British Ecological Society – Forest Ecology Group
Bramble in Woodland - bane or benefit?

The following are very brief notes of the presentations made at this meeting held on 21st June 2006 and which was attended by almost 50 people, most of whom were involved in the practical management of bramble.

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Distribution and ecology of Bramble

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Bramble is a very common, successful, native species that occurs in a wide variety of habitats throughout Britain including woodlands, heaths, dunes, mires and grassland. Several features may explain the success of bramble: it can survive long periods in the seed-bank; spreads vigorously by vegetative growth; is semi-evergreen – in mild winters the leaves persist on first year canes; can be spread long distances by birds. In favourable conditions it can grow to produce dense thickets that can have adverse competitive effects on other vegetation.

It is a component of all woodland and scrub communities except Native Pine Woodland (W18) and two types of upland scrub (W19,W20). The recorded frequency of bramble within woodland communities varies and it tends to be less frequent in upland compared to lowland woods. For example, it is scarce in upland ash and oak woods (W9 and W11) but constant in the lowland equivalents (W8 and W10). The abundance of bramble is related to soil quality, light and the intensity of grazing. It is often abundant on sites with base rich, mesotrophic soils, but growth is restricted by dense shade. It is a palatable species that is eaten by a variety of herbivores, which may help explain its reduced frequency/abundance in NVC woodland communities associated with the uplands, as these were often heavily grazed in the 1970's when the NVC's vegetation surveys were carried out.

Bramble cover in woodland is often dynamic with abundance being generally related to changes in canopy cover and browsing pressure. This results in variable bramble cover throughout a woodland in both location and time which is of benefit to the overall diversity present.

Growth, Flowering and Fruiting

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The shoots of bramble are biennial, growing from a perennial root-stock – they remain vegetative in the first year forming flowering lateral shoots in the second. Daughter plants may be produced vegetatively from fiirst year canes which can root at their tips during the autumn. An experiment was carried out over 3 years to investigate how different levels of canopy cover, created by thinning treatments within a stand of 35-year-old Corsican pine (10,20,40,80% of basal area removed), influenced vegetative growth, flowering and fruiting.

A non-destructive method was used to assess the cover, height and length of bramble shoots. All increased roughly in accordance with the amount of basal area removed, but treatment differences were not always significant. It was possible to predict bramble growth from the basal area of trees remaining after thinning. Fruiting was observed by assessing the number of berries and filled seeds produced during late summer. The number of fruits on each inflorescence was unaffected by canopy cover, but both the number of inflorescences and number of berries per square metre was positively related to intensity of thinning (*i.e.* more light, more fruiting). Although fruit development was more advanced under the heavier thinning, there was no effect on the number of seeds in a berry nor the proportion of filled seeds. Whilst bramble can grow beneath a canopy, its vigour and reproductive success is reduced.

Better growth, flowering and fruiting under reduced canopy cover may bring benefits to some wildlife, but these must be balanced against adverse competitive effects that bramble may have on tree regeneration and small plants in the ground flora.

Rubus – who needs sex?

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Reproduction in plants may be sexual or asexual. Typically seed production is sexual but there are many plants which are apomictic – reproducing by seeds that are produced asexually and are entirely maternal in origin – these include dandelions and brambles. Apomictic brambles are polyploid and their expression of apomixis is facultative – with plants being able to reproduce sexually, apomictically or by both means which allows new types to develop by hybridisation. In addition, they all, of course, reproduce vegetatively. Seed production by apomixis can occur in a

variety of ways. In brambles both apospory and diplospory occurs, but in addition pollination is required in order to generate endosperm. This is termed pseudogamy, and means that brambles have to produce pollen to achieve it, in contrast to many other apomicts such as most dandelions, in which pollen production does not occur.

Because of their asexual mode of reproduction, brambles have diversified and produced a great number of taxa (over 320 in Britain) which, with much practice, can be recognised by experts. These microspecies differ in their habitat preferences and ideally managers should be able to identify those present on a site. However, identification of different microspecies can be very difficult and there are few capable of the task. In order to identify a microspecies it is necessary to look at both flowering and non-flowering stems observing a wide variety of features including leaves, prickles, glands, flower characters and young fruit. Mature fruits are of relatively little value in identification. It is not necessary for a local botanist or forester to be able to recognise anything like 320 species; for example, only about 120 are recorded for the whole of Gloucestershire. It is suggested that he collect a good sample of each sort in his area, and that he get these determined by an expert so his collection can be used as a reference in the future. In this way the (say) 20 or so species present in a woodland site can soon be learnt.

Birds and other wildlife

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A variety of wildlife resources are provided by bramble, these include both food (nectar, pollen, flowers, fruit, leaves) and physical structure that provides habitat in which to live. About 240 species of phytophagous insects and mites feed on bramble; 32 of these rely exclusively on bramble and 12 have red data book status. The adults of saproxylic insects also use the flowers of bramble when those of their main food plants – often hawthorn – are over. Bramble is a very valuable species for dormice: they nest within the bramble thicket; they eat the flowers and the insects attracted to them and consume the berries produced in autumn.

Birds utilise bramble in a variety of ways as it is: a key nesting site for several species (e.g., song thrush and wren); an important component of the habitat providing cover and protection from predators (e.g. nightingale); provides berries which are an important source of food especially for pre-migratory fattening (e.g. Sylvia warblers). The shoots and leaves of bramble provide food for large herbivores such as deer whose browsing activity can have significant effects on the growth and development of the bramble thicket. Consequently high numbers of deer or other animals

that create overbrowsed woodlands will reduce both food supply and structural in which birds live, nest and take cover from predators.

Although in some circumstances bramble can be a problem it is often of benefit. It provides many resources and is a key structural component of habitats for birds in many woods.

Practical aspects of management

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If bramble is managed it can have a number of positive benefits, for example: as a food plant for many animals; by providing a protective/structural habitat in which many species live; retaining moisture and influencing microclimate at ground level; protecting planted and naturally regenerating trees from browsing animals. In addition it can provide a living hedge to restrict or zone public access on a site. However, if it is unmanaged, bramble can have serious negative effects: natural regeneration can be limited; the development of the ground flora can be suppressed with consequences for diversity; it can physically smother plants *e.g.* pulling-down both planted and naturally regenerated trees; it may restrict access for maintenance operations. There are 5 options for control: careful manipulation of over and understorey cover to control light level at the forest's floor; tractor mounted cutters, pedestrian operated cutters; herbicides; tractor mounted combing using a modified spring-fire cultivator. The future for the use of herbicides is unclear.

Field visit

Rik's presentation took place at an experimental site within a neglected ash – field maple coppice woodland where the effects of different stand management treatments on the regeneration of trees and the development of the groundflora is being investigated. The treatments include different intensities of thinning, fencing and control of bramble.

For more information about this site contact Gary Kerr or Ralph Harmer of Forest Research.
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