

Slide 1

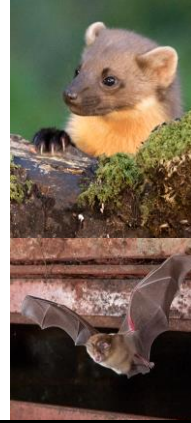


Good afternoon thanks for the invitation to talk. We have heard about pips, myotis and plecotus and now I'll be mainly talking about horseshoe bats.

About us



- Independent NGO – mammal research and conservation – UK, Ireland, Europe
- Established by the Honourable Vincent Weir in 1975
- Originally an independent private wildlife organisation – registered charity since 2005
- Small (18 staff) but working nationally and internationally
- Focus on small carnivores, particularly mustelids (weasel family), and a number of the rarer bat species



VWT's Bat Reserves

Today we manage 38 bat reserves (leased or owned)



Britain:
8 GHB summer roosts
18 LHB summer roosts
2 ice houses

Almost 40 reserves across England, Wales and Ireland

Responsible for a large percentage of the UK horseshoe bat population

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Home to:

- 50% of Britain's Greater horseshoe bat populations
- 10% of Britain's Lesser horseshoe bat population
- 31% of the Irish Lesser horseshoe bat population

Including two of the largest colonies of both species in western Europe



Huge responsibility and input to horseshoe bat recovery in Britain and Ireland

The beginnings

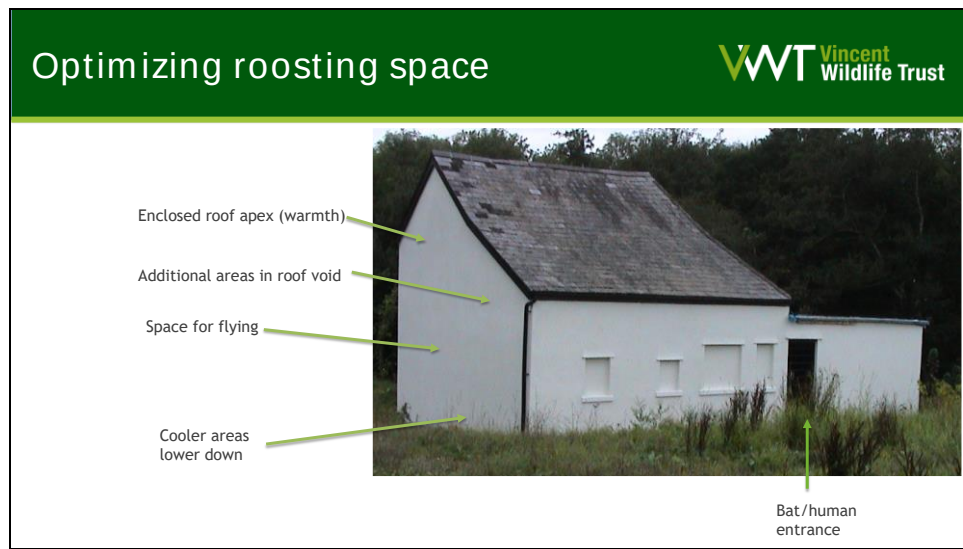
Hendre Cottage in 1991 - First VWT Lesser horseshoe reserve - first enhancements



after renovation

Hendre Cottage following renovation





We modify the buildings for bats to make them suitable for all year round use

Horseshoe Roost resilience audit form



Future-proofing roosts in light of climate change

Integrity of the building
Structure, weather resilience, longevity

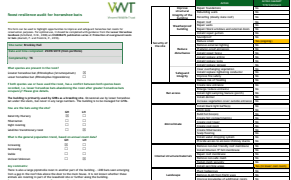
Bat access
Number & size of entrances, light, cover

Security of the site
Disturbance, predators, trespass, trees

Internal structure
Materials, perching, clutter

Microclimates
Stability, humidity, variety

Surrounding landscape
Artificial light, flight lines, other roosts




We've created what we call a roost resilience audit form to help assessing horseshoe roosts and identify how they could be improved for the bats.

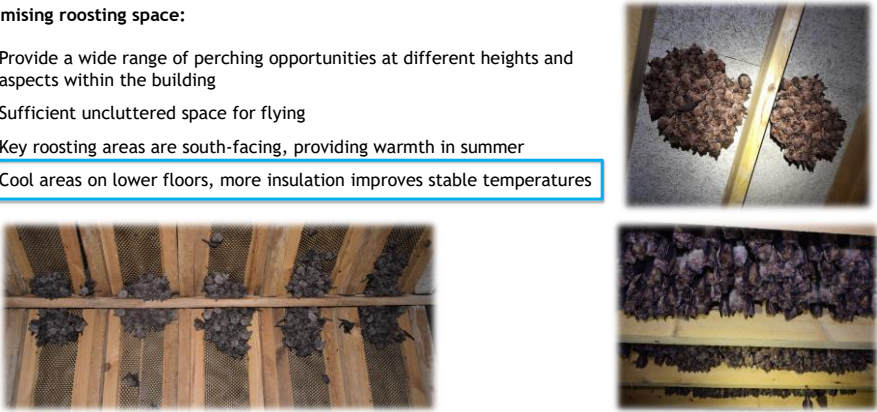
We've used it on our reserves and it's helped us to find what else needs to be done to improve it for the bats. A copy will be available on the website but in the meantime get in touch if you want a copy. The key points in the audit are:

Internal structure

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Optimising roosting space:

- Provide a wide range of perching opportunities at different heights and aspects within the building
- Sufficient uncluttered space for flying
- Key roosting areas are south-facing, providing warmth in summer
- Cool areas on lower floors, more insulation improves stable temperatures



Summary of 'key' important things optimizing roosting species

Artificial heat - incubators

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In some roosts, incubators have been installed & readily used. Especially important for pups in critical weeks of summer - drawback: costly to maintain



Insulated box with thermostatically controlled temperature – 27c. Bats use all year round and might aid winter survival in some roosts – GHB's, BLE's, natts and bechs

Microclimates: cool roosting areas

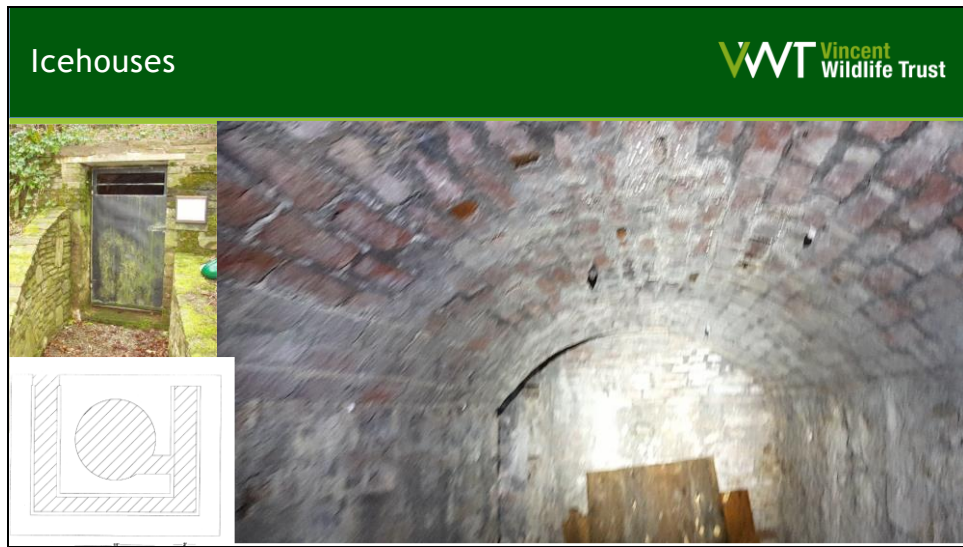
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Horseshoe bats typically use subterranean hibernacula (caves, tunnels, ice houses) during the coldest parts of winter.

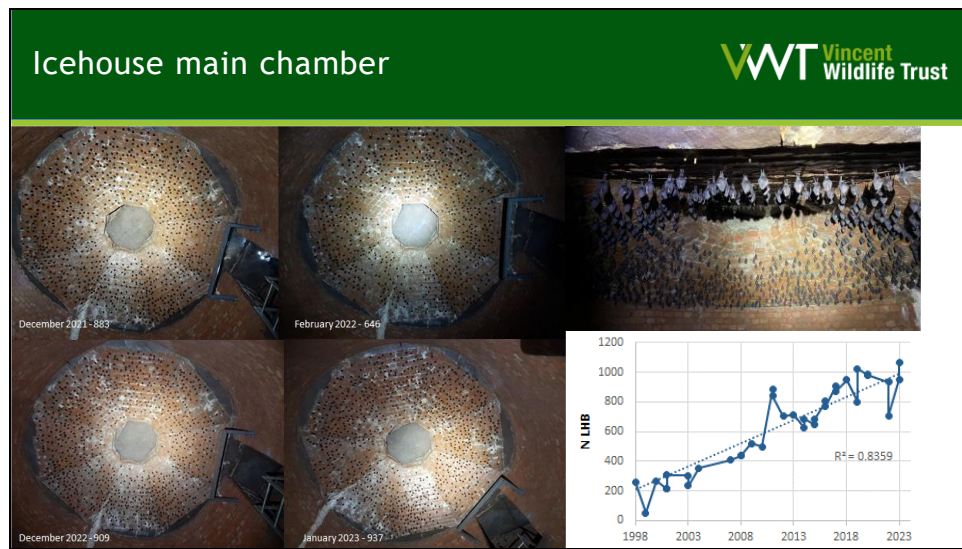
The most successful colonies have a close network of summer and winter roosts.



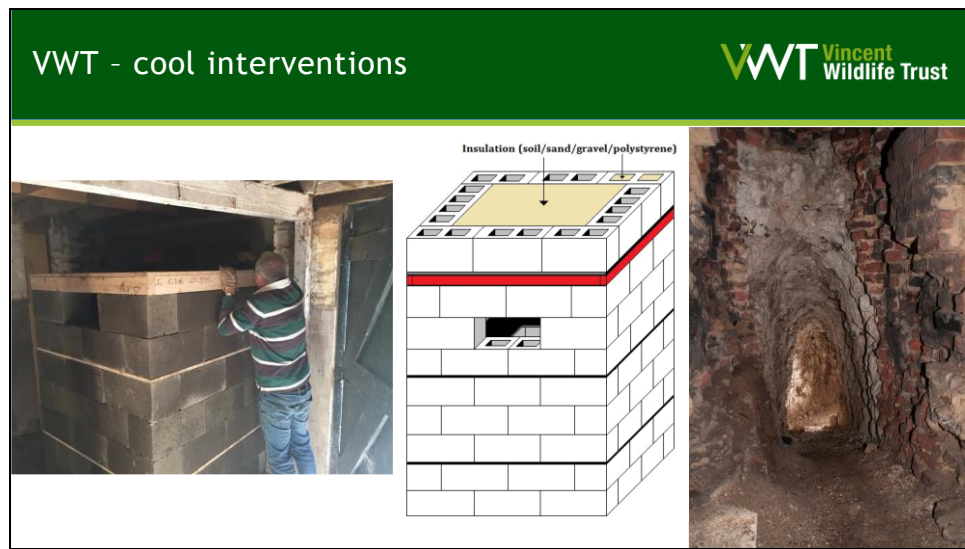
Ideally maternity roosts would be close to an underground system bats can go to in winter, but this isn't always the case and also more bats are staying in buildings during winter due to milder temperatures.



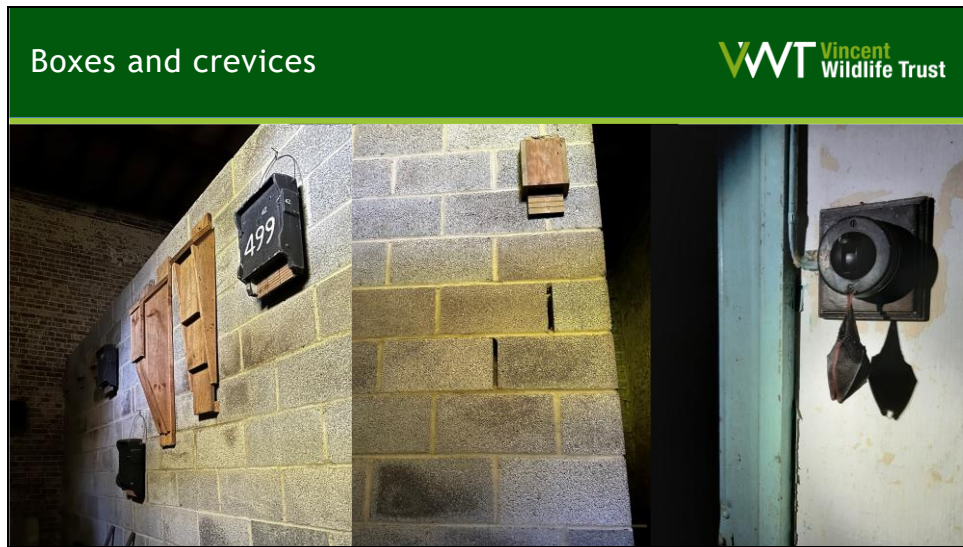
Old sites built above ground and covered over or dug into a slope very humid and provide perfect temperatures



End chamber contains most bats – fluctuates through winter.
Important to do accurate counts as the top two images you would think is similar numbers
but there are 25% less – 240 bats



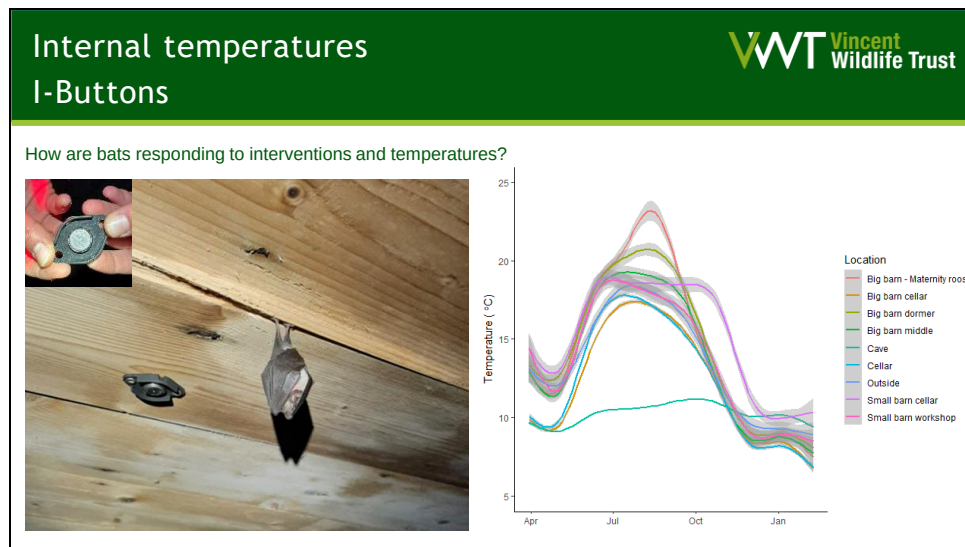
Cool towers designed by Colin Morris thermite bricks with wooden baffles and insulation on top or in extreme cases open-up underground sites



Trialled lots of boxes and gaps in walls – they get used by small numbers with several species using this site



Purpose built cold rooms within ground floor of buildings and built to be as thermally stable as possible. The most recent is a spiral chamber with insulated ceiling and was used the first winter following construction.

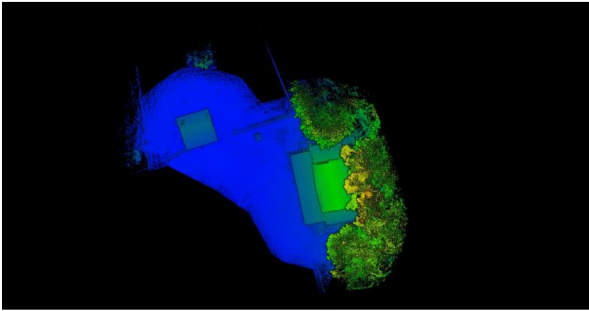


We use I-buttons to monitor all reserves and have loggers in each key area

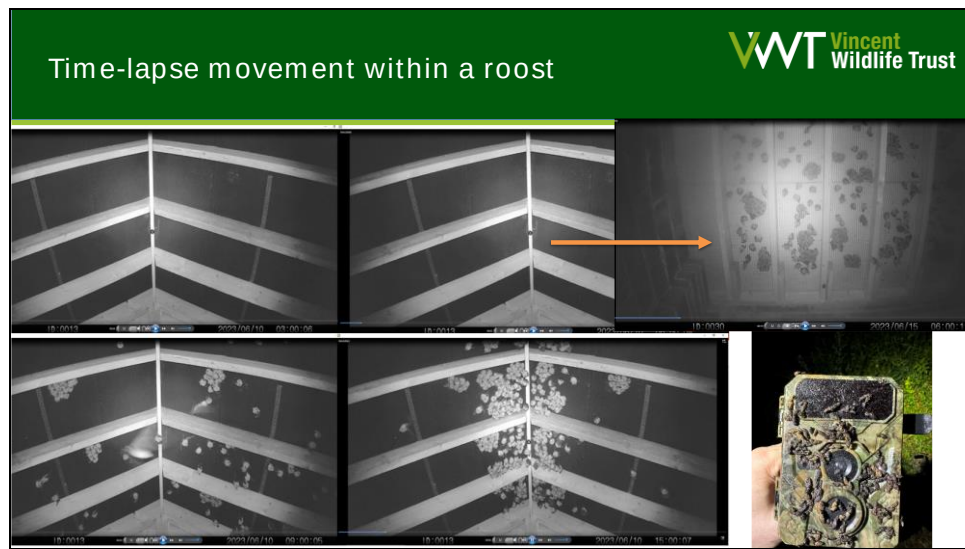
Bats and climate change

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- Over 50 passive temperature and humidity loggers deployed across our English bat reserves.
- We need to map bats' use of sites and available temperatures
- Calculate volume, airflow, orientation and predictive tool to design roosts for future climate



We can monitor temperatures in small areas but we need to understand the entire building and most importantly how bats use the interventions and temperatures



The last 6 weeks we have been utilising trail cameras to look at how bats are using the sites and use of cool and hot areas with lots of roost switching and surprising high amount of activity in the cold rooms in summer.

Effect of VWT's roost management



Both horseshoe species are recovering.
Populations at VWT reserves have increased at a faster rate than the national trend between 1999-2019

P.G.R. Wright, T. Kitching, R. Hanniffy, M. Bollo Palacios, K. McAney & H. Schofield / Conservation Evidence Journal (2022) 19, 21-26

Effect of roost management on populations trends of *Rhinolophus hipposideros* and *Rhinolophus ferrumequinum* in Britain and Ireland

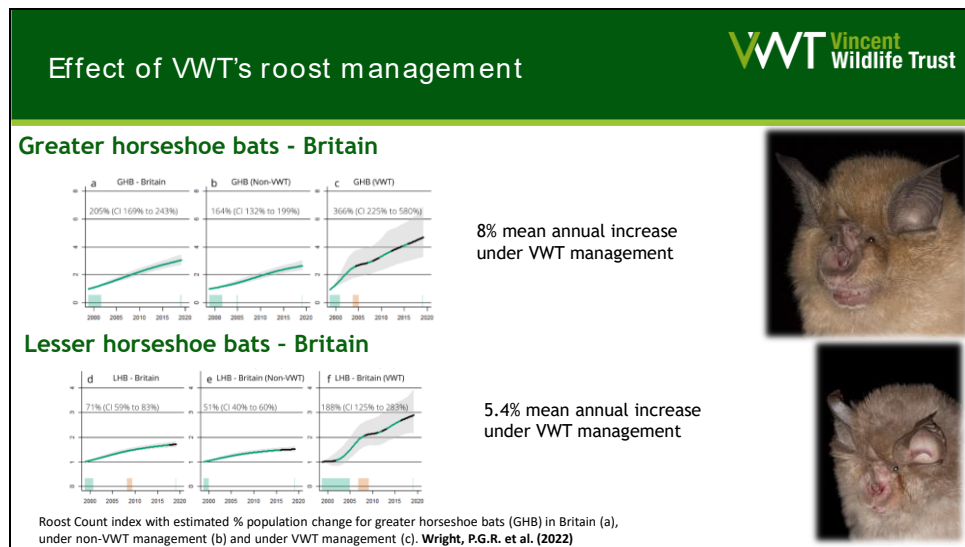
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<https://www.conservationevidence.com/individual-study/11845>



30 years has gone past since those first enhancements. We've recently analysed population increases at non-VWT horseshoe roosts and roosts under the Trust's management using NBMP count data between 1999-2019. Analyses included 40 greater horseshoe bat roosts (34 non-VWT and six VWT sites), 305 lesser horseshoe bat roosts in Britain (291 non-VWT and 14 VWT sites) and 199 lesser horseshoe bat roosts in Ireland (187 non-VWT and 12 VWT sites).



Greater horseshoe bat populations have increased by 366% from 1999 to 2019 which is equivalent to a 8% mean annual increase under VWT management

Winter checks - disturbance/timing?





1 hour later >90% of bats moved after conducting check – two people, minimal disturbance.

Interesting that in December we carried out a hibernation visit and had to go back through the site 1 hour later - almost all GHB had aroused and moved. 2 surveyors with minimum disturbance

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Still learning! lots of activity in winter for unknown reasons – lots of predators visiting sites including tawny owls and sparrowhawks. Utilising camera traps to record behaviour

Thank you!



Contact information

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