Use of trees by bats in the UK: implications for forestry and woodland management

by Andrew Harrington and Lauren A. Harrington

Summary:
We used a database of bat roost records provided by bat experts from across the UK to describe and summarise the types (and particularly the size) of trees, and the diversity of tree features, in which bat roosts may be found. Our analysis shows that bat roosts are commonly found in small trees that are likely to be targeted for removal when thinning woodland, a finding that has clear implications for forestry and woodland management.

Introduction

There are 17 species of bat that are resident and known to breed in the UK (Bat Conservation Trust, 2023). All UK bats have been found in or around trees and wooded areas (Altringham, 2003), and 14 of the 17 breeding resident species have been recorded roosting in, or on, trees, in cavities and crevices created predominantly, but not exclusively, through the natural decay or damage of the wood (BTHK, 2018). Bats roosts (defined as 'a physical site used by bats when not flying', for rest, shelter, mating, or rearing young; Altringham, 2003) are often found in oak trees (Boonman, 2000; Dietz et al., 2009; Kühnert et al., 2016; Smith and Racey, 2006), and a number of bat species (Alcathoe bat *Myotis alcathoe*, barbastelle *Barbastella barbastellus*, noctule *Nyctalus noctule*, and Leisler's bat *N. leisleri*) reportedly show a preference for large oak trees specifically (Lučan et al., 2009; Tillon et al., 2016), dead or dying oak trees, or those with a large number of dead limbs (Carr et al., 2018; Görföl et al., 2019; Ruczyński and Bogdanowicz, 2008). A number of scientific articles also refer specifically to the size of trees used by bats for roosting, suggesting either that bats do not use trees with a diameter measured at breast height (DBH) less than 30-40cm (e.g. Kubista and Bruckner, 2015, and references therein), or that cavities – and thus potential roost sites – are not found in trees with a DBH less than 30-40cm (e.g. Russo et al., 2004). In contrast, our own observations in a southern England woodland, based on inspection of potential tree roosts with an endoscope, carried out under licence, suggest that bats are also frequently found roosting in very small trees and often in species other than oak (e.g. field maple and sycamore). This observation is relevant to anyone working with trees, but particularly to forestry and woodland managers when thinning or felling trees in woodland.

In this study we used the Bat Tree Habitat Key (BTHK), an open access database containing detailed data on tree roosts occupied by bats, collected by bat ecologists from across the UK, to describe the types of trees (species, size, characteristics), and tree features (size, height and position of entrance) used by bats as roosts. Specifically, we were interested in the smallest trees used for roosting by bats. Our aim is to fill an apparent knowledge gap with respect to the use of small trees by bats, to raise awareness of the potential presence of bats in small trees, and thus to support foresters and woodland managers in making decisions regarding protection of bats during routine forestry and woodland management.

The Bat Tree Habitat Key (BTHK) database

As of December 2021, the database (available from www.battreehabitatkey.co.uk) contained 7,927 records of potential roost features (PRFs) on, or in, 1,358 trees from across England (n = 1293), Northern Ireland (n = 36), Wales (n = 17) and Scotland (n = 13), collected between 2011 and 2021. We restricted our analysis to observations of PRFs confirmed to be used by bats (n = 1,848 observations, hereafter 'known roost features' or KRFs) where positive confirmation was based on the presence of bats (n = 1,623), bat droppings (n = 218), or flies (*Nycteribiidae* spp., obligate hematophagous ectoparasites of bats, commonly found associated with bats and their roosts; Szentiványi et al., 2019) (n = 7). Eliminating duplicate observations resulted in a dataset containing data on 933 unique bat roosts (KRFs) in 841 unique trees.

BTHK records are collected non-systematically in the absence of any specified site selection methodology and as such are a non-random sample that contains known and unknown biases (e.g., most records are known to be from England, but it is not known, for example, to what extent observers might have consciously or unconsciously preferentially searched oak trees for PRFs as compared to other tree species). This means that it is not possible to extrapolate proportional data to infer, for example, the relative occurrence of bat roosts in different tree species across the wider population of trees in the UK. The number of tree species included in the dataset (whether they are alive or dead, and where roost features occur) is, though, a valid indicator of the diversity of trees (and situations) in which bat roosts may be found.

KRFs were recorded in at least 40 different tree species. These were predominantly hardwoods (n = 35 of the 40 tree species, and some 93.7%, n = 788, of the individual trees); but, of the hardwoods, only half were oak (*Quercus* spp., n = 393). Only five of the tree species were softwoods (6.3%, n = 53, of all individual trees).

Species comprising 5% or more of trees in the dataset included: field maple (*Acer campestre* 5.6%), sycamore (*A. pseudoplatanus* 9.2%), common beech (*Fagus sylvatica* 6.5%), ash (*Fraxinus excelsior* 7.5%), sessile oak (*Quercus petraea* 26.8%), and English oak (*Quercus robur* 16.3%). Yew (*Taxus baccata*) comprised 4.5% of trees. The majority of the trees in the dataset (n = 725, 86.2%) were alive; 116 (13.8%) were dead.

Most (74.3%) of the trees in the dataset occurred in broadleaved woodland, with 8.3% trees occurring in mixed woodland, 5.5% in scattered parkland trees, and less than 3% in other habitat types (e.g. plantations, trees in hedgerows, and built-up areas).

Individual trees had between one and four roosts (KRFs) most of which (n = 783, 83.9%) were on the stem of the tree, the remainder (n = 138, 14.8%) were on a tree limb (and for 12 KRFs location was not recorded). Observations were recorded year-round (Jan, Feb n = 165; spring-flux Mar, Apr n = 439; pregnancy period May, June n = 301; nursery period Jul, Aug n = 294; mating period Sept, Oct n = 320; autumn-flux Nov, Dec n = 325; unknown n = 4).

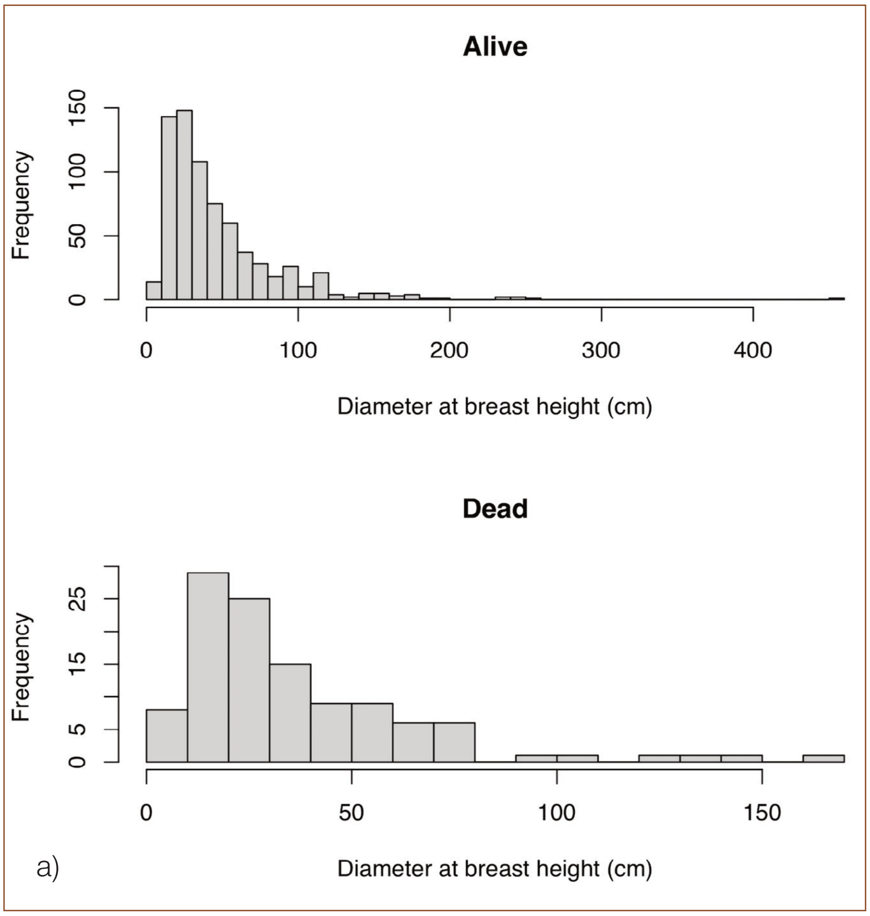
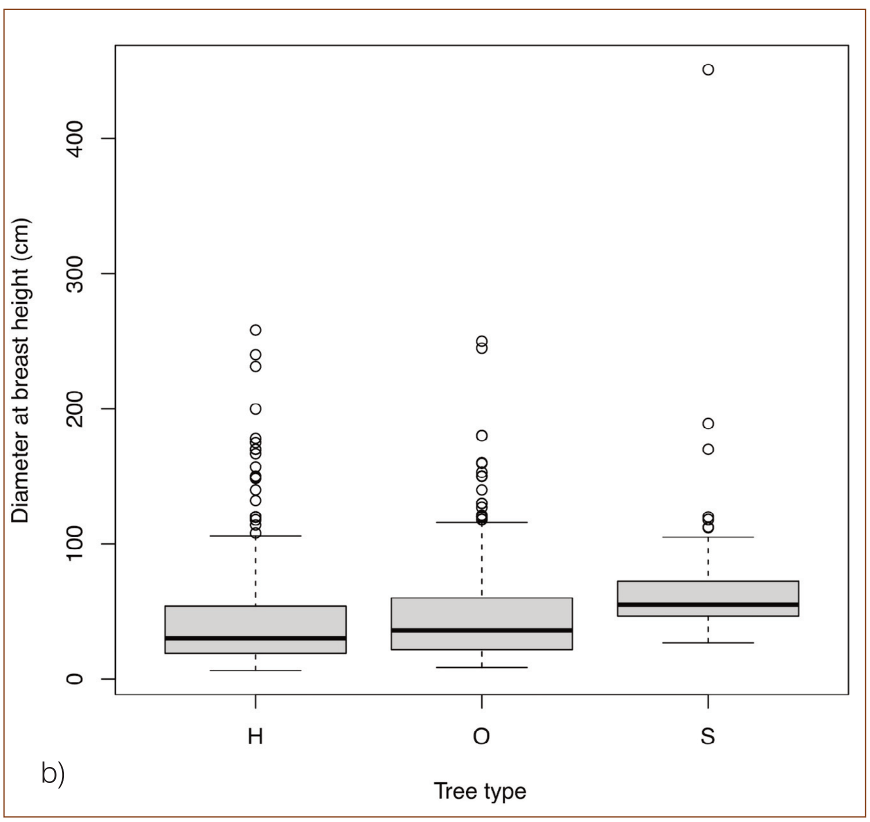


Figure 1. DBH of trees used by bats for roosting (a - above) for alive and dead trees, and (b - below) according to tree type: O = oak (n = 393), H = other hardwoods (n = 395), S = softwoods (n = 53)



In more than half (n = 1,058, 57.3%) of all observations of KRFs, roosts were occupied by a single bat. The presence of more than ten bats in a single roost was confirmed on relatively few occasions (n = 137, 0.07%), and most often during the pregnancy, nursery, and mating seasons. No estimate of the number of bats present was available on 310 (16.8%) occasions. The maximum number of bats observed in a roost was 95 (median = 1).

We present here a detailed description of 933 KRFs, including the height and DBH of the trees in which they were found, as well as a number of parameters (type, facing direction, height, entrance dimensions, and internal cavity size) of the cavities themselves. Relationships between tree features and state (alive or dead) and type (categorised for analysis as oak species, ‘other’ hardwoods, and softwoods) of the tree, and between cavity features (height and dimensions) and tree size and state are described. We also report the position of any bats in relation to cavity entrance and quantify their distance from it. Statistical tests pertain only to the characteristics of trees and bat roosts within our dataset and are presented to help describe patterns in the data. The objective of our analysis was not to quantify the prevalence of any particular characteristic of either trees or cavities used by bats, rather it was simply to quantify the size of the smallest trees (minimum and lower quartile of measurements) in which KRFs were recorded and to describe the diversity of tree cavities used as roosts. Because all bats are protected by law, we considered all bats together and did not separate by species; similarly, because all ‘resting sites’ are protected, we considered all KRFs regardless of the time of year or occupancy (i.e. single male bats in a day roost, hibernation, and breeding roosts were combined). All statistical analyses were carried out in R (version 4.1.0, R Core Team, 2021) and output from the test is shown in the notes at the end of the article; in all cases KRFs were treated as independent regardless of whether or not they occurred on the same tree.

Characteristics of trees used by bats for roosting

Tree height ranged between 1.6 and 32.0m, with an average of approximately 12m (median = 12.0, n = 839; note that differences in sample sizes are due to missing data in the database). DBH ranged between 6.2 and 451.2cm (median = 34.0, n = 832) but was strongly left-skewed such that nearly a quarter (n = 194, 23.3%) of trees in the dataset had a DBH of 20cm or less (Figure 1). These ‘small’ trees (hereafter defined as those with a DBH of 20cm or less) are comprised of both dead and alive trees (Figure 1a), oaks and other hardwoods (but not softwoods, Figure 1b), and trees ranging in height from 2 to 25m (tree height and DBH were moderately positively correlated[1]). Among the six tree species that occurred most frequently in the dataset (field maple, sycamore, common beech, ash, sessile oak, and English oak), there was a statistically significant association between species and the likelihood of being small (DBH ≤20cm) and hosting a bat roost (having a KRF).[2] Approximately 50% of field maple and sycamore trees in the dataset had a DBH less than or equal to 20cm, as did approximately one third of sessile oaks (Table 1); no beech, ash, or English oak trees hosting bat roosts had a DBH ≤20cm. The minimum DBH recorded was less than 7cm (Table 1).

Table 1: Trees with DBH ≤ 20cm containing confirmed bat roosts
(n = 194; red highlights those species that occurred most frequently in the dataset)

Latin name	Common name	No. trees	min. DBH (cm)	Height range (m)
Other hardwoods				
Acer campestre	Field maple	26	6.4	6 - 17
Acer platanoides	Norway maple	1	16.5	12
Acer pseudoplatanus	Sycamore	39	6.2	2 - 14
Alnus glutinosa	Alder	1	15	5.3
Betula pendula	Silver birch	7	8	6 - 25
Betula pubescens	Downy birch	6	12	5 - 11
Carpinus betulus	Hornbeam	2	17	10 - 14
Corylus avellana	Hazel	4	10.2	3.5 - 8
Fagus sylvatica	Common beech	4	11	6 - 14
Fraxinus excelsior	Ash	8	11.8	8 - 20
Malus sylvestris	Crab apple	1	14.2	8
Salix caprea	Goat willow	1	19	14
Salix sp.	Willow sp.	1	13	9
Sorbus aucuparia	Rowan	5	9.7	5 - 12
Ulmus glabra	Wych (or Scots) elm	4	7.9	8 - 10
Oak species				
Quercus petraea	Sessile oak	77	8.6	2.3 - 15.5
Quercus robur	English oak	6	13	8 - 15
Quercus sp.	Oak sp.	1	10	2
Total		*194*		

Characteristics of tree cavities used by bats for roosting

KRFs were formed almost equally by tree damage and decay: n = 444

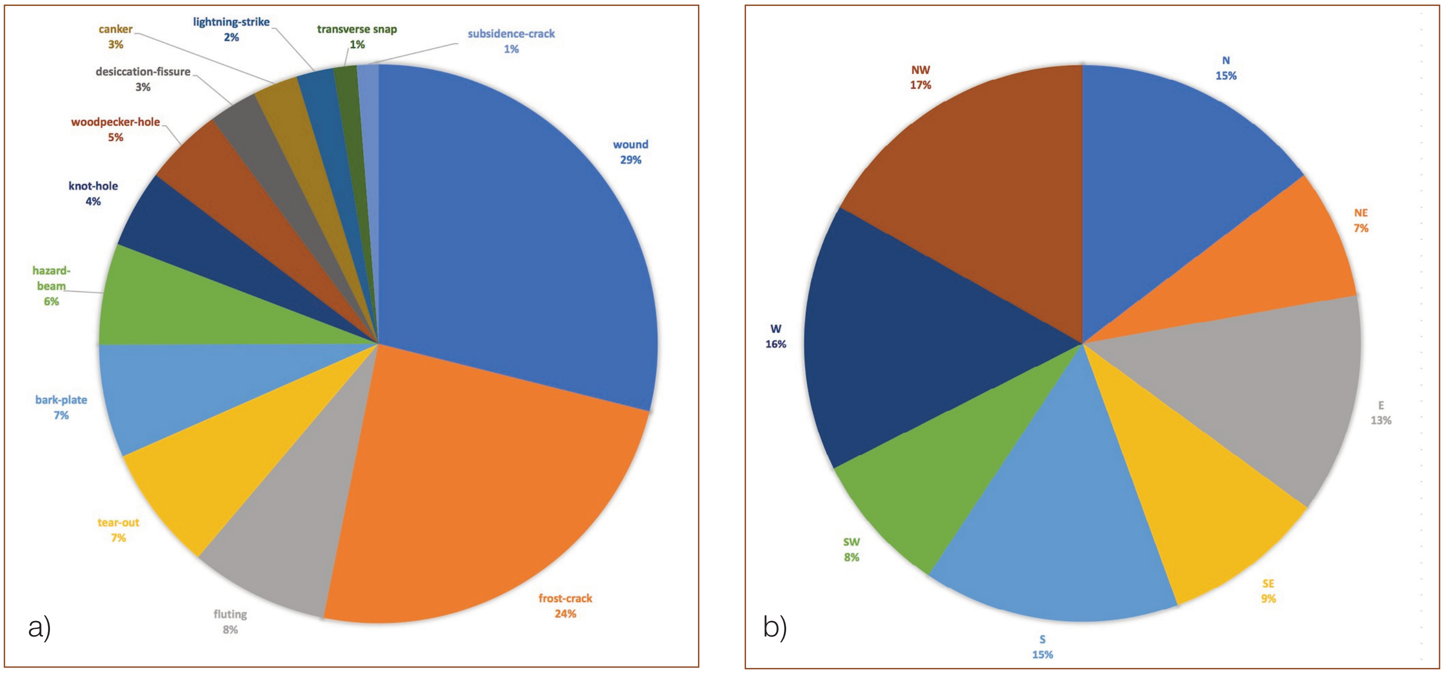


Figure 2. Pie charts showing on left a) the type of roost feature (types comprising <1% not shown, these included butt-rot, shearing-cracks, welds, pruning-cuts, compression forks, squirrel holes, ivy, impact shatters, and Jim-Gems, commonly referred to as "Jim-Jams"), and on right b) the direction of the roost entrance (for those roosts with a single entrance, n = 873; an additional 43 KRFs had two entrances, each facing opposite directions). See BTHK (2020) for a description of roost feature terms; note that 'squirrel holes' (used as nest sites by squirrels) are cavities initially caused by decay/damage where the entrance is maintained and may be enlarged by squirrels gnawing the woundwood callus (BTHK, 2020).

(47.6%) and n = 406 (43.5%), respectively. Only 74 KRFs were formed by association, i.e. occurred naturally during growth in the absence of damage or decay, such as ivy growing on the tree or the age-related development of flutes (deformation in the circular periphery of the tree). Data for nine were missing. More than half of KRFs were either wounds (27.4%) or frost cracks (23.0%). Other feature types comprising more than 5% of KRFs in the dataset were: flutings, tear-outs, bark plates and hazard beams (longitudinal splits in either the limb or stem of the tree that passes through the entire width of the limb/stem) (Figure 2a). A full description of these features and how they occur is given in the BTHK (2020). There was no significant pattern in the direction in which KRF entrances faced[3] (Figure 2b). KRFs were recorded at heights of between 0.21 and 20.0m (median = 2.0m). Entrances can thus be found at any height from virtually ground level upwards. Almost three-quarters of KRFs in the dataset (n = 646, 70.1% of 918 for which height was recorded) were found at heights <3m but this is most likely due to limitations associated with observers being on foot (this potential bias is discussed further below).

KRF entrance openings ranged between <1 and 754cm in height (median = 20cm; n = 867) and between 0.7 and 265cm in width (median = 4.0cm; n = 864).[4] Of 861 KRF entrance openings for which precise height and width dimensions were available, one third (n = 292, 33.9%) were 5cm or less in width and 20cm or less in height; 29 KRF entrance openings were 1cm or less in at least one dimension, and five were 2cm or less in both dimensions. The smallest KRF entrance opening recorded was 1.5cm high and 0.9cm wide. The internal cavity volume of KRFs ranged predominantly between 2cm^3 and 0.23m^3 (n = 252), but two KRFs had larger internal volumes of 0.97m^3 and 2.1m^3. There was no correlation between the internal volume of the KRF and the size of the tree (as measured by DBH)[5] such that some of the largest cavities occurred in relatively small trees and vice versa (Figure 3).

Although the precise location of any bats within the cavity is presumably variable, it is noteworthy that the size and shape of some of the cavities in the dataset meant that a bat could potentially be located more than 4m from the cavity entrance: maximum recorded distance of bats from the roost entrance was 428cm (minimum = 0cm, median = 14cm, n = 1,129). Bats were most often recorded above the entrance (n = 1,169, 84.9% of 1,377 observations) but were also sometimes recorded below the entrance (n = 166, 12.0%), and occasionally to the side (n = 31, 2.3%), directly opposite (n = 7, 0.5%), or above and to the side (n = 4, 0.3%).

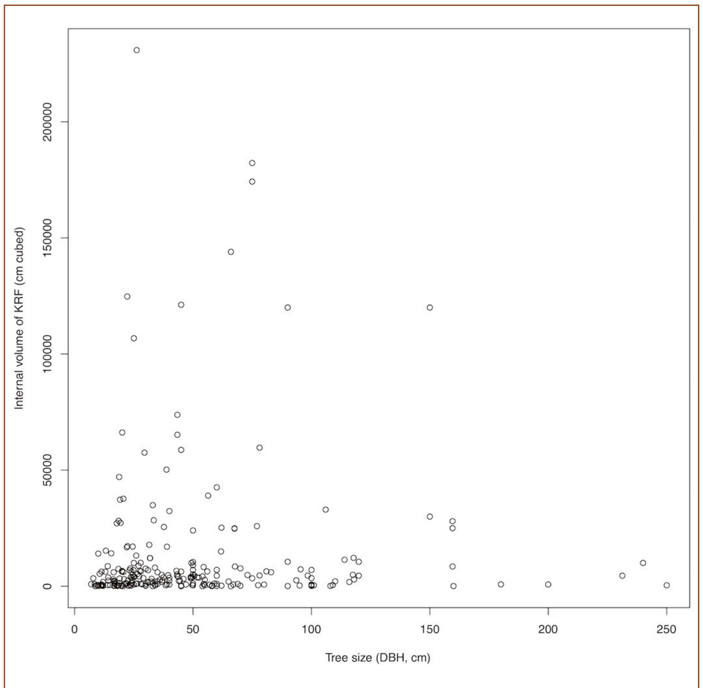


Figure 3. Internal volume of KRFs (in cm³) relative to tree size (as measured by DBH, in cm; n = 254), excluding two outliers with internal volumes > 0.9m³.

Discussion and conclusions

A simple descriptive analysis of the data held in the Bat Tree Habitat Key database demonstrates the use of a range of cavity types by bats, in a wide range of living and dead trees, of multiple species (softwood and hardwood), between 1.6m and 32m high, and between 6cm and 451cm wide (as measured by DBH), predominantly, but not exclusively in field maple, sycamore, common beech, ash, sessile and English oak, and yew. In short, it is clear that small trees (defined here as those with a DBH of 20cm or less) are often used by bats for roosting, and that species of hardwood (broadleaved) trees are more often found with roosts than softwoods (conifers). We found no correlation between tree size and cavity size, and some of the smallest trees in our dataset contained sizeable long, narrow cavities (see Figure 3). Several cavities confirmed to be occupied by bats had entrances that were less than 1cm in at least one dimension and could be found close to ground level to much higher in the tree.

We are not the first to highlight the importance of small trees for roosting bats. In a study in fragmented oak woodland in southwest England, Carr et al. (2018) suggested that roost selection by barbastelle bats occurred at the cavity level rather than on the characteristics of the tree, and so stated that any tree supporting a suitable cavity may potentially be used by bats irrespective of its size, condition or species. A paper by Apoznański et al. (2021) described single male barbastelle bats roosting predominantly in ‘thin’ dead or dying oak trees with a DBH between 20 and 35cm in a commercially managed landscape in southern Sweden where there were few large trees remaining, and Coronado et al. (2017) report the Alcathoe bat preferentially selecting secondary shrubs such as common holly *Ilex aquifolium* for breeding roosts. These types of articles, however, appear to be outnumbered by those reporting a preference for larger, mature trees. A brief search of the scientific literature (via the Web of Science, www.webofscience.com) for articles on bats and trees or tree roosts, focusing on bat species that occur in the UK, using the search terms ‘bats AND trees’, ‘bats AND forestry’, and ‘bat roost* AND tree*’, revealed only five articles out of 22 that referred to the size of the trees used reporting tree roosts with a minimum DBH of 20cm or less. Among these articles, the smallest tree diameter confirmed to be occupied by a bat was 14cm (recorded in an oak woodland in France by Tillon et al. (2016)) – the minimum DBH recorded in the BTHK, and reported here, at 6.2cm DBH, is less than half that value.

Limitations and potential bias in the BTHK

The lack of comparative data in the BTHK on trees, both large and small, that do not have bat roosts limit the inferences that we can draw from these data, particularly with regard to the likely abundance of small trees per area of woodland that might provide suitable conditions for a roosting bat. This is directly relevant to the applicability of our findings to forestry and woodland management and we outline a number of key research questions below.

The BTHK also contains a number of potential biases that should be considered when interpreting the data. These include an underrepresentation of softwoods, and a geographical bias at both country- (records from England dominate) and county-scales (H. Andrews, pers. comm.). Most notably, since most recorders will have been limited by the height of the PRF that they could see and examine, KRF height is very likely biased towards lower heights. KRFs were recorded at heights over 15m but these roosts are only accessible to trained climbers and they are almost certainly underrepresented in the dataset. Most important in the context of this analysis is whether a bias towards KRFs at lower heights means that there is also a bias towards smaller trees – we do not believe this to be the case: KRFs below 3m were reported in both short and tall trees (up to 30m) suggesting that although KRFs at height are underrepresented in the database, tall trees (i.e. those that tend to be larger) are not.

Further research questions

It is not possible to determine from the database what proportion of small trees in the wider tree population contain suitable potential roost sites, and thus how widely applicable our findings are, especially compared to large, mature trees more widely known to be associated with bat roosts. It is also not clear to what extent the use of small trees by bats might differ among regions, or even in particular woodlands, due to factors such as tree composition, weather, or management regime. To inform woodland and plantation conservation management policy, the key research questions are: what proportion of trees in woods and plantations of different types have bats roosts? What proportions of these trees are 'large' or 'small' (or, alternatively, what proportion of 'large' and 'small' trees in a woodland have bat roosts)? And how many small trees containing bat roosts are there per area of woodland/plantation?

Importantly, we do not currently know what impact the loss of a roost (whether in a large or a small tree) might have on bats, at an individual, colony or population-level. The question is largely irrelevant in terms of the law since destroying a bat roost is illegal regardless of impact (although it is permitted with a licence). However, a better understanding of wider impacts might help inform licensing decisions and/or wider conservation planning.

Bats change roost sites frequently, often every few days (August et al., 2014; Kühnert et al., 2016) and so one might expect a bat simply to move to another roost if one is lost. However, bats also show high levels of site fidelity (Smith and Racey, 2006), sometimes over several years, and social groups may be reliant on a network of roosts within a constrained geographical area. The mean roost home ranges for Daubenton's *Myotis daubentonii* (Figure 4) and Natterer's bats *M. nattereri* in a woodland in southern

Figure 4. Daubenton's bat Myotis daubentonii, normally associated with water, are often found roosting in trees. (Photo: ©Andrew Harrington)

Figure 5. Known bat roosts in trees or tree limbs with DBH < 20cm. There are five bat roosts in the bottom image. Wytham woods, Oxfordshire. (Photos: ©A.L. Harrington)

England were 0.2km^2 and did not overlap with neighbouring social groups of the same species, suggesting that small scale habitat changes may represent significant loss to local resident bats (August et al., 2014). The impact of the loss of a tree roost might also differ among species (indeed, the availability of roost sites is unlikely to be the only limiting factor for bat abundance). Thinning broadleaved woodland, for example, may have positive effects on common more adaptable species (such as common pipistrelles *Pipistrellus pipistrellus*) that forage along woodland edges and are able to exploit the less cluttered woodland interiors in a managed woodland, but the same process is likely to have a more negative impact on rarer species that roost predominantly in trees (such as barbastelle bats) by reducing roost opportunities (Carr et al., 2020). Ruczyński and Bogdanowicz (2008) also suggest, based on the more frequent use by noctules of healthy trees for roost sites, that they would be better able to exploit younger, managed forests, and be less vulnerable to forestry operations such as the removal of snags, than Leisler's bats that use healthy trees relatively rarely. In this context, whilst species-specific differences were beyond the scope of this study, it would be interesting to see if particular bat species are more or less likely to be found in roosts in some of the smaller trees described here. Similarly, although the relatively mild winters experienced in the UK should not limit the use of tree roosts for hibernating bats over winter (Mayle, 1990), the extent to which bats are found in small trees in winter, as compared with warmer seasons, would be informative.

Implications for forestry and woodland management

Not only are roost entrances often very small and potentially difficult to spot, particularly when there are leaves on the trees (Figure 5), but many of the trees in the dataset at the smaller end of the spectrum are those that are likely to be targeted for removal when thinning woodland. A study by Carr et al. (2018) reported locating roost cavities on young trees with small girths that would ordinarily be removed during thinning interventions. In addition, because sycamore is a non-native invasive species, it is often selectively eradicated from woodlands, yet it was one of the most frequently recorded tree species with confirmed bat roosts in this dataset. Smaller trees retained in stands otherwise thinned primarily to promote growth in larger selected timber trees that have reached the canopy will rarely compromise further growth of favoured timber trees. Indeed, they will contribute to ensuring clean stem growth and to forest soil maintenance. The retention of smaller trees with potential bat roosts is thus very unlikely to be at the expense of timber tree performance.

Because of the constraints of the data set used, being comprised only of trees with known bat roosts, it is difficult to draw conclusions as to the frequency of such roosts within woodland stands. Our results do not suggest that bats preferentially select either 'small' trees or sycamore, only that they can and do use them. However, in terms of the legal protection of bats, since the law does not distinguish between bat roost sites in different situations, the question of why a bat selected a particular tree or cavity and the quality of the shelter it provides is largely irrelevant.

All UK bats are protected under both national and international legislation via (in England and Wales) the Wildlife and Countryside Act (1981) (as amended) and the Conservation of Habitats and Species Regulation 2017. Both pieces of legislation extend protection beyond bats themselves to the sites (roosts) used by bats, whether a bat is present at the time or not.[6] Consequently, the British Standards Institution (BSI) advises landowners and anyone undertaking 'work' on trees (pruning, felling, or crown reduction) to carry out a scoping survey prior to work being undertaken to assess the likelihood of bat roosts being present and to allow appropriate steps to be taken to "prevent the ... damage and destruction of [bat] roosts" (BSI, 2015). Scoping surveys can be carried out by non-specialists (usually those carrying out the work) but forest/woodland managers are advised to ensure staff "have received basic bat awareness training" (BSI, 2015). The findings of any such scoping studies should be recorded, even if no potential roost features are found to demonstrate that best practice was followed. Any work that would impact a confirmed bat roost requires a European Protected Species Licence (or 'derogation licence') issued by the relevant statutory nature conservation organisations.

The success of this approach in protecting bats and their roosts depends on accurate knowledge and understanding of what constitutes a potential bat roost, and where they might be found. There are a number of sources that discuss the importance of trees for bat roosts. The Bat Conservation Trust (BCT, 2020), for example, clearly state that "any tree could be used [as a bat roost] if there is a suitable opportunity". However, guidelines produced specifically for forestry and woodland managers offer less clarity and potentially misleading advice. Notably, the BSI (2015) guidelines describe the first step in a scoping study as an assessment of the potential of the site to support roosting bats (where a 'site' may be individual trees or groups of trees) and refer to "trees of sufficient size and age to contain bat roosts". The BSI (2015) guidelines do not define 'sufficient size' but clearly imply that some trees might be of 'insufficient' size. Our results suggest that if the concept of 'insufficient size' has any relevance at all, it is vastly smaller than might be commonly perceived.

Conclusion

Our conclusions are simple: bats also live in small trees. Knowing where bats may be found, and particularly understanding the diversity of features that might be used, is key to the need to be able to recognise bat resting sites, which are protected by law. Whilst woodland tends to be managed on a landscape scale, it is important that foresters and woodland managers have the knowledge that will enable them to help protect bats and, of course, to comply with the law.

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Notes

1. Pearson's correlation coefficient, $r = 0.45$, $p < 0.001$
2. Pearson's Chi-squared test: $\chi^2 = 97.169$, $df = 5$, $p < 0.001$
3. Pearson's Chi-squared test: $\chi^2 = 0.505$, $df = 3$, $p = 0.918$, categories combined as N/NE, E/SE, S/SW, W/NW, compared with an equal distribution.
4. Both the height and width of roost entrances were statistically significantly smaller in softwoods (median height = 13cm, median width = 2cm, $n = 67$) than in either oak or other hardwoods (median height = 25 and 21cm, $n = 385$ and 415, respectively, median width = 4cm in both cases, $n = 383$ and 412, respectively; Kruskal-Wallis rank sum test height: $\chi^2 = 11.552$, $df = 2$, $p = 0.003$; Kruskal-Wallis rank sum test width: $\chi^2 = 33.104$, $df = 2$, $p < 0.001$), although sample size for softwoods was relatively small. Neither dimension differed between trees that were alive or dead (Mann-Whitney test height: $W = 39211$, $p = 0.824$, $n = 765$ and 102, alive and dead, respectively; Mann-Whitney width: $W = 41835$, $p = 0.110$, $n = 762$ and 100).
5. Pearson's correlation coefficient $r = 0.059$, $p = 0.354$
6. The Wildlife and Countryside Act (1981) states that "if any person intentionally or recklessly damages or destroys, or obstructs access to, any structure or place which [bats use] for shelter or protection; or disturbs [a bat] while it is occupying a structure or place which it uses for that purpose, he shall be guilty of an offence" (Part 1, section 9, sub-section (4)(a) and (b)). The Conservation of Habitats and Species Regulation 2017, similarly states that "A person who damages or destroys a breeding site or resting place of [a bat] is guilty of an offence", Part 3, regulation 43, paragraph (1)(d). In Scotland, Northern Ireland, and the Republic of Ireland, the provisions are essentially the same, under the Conservation (Natural Habitats, etc.) Regulations 1994 (as amended), the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995, and the Wildlife Act 1976 and the European Communities (Natural Habitats) Regulations 1997, respectively.

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