

# **ENHANCEMENT OF LOWLAND FOREST RIDESIDES AND ROADSIDES TO BENEFIT WILD PLANTS AND BUTTERFLIES**

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## Abstract

Wild plants and butterflies can be specially catered for in modern forests by widening and shaping the forest edge beside roads and rides. Rideside and roadside bays or glades provide alternatives to uniform widening. Recommended shapes and dimensions of these features have been worked out from calculations of the lengths of shadows thrown by adjacent trees during the growing season.

## Introduction

Lowland forests are often havens for flowering plants and insects. The fairly long intervals between bouts of disturbance and the mosaic of open ground and woodland together provide conditions that suit a wide range of species. Woodland, scrub and grassland species can all occur in different parts of the mosaic.

In plantation forests roadside and rideside edges are major habitats for flowering plants and butterflies. Both these groups need light and most of that will be at road and ride edges. In stands of evergreen trees, or beech, shrubs and their

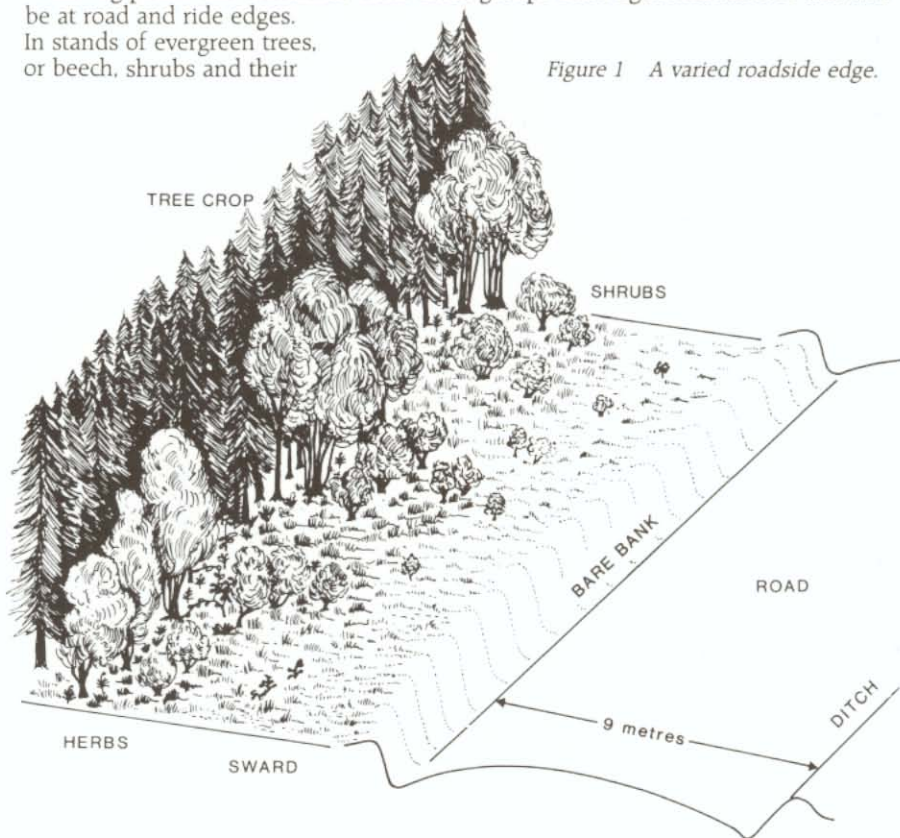


Figure 1 A varied roadside edge.

Front cover photographs:

Top: Unimproved plantation edge suiting only a limited variety of wild plants and insects.

Bottom: Edge of plantation cut back, allowing greater incident sunshine to stimulate the development of a shrubby and herb-rich zone, with food and nectar plants for butterflies.





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#### Photographs:

1. Speckled Wood (*Pararge aegeria*).

One of the very few species of butterflies that can tolerate shaded rides. (*S.H.Carter*).

- 2-5: Examples of some of the woodland butterflies that can be encouraged to breed in improved ridesides.

2. Wood White (*Leptidea sinapis*) · (36226).

3. White Admiral (*Ladoga camilla*) · (*S.H. Carter*).

4. Silver Washed Fritillary (*Argynnis paphia*) · (*M.R. Jukes*).

5. The Brimstone (*Gonepteryx rhamni*) · (35919).

## Shaping ride edges

Road and ride edges need not be cut back uniformly. Scalloped or bay shapes can be formed instead. These will reduce the 'wind-tunnel' effect on long straight rides, increase visual variety and lessen the hindrance to timber extraction from the crop behind. Each scallop or bay can contain a different stage in the succession from open ground to scrub. Or each bay can contain a different range of shrub species. Figure 2 shows several bay or scallop shapes that have been found useful. Opposed bays give a greater fetch of light across the ride than staggered ones. Large, well-lit glades can be formed by cutting off the corners at ride or road intersections. These corner glades provide light from a variety of angles.

The smallest useful glade or bay length, along the ride, is about 7 metres. Lesser lengths will not provide enough room for greensward as well as a shrub belt. Bays or scallops in tree crops taller than about 20 metres will need to be at least 25 metres long to provide light for a range of plants over an appreciable part of the growing season. Corner glades may be cut to slightly smaller dimensions because light strikes from several angles anyway.

## Cutting frequencies

This depends very much on local conditions and the plants and butterflies for which the site is being managed. But, in general, shrubs will need to be cut again



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every 3-7 years and grass swards every 2-5 years, but not before October in each case. If short-turf plants, such as Bird's foot trefoil, are desired, some cutting will have to be done annually and the mowings removed. Brash from shrub cutting should be removed or pulled back under the trees. Where this cannot be done, small piles may be tolerated for a few years if spaced at least 50 metres apart.

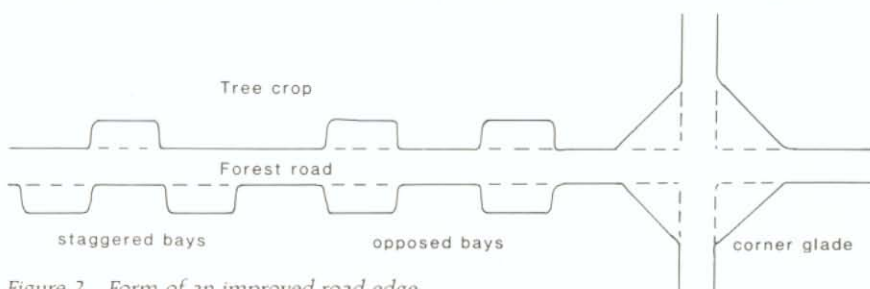


Figure 2 Form of an improved road edge.

Areas of 1-2 square metres should be bared or scraped in each scallop or bay when the sward is cut. On uniformly widened areas these bared parts should be about 25 metres apart. Shrubs will need to be cut with clearing saws but swards can be mown or flailed if the interval is less than about 3 years.

## Problem plants

Brambles and fast-growing grasses, for example species of *Deschampsia* and *Calamagrostis*, may compete with or shade smaller plants; they may have to be cut specially but should not be eradicated. Willows and birch that spring up in roadside ditches must be kept down to prevent them from shading the sward or the bank behind.

## Browsing by deer

Deer browse heavily on the thorn bushes that are food plants for Black and Brown Hairstreak butterflies. Exclusion or special management of deer may be needed but will certainly prove very expensive where there are many roe or muntjac. Deer will, however, feast on brambles in winter, beneficially letting in light to smaller plants beneath. So, as a means of benefitting desirable small plants, deer may be tolerated to a degree if thorns are not needed as butterfly food. Some brambles should be kept, though, as late-season sources of nectar.

associated insects may become restricted to the edges along with many of the smaller flowering plants. These strips of edge vegetation provide reservoirs of seeds, plants or insects from which adjacent areas can be colonized after the trees on them have been cut down. Because of the light and the presence of two neighbouring habitats, road and ride edges can be rich in species. Finally, roadside and rideside edges are in full public view and readily accessible for special treatments to favour wildlife.

## Aims of edge-management for wildlife

In general, management of ride and road edges seeks to provide a variety of habitats for plants and their associated butterflies. This is best achieved by grading the edge in stature from tall trees, down through shrubs and scramblers to grass and finally to bare ground that acts as a seed bed. There should be gaps in the shrub belt and some variety in the species. These features are shown in Figure 1. The form of a standard forest road has been taken into account.

## Management practices

There are three elements in this management:

1. setting back the tree crop's edge,
2. repeatedly cutting shrubs and grass sward,
3. providing bared ground as a seed bed.

The edge of the tree crop must first be cut back to provide light and room for plants. Table 1 gives a guide to depths of cut, calculated from the length of the shadows thrown by the tree crop on the other side of a road or ride during the growing season. Shrubs will usually spring up by themselves from old rootstocks or seed where there has previously been woodland but elsewhere some species may be specially planted as butterfly food or nectar plants; for examples see Table 2.

Only small areas of bared ground are needed as places for seeds of small plants, for example strawberry, to germinate and establish. These can be made by scraping the tops of roadside ditch banks. Grass swards, in front of shrub belts, will form themselves and will need to be maintained by rather frequent mowing or flailing; this will have to be done more often than the regular cutting of shrubs, for instance.

**Table 1** Minimum ride widths, from tree to tree, calculated for latitude 52°N, Llandovery to Ipswich. These are worked out from the maximum shadow-free distances across rides in the growing season, defined as the time between the spring and autumn equinoxes.

Height of trees (metres)	Minimum* ride width (metres)	Greatest possible duration of sunshine				
		East-west ride		North-south ride		
		South aspect	North aspect	East aspect	Centre of ride	West aspect
5	4.5	5 hours before noon	1.5 hours	2.75 hours	2-2.5 hours before noon	2.75 hours
10	9.0	and 5 hours after noon	before 7 am	at equinox-	and	at equinox-
15	13.5	(continuous for 10 hours)	and then 1.5 hours after 5 pm	and 3.75 hours at midsummer (morning only)	2-2.5 hours after noon (continuous for 5 hours)	3.75 hours at midsummer (afternoon only)
20	18.0					

\*Narrower rides will not be sunny enough for a wide range of butterflies and their food plants to flourish.

The table refers to level ground. Sites sloping to the north will be less favourable than those sloping to the south. In the north of Britain the lower sun angles may make it more desirable, where the crops are very tall, to manage N-S rides on southerly slopes rather than E-W rides.



## Ready-made opportunities

Timber-stacking and loading areas or 'passing places' all form usefully-sized bays. If the soils are not compacted by vehicles and contain rootstocks or seeds then these areas may prove valuable for plants and butterflies. But metalled or compacted areas will develop a different and poorer vegetation to that in Figure 1 and will not readily support woodland plants for several years.

## Plant and butterfly species

Table 2 shows plants and butterflies that may be present or may appear on managed edges. Emphasis is given to the food plants of lowland butterflies.

**Table 2**

Examples of plant species and butterflies likely to benefit from roadside and ridside management.

	<b>Non-butterfly plants</b>	<b>Caterpillar food plants</b>	<b>Butterflies</b>
A. In the shrub belt	Wood sage ( <i>Teucrium scorodonia</i> )	Common violet .....	Fritillaries
	Primrose ( <i>Primula vulgaris</i> )	Sallow .....	Purple Emperor
	Dog's mercury ( <i>Mercurialis perennis</i> )	( <i>Salix</i> spp.)	
	Dogwood ( <i>Cornus sanguineus</i> )	Blackthorn .....	Hairstreaks
	Spurges ( <i>Euphorbia</i> spp.)	( <i>Prunus spinosa</i> )	
	Stitchwort ( <i>Stellaria holostea</i> )	Buckthorn .....	Brimstone
	Wood sorrel ( <i>Oxalis acetosella</i> )	( <i>Rhamnus catharticus</i> )	
		Honeysuckle .....	White Admiral
		( <i>Lonicera periclymenum</i> )	
		Golden rod ( <i>Solidago virgaurea</i> )*	
B. In swards	Yellow rattle ( <i>Rhinanthus</i> spp.)	Grasses .....	Skippers, Gatekeeper, Speckled Wood.
	Composites ( <i>Compositae</i> )	( <i>Graminae</i> )	
	Green-winged orchid ( <i>Orchis morio</i> )	Bird's foot trefoil .....	Common Blue, Dingy Skipper.
	Self-heal ( <i>Prunella vulgaris</i> )	( <i>Lotus corniculatus</i> )*	
	Hedge woodwort ( <i>Stachys sylvatica</i> )	Vetches .....	Wood White
		( <i>Vicia</i> spp.)	
		Thistles - ( <i>Compositae</i> )*	
		Brambles ( <i>Rubus</i> agg.)*	
		Teasel ( <i>Dipsacus fullonum</i> )*	
		Bugle ( <i>Ajuga reptans</i> )*	
C. On bare ground	Mosses ( <i>Bryophyta</i> )	Wild strawberry .....	Grizzled Skipper
	Wood melick ( <i>Melica uniflora</i> )	( <i>Fragaria vesca</i> )	
		Hairy violet .....	Fritillaries
		( <i>Viola hirta</i> )	

\*Nectar plants

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