

A Dorset Bat box project

The Silverlake woodlands: Year 2 report

Project funding from:

The Silverlake Conservation and Community fund.

Project implementation and reporting:

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Project start: 2022

Planned Duration: 5 years

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Introduction

Rationale for the project.

In the last 3 years an increased range of bat boxes has appeared on the online sales pages, including some new woodcrete boxes, plastic coated wooden boxes and plain or painted wooden boxes; in addition boxes direct from sellers include those made using recycled plastic materials such as the Greenwoods ecohabitats ecostyrete boxes, <https://www.greenwoodsecohabitats.co.uk/bats> and the Bark boxes recycled polyamide/cement moulded boxes <https://www.barkboxes.co.uk/>. This appears to be a response to the long delays in obtaining Schwegler boxes; the Schwegler range have provided most of the boxes used in volunteer bat box projects over the last 20 or 30 years. It is understood that Schwegler do not intend to significantly increase production at the moment. There is additional pressure on supplies from developers ordering bat boxes for mitigation and as a result alternative boxes are being brought into use.

There is a need to test these alternatives, both in order to continue and extend voluntary bat box projects and to try to ensure that developers provide replacement roosting habitats that bats will use. The range of boxes commercially available was reviewed in the planning stages of this project. There is a large range of crevice boxes but almost all have the weakness that they can't be opened to check for bat use. This means that they aren't useful options for volunteers looking to handle bats to record biometric data, or for those trying to gain handling experience while training for a bat license. The Schwegler 1ff box opens, as does the Vivara Pro low profile Woodstone box but the action of opening is very likely to disturb the bats and cause them to fly. The Schwegler 2FN and 2F are the most commonly used cavity boxes and the project aim was to test replacements for these.

The "industry standard" Schwegler 2f and 2fn have removable doors and bats can be observed in situ or captured for further assessment. There are fewer alternative cavity boxes and only 4 were found that opened.

The Vivara Pro Harlech Woodstone box opens by removing a panel at the front that exposes almost all of the inner space of this small box.

The Improved cavity box is a painted wooden box with a panel at the base that slides out after removing a screw. It has a ceramic heat sink to retain heat in the box.

The Vivara Pro Large Multi chamber Woodstone box has a removable front panel and a wooden insert that creates crevice features inside, but can be taken out to provide a larger cavity space for multiple bats.

A new model in 2022 is the General Purpose or convex Woodcrete box (convex hereafter) which has a similar design to the Schwegler 2fn.

These 4 boxes were the main ones selected for the project trials. Note that at the Silverlake site only the three Woodcrete boxes have been used.

The object of the project is to test the alternative boxes in direct competition with the Schwegler boxes, and it seems sensible to test those that are most easily available and meet the needs of both of the main user types, conservationists and developers. 8 Dorset woodlands in total have been used to set up locations where use by bats can be recorded and any preference in box selection by bats noted.

Work at Silverlake

This is the only project site where all of the bat boxes put up are newly purchased; in 6 other sites new alternative boxes have been added to trees where Schwegler boxes have been present for some years. One other site was set up with bat boxes for the first time in 2022; however, the Schwegler boxes used here had been in a woodland previously. These were taken down and stored for some time but may have been used by bats when previously on a tree.

At Silverlake bat box purchase was generously aided by the Conservation and Community fund; this enabled the purchase of 30 Schwegler boxes (fifteen x 2f and fifteen x 2fn types). The 30 alternative boxes bought were 10 x Vivara Harlech Woodstone, 10 x Vivara Large Multi Chamber and 10 x convex woodcrete boxes. This selection was based on early indications from other sites that bats were not using the plain wooden boxes installed as part of the project work elsewhere.

The 60 boxes were put up in March 2022; 2 woodlands were used, one a smaller Scots pine wood with uneven terrain known as Outer Heath. The other is a larger broadleaved woodland named Knighton Heath wood. Maps below illustrate the locations of the bat boxes, mapped in Living Record. Details of numbers of bat boxes deployed here are shown below the maps. The types of boxes used across both woods are illustrated below.

Schwegler boxes



2f box



2fn box.

Note that an attempt has been made to size the images to give a realistic idea of the comparative sizes of the individual boxes, here and in the images of alternative boxes below.

Alternative boxes from other manufacturers.



The Vivara Harlech box

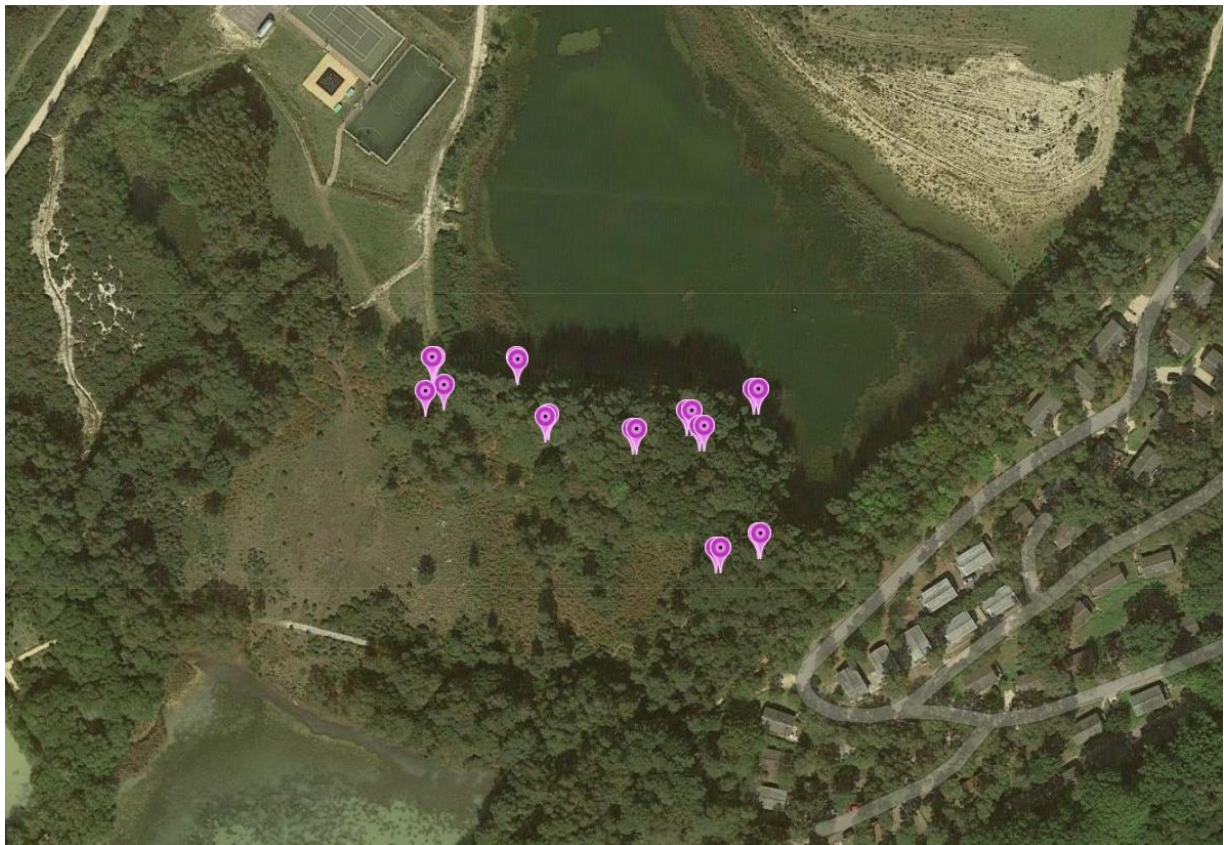


The Vivara Large multi chamber box



The convex box.

Outer Ridge Map.



Bat box locations in the small pine woodland between two water bodies. Aerial image copyright Google Earth, mapping from Living Record.net.

Woodland type

This is a small conifer woodland, probably self-seeded with most trees of moderate size.

Box deployment

This woodland has five x Schwegler 2f, five x Schwegler 2fn, four x Vivara Large Multi chamber, four x Vivara Harlech and two x Convex boxes.

Two of the alternative boxes are larger models and were preferentially deployed with the Schwegler 2fn, on the same tree or a closely adjacent trunk. One Large Multi Chamber box was put up with a Schwegler 2f. The four smaller Harlech boxes were put up with Schwegler 2f boxes.

Bat boxes were positioned on the E or W side of trees, again where possible, allowing for access by ladder. This was intended to avoid boxes being excessively hot or cold. Boxes were positioned between 3 and 5 metres high – the woodland has mainly younger trees and it wasn't always possible to find straight bare trunks up to 4 metres+.

Knighton Heath Wood map



Bat box locations in the larger deciduous wood, which has substantial water bodies on all sides. Aerial image copyright Google Earth, mapping from Living Record.net.

Woodland type

This woodland is listed as Priority habitat Broadleaved woodland and Deciduous woodland in the National Forest inventory. It is present (and larger) in the 1930's OS mapping. It holds a mix of native species with some very large old beeches, possibly from previous planting. The age of the trees means that there are natural cavities in many, although the potential roost features have not been systematically checked and recorded.

Box deployment

This woodland has ten x Schwegler 2f, ten x Schwegler 2fn, 6 x Vivara Large Multi chamber, six x Vivara Harlech and eight x Convex boxes. Box deployment suffered an issue with poor quality nails, causing the leader to go off site for an hour to get new nails. During this period some of the box locations chosen were a little erratic in the NE part of the wood, as the aerial image shows. This was partly down to a lack of suitable trees along the intended N – S line down the Eastern side of the wood. This isn't an issue in terms of bat usage but has made it harder to refind the boxes. One pair, which consists of a Vivara Harlech and a Schwegler 2f has not been refound, despite several searches. The replacement boxes were put up early in 2023.



Box deployment in Knighton Heath wood.



Similar in Outer Heath wood.

Surveys in 2022 and 2023

Given that boxes were not in place until March surveys were planned for alternate months in the summer, with the thought that bats might not start to occupy the boxes immediately. The dates chosen initially were 21st May, 7th July and 8th September. The first 2 went ahead but the September date was rained off and postponed until 23rd September. A further date, 23rd October, was added as the September results were very positive.

The 2023 season looked to visit every month between March and October inclusive; this was not quite achieved but 7 visits were made to Knighton Heath Wood and 4 to Outer Heath wood. Outer Heath wood has so far had very low numbers of bats and no signs of use in the majority of

boxes; the aim will be to continue with visits on most survey dates and increase cover if numbers start to pick up.

Surveys were attended by a mix of volunteers and Abbas Ecology staff using the checks as training in bat ecology and handling. Masks and sanitised gloves were worn whenever bats were handled or boxes were opened, in accordance with Dorset Bat group guidelines to avoid passing Covid to bats. In order not to cause unnecessary disturbance only one bat was handled from boxes where more than one bat was present.

Pictures



Checks in May.



The first bat in May.

Tables of results from the 2022 and 2023 survey seasons are given below. The individual species are referred to as to as follows:

Pippip or CP = *Pipistrellus pipistrellus*, (Common pipistrelle)

Pippyg or SP = *Pipistrellus pygmaeus*, (Soprano pipistrelle)

Plec sp or LE = *Plecotus* species – (Long-eared bat). (These are assumed to be Brown long eared as the rare grey species is not thought to use bat boxes)

Myo Nat = Natterer's bat, *Myotis Nattereri*.

July 7-23

Site	Compartment	Comments
Silverlake	(KNIGHTON WOOD)	
Box Number	Type LC, SC, Wood, 2f, 2fn, convex.	Droppings: Blank or approx number
21	LC	5
22	2FN	100
23	2F	100
24	SC	100
25	2FN	100
26	CONVEX	100
27	2F	100
28	2F	100
29	CONVEX	100
31	2F	100
32	SC	100
33	CONVEX	100
34	2FN	100
35	2FN	100
36	LC	100
37	2F	100
38	2F	100
39	LC	100
40	2FN	100
41	CONVEX	100
42	2FN	100
43	2F	100
44	CONVEX	100
45	2FN	100
46	CONVEX	100
47	SC	100
48	2F	100
49	CONVEX	100
50	2FN	100
51	2FN	100
53	SC	100
54	2F	100

July recording sheet with larger droppings



The first Long-eared bat.



The first Natterer's bat, September 2023



Long-eared bat group in October 2022.

Tables of results: Outer Heath Woodland 2022

Box type	Number:	Grid ref. - all SY, all boxes in pairs	Visit 1: 21/05/2022			Visit 2: 07/07/2022			Visit 3: 23/09/2022			Visit 4: 23/10/2022		
			Droppings	Numbers of bats	Notes	Droppings	Numbers of bats	Notes	Droppings	Numbers of bats	Notes	Droppings	Numbers of bats	Notes
2f	1	75622	0	0		0	0		0	0		0	0	
Harlech Woodstone (Harlech)	2	87681	0	0		0	0		0	0		0	0	
Large Multi chamber (LMC)	3	75626	0	0		0	0		0	0		0	0	
2fn	4	87692	0	0		0	0		0	0		0	0	
Harlech	5	75653	0	0		0	0		0	0		0	0	
2f	6	87691	0	0		0	0		0	0		0	0	
LMC	7	75655	0	0		0	0		0	0		10	2	Pippyg
2fn	8	87697	0	0		0	0		0	0		0	0	
2f	9	75690	0	0		0	0		0	0		0	0	
Harlech	10	87682	0	0		0	0		0	0		0	0	
Convex	11	75702	0	0		0	0		0	0		0	0	
2fn	12	87679	0	0		0	0		0	0		0	0	
2fn	13	75709	0	0		0	0		6	0		0	0	
LMC	14	87692	0	0		11	0		0	1	Pippyg male handled	10	0	
2F	15	75728	0	0		30	0		100	0		0	1	Pippyg
Harlech	16	87692	0	0		0	0		0	0		6	0	
LMC	17	75725	0	0		0	0		0	0		0	0	
2f	18	87630	0	0		0	0		8	0		30	0	
Convex	19	75739	0	0		1	0		0	0		0	0	
2fn	20	87637	0	0		0	0		0	0		0	0	

Knighton Heath Wood 2022 Page 1

Box type	Number:	Grid ref. - all SY, all boxes in pairs	Visit 1: 21/05/2022		Visit 2: 07/07/2022		Visit 3: 23/09/2022		Visit 4: 23/10/2022	
LMC + insert	21	74705	5	1 Male Pippip	5	1 Pippyg - flew when	0	0	6	1 Pippyg
2fn	22	88723	0	0	0	0	0	0	0	0
2f	23	74702	0	0	0	0	0	0	0	0
Harlech	24	88681	0	0	30	1 Pippyg male - handled	20	0	4	0
2fn	25	74679	0	0	0	0	0	0	0	0
Convex	26	88642	0	0	0	0	0	0	0	0
LMC + insert	27	74687	10	1 Male Pippip	100	0	100	3 Pippip - handled female. Not bred - prob juvenile	100	3 Pippyg - 1 handled
2fn	28	88593	0	0	0	0	5	0	0	0
2f	29	74658	0	0	0	0	0	0	0	0
Convex	30	88557	0	0	1	0	10	0	0	4 Long-eared
Harlech	31	74658	0	0	0	0	0	0	0	0
2f	32	88479	0	0	0	0	0	0	0	0
Convex	33	74787	0	0	0	0	20	0	0	1 Long-eared
2fn	34	88454	0	0	0	0	0	0	0	0
2f	35	74814	0	0	0	0	6	0	0	0
LMC insert?	36	88492	0	0	50	0	20	0	0	0
harlech	37	74820	0	0	0	0	0	0	0	0
2f	38	88621	0	0	0	0	25	0	30	0
LMC +insert	39	74835	0	0	0	0	5	0	0	0
2fn	40	88652	0	0	0	0	0	0	0	0

Knighton Heath wood 2022 Page 2

Convex	41	74780	0	0	15	0		30	0		20	0	
2fn	42	88695	0	0	0	0		0	0		0	0	
2f	43	74740	0	0	70	0		10	0		0	0	
Convex	44	88708	0	0	10	0		100	3	Pippip - handled male. Keen to bite	10	0	
2fn	45	74849	0	0	0	0		100	0		25	0	
Convex	46	88706	0	0	0	0		100	3	Long-ear. Handled juvenile male	30	0	
Harlech	47	74953	0	0	5	0		20	0		100	1	Plec sp
2f	48	88673	0	0	20	1	Pippy g flew	15	0		10	0	
Convex	49	74935	0	0	0	0		30	0		25	0	Large droppings, not pip
2fn	50	88614	0	0	0	0		30	0		0	1	Pippyg
2fn	51	74946	0	0	50 larger droppings	0		150	0		2	0	
LMC no insert	52	88588	0	0	0	0		50	1	Pippip handled - juv female hid behind hornets nest	30	0	
Harlech	53	74906	0	0	0	0		10	1	Pippip on back of door	0	0	
2f	54	88591	0	0	60	0		35	0		30	0	
2f	55		0	0							0	0	
Harlech	56		0	0							0	0	
2fn	57	74928	0	0	0	0		0	0		0	0	
LMC no insert	58	88515	0	0	7	0		5	2	Pippip. Handled juvenile male	200	9	Pippyg
2f	59	74895	0	0	0	0		20			0	0	
Convex	60	88435	0	0	0	0		10	2	Plec sp, poss mating	50	8	Plec sp

Outer Heath Wood 2023

		2023															
Box type	Number	Grid ref. - all SY, all boxes in pairs	Visit 1: 12/03/2023		Visit 2: 12/04/2023		Visit 3: 21/05/2023		Visit 4: 14/06/2023		Visit 5: 08/07/2023		Visit 6: 23/09/2023		Visit 7: 20/10/2023		
		Outer Heath	Droppings	Numbers of bats	Droppings	Species + No. of bats	Droppings	Species + No. of bats	Droppings	Species + No. of bats	Droppings	Species + No. of bats	Droppings	Species + No. of bats	Droppings	Species + No. of bats	
2f	1	75622	0	0	NV	NV	0	0	5	SP x 1	NV	NV	0	0	NV	NV	
Harlech Woodstone (Harlech)	2	87681	0	0			0	0	0	0	0	0	0	0	0	0	
Large Multi chamber (LMC)	3	75626	0	0			0	0	0	0	0	0	0	0	0	0	
2fn	4	87692	0	0			0	0	0	0	0	0	0	0	0	0	
Harlech	5	75653	0	0			0	0	0	0	0	0	0	0	0	0	
2f	6	87691	0	0			0	0	0	0	0	0	30	0	0	0	
LMC	7	75655	0	0			0	0	0	0	0	0	10	0	0	0	
2fn	8	87697	0	0			0	0	0	0	0	0	0	0	0	0	
2f	9	75690	0	0			0	0	0	0	0	0	0	0	0	0	
Harlech	10	87682	0	0			0	0	0	0	0	0	0	0	0	0	
Convex	11	75702	0	0			0	0	0	0	0	0	0	0	0	0	
2fn	12	87679	0	0			0	0	0	0	0	0	0	0	0	0	
2fn	13	75709	0	0			0	0	0	0	0	0	0	0	0	0	
LMC	14	87692	0	0			0	0	0	0	0	0	0	0	0	0	
2F	15	75728	0	0			0	0	0	0	0	0	0	0	0	0	
Harlech	16	87692	0	0			2	0	0	0	0	0	0	0	0	0	
LMC	17	75725	0	0			0	0	0	0	0	0	0	0	0	0	
2f	18	87630	0	0			0	0	0	0	0	0	0	0	0	0	
Convex	19	75739	0	0			0	0	0	0	0	0	0	0	0	0	
2fn	20	87637	0	0			0	0	0	0	0	0	0	0	0	0	

Notes are not added within the table as there is not enough space with the increased number of visits in 2023 but are presented in the summary discussion below. Yellow highlights indicate dates where Outer Heath woodland was not visited for various reasons, weather on 2 occasions and time pressure on attendees on one other. The August visit was cancelled due to illness.

Knighton Heath Wood 2023 Page 1

Box type	Number	Grid ref. - all SY, all boxes in pairs	Visit 1:		Visit 2:		Visit 3:		Visit 4:		Visit 5:		Visit 6:		Visit 7:	
			12/03/2023		12/04/2023		21/05/2023		14/06/2023		08/07/2023		23/09/2023		20/10/2023	
			Droppings	Numbers of bats	Droppings	Species + No. of bats	Droppings	Species + No. of bats	Droppings	Species + No. of bats	Droppings	Species + No. of bats	Droppings	Species + No. of bats	Droppings	Species + No. of bats
LMC + insert	21	74705	0	0	0	0	0	0	0	0	0	0	0	0	5	1 x SP
2fn	22	88723	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2f	23	74702	0	0	0	0	0	0	0	0	50 BLE	0	0	2 x SP	100+	0
Harlech	24	88681	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2fn	25	74679	0	0	0	0	0	0	0	0	0	0	50	0	50+	14 x BLE
Convex	26	88642	0	0	1	0	0	0	0	0	0	0	5	0	0	0
LMC + insert	27	74687	0	0	0	0	10	1 x SP	0	0	0	0	5	6 x Pip	100	0
2fn	28	88593	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2f	29	74658	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Convex	30	88557	0	0	0	0	0	0	0	0	0	0	0	0	5	1 x SP
Harlech	31	74658	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2f	32	88479	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Convex	33	74787	0	0	10	0	0	0	10	0	0	0	50	0	50	6 x SP
2fn	34	88454	0	0	0	0	30	0	0	0	0	0	0	0	50	0
2f	35	74814	3	0	4	0	0	0	50	0	0	0	0	0	40	0
LMC insert?	36	88492	20	0	0	1 x SP	40	0	10	0	0	0	10	0	10	0
harlech	37	74820	0	0	0	0	0	0	16	0	0	0	0	0	0	0
2f	38	88621	50	0	0	0	50	0	35	0	1	0	20	0	20	0
LMC +insert	39	74835	0	0	0	0	0	0	20	0	10	1 x CP	0	0	10	1 x SP
2fn	40	88652	0	0	0	0	0	0	0	1 x SP	1	0	0	0	30	1 x BLE

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Convex	41	74780	0	0	10	0	8	0	25	SP x 1	60	Pip	0	0	0	20	2 x SP
2fn	42	88695	0	0	0	0	0	0	10	0	0	0	0	0	5 x Myo Nat	30	0
2f	43	74740	0	0	0	0	0	0	0	0	6	Pip	0	0	0	10	1 x SP
Convex	44	88708	0	0	0	0	0	0	10	0	1	1 x CP	0	0	0	0	0
2fn	45	74849	0	0	0	0	0	1 x BLE male	2	0	50	1 x SP	10	LE	0	0	0
Convex	46	88706	0	0	0	0	0	0	BLE x 1	0	0	0	0	0	2 x SP	200	0
Harlech	47	74953	0	0	2	0	0	0	1	0	0	0	0	30	Pip	0	0
2f	48	88673	0	0	0	0	6	0	100	0	0	0	0	0	0	50	0
Convex	49	74935	0	0	0	0	10	2 x BLE	0	0	0	0	0	0	0	0	0
2fn	50	88614	10	0	5	0	60	0	20	0	0	0	0	50	LE	0	20
2fn	51	74946	0	0	0	0	0	0	10	SP x 1	15	Pip	0	0	0	20	0
LMC no insert	52	88588	0	0	8	0	40	2 x SP	10	0	20	1 x SP	50	LE	0	100	0
Harlech	53	74906	0	0	0	0	0	0	20	SP x 1	0	0	0	0	0	0	0
2f	54	88591	0	0	0	0	50	0	10	0	10	Pip	0	0	0	10	1 x SP
2f	55	Replaced	0	0	0	0	0	0	0	SP x 1	0	0	0	0	0	0	0
Harlech	56	Replaced	0	0	0	0	0	0	0	0	0	0	0	200	Fresh	1 x SP	0
2fn	57	74928	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LMC no insert	58	88515	50	7 x SP	30	0	30	0	0	0	0	0	0	50 LE + 50 Pip	2 x SP	20	0
2f	59	74895	0	0	0	0	0	0	10	0	20	Pip	0	100+	2 x SP	20	2 x SP
Convex	60	88435	0	0	0	0	1	0	0	18 x BLE	10	Pip	1 x Pip sp	20	0	200	20 x BLE

Discussion

2022

The first year of survey produced some interesting results:

- Bats present in boxes just over 2 months from the date of deployment;
- A notable difference in speed of uptake and numbers of bats present between the smaller conifer woodland and the larger mixed woodland.
- A preference in the first season for 2 of the alternative boxes; these had more than double the take-up of the “industry standard” Schwegler 2fn.
- 55% of all boxes with evidence of bats at least once during the 4 visits; 57%, if the 2 boxes not found are excluded.

2023

The second year of survey had a number of highlights and points of interest:

- Only 3 boxes of 20 present had signs of use in Outer Heath woodland, across 4 visits; this contrasts with evidence of use in 33 of 40 boxes in Knighton Heath wood, across 7 visits.
- 60% of boxes across the whole site were used by bats at least once during 2023; in Knighton Heath wood 82.5% of boxes were used.
- Of the unused boxes in Knighton Heath Wood, 5 were Schwegler models and 2 were alternatives. In Outer Heath wood 9 alternatives were unused against 8 Schwegler.
- 5 Natterer’s bats were found in September 2023, a new species for the site.
- A total of 35 Brown Long-eared bats were found in October and 14 Soprano Pipistrelles. This compares with 14 of each species in October 2022.
- Low numbers of bats found on early season visits with no Long-eared bats found until May.
- Other notes made on each visit are given in Appendix I.

Thanks

Many thanks to Melanie, Jon, Jennie, Stewart, Simon, Katie, Bron, Charlie, Annabel, Melissa, Adam and Laura for helping with ladder carrying and being good company on the visits! Thanks to Adrian /Bicker for advice and help getting this set up as a Project on Living Record. Many thanks to Caroline Kelly and James Ponting for continued advice and help, and Darren and the duty team at Silverlake for their friendly welcome and help.

Jonathan Crewe 10/03/2023.