Introduction

Hedges are more than just lines of shrubs. They usually have some sort of herbaceous growth at or near the base and many contain emergent trees. They may be set on banks and can have ditches along one or both sides. The best hedges have wide margins, often referred to as buffer strips or headlands, which are managed differently from the arable or grass crop.

These five different components: mature/emergent trees, shrub layer, base/bank, ditch and margins, need to be thought about when deciding how to manage a hedge.

There are 18 bat species in the UK, more than a quarter of our terrestrial mammals. All these bats benefit from hedges for roosting, foraging or navigation. Almost all use mature trees, some relying on them year round, others for just part of the year. Since they mimic woodlands and especially woodland edges, preferred habitats for most species, hedges are much used by bats in agricultural landscapes. Indeed, some bats are dependent on them, if not for food or roosts, then as flyways for moving through the countryside.

A Good Hedge for Bats

A good hedge for bats is one that has tall mature trees, a diverse shrub layer and a wide field margin, and is continuous with other hedges or habitats like woodlands, rivers and ponds, providing continuity of habitat. The presence of a ditch will enhance the value of the hedge.

Tall mature trees like oak, beech and ash can be used as a roost (at any time in the year), as a route-marker for bats flying through the landscape at night and attract large numbers of flying invertebrates, which bats feed on.

Hedge Components used by Bats

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<th>Component</th>
<th>Used by Bats</th>
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<td>Mature/Emergent Trees</td>
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<td>Shrub Layer</td>
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Barbastelle

Barbastelle bats (*Barbastella barbastellus*) feed along hedges in summer. They are specialist moth predators and therefore have to switch choice of foraging habitat throughout the year in order to target those places where moths are most abundant. In the winter this tends to be within dense woodland, riverine habitats are used in the spring, and hedges and meadows during the summer. Barbastelle’s are predominantly tree-dwelling species associated with woodland with a high proportion of standing dead wood or storm damaged trees. They are rare in Great Britain.

Brown long-eared

Brown long-eared bats (*Plecotus auritus*) feed along hedges and use them as fly-ways. They rarely cross open areas so navigate along hedges when they move between roosts and foraging sites. They occasionally roost in trees, but mostly use buildings.

Noctule

Noctule bats (*Nyctalus noctula*) roost and breed in tree holes (old woodpecker holes), including those in hedges. They also use hedges as feeding stations. This species flies high over hedges and pastures.

Natterer’s

Mature field margin trees make up a major proportion of the trees used as roosts by Natterer’s bats (*Myotis nattereri*). Natterer’s usually forage around trees, woodland edges and other vegetation, often gleaning insects from the surface of the foliage. They mainly eat small flies, small moths, caddisflies, lacewings, beetles and spiders. Loss of convenient night roosts in outgrown hedges could be detrimental to the survival of

Common and Soprano Pipistrelle

Common and Soprano pipistrelle bats (*Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*) feed in a wide range of habitats including woodland, hedges, grassland, farmland, suburban and also urban areas. They can roost in tree holes and can also hibernate in cracks/splits in trees. These two species also prefer roosts with linear vegetation, such as hedges nearby, which may aid navigation or feeding, or possibly provide protection from predators. Soprano pipistrelle roosts are often situated close to water and hedges, as these habitats are more likely to have suitable prey species such as Ceratopogonidae (biting midges).

Bechstein’s

Bechstein’s bat (*Myotis bechsteinii*) is a tree-dwelling species, associated with old growth woodland. They use linear features such as hedges to navigate from their roosts to their feeding sites. During summer females rarely travel more than 1km from their day roosts. This species mostly roosts in natural holes, like old woodpecker holes, in mature trees and sometimes in bat boxes. Bechstein's bat is one of Great Britain’s rarest bats.
Key Management Tips

The value of hedges for bats can be improved by:

- Retaining and maintaining older trees for bats like Brown long-eared and Noctule bats. Any hedge tree can be used as a bat roost, as long as it provides shelter, for example, in the form of splits, cracks, holes and cavities in the trunk and branches, loose bark and ivy cover.

- Creating the necessary diversity of structure, and keeping hedges in good health, following the management cycle*, as presented in the accompanying Complete Hedge Good Management Guide.

- Erecting bat boxes in hedge trees, where appropriate.

- Minimising the use of pesticide around hedges and associated ditches, as this affects the invertebrates on which the bats feed.

- Increasing habitat connectivity between roosts and foraging areas so decreasing habitat fragmentation. This can be achieved by planting new hedges and gapping up existing hedges.

Ecology of Bats

British bats feed mainly on insects (pipistrelles can eat up to 3,000 midges a night) and are dependent on the presence of suitable roost sites such as tree holes, caves, building and bridges. They also need good quality feeding habitat like woodlands, hedges and rivers. Foraging activity and distance moved from roosts varies according to temperature, weather, species, sex and reproductive state. Both roosts and feeding sites are under constant pressure from development. This has affected all of our bat species, with some managing to adapt to this changing environment, while others have not and as a result are now very rare.

Bats use different roosts throughout their yearly cycle. From October to March bats normally hibernate. From March to May they are active and feeding and in May female bats form large maternity colonies. Between June and July they give birth to one young. In August and September the mothers leave the nursery roosts to mate, followed by the young a little later. From October bats start to look for winter hibernating sites again.

Bat species that use trees to roost are: Common pipistrelle, Soprano pipistrelle, Nathusius’ pipistrelle (Pipistrellus nathusii), Brown long-eared bat, Whiskered (Myotis mystacinus), Natterer’s, Daubenton’s (Myotis daubentonii), Noctule, Brandt’s (Myotis brandtii), Leisler’s (Nyctalus leisleri), Barbastelle and Bechstein’s, although all bat species at some stage in their life cycle will use trees.

Bats use different parts of the tree for different reasons, depending on the time of year and temperature. In summer bats use the higher canopy sites to give birth in warmer temperatures. Breeding females cluster together to retain body heat and gain ‘free’ heat from tree roosts in two ways: by selecting naturally warm sites, such as sheltered trees receiving some sunshine during the day; and selecting highly insulated sites, such as a tree hole with a small space and thick wood. In winter, bats may move deeper and lower into the tree to hibernate.

All bats are protected under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 (as amended). Seven bat species are also Priority species under Section 41 (England) and Section 42 (Wales) of the Natural Environment and Rural Communities (NERC) Act (2006), the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment Act (Northern Ireland) 2011. These are: Greater Horseshoe (Rhinolophus ferrumequinum), Lesser horseshoe (Rhinolophus hipposideros), Brown long-eared, Bechstein’s, Barbastelle, Soprano pipistrelle and Noctule bat.

Further information

Bat Conservation Trust — www.bats.org