



MANAGING SMALL WOODLANDS FOR DORMICE

a guide for owners and managers

Woodlands have always been a very valuable resource. In the past they provided fuel, timber and materials for hedging. They were actively worked: timber trees were felled and new saplings planted and allowed to develop, coppice was cut on either a long or short term cycle and hedges were laid and managed. This gave rise to a mosaic of different types and sizes of woodlands within the countryside that were connected by a network of hedges.

Woodlands in the 21st century remain important for timber production, for their amenity value and as a habitat for wildlife. Unfortunately, inappropriate, or lack of, management has meant that many of our woods are losing their botanical diversity and their associated fauna. Furthermore, changes in farmland practices have meant that many of our hedgerows are no longer appropriately managed, which has led to them becoming degraded or disappearing altogether in many areas. Consequently, many of our woodlands have become increasingly isolated within the landscape.

In Victorian times dormice were widespread throughout England and Wales and even today there are isolated populations as far north as the Lake District and Northumberland. However, due to habitat fragmentation they have become locally extinct in most of the midland and northern counties and are now generally restricted to parts of Wales and southern England, where they are still considered to be in decline.

Dormice are easy to recognise with their sandy coats, furry tails and large black eyes, but they are hard to find as they are small, nocturnal and arboreal when active and hibernate over winter. They live at low population densities even in their ideal habitat which is considered to be semi-natural ancient woodlands with a high plant diversity and a dense understorey. They also inhabit scrub, hedgerows and mixed conifer plantations.

This leaflet is aimed at owners of woodlands up to about 10 hectares who might not have had any experience of woodland management and who are not working with professional woodland managers, ecologists or foresters. It is specifically intended to promote management practices that will either maintain or enhance the habitat for our native hazel dormouse and to give guidance relating to the European Habitats Directive.

dormouse ecology

Hazel dormouse



Dormice hibernate on the ground in winter and when active in summer live in the shrub layer and tree canopy and are reluctant to come to the ground.

Food Dormice rely on a wide range of foods that vary seasonally according to availability. In early spring after waking from hibernation, they feed on flowers such as hawthorn and willow and later on honeysuckle or bramble flowers. In summer, after flowering finishes and before the fruit and nuts ripen, dormice feed on invertebrates such as caterpillars and aphids. Oak and sycamore can be useful trees for dormice as they support large quantities of insects. Bramble is valuable in autumn when dormice feed on the abundant blackberries. They also eat a range of fruits and seeds, ash keys, yew berries, sweet chestnuts and hazel nuts.

Nesting Dormice weave their spherical summer nests from shredded plant material (often honeysuckle bark) and will regularly use green leaves as an outer layer. Nests are often sited in tree holes and dormice will also make use of the existing nests of other mammals or birds. Later in the season nests may be found in bramble and in the tops of hedges.

Breeding Dormice usually give birth from June onwards and females will generally have a litter of between four and six young. Some individuals have a second litter later in the autumn but survival of those young is dependent on the weather and whether or not they have enough time and food available to build up sufficient fat reserves to enable them to survive hibernation.

Hibernation Dormice can hibernate for up to seven months of the year from October/November to April/May. They make a tightly woven nest at ground level either under coppice stools, dead wood or in moss or leaf litter. Hibernating in a damp environment reduces their moisture loss and provides them with a relatively low constant temperature throughout the winter. In mild winters, or as a result of human disturbance, dormice may wake up and, without any available food, they quickly use up their valuable fat reserves.

Home range Female dormice will generally have a home range no larger than 1ha. Males defend larger territories that overlap several female home ranges. This keeps the population density relatively low and reduces the demand on limited food resources. Even in an ideal habitat there are only likely to be between three and five adults per ha present throughout the year. If a woodland is isolated, it needs to be about 20ha in area to maintain a viable population of dormice. Smaller woods can be very valuable for dormice if they are part of a mosaic linked by hedgerows or scrub.

Blackberries



Dormouse nest



Nest tube used to detect the presence of dormice



Nest box used to monitor known dormouse populations



dormice in woodlands

How do I know whether I have dormice in my woodland?

Dormouse presence should be assumed in all woodland, scrub or hedgerows within its range (please see map below). You can check for nearby records with your local biological records centre or on the National Biodiversity Network (NBN) website www.data.nbn.org.uk.

Even if you do not find evidence of dormice in your wood, this does not mean they are absent and they may also be present nearby.

If you have hazel in your woodland, the best indicator of dormouse presence is opened hazel nut shells found on the ground. Dormice eat hazel nuts straight from the tree and the discarded shells are dropped to the woodland floor below. Birds and squirrels usually split the shells completely in half or smash them to pieces, whereas dormice gnaw a hole and leave characteristic toothmarks around the rim. The best time to carry out a nut hunt is from mid-September to October when hazel nut shells are fresh and before the main leaf fall covers them up.

Using a magnifying glass, check around the edge of the hole. Dormice leave a neat round opening with a smooth inner edge and tooth marks parallel to the rim of the hole. Mice and voles generally gnaw irregular-shaped holes with tooth marks at right angles to the rim of the hole. Please see pictures to help identification.

If you don't have hazel in your woodland, you can use nest tubes or nest boxes to establish dormouse presence because it is extremely hard to find dormouse nests in the wild. Nest tubes are put out into woodland or hedges in early May and left until the autumn. If present, dormice may occupy the tubes for daytime shelter and occasionally for breeding. The tubes are then checked in November for their distinctive nests (please see pictures on left). Dormice will be hibernating by then and it is unlikely that a live dormouse will be disturbed.

Wooden nest boxes are especially good for detecting dormice in woodlands. Their main use, however, is for the conservation of dormice and to boost their populations when natural nesting sites are scarce.

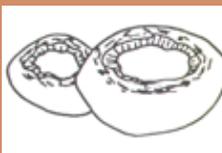
Once the presence of dormice is identified in an area, a handling licence is required for any further monitoring. It is necessary to train for this licence, which can then be obtained from Natural England.

For further information on these methods and where to obtain nest boxes and nest tubes please contact PTES on 020 7498 4533.

Hazel nut opened by a dormouse



Hazel nut opened by a wood mouse



Hazel nut opened by a bank vole



UK distribution



woodland management for wildlife

Key points: cut holes in woodland to encourage new growth, keep habitats well-linked and promote diversity of plant species, age and size.

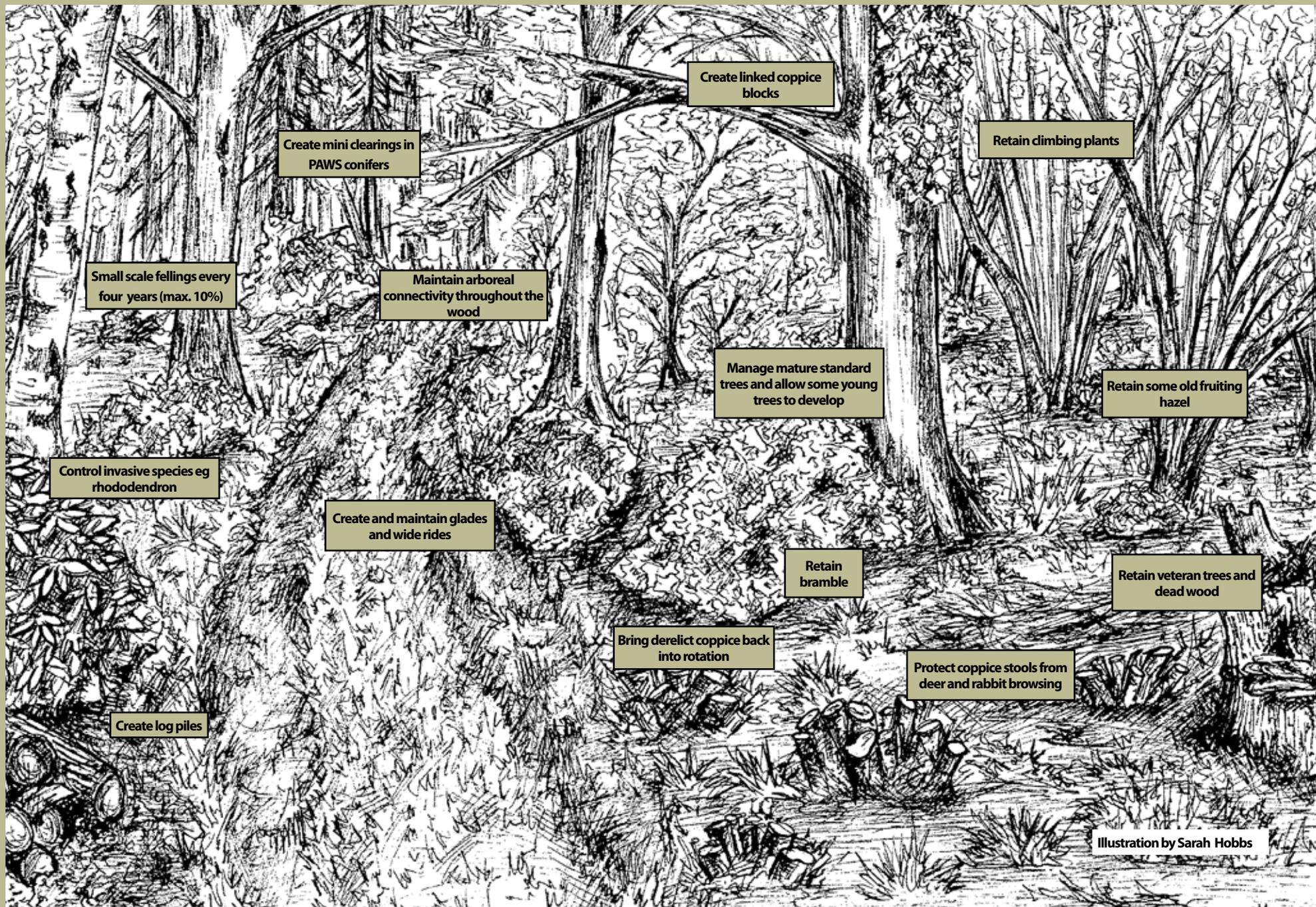
This drawing highlights the main objectives in a woodland managed for dormice and other wildlife.

Allowing light to reach the woodland floor in places helps the understorey to grow and provides food for dormice.

A diversity of plant species as well as a mosaic of different ages and structures is important in a woodland.

Keeping areas of habitat well-linked enables wildlife to move from one to the other (when an area becomes less suitable) to access different food sources and nesting sites.

Your woodland may not contain all of these features but neighbouring woodlands might contain those that are missing. Try to consider your woodland as part of the wider landscape.





woodland management for biodiversity

The management options below are based on four main principles: open up the canopy, encourage a diverse understorey, retain dead and decaying wood and keep areas of woodland well-linked. These principles, whilst good for dormice, should also benefit a range of other species. Even if you cannot tackle all these activities doing a little to help is better than nothing so don't be discouraged!

Plan woodland work

Trees can be very long-lived and take hundreds of years to mature. As woodland managers you are temporary custodians of these woodlands but your actions have potentially long-term consequences. It is therefore important to develop a management plan before any work is undertaken. Consider what you would like to achieve (your aims), what can be achieved (your objectives) and what resources you have available to achieve them (your work plan). Management plans often cover a five year period, but for woodland a 10 or even 50 year plan might be more appropriate, with some realistic annual actions. The plan should include the size and state of the woodland and its situation in the landscape. It must also take into account any UK conservation designations such as Site of Special Scientific Interest (SSSI) and European designations such as Special Areas of Conservation (SAC); these can be viewed at www.magic.gov.uk.

Open up the canopy

Opening up the canopy by felling some trees has numerous benefits for wildlife. It allows light to reach the woodland floor encouraging plants, wildflowers and eventually a scrubby understorey to develop. This provides food for insects, birds and mammals including dormice. Don't fell veteran trees as these are very valuable for wildlife. Aim for holes in the canopy of between 10m x 10m and 20m x 20m. Smaller gaps will not provide enough light for regeneration (except at the wood edge or ride-side) and larger ones may encourage deer or affect the connectivity within a small site. In some cases a tree felling licence will be required. For further advice please see www.forestry.gov.uk.

Create and maintain rides and glades

Rides and glades provide increased edge habitat within your wood and ensure light reaches the woodland floor. This can be further enhanced by cutting scallop edges into the wood along the rides. These bright, sunny areas are very important for woodland butterflies, they afford protection from wind and prevent rides becoming wind tunnels. Maintain tree branch connections over the rides at pinch points every 50m to enable dormice to travel throughout your woodland. Some mature fruiting hazel should be retained along ride sides if possible.

Minimise damage to ground flora

Try to keep the number of tracks and paths in your woods to a minimum to avoid excess damage to the ground flora. When trees are felled consider leaving some as dead wood. Avoid burning material, but if unavoidable keep fire sites

to a minimum to avoid damaging shallow tree roots, the existing seed bank in the soil and hibernating dormice.

Maintain and enhance tree and shrub diversity

Dormice need a wide variety of different food sources. The greater range of habitats you can create in your woodland the greater will be the species diversity. These habitats can be edges of the woodland and rides, glades, different aged trees, dead wood and woodland layers (ie tree canopy, shrubs, ground flora). Thinning of the canopy will allow natural regeneration to occur and encourage structural diversity. This method of restocking the woodland can, if necessary, be reinforced by group planting species native to the site, and of local provenance.

Maintain arboreal connectivity within your wood and externally

Try to maintain a continuous connection between shrubs and trees throughout your wood to enable dormice, which are largely arboreal and reluctant to come to the ground, access to areas of suitable habitat even on neighbouring land. You can also retain brash, bramble and bracken across felling areas.

Manage impact of grazers and browsers on regeneration

Protect new tree growth in your woodland from deer, rabbits or domestic stock. For small areas, using tree guards or piling brash over cut stumps and coppice stools may be sufficient protection. Other areas may need temporary plastic fencing. Consider joining a deer management group. These voluntary groups of landowners and managers monitor deer numbers, assess the population in a particular area and decide upon a deer management plan and its implementation.

Retain climbing plants and bramble

Climbing plants like ivy, honeysuckle and wild clematis can provide good links between the shrub and canopy layer as well as providing additional habitat and autumn food for dormice, birds and invertebrates. Generally, ivy should not be removed from trees unless it has developed to the point where it shades the understorey. Bramble is a very useful plant that provides food and shelter for many species over a long period. It can develop as part of the felling cycle, growing when light reaches the woodland floor and becoming shaded out as the canopy grows.





Manage non-native plants

Non-native, invasive plants are considered to be one of the greatest threats to biodiversity. In woodlands, rhododendron (which is of very little value to wildlife) may become invasive, shading out other shrubs and ground flora and restricting their regeneration. For more advice see *The Scrub Management Handbook* by Natural England.

Manage sycamore

Sycamore can be beneficial for dormice in your woodland at low densities as it produces flowers and supports a high number of insects that dormice feed on. However, sycamore produces copious seed which, if left unmanaged, will produce stands of trees that quickly shade out the understorey. They can be managed by coppicing which will maintain the supply of insects without allowing them to seed. Excess saplings should be removed.

Create log piles

Although small cut timber can be used for firewood, leave some cut timber in the wood to rot down individually or use logs to create habitat piles. If possible bury the lower layers and build a compact stack away from coppice stools. Log piles offer sheltered places for dormice to hibernate over winter. The crevices will also provide habitat for other small mammals, reptiles and amphibians and the rotting timber itself provides a home for a variety of invertebrates.

Retain veteran trees and standing dead wood

Standing dead wood is very important for invertebrates, birds, bats and dormice. Retain some dead or damaged trees (as long as they are not unsafe) especially those with cracks and holes, in which dormice may nest and bats roost.

Plantations on ancient woodland sites (PAWS)

In the past, many ancient woodland sites have been planted with conifers. In spite of this change, many have retained dormice, especially where hazel is still present. The problem for dormice however, is that ageing conifer plantations cast dense shade and will prevent understorey and scrub regeneration thus reducing the food and nest sites available. Conifers should be removed over time, either in small blocks or to open rides. Ensure that arboreal connectivity is retained around the felled areas. Deciduous species should be retained and if possible felled areas enhanced by planting species of local provenance to create uneven ages of trees. For information on restoration of PAWS woodland, see *Restoration of Native Woodland on Ancient Woodland Sites* by the Forestry Commission.

Create linked coppice blocks

Coppice is generally cut between November and March, either with a chainsaw, bow saw or billhook. It is better to cut several smaller plots up to ¼ha (but not more than 10% of the total area each year) in your wood rather than just cut one

large block, so the cutting cycle should be carefully planned. Over time this will give a mosaic of mixed aged coppice in the wood. Ensure that coppice coupes remain linked either with intermediate blocks or along an edge so that no areas become isolated due to coppicing. Cut coppice stools will need protection from deer and rabbits to restrict grazing on new growth.

Derelict coppice

If hazel coppice has not been cut for at least 30 years (stem dia. >150mm), cutting may not produce much regeneration and gaps may need to be replanted. Restoring coppice will help many birds, butterflies and other invertebrates, and plants. Please be aware that cavities in derelict coppice may contain dormice. Aim to cut a small coupe ie up to ¼ha in non-adjacent blocks per year. To restore derelict coppice it is normally necessary to cut all the coppice again after three years to allow the new plants to produce more stems and grow up strongly. For more detailed advice see *Restoration of Neglected Coppice* by the Forestry Commission.

Create a variable age structure

To ensure the longevity of your coppiced woodland, ensure that some new coppice stools are initiated by layering from existing stools and some new standard trees are selected and allowed to develop. This will give a better age structure to your wood and ensure that there is timber provision for the future. For hazel coppice, a rotation of 15-20 years is recommended. The traditional seven to eight year cycle which will produce saleable rods, may not allow hazel enough time to mature and produce nuts for dormice.

Make use of brash

Brash is the thinner, whippy material left when the useful products of the coppice have been removed. It is useful left in the wood providing nesting habitat for woodland birds; it can also be used for dead hedging around newly cut stools or around cut coupes to reduce browsing of coppice regrowth (although other protection such as fencing may also be required). Sometimes brash is burnt. Have as few fires as possible and keep them away from coppice stools and standards.

Manage standard trees

A standard tree is one with a single trunk that is not cut in the coppice cycle. The foliage of these trees forms the upper canopy cover in a woodland. Mature standard tree density should be around 10-15 per hectare with another 10-15 younger standards allowed to develop. This will allow light to get through to the shrub layer. Some of these shrubs should provide access for dormice into the tree canopy where possible. If standards require thinning this work should be undertaken in the same season just after the coppice is cut, to minimise damage to the stools.

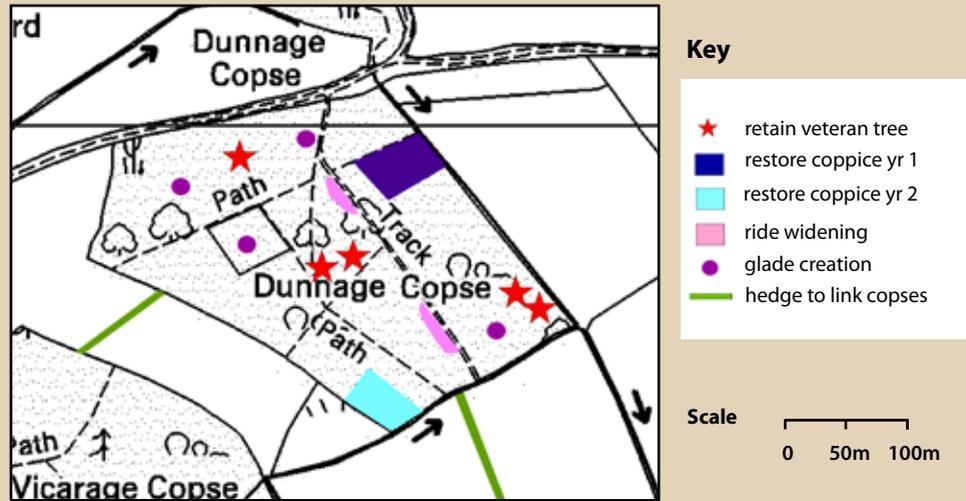
Further information about all aspects of woodland management can be obtained from the organisations on the contacts list at the end of this leaflet.



management and planning

legal protection and glossary

Example management map



Year planner

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Felling												
Coppicing												
Ride widening & glade creation												
Mow half of ride annually												
Planting												
Dormouse survey - nut hunt												
Dormouse survey - place nest tubes												
Dormouse survey - check nest tubes												
Plan winter work												

The Habitat Regulations provide protection for certain species and habitats and are based on the European Habitats Directive. It is an offence to damage or destroy dormouse breeding sites and resting places (even unintentionally) or to deliberately disturb, capture or kill dormice. If you accidentally disturb a hibernating dormouse, please return it to its original location and cease working in that particular area. Please report any dormice you see to PTES and your local record centre.

PTES would advise the following:

Undertake any tree, scrub or coppice work between November and March to avoid disturbing nesting dormice. The destruction or disturbance of a breeding nest can seriously impact on the local dormouse population.

Keep fire sites, paths and trackways to a minimum to avoid harming hibernating dormice!

Fell or coppice in small non-adjacent blocks (no larger than ¼ha depending on woodland size) to ensure a complete dormouse home range is not destroyed. Aim for a complete cycle over about 20 yrs.

Retain arboreal connection between habitats such as coppice blocks to allow dormice to travel throughout the woodland without coming to the ground.

The Forestry Commission's official good practice guidelines for managing woodlands with dormice can be found on their website at www.forestry.gov.uk/england-protectedspecies

Glossary

Billhook - a hand tool with a curved blade and wooden handle used for cutting small branches and for stripping side shoots from the main stem.

Coupe - an area of coppice cut on a regular rotation. Also called a cant or panel.

Layering - a method of establishing new trees suitable for coppicing by bending over a shoot from an existing stool and pegging it down in contact with the earth so that it will root and grow.

Derelict coppice - where the stems have grown tall and old and have not been cut for at least 30 years for hazel and 40 years for sweet chestnut.

Rotation - the length of time between coppice cuts.

Stool - the stump of the tree from which new shoots arise.

useful contacts

Bat Conservation Trust

Provides advice on bats and their conservation.
www.bats.org.uk

BTCV

Conservation volunteering charity. Produces a very useful and informative Woodland Handbook.
www.btcv.org.uk

Butterfly Conservation

Produces useful butterfly fact files.
www.butterfly-conservation.org

Countryside Jobs Service

Provides details on nationwide training courses.
www.countryside-jobs.com

Forestry Commission

Grants available for managing woodlands for wildlife. Also provides advice and issue felling licences.
www.forestry.gov.uk

Green Wood Centre

Runs courses on woodland management.
www.greenwoodcentre.org.uk

Living Countryside Ltd

Provides information on coppicing and wildlife including case studies.
www.coppicing.com

The Mammal Society

Dedicated to the study and conservation of all British mammals. Offers courses in dormouse ecology.
www.abdn.ac.uk/mammal

Natural England

Delivers an agri-environment scheme to provide funding for land managers. Provides protected species licences and advice.
www.naturalengland.org.uk

Naturenet

Independent countryside and conservation site.
www.naturenet.net

People's Trust for Endangered Species

UK conservation charity which runs the National Dormouse Monitoring Programme. Offers training days to understand dormice and their conservation and runs public events to see dormice.
www.ptes.org

Royal Forestry Society

Dedicated to the wise management of trees and woodlands.
www.rfs.org.uk

RSPB

British bird conservation charity. Owns and manages woodland reserves.
www.rspb.org.uk

Small Woodland Owners' Group

The Small Woodland Owners' group was formed to aid the enjoyment, diversity and conservation of British woodland.
www.woodlands.co.uk/swog

Small Woods Association

Supports and promotes the work done by the owners and carers of small woodlands.
www.smallwoods.org.uk

The Deer Initiative

Provides help and advice on deer management.
www.thedeerinitiative.co.uk

UK BAP website

Information on the UK Biodiversity Action Plan species and habitats.
www.ukbap.org.uk

Woodland Trust

UK's leading woodland conservation charity.
www.woodland-trust.org.uk

Woodnet

Helps timber growers and wood users make the most of local timber resources in SE England.
www.woodnet.org.uk

