

# Killing sweet chestnut *Castanea sativa* coppice stools by cutting and herbicide treatment, Blean Woods RSPB Reserve, Kent, England

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## SUMMARY

Sweet chestnut *Castanea sativa* coppice was controlled by five different methods: repeated cutting, amicide poured into drilled holes, herbicide painting of stumps, weed-wiping of first year growth, and knapsack spraying of regrowth. The most effective and efficient method was to cut the coppice stools and subsequently knapsack spray the first year regrowth with herbicide.

## BACKGROUND

In the UK, sweet chestnut *Castanea sativa* is an alien species which supports relatively little wildlife. Extensive areas of the Blean Woods Royal Society for the Protection of Birds (RSPB) Reserve, an ancient woodland in southeast England, are covered in sweet chestnut or chestnut/birch *Betula* coppice. One objective of reserve management is to gradually reduce the dominance of chestnut and return the coppice to a mix of native species. Because the coppice stools are often large (60 to 120 cm in diameter) they have extensive root systems which are not easy to kill with herbicides alone. Therefore various herbicides, application techniques and cutting regimes were tested over a number of years to devise an effective, practical and cost-efficient method of sweet chestnut control.

## ACTION

**Study site:** Blean Woods RSPB Reserve, located in Kent, southeast England, is an ancient sessile oak *Quercus robur* dominated woodland with an understorey of mixed coppice (including native hazel *Corylus avellana* and extensive areas of non-native sweet chestnut). A range of approaches to control sweet chestnut at Blean Woods have been tried over the years:

**Repeated cutting:** Cutting regrowth of coppiced stools three times annually over several years.

**Drilling coppice stools and Amicide application:** At least two holes were drilled in each cut face of the stool (main branches), the holes where at least 10 mm wide and 50 mm deep. A saturated solution of Amicide in water was then poured into each hole.

**Herbicide painting of stumps:** Cut stumps were painted with solutions of two different herbicides - Timbrel/Triptic (a selective scrub and brushwood herbicide for use in forestry and woodland areas which is harmless to grasses) and Roundup (a broad spectrum herbicide) at variable strengths of up to 50% solution (i.e. over 5-times the manufacturers recommended application rate).

**Weed-wiping first year regrowth:** Weed-wiping was undertaken in late June-July when there was sufficient leaf area but before the shoots were so tall that wiping became physically difficult and much slower.

**Knapsack spraying regrowth:** This had been avoided in the past due to fears of damaging non-target vegetation, however, trials were undertaken in 2004, after suggestions that if care was taken by the operator this need not be a particular problem.

## CONSEQUENCES

**Repeated cutting:** Cutting three times annually had to be carried out for a total of five years before all stumps comprising one stool were completely dead. This method was so time-consuming as not to be considered further.

**Drilling stools and Amcide application:** This method of control proved very labour-intensive and expensive but was 80%-90% effective in achieving a kill.

**Herbicide painting of stumps:** Timbrel/Triptic was more effective than Roundup but even with concentrations up to a 50% solution, a total kill was not achieved. Any small areas of bark left untreated were liable to produce shoots and had to be retreated. This method again proved very labour-intensive and expensive in chemicals.

**Weed wiping first year regrowth:** This was a relatively slow method but used little herbicide. Kill rates were very variable but generally higher on smaller stools and where herbicide was applied more thoroughly. Some follow-up herbicide treatment was usually needed in the following year.

**Knapsack spraying regrowth:** This was the fastest of all the methods tried and is probably at least as effective as weed wiping. It has the

advantage over weed-wiping in that tall regrowth is much easier to spray. It can thus be used later in the season when the leaf surface area is at its maximum and absorption of the active herbicidal chemicals is therefore thought to be greater.

**Future trials:** Knapsack spraying of cut stools is the only method currently under consideration that has not yet been tested. The main problem envisaged is increased chance of wash-off by rain before the chemical has been absorbed properly. This treatment is also supposed to be more effective if carried out when the stumps are freshly cut, but this is predicted to be often not possible due to manpower constraints.

**Conclusions:** To date, the most effective and efficient method of sweet chestnut treatment has been to cut the coppice stools with subsequent knapsack spraying of first year regrowth with herbicide. However, care is needed to avoid damage to non-target, desirable vegetation and in some areas this would not be an appropriate technique to use. Spraying freshly cut sweet chestnut coppice stools with herbicide would produce quicker results but this is operationally harder to implement due to limited resources.