

Homes from home

TESSA KNIGHT AND GARETH JONES OF THE UNIVERSITY OF BRISTOL HAVE BEEN WORKING ON A PTES-FUNDED PROJECT EXAMINING ACTIVITY PATTERNS AND ROOSTING PREFERENCES IN RARE LESSER HORSESHOE BATS. NIDA AL FULAIJ SUMMARIZES THEIR SURPRISING FINDINGS.

Bats do not make nests to sleep and rest in but instead select a variety of roosts in which to shelter, to sleep by day, to give birth and rear young and to hibernate. Maternity and hibernation roosts are legally protected from development and disturbance. However at the moment the same protection does not extend to other types.

Tessa Knight and Gareth Jones, working on lesser horseshoe bats at the University of Bristol, suspected that the roosts used for short periods of shelter and rest during a night's foraging may be just as important as the maternity and hibernation roosts. They decided to investigate further, and PTES agreed to fund their work.

Nightly pattern

Most UK bat species have a bi-modal pattern of nightly activity – they forage actively in two bouts, one shortly after dusk and another just before dawn, with

a lull between. Based on earlier observations, however, Tessa and Gareth wondered if lesser horseshoe bats might be multi-modal foragers, with two to four bouts of activity during the night. Bats within a roost usually disperse across the landscape to feed at night, spreading out so that they avoid competing directly with one another. For a colony to support many bats, the habitat surrounding it needs to be good enough that each individual can find adequate feeding space without having to fly too far. Night roosts allow bats to extend the distance they can travel to forage, by providing safe places to stop, rest and feed. An abundance of suitable night roosts can increase the area available for foraging and thus the potential size of the main colony.

Tessa and Gareth chose to study three lesser horseshoe colonies in different types of habitat. The first colony comprised 160 animals living in the attic of a converted barn in north Somerset. The barn is



Colonies of lesser horseshoe bats often roost in old buildings, but individuals will utilise alternative shelter for short stops during a night's foraging.

GARETH JONES

surrounded by pasture and arable farmland, with some woodland, typical of many areas in the southwest and in southern Wales. The second colony, in the Wye Valley, had 750 bats roosting in a small barn set in an area of broad-leaved woodland and pasture, prime foraging habitat. The third colony, of 130 animals, is located in a large barn in the Brecon Beacons. The barn is surrounded by extensive moorland with areas of forestry plantation, pasture and streams – considered sub-optimal habitat.

Tessa tracked 54 animals over three summers and found that in general the bats did indeed tend to venture out more than twice a night

to forage. Some set out as many as eight times a night and utilised as many as five different night roosts. Previous studies have suggested that bats use night roosts when the weather turns cold. However Tessa found that wet and windy weather meant bats were more inclined to stay at home in the main colony and not forage at all. In fact, it appears that the main reason bats use night roosts is to rest and digest their food between bouts of feeding. Most species of bat in the UK eat insects that swarm at dusk. Lesser horseshoes, however, take a lot of moths, which remain on the wing all night. Foraging all night long burns a lot of energy, so the bats need access to convenient resting sites. The more such sites there are available, the more energy the bats can save by not having to fly back to the main roost.

We now need to know if the home range of a lesser horseshoe bat is limited not only by the amount of available feeding habitat but also by the number of available night roosts. If so, this has significant consequences for bats and their conservation. Areas we thought were suitable may not be so good if the feeding opportunities are not matched by a suitable abundance of safe places to rest. Having recognised the importance of night roosts in the lives of these threatened mammals, there is a very strong case for them to be protected too.

Roosts for all occasions

Bats are long-lived animals and, along with hedgehogs and dormice, the only mammals in this country that hibernate. Bats need different roosting conditions throughout the year and therefore have many different types of roosts.

- **Maternity or day roosts** Used by female bats between May and August and are warm and safe places for them to raise their babies.
- **Bachelor or day roosts** Used by solitary or groups of males.
- **Hibernation roosts** Occupied from November through until April, bats will often hibernate in underground sites like caves which provide a cool, constant temperature to see them through the winter.
- **Foraging or night roosts** In use throughout April until November by males and females to stop and feed in whilst out foraging or to take refuge from predators.

Where bats roost

- **Trees** Traditionally all of our bat species are likely to have roosted in trees but about only three quarters do today due to lack of suitable sites. Old woodpecker or other animal holes, cracks and splits and the underside of old bark are all used to roost in. Even dense ivy and root cavities can provide shelter for bats.
- **Caves** Used widely by all bats to hibernate in over winter as they are unlikely to be disturbed and provide a cool constant temperature. Species such as lesser and greater horseshoe also widely use caves throughout the summer. There have been reports of otters denning in caves in the summer months feeding on roosting bats.
- **Buildings** All species of bat in the UK use buildings at some time or another as natural roosting sites have become scarcer. They roost behind hanging tiles and boarding, or in roof spaces, in both new and old buildings.



GARETH JONES

Savernake bat box success



STEVE LAURENCE

We were delighted to hear from Steve Laurence of Wiltshire Bat Group with a report on their PTES bat box check event at Savernake Forest near Marlborough, Wiltshire.

The Savernake bat box project has been running since February 2002 and the results to date have been impressive. In the first six years, almost 90% of the boxes in the two main schemes had been used, by barbastelles, noctules, common pipistrelles, soprano pipistrelles and brown long-eared bats, and this summer bat group volunteers recorded a sixth species, Natterer's bat, using the boxes. Excitingly, barbastelles, Natterer's and brown long-eared bats are now known to be using the boxes for maternity roosts. Noctules have also used the boxes for hibernation – on one occasion no fewer than 17 hibernating bats were recorded in one box.

The bats are ringed, so individuals that have been recorded before can be recognised. In fact one female brown long-eared bat is a regular occupant of the boxes and has been recorded nine times since she was first ringed in the summer of 2001.

As well as bats, dormice continue to enjoy using the additional facilities with seven boxes used for nesting and numerous dormice, including juveniles, having been recorded.

Further boxes were placed in the north of the forest (Postern Hill) in February 2008, with the key objective of attracting barbastelles, which are known to roost in the area. Of these new boxes, over 40% have already been used, initially by brown long-eared bats, noctules and common pipistrelles and then in summer 2009 the team recorded the target species for the first time. This rapid occupation of the new boxes by a barbastelle was much faster than in the south of the forest (Feb 2002 boxes). The pioneering individual was a solitary male, which had originally been ringed as a juvenile at the disused Savernake railway tunnel during a previous PTES *Wildlife Encounters* day, back in 2004. Since then it was recorded hibernating in the tunnel during the winters of 2005/06 and 2007/08. We're all delighted with this find, which was the team's initial objective for the project. We hope they'll be able to record a maternity roost of barbastelles in these boxes in the future.

Lightweight metal cuffs, which do not damage the bats' delicate wings, carry a unique code that will allow any bat worker to identify the animal should it be seen again.



STEVE LAURENCE