



Bechstein's Bat

An introduction for woodland owners

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1. Introduction

This document is intended as an introduction for owners of woodlands in which Bechstein's bats are present, or for those who wish to enhance their site for this species. It is designed to:

- Explain the need to consider Bechstein's bats in your wood.
- Show landowners that you can undertake planned work within the woodland by following careful guidelines.
- Highlight the advantages to landowners of the confirmed presence of a rare species on a site.

2. Bechstein's bat

Bechstein's bat is one of the UK's rarest bats, found almost exclusively in woodland habitat. This species' reliance on ancient mature woodland for both roosting and foraging makes it very sensitive to habitat fragmentation and intensive woodland management practices.

Bechstein's bat is difficult to survey using standard monitoring techniques leading to a lack of data for this species in terms of its distribution and habitat associations. Through the development of new survey methods (by leading experts Dr David Hill and Frank Greenaway) and their use in a pilot project (Hill & Greenaway, 2006) and a subsequent project by the Bat Conservation Trust (BCT) www.bats.org.uk/bechsteinsproject, we now have a better understanding of Bechstein's bat's UK distribution.

The UK is thought to be the northern edge of the European range for this species. Our current understanding is that the species is present from Devon in the west of England to Kent in the east, extending north to Worcestershire and Buckinghamshire, with outlying male records in south Wales. Core areas for this species are thought to be Somerset, Dorset, Wiltshire, Hampshire, the Isle of Wight and West Sussex.



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3. Roosting behaviour

During the summer (May - September), female Bechstein's bats form nursery colonies – groups of females that roost together to give birth and raise their young. 20-25 breeding female bats is considered a viable colony size (Hill and Greenaway 2006) however in prime conditions they can occasionally reach up to 130 bats (Greenaway 2007). Each of the breeding females in the colony will typically have their own foraging territory of approximately 1 ha.

Bechstein's bats roost in deep tree cavities. Woodpecker holes appear most favoured, with rot holes and splits also used. The majority of known roosts are in oak although a number of other trees including beech, ash, poplar and willow are also known to be used. Colonies require several suitable roosts within their territory and switch roosts regularly. It has been observed (especially for smaller woodlands as reported by Merrett 2012) that one or more of these roosts can be in trees outside the woodland, for example in nearby hedgerow or riverside trees. Both living and dead trees will be used, however living trees are most favoured.

Examples of different bat roosts in trees



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Male Bechstein's bats play no part in the rearing of young and are usually found roosting individually or in small groups. The energy demands of these individuals are lower than those of females with young. Males (and non-breeding females) can be found in woodlands that are not suitable to support nursery colonies. However, the importance of these woodlands and the bats they support should not be discounted, as they are important for the long term success of the population.

In winter this species is thought to hibernate in similar roosting sites to those it uses in summer, although perhaps in slightly deeper tree holes.

4. Habitat requirements

Maternity roosts of Bechstein's bats are typically found in deciduous semi-natural or ancient woodlands with a diversity of tree ages and vegetative structure. They are often greater than 25ha and have a high proportion of oak in the canopy mix with a well-developed understorey. (Schofield & Morris 2009)

A woodland considered particularly favourable for a maternity roost of Bechstein's bats would be:

- An unevenly aged, deciduous woodland
- With a high number of mature oaks
- Above 25 hectares in size
- Semi-natural or ancient woodland
- A high degree of canopy cover consisting of native species
- Containing numerous woodpecker holes
- Dense mixed native species understorey
- Streams/ponds or ditches retaining water within the wood
- Within the predicted distribution range

The suitable habitat may be either in a single block, or, especially in areas of the country where smaller woodlands predominate, may consist of closely connected smaller woodlands (Hill and Greenaway 2006).

Male Bechstein's bats are less restricted in their choice of habitat and although generally preferring similar woodland characteristics to the breeding females will accept a wider range of sites. Both males and females have been observed in mixed woodlands, however it is considered that high quality deciduous woodland still underpins the reason for their presence in an area.

5. Key issues to consider

This guidance does not inhibit you from undertaking work on your land rather it aims to ensure that Bechstein's bats are considered when producing your woodland management plan.

It is important that the characteristics of your woodland that make it favourable for Bechstein's bats are retained, hence the following should be considered when planning any management work on the site:

- a. Retain size, structure and diversity of your woodland**
- b. Retain and where possible enhance connectivity**
- c. Retain trees with bat roost potential and buffer them from disturbance**
- d. Consider timings of work**
- e. Consider appropriate surveys**

a. Retain size, structure and diversity of your woodland

Bechstein's bat will use woodland for both roosting and foraging; so colonies of breeding females typically concentrate in woods of around 25ha or more. This may be continuous woodland in a single block, or in two or three well-connected woods.

Larger woods allow greater potential for a colony to thrive as although they may only roost within a small area at any one time it has scope to move around over time within a larger area of slowly changing woodland (Greenaway and Hill, 2004).

Bechstein's bats require a woodland that has a diverse structure with a range of tree age classes. Bechstein's bat colonies tend to be associated with a predominantly oak canopy with a dense understorey (at least 50% cover) of native species such as holly and hazel.

b. Retain and where possible enhance connectivity

Many bat species (including Bechstein's bat) use hedgerows and other linear features to move between roosting and foraging sites. Any areas of high bat potential within the woodland network should be linked, as should natural features beyond the wood.

Colonies will often move between a number of roost trees within a woodland and also roost in trees outside the wood along hedgerows or wooded waterways.

c. Retain trees with bat roost potential and buffer them from disturbance

Any trees exhibiting bat roost potential (e.g. woodpecker holes, loose bark, cavities) should be retained. Bats will move between roosts frequently throughout the summer so the choice of roosting sites is very important. Removing trees or understorey around a roost can change the environmental conditions of that roost, making it less favourable. Hence a buffer of trees and understorey should be kept around any actual or potential roosts.

Small woodlands: small numbers of bats or part of a connected woodland.

Small woodlands (<5ha)

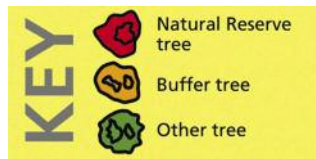
This option is for small woodlands less than five hectares in size. Small woodlands may be less likely to sustain many foraging bats, but they will provide roosts for bats that forage in the wider landscape.

In each hectare, set aside at least ten Natural Reserve trees that are most likely to contain bat roosts and which will remain standing for many years.

Natural Reserve trees may be scattered through the wood (A), clumped in groups (B) or occupy a corner of the wood (C). These trees should be loosely connected and remain linked to other woodlands by trees or hedgerows (D). They should include a range of environments, from the middle to the edge of the woodland.

Natural Reserve trees, with a buffer area of at least 1.5 times their canopy diameter, should ideally be left undisturbed to age and develop old growth habitat naturally. However, actions taken to prolong the life of a roost tree would be beneficial. Over time, the range of roosts will increase, so take care not to damage Natural Reserve trees or significantly change the conditions around them.

Maintain sufficient Natural Reserve areas and/or trees by identifying replacements well before existing trees collapse. Retain all ancient trees wherever they occur.



Taken from *Woodland Management For Bats*

Medium-large: Small numbers of bats or maternity colonies.

Medium to large woodlands

Medium and large woodlands are likely to provide foraging habitats for bats as well as roost sites.

First, set aside Natural Reserves in the woodland based on the results of your survey. Old stands and those with likely bat roosts should get priority (A). Stands in the wettest part of the woodland can be particularly attractive to both foraging and roosting bats (B).

Second, maintain links between Natural Reserve stands. Use networks of trees, particularly those following historic boundaries (C) and natural features such as streams (D) with a rich variety of tree and shrub species. Such areas are often where ancient trees of great value to bats are found.

Link Natural Reserves to natural features beyond the wood, too, such as hedgerows (E), historic parkland (F), tree-lined streams and lakes (G). During felling operations, retain and buffer your natural reserve trees (H).

Aim to have at least 5% of the woodland earmarked as a Natural Reserve. This percentage matches the minimum standard set by the UK Woodland Assurance Scheme for the area of semi-natural woodland set aside as Natural Reserve. Remember though that other trees with known bat roosts should be retained wherever they occur.



Taken from *Woodland Management For Bats*

d. Consider timings of work

Bats are particularly sensitive to disturbance between May and September (when females gather together at roosting sites to give birth to their young) and during hibernation. Any necessary felling or management work should ideally take place outside of these times between October and November or in April.

e. Consider appropriate surveys

All bats in the UK and their roosts are protected by UK and European law. It is therefore important that appropriate surveys are undertaken to assess the bat potential of a site and/or tree and the potential risk to bats that operations would pose, prior to any work being undertaken.

6. Can I do any work in my wood?

It should be possible to carry out the normal operations required in your woodland. If work is undertaken with bats in mind it is possible to prevent damage to and loss of roosts. Below are a few examples of work that may be required in your woodland and steps to be taken to consider the bats present.

Management work

Thinning/clearance/coppicing

BCT acknowledges that there may be a need to undertake some thinning, clearance or coppicing activities within the woodland. Any work should take account of the potential effect on bats and other biodiversity present in the woodland. Veteran trees and trees with woodpecker holes and other hollows and crevices should be protected; clearing or coppicing of understorey should be minimised to safeguard the conditions favoured by the bats and their insect prey; and standing and fallen deadwood retained. The inclusion of minimum intervention areas (Nature Reserve) may often be the most appropriate way to achieve this, however as Hill and Greenaway (2004) explain, a forestry timber extraction policy (such as some forms of continuous cover forestry) that promotes the slow removal of prime individual trees on a continual basis rather than clear fell will avoid sudden crashes in colony population sizes and should maintain adequate canopy cover for foraging.

Enhancement work

Creation of rides/glades

Enhancement work such as the creation of rides/glades can be beneficial for a variety of wildlife, with high species diversity being associated with woodland edges. However, consideration should be given to species such as the Bechstein's bats that are associated with closed canopy and continuous woodland and could be affected by the opening up of sections of the woodland. It is important to assess the woodland to identify areas which are of primary importance to Bechstein's bat. If possible these areas should be designated as minimum-intervention areas with a buffer around them. Creation of rides, glades or open spaces should avoid these areas and connectivity between different features encouraged.

7. How can I help to improve my woodland for Bechstein's bats?

Management	Funding
Managing grasslands within or adjacent to woodlands, with the aim of increasing ant numbers to benefit woodpeckers.	Outside the woodland boundary a grant may be available as part of a High Level Stewardship package from Natural England.
Ensuring, by new planting if necessary, that all hardwood blocks in nursery colony areas have deciduous woodland connections.	Grants are available for new woodlands that are over 0.25 ha in size and greater than 15 metres width.
Creating minimum-intervention strips along all watercourses within the woodlands. This should include all the small floodplains and steep banks along the woodland streams. If you have invasive non-natives species growing in this strip this will need discussion with your FC Woodland Officer.	No funding is currently available for minimum-intervention. Some funding available for control of invasive non-native plants such as Rhododendron.
Consider zoning the most important areas as minimum-intervention with the remaining areas utilising a method of low impact management such as continuous cover forestry (CCF) where only by selected felling and on a slow continuing basis cutting only the best sound mature timber at appropriate times of the year.	No funding for minimum-intervention areas but it is a requirement of the UK Forestry Standard. Funds are available for setting up CCF systems.
Monitoring stands of trees used as nest sites by woodpeckers and leaving these stands as minimum-intervention until their natural decay.	Not always funded unless part of required monitoring through a management grant.
Leaving not only hollow trees but the immediate stand of trees around them together with the understorey during any felling operations.	No funding currently available although management of veteran trees might apply.

8. Contacts for grants

Bechstein's bat is a very rare UK mammal and as such the discovery of Bechstein's bat in your woodland is extremely important. The presence of rare species such as Bechstein's bat can add significance to a landowner's application for grants.

Details of Forestry Commission Woodland Grants can be found here: www.forestry.gov.uk/ewgs with further guidance here: [www.forestry.gov.uk/pdf/ewgs5-guide.pdf/\\$FILE/ewgs5-guide.pdf](http://www.forestry.gov.uk/pdf/ewgs5-guide.pdf/$FILE/ewgs5-guide.pdf)

To get in touch with the regional offices for the South East and South West for more specific information on targeting grants according to species:

South East – www.forestry.gov.uk/forestry/INFD-6NZE5XSE

South West – www.forestry.gov.uk/southwestengland

Details of Natural England Higher Level Stewardship Schemes can be found here: www.naturalengland.org.uk/ourwork/farming/funding/es/hls/default.aspx

It is important to note that in order to receive grant funding you will need to register your land.

9. Further reading & references

Further reading

- The Woodland Trust 2009. *Ancient Woods: A guide for woodland owners and managers.*
- Forestry Commission 2005. *Woodland management for bats.*
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