



Arboriculture Research Note

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COPPICE by R E Crowther and D Patch. (Revised by J Evans and H L Davies*)

Abstract

There is an increasing interest in coppice both for the production of firewood and as a means of conserving existing woodland. This note outlines the main points to consider when coppicing existing woodland and suggests techniques for establishing new coppices.

What is Coppice?

1. Coppice is the term applied to woodland arising as vegetative shoots from cut stumps. Historically coppice shoots were cut on a 10 to 25 year cycle to provide small diameter poles for building and fencing. Since the industrial revolution the use of coppice materials has greatly declined so that now the major active coppice work is with Sweet chestnut (*Castanea sativa*) for fencing. Small amounts of hazel (*Corylus avellana*) are cut for hurdles, bean and pea sticks and osiers (*Salix viminalis*) for basket making. There has recently been an increase in the cutting of mixed species coppice to revive the practice for conservation reasons and to produce firewood.
2. Many old coppices contain scattered trees, which have been allowed to grow on through several coppice rotations to produce large diameter timber. If these 'standard' trees are retained the yield from the coppice may be considerably reduced because of the effects of shading. Thirty 'standards' per hectare is the traditional number of trees grown over a coppice system and was enforced by statute introduced by Henry VIII. New 'standards' can be recruited by leaving straight and vigorous natural seedlings to grow on to maturity.

Managing existing Coppice

3. Interest in coppice woodlands is reviving because systematic coppice management of broadleaved species provides a range of habitat for wildlife while rehabilitating neglected woodlands. In addition the small diameter straight poles cut from coppice woodland are easily converted for use as fuel in wood-burning stoves and as hardwood pulp.
4. Many woodlands have a history of coppice management but have been neglected in recent years. The successful revival of old coppice depends on both the species present, the age and vigour of the old stools and their stocking. Provided there are vigorously growing trees present, either maidens or coppice, felling will result in prolific shoot growth from the cut stumps and the cycle of coppice cutting can be re-commenced. Protection from grazing animals will be necessary until the coppice growth is well established.

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5. Cutting should normally be carried out in winter, which allows the whole of the summer for coppice re-growth and for the cut wood to dry ready for use in the following winter. Summer cutting will result in less vigorous coppice shoots in the first year. Cutting should be as close to the ground as possible to encourage new shoots to spring from the rootstock rather than the stumps of cut stems. The cut should slope to shed water and although traditionally a smooth cut with axe or billhook was advocated, the rougher surface left by chainsaw cutting is not detrimental.
6. Coppice stools can be killed or damaged by fires, so if branchwood has to be burned fires should be well away from stools. Unwanted branchwood may be left on site to decay naturally and provide sites for a large number of insects and fungi, increasing the conservation interest. (In traditional coppice working, all branchwood was made up into faggots and used to heat ovens; fires were not needed in the coppice).
7. When stools eventually become weakened or decayed open spaces may develop in the stool bed. If these gaps are in excess of 8m x 8m filling by layering shoots from adjacent stools or new planting should be considered. Young trees placed in smaller gaps are unlikely to be able to grow or to compete for light with adjacent coppice shoots. Large gaps may be used to establish trees to grow as standards as an overstorey for either habitat diversification or to produce large diameter logs.

Establishing a New Coppice

8. Conditions on the site will determine the tree species planted but the reasons for planting must also be considered. Wildlife conservation may be achieved with native slow growing species, which often have a large associated fauna, while for fuel wood production rapid growth is essential. Although experience with exotic broadleaved species as coppice crops is very limited in Britain, there is evidence of their ability to coppice and to produce substantially greater yields than some of the more common broadleaved species. The following species are suggested for firewood coppices and for those who are prepared to take the inevitable risks involved in trying new techniques.

<u>Site</u>	<u>Name</u>	<u>Species or Variety</u>
Stream and pond sides	Willow	<i>Salix alba</i> and cultivars <i>S. fragilis</i>
Moist but well drained	Alder	<i>Alnus rubra</i> , <i>A. incana</i> .
	Poplar	<i>Populus nigra</i> <i>P. x euramericana</i> cultivars <i>P. trichocarpa</i> 'Fritzi Pauley' <i>P. trichocarpa</i> 'Scott Pauley'
Well drained fertile lowland sites. Avoid frost hollows.	Eucalyptus	<i>Eucalyptus gunnii</i>
	Nothofagus	<i>Nothofagus procera</i> in the west. <i>N. obliqua</i> in lower rainfall areas (but not East Anglia).

Other species, such as ash (*Fraxinus excelsior*), alder (*Alnus glutinosa*), Sweet chestnut (*Castanea sativa*), hornbeam (*Carpinus betulus*), lime (*Tilia* spp.), oak (*Quercus* spp.) and sycamore (*Acer pseudoplatanus*) can be used but wood production will be slower.

On heathland sites in lowland areas soil cultivation and phosphate fertiliser applications are essential; very limited experience suggests that birch (*Betula* spp.) and *Nothofagus* spp. are the most likely candidates.

9. Removal of competing vegetation should be undertaken, preferably with a herbicide, before planting. This could be a total or spot treatment. The method of weed control to be used after planting will influence the spacing adopted and must be decided before planting commences.
10. Plants of between 0.5 and 1 metre in height should be planted into clear ground at a 2 or 3 metre square spacing. The ground should be weed free so that early growth is assured. Control of competing weeds should be maintained to ensure continued vigorous growth of the trees until vegetation is suppressed after the first cutting cycle. Newly planted trees are vulnerable to damage from farm stock, rabbits, hares and deer, and fencing or individual tree protection may be necessary.

When to Cut Coppice

11. When establishing a coppice woodland for firewood newly planted trees should not be cut until there is material suitable for the fire. Depending on species and site this may be between 7 and 10 years by which time trees should be sufficiently well established to withstand being cut. Growth following the first cut is not likely to produce as much growth as a well established coppice. However, after the second and subsequent cuts yield should improve. The frequency of cutting will be determined by the site, species and management objectives. (E.g. 12 - 18 years for good Sweet chestnut coppice).
12. Production of poles suitable for firewood will be achieved earlier if the number of shoots on each stool is reduced to between 5 and 10 in the second year after cutting. This will concentrate growth on to a smaller number of shoots. It is a costly practice and is not widely applied.

Conclusion

13. Managing coppice woodland requires sustained effort in looking after the woodland and ensuring successful coppice regeneration, where necessary, after each cut. If the objective is production of domestic fuel additional effort will be required to transport, prepare and dry the produce before it can be burned. An additional spin-off in the case of neglected coppice woods is that systematic management could restore and improve habitats for plants and animals.

Further Reading:

Crowther, R E and Evans, J (1986) Coppice Leaflet 83. Forestry Commission, Edinburgh.

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