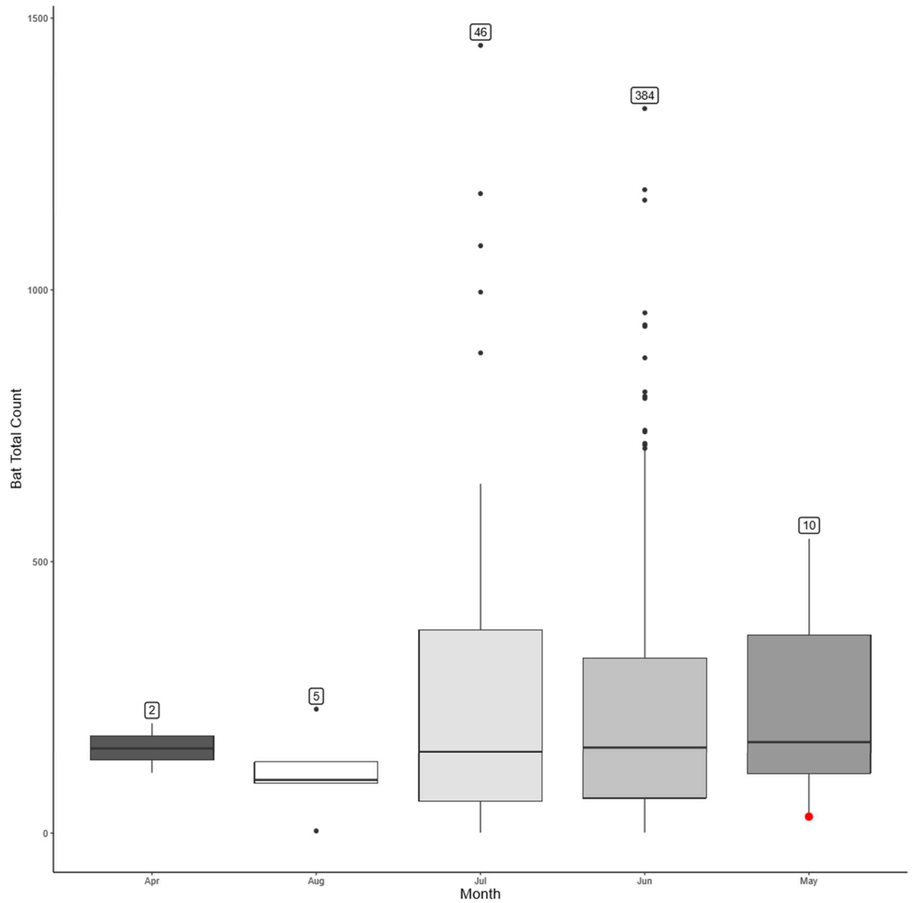

Figure 2: A boxplot showing total count of bats in roosts per month across all years. Your roost is shown as the red dot.The numbers above the boxplots represent the sample size used from the database.

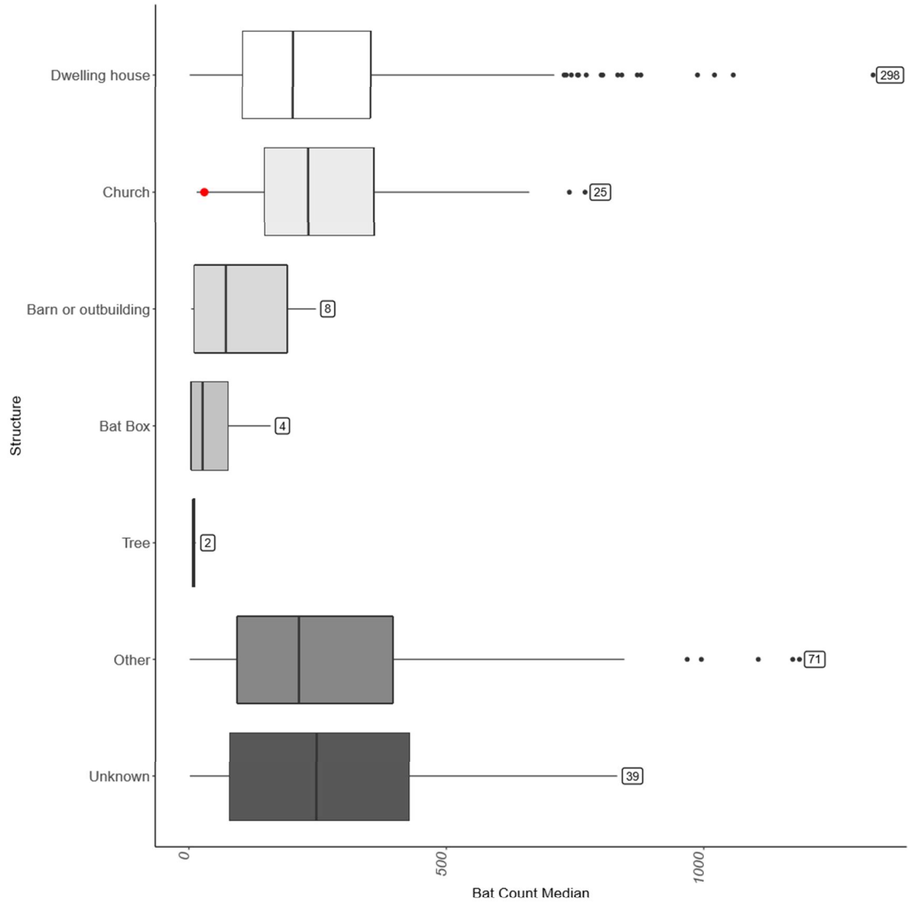

Figure 3: Boxplots of median bat counts in roosts split by structure type of the roost for all roosts in database. Your roost is shown as a red dot. Please note that counts tend to become more variable earlier and later in the season. The numbers alongside the boxplots represent the sample size used 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 **11th 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*.

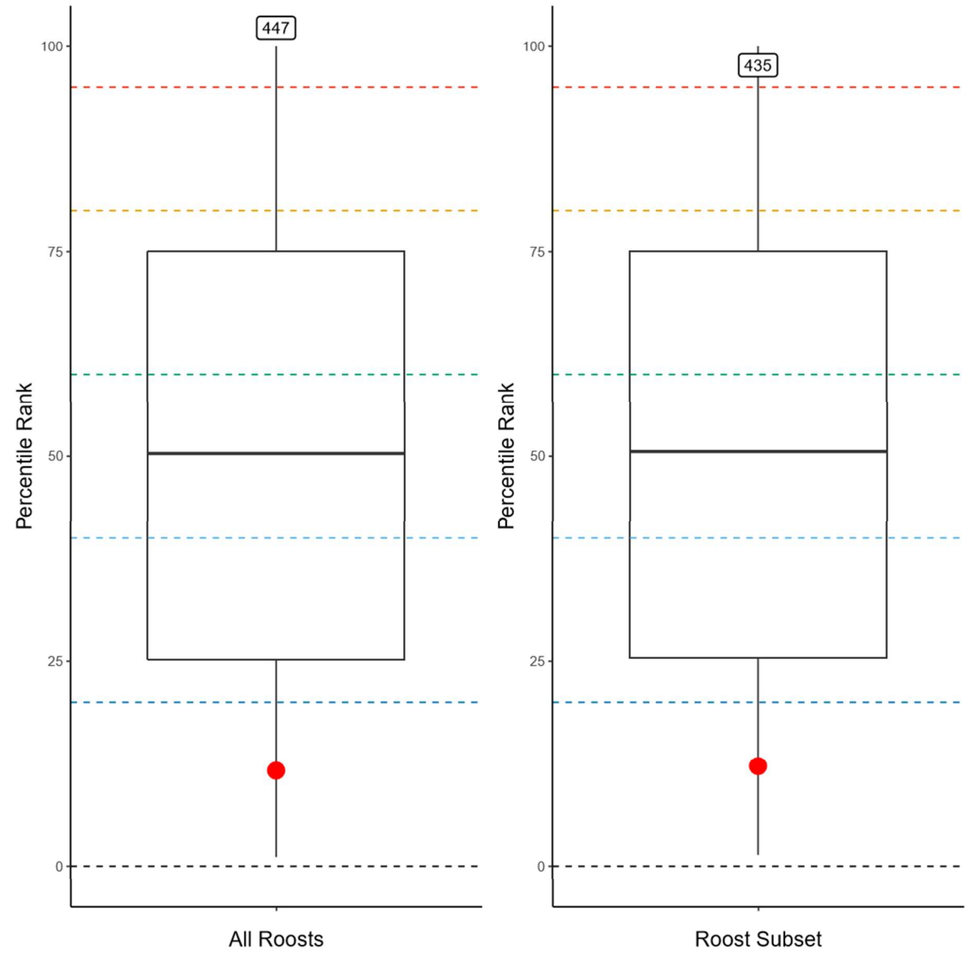

Figure 4: A boxplots showing where your data lies in relation to all other roost data (left) and in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. Database sample size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

Section 3: Results filtered by Structure Type

The following section has subsetted 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 **11th 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*.

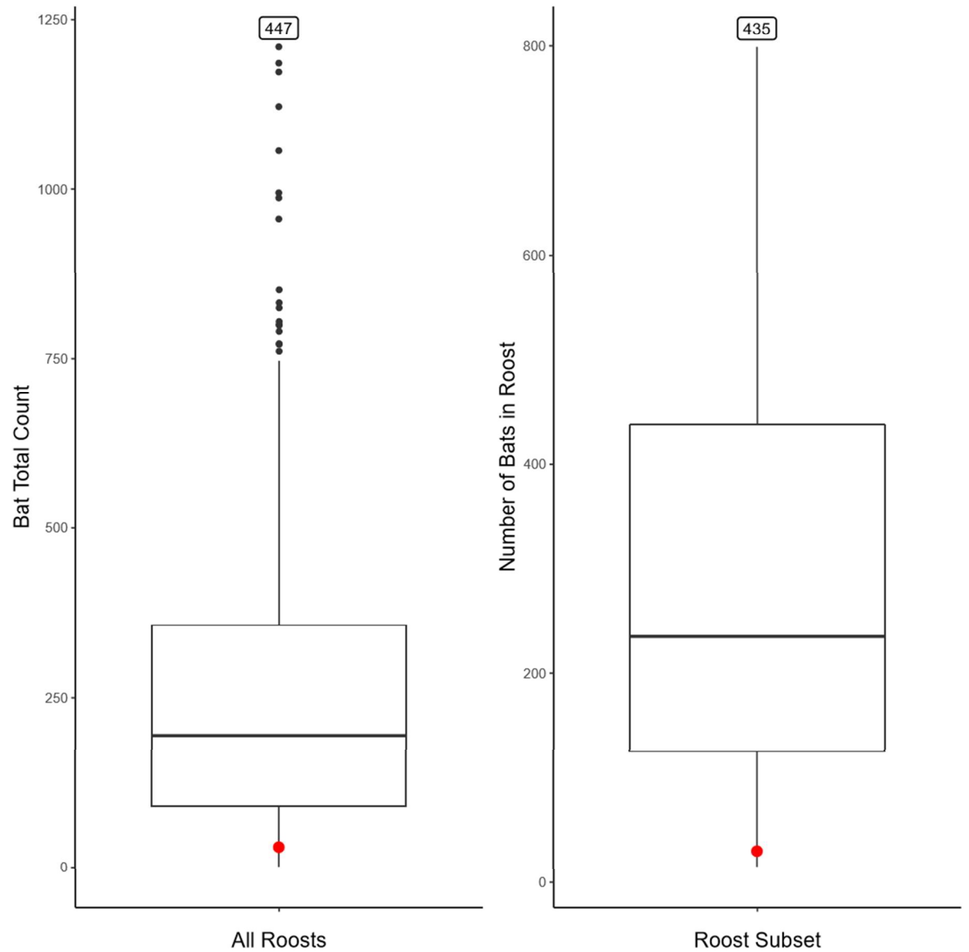

Figure 5: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) of the same structure type. Your data is shown as the red dot.

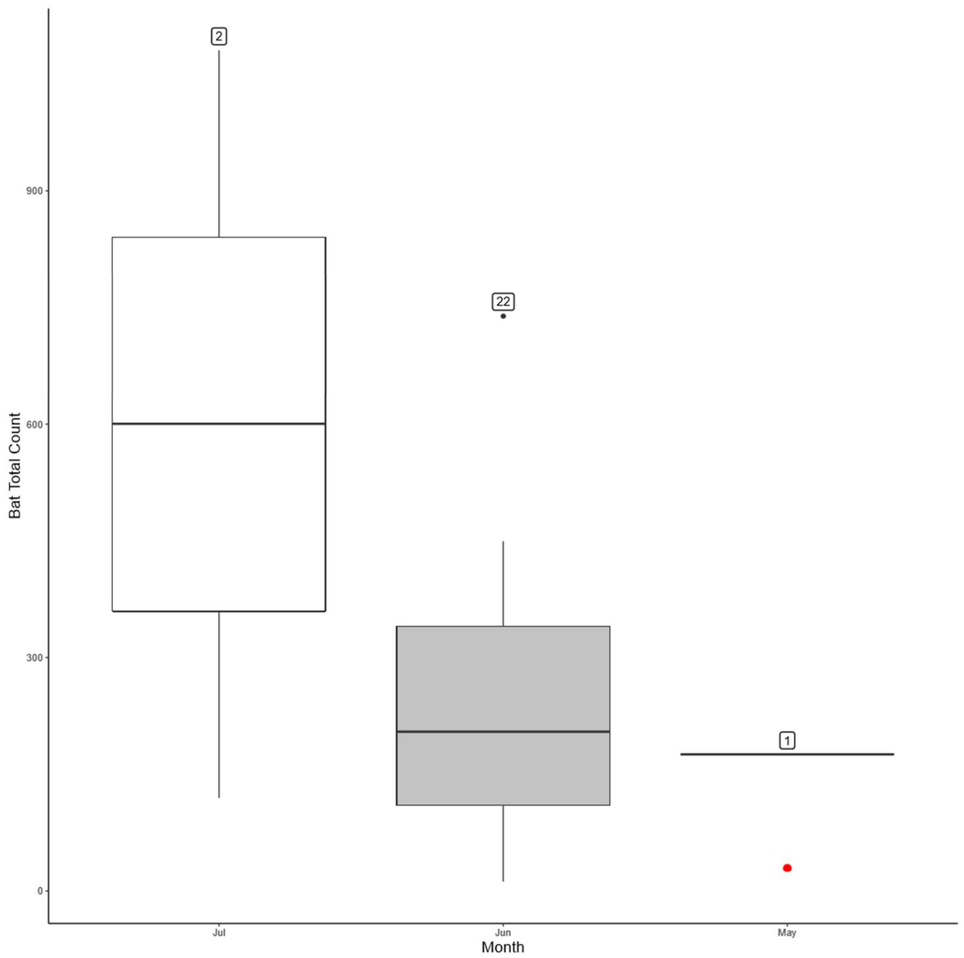

Figure 6: A boxplot showing total count of bats in roosts per month across all years for your roost's Structure Type. Your roost is shown as the red dot.

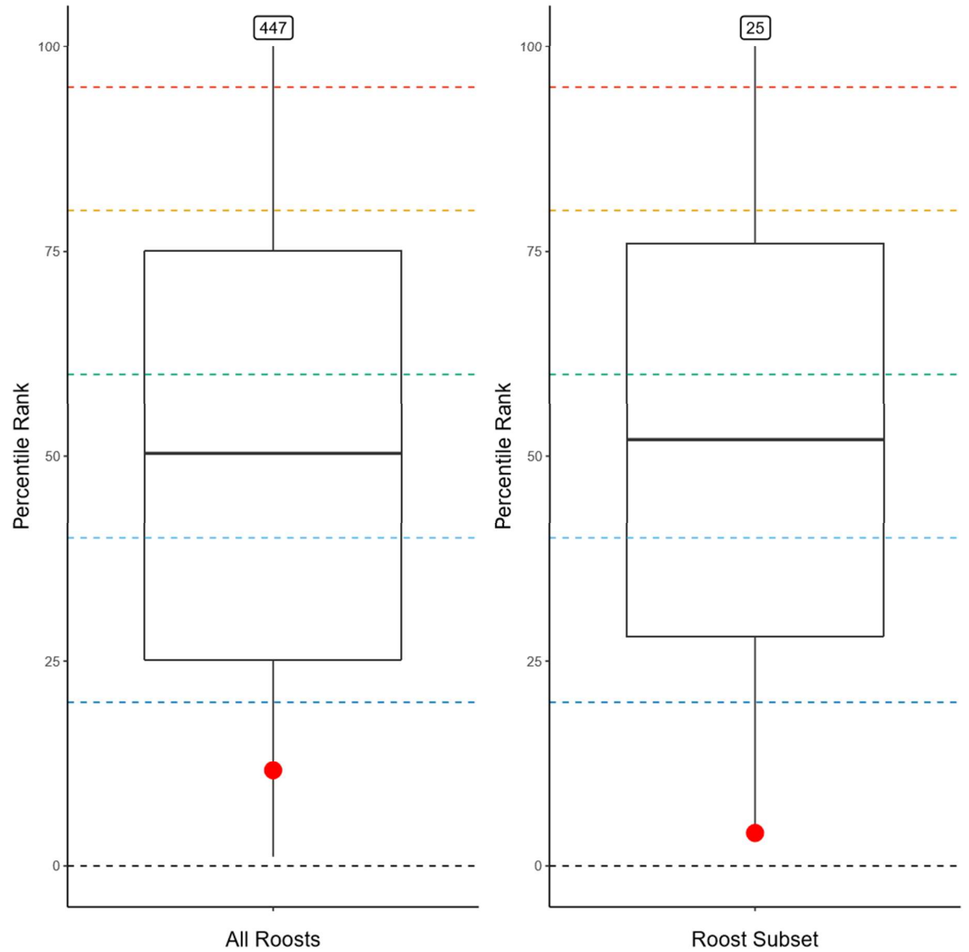

Figure 7: A boxplot showing where your data lies in relation to all other roost data (left) and a boxplot showing where your data lies in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked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

Survey 2: Soprano pipistrelle

Count Bat

Site Name: All Saints Wetheringsett

Author: Chris Damant

2021-10-27 13:13:12

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

Summary

A total count of **95** ***Pipistrellus pygmaeus*** were found at a **Church** roost on **24/06/2021** in **Suffolk, East Anglia, 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

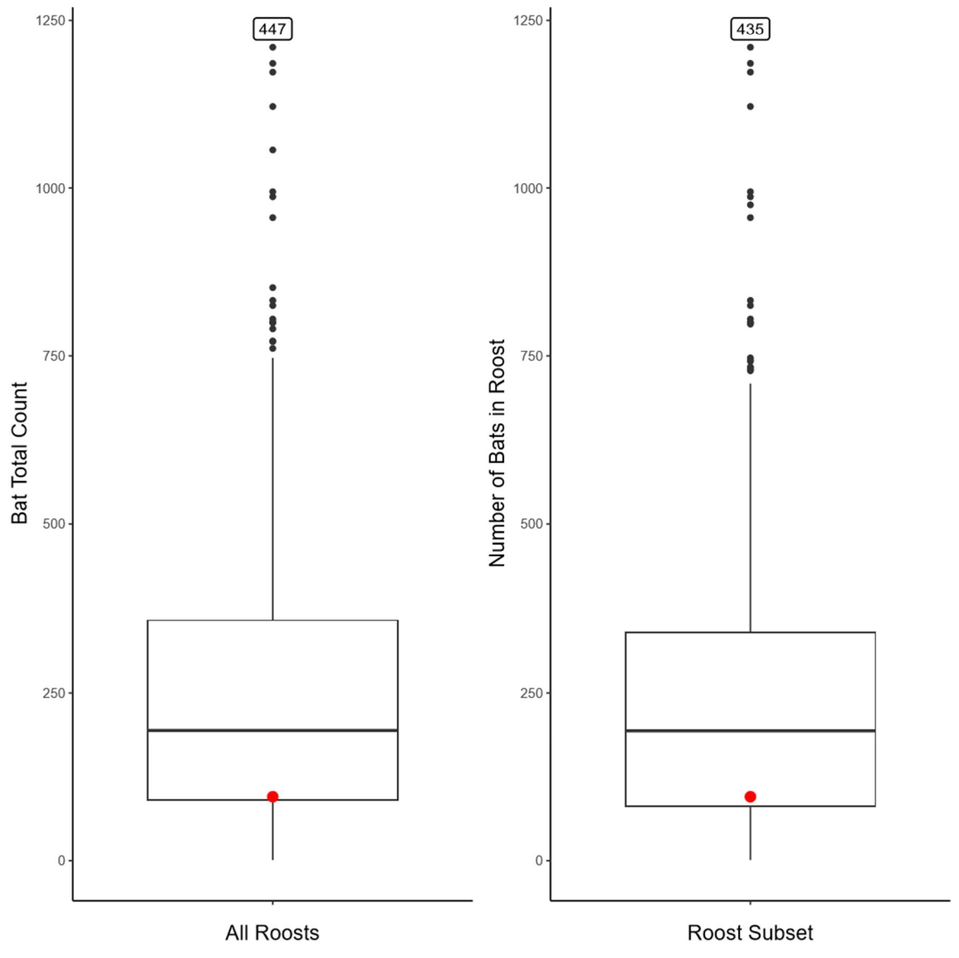

Figure 1: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) Your data is shown as the red dot.

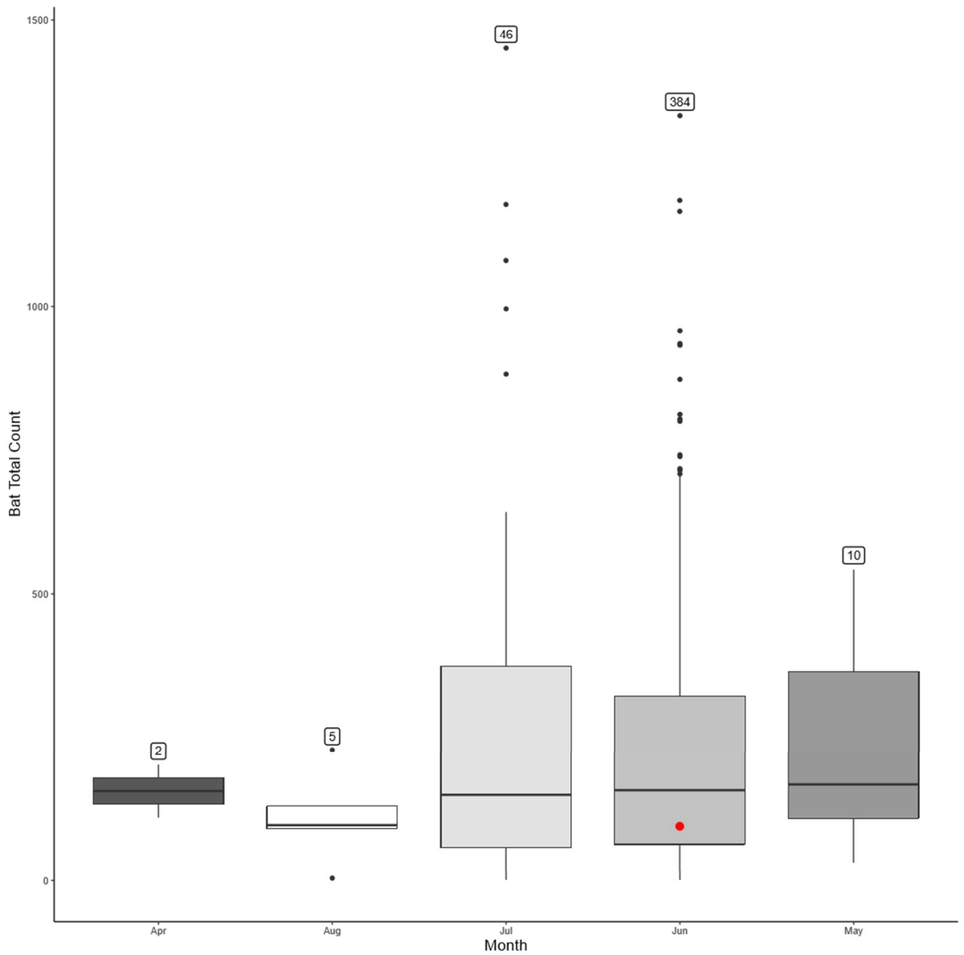

Figure 2: A boxplot showing total count of bats in roosts per month across all years. Your roost is shown as the red dot.The numbers above the boxplots represent the sample size used from the database.

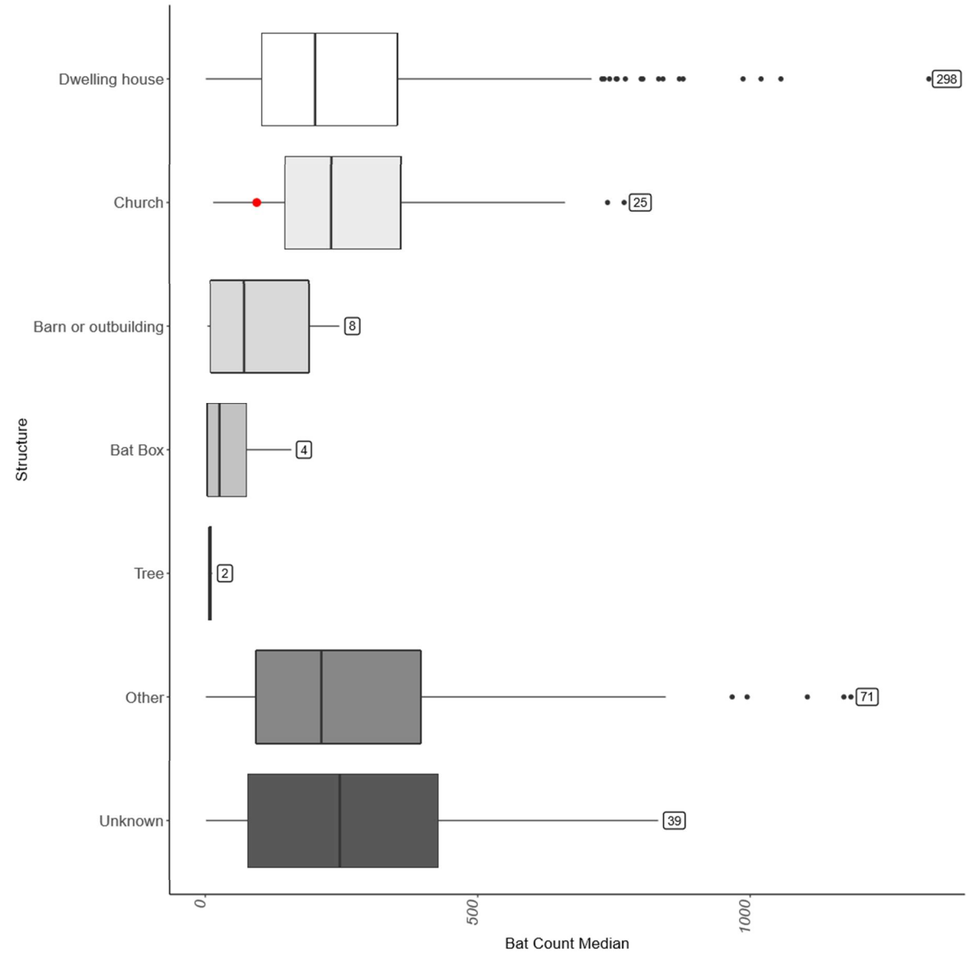

Figure 3: Boxplots of median bat counts in roosts split by structure type of the roost for all roosts in database. Your roost is shown as a red dot. Please note that counts tend to become more variable earlier and later in the season. The numbers alongside the boxplots represent the sample size used 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 **26th percentile** when compared to the **447 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low/moderate** 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 **27th percentile** when compared to the **435 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low/moderate** number of *Pipistrellus pygmaeus*.

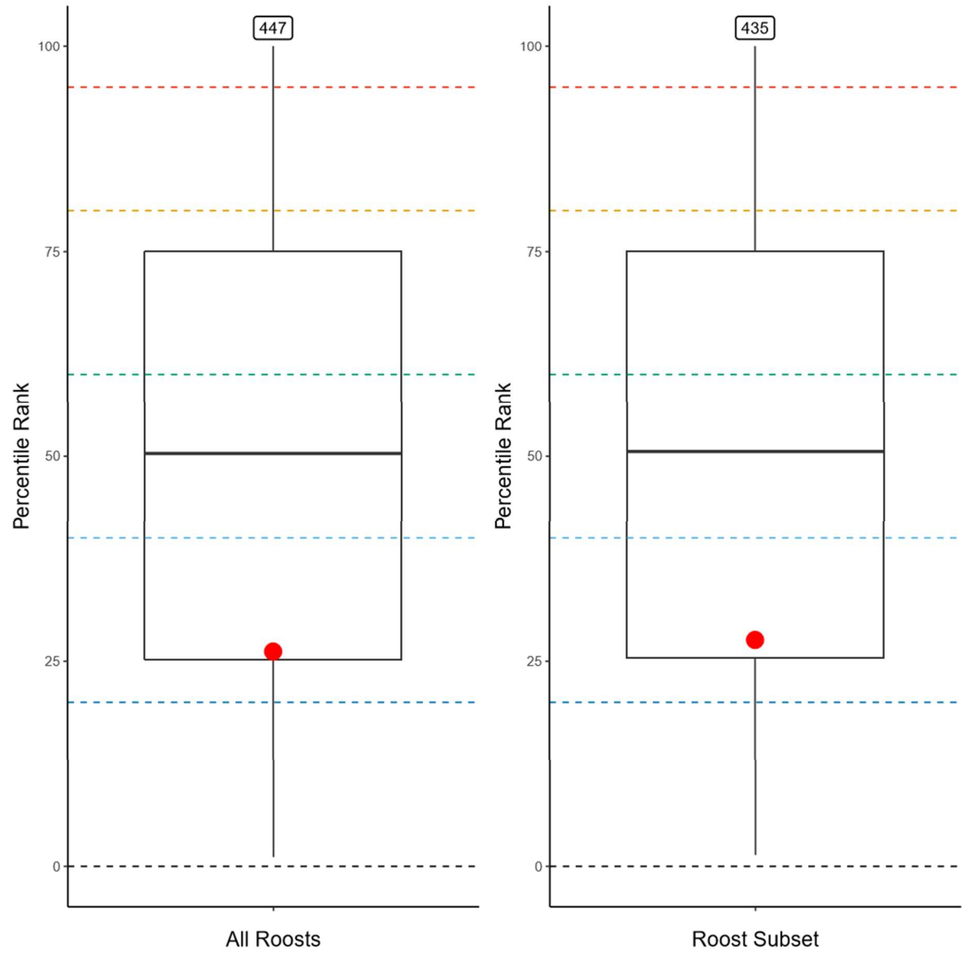

Figure 4: A boxplots showing where your data lies in relation to all other roost data (left) and in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. Database sample size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

Section 3: Results filtered by Structure Type

The following section has subsetted 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 **26th percentile** when compared to the **447 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low/moderate** 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 **27th 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*.

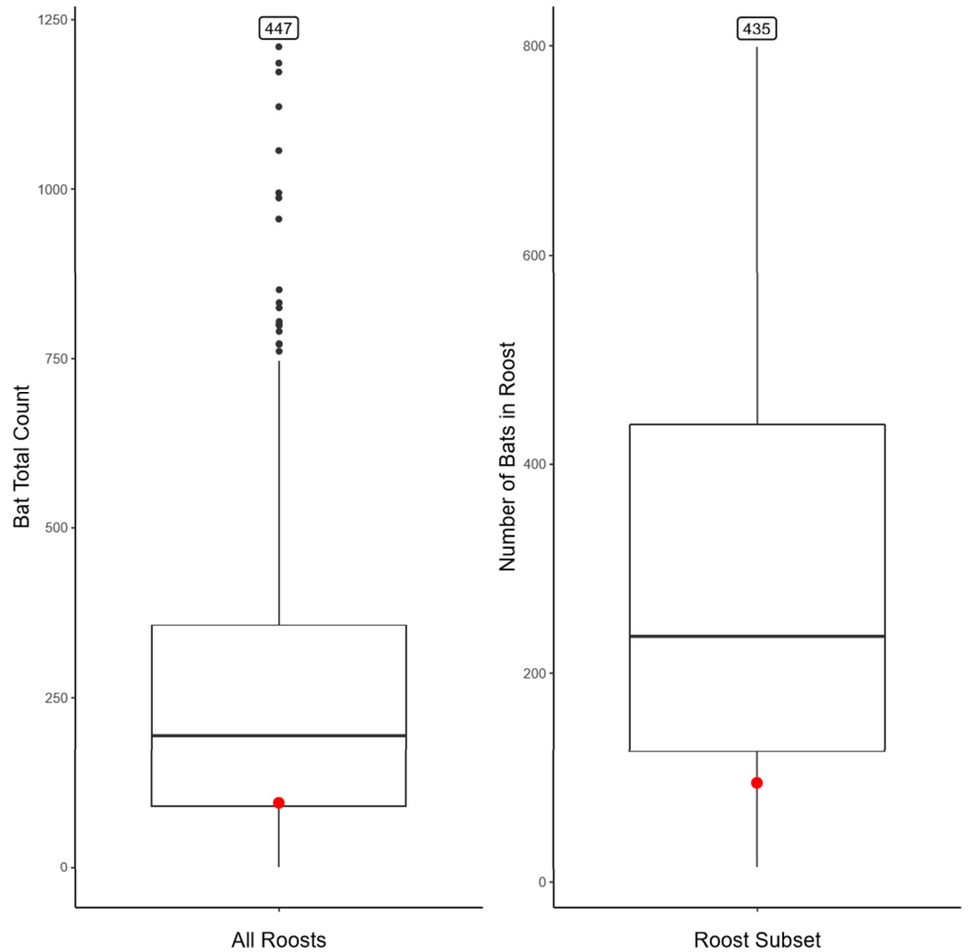

Figure 5: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) of the same structure type. Your data is shown as the red dot.

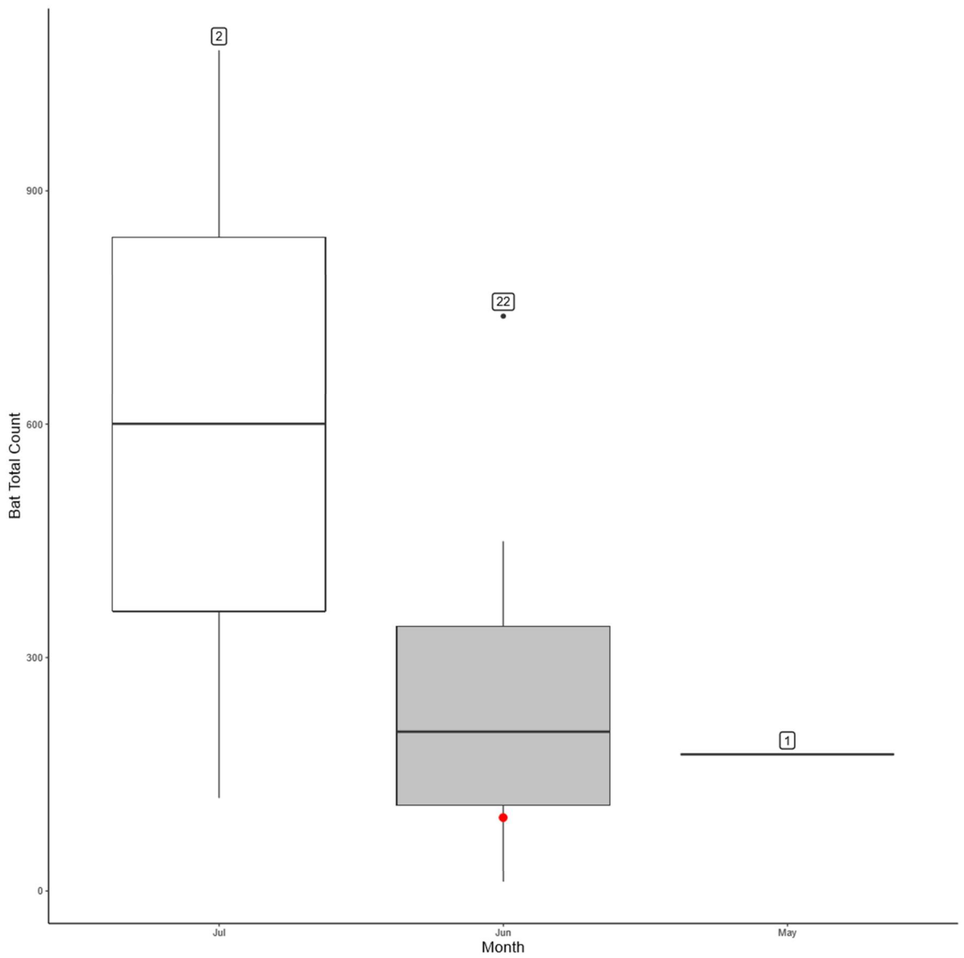

Figure 6: A boxplot showing total count of bats in roosts per month across all years for your roost's Structure Type. Your roost is shown as the red dot.

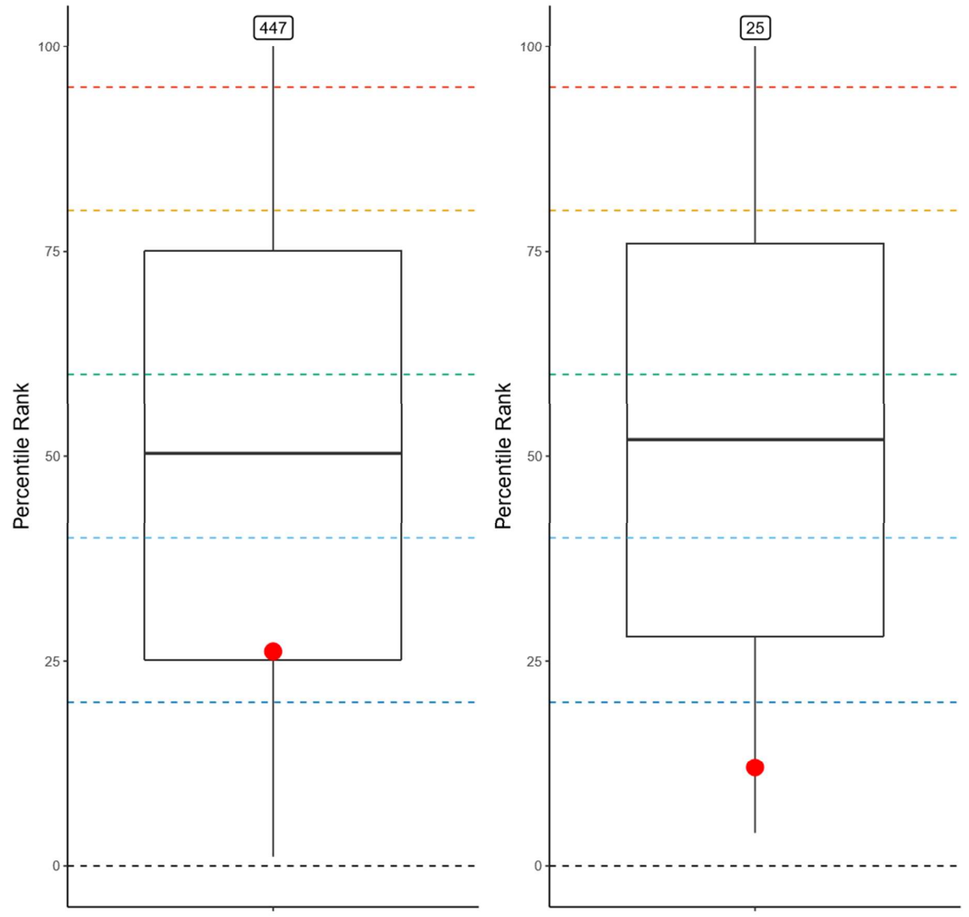

Figure 7: A boxplot showing where your data lies in relation to all other roost data (left) and a boxplot showing where your data lies in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked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

Survey 3: Soprano pipistrelle

Count Bat

Site Name: All Saints Wetheringsett

Author: Chris Damant

2021-10-27 13:27:36

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

Summary

A total count of **75** ***Pipistrellus pygmaeus*** were found at a **Church** roost on **26/07/2021** in **Suffolk, East Anglia, 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

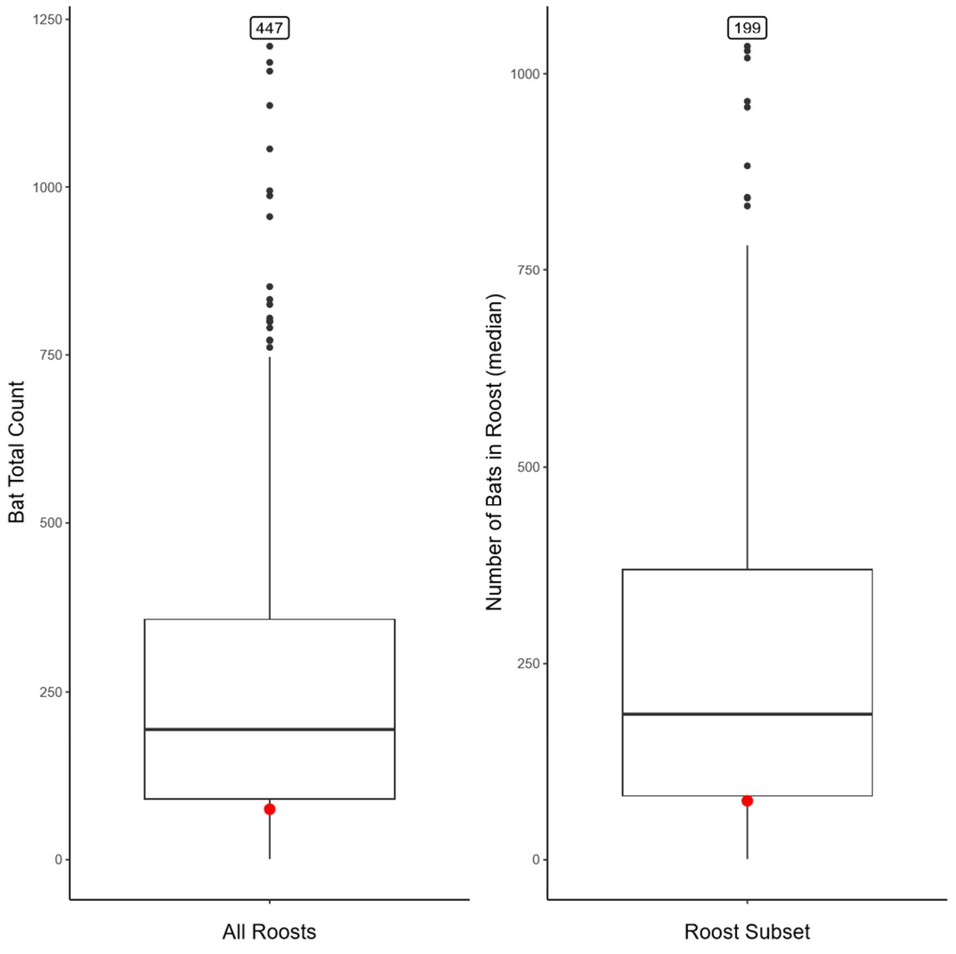

Figure 1: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) Your data is shown as the red dot.

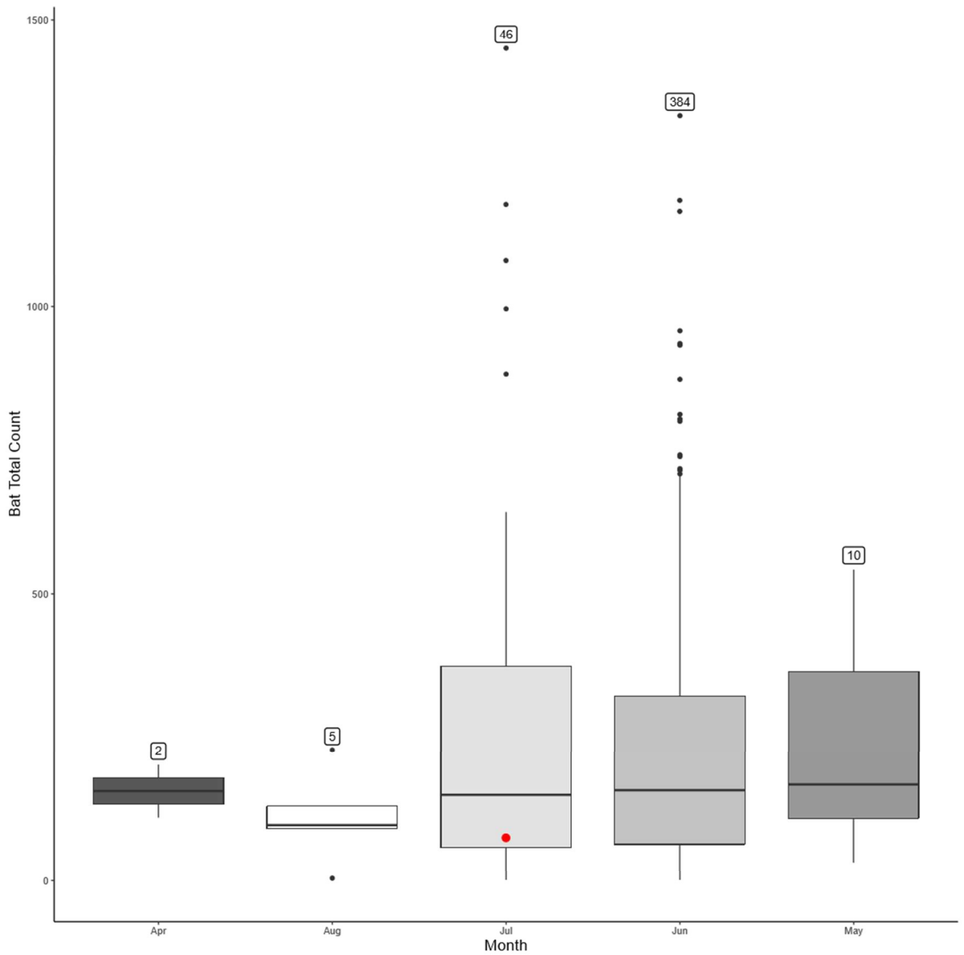

Figure 2: A boxplot showing total count of bats in roosts per month across all years. Your roost is shown as the red dot.The numbers above the boxplots represent the sample size used from the database.

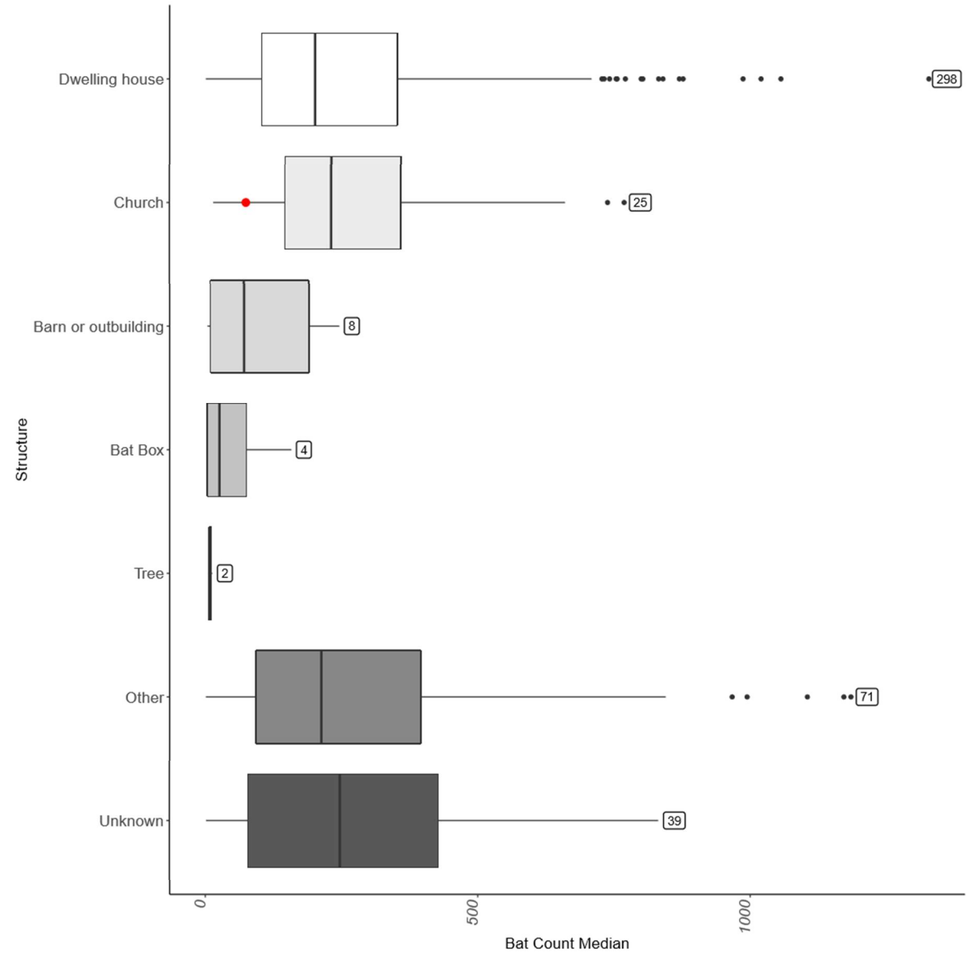

Figure 3: Boxplots of median bat counts in roosts split by structure type of the roost for all roosts in database. Your roost is shown as a red dot. Please note that counts tend to become more variable earlier and later in the season. The numbers alongside the boxplots represent the sample size used 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 **21th percentile** when compared to the **447 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low/moderate** 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 **24th percentile** when compared to the **199 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low/moderate** number of *Pipistrellus pygmaeus*.

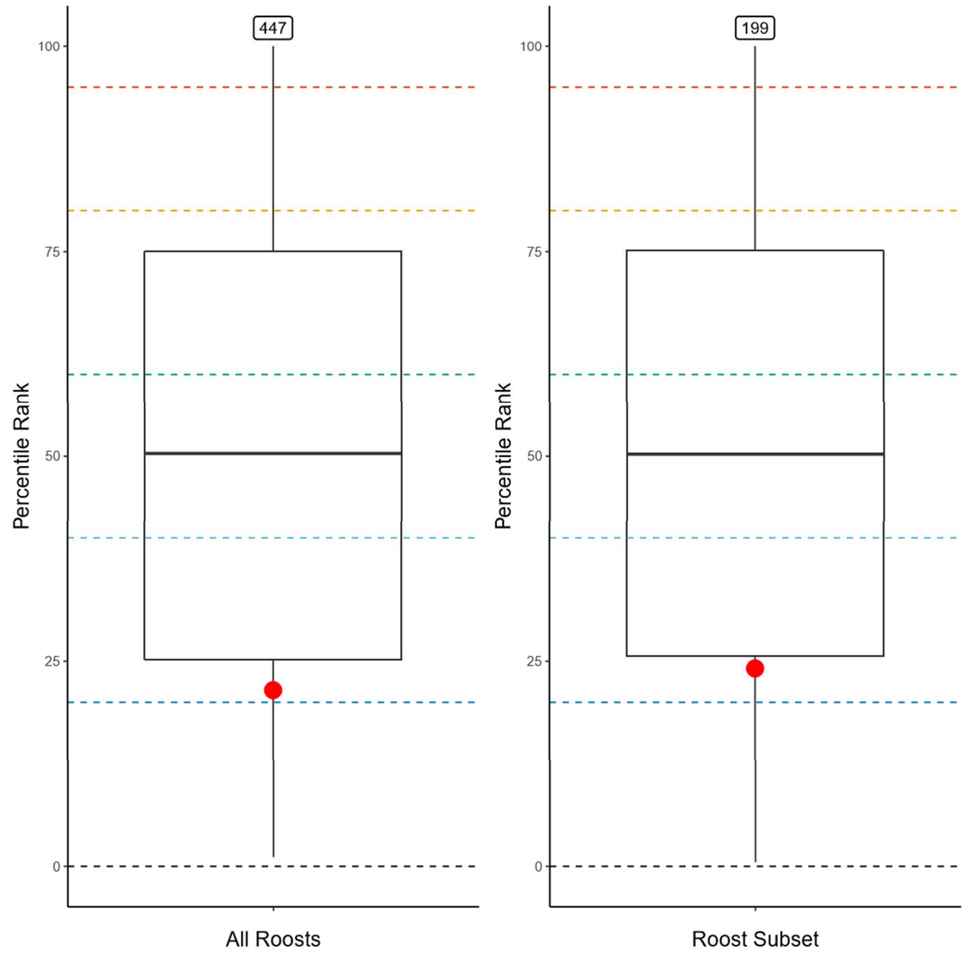

Figure 4: A boxplots showing where your data lies in relation to all other roost data (left) and in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. Database sample size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

Section 3: Results filtered by Structure Type

The following section has subsetted 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 **21th percentile** when compared to the **447 *Pipistrellus pygmaeus*** roosts in the dataset. This means your roost is ranked as having a **low/moderate** 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 **24th 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*.

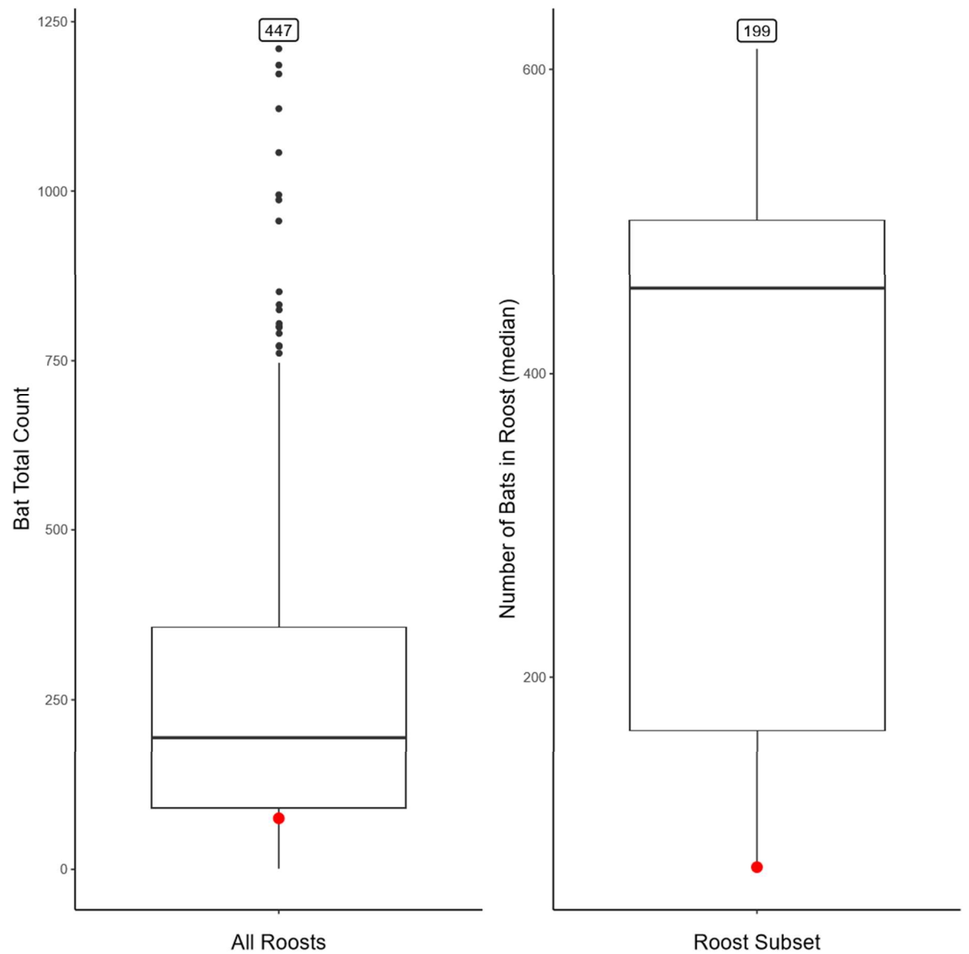

Figure 5: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) of the same structure type. Your data is shown as the red dot.

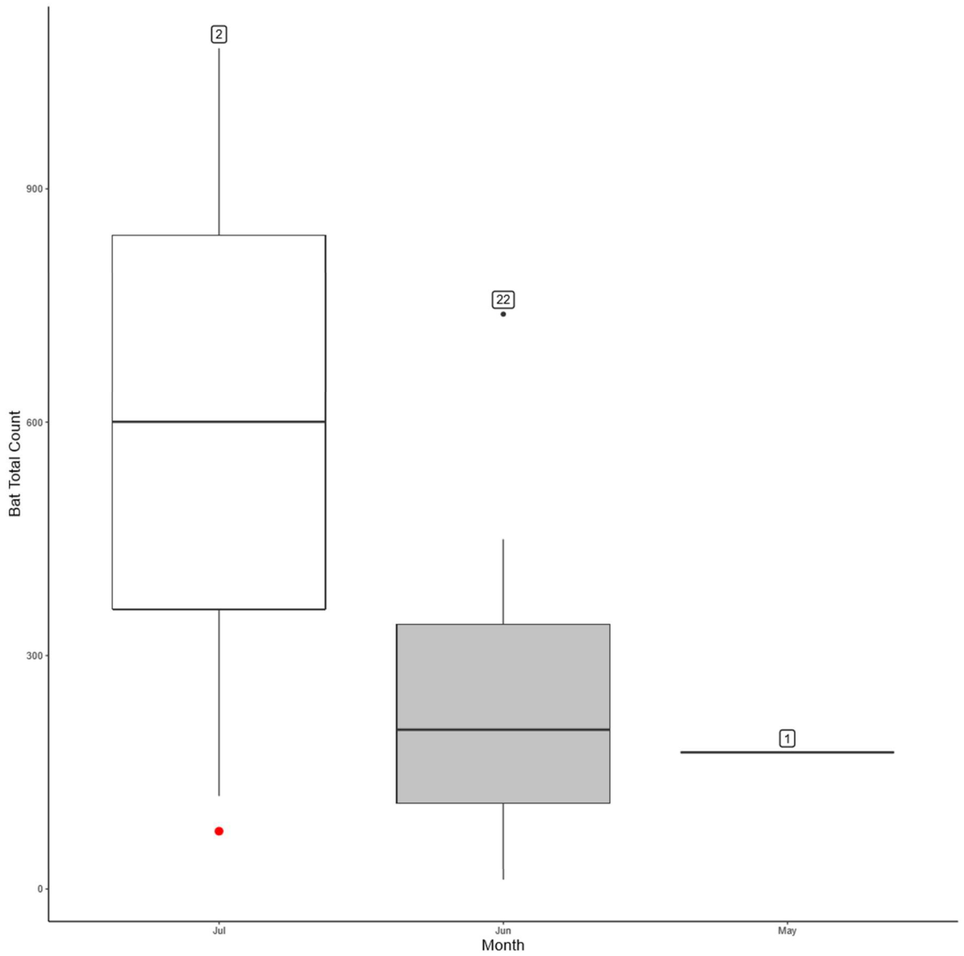

Figure 6: A boxplot showing total count of bats in roosts per month across all years for your roost's Structure Type. Your roost is shown as the red dot.

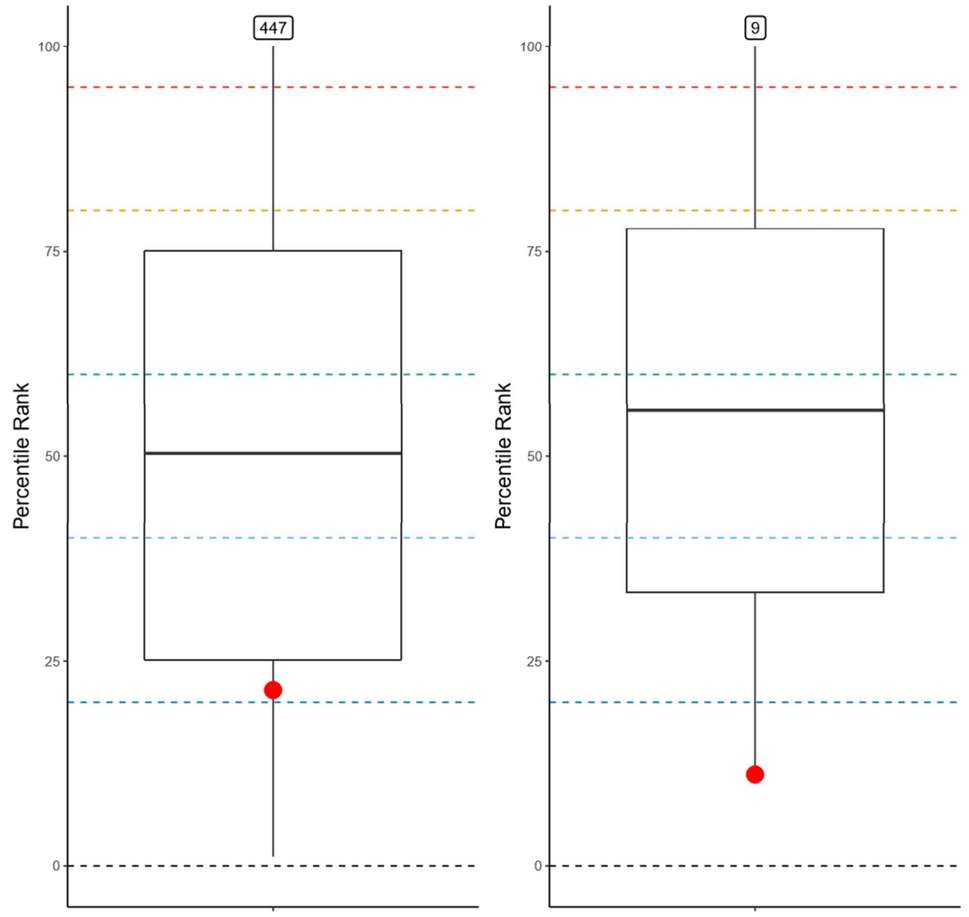

Figure 7: A boxplot showing where your data lies in relation to all other roost data (left) and a boxplot showing where your data lies in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked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

Survey 2: Natterer's bat

Count Bat

Site Name: All Saints Wetheringsett

Author: Chris Damant

2021-10-27 13:24:39

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

Summary

A total count of **35** ***Myotis nattereri*** were found at a **Church** roost on **24/06/2021** in **Suffolk, East Anglia, England**

Section 1: Roost Count Data

This section uses the roost count of each ***Myotis nattereri*** 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

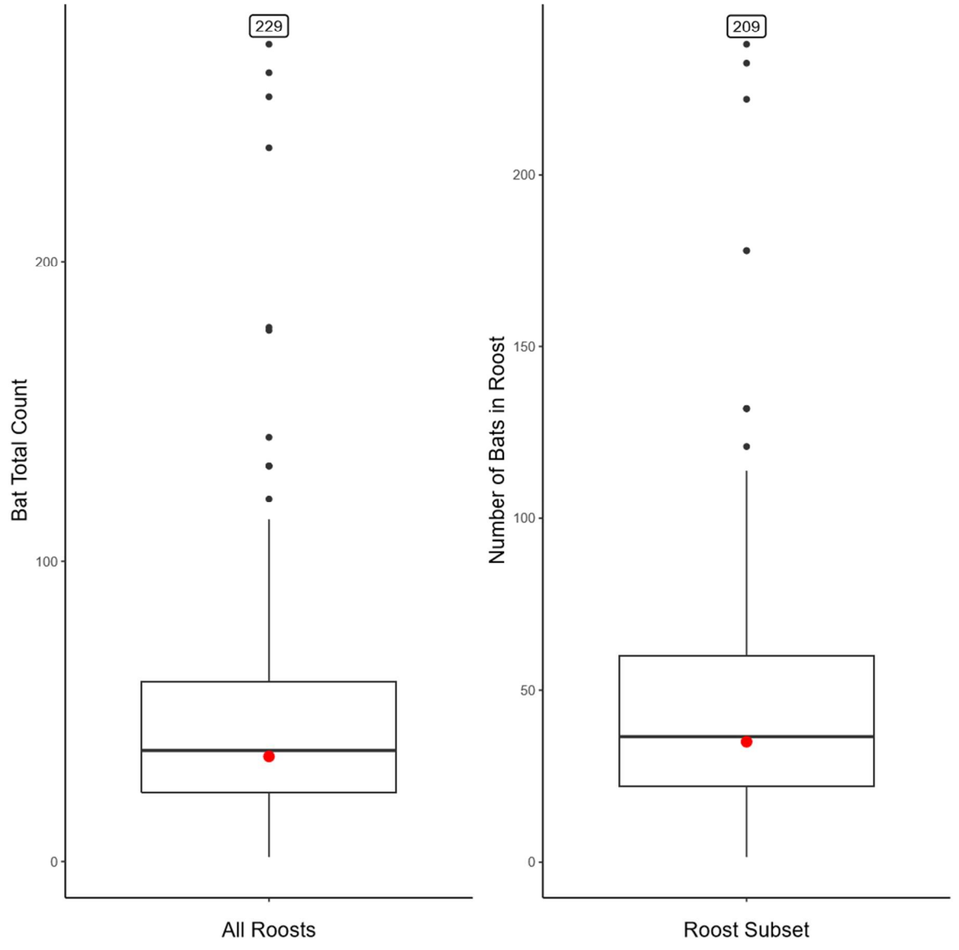

Figure 1: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) Your data is shown as the red dot.

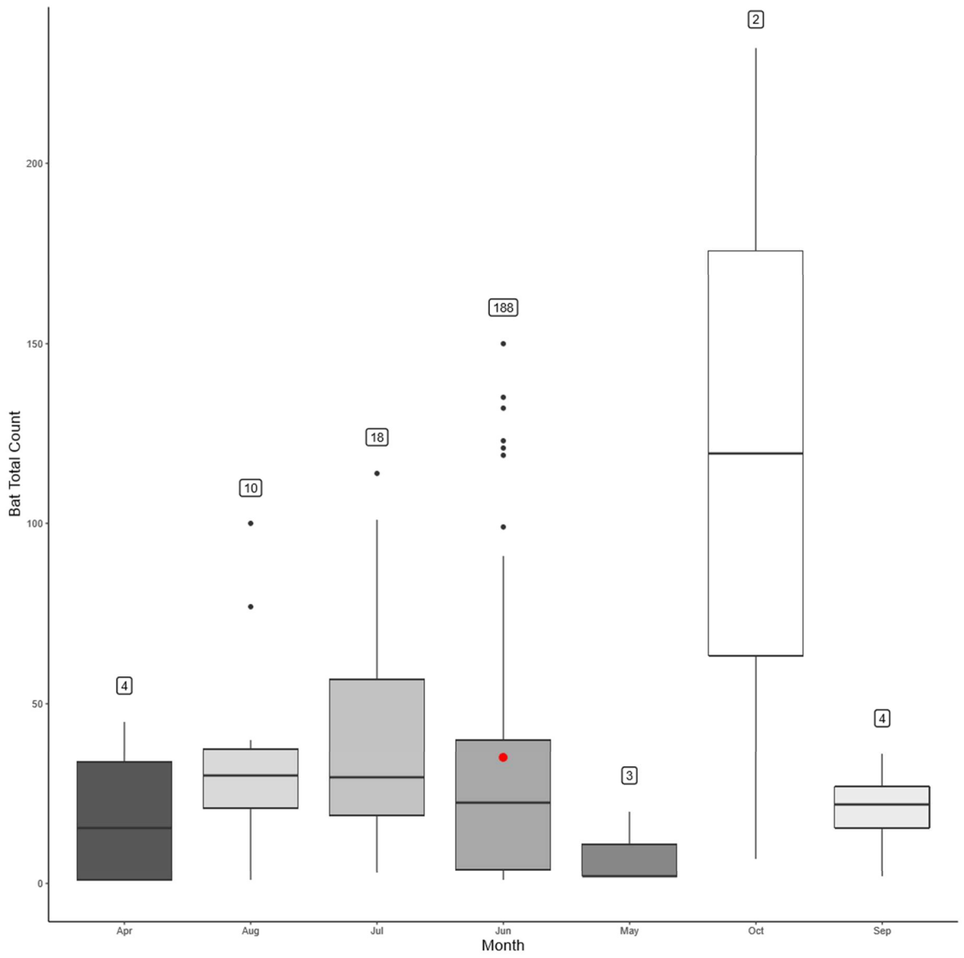

Figure 2: A boxplot showing total count of bats in roosts per month across all years. Your roost is shown as the red dot.The numbers above the boxplots represent the sample size used from the database.

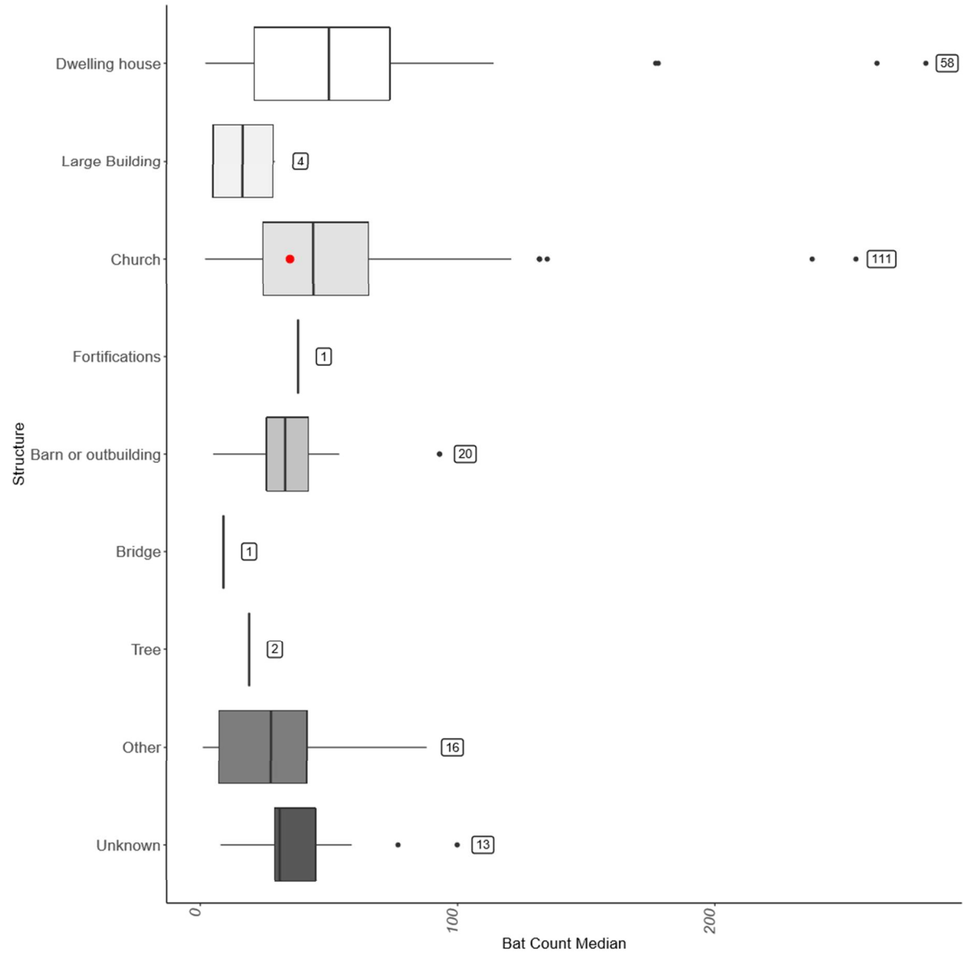

Figure 3: Boxplots of median bat counts in roosts split by structure type of the roost for all roosts in database. Your roost is shown as a red dot. Please note that counts tend to become more variable earlier and later in the season. The numbers alongside the boxplots represent the sample size used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

Section 2: Percentiles Analysis

This analysis looks at the relative size of the ***Myotis nattereri*** roost you recorded. We take your total count of *Myotis nattereri* 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 *Myotis nattereri* 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 **48th percentile** when compared to the **229 *Myotis nattereri*** roosts in the dataset. This means your roost is ranked as having a **moderate** number of *Myotis nattereri*.

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

Your roost is the **49th percentile** when compared to the **209 *Myotis nattereri*** roosts in the dataset. This means your roost is ranked as having a **moderate** number of *Myotis nattereri*.

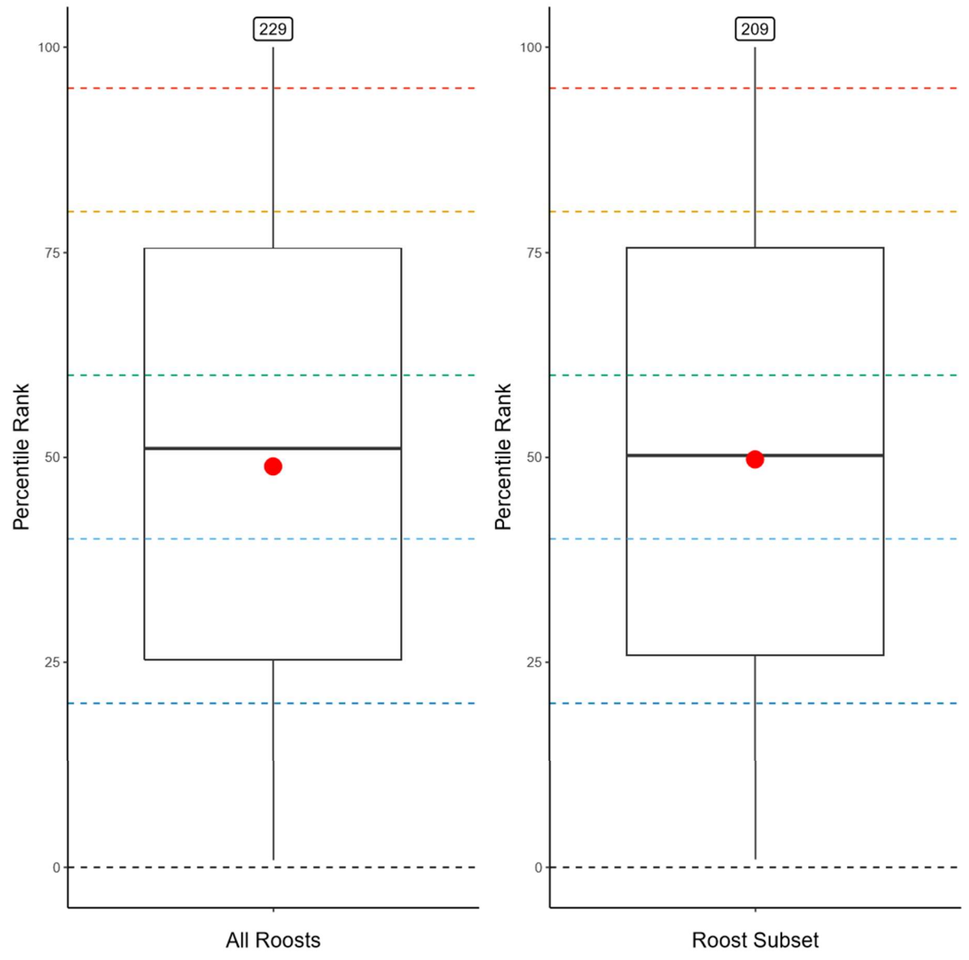

Figure 4: A boxplots showing where your data lies in relation to all other roost data (left) and in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. Database sample size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

Section 3: Results filtered by Structure Type

The following section has subsetted 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 **48th percentile** when compared to the **229** ***Myotis nattereri*** roosts in the dataset. This means your roost is ranked as having a **moderate** number of *Myotis nattereri*.

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

Your roost is the **49th percentile** when compared to the **209** ***Myotis nattereri*** roosts in the dataset. This means your roost is ranked as having a **moderate** number of *Myotis nattereri*.

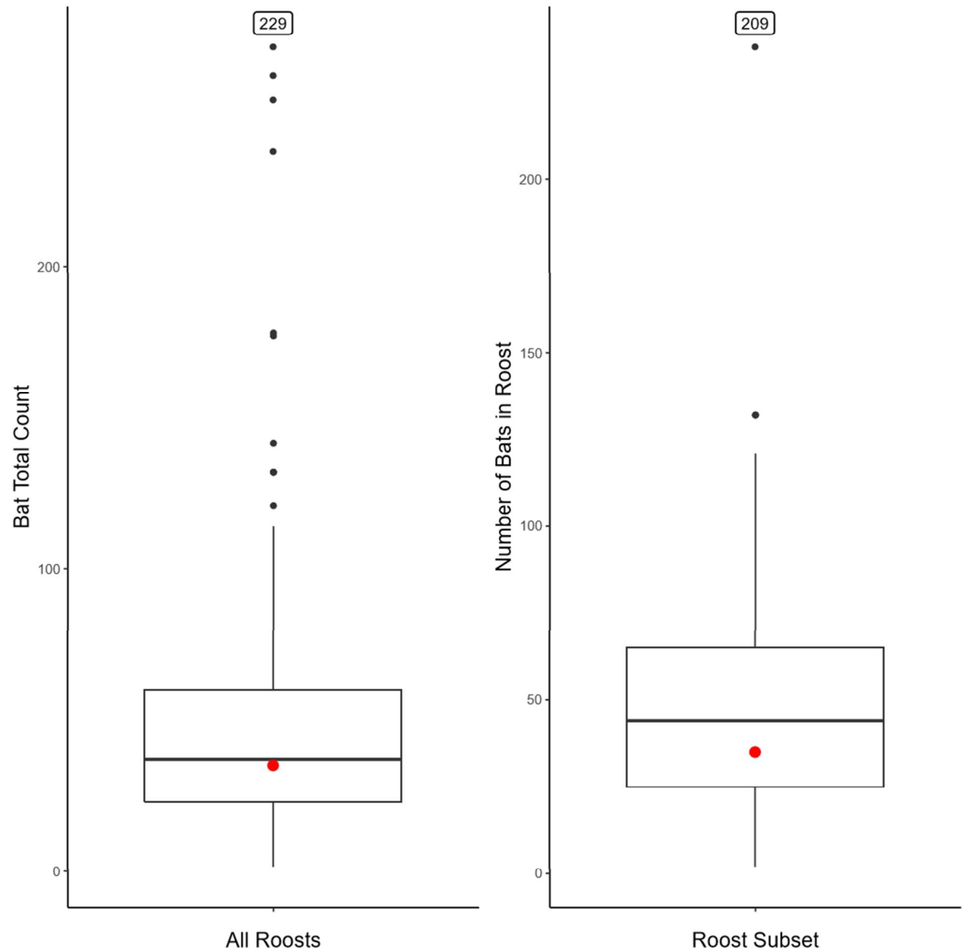

Figure 5: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) of the same structure type. Your data is shown as the red dot.

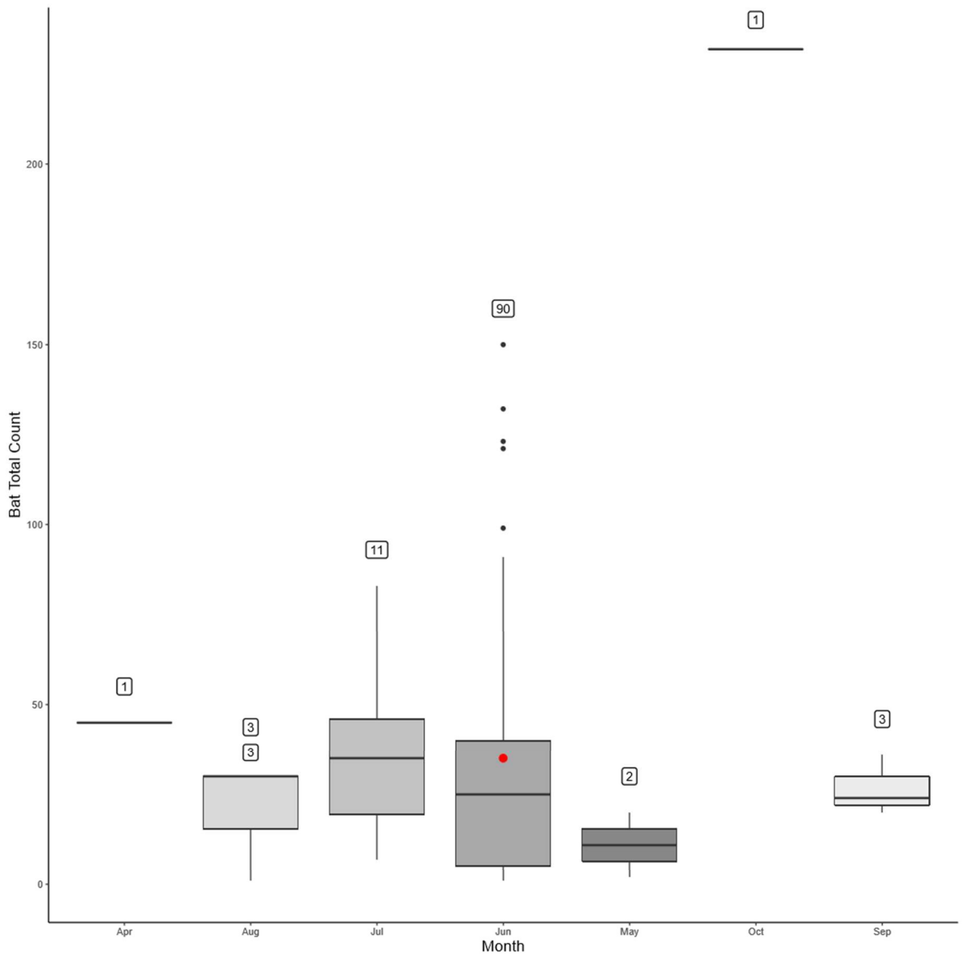

Figure 6: A boxplot showing total count of bats in roosts per month across all years for your roost's Structure Type. Your roost is shown as the red dot.

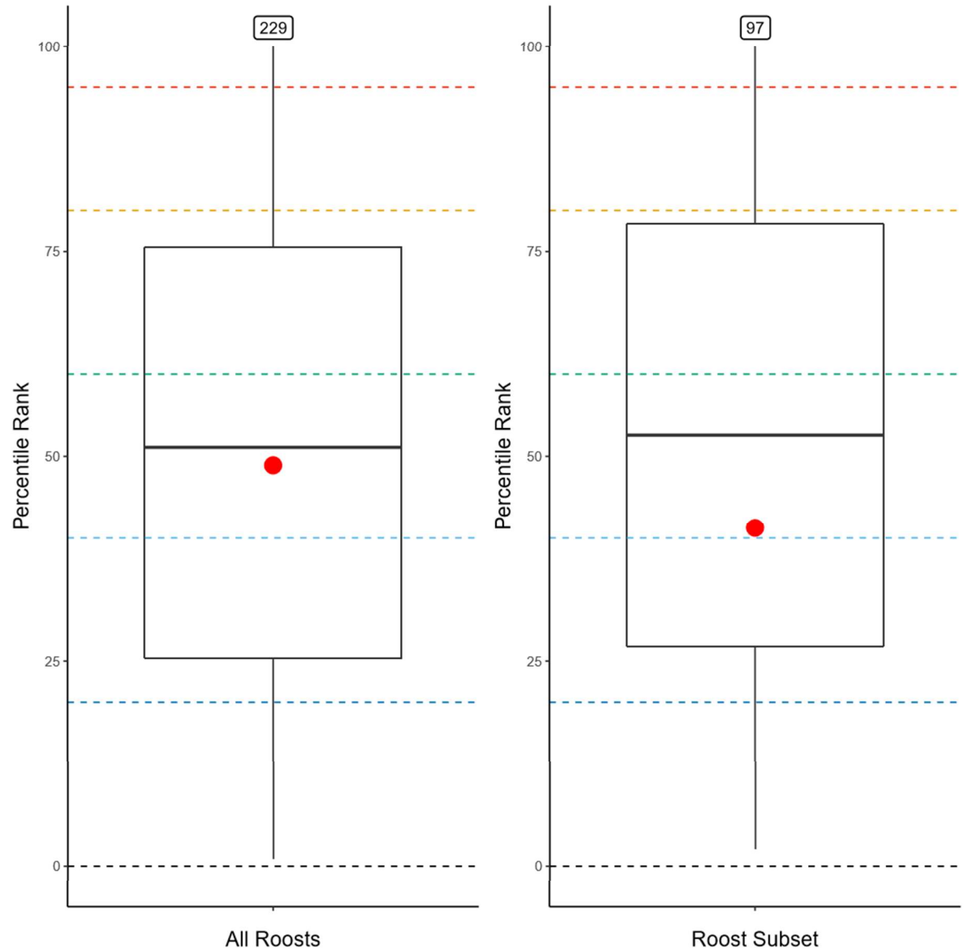

Figure 7: A boxplot showing where your data lies in relation to all other roost data (left) and a boxplot showing where your data lies in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked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

Survey 3: Natterer's bat

Count Bat

Site Name: All Saints Wetheringsett

Author: Chris Damant

2021-10-27 13:36:10

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

Summary

A total count of **18** ***Myotis nattereri*** were found at a **Church** roost on **26/07/2021** in **Suffolk, East Anglia, England**

Section 1: Roost Count Data

This section uses the roost count of each ***Myotis nattereri*** 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
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Boxplots are used to visualise data. For all boxplots in the report:

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- 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

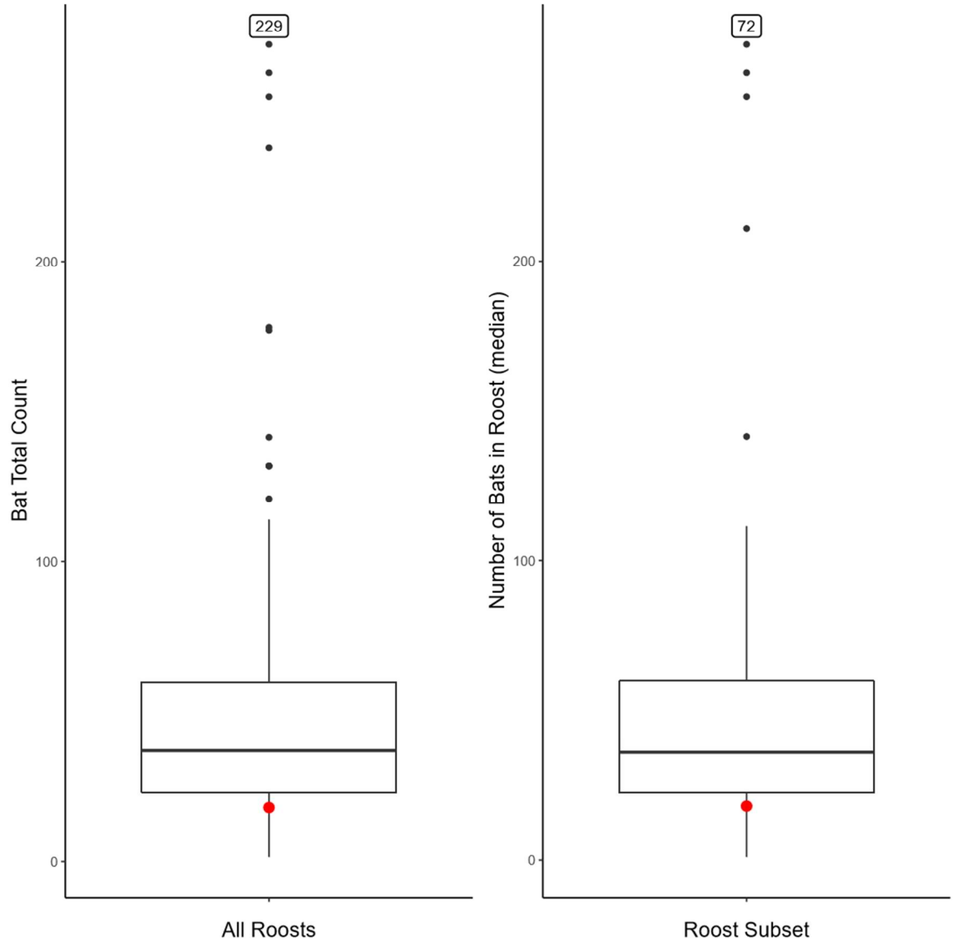


Figure 1: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) Your data is shown as the red dot.

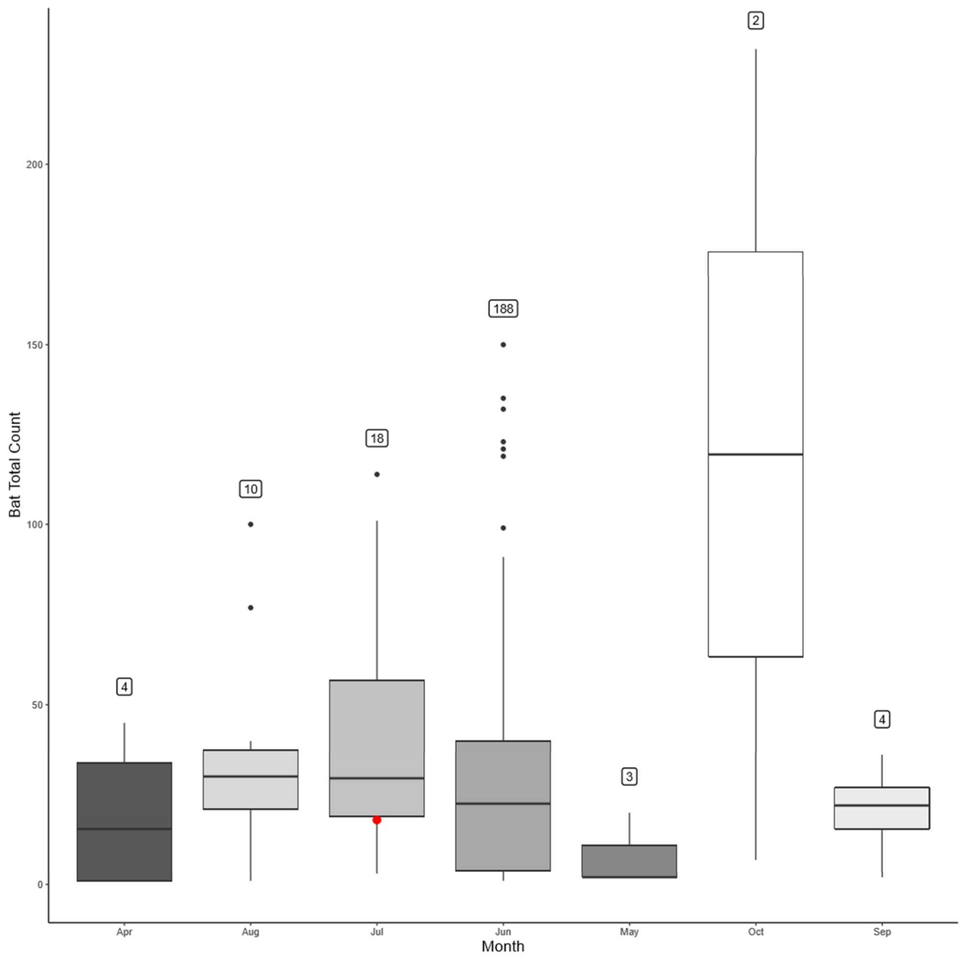


Figure 2: A boxplot showing total count of bats in roosts per month across all years. Your roost is shown as the red dot.The numbers above the boxplots represent the sample size used from the database.

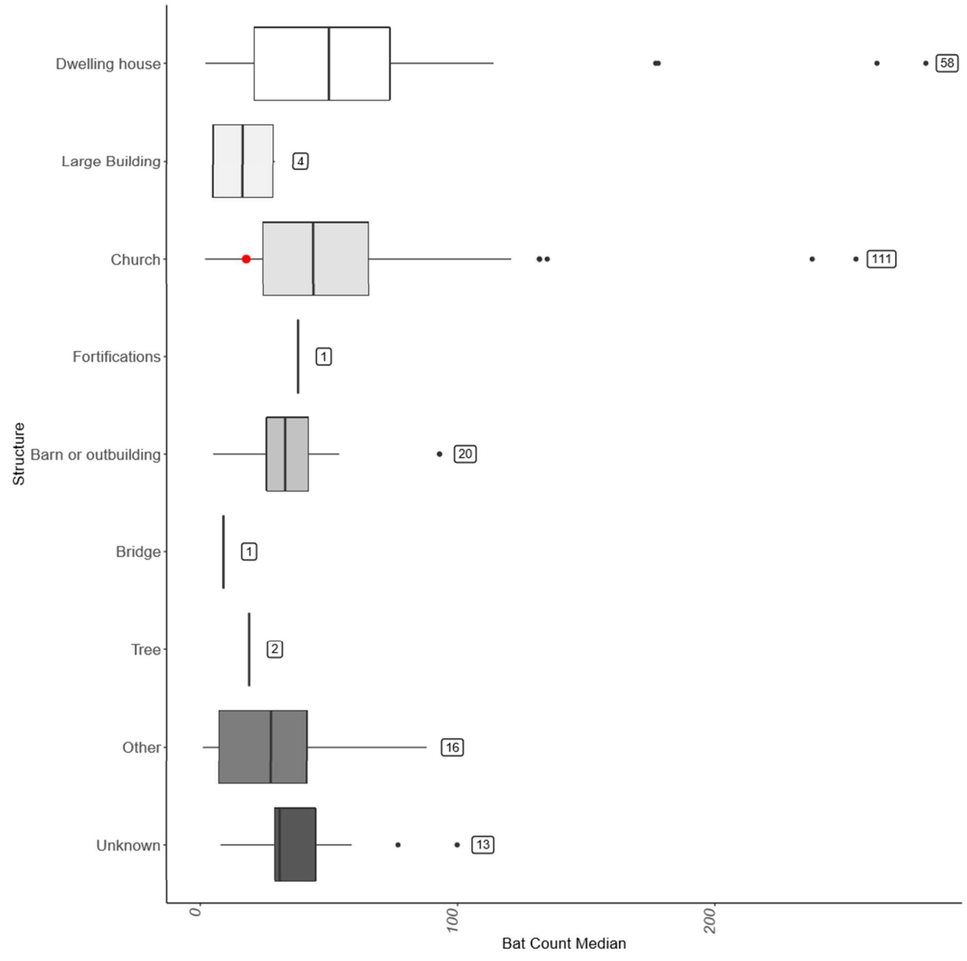


Figure 3: Boxplots of median bat counts in roosts split by structure type of the roost for all roosts in database. Your roost is shown as a red dot. Please note that counts tend to become more variable earlier and later in the season. The numbers alongside the boxplots represent the sample size used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

Section 2: Percentiles Analysis

This analysis looks at the relative size of the ***Myotis nattereri*** roost you recorded. We take your total count of *Myotis nattereri* 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 *Myotis nattereri* 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 **18th percentile** when compared to the **229 *Myotis nattereri*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Myotis nattereri*.

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 **72 *Myotis nattereri*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Myotis nattereri*.

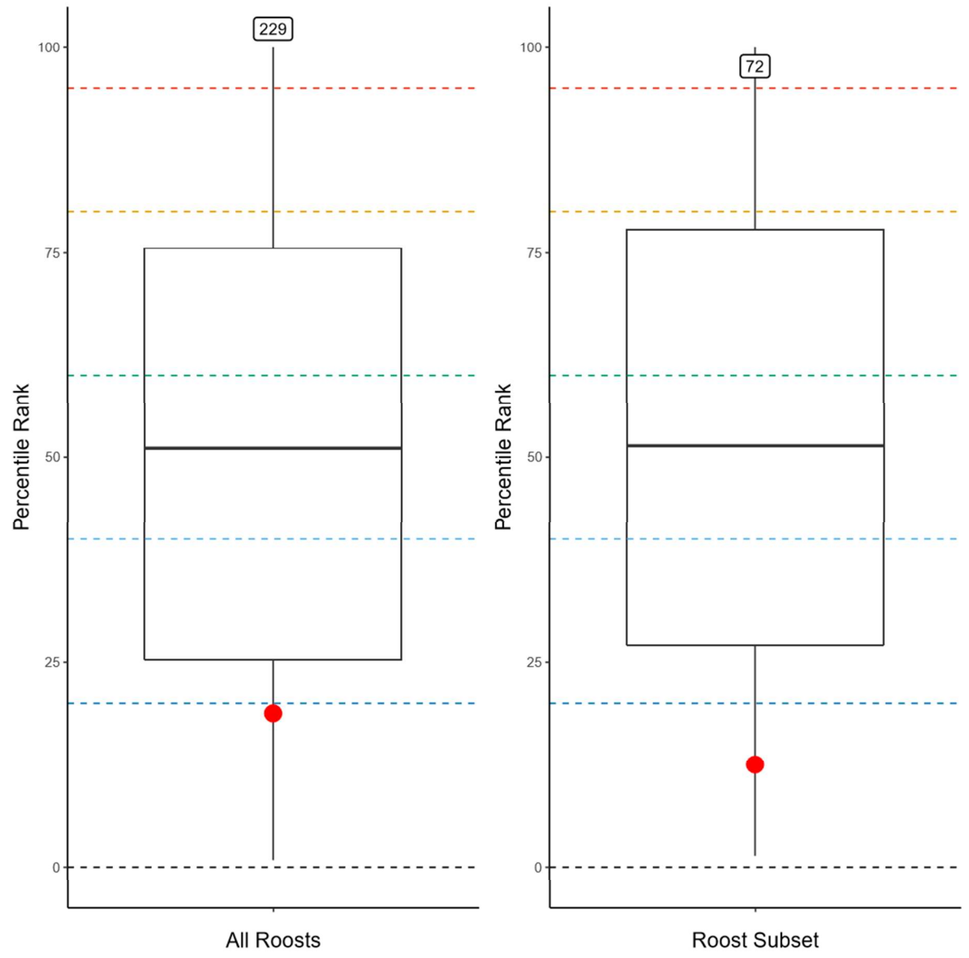


Figure 4: A boxplots showing where your data lies in relation to all other roost data (left) and in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked by dashed lines. Database sample size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

Section 3: Results filtered by Structure Type

The following section has subsetted 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 **18th percentile** when compared to the **229** ***Myotis nattereri*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Myotis nattereri*.

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 **72** ***Myotis nattereri*** roosts in the dataset. This means your roost is ranked as having a **low** number of *Myotis nattereri*.

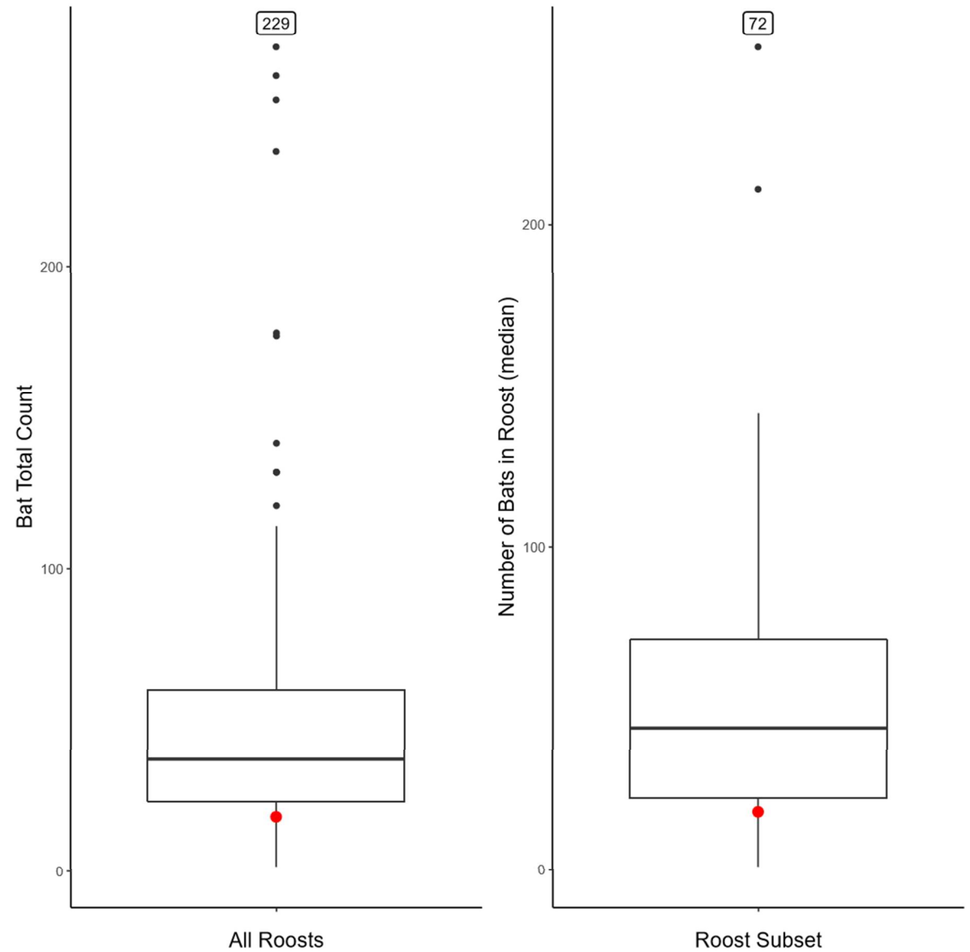


Figure 5: A boxplot of where your roost count sits in relation to all those in the database (left) and a subset based on Assignment (right) of the same structure type. Your data is shown as the red dot.

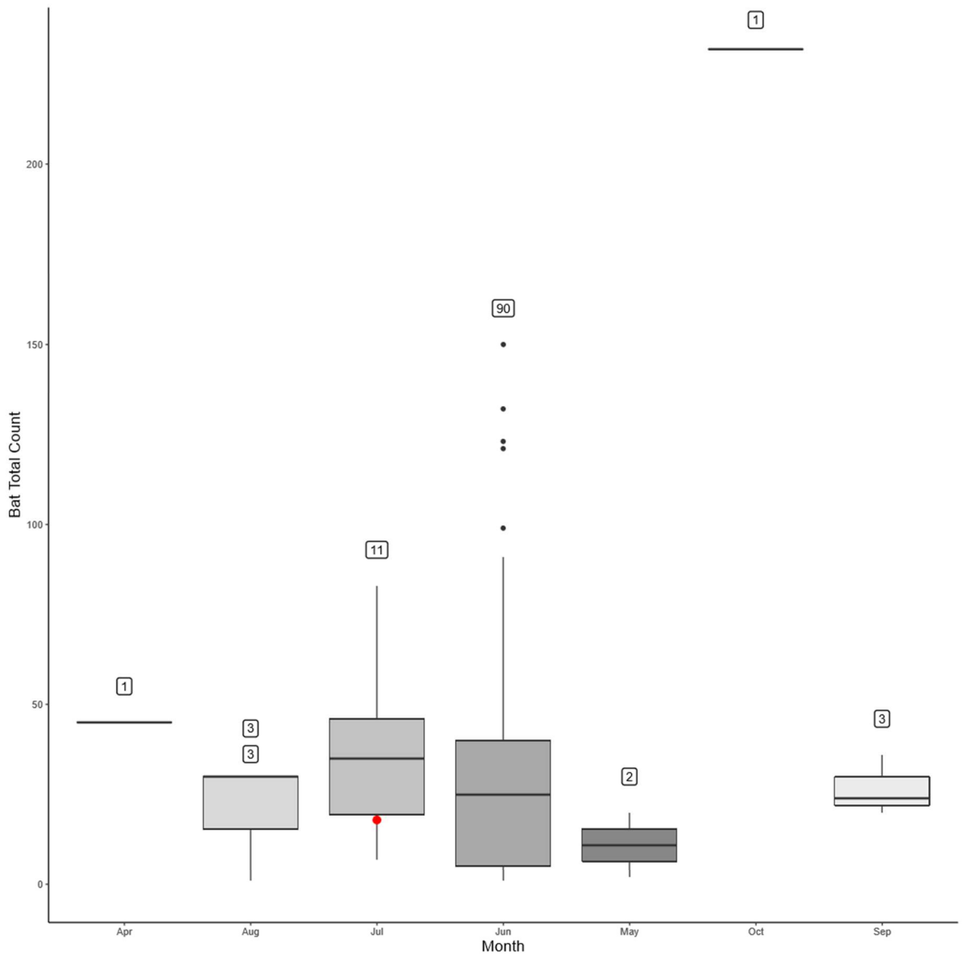


Figure 6: A boxplot showing total count of bats in roosts per month across all years for your roost's Structure Type. Your roost is shown as the red dot.

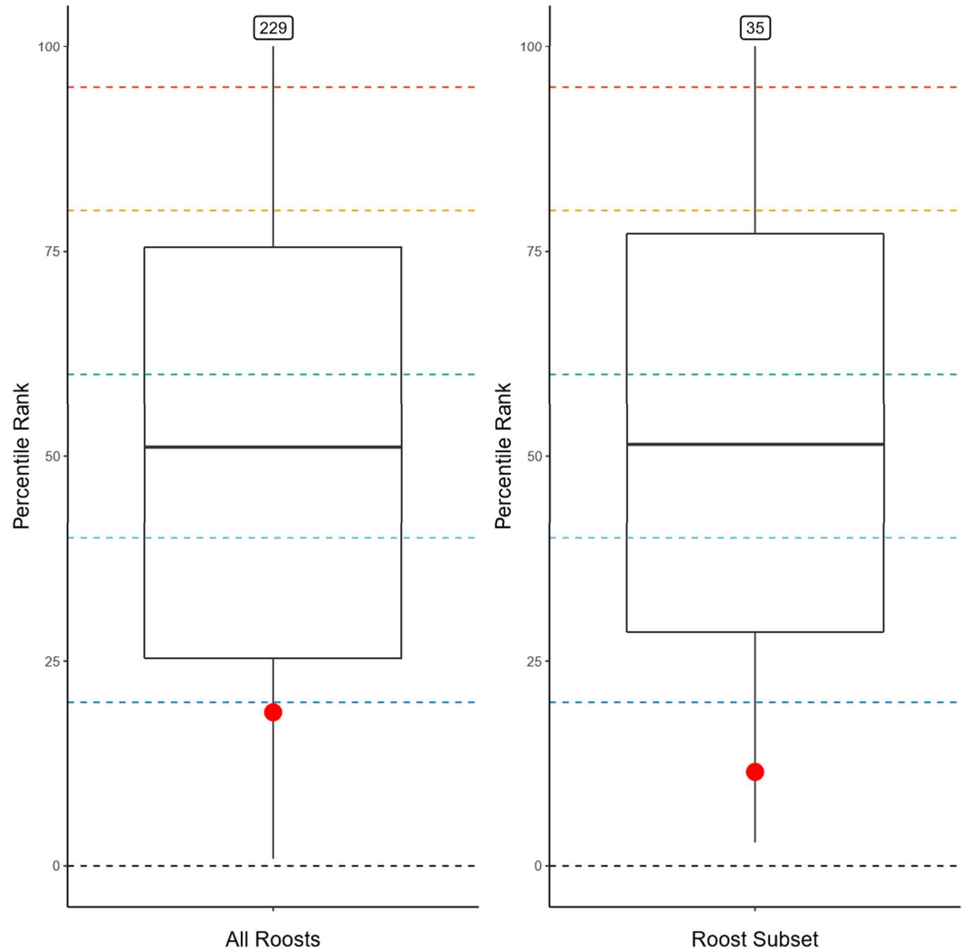


Figure 7: A boxplot showing where your data lies in relation to all other roost data (left) and a boxplot showing where your data lies in relation to a subset of data based on the Assignment you gave your data. Values are the percentile values. The 20th, 40th, 60th, 80th and 95th percentiles are marked 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 11-17).

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: Cover pews and use voiles	Option 2: Baffle/Catch boards	Option 3: Temporary sails at west end of church including nave and community areas (Cannot be costed)	Option 4: Small scale temporary sails above south and north aisle community (kitchen) area. (Cannot be costed)	Option 5: Create new artificial bat boxes at east ends of south and north aisles with external bat access.	Option 6: Chancel ceiling	Option 7: Enhancement of belltower for bats	Option 5, 6 & 7
Professional fees – Ecologist	Light Touch Survey	£500	£500	£500	N/A	N/A				
Professional fees – Ecologist	Activity Survey	£4,671			N/A	N/A	4,671.00	4,671.00	4,671.00	4,671.00
Professional fees – Ecologist	Design input low	£500		£500	N/A	N/A		500.00	500.00	
Professional fees – Ecologist	Design input moderate	£1,000			N/A	N/A				
Professional fees – Ecologist	Design input high	£2,000			N/A	N/A	2,000.00			2,000.00
Professional fees – Ecologist	Licence	£850			N/A	N/A	1,000.00	850.00	850.00	1,000.00
Professional fees – Ecologist	Ecological Clerk of works - major	£4,000			N/A	N/A	3,000.00			3,000.00
Professional fees – Ecologist	Ecological Clerk of works - minor	£2,000			N/A	N/A		1,000.00	1,000.00	
Professional fees – Ecologist	Post intervention monitoring (1-year)	£2,312			N/A	N/A			2,312.00	
Professional fees – Ecologist	Post intervention monitoring (2-year)	£4,624			N/A	N/A				
Professional fees – Ecologist	Post intervention monitoring (3-year)	£6,936			N/A	N/A	6,936.00	6,936.00		6,936.00
Professional fees – Architect	Design / Faculty	£3,500		£500	N/A	N/A	3,500.00	1,500.00	1,500.00	3,500.00
Professional fees – Architect	Contract administration	£3,000			N/A	N/A	1,500.00	1,000.00	1,000.00	1,500.00
Fees	Faculty	£250		£250	N/A	N/A	250.00	250.00	250.00	250.00
Fees	Scaffold	£3,238			N/A	N/A	4,000.00	2,000.00		5,000.00
Fees	Porta loos	£500			N/A	N/A	500.00	500.00	500.00	1,000.00
Fees	Bat box	£2,000			N/A	N/A	5,000.00			5,000.00
Fees	Masonry	£1,000			N/A	N/A				
Fees	Eaves box	£13,000			N/A	N/A				
Expenses	Materials (Linin)	£1,000	£1,000							
Contract value				£2,500	N/A	N/A	9,750.00	5,250.00	2,000.00	15,750.00
Contingency	10% of contract value			£250.0			975.00	525.00	200.00	1,575.00
Estimate values exclude inflation cost on professional fees		**TOTAL:**	**£1,500**	**£4,500**	**N/A**	**N/A**	**£33,332**	**£19,732**	**£12,783**	**£35,432**

*

Note: Based on current survey data (2021) which remains valid for one year in accordance with BiCCL. Additional surveys will be required where time elapses between the survey and implementation of interventions with Option 5.

Appendix 11. Intervention Option 1: Covers & voiles.

Description

Use of linen cloth covers over pews and voiles over monuments.


Purpose

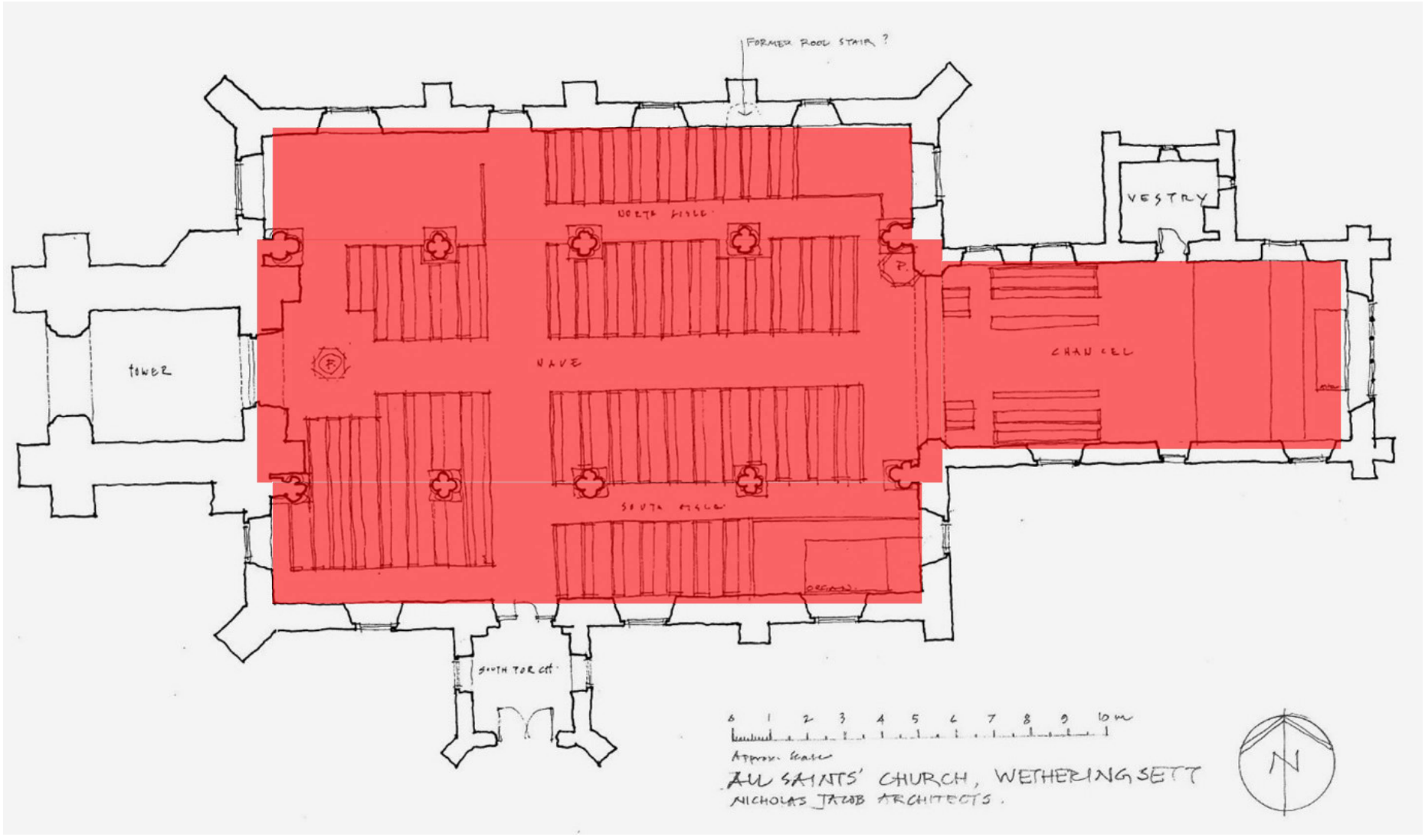
- To protect pews and monuments by covering with linen cloth covers and voiles.
  - Fabric and linen to be used rather than plastic sheeting to allow woodwork and masonry/stone to breathe and reduce build-up of condensation that otherwise would result in damage.
  - Maintain by cleaning weekly during the peak summer activity period when bat droppings, staining and/or smell is obvious.

Nature of work

Although economical, simple and effective to use, this method simply controls the impact of bat droppings and urine staining and can become a burden for church communities where there are sizeable bat populations.

Fabric should ideally be fitted to cover features that need protecting and curtain weights or similar will be needed to hold the material in place.

Regular washing of materials is required to prevent staining. Replacement of fabric materials should be anticipated**.**



Address

All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Facilities and Services

Car parking:

- All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Access:
- By arrangement with the PCC.

Water:
- No

Electricity:
- Yes

Toilets:
- No

Consultation

Historic England:	No
Natural England:	No
Local bat group:	No
Bat Conservation Trust:	No
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 covers and/or voiles.

Other:

Key personnel

DAC:	Ipswich & St Edmundsbury
PCC Chairperson:	
Church Representative:	Rosemary Foulger m.j.foulger@btinternet.com Cathy Smith Cathy.whisper@btinternet.com
Church Architect:	Nick Jacob njacob@njarchitects.co.uk
Bats in Churches Engagement Officer:	Honor Gay Honor.gay@churchofengland.org
Ecologist:	Bernwood Ecology Chris Damant
Suffolk Bat Group:	Sue Hooton sue.hooton@phonecoop.coop

Option Costs

Professional fees
- Architect:
  - Design and contract specifications
  - Contract management to completion

- Ecologist:
  - Survey. Assessment of location for fabric and material
  - 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

- Contractors' Work programme:
  - Not required if intervention avoids impacts on bats including disturbance, damage or destruction of roosts

Contractors' Health and Safety Plan

- Cleaning materials.
- Animal waste - hygiene

Volunteer Opportunities:

- Survey
  - Record bat dropping location and quantities prior to installation of fabric/linen
- Monitoring
  - Desirable not essential for the installation of fabric/linen
- Maintenance
  - Clean weekly during peak (summer) activity period
- Constraints
  - Hygiene

Management and Maintenance:

Inspection

- Weekly/monthly to determine cleaning programme

Cleaning

- Anticipated weekly during peak bat activity period (summer), monthly over winter

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:

- Can church community maintain long-term interest / enthusiasm for cleaning?

Late discoveries

- Bat roosts are likely to vary through the year and between years. Flexibility in locating covers to pews etc. will be required throughout the year.

Working methods

-

Material costs / supply

- Regular replacement of linen of fabric covers will be required where staining becomes unattractive.

Assessments of Impacts

Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelles	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention	0	0	0	0	0	0	0	-1
Moderate Impact Intervention								
High Impact Intervention								

Appendix 12. Intervention Option 2: Baffle/ Catch boards

Description

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

Purpose

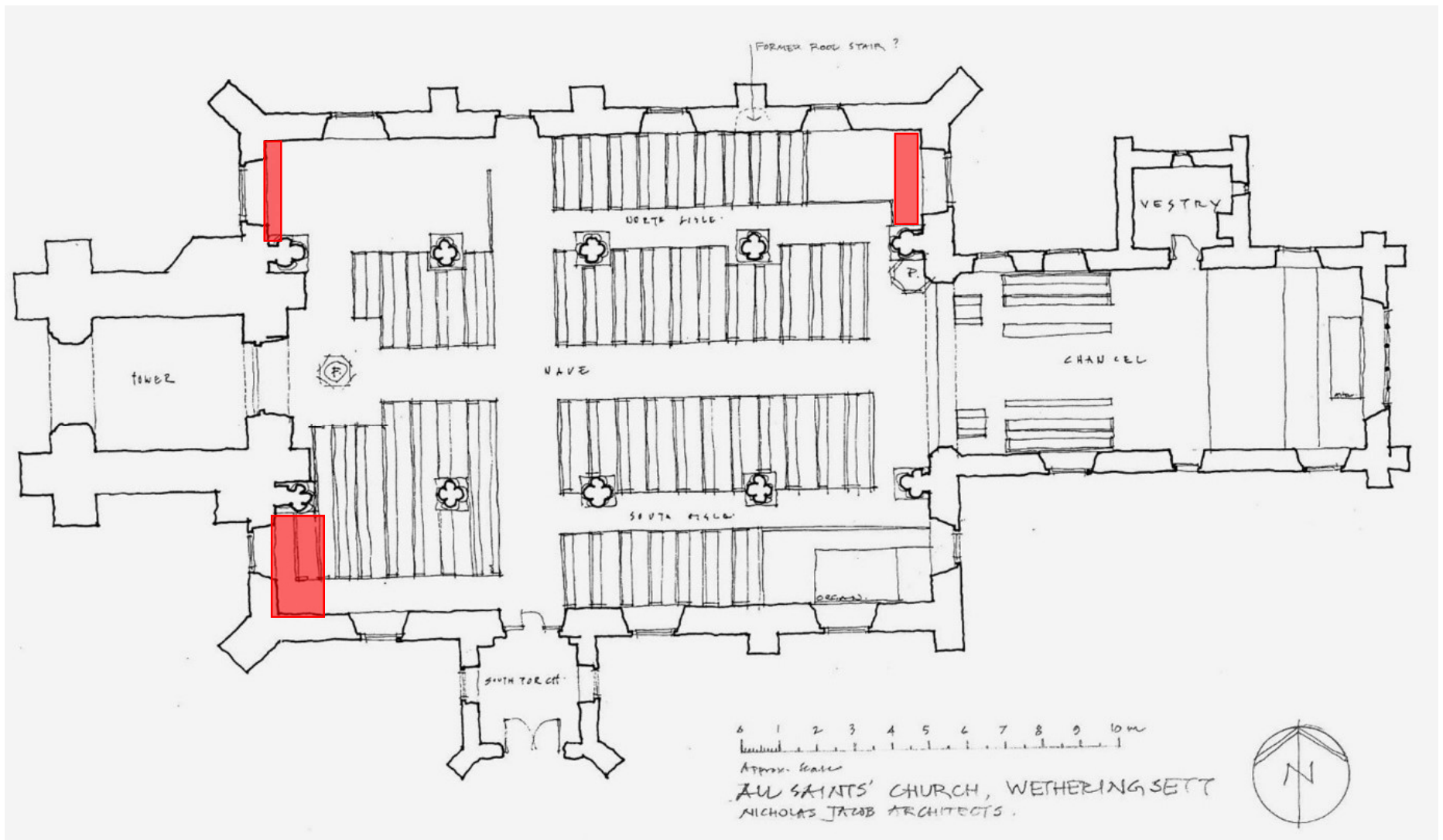
- To collect bat droppings at concentration points and reduce sight of unsightly accumulations.
  - Cat litter would reduce dampness and reduce smell.
  - Maintained by cleaning once a month during the peak summer activity period when bat droppings are obvious.

Nature of work

To erect 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

All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Facilities and Services

Car parking:

- All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Access:

- By arrangement with the PCC.

Water:

- No

Electricity:

- Yes

Toilets:

- No

Consultation

Historic England:	
Natural England:	No
Local bat group:	No
Bat Conservation Trust:	No
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

DAC:	Ipswich & St Edmundsbury
PCC Chairperson:	
Church Representative:	Rosemary Foulger m.j.foulger@btinternet.com Cathy Smith Cathy.whisper@btinternet.com
Church Architect:	Nick Jacob njacob@njarchitects.co.uk
Bats in Churches Engagement Officer:	Honor Gay Honor.gay@churchofengland.org
Ecologist:	Bernwood Ecology Chris Damant
Suffolk Bat Group:	Sue Hooton sue.hooton@phonecoop.coop

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:

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

Contractors' Health and Safety Plan:

- Required prior to undertaking works.

Volunteer Opportunities:

- Survey
  - Record bat dropping location 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.

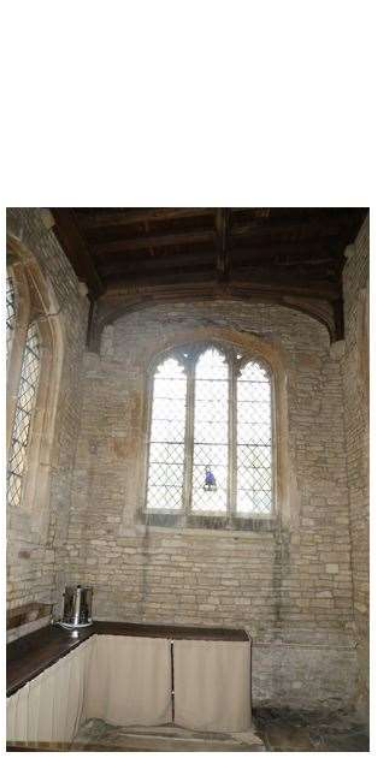
Assessments of Impacts

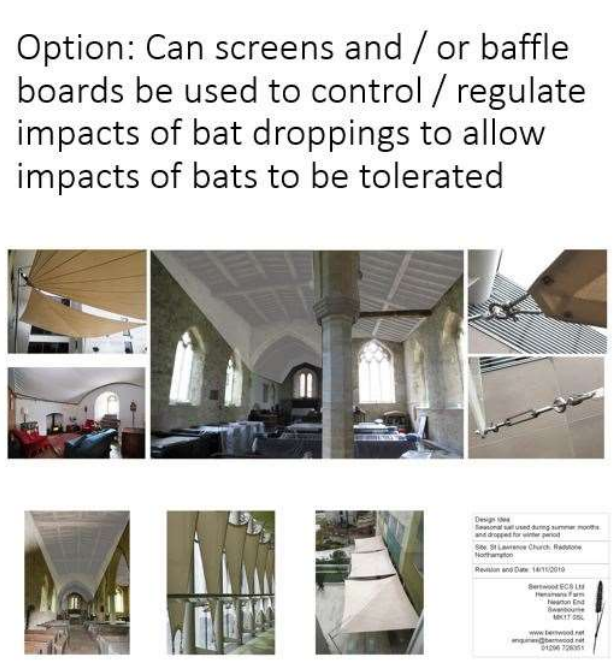
Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelles	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention	0	0	0	0	-1	0	1	-2
Moderate Impact Intervention								
High Impact Intervention								

Appendix 13. Intervention Option 3: Temporary sail at western end of church (including nave and community areas)

Description

Addition of a temporary sail, present during summer months only (in place of fixed baffle boards) below main roost points within 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 a temporary sail below known bat roost points.

Sails are:

- to be made of 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.

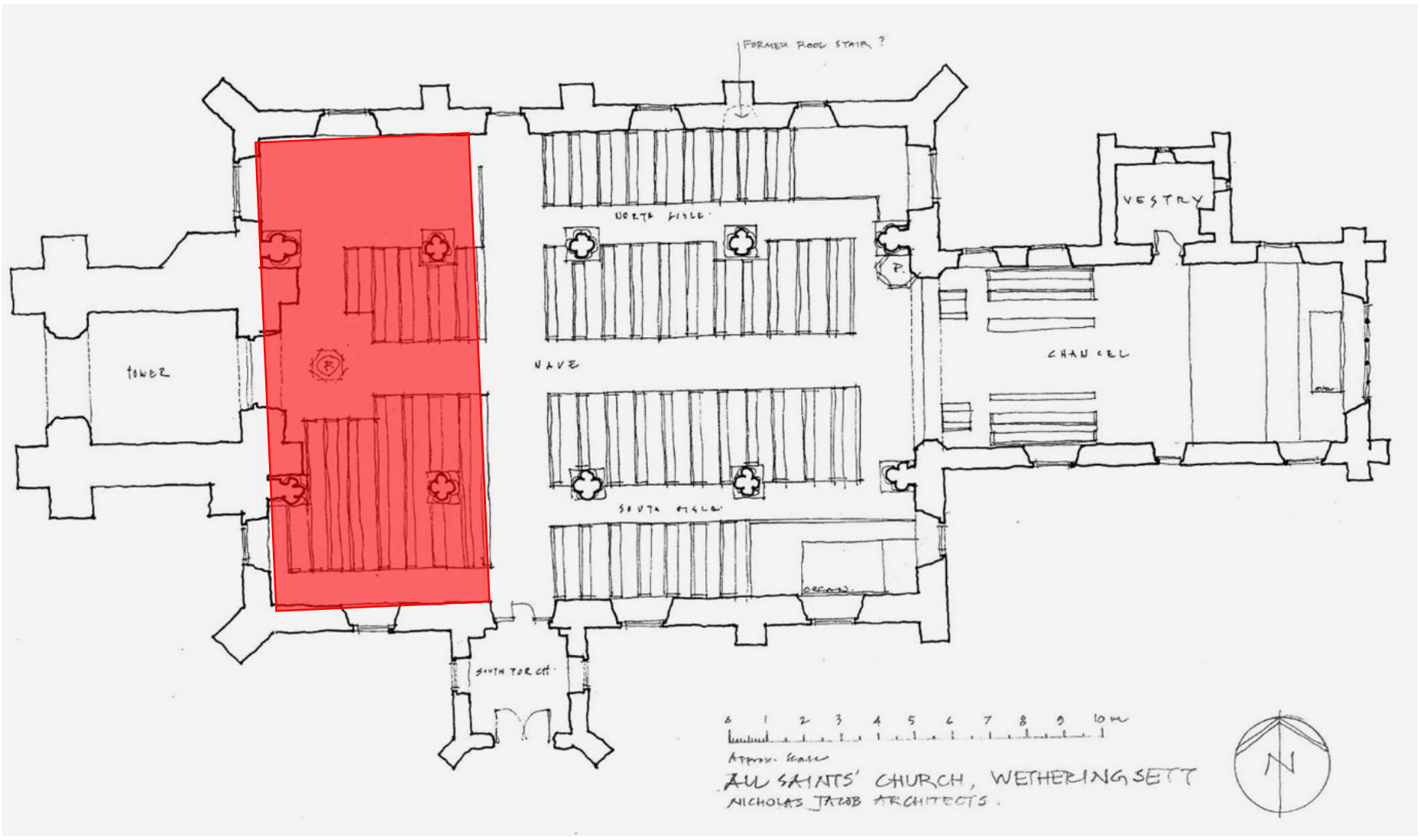
The size of the sails will be determined by assessment of the known roost points and history (coverage) of droppings, although it is recognized that to reduce visual intrusion the scale and proportions of the sails will need to be addressed. They must be of sufficient size to meet the 'need' i.e., control 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 ladder or mobile scaffold platform. The annual costs for cleaning sails will need to be considered subject to manufacturer's recommendations.

Without sail (late summer – spring)

With sail (spring – late summer)



Address

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Facilities and Services

Car parking:

- All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Access:

- By arrangement with the PCC.

Water:

- No

Electricity:

- Yes

Toilets:

- No

Consultation

Historic England:	Yes
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):

- Not required where the provision of covers and/or voiles.

Other:

Key personnel

DAC:	Ipswich & St Edmundsbury
PCC Chairperson:	
Church Representative:	Rosemary Foulger m.j.foulger@btinternet.com Cathy Smith Cathy.whisper@btinternet.com
Church Architect:	Nick Jacob njacob@njarchitects.co.uk
Bats in Churches Engagement Officer:	Honor Gay Honor.gay@churchofengland.org
Ecologist:	Bernwood Ecology Chris Damant
Suffolk Bat Group:	Sue Hooton sue.hooton@phonecoop.coop

Option Costs

Professional fees

- Architect:
  - Design and contract specifications
  - Contract management to completion
- Ecologist:
  - Survey. Assessment of location of bat droppings and placement of sails 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:

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

Contractors' 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 restriction 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 place 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 a recent issue following Brexit / COVID-19 pandemic. Material costs have risen significantly and may continue to do so in the foreseeable future.

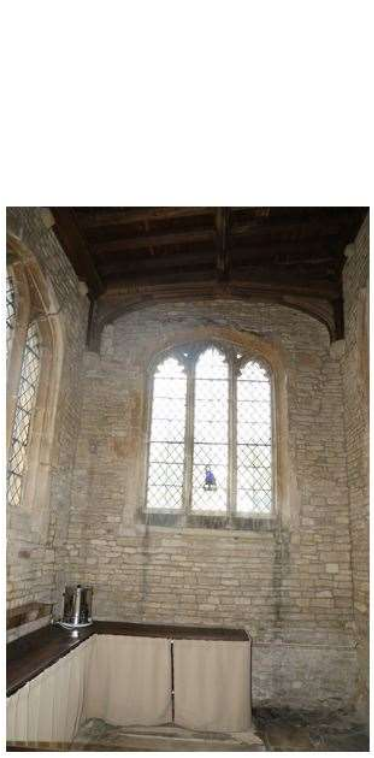
Assessments of Impacts

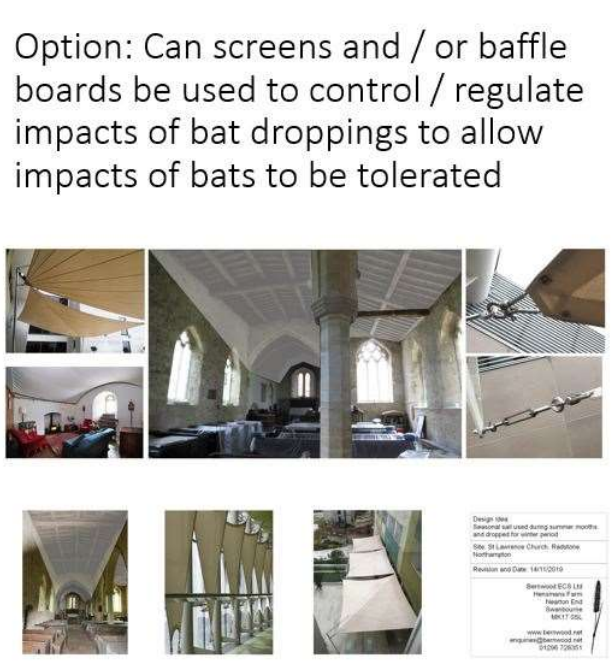
Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelles	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention								
Moderate Impact Intervention	0	0	0	1	-3	0	0	0
High Impact Intervention								

Appendix 14. Intervention Option 4: Small-scale temporary sails below south & north aisle roosts

Description

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





Purpose

To collect bat droppings at concentration points and reduce sight of unsightly accumulation.

Maintain by cleaning once a month during the peak summer activity period when bat droppings are obvious.

Nature of work

To erect temporary sails below known bat roost points.

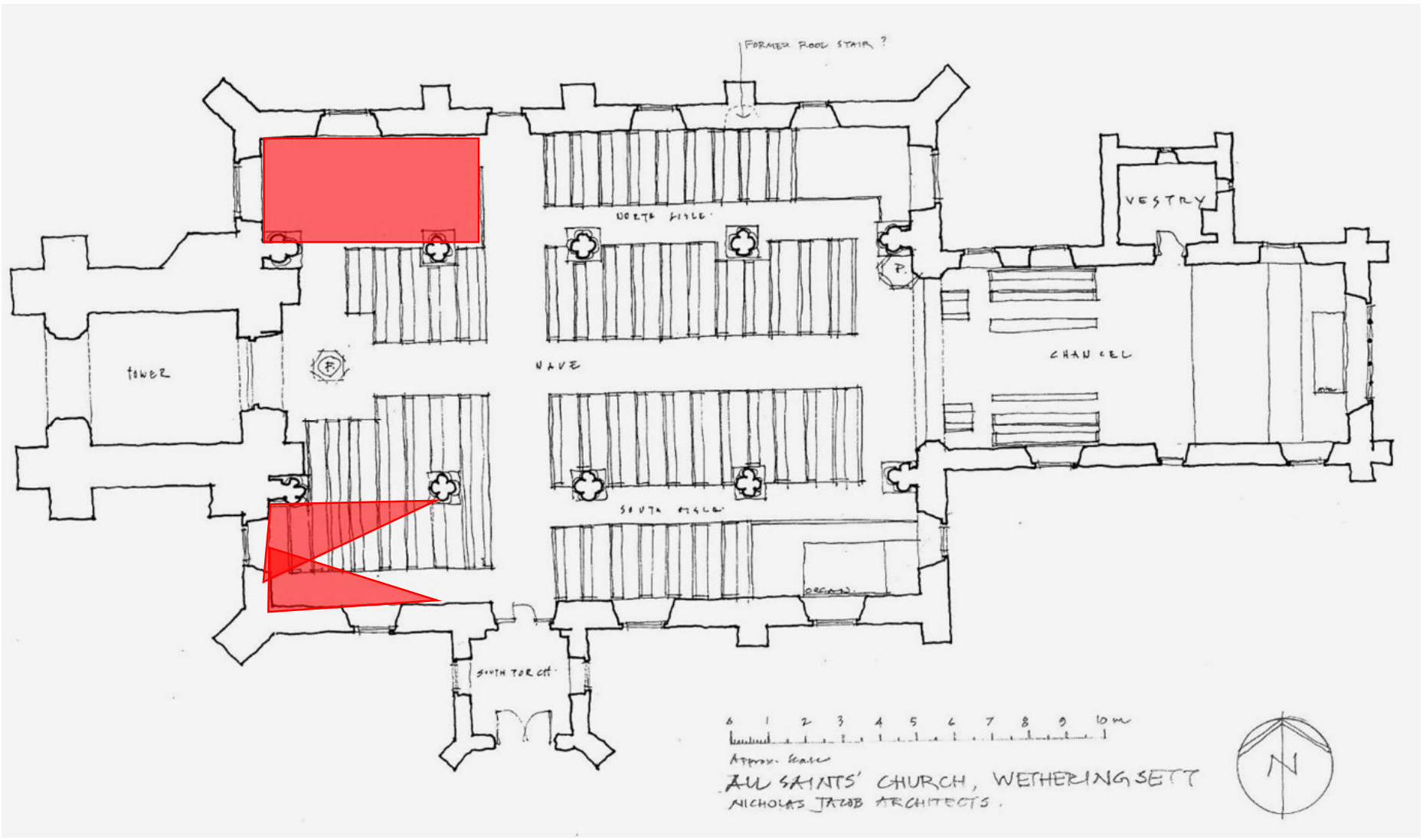
Sails are:

- to be made of 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 ladder or mobile scaffold platform. The annual costs for cleaning sails will need to be considered subject to manufacturer's recommendations.



Address

All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Facilities and Services

Car parking:

- All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Access:

- By arrangement with the PCC.

Water:

- No

Electricity:

- Yes

Toilets:

- No

Consultation

Historic England:	Yes
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):

- Not required where the provision of covers and/or voiles.

Other:

Key personnel

DAC:	Ipswich & St Edmundsbury
PCC Chairperson:	
Church Representative:	Rosemary Foulger m.j.foulger@btinternet.com Cathy Smith Cathy.whisper@btinternet.com
Church Architect:	Nick Jacob njacob@njarchitects.co.uk
Bats in Churches Engagement Officer:	Honor Gay Honor.gay@churchofengland.org
Ecologist:	Bernwood Ecology Chris Damant
Suffolk Bat Group:	Sue Hooton sue.hooton@phonecoop.coop

Option Costs

Professional fees

- Architect:
  - Design and contract specifications
  - Contract management to completion
- Ecologist:
  - Survey. Assessment of location of bat droppings and placement of sails 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

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

Contractors' 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 restriction 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 place 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 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	Soprano & common pipistrelles	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention								
Moderate Impact Intervention	0	0	0	0	0	0	1	-1
High Impact Intervention								

Appendix 15. Intervention Option 5: Create new bat boxes with external bat access at western end of south aisle and eastern end of north aisle.

Description

Bats are utilizing gaps in ceilings of both the north and south aisles. Bat access is either via a gap in the overstorey window (south eastern corner) or via gap above tower door.

It is proposed that subject to architectural issues with masonry and timber beams, to create two new discrete sealed bat boxes above both chapels at the east end of the aisles. The bat boxes will require the creation of new external bat access points.

The creation of new access points will need to be combined with at least a one-year habituation period to allow the bats to continue to use current roost points but also allow for discovery of new bat access points. This remains a high-risk strategy as it requires a degree of discovery and learning prior to decommissioning old access points.

The sealed bat box could be used in combination with allowing continued bat access through existing access points in the hope that bats adapt and change behaviour and reduce the internal impacts of large numbers of bats in flight at dawn and dusk, however this is considered unlikely to work as there would be no reason (driver) for bats to change behaviour unless perhaps combined with acoustic deterrents.

Purpose

To provide alternative external bat access points to previously identified roost areas inside the church.

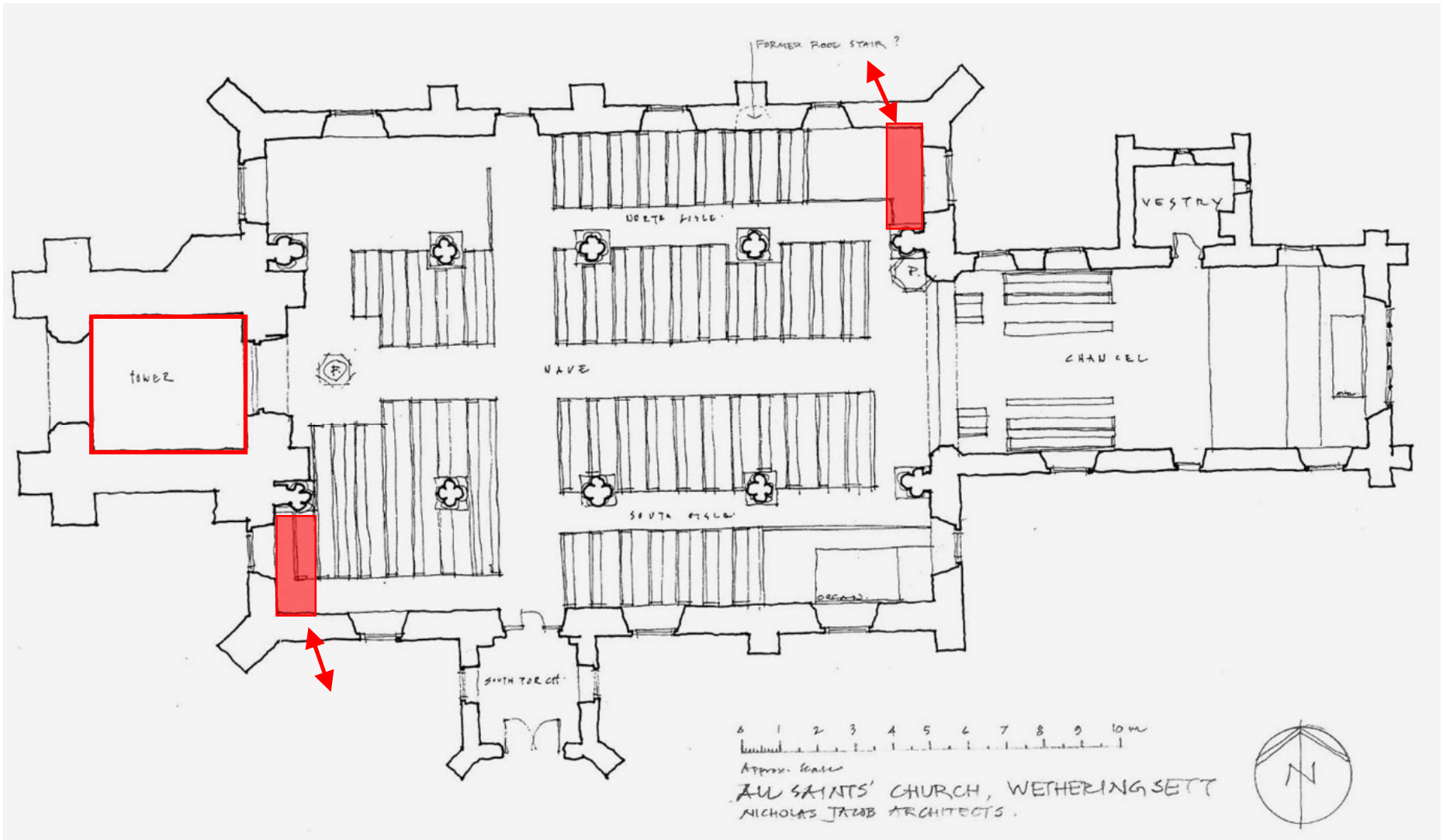
Nature of work

To create a sealed lead bat box with wooden framework and boarding blended to match existing woodwork within church.

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

Material to be used include untreated oak or 5mm ply to create sealed unit. Masonry and/or plaster work will be required to create new external bat access points.

This option will need to be used in conjunction with enhancements to the open tower area for the benefit of brown long-eared bats.



Address

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Facilities and Services

Car parking:

- All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Access:

- By arrangement with the PCC.

Water:

- No

Electricity:

- Yes

Toilets:

- No

Consultation

Historic England:	Yes
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 European Protected Species license required

Other:

Key personnel

DAC:	Ipswich & St Edmundsbury
PCC Chairperson:	
Church Representative:	Rosemary Foulger m.j.foulger@btinternet.com Cathy Smith Cathy.whisper@btinternet.com
Church Architect:	Nick Jacob njacob@njarchitects.co.uk
Bats in Churches Engagement Officer:	Honor Gay Honor.gay@churchofengland.org
Ecologist:	Bernwood Ecology Chris Damant
Suffolk Bat Group:	Sue Hooton sue.hooton@phonecoop.coop

Option Costs

Professional fees

- Architect:
  - Design and contract specifications
  - Contract management to completion
- Ecologist:
  - Survey:
    - Additional surveys specifically to address how brown long-eared bat accessing structure
    - Allow us to re-evaluate Natterer's bat (generally absent in 2021) where historical reference indicates a larger presence in the past.
    - Bat surveys will need to be maintained as up to date and cover the preceding years peak activity period for a protected species license.
  - 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 breakup 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:

- Contractors' 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 Options 6 and 7 and in the long-term closing of the existing bat access points.

Contractors' 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 Options 6 and 7 and in the long-term closing of the existing bat access points.

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

- Understanding Brown long-eared bat
- Understanding Natterer's bat and other species
- 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.

<u>Assessments of Impacts</u>

Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelles	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention								
Moderate Impact Intervention								
High Impact Intervention	-3	-3	-3	-3	-1	-1	3	0

Appendix 16. Intervention Option 6: Repairs to chancel ceiling to seal roof space

Description

It is proposed that subject to architectural issues with timber boarding and decorative wooden finishes to seal decorative chancel ceiling boards to prevent bat accessing the internal areas of the church.

Bat access appears to be through the eaves of the chancel.

Purpose

To allow bats to use the void above the chancel ceiling including eaves bat access points and control bats accessing the internal area of the church.

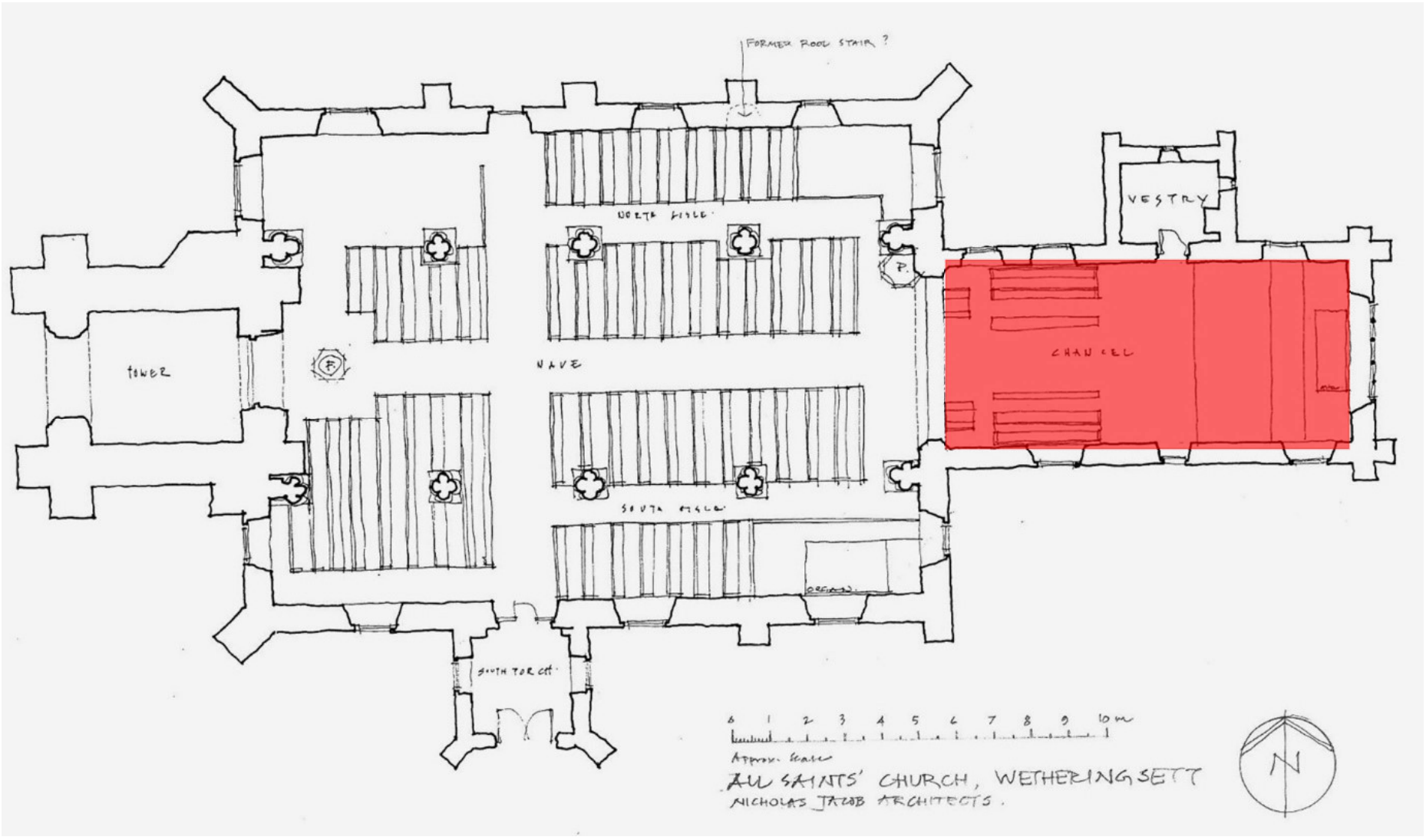
Nature of work

To seal up decorative chancel ceiling to control bat access to the internal area of the church.

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

Materials to be used include untreated oak and packing to create sealed ceiling structure ensuring bat access to the internal area of the church is fully sealed.

This option will need to be used in conjunction with other options and is intended to assist with maintaining suitable habitat for brown long-eared bats if bat access to the internal area of the church is blocked.



Address

All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Facilities and Services

Car parking:

- All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Access:

- By arrangement with the PCC.

Water:

- No

Electricity:

- Yes

Toilets:

- No

Consultation

Historic England:	Yes
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 European Protected Species license required

Other:

Key personnel

DAC:	Ipswich & St Edmundsbury
PCC Chairperson:	
Church Representative:	Rosemary Foulger m.j.foulger@btinternet.com Cathy Smith Cathy.whisper@btinternet.com
Church Architect:	Nick Jacob njacob@njarchitects.co.uk
Bats in Churches Engagement Officer:	Honor Gay Honor.gay@churchofengland.org
Ecologist:	Bernwood Ecology Chris Damant
Suffolk Bat Group:	Sue Hooton sue.hooton@phonecoop.coop

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:

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

Contractors' 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

-

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.

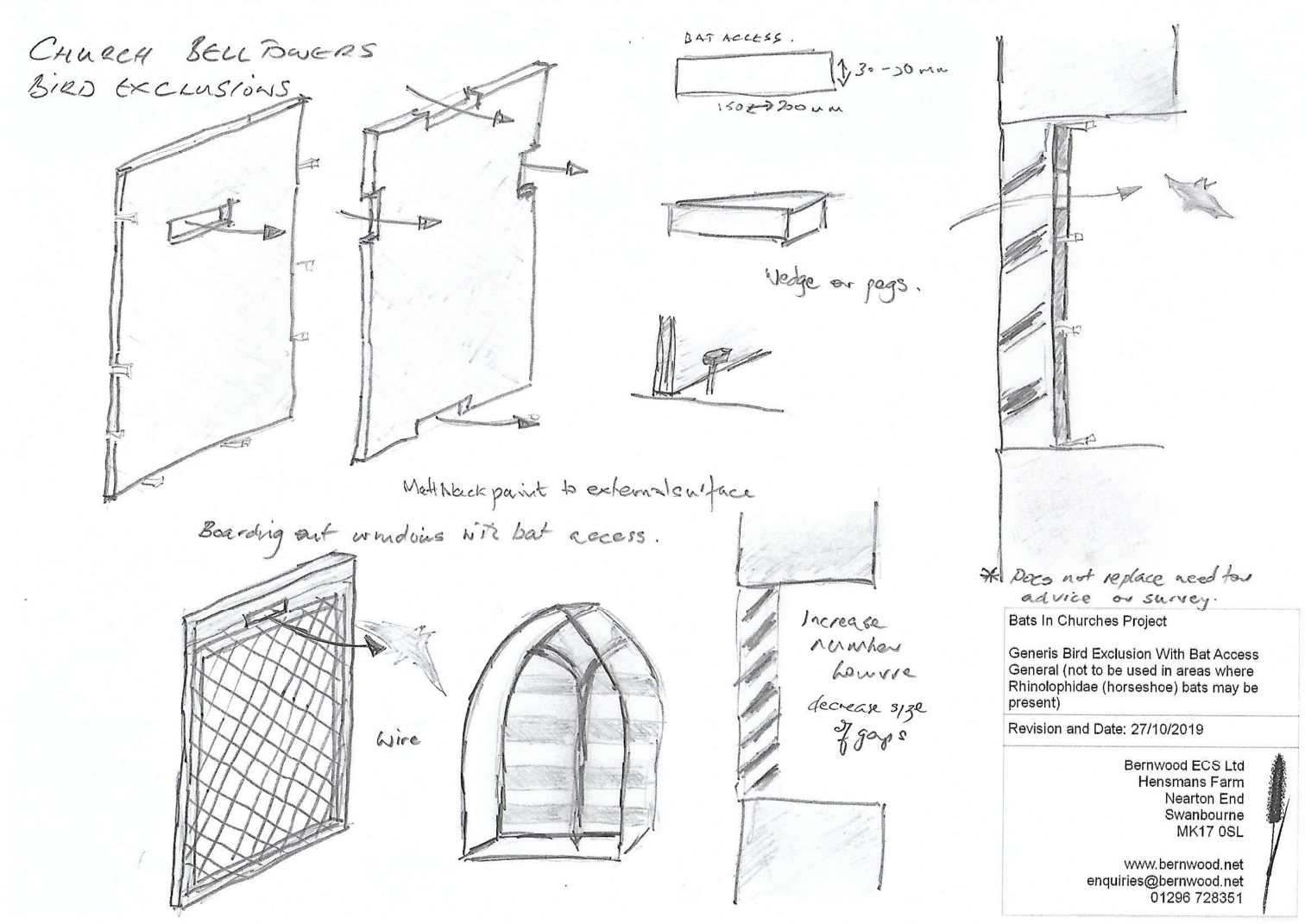
Assessments of Impacts

Receptor	Bat Populations				Heritage Assets	Architectural	Social	Visual
Intervention Scale	Soprano & common pipistrelles	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention								
Moderate Impact Intervention	0	1	0	0	0	0	0	0
High Impact Intervention								

Appendix 17. Intervention Option 7: Enhance belltower for bats

Description

Carry out enhancements to belltower to provide improved roost opportunities.



Purpose

To provide alternative enhanced roost opportunities for bats as part of an overall mitigation strategy that may include options 5 and 6.

Nature of work

Scope of works could include:

- creating a false suspended ceiling with void for bats between the existing first floor ceiling
- where bells are no longer rung close, belltower windows with baffle boards incorporating small bat access points to create dark void space with stabilized temperatures (reduced draft from prevailing winds)

Materials to be used will need to match existing and avoiding detracting from this strong architectural and visual feature of the church.

This option may be undertaken in isolation to other options or be used as part of a mitigation package where more complex and high-risk interventions are proposed.

Address

All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Facilities and Services

Car parking:

- All Saints Church. Church Street, Wetheringsett, Stowmarket. IP14 5PH

Access:

- By arrangement with the PCC.

Water:

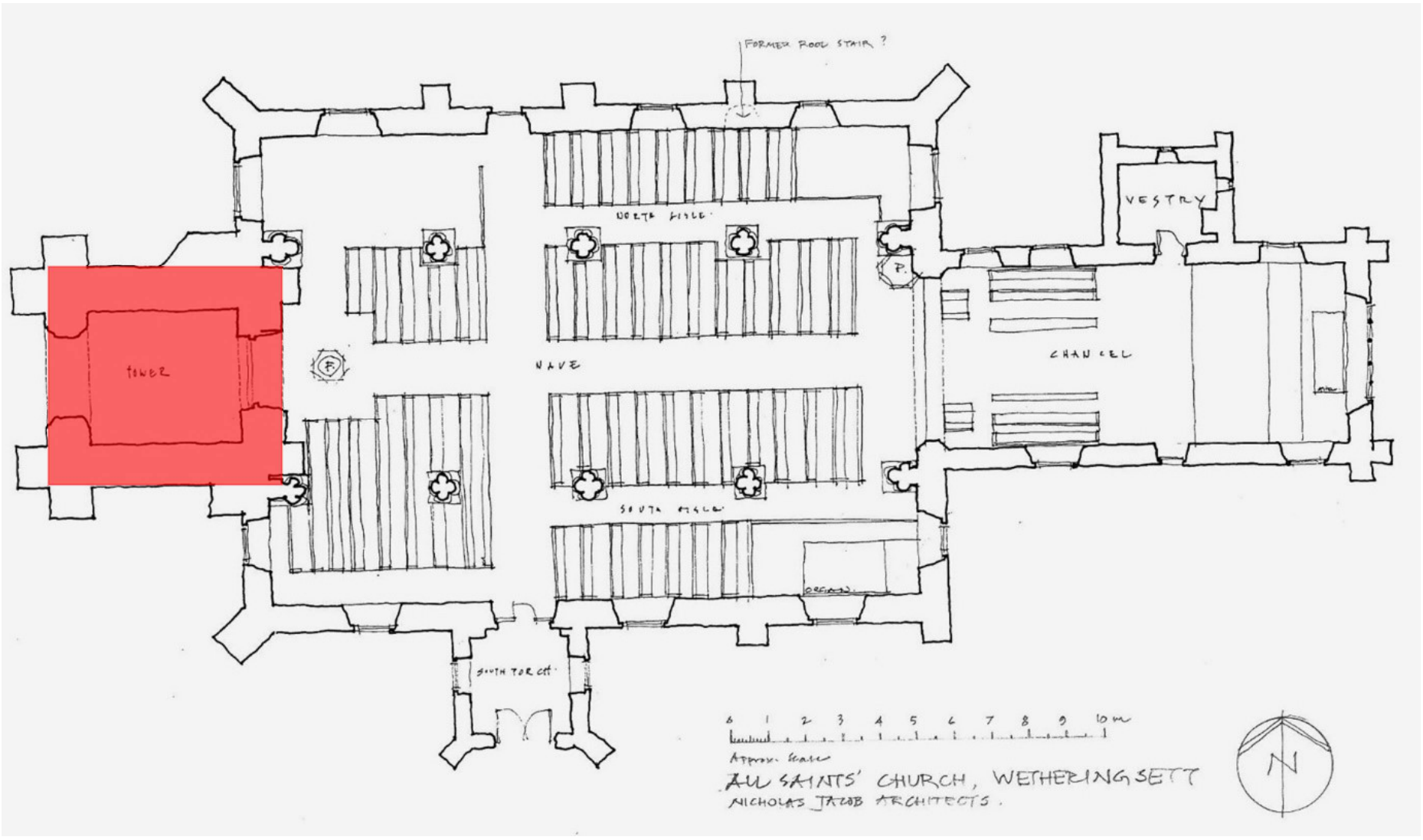
- No

Electricity:

- Yes

Toilets:

- No



Consultation

Historic England:
Natural England: No
Local bat group: Yes
Bat Conservation Trust: No
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):

- May be required if belltower is being used by bats. Further survey may be needed.

Other:

Key personnel

DAC: Ipswich & St Edmundsbury

PCC Chairperson:

Church Representative: Rosemary Foulger
m.j.foulger@btinternet.com
Cathy Smith
Cathy.whisper@btinternet.com

Church Architect: Nick Jacob

	njacob@njarchitects.co.uk
Bats in Churches Engagement Officer:	Honor Gay Honor.gay@churchofengland.org
Ecologist:	Bernwood Ecology Chris Damant
Suffolk Bat Group:	Sue Hooton sue.hooton@phonecoop.coop

Option Costs

Professional fees

- Architect:
  - Design and contract specifications
  - Contract management to completion
- Ecologist:
  - Survey. Assessment of belltower use by bats.
  - License Application through to license return. Not anticipated
  - Ecological Clerk of Works. Yes
  - Post-Intervention Monitoring. Desirable if enhancement only. Will be required if carried out as part of bigger mitigation scheme.
- Other (i.e., environmental monitoring, quantity survey, structural engineer): N/A

Contract Cost Forecast:

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

Contractors' Health and Safety Plan:

- Required prior to undertaking works.

Volunteer Opportunities

- Survey
  - Record bat dropping location and quantities prior to installation of sails.
  - Activity surveys if carried out as part of enhancement only
- Monitoring
  - Desirable
- Maintenance
  - Annual clean. Where manageable by local community consider basic cleaning once a month during peak (summer) activity period.
- Constraints
  - Access

Management and Maintenance:

Inspection:

- Annual inspection of fixtures and fittings

Cleaning

- Annual inspection, clean as required.

Constraints

- Access

Risk Register

Design principles:

- Proposals are in principle and subject to design brief that considers:
  - Appearance
  - Fixtures and fittings
  - External appearance (colour) blackened to reduce appearance from external views

Programme

- No restriction 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

- Intervention remains untested and although initial results indicate use of church towers at at least one 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: Potential depending on condition of masonry and woodwork. 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 baffle boards remains untested. A full design scheme will be required prior adaption of this approach.
- 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	Soprano & common pipistrelles	Brown long-eared bat	Natterer's bat	Serotine				
Low Impact Intervention								
Moderate Impact Intervention	0	0	0	1	-3	0	0	0
High Impact Intervention								