Muntjac © Andrew Harrington

Woodland & scrub

Woodland has the potential to be one of the richest lowland habitats for wildlife. From the flowers that carpet woodlands in spring, to mosses, fungi, and invertebrates that, in turn, provide food for many mammals and birds, woodlands are home to an immense number of species. They are especially important in the wider landscape, and much farmland wildlife will use woodlands or scrub at certain times of year for nesting or foraging. The trees themselves can provide timber, shelter, or amenity value.

Key points

- **Farm woodlands and scrub have great potential for wildlife**
- **They provide vital food, nesting sites and shelter for wildlife in the farmed landscape**
- **Encouraging native tree and scrub species, and managing for a range of structures and varying light levels will result in a rich diversity of wildlife**

Woodland & scrub

Primroses are one of the most well known woodland flowers, providing important early nectar for butterflies and bees
© Chris Gardiner/Natural England

Woodlands can support a great diversity of plants and animals. There are around fifty native tree species in the UK and a number of non-native trees (often planted). The range of species present defines the type of woodland and, to an extent, the biodiversity it can support. Ancient and native woodlands are especially important for wildlife, but many are now small in size (almost half of the ancient woodlands in England are between 2 and 5ha) and frequently isolated from other woodlands and semi-natural habitats. Woodland species are often not very mobile, and so are particularly vulnerable to impacts from surrounding land use and the effects of climate change.

Woodlands can have a diverse and species-rich vegetation. Shrubs, such as hazel, hawthorn and holly, often provide an important understorey vegetation, while mosses, ferns and wildflowers appear throughout the year. Among the most characteristic and well known are flowers such as bluebell, primrose, wood anemone and snowdrop, which carpet the woodland floor in spring and provide early sources of nectar for pollinators, such as bumblebees.

Noctule bats use woodland for roosting and feeding © wolf359 CC BY NC SA 2.0

Woodland vegetation supports a complex community of invertebrates, birds and mammals. Most UK mammals use woodland habitats for at least some of their time. Some small mammals, such as wood mice, may move into woods from surrounding farmland at times when food or shelter in the fields is scarce. Dormice are much more dependent on woodland, requiring species-rich, structurally diverse woods with good canopy cover. Nearly all bat species found in the UK spend some of their time in woodland, and some are restricted to ancient woodland.

Tawny owls are found in woodland
© Paul Buxton CC BY NC ND 2.0

Broadleaved woods have an abundant birdlife, including resident species such as tree creepers, great tits, nuthatches and greater and lesser spotted woodpeckers. Spring and summer visitors to woodland include chiffchaffs and blackcaps, and coppiced woods are especially important for nightingales. The nocturnal tawny owl is a woodland resident, and several species of raptor will use woodland for nesting.

The threatened pearl-bordered fritillary butterfly can be found in coppiced woodland clearings in spring

An abundance of insects and other invertebrates thrives in broadleaved woodlands. Of Britain's native trees, the English oak, in particular, supports the greatest number of insect species. A high proportion of the UK's beetles are associated with woods and trees, especially ancient ones. Some declining butterfly species, such as pearl-bordered fritillary, rely on coppiced woodland for their survival, while other species, such as speckled wood and green-veined white, are commonly found in woodlands. Woodland moths are even more diverse (Box 5).

As well as the species of tree in a woodland (whether native or non-native), how much biodiversity a woodland can support depends on three other main factors: the amount of light beneath the canopy, the age of the trees (and how long woodland cover has been there), and the structural diversity within the woodland. This is affected by management and other factors such as deer browsing (Box 6). Native broadleaved woodland (especially ancient woodland), managed to allow different amounts of light through, and having different habitat structures, will have the greatest diversity of wildlife. Wildlife can nonetheless be encouraged in all woodlands, with the right management.

Which trees are best for biodiversity?

English oak

Woodland biodiversity is affected by whether the main tree species making up the woodland are native to Britain or not. In general, native trees will be best for biodiversity. Tree species introduced from other countries are often unpalatable to native species of invertebrates, which have not evolved to feed on them. For example, over 200 invertebrates are associated with native oaks, compared to fewer than 50 species on introduced larch.

Coniferous woodlands tend to have a lower biodiversity than broadleaved woodlands, partly due to the fact that most coniferous woods in England are plantations of non-native tree species. However, they still have value, often for different species to those which occur in broadleaf woodlands. For example, birds such as goldcrests prefer conifers, and will provide food for predators such as the sparrowhawk, which often uses conifers for nesting.

Woodland & scrub

Coppiced woodland in spring with rich ground flora

Woodland management

Coppicing and creation of rides and clearings are effective ways to increase biodiversity within broad-leaved woodlands. Coppicing is an ancient form of management, which involves repetitive felling on the same stump, near to ground level, and allowing the shoots to regrow from that main stump. It is a highly effective method of producing a great deal of fast growing, sustainable timber without the need to replant. Coppiced woods are also exceptionally good for wildlife. Where coppicing is done on a rotation, the areas of varying canopy density through the woodland provide a range of habitats for wildlife. Coppicing, ride widening and glade creation all allow more light into the woodland, encouraging a rich ground flora and an abundance of invertebrates and birds.

Areas of good tree cover and shade should also be present in a woodland. These areas are important for a variety of other plant and animal species which cannot survive in more open areas. The cover and shade provide a damp, cool, sheltered microclimate in which certain species thrive, including a number of invertebrates, mosses, liverworts, ferns and fungi. Many common dead wood invertebrates need rotting wood that is left to decay in the shade, while some of our rarest moths are only found in dark, shady woodlands.

A coppiced chestnut stool

New woodlands

New woodlands can be planted to encourage biodiversity. The choice of species, planting density and management will all affect the wildlife that will colonise and use the new woodland. Woodlands that are linked to other areas of habitat will be of great value, and if the woodland can be designed to have a sympathetically managed buffer zone around it, this will also encourage species that need woodland edge habitats. Care should be taken to ensure the site is not already of high biodiversity interest, such as a species-rich meadow. Much information is available on how to manage existing woods or create new woodlands, and specialist advice is available using the website links at the end of the chapter.

The striking amethyst deceiver is found in deciduous woods

Whitethroats favour young, scattered scrub for nesting

Bullfinches nest in older, mature stands of scrub

Scrub

Many farms that do not have woodland may have scrub. This is a vegetation stage intermediate between open ground and woodland, and can comprise scattered shrubs, young trees, or a dense thicket. Influenced by soil type and location, common scrub species are hawthorn, blackthorn, willow or bramble. Scrub of varied age, species and structure supports the greatest wildlife diversity, through the provision of nectar, pollen, fruits, seeds, shelter and nest sites. Scrub in field corners, along woodland edges and as scattered patches along hedgerows are all highly valuable wildlife habitats, and may also buffer woodland, hedgerows and ditches from farm operations.

Scrub will establish and develop naturally if left to do so, ultimately growing into woodland, and so will require management to ensure the desired balance of habitat is maintained. Older stands can be removed, and younger growth allowed to develop, using rotational management around the farm. Grazing and browsing, as well as mechanical means, can be used to manage scrub, although the grazing pressure needs to be appropriate to allow scrub to regenerate or to control it where required.

Oak tree in arable field

In-field trees

Many large, old trees can be found in wood-pasture, or as in-field trees within arable or grassland areas. Ancient in-field trees, such as mature oaks or old pollards, may often be a remnant from a former hedgerow, long since destroyed. Such trees are important for a range of wildlife, including invertebrates, fungi, bats and birds that depend on them for all or part of their lifecycles. At a landscape scale they are highly valuable features, providing 'stepping stone' habitats across farmland, and may help wildlife to move through the landscape. In-field trees are particularly threatened by cultivation and other agricultural activities. Environmental Stewardship support is available to help support their protection.

Clifden nonpareil © Mark Parsons/Butterfly Conservation

Managing woodland for moths

In the UK, 71 formerly widespread moth species are suffering rapid and severe declines and are listed as Biodiversity Action Plan (BAP) species (in addition to another 80 threatened BAP moths with more specific requirements). Most of the formerly widespread moths use woodlands to a greater or lesser extent.

Using light traps, we surveyed moths in Tytherley woods, on the Hampshire/Wiltshire border. The aim was to find out how moths are affected by woodland management. Moth numbers were lowest in young coppice (characterised by plenty of bare ground) and highest in sheltered standard rides and woodland. Sheltered, dark, humid woodland was especially valuable for some scarce moths, while moths that depend less on woodland, but are nonetheless declining in the wider countryside, preferred wide woodland rides and young coppice. Young coppice can support different suites of species. The results highlight the importance of having a variety of woodland habitats for moths.

We recorded 11,670 individuals and 265 moth species over three months, with some exciting new records. A notable find was that of the beautiful Clifden nonpareil, a rare moth recorded from only a handful of sites in southern England and, until recently, thought to be an immigrant. The numbers of this moth found strongly suggest the existence of a resident breeding population.

Key results

- Create or maintain cores of dark woodland habitat
- Create lighter woodland zones around the darker core by coppicing or wide woodland rides
- Having different zones will benefit a range of species, from deep shade- or moisture-loving woodland moths, to moths that prefer lighter, more open, woodlands

Moths can be sampled by light trapping © nutmeg66 CC BY NC ND 2.0

Roe deer © Don Sutherland CC BY NC ND 2.0

Deer grazing affects small mammals

Long term studies in Wytham Woods, Oxfordshire, suggest that increasing deer numbers may have had significant impacts on small mammals.

We established deer exclosures to study the effects of deer grazing on small mammals. The 2.5m high deer fence around each exclosure excluded all deer but allowed mice and voles to move freely. The fence minimized grazing pressure, leading to a much denser understorey. Between 2001 and 2003, we compared numbers of wood mice and bank voles inside the deer-free exclosures with those in the surrounding deer-grazed woodland. Bank voles were found to occur in much higher numbers inside the exclosures, while wood mice were much more common in the surrounding woodland.

A further study looked at how the three-dimensional forest structure was used by woodland rodents One in five wood mice and one in ten bank voles were caught in trees, up to heights of 2.20m, confirming that arboreality is common in small mammals. Bank voles, however, were less likely to climb as high as wood mice due to their lack of agility and their need for dense vegetation as protection from predators. This may help to explain why densities of bank voles increased significantly where browsing pressure was eliminated, highlighting the potential effect of deer over-grazing on small mammals.

Key results

- Deer overgrazing can affect woodland small mammals
- Bank voles and wood mice will both climb trees but bank voles are less agile
- Bank voles need more understorey cover than wood mice
- Where deer are excluded in woodland, bank voles increase

Bank voles in woodland are vulnerable to overgrazing by deer
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