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Surveying for bats in trees and woodland – Guide

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This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 58, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 October 2015. It was prepared by Technical Committee BDY/1, *Biodiversity management*. A list of organizations represented on this committee can be obtained on request to its secretary.

Use of this document

As a guide, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification or a code of practice and claims of compliance cannot be made to it.

Presentational conventions

The guidance in this standard is presented in roman (i.e. upright) type. Any recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

0 Introduction

0.1 General

Other publications that include the subject of surveying for bats in trees and woodland have been produced and these are primarily aimed at ecological consultants involved in the planning process for development, or for arboriculturists undertaking tree work. This British Standard brings together, into one place and for the first time, all the information about surveying for bats in trees and woodland. In doing so it updates the information with evolving knowledge about how bats use trees and woodland, and what emerging techniques there are for surveying. It also addresses some identified information gaps.

This British Standard gives guidance on surveying to those directly involved in the management of trees and woodland (urban and rural), enabling those professionals to attain the necessary understanding of the surveys and checks that they can do themselves, while identifying the occasions when the services of a bat specialist might be needed. As such it is of assistance for those carrying out sustainable forest management under the *UK Forestry Standard* [1] (see Annex A for information on the UK Forestry Standard). It also gives guidance to bat specialists where more advanced surveys are required. The aim of this British Standard is to aid clarity by bringing together recommendations on all aspects of surveying, for all audiences, and matrices are included to ensure that the relevant information is accessed with ease (see Figure 1 and Figure 2).

This British Standard acknowledges and maintains the variety of approaches required to fit the differing needs that range from individual garden trees through to loss of woodland as a result of development and ongoing forestry management.

The following are examples of some of the reasons that bat surveys might be required:

- development;
- health and safety considerations;
- forestry operations;
- tree risk management and proposed tree work;
- conservation management; and
- site designation.

In planning any survey it is important to reflect on the reasons for carrying it out to ensure the survey is fit for purpose.

0.2 The matrices

This British Standard is aimed at those who carry out surveys for bats, whether in individual trees, small copses, woodland or forests. This could relate to trees in gardens or on development sites, within a farmed landscape or in parkland. For woodland, this could relate to management for forestry purposes or conservation.

Bat surveys might be required to identify potential roosts in trees or to identify the value of a group of trees or woodland for bat foraging or commuting potential. Figure 1 covers roosts and Figure 2 covers foraging and commuting. Within the sections indicated there are links to other points of common interest or reference.

Figure 1 Matrix: roosts

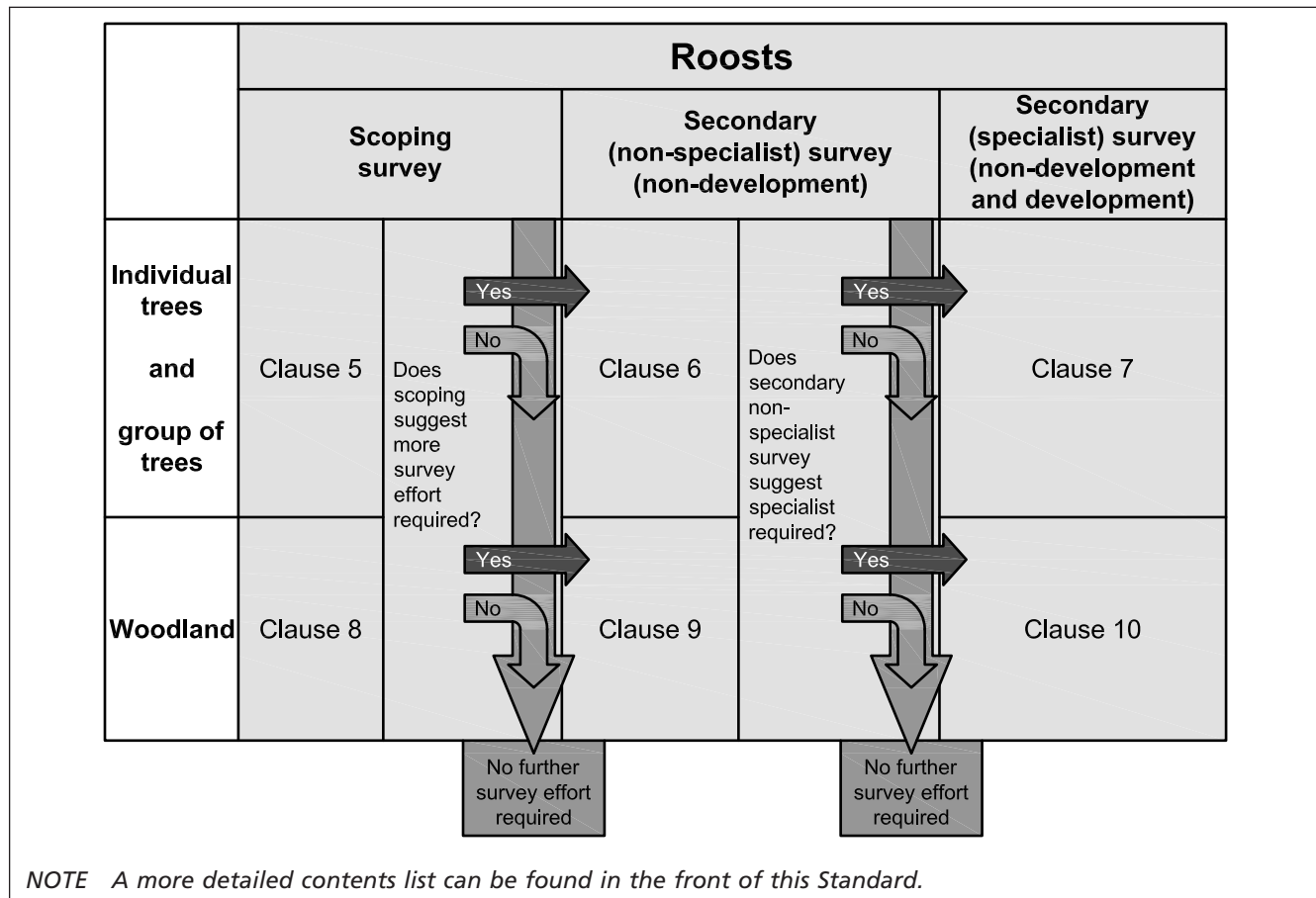
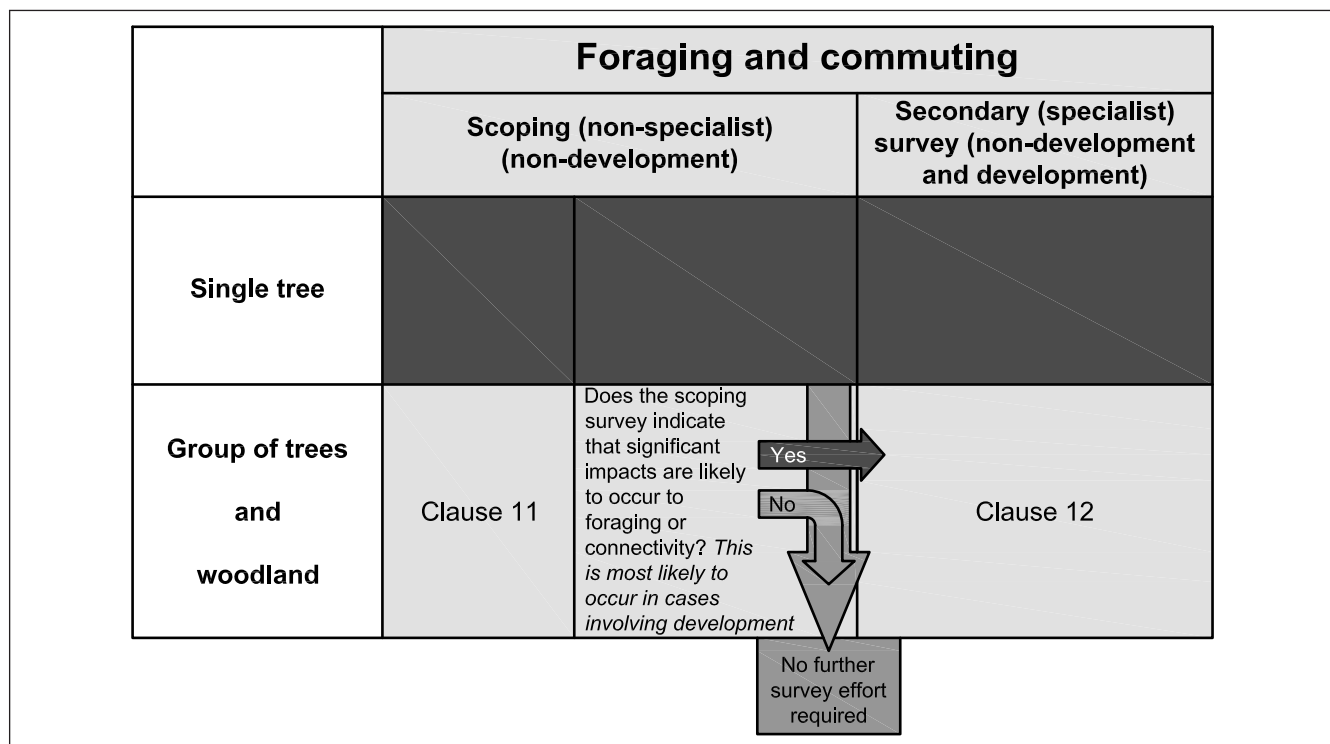


Figure 2 Matrix: foraging and commuting



Section 1: General

1 Scope

This British Standard gives guidance on surveying for bats in individual trees, groups of trees and in woodland. This includes scoping, roost and activity surveys, and record keeping.

This British Standard applies to the following:

- forestry and woodland managers and operatives, including woodland owners, managers, agents, foresters, contractors, conservation bodies and woodland advisers;
- arboriculturists, in particular tree work contractors, but also arboricultural consultants and local authority tree officers;
- planning officers, local government ecologists and other government departments whose functions might bring them into contact with bats in trees or woodland (whether directly or indirectly);
- developers and associated professions, e.g. construction companies, demolition companies and landscape architects;
- ecological consultants, particularly those who have the potential to work on the specialist aspect of surveying for bats in trees;
- utility companies, infrastructure constructors and maintainers, engineers; and
- flood risk managers.

This British Standard does not include guidance relating to bat surveys in buildings, underground sites or any habitat other than woodland or trees. It also does not give any guidance about the outcomes of the surveys undertaken, such as how woodland is managed or mitigation measures.

2 Normative references

The following document, in whole or in part, is normatively referenced in this document and is indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 42020, *Biodiversity – Code of practice for planning and development*

3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

3.1 activity survey

assessment undertaken by a bat specialist to establish the extent to which an area is used by bats where additional information is required to supplement the findings of the secondary habitat assessment

NOTE An activity survey might be required when proposed work has the potential for high impact to bats, particularly if mitigation or compensation is required.

3.2 ancient woodland

woodland that has existed continuously since 1600 or before in England, Wales and Northern Ireland (or 1750 in Scotland)

3.3 arboriculturist

person who, through relevant education, training or experience, has gained recognized skills or knowledge in the care and management of trees

NOTE In this British Standard the term “arboriculturist” includes professional tree work contractors and those involved in specifying tree management.

3.4 autumn swarming

bats circling at the entrance to underground sites, tunnels or other structures between August and November where they gather from some distance for the likely purpose of mating or finding a hibernation site

NOTE 1 Autumn swarming mostly occurs with the myotis species.

NOTE 2 Bats might be active at an autumn swarming site for several hours after dusk.

3.5 bat colony

sum of bats that form a social group including males, females and immature bats

NOTE The colony might utilize a number of roosts for a range of purposes throughout the annual cycle; for example, maternity roost/nursery roost (see 3.21) and hibernation site (see 3.17).

3.6 bat population

total number of bats of a species, in either a local, regional or national context

NOTE Population figures are approximate extrapolations from monitoring data or other methods commonly used to arrive at species population figures and are usually applied at country level.

3.7 bat specialist

person who is an experienced and/or licensed bat worker

NOTE See licensed bat worker (see 3.20) for cases where licences might be required.

3.8 commuting

bats travelling through the landscape

NOTE Often the routes used for commuting create feeding opportunities and convey some level of protection from predators.

3.9 connectivity

predominantly natural features that allow bats to travel through the landscape between resource patches

3.10 core sustenance zone

area surrounding a bat roost that is of significance for foraging

NOTE This varies in size depending on the species of bat (see Table 2¹⁾).

3.11 dawn swarming

bats circling at around sunrise outside a roost entrance before entering

3.12 desk study

review of available existing information

¹⁾ Table 2 appears at the end of Section 1.

3.13 European protected species (EPS)

specific animals and plants which are protected under the European Habitats Directive 1992 [2]

NOTE 1 All species of bat resident in Britain are listed as European protected species.

NOTE 2 The European Habitats Directive 1992 [2] is as transposed to the UK Habitat Regulations 2010 [3].

3.14 experienced bat worker

individual with practical/professional experience of bat ecology and survey techniques but not necessarily licensed

NOTE See licensed bat worker (see 3.20) for cases where licences might be required.

3.15 foraging

bats feeding on insects and other invertebrates

NOTE This is most often carried out while flying but can involve skimming the water surface, flying to catch insects from a perched position on a tree and picking insects off surfaces such as leaves.

3.16 forester

person who, through relevant education, training or experience, has gained recognized skills or knowledge in the care and management of forests and woodland

3.17 hibernation site

winter roost where bats enter a deep prolonged sleep to save energy (torpor)

3.18 individual tree

tree growing alone which is not obviously part of a wider tree group or woodland

3.19 invasive survey techniques

surveys which involve handling bats, inserting items into a potential roost feature (see 3.23) or the use of techniques such as trapping bats using harp traps, mist nets or handheld nets, or an acoustic lure, or radio tracking

3.20 licensed bat worker

individual holding a licence issued by the statutory nature conservation organization (SNCO) for survey activities that might otherwise be in violation of wildlife legislation

NOTE Examples of licensed survey activities include disturbance of bats in their roosts, using invasive survey techniques, or capturing and handling bats.

3.21 maternity roost/nursery roost

roosts where mothers give birth to and care for their young

3.22 non-specialist

person who is not an experienced and/or licensed bat worker (see 3.7)

3.23 potential roost feature (PRF)

feature on or in a tree which has the potential to be a bat roost (see 5.2)

3.24 roost

resting place of a bat

3.25 scoping survey

preliminary assessment which may be undertaken by a non-specialist with suitable training to establish the suitability of a habitat to support bats or PRFs in trees, or to establish the likely importance of groups of trees or woodland for commuting or foraging by bats

3.26 secondary (non-specialist) survey for roosts

assessment of PRFs identified in the scoping survey to establish as far as possible the suitability of the feature for use by bats as a roost

NOTE This work is likely to require an aerial assessment and may be undertaken by a non-specialist with suitable training.

3.27 secondary (non-specialist) survey for foraging and commuting

assessment undertaken by a non-specialist (see 3.22) to establish the likely importance of tree group(s) or woodland for bat foraging and commuting, and the potential impact that removal of the trees would have on bat populations present within the area

3.28 semi-natural woodland

area composed of locally native trees and shrubs which have generally derived from natural regeneration within the last few centuries

3.29 soft edge

gradual transition between habitat types

NOTE An example of this is the transition from high woodland to scrub and then to grassland, rather than the abrupt change from high woodland to grazed pasture.

3.30 specialist bat roost assessment

assessment of PRFs undertaken by a bat specialist (see 3.7)

NOTE This assessment is required when the secondary (non-specialist) survey for roosts (see 3.26) is unable to reasonably rule out PRFs as roosts and when work is still intended on the tree(s).

3.31 secondary (specialist) survey for foraging and commuting

assessment undertaken by a bat specialist to assess the potential value of tree group(s) or woodland for their foraging and commuting potential by bats

NOTE 1 This is required where the non-specialist survey for foraging and commuting has highlighted a potential impact on bat populations using the tree group(s) or woodland or where it has not been possible for the non-specialist to assess the risk.

NOTE 2 The secondary (specialist) survey for foraging and commuting ascertains the degree of impact that planned work would have.

3.32 statutory nature conservation organization (SNCO)

statutory licensing authority for each country in the United Kingdom

NOTE The SNCOs are Natural England, Natural Resources Wales, the Northern Ireland Environment Agency and Scottish Natural Heritage.

3.33 tree group

more than one tree with branch tips touching or close to touching

NOTE The term tree group includes small copses, and linear hedgerow features which might form connections between tree groups or woodland.

3.34 woodland/forest

area of land in excess of 1 000 m² under stands of trees with a canopy cover of at least 20% (25% in Northern Ireland) of the overall area

NOTE This covers land dominated by native or non-native trees and includes commercial forestry plantations. The minimum area included in the Forestry Commission woodland inventory is 1 000 m².

4 Background knowledge and considerations for bats in trees and woodland

4.1 General

Before identifying survey requirements for bats in trees and woodland, the surveyor should ensure they have an understanding of the bat species found in the UK, their general habitat requirements and the more specific needs of some species, given in Table 2²⁾.

Surveyors looking at trees and woodland should undertake a brief, preliminary assessment to ascertain whether the site has the potential to support roosting, commuting and foraging bats. This can involve a review of aerial photographs or woodland plans to place the feature (individual trees or woodland) in the context of the surrounding landscape. This review aims to identify the habitat associations listed in Table 2 that would make the area more suitable for bats either for roosts or for foraging. This helps to inform decisions regarding any potential impacts that works could have, thereby influencing survey effort.

The age of the tree(s) should be taken into account at this stage. Although age cannot accurately be used to predict the presence or absence of bats in the majority of situations, very young plantations can often be ruled out at this stage for roosting bats as they do not support the features (see 5.2) needed for roosting, although they might still be used for foraging or commuting.

4.2 A bat's year

Bats need different roosting conditions at different times of the year and their level of activity varies too. Table 1 gives an outline of these changes over the seasons.

Table 1 Seasonal bat activity

Season	Activity
Spring	Becoming more active, feeding and gathering at summer roosts in late spring.
Summer	Maternity groups of females form. Mothers give birth with the single young being completely dependent for the first weeks of life.
Autumn	Building up fat reserves for the winter. Social gatherings close to winter sites. Mating.
Winter	Hibernating in cool places where the temperature is stable and humidity is high. Small species occasionally feed if the temperature is high enough to support insect activity.

4.3 Wider habitats and factors affecting suitability for bats

Wider habitat assessment should involve the identification of additional potential foraging areas surrounding the survey site. The radius depends upon the potential impact of the proposed work and the species within the locale likely to be affected. Table 2 gives an indication of the areas to be considered. The assessment should take account of any PRFs. Also, the connectivity between the potential roost site and the foraging ground should be assessed.

²⁾ Table 2 appears at the end of Section 1.

NOTE 1 On larger sites, the remainder of the woodland (i.e. the area outside the scope of works) might constitute the foraging grounds of resident bats and, as such, large woodlands isolated from other foraging features are not automatically discounted from a further survey.

When assessing an area for bats, surveyors should take the following wider habitat considerations into account:

- a) the surrounding land uses and their potential to support invertebrate prey;
- b) features with the potential to concentrate and support an abundance of invertebrate prey (e.g. wetlands, water bodies, rivers, streams and manure piles);
- c) proximity to other features that could support roosting bats, especially those that could support bats at other times of year (given that bats roost in different locations during different seasons);
- d) barriers to bat movements (e.g. motorways) and the levels of disturbance through human activities (e.g. increased noise and light levels); and

NOTE 2 Several bat species actively forage in suburban areas and roost in buildings.

- e) connectivity between potential roosts and surrounding foraging grounds which is particularly important for slow flying species. This could include linear features such as hedgerows, lines of trees or streams. It is a combination of these attributes that make a site more suitable for roosting bats. However, an isolated tree in parkland might still support fast flying species if there are adequate foraging grounds nearby. A wider habitat assessment can only inform assumptions about the likelihood of an area supporting bats. In situations where a tree with the potential to support bats is identified, it is unlikely that a wider habitat assessment alone would be sufficient to conclude bat absence.

4.4 Supporting an abundance of insects

The foraging habits of different bat species vary, but there is a general requirement for a steady supply of insects during their active period (April to October). Surveyors should take note of the features in woodland most likely to support an abundant insect population such as the following:

- a) native trees, shrub and ground flora layers;
- b) a diverse structure;
- c) dead wood (fallen and standing);
- d) water (rivers, streams, ponds, ditches and wet/damp woodland); and
- e) rides, tracks and clearings with a soft edge (see 3.29).

4.5 Structural suitability

Different bat species have adapted to feed in different types of woodland surroundings. When surveying woodland, and for the purposes of their preliminary assessment (see 4.1), surveyors should take note of the following distinctions.

- a) Cluttered woodland interior is used by species of bat that are relatively slow flying and have a highly manoeuvrable flight that allows them to hunt by gleaning insects off the surface of vegetation, both in the understory and in the tree canopy.
- b) Open areas and woodland edges are used by species of bat that have a

faster flight and catch their insects by hawking them as they fly along tracks, rides or woodland edge or in the more open areas of glades and clearings.

Having a mosaic of habitats that include cluttered interiors, soft edges and open areas is beneficial in providing structural diversity and an abundance of insects.

4.6 Proximity of roosts

If there are known roosts in nearby trees, woodland or other structures, this increases the likelihood that the area is used for foraging by bats. Sources of bat records can be found in Annex B. Table 2 gives more information on the types of woodland and roost that are used by different species.

4.7 A summary of features that are of value to bats

When considering the features of importance to bats, surveyors should take into account the following:

- a) features in trees which could support roosting bats (see Table 2);

NOTE Any tree, regardless of its age or size, has the potential to contain a bat roost if it supports features given in Table 2. However, young trees with small stem diameters seldom contain PRFs.

- b) features that could support foraging bats (e.g. vegetation and water bodies that concentrate invertebrate activity in a certain area or support an abundant invertebrate population);
- c) features that could connect potential roost sites to potential foraging sites (e.g. possible commuting routes provided by hedgerows, watercourses and lines of trees); and
- d) other non-tree features that could support roosting bats, which could include buildings close to or within the site and caves/mines/bridges close to the site (see Table 2 for roosting preferences and Annex C for further information on such roosts).

A combination of these factors might influence the suitability of a site for bats and should therefore inform any survey effort and the type of survey that is undertaken at each location.

4.8 Woodland use by bats

4.8.1 General

All species of bat which breed in Britain are protected under the UK Habitat Regulations 2010 [3] (see Annex D for information about these regulations). All bat species use woodland and woodland edge habitats at least during part of the year, whether to forage, roost, breed or hibernate. Anyone surveying woodland for bats should take into account the ways in which bat species are likely to make use of woodland. Additional sources of information on bats and woodland are listed in Annex E.

It is possible to break down the use by bat species into two general groupings: bats that require woodland interior (typically with a cluttered understory and often in areas of minimum intervention); and bats that utilize woodland edges, tracks, rides and clearings.

Examples of the bat species using cluttered understory and woodland interior are:

- a) Bechstein's bat (see 4.8.2);
- b) barbastelle (see 4.8.3);
- c) brown long-eared bat;

- d) lesser horseshoe bat; and
- e) Alcaethoe bat.

The recent discovery of the presence of Alcaethoe bats in the UK might highlight the importance of woodland to this species and additional survey methods might be required in future.

Examples of the bat species using woodland edges, tracks, rides and clearings are:

- 1) noctule;
- 2) common pipistrelle;
- 3) soprano pipistrelle;
- 4) serotine; and
- 5) greater horseshoe bat.

There are four species of bat present in England and Wales that are listed in Annex II of the European Habitats Directive 1992 [2] to highlight their conservation significance and this enables the designation of Special Areas of Conservation. These are the greater horseshoe bat, lesser horseshoe bat, Bechstein's bat and barbastelle. Three of these four species are particularly associated with woodland.

The lesser horseshoe bat does not roost in trees (although it can roost in built structures or mines and caves within woodland) but relies on woodland as an important place to forage all year round. Barbastelles and Bechstein's bats roost almost exclusively in trees, and Bechstein's bats in particular are woodland obligates as their whole life cycle, including roosting and foraging, are directly linked to suitable woodland.

4.8.2 Bechstein's bat

While many bat species forage in the wider landscape as well as within woodland, Bechstein's bats forage only in woodland and are a species that specializes in feeding in cluttered areas. They prefer large woodlands of 40 Ha to 50 Ha but are found using woodlands of over 25 Ha. This might be continuous woodland in a single block, or in two, three or more well connected woodlands. However, smaller unconnected ancient (see 3.2) semi-natural woodlands (see 3.28) are known to be utilized.

A colony of Bechstein's bats might only utilize roosts within a small area of woodland at any one time, however, the colony is more likely to thrive in a large woodland where there is likely to be a better long-term availability of roosts in a slowly changing woodland, and where the woodland is better able to support foraging.

Bechstein's bats require woodland that has a diverse structure with a range of tree age classes. Bechstein's bat colonies in the UK tend to be associated with a predominantly oak and ash canopy with a dense understory (at least 50% cover) of native species such as holly, hazel and hawthorn. Bechstein's bats can also roost in suitable trees in well connected tree lines and hedges.

4.8.3 Barbastelle

Proximity to rivers and woodland streams appears to be a factor in the choice of woodland by barbastelles, with unmanaged and quieter areas of the woodland preferred.

A high degree of canopy closure can be important in allowing the bats to emerge earlier after dusk and feed within the woodland with reduced threat from predation. Barbastelles continue to forage within woodland during the winter months when temperatures inside the wood exceed around 8 °C to 10 °C, which is often higher than the temperature in the surrounding countryside.

4.8.4 **Commuting and connectivity**

Surveyors should take into account the importance that connectivity (see 3.9) has for bat species when assessing the area in question.

Most bat species, even those that feed in more open areas, prefer to move through the landscape using features such as hedgerows, rivers and woodland. This protects the bats from predators, as well as providing a sheltered environment.

A lack of ideal connectivity does not immediately indicate a lack of bats utilizing the woodland; it only reduces the likelihood of bats being present and the number of species likely to use such woodland. For instance, common pipistrelles roosting in woodland in the North York Moors utilize moorland drainage ditches as cover to commute from the woodland to adjacent foraging features, and noctules commonly cross open ground to get to foraging sites.

Table 2 Summary of distribution and habitat associations of British bats

Species	Distribution	Habitat associations and requirements	Core sustenance zone sizes ^{A)} km
Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	Common throughout the UK (the most common UK species).	Roosts in buildings, trees and bat boxes. Often found in cracks and crevices. Exploits a wide range of foraging habitats including those associated with woodland, watercourses, grassland and built-up areas.	2 Poor data to support
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	Common throughout the UK (second most common UK species).	Roosts in buildings, trees and bat boxes. Often found in crevices. Exploits a wide range of foraging habitats but is more often associated with water and riparian woodland.	3 Good data to support
Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>)	Distribution is unclear. Present throughout England but with a patchy distribution and a proportion of the population that appears to be migratory. There appears to be a strong presence in east England. It has been recorded in Wales.	Roosts in buildings, trees and bat boxes. Found in tree hollows and edges and rides.	3 Poor data to support
Barbastelle (<i>Barbastella barbastellus</i>)	Recorded south of a line from North Wales to the Wash. Not recorded in Scotland or Ireland.	Roosts in trees and can also roost in buildings. Summer roosts almost exclusively in trees, often within ancient woodland; either behind loose bark or in vertical/horizontal cracks and broken branches (maternity roosts/nursery roosts). Roosts move frequently, but are loyal to a general area. Hollow and cracked trunks used as winter roosts. Forages along woodland edge and rides and within woodland when there are cold or poor weather conditions. Uses hedges, streams and rivers for commuting. This species often uses very low intensity echolocation calls and has a relatively fast flight. This can make it difficult to detect during surveys.	6 Moderate data to support

Table 2 Summary of distribution and habitat associations of British bats

Species	Distribution	Habitat associations and requirements	Core sustenance zone sizes ^{A)} km
Bechstein's bat (<i>Myotis bechsteinii</i>)	Found in southern England from Kent to Devon with records extending up to Herefordshire and Buckinghamshire. A small number have been recorded in Wales.	Roosts in holes and cracks in mature trees. Uses bat boxes and occasionally found in buildings. Usually associated with broadleaved woodland containing mature, over-mature and veteran trees, particularly oak. Nursery colonies favour old woodpecker holes. Tree holes are also used as hibernation sites. Forages in areas of closed-canopy woodland close to water, along overgrown hedgerows and near tree lines. Within woodland, this species spends a lot of its time high up in the tree canopy. This can make it difficult to detect during activity surveys.	3 Moderate data to support
Leisler's bat (<i>Nyctalus leisleri</i>)	Widespread and common in Ireland. Rare and widespread in England (significant populations in central and southern counties) and southern Scotland. Few records from Wales.	Roosts in trees, bat boxes and buildings. Forms dense clusters in tree holes and crevices. Can be found foraging in open habitats (often over water or pasture). Flies high and far and does not rely on linear features.	3 Moderate data to support
Noctule (<i>Nyctalus noctula</i>)	Found throughout England and Wales and in southern Scotland. Not recorded in Ireland.	Roosts in trees, bat boxes and rarely in buildings. Often found in tree holes, bats can form clusters in hollow trees. Forages over pasture, parkland and deciduous woodland. Flies high and far and does not rely on linear features.	4 Poor data to support
Serotine (<i>Eptesicus serotinus</i>)	Widespread but scarce in southern Britain, restricted to the south and south east of England. Occasional records in Wales.	Roosts in buildings and rarely roosts in trees but has been found in tree hollows. Forages mainly over pasture, parkland, woodland and suburban gardens.	4 Poor data to support
Brown long-eared bat (<i>Plecotus auritus</i>)	Common throughout UK wherever there is suitable woodland (distribution appears to reflect tree cover in general pattern).	Roosts in buildings, trees and bat boxes year round. Strongly associated with tree cover, prefers woodland with cluttered understorey, particularly deciduous. Also forages in mixed woodland edge and among conifers. ^{B)}	3 Poor data to support
Grey long-eared bat (<i>Plecotus austriacus</i>)	A rare species found in a few areas of southern England and on the Isle of Wight.	Roosts in buildings and caves. Not known to roost in trees. Forages in more open areas than the brown long-eared bat, over grassland and woodland edges.	3 Moderate data to support

Table 2 Summary of distribution and habitat associations of British bats

Species	Distribution	Habitat associations and requirements	Core sustenance zone sizes ^(A) km
Natterer's bat (<i>Myotis nattereri</i>)	Found throughout the UK (except the far north of Scotland) where there is suitable woodland.	Generally, summer roosts within crevices and cavities in trees. Also roosts in buildings. Not commonly recorded as hibernating in trees. Forages in tree canopies or close to foliage and by the edge of water.	4 Good data to support
Daubenton's bat (<i>Myotis daubentonii</i>)	Found throughout the UK.	Roosts in trees, buildings, bridges and caves. Known to roost in tree holes with noctules. Forages mainly close to the surface of slow-moving or calm water. Also forages in trees or along woodland rides, especially if these are associated with water.	2 Poor data to support
Whiskered bat (<i>Myotis mystacinus</i>)	Found throughout England, Wales, southern Scotland and parts of Northern Ireland.	Roosts mainly in buildings, but some summer roosts have been found in trees (no known preference for features). Not known to hibernate in trees. Forages in a wide range of habitats including woodland, parklands, flowing water and suburban gardens.	1 Poor data to support
Brandt's bat (<i>Myotis brandtii</i>)	Found throughout England, Wales, southern Scotland and parts of Northern Ireland.	Mainly roosts in buildings. However, roosts have been recorded in trees, bridges and bat boxes. Forage in woodland and close to water bodies.	1 Poor data to support
Alcathoe bat (<i>Myotis alcathoe</i>)	Confirmed as a UK resident in 2010. Distribution unknown but includes Yorkshire, Surrey and Sussex.	From the limited knowledge available it is a tree roosting species that also relies on woodland for foraging.	1 Poor data to support
Greater horseshoe bat (<i>Rhinolophus ferrumequinum</i>)	Found in western England and Wales.	Maternity roosts/nursery roosts normally found in sun-warmed attics of large buildings or underground sites. Hibernates in underground sites. Not known to roost in trees. Will use branches as perches from which to hunt. In spring, predominantly forages over cattle-grazed pasture and in ancient woodland or semi-natural woodland. During summer, forages mainly over hay meadows and silage fields. Hunts mainly along linear features, such as substantial hedgerows and woodland edge.	3 Moderate data to support
Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>)	South west England, West Midlands, Wales and western Ireland.	Roosts in disused or undisturbed sections of buildings, caves and mines. Usually in areas of extensive deciduous woodland, well connected with tree lines and hedgerows. Forages in deciduous woodland, riparian trees, and over pasture, along hedgerows and lines of trees.	2 Good data to support