

# Traditional orchards: orchards and wildlife

Traditional fruit tree orchards and cobnut plats, whilst of artificial origin, have often escaped agricultural intensification and are important refuges for a wide range of wildlife. A number of species are conservation priorities under the national Biodiversity Action Plan (BAP) including dormouse, lesser spotted woodpecker, great crested newt, stag beetle, noble chafer and mistletoe marble moth. The total area of traditional orchards has declined drastically in recent years and the conservation of the remaining orchards is a high priority. In recognition of this, orchards have been made a national priority BAP habitat. For an explanation of terms used in this leaflet see the information note TIN021 *Orchard glossary*. Other information notes deal with other aspects of traditional orchards.

## Key points

- The key management principle for orchard wildlife conservation is to continue or reinstate low intensity management without wide-scale use of pesticides, herbicides or other chemicals.
- Networks of orchards within the landscape are important for much of the wildlife found in them. These should be maintained and strengthened.
- It is important to maintain a full age range of orchard trees and the other associated habitats within the orchard. Trees with veteran features such as hollow trunks and rot holes provide the most important habitat, but younger trees are important to maintain continuity.
- Manage the orchard as a whole, not just the fruit trees. Much orchard wildlife depends on the mosaic of habitats such as dead wood, scrub, hedgerows, unimproved grassland and ponds.
- Producing a management plan may be a useful tool in identifying what is important and what work needs doing.

## The ecological importance of orchards

With their combination of open-grown fruit trees, the grassland on the floor of the orchard and hedgerow boundaries and scrub, ecologically traditional orchards resemble mini-parklands, wood pastures or woodland edge. They provide homes for similar wild plants and animals, notably many invertebrate species that are characteristic of ancient wood pasture and dependent on decayed-wood habitats.

Many species require the long-term continuity of tree cover of different ages. Individual orchards are usually comprise trees of the same age group. New planting within a traditional orchard will provide a range of tree ages and when trees die they should be replaced with new ones.

## Orchards within the landscape

The size of individual orchards and the amount of wildlife they contain aren't necessarily related; small orchards can contain just as many species as large ones

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However, this may be dependent on the continuity of suitable habitats within the landscape, so that wildlife can move from one site to another.

An individual orchard by itself may be too small to support viable populations of many species in the long term. As well as orchards, other open-grown-tree habitats such as hedgerows, parkland and wood pasture in the surrounding landscape, may be suitable. Linking such habitats may also improve the capability of wildlife to adapt to climate change.

Having said this, even isolated traditional orchards can provide oases for wildlife within an otherwise intensively farmed landscape.

### Orchard habitat mosaics

The most important habitat for wildlife is usually the old fruit trees, but orchards may also contain associated habitats including scrub, hedgerows, unimproved grassland, fallen dead wood, ponds and dykes.

Much orchard wildlife depends on this mosaic. For instance many bumblebee species, which help pollinate the fruit trees need tussocky grassland for nesting and hedgerows or scrub to hibernate under through the winter. Many beetles which live as larvae in the wood of the trees feed as adults on the flowers of tall herbs such as hogweed and wild angelica, as well as hawthorn and other shrubs.

Traditional orchards are important habitats for amphibians, mammals and birds which range widely across the landscape. A variety of bats forage over traditional orchards including the priority BAP species pipistrelle and greater horseshoe bat. Dormice, another BAP species, have been found foraging in cobnut plats and hedges around orchards. The great crested newt, also a priority BAP species, may be found in orchards which have ponds for breeding, rough grassland for foraging and hedgerows and fallen logs for shelter.

Foxes will visit orchards hunting for rabbits and other small mammals. Along with badgers they will also eat fallen fruit and have been seen reaching up to pick fruit from low branches.

The management of these associated habitats as part of a package is important for the overall biodiversity. The sections below contain details on how to do this.

### Orchard trees

Fruit trees are generally, although not necessarily (eg perry pears), short-lived trees compared to other hardwood species. This means that they begin to produce veteran tree features such as hollow trunks, rot holes, split bark, tears, lightning strikes and sap runs relatively quickly.

Dead and decaying wood is usually in open, sunny locations because of the wide tree spacing in orchards. These conditions create good habitat for many insects and other invertebrate species which depend on decaying wood habitats.

Over 400 specialist wood-decay species have been found in traditional orchards including 102 Red Data Book or Nationally Scarce species. The list includes 4 priority BAP beetles one of which, the noble chafer *Gnorimus nobilis*, is almost confined to traditional orchards.

The wood decay species occupy a variety of niches. They include invertebrates directly dependent on decaying wood, fungus-feeders, predators and parasites.

Many species of invertebrates feed on the foliage of fruit trees, but only a tiny minority of these are regarded as significant pests. The blossom is a good source of nectar for bumblebees, butterflies and other insects.

Invertebrates in turn provide food for other wildlife. A great variety of birds take advantage of the feeding, nesting and roosting opportunities in traditional orchards. Hollow branches or tree trunks may host birds such as green, great spotted and the declining (Red List) lesser spotted woodpeckers, as well as nuthatch, treecreeper, pied flycatcher and various tits, while mistle thrushes and chaffinches nest in tangled branches. These birds will feed assiduously on insect grubs including potential pests.

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In the winter months northern visitors such as redwings and fieldfares feed on the fallen fruit. Cobnut plums provide food for nuthatches. One BAP species, the wryneck, is now more or less absent from Britain as a breeding bird, historically it had strong links with orchards and it is still reliant on orchard habitats in Europe.

Climbing plants such as bramble, ivy and honeysuckle may be features of orchard trees, especially in neglected orchards. Their presence on some trees provides useful habitat for nesting birds or food supplies for insects and the moist conditions which suit some fungi. However, if climbers become widespread and abundant they will exclude most mosses and lichens as well as the scarcer decayed-wood invertebrates like the noble chafer which depend on warm, sunny conditions.

Mistletoe is often found growing in the canopy of orchard trees, particularly in the three counties of Gloucestershire, Herefordshire and Worcestershire. It is semi-parasitic, taking water and nutrients from the tree and photosynthesising its own food. In turn it hosts four mistletoe-dependant bugs as well as the mistletoe weevil and the mistletoe marble moth (*Celypha woodiana*).

Mistletoe berries provide a valuable winter food source for mistle thrushes and blackcaps, which spread the seeds through their droppings and by wiping their beaks on the rough bark to remove the sticky seed after eating the berry.

Mistletoe can also be spread artificially by smearing the berry and seed onto a branch of at least 20 mm in diameter, preferably in February-March. Since mistletoe has separate male and female plants, several plants are required to guarantee future berries.

Heartwood decay fungi such as chicken-of-the-woods *Laetiporus sulphureus* and the weeping bracket *Inonotus hispidus* are a common feature of old orchards. These fungi do not harm the tree and the hollowing they cause may actually benefit the tree by recycling nutrients and improving its ability to withstand strong winds. The cavities the fungi create also provide habitats which birds and other wildlife exploit.

The rare BAP species the orchard tooth fungus *Sarcodontia crocea* is known at only about 15 sites in the country and is found exclusively on apple trees.

Lichens on orchard trees include species characteristic of continuity of tree cover in the landscape as well as rare and scarce species. Surveys of orchards have to date found 16 Nationally Rare or Nationally Scarce species among 131 species of epiphytic lichens. This includes a very rare and protected species, *Parmelinopsis minarum*.

The lichen species in an orchard vary with the age and position of the trees, local climate and level of air pollution to which some lichens are very sensitive. Different fruit tree species support different lichen communities due to the different bark structures and chemistry.

A wide range of epiphytic mosses and liverworts are often abundant on orchard trees and can include locally rare species. The variety of species can be high, especially on apple and pear trees, compared with other tree hosts. These in turn provide food and shelter for a range of invertebrates, as well as nesting material for birds.

The 'epiphytic' fauna which live on the lower plants, along with algal crusts and fungal spores, include a good variety of barkflies *Psocoptera spp.* and the Nationally Scarce apple-tree lace bug *Physatocheila smreczynskii*.

### Orchard tree management

As in parkland or wood pasture sites, careful management of the trees is necessary to maintain older individual ones. Dead and decaying branches should not be removed unless they interfere with necessary operations, are diseased or are unsafe.

Large cut branches, fallen dead wood or remains of old trees should be left on site. Replanting and adequate aftercare of new fruit trees is also required to ensure the long term future of the orchard. The abundance of climbers such as bramble and ivy should be controlled to allow plants and animals that need higher light levels or warmth to survive.

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Any tree health problems need to be assessed on a case by case basis. The application of chemicals to control pests and diseases should be minimal and their use should be the exception rather than the rule.

Where there are not enough suitable natural tree holes bat and bird boxes may be installed in large trees, tall hedges or on poles.

### Hedgerows

#### Wildlife

Hedgerows contribute directly to the biodiversity value of orchards, providing food and shelter for a range of species. They provide nesting sites for a wide variety of birds, especially hedges that are over two metres tall. Hedgerow shrubs such as hawthorn and blackthorn are also good nectar sources. Traditionally crab apples, plums, damsons or cherries were often planted in mixed hedges to attract pollinating insects and to provide an extra source of fruit.

Hedges also contribute as part of the habitat mosaic, for example by providing food and shelter for specialist wood-decay beetles and habitat links for dormice.

Coniferous, single species windbreaks are sometimes planted instead of hedges. These provide a poorer habitat for wildlife and support little biodiversity. However, they can have an important influence on the microclimate within the orchard.

#### Hedgerow management

Hedgerows can provide an important scrub habitat that is relatively easy to manage in comparison with scrub amongst the orchard trees. Continuity of berry and blossom supplies can be achieved by trimming hedgerows less frequently than once a year and by carrying out longer term restoration by coppicing or laying. Trimming and restoration should be done in rotation, possibly by cutting each side of a hedge in alternate years, so that some food supplies are always available.

Allowing some hedges to grow tall and untrimmed will also benefit different species for example bullfinch and turtle dove like very large hedgerows.

Non-fruit hedgerow trees are also important for wildlife, for instance ash seeds (keys) are a winter food source for bullfinch.

### Orchard floor habitats

#### Wildlife

Traditionally orchards were often among the more fertile grasslands on a farm. They were usually grazed rather than cut for hay and were often used for sheltering stock which would have enriched the soil. They may have had top dressings of manure to maintain fruit production, and the action of the trees in drawing up nutrients from the soil would also have helped to raise the fertility. However, the grasslands in many traditional orchards have been undisturbed for decades if not centuries and have escaped agricultural improvement. These grasslands can be important for a range of plants and animals.

Where levels of soil fertility are not too high the flora can be rich in herbs. Most orchards are on neutral or slightly acidic soils and will therefore have a corresponding flora, sometimes including species such as green-winged orchid and adder's tongue fern as well as more shade tolerant species like bluebell and wild daffodil.

Waxcap fungi are also found in orchard grassland. They belong to a threatened assemblage of fungi which depend on old grassland and include the priority BAP species pink wax-cap *Hygrocybe calyptiformis*. Anthills, an indicator of old grassland, may also be present.

Unlike fruit orchards, cobnut plats were often planted on the poorer soils of the farm. Ungrazed cobnut plats can harbour a diverse woodland herb flora, including a range of ancient woodland indicators such as moschatel, broadleaved helleborine and toothwort.

Many species of bumblebee, solitary bee and other insects may be present in an orchard. Wild bees play an important role during the blossom period when they help to pollinate the orchard trees. They are particularly helpful as they are active in colder conditions and forage for longer than honey bees.

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Many bee species use pollen and nectar from flowers in the orchard grassland. Members of the daisy family (such as ox-eye daisy), hogweed and other umbellifers and legumes (clovers, vetches and trefoils) are particularly important food sources.

Mice, voles and other small mammals live in the bottom of hedges and banks, particularly close to areas of longer grass. They in turn provide food for birds of prey such as kestrels, sparrowhawks and owls, and for predatory mammals.

### Orchard floor management

This needs to be tailored to the types of wild plants and animals present. The ideal is usually a varied sward structure including patches of short grass, small areas of bare ground and taller vegetation with seeds heads. This can be achieved by annual extensive grazing or hay cutting and aftermath grazing.

Overgrazing of cobnut plats, especially in spring, can seriously harm the woodland ground flora. Annual cutting in the autumn is an alternative, especially if the plat is on infertile soil.

Taller herbs and tussocky grasses found along hedgerows or around ponds benefit from lighter grazing or more intermittent cutting. Waxcap fungi thrive in short turf, usually around 10 cm or less.

If the meadow is mown then the cuttings should be removed rather than left in situ to prevent soil nutrients building up as this will favour coarse competitive species at the expense of smaller herbs.

Herbicides and fertilisers should be avoided as should rolling and harrowing. Rolling and harrowing can harm the often shallow roots of fruit trees through compaction and mechanical damage. They can also disturb invertebrates in the soil, damage ant hills and, depending on the time of year, affect nesting birds or destroy fallen fruit that would be eaten by birds through the winter.

If livestock are present then heavy trampling around the base of trees should be avoided as this will create conditions for competitive species

such as thistles, docks and nettles to invade, as well as damaging the tree roots.

At the other extreme, neglected and under-grazed orchards will become invaded by bramble and other scrub species and by bracken on more acidic soils. These species can easily get out of hand and can shade out grassland flora and enrich the soil. However, they are often important wildlife habitats in the own right and, rather than clearing them entirely, some patches should be maintained where they are relatively easily managed, such as in areas associated with hedgerows and field corners.

Solitary bees and other insects often nest in areas of bare soil, especially on warm, south-facing banks. Insects can also be encouraged by leaving banks or hedges with undisturbed areas of long grass for nesting.

Areas of rough grass in corners and along hedges and windbreaks should be left ungrazed or unmown in rotation to provide wildlife habitat. If necessary these can be fenced off to exclude livestock, but if they are not grazed at all then they will need to be cut every 2-3 years to prevent them turning to scrub.

### Ponds

Where these are present they add to the mosaic of habitats and benefit a range of wildlife. They should be managed sensitively. It may be appropriate to create or recreate ponds in naturally wet areas, but care should be taken not to affect fruit trees or areas of species-rich grassland.

### Further information

Natural England Technical Information Notes are available to download from the Natural England website: [www.naturalengland.org.uk](http://www.naturalengland.org.uk).

This note is aimed at managers of traditional orchards and agri-environment scheme land management advisers. Other orchard notes include:

- TIN012 *Traditional orchards: a summary*
- TIN013 *Traditional orchards: site and tree selection*

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- TIN014 *Traditional orchards: planting and establishing fruit trees*
- TIN015 *Traditional orchards: an introduction to pruning*
- TIN016 *Traditional orchards: formative pruning of young trees*
- TIN017 *Traditional orchards: maintenance pruning*
- TIN018 *Traditional orchards: restoration and management of mature and neglected orchards*
- TIN019 *Traditional orchards: fruit tree health*
- TIN021 *Traditional orchards: glossary*

For further information contact the Natural England Enquiry Service on 0300 060 0863 or e-mail [enquiries@naturalengland.org.uk](mailto:enquiries@naturalengland.org.uk).

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