



Heartwood Forest – notes on habitat enhancements for butterflies and moths at the Woodland Trust’s woodland creation project at Sandridge, Hertfordshire

New native woodlands as a habitat for lepidoptera

The creation of new native woodlands (typically on arable or other farmland) has increased greatly in recent decades, and has the potential to form important links between existing woodland sites and provide significant contributions to landscape biodiversity. However, many woodland creation schemes are not fulfilling their true potential in terms of biodiversity, and have little prospect of developing significant woodland ecosystems over 50 or 100 years.

In particular, once newly planted woodlands have closed canopy the chances of new flora developing are much reduced, making the early stages of new creation projects vitally important in determining their future biodiversity benefits. Incorporating key features at the design stage is crucial, and relatively small and inexpensive enhancements can make very significant contributions to the development of the ecosystem in the long term.

A general guide to features that can enhance biodiversity has been produced by East Malling Research - Woodland Creation for Wildlife: a guide to creating new woodland for wildlife in Kent and East Sussex by David Blakesley. This is available to download at <http://www.emr.ac.uk/recentpublication.htm>. Butterfly Conservation are working with the authors on a national publication highlighting the same issues, the broad principles of which are outlined in this document.

General principles

- **Increasing floral and shrub species diversity.** Butterflies require flowering plants as nectar sources and foodplants for developing larvae, and it is often the latter that is the factor limiting butterfly breeding populations in woodlands. With one or two exceptions, butterflies associated with woodland use grasses, herbaceous plants or shrubs as larval foodplants (see enclosed table), and increasing the diversity of these species in planting mixes will greatly improve the value of the site for butterflies and moths.
- **Improving vegetation structural diversity.** Uniform grassland or even-aged woodland plantings can be enhanced by using different planting mixes, staggering planting schedules, incorporating areas with short management cycles (e.g. coppice). Grassland areas and rides should not be uniformly mown – edges can be left to retain longer grass and natural scrub regeneration.
- **Providing a graded, shrub-rich woodland edge.** Rides and glades function as extensions of the woodland-edge habitats which are often richest in wildlife, including butterflies and moths. Ride designs should incorporate a three-zone structure of short grass (managed regularly for access), longer grass and tall herbs (mown every 2-4 years) and a taller edge of scrub or coppice (cut every 6-20 years) that grades into developing high forest.
- **Planning a ride and glade network that connects to likely sources of colonisation.** While many butterflies of the wider countryside are relatively mobile,

the chances of colonisation, particularly by scarcer species or grassland specialists, is very much improved by providing open sunny rides connecting into the ride network of neighbouring woodland. Cut material from ride mowing should be collected and removed or piled at the ride edge.

Specific guidance for key woodland species in Hertfordshire

Four woodland specialist butterflies of high conservation importance occur in neighbouring woodlands within colonisation distance of the Heartwood Forest site (the first three within 1-2km), and all could be encouraged breed on site:

- **Silver-washed Fritillary** – a 30% decline in UK distribution in over 30 years, but currently undergoing a population increase in the South East and expanding its local distribution. Breeds in rides, glades and coppice where the larvae feed on Common Dog Violets. It particularly likes recently-managed coppice, woodland edge and ride edges managed on rotation (3-12 years). Adults nectar on bramble in high summer and thrive where sunny but sheltered banks of bramble are allowed to develop. Encourage violets by rotational management of scrub and coppice edge, and consider plug-planting violets where colonisation from existing ancient woodland is unlikely.
- **White Admiral** – a very severe decline in population levels on occupied sites may be due to increases in deer numbers in the core of its range in southern England, browsing out the honeysuckle on which the larvae depend. Adults are typically seen at established banks of bramble, which require sensitive management to ensure a continuous resource. **Honeysuckle planted in the shrub zone of the ride edge should be allowed to develop** – straggling plants growing in shaded conditions inside the tree crop are favoured for breeding. **Avoid routine ‘cleaning’ of honeysuckle from established trees during forestry operations.**
- **White-letter Hairstreak** – more widely reported in recent years due to increased recording, this species breeds on elms, including Wych Elm, English Elm and Small-leaved Elm. **Both native and disease-resistant hybrid elms can be incorporated into planting mixes.** The adults spend long periods high in the tree canopy, often feeding on aphid honeydew, but also come to nectar sources in rides and woodland edges.
- **Purple Emperor** – found within 10km of the site, and capable of colonising over long distances. Thought of as a species of high forest, breeding on sallows in established woodlands, but it readily uses willow bushes on ride edges or in younger willow thickets. **Goat Willow (*Salix caprea*) is the preferred foodplant, which can be easily planted as whips in ride edges and wet flushes, and incorporated in planting mixes.** Sallows are also a very important early-season nectar source for butterflies, bees and other insects, as well as a foodplant for many moths. Creating wet flushes or ditches in which these can grow, *set back from ride edges*, ensures that a willow resource is retained if those which inevitably grow in ride drainage ditches need to be cut back at any time.

Open habitat management on areas not being planted with trees

Nomansland Common immediately to the north will be a key source of colonisation for Heartwood Forest, both for common species and some scarcer grassland species, including Small Heath, Small Copper, Common Blue, Brown Argus & Marbled White. An extension of this unimproved grassland habitat into the open habitat network of the Heartwood project area would be a very significant contribution to the landscape. This will, however, depend upon the soil fertility of the site, and in general would be most practical where soil nutrients are lowest. Grassland seed mixes should aim to incorporate fine grasses such as fescues and bents, and areas of very short turf or bare ground would be a major addition to the grassland habitat mosaic. We would strongly recommend aiming to retain parts of this area as permanent open grassland and scrub, rather than allowing natural regeneration to secondary woodland throughout. Low intensity grazing or rotational scrub management can be used to maintain an open character, and are preferable to regular mowing. If cutting grassland is necessary, removal of the arisings will greatly improve habitat quality – repeated cutting with the arisings left on will lead to increasing rankness, uniformity of sward and loss of ground flora.

Butterfly larval foodplants, taken from Blakesley, D. (2006) *Woodland Creation for Wildlife: a guide to creating new woodland for wildlife in Kent and East Sussex*.

Table 4.10 Butterfly larval foodplants

	Main foodplants in grassland and open areas in woodland
Wider countryside species	
Small skipper	Yorkshire-fog; rarely other grasses such as timothy, false brome
Essex skipper	Cock's-foot, but may use other grasses such as creeping soft-grass, timothy, false brome, meadow foxtail, tor-grass, common couch
Large skipper	Cock's-foot; occasionally purple moor-grass and false brome
Dingy skipper	Common bird's-foot-trefoil; occasionally horseshoe vetch, greater bird's-foot-trefoil
Brimstone	Buckthorn, alder buckthorn
Large white	Wild or cultivated crucifers, particularly <i>Brassica oleracea</i> vars.
Small white	Cultivated crucifers; sometimes wild crucifers, including wild cabbage, hedge mustard, charlock, mignonette
Green-veined white	Wild crucifers, including wild cabbage, hedge mustard, large bitter-cress, cuckooflower, charlock
Orange tip	Cuckooflower and garlic mustard; occasionally large bitter-cress, charlock, winter-cress, hedge mustard, turnip, hairy rock-cress
Green hairstreak	Gorse, broom, Dyer's greenweed, buckthorn, dogwood; common rock-rose, common bird's-foot-trefoil on chalk grassland, possibly in woodland
Small copper	Common sorrel, sheep's sorrel; occasionally broad-leaved dock
Brown argus	Cranesbills
Common blue	Common bird's-foot-trefoil; others include greater bird's-foot-trefoil, black medick, lesser trefoil, white clover, restharrow
Holly blue	Holly, ivy; others include a wide variety of shrubs such as dogwood, bramble, spindle
Red admiral	Nettle; sometimes small nettle
Painted lady	Thistles (<i>Carduus</i> spp. and <i>Cirsium</i> spp.); wide range of other plants including mallows, common nettle, viper's bugloss
Small tortoiseshell	Nettle, small nettle
Peacock	Nettle
Comma	Nettle; others include hop, willows, currants
Marbled white	Red fescue; possibly supplemented with sheep's-fescue, Yorkshire-fog, tor-grass
Grayling	Sheep's-fescue, red fescue, bristle bent, early hair-grass
Gatekeeper	Fine grasses including bents, fescues, meadow-grasses
Meadow brown	Fine grasses including bents, fescues, meadow-grasses, coarse grasses including cock's-foot, false brome
Ringlet	Meadow-grasses, coarse grasses including cock's-foot, false brome, common couch, tufted hair-grass
Small heath	Fine grasses including bents, fescues, meadow-grasses
Woodland specialists	
Brown hairstreak	Blackthorn, occasionally other <i>Prunus</i> spp
Purple hairstreak*	Oaks
White-letter hairstreak*	Wych elm, English elm, small-leaved elm
White admiral	Honeysuckle
Speckled wood*	Cock's-foot, false brome, Yorkshire-fog, common couch and other grasses

*considered by Asher *et al.* 2001 to be wider countryside species