

Traditional orchards: orchards and wildlife

Traditional fruit tree orchards and cobnut plats, whilst of artificial origin, have often escaped agricultural 'improvements'. Those that are managed extensively are important refuges for a wide range of wildlife including fungi, mosses, lichens, wildflowers, insects and other invertebrates, birds and mammals. A number of species are priorities for conservation under the national Biodiversity Action Plan (BAP) for example dormouse, tree sparrow, great crested newt, noble chafer and stag beetle. The total area of traditional orchards has declined drastically across the country 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 *Orchard glossary*.

Key points

- The key management principle for orchard wildlife conservation is the continuation or reinstatement of low intensity management without the wide-scale use of pesticides, herbicides or other chemicals.
- The maintenance of networks of orchards within the landscape is important for much of the wildlife found in them.
- While trees with veteran features such as hollow trunks and rot holes provide the most important habitat, it is important to maintain a full age range of orchard trees and the other associated habitats within the orchard.
- Much orchard wildlife depends on the mosaic of habitats such as dead wood, scrub, hedgerows, unimproved grassland and ponds.
- Management of the orchard as a whole needs attention, not just the fruit trees. Producing a management plan may be a useful tool in identifying what is important and what work needs doing.

The ecological importance of orchards

Ecologically, traditional orchards resemble mini-parklands, wood pastures or woodland edge because of their combination of open-grown fruit

trees, the grassland on the floor of the orchard and hedgerow boundaries or scrub. They provide homes for similar wild plants and animals as are found in these habitats, 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, which often comprise trees of the same age group, may not provide this or be too small to support viable populations of wide ranging species. Therefore, it is important to provide continuity of orchard habitat within the landscape so that wildlife can move from one site to another. New planting within orchards to provide a range of tree ages and replacements for when existing trees die is also important. Even isolated traditional orchards can provide oases for wildlife within an otherwise intensively farmed landscape.

Orchard habitat mosaics

Although the most important habitat for wildlife is usually the old fruit trees, orchards may also contain associated habitats including scrub, hedgerows, unimproved grassland,

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fallen dead wood, ponds and dykes. Much orchard wildlife depends on this mosaic of different habitats. 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, 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. 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.

Management of orchard habitats

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

Orchard trees

Wildlife 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. Because of the wide tree spacing in orchards compared to woodland, the dead and decaying wood is usually in open, sunny locations. These conditions create good habitat for 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 may nest in tangled branches. These birds will feed assiduously on insect grubs including potential pests. In the winter months, northern visitors such as redwings and fieldfares feed on the fallen fruit. Cobnut plats provide food for nuthatches.

One BAP species, the wryneck, which is now more or less absent from Britain as a breeding bird, had historically strong links with orchards and is still reliant on orchard habitat 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 the scarcer decayed-wood invertebrates like the noble chafer which depend on warmer, sunnier conditions, as well as most mosses and lichens that require higher light levels.

Mistletoe is often found growing in the canopy of orchard trees. It is semi-parasitic, taking water and nutrients from the tree and photosynthesising its own food. In turn it hosts four mistletoe-dependant bugs, the mistletoe weevil and the mistletoe tortrix moth. The berries provide a valuable winter food source for some birds, in particular mistle thrushes and blackcaps.

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Mistletoe is naturally spread by birds, through their droppings and by wiping their beaks on the rough bark to remove the sticky seed after eating the berry. Alternatively, it can 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 may exploit.

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. The flora included a very rare and protected species, *Parmelinopsis minarum*.

The lichen species in an orchard will 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, 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 lives on these lower plants, along with algal crusts and fungal spores, includes a good variety of barkflies, *Psocoptera*, and the Nationally Scarce apple-tree lace bug *Physatocheila smreczynskii*.

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 or are unsafe. Large cut branches, fallen dead wood or remains of old trees should be left on site. Planned replanting over time 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. 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 minimized, 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. Hedgerows, especially those over two metres in height, provide nesting sites for a wide variety of birds. Bullfinch and turtle dove prefer even larger hedgerows.

Hedgerows also have value as part of the habitat mosaic, particularly where little scrub is present within the orchard, by providing food and shelter for specialist wood-decay beetles living in the orchard trees and habitat links for dormice.

Traditionally crab apples, plums, damsons or cherries were often planted as standard or multi-stemmed trees in a mixed hedge to attract pollinating insects and to provide an extra source of fruit. Hedgerow shrubs such as hawthorn and blackthorn are also good nectar sources.

Coniferous, single species windbreaks are sometimes planted instead of hedges but these provide a poorer habitat for wildlife and support little biodiversity. However, they can have an

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important influence on the microclimate within the orchard.

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. 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 often have had top dressings of manure to maintain fruit production. Cobnut plats, on the other hand, were often planted on the poorer soils of the farm. However, the grasslands in many traditional orchards have been undisturbed for decades 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. Ungrazed cobnut plats can harbour a diverse woodland herb flora, including a range of ancient woodland indicators such as moschatel, broadleaved helleborine and toothwort.

Waxcap fungi may be present. They belong to a threatened assemblage of fungi which depend on old grassland and include the priority BAP species pink wax-cap *Hygrocybe calyptriformis*.

Anthills, an indicator of old grassland, may also be present.

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. Many bee species use pollen and nectar from flowers in the orchard grassland and tall herb areas as well as fruit blossom on the trees. 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 predatory mammals.

Management Orchard floor management needs to be tailored to the types of wild plants and animals present. A varied sward structure including patches of short grass, small areas of bare ground and taller vegetation with seeds heads is usually ideal. This can be achieved by annual extensive grazing, or hay cutting and aftermath grazing. Overgrazing, especially in spring, can seriously harm the woodland ground flora of cobnut plats. 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.

A greater diversity of species can be encouraged by avoiding the use of herbicides and fertilisers. Rolling and harrowing should also be avoided as they can harm the often shallow

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roots of fruit trees through compaction and mechanical damage. Rolling and harrowing can also 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 undergrazed 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

This note is aimed at managers of traditional orchards and agri-environment scheme land management advisers. Other Natural England Technical Information Notes include:

- *Traditional orchards: a summary*
- *Traditional orchards: site and tree selection*
- *Traditional orchards: planting and establishing fruit trees*
- *Traditional orchards: an introduction to pruning*
- *Traditional orchards: formative pruning of young trees*
- *Traditional orchards: maintenance pruning*
- *Traditional orchards: restoration and management of mature and neglected orchards*
- *Traditional orchards: fruit tree health*
- *Traditional orchards: glossary*

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