

ORIGINAL ARTICLE

Influence of bat house design on hibernating bats - a case study in Herefordshire (UK)

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Table 1 - Magazine 1 post-enhancement internal monitoring. *Roost type classified according to Collins (2016). **Droppings identified from visual inspection only (i.e. not sent for DNA analysis).

Date of inspection	Bats/evidence of bats identified	Internal relative humidity/temperature	Anabat results: bat species detected (number of passes) <i>Anabats in place one night only each time</i>	Roost type*
August 2006	Small number of fresh lesser horseshoe bat droppings**.	Not recorded	N/A	Possible night
September 2008	1 lesser horseshoe bat	Not recorded	N/A	Probable transitional
November 2008	Small numbers of fresh lesser horseshoe bat droppings**.	Not recorded	N/A	Possible feeding/night/transitional
October 2010	1 torpid lesser horseshoe bat	Not recorded	N/A	Hibernation
06.02.2012	3 brown long-eared bats identified hibernating behind one of the plywood panels inside the building. Fresh droppings**, characteristic of <i>Pipistrelle</i> species and lesser horseshoe bat, were identified.	Not recorded	N/A	Hibernation, plus possible feeding/day/night/transitional
27-28.03.2012	2 brown long-eared bats were identified behind plywood panels on the internal wall of the building.	At visit: north 58%/11.9°C, middle 61.3%/11.5°C, south 48.6%/13.5°C	Common pipistrelle (5), <i>Pipistrelle</i> species (45/55 kHz) (5), Soprano pipistrelle (2), <i>Myotis</i> species (1), Lesser horseshoe bat (29)	Hibernation
04-05.07.2012	1 brown long-eared bat was identified behind a plywood panel attached to the internal wall.	Over-night range: 52%-68% RH, 19.5°C-26.5°C.	Common pipistrelle (21), <i>Pipistrelle</i> species (45/55 kHz) (4), <i>Myotis</i> species (5), Lesser horseshoe bat (2)	Day/transitional
08-09.04.2013	1 torpid lesser horseshoe bat.	At visit: north 67.9%/7.5°C, south 62.7%/7.1°C. Over-night range (17:03 – 10:03): 72.2%-81.9% RH, 4.4°C-6.0°C	Error (No files recorded. Probable Anabat malfunction.)	Hibernation

Date of inspection	Bats/evidence of bats identified	Internal relative humidity/temperature	Anabat results: bat species detected (number of passes) <i>Anabats in place one night only each time</i>	Roost type*
03-04.06.2013	No bats/evidence identified.	Not recorded	Common pipistrelle (41), <i>Pipistrelle</i> species (45/55 kHz) (4), Soprano pipistrelle (7), <i>Myotis</i> species (4), Lesser horseshoe bat (39), Noctule (2)	No evidence
22.07.2013	1 long-eared bat seen flying. 3 long-eared bats identified behind wooden boarding. 1 common pipistrelle seen in flat Schwegler box (also seen there the following morning).	At visit: north 68.5%/23.1°C, south 71.8%/21.8°C Over-night range (18:11-08:11): 78.3%-94.2%, 19.0°C-20.3°C	N/A	Day/transitional
02.12.2013	No bats/evidence identified.	At visit: north 68.7%/9.7°C, middle 71.3%/10.2°C, south 70.5%/12.6°C	N/A	No evidence
03.02.2015	1 long-eared bat identified behind wooden boarding.	At visit: north 67.1%/8.2°C, middle 64.7%/10.2°C, south 68.3%/9.1°C	N/A	Hibernation
14.01.2016	1 long-eared bat identified behind wooden boarding.	At visit: north 78.8%/9.2°C, middle 71.4%/9.4°C, south 66.2%/9.9°C.	N/A	Hibernation

Table 2 - Magazine 2 post-enhancement internal surveys. *Roost type classified according to Collins (2016). **Droppings identified from visual inspection only (i.e. not sent for DNA analysis).

Date of inspection	Bats/evidence of bats identified	Internal relative humidity/temperature	Anabat results: bat species detected (number of passes) <i>Anabats in place one night only each time</i>	Roost type*
August 2006	No evidence of use by bats.	Not recorded	N/A	No evidence
September 2008	Small numbers of fresh lesser horseshoe and brown long-eared bat droppings**, and some feeding remains (moth wings).	Not recorded	N/A	Feeding (for one or two species),
November 2008	2 pipistrelle bats behind a crevice board. Small numbers of fresh lesser horseshoe bat droppings**.	Not recorded	N/A	Hibernation, plus possible feeding/night/transitional
October 2010	1 torpid lesser horseshoe bat. Small numbers of fresh lesser horseshoe bat droppings**.	Not recorded	N/A	Hibernation
06.02.2012	1 barbastelle bat identified hibernating behind a plywood panel inside the building. Fresh droppings**, characteristic of <i>Pipistrelle</i> species and lesser horseshoe bat, were identified.	Not recorded	N/A	Hibernation, plus possible feeding/day/night/transitional
27-28.03.2012	3 lesser horseshoe bats were identified roosting individually inside the building (hanging from a wooden board, on the outside of a bat box and hanging from a polystyrene ceiling tile).	At visit: north 78.6%/10.7°C, middle 79.4%, south 78.8%/13.0°C	Common pipistrelle (10), <i>Pipistrelle</i> species (45/55 kHz) (2), Soprano pipistrelle (2)	Hibernation
04-05.07.2012	No bats/evidence identified.	Not recorded	<i>Pipistrelle</i> species (Nathusius'/45 kHz) (1), Common pipistrelle (29), <i>Pipistrelle</i> species (45/55 kHz) (12), Soprano pipistrelle (3), <i>Myotis</i> species (145), Lesser horseshoe bat (21)	No evidence
08-09.04.2013	No bats or evidence of bats identified inside the building.	At visit: north 76.4%/6.7°C, south 67.8%/8.1°C . Over-night range (17:03 – 10:03): 89.3%-100% RH, 4.2°C-7.7°C	<i>Pipistrelle</i> species (45/55 kHz) (3)	No evidence

Date of inspection	Bats/evidence of bats identified	Internal relative humidity/temperature	Anabat results: bat species detected (number of passes) <i>Anabats in place one night only each time</i>	Roost type*
03-04.06.2013	1 lesser horseshoe was identified inside the building.	Not recorded.	Common pipistrelle (75), Pipistrelle species (45/55 kHz) (53), Soprano pipistrelle (3), Long-eared/Myotis species (4), Lesser horseshoe bat (100), Noctule (1)	Day/transitional
22.07.2013	No bats/evidence identified.	At visit: north 83.8%/19.9°C, south 85.3%/21.5°C	N/A	No evidence
		Over-night range (18:11-08:11): 100% RH throughout, 18.3°C-20.8°C		Hibernation
02.12.2013	3 lesser horseshoe bats were identified inside the building: 1 on the outside of the wooden bat box; 1 on the bottom edge of a single wooden wall plank; and 1 on a polystyrene ceiling tile.	At visit: north 93.5%/8.2°C, middle 91%/8.2°C, south 81.4%/9.2°C	N/A	Hibernation
03.02.2015	2 lesser horseshoe bats were identified hanging from the ceiling inside the building.	At visit: north 86.9%/7.5°C, middle 87.3%/7.0°C, south 74.1%/8.0°C	N/A	Hibernation
14.01.2016	2 lesser horseshoe bats were identified inside the building: 1 on the outside of the wooden bat box; and 1 on the ceiling in the middle of the building. 2 long-eared bats identified behind wooden boarding.	At visit: north 75.4%/9.7°C, middle (inside grille doorway) 71.3%/9.1°C, middle (where lhs on ceiling) 77.2%/10.4°C, middle (where lhs on bat box) 77.6%/10.9°C, south 78.7%/12.0°C	N/A	