

BERNWOOD ECOLOGY

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St Lawrence's Church, Willington Bedfordshire

DEFRA and Bats in Churches Project

29th December 2022

Site: St Lawrence's Church, Willington,
Bedfordshire, MK44 3PX
Grid reference: TL1066449868
BiC Class Licence: WML-CL32
Your Site Reference: B32RC006-8a
Licence Period: 1st August 2020 to 31st December 2023
Licence Monitoring: 2020 - 2023

Background

The presence of a large soprano pipistrelle *Pipistrellus pipistrellus* roost St Lawrence's Church, Willington caused a number of issues and problems including:

- urine staining and faecal damage to monuments and fabric of the building
- disturbance of services and events
- nuisance and increased burden on cleaning
- concerns about health and hygiene,

as a result of a significant amount of mess created by bats within the structure.

Mitigation strategies were implemented to attempt to remove the burden and negative effects of the mess, whilst also maintaining the favourable conservation status of the bat populations, and the continued ecological function of the church itself.

Bernwood Ecology have undertaken pre-intervention surveys and post-development monitoring for bat activity at St Lawrence's Church in 2019, 2020, 2021 and 2022.

A large (peak count of 133 individuals) soprano pipistrelle *Pipistrellus pygmaeus* maternity roost were identified within St Lawrence's Church in 2019. Bats were known to be entering the church through the ventilation gap at apex of window in south west corner of chancel.

In 2020 under the Bats in Churches Class licence B32RC006-8a a bespoke heated bat box was erected in the chancel (completion: 30th October) with an additional copper gabled bat access point created in the roof above the primary roost beam in the nave, Appendix 1.



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After a one year period of habituation the main bat access point from the heated bat box into the church were closed. The nave beam timbers were also sealed to prevent bats accessing the inside the church.

Initial results of the 2021 post-development monitoring surveys indicated that the bats were no longer accessing the internal space of the church.

To-date there is no evidence that the the interventions have worked from the perspective of maintaining Favourable Conservatoion Status of a maternity colony of Soprano pipistrelle at the church. A small number of bat droppings have been recorded in the floor of the bat box in 2021 and 2022 indicating bats are using the structure however this is not consistatnt with a moderate maternity roost being present. There is no evidence of the void in nave roof space being used.

A summary of all bat survey dates is included in Appendix 2.

Limitations

Ecological assessments can be used to draw conclusions as to the presence or likely absence of species (animals, plants, and fungi), probable population sizes, and use of the site by animals. Any ecological survey is a snapshot in time and should not be regarded as definitive nor complete.

Every professional effort and due diligence have been applied to provide an accurate ecological assessment of the site at the time of the preparation of this report, but no liability can be assumed for omissions.

No responsibility will be accepted for any use of or reliance on the contents of this report by any third party. No responsibility will be accepted for changes or alterations made to this report following submission to Bernwood Ecology client.

BiC Class Licence Monitoring

Bernwood Ecology have undertaken post-development monitoring for bat activity at St Lawrence's Church, Willington.

The purpose of this monitoring is to evaluate the effects of the installation of the bat box and nave bat roosting area to the bat population previously occupying the church.

The Bats in Church Class Licence (Chris Damant B32RC006. Site Reference B32RC006-8A) requires further monitoring (2 x activity surveys) funded by the Bats in Churches Project to take place in 2023.

Additional monitoring in the form of evaluating the success of the interventions on the church community and the church is also required.

Licence Monitoring Methodology

Favourable Conservation Status and Continued Ecological Functionality

Continued presence of the medium soprano pipistrelle roost at St Lawrence's Church either using the pre existing roost feature and using new external bat access and/or using bespoke heated bat box.

Methods for FCS/CEF

- 2 peak activity surveys (1 pre/1 post maternity) (remote/static bat detectors, IR and TI cameras)
- Visual inspection of bespoke bat box features including IR camera, Temp/humidity loggers.

Table 1. 2022 Survey requirements as set out in licence registration (section 41 project plan).

Item	Year	Details
4.	2022	Monitor impacts of newly created bat box May/July 2022 Methods Dusk emergence survey x2 (1 pre-, 1 post-maternity) Remote bat detectors Temperature humidity loggers IR cameras

PCC Interviews

A questionnaire was emailed to the PCC of St Lawrence's Church in 2021 and 2022.

In 2021, the PCC were asked to indicate the views of the community regarding ongoing damage to fabric and monuments of the church. The PCC stated that there was no longer any evidence of bat activity within the church, and that the burden of cleaning up bat faeces was no longer preventing the full use of the church for services, weddings, funerals and further community use.

In 2022, the PCC gave a score of '0' to indicate a complete absence of bat droppings within the open public space of the church following the closing of the bat access points. This score indicates that at this current time the issues of ongoing damage to the fabric and monuments of the church, due to the presence of bats within the open public spaces of the building, continue to be resolved.

The PCC stated that there is no longer any disruption to the church's mission of hosting services, weddings, funerals and other community events. Furthermore, it is affirmed that the community of St Lawrence's appreciate the reduction in mess caused by bats within the church, and that the burden of cleaning up this mess has been lifted.

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Verbal communications with members of the congregation have expressed relief at the lack of bat-related damage and cleaning, regret that the bats do not seem to be using their home in the church, and hope for a future coexistence within the church.

Bat Surveys

2019

A total of four dusk and dawn emergence/ re-entry surveys took place in 2019 (Appendix 2).

2020

A total of two dusk surveys were undertaken in 2020.

2021

A total of two dusk surveys were undertaken in 2021.

29th March 2021. No evidence of bat droppings visible on the internal camera of the heated bat box. No bat droppings were found in the boxed-in bat space of nave.

3rd June 2021

No evidence of bat droppings visible on the internal camera of the heated bat box. No bat droppings were found in the boxed-in bat space of nave.

2022

During the 2022 post-development monitoring bat activity surveys, a low number of bats were again observed using the church. No bats were observed flying within the church.

4th March 2022

There was no evidence of bat use visible on the internal camera of the heated bat box. The bat box's thermostat was found switched off and was reset (temperature reading was ~10°C); the timer was on and working. No bat droppings were found in the boxed-in bat space of nave.

8th April 2022

No evidence of bat droppings visible on the internal camera of the heated bat box. No bat droppings were found in the boxed-in bat space of nave.

14th April 2022

Both thermostat and timer were on and running (temperature reading was ~22°C). No inspection via camera was undertaken at either bat compensation feature.

21st June 2022

Bat droppings (<10) were visible on the internal camera of the heated bat box. The thermostat was found switched off and was reset (temperature reading was ~24°C); the timer was on and running. The equipment was moved to a different set of outlets

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due to suspected interference with the church wi-fi modem. No evidence of bat use was visible in the boxed-in bat space of nave.

During the dusk emergence survey no emergences, or bats flying internally within the church, were observed.

20th July 2022

At least 20 bat droppings were visible on the internal camera of the heated bat box. The thermostat was found switched off and was reset (temperature reading was ~27°C); the timer was on and running. Hazard tape and other measures were used to prevent suspected interference with the church wi-fi modem. No evidence of bat use was visible in the boxed-in bat space of nave.

7th September 2022

The camera inspection of the heated bat box showed ≥ 40 droppings. Both thermostat and timer were on and running (temperature reading was ~22°C). No evidence of bat use was visible in the boxed-in bat space of nave.

During the dusk emergence survey one soprano pipistrelle was observed exiting the heated batbox. No bats were observed within the church.

19th December 2022

Small number of droppings present in heated bat box but previous evidence decayed. No evidence of bat use was visible in the boxed-in bat space of nave.

A summary of all bat activity surveys to-date is included below (Appendices 2 and 3).

Effectiveness of Intervention

Based on current evidence the intervention has not yet proved effective in terms of meeting requirements for FCS status of in terms maintaining a large Soprano pipistrelle roost at the church. Some use of the bat box (evidence of bat droppings) is encouraging however the failure to maintain the heating system during the peak maternity season remains a concern.

Licence Obligations

The site registration period is from 1st August 2020.

Annual monitoring is required in 2023 as set out in the licence registration.

A licence return form must be completed and sent to Natural England (BatsinChurchesCL@naturalengland.org.uk) by 15 January in each year of site registration, to report on the previous calendar year.

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A final licence return must be sent to Natural England within 4 weeks of the end of the site registration period. The site registration period is expected to be from 1st August 2020 until 31st December 2023.

Recommendations

To continue to monitor for the presence of bats using the intervention measures carried out at St Lawrence Church, Willington.

Table 2. Monitoring survey requirements as set out in licence registration (section 41 project plan).

Item	Year	Details
5.	2023	2023 Review of need for ongoing monitoring Dusk emergence survey x2 (1 pre, 1 post maternity)

To investigate, with specialist electrician advice, how the heated bat box system power supply can be maintained and prevented from tripping out due to accidental switching off or electrical storms, etc..

Report Information

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Appendix 1. Bat emergence surveys undertaken.

Year	Date	Survey Type	Emergence/ Re-entry Survey Number	Surveyor Initials
2019	30/05	Dusk	1	CD/ED/JF/CT/MC
	31/05	Dawn	2	ED/JF/CT/DB
	08/07	Dusk	3	JS/DK/BC/KR
	15/08	Dusk	4	JS/JD
2020	03/06	Dusk	1	JS/SS/JF/ED
	15/07	Dusk	2	CD/ED/JF/SS
2021	29/3	Bat box/ heater check		CD/SS
	3/6	Bat box/ heater check		SS
	21/06	Dusk	1	CD/SS/HH/TG/BC
	16/08	Dusk	2	CD/JS/TG/ZP

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2022	04/03	Bat box/ heater check	-	SS
	08/04	Bat box/ heater check	-	CD/SS
	14/04	Bat box/ heater check	-	SS
	21/06	Dusk + bat box/ heater check	1	SS/MD/SF/HH
	20/07	Bat box/ heater check	-	SS
	07/09	Dusk	2	SS/MD/SF
	19/12	Bat box/ heater check	-	SS

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Appendix 2. Summary of bat activity surveys.

Year	Date	Results
2019	30/05 Dusk	Soprano pipistrelle emergence count 95+ from ventilation gap at apex of window in south west corner of chancel. Bats roosting in nave roof timber at west end.
	31/05 Dawn	133 soprano pipistrelle re-entered church via ventilation gap at apex of window in south west corner of chancel. Bats roosting in nave roof timber at west end. No activity noted around stable of Dovecote. 2 barn owls out of bat box in church yard.
	05/07 Roost check	2 juvenile soprano pipistrelle found below roost.
	08/07 Dusk	Emergence count from window 114, re-entry recorded. Internal roost emergence count of approx. 160. One brown long-eared inside stables. One brown long-eared inside Dovecote (west section) with hot spot noted on thermal imaging suggesting roost point near roof access point.
	15/08 Dusk	30 +/- Soprano pipistrelle emerged – lower numbers evident.
2020	03/06 Dusk	148 soprano pipistrelle emergences observed from the south side of the church through stained-glass window. Soprano pipistrelle roost discovered within internal beam.

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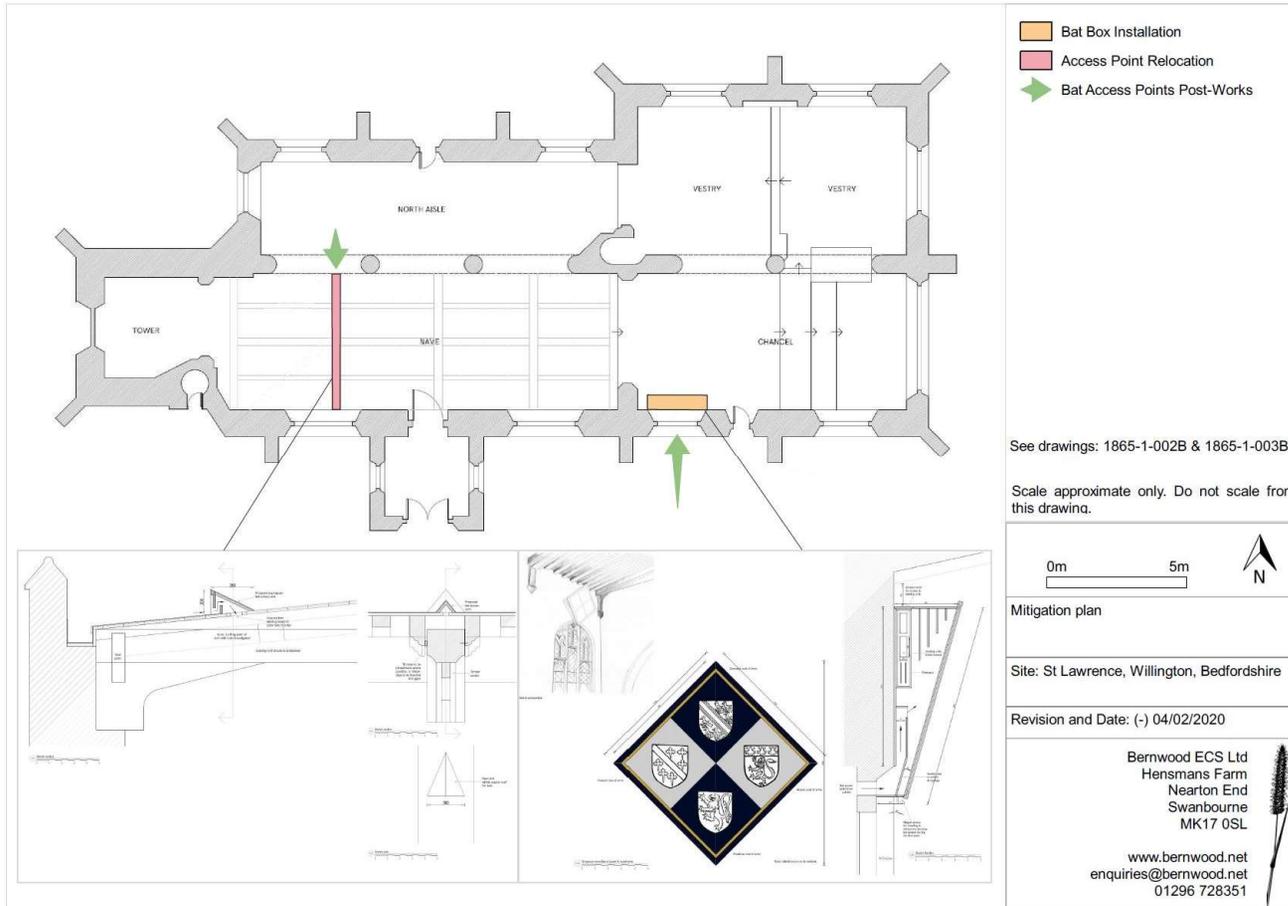
Appendix 2. Continued.

Year	Date	Results
2020	15/07 Dusk	Soprano pipistrelle bats observed emerging from west facing window of the tower. 18 Natterer's bats observed emerging from stained glass window on southern side of the church. Strong smell of bat faeces noted within the church.
2021	21/06 Dusk	Five soprano pipistrelles seen emerging from southern stained glass window. Lower background activity and emergences observed than previous years.
	16/08 Dusk	Soprano pipistrelle bats observed flying within the chancel and nave of the church, then seen exiting at the back from the northern corner of the church wall.
2022	21/06 Dusk	No bats inside church, <10 droppings in bat box after check of the camera. No bats observed internally, and no emergences. Thermostat to heat the bat box was found to be off, perhaps switched off by error. Nothing was found after a check of the camera focusing on the eaves.
	07/09 Dusk	One soprano pipistrelle emergence was observed from the heated bat box through the ventilation hole at the apex of the central southern stained-glass window, no bats were observed flying within the church. Low background activity of pipistrelle bat species was noted.

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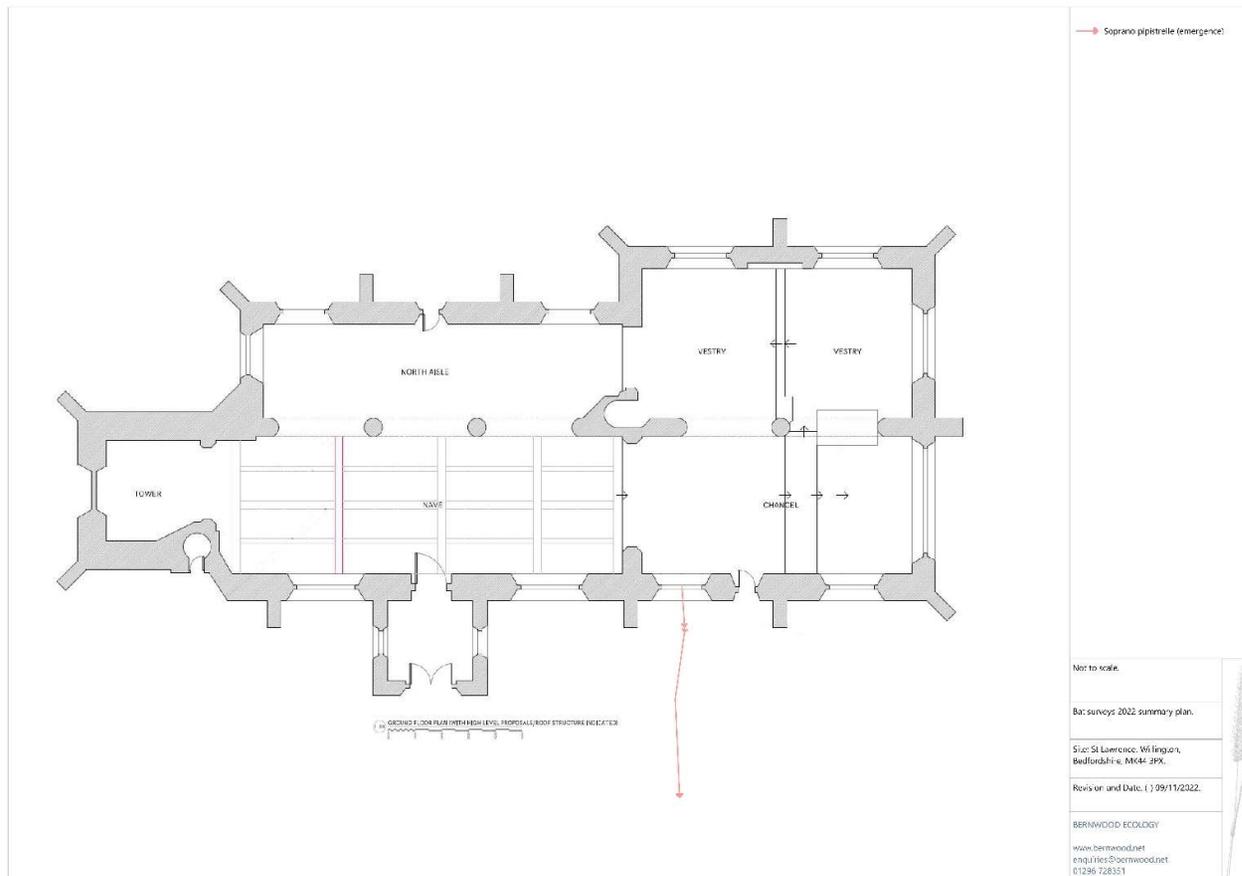
Appendix 3. Mitigation proposals



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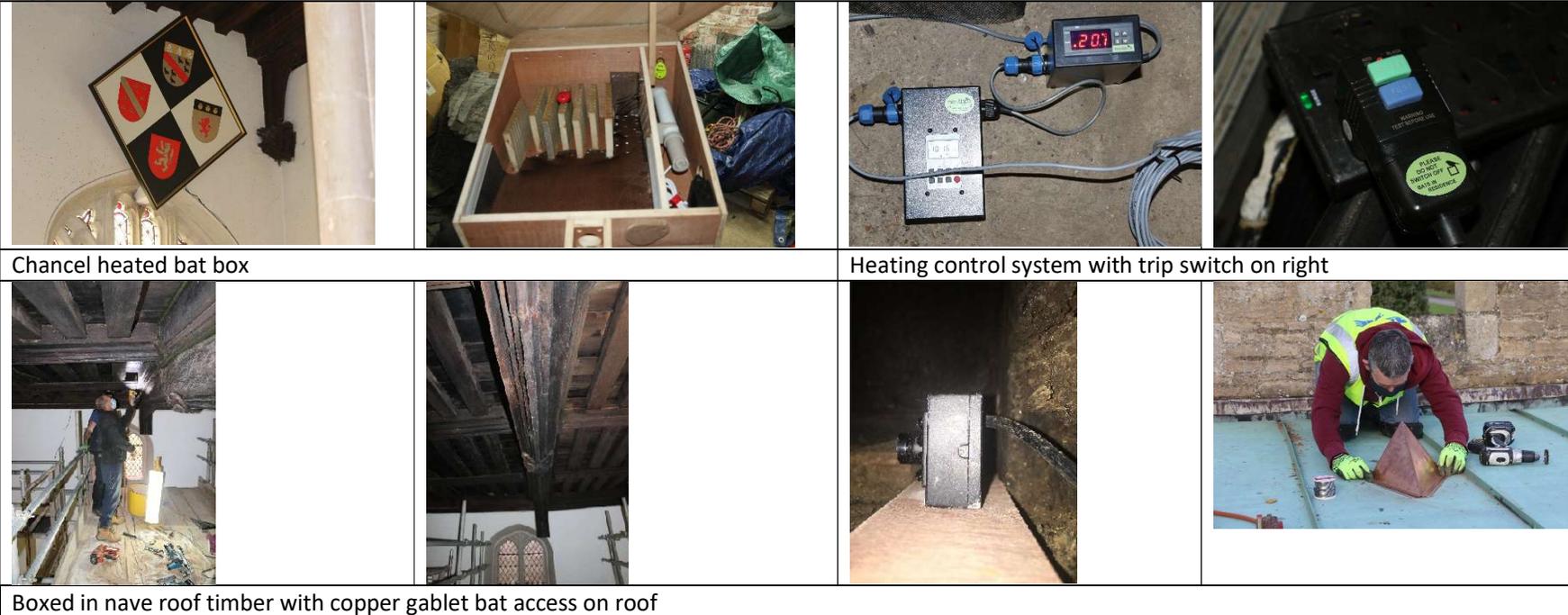
Appendix 4. 2022 Survey results summary showing bat entry/ exit point.



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Appendix 5. Screen shots of IR video camera images from inside intervention bat boxes



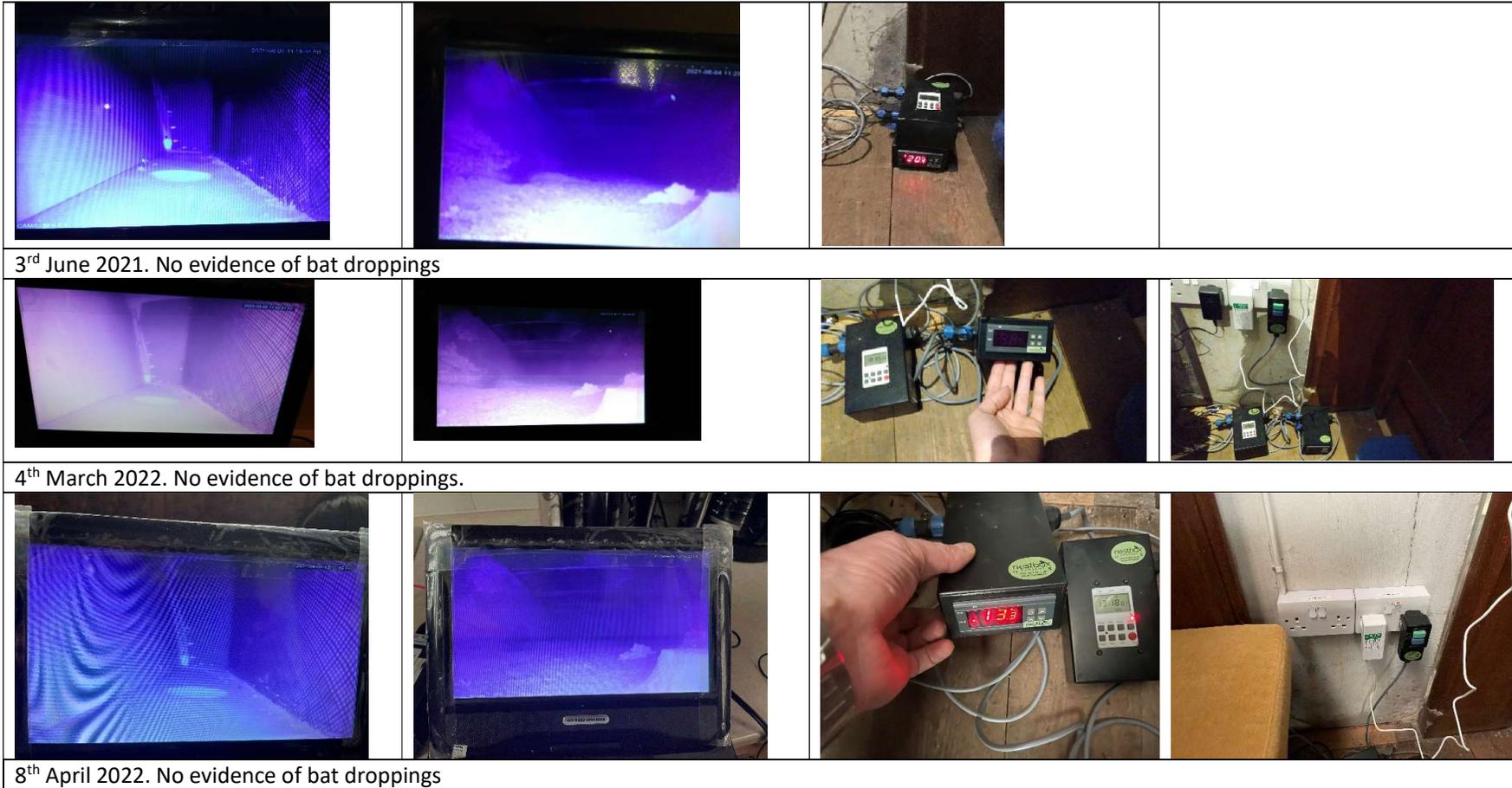
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<p>28th October 2022 – Camera installation</p>		
		
<p>29th March 2021. No evidence of bat droppings</p>		

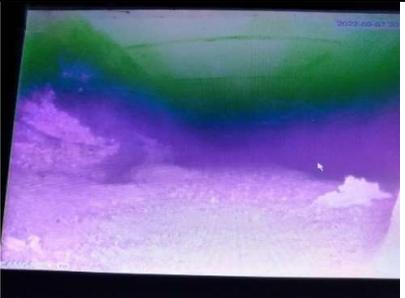
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<p>20th July 2022. 20+ Bat droppings present in heated bat box. Signage added to help prevent accidental switching off of heating system & tripping out.</p>			
			
<p>7th September 2022. 40+ Bat droppings present in heated bat box</p>			
			
<p>19th December 2022. Small number of droppings present in heated bat box but previous evidence decayed</p>			

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