

Managing Road Verges for Pollinators



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This resource has been designed for local authorities managing road verges for wildlife and the local community, with a particular focus on providing for the needs of pollinators, especially within B-Lines.

Connecting up our landscape through wildflower-rich corridors of habitat is no small feat. It requires us to look at the management of all wildlife spaces. Perhaps the most logical step to creating B-lines is restoring nature along our travel networks, and that includes road verges, that wind through the countryside and can be important connective features for people and wildlife. The profile of verges managed for wildflower habitat is growing, but there are still many hearts and minds to win over. Safety and tidiness are pitted against wildlife-friendly habitat, but there are local authorities across the country trialling innovative ways to manage their road verges and roundabouts for wildlife whilst also factoring in safety for road-users.

Road verges

Road verges can incorporate a multitude of habitat types including grassland, wetland, hedgerows, scrub and woodland. These habitats can host a variety of features that are beneficial to the adult and larval stages of pollinators. Verges can be challenging places for wildlife, with pollutants and disturbance from traffic impacting on the species living there. A [Buglife report](#) addressed these issues and the evidence surrounding them and concluded that, due to the unique nature of road verges and the varying habitat that they could offer, that it is still beneficial to provide habitat for pollinators on them.

Some road verges lend themselves better to habitat work than others. Work should be prioritised on wider verges where the effects of the traffic are lessened. If you are enhancing a site with local wildflower seed or green hay avoid creating this habitat within the first 1-2m of the roadside where collision rates and contamination levels are highest and pollinator activity is often low. Typically, road verges are either over-managed or under-managed. Enthusiastic mowing regimes through the summer are a common sight that leave no space for anything to flower or set seed, whereas other verges may be abandoned completely and eventually become dominated by monocultures of 'thuggish' plants and grasses.



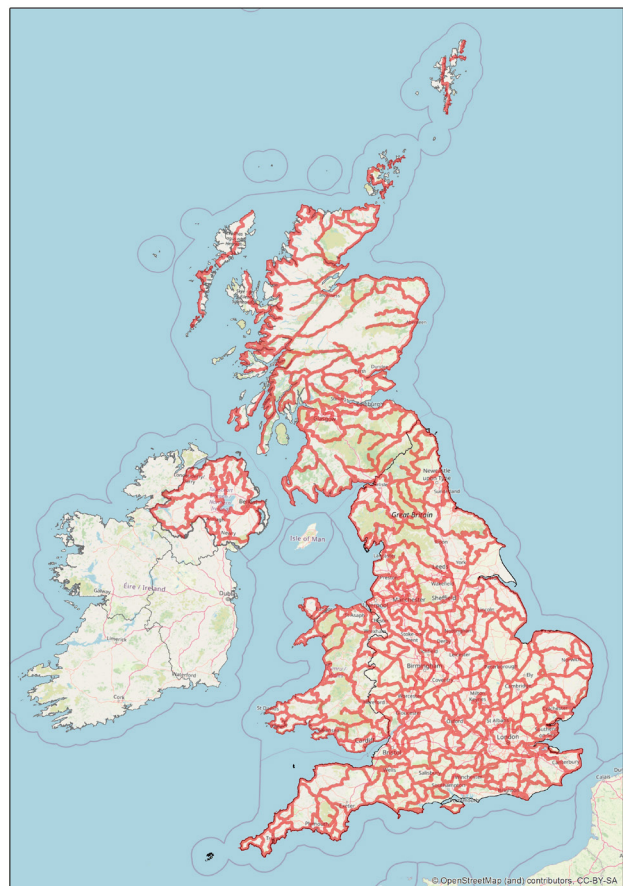
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There is a wealth of resources when it comes to road verge management. This document is a brief overview of the options with links to relevant documents, as well as a breakdown of what pioneering local authorities across the UK are doing and how sensitive management of road verges has reaped rewards.

B-Lines and road verges

B-lines are pollinator superhighways, a landscape-scale solution to reverse the decline in pollinating insects. They stretch across Britain's countryside, towns and cities, running north to south and east to west joining up the best remaining flower-rich habitats. Within B-Lines we are encouraging everyone to create flower-rich stepping stones, big and small, to help pollinators and other insects travel safely through our landscape. Built-up and intensively farmed or managed environments can be very difficult for insects to move through as there is no food or suitable resting places. Many insects are unable to travel very far and can become isolated within small 'islands' of suitable, flower-rich, habitat, unable to colonise new areas or recolonise old sites. This means both habitats and species can become increasingly fragmented and vulnerable. B-lines is the beautiful solution to joining up the flower-rich places in our towns and countryside to help halt the decline in insect populations, and we need your help!

The B-lines map [B-Lines - Buglife](#) overlaps in many places with minor road verges and main road routes, meaning that habitat work to benefit pollinators on road verges, especially within B-Lines can be added to the B-Lines map, contributing to the connectivity of pollinator habitats across the UK.



UK B-Lines network. Interactive map accessible at buglife.org.uk



Large-headed Resin Bee (*Heriades truncorum*) on Ragwort
© Lucia Chmurova



Cut and collect machine, Angus Council, Strathmore B-Lines
© Rachel Richards

Reducing nutrients

Wildflowers do best on low nutrient soils so when managing a grassy road verge the emphasis should be on reducing nutrient levels. If nutrient levels are reduced then so is grass growth and, in turn, the frequency of cuts required, thereby reducing workload and costs. When creating new verges or undertaking groundworks on existing ones making sure that the top layer of soil is as low in nutrients as possible will give an optimal starting point. The use of low nutrient substrate when creating new road verges can be very successful in the creation of flower rich habitats. Chalk grassland established on the chalk banks of the Weymouth relief road developed in 2011 now supports over half of the butterfly species found in the UK and Highways England are now instructing contractors to follow a Low Nutrient Grassland policy on all major schemes.

In the more usual situation of managing existing grassy road verges then a programme of cut and collect should be undertaken. In most instances cuttings are left to rot down on the verge, thereby smothering delicate wildflowers and enriching the soil leading to the dominance of grasses, Nettles and species like Hogweed and Cow Parsley. Ensuring that the grass cuttings are taken off the cut area will gradually reduce the nutrient load over time and allow more space for wildflowers to establish.

Timing of the cuts

This is absolutely crucial to enable the wildflowers present to establish, flower and set seed. It will vary depending on the condition of the verge. A very grassy verge may require up to three cuts per season, whereas a verge that is less grass-dominated may only require one to two cuts per season. A good schedule to follow though if you are carrying out three cuts per season is as follows:

First cut and collect

This should be undertaken in March, particularly if a mild winter and early spring has led to grass growth. This early cut knocks back the grass and allows more space and light

for the wildflowers to grow. If you have Yellow Rattle in your verge this early cut should be carried out before the seedlings start to appear.

Second cut and collect

Mid-July to end of September. This late summer cut should be varied from year to year if possible. An earlier cut in mid-July is good for keeping the nutrient status of the site low, but does not allow later flowering species to set seed. A later cut provides cover for invertebrates and other wildlife for longer and allows all species to flower and set seed.

Third cut and collect

October. This cut may only be appropriate if a mid-July cut was undertaken and the grass has grown substantially, as it aims to knock back the grass before heading into winter. This cut may be interchangeable with the early spring cut.

When carrying out road verge cuts aim to stagger cutting, for example by cutting one side of the road one day and the other side a week later when the first area has begun to produce new flowers. This avoids removing too many flower resources from a particular area at the same time which can leave pollinators struggling to find food.

Leave an area uncut

It is good to leave an area uncut each autumn and change this patch on rotation each year. Although cut and collects are good for maintaining the low nutrient status of a site, they are damaging for pollinator populations. Factoring in a portion of the site each year that is left uncut through the season provides cover and continuous forage for invertebrates. This area should be rotated each year so that no one area becomes overgrown and dominated by tussocky grasses or plants like Cow Parsley, Hogweed and Nettle.

The adoption of a sensitive cut and collect regime is the keystone of verge management, and a number of local authorities have demonstrated the benefits of this approach including not only habitat provision for wildlife but reduced costs, public approval, and maintaining effective sight lines.

Case studies

1



Red-tailed Bumblebee (*Bombus lapidarius*) on Knapweed
© Rachel Richards

£100,000

IN SAVINGS

Dorset County Council

In 2014 Dorset County Council approved a new approach to managing the county's network of road verges to substantially reduce costs whilst maintain safety standards and provide habitat for wildlife.

The new programme incorporated reducing the number of cuts, collecting the cuttings, introducing Yellow Rattle, engaging with local communities and identifying road verges of conservation value for targeted habitat management.

The council reported savings of £100,000 in 2015/16 and 2016/17, created a new six hectare wildflower verge and have recorded a number of specialist species across their verge network. It all contributes to their 'Action Plan for Pollinators'.

2



Red-tailed Bumblebee (*Bombus lapidarius*) on Cat's Ear
© Rachel Richards

81%

VALUED THE QUALITY OF GREEN SPACES

Causeway Coast & Glens Borough Council

This council led on the 'Don't Mow, Let it Grow' project which ran for three years from 2016 to 2018 with significant positive results in cost savings, public perception and increased species-richness recorded on the sites.

Interestingly the project recorded that 81% of the public asked stated that the quality of the greenspaces in an area impacts on their decision of whether or not to visit an area.

People responded overwhelmingly positively to the management and the resultant flower-rich verges. The project released an online toolkit for use by other local authorities - [Don't Mow Let It Grow Toolkit \(dontmowletitgrow.com\)](http://dontmowletitgrow.com)



Removing cuttings © Urban Green Newcastle

Removing the arisings

As detailed earlier, removing cuttings from a site is essential for boosting the species-richness of the site and reducing the build-up of cut grass. In natural ecosystems this would be done by grazing herbivores but what is to be done here with the waste cuttings? There are a number of options, some of which can be financially beneficial to councils;

- **Anaerobic digestion plants:** A number of councils have trialled using grass verge cuttings as a feedstock for anaerobic digesters. This prevents cuttings ending up in landfill, makes a potentially economically viable option, as well as being carbon neutral. There are still barriers to this option such as harvesting equipment, transportation costs and logistics, litter present on the verge, and licensing requirements from the Natural Resources Wales. Trials have been conducted in [Lincolnshire](#) and [Powys](#), which have yielded useful results in terms of costs and practicalities and have found that road verge cuttings make a good feedstock for the anaerobic digestion plants.
- **Community adopted verges:** Local groups have popped up across the UK who are passionate about conserving the grassland on verges in their local area, organising volunteers, local farmers and residents to cut, collect and remove grass from specific locations in order to boost biodiversity. Local authorities can encourage and support these groups and keep a record of the verges that are maintained by community groups to ensure no conflict of management.
- **Leaving cuttings on-site:** Where this is no option to remove cuttings from site, a suitable composting area can be used on site. Avoid covering sensitive vegetation with cuttings and rotate the location each year.

Restoring grassland with natural regeneration

We would always recommend natural regeneration such as reduced cuts and removing cuttings. Often a simple change in management can lead to wonderful results, as plants that have been reduced to basal rosettes finally flower and bloom, or the seed bank already present responds to the change in management and wildflower seeds germinate and establish. In some instances it can take 2-3 years or sometimes longer to see these changes. In other situations, especially where soils nutrient levels are low, results can be almost immediate.

However, in some cases an input of seed to boost floral diversity of the verge would be a worthwhile endeavour. Purchasing and sowing a commercial seed mix from a supplier should be seen as a last option, local seed from a nearby site of a similar character is always preferable as it is adapted to the local conditions and the local wildlife.

Yellow Rattle

Where sites are very grass dominated, Yellow Rattle (*Rhinanthus minor*) seed can be sown to help open up the sward. Yellow Rattle is a hemi-parasitic plant, nicknamed the 'Meadow Maker' because of its ability to impact on the vigorous growth of grasses. It draws some of its nutrients by tapping into and parasitising the roots of grasses, thereby reducing their growth and allowing more space and light for other wildflowers. If left to establish it can reduce the growth of grass by up to 60% and reduces the necessity for multiple cuts, meaning just one cut and collect can be sufficient to maintain a verge and the resulting arisings are also reduced.

Green hay

The process of using green hay as a seeding method ensures the introduction of local, native species and can be very cost effective. The use of green hay is extremely time-sensitive which can make it logistically challenging, and it is important to note that using green hay as a seed source is only a snapshot of a meadow. You will only be getting the species that are seeding at that time of year (July) and will miss out on the earlier and later flowering species, so try to harvest the meadow when most things are in flower. Also harvesting a little later with a large flail collector set low to Hoover up fallen seed is a good solution.

If you opt for green hay you will need to identify a species-rich donor site in the same locality as your restoration site, with similar characteristics in terms of soil pH, soil type, hydrology and management. It needs to be about one third of the size of your restoration site. A brief overview of the process is to prepare your receptor site to receive the donor seed by creating bare ground, the donor site then needs to be cut in July or when the Yellow Rattle seed heads are ripe but not yet dropped. Once cut, the green hay needs to be transported to the receptor site and spread within a few hours, otherwise the hay heats up and starts to kill the seeds. [Natural England's technical note](#) gives a detailed rundown of what is required from the donor site and the receptor site.

Brush-harvested seed

This option has many of the same benefits as using green hay but isn't so time-sensitive. It may work out more expensive and has the same issue of only gathering a snapshot of seed from your donor site if you only do one harvest but there is the option to carry out multiple harvests to catch later flowering species. The seed can either be harvested and immediately spread, or dried and stored if multiple harvests are being undertaken and then sowed in September or October. A donor site within the same locality and of the same characteristic as the receptor site should be selected, again roughly one third of the size of the receptor site.



Harvesting Green Hay © Buglife

The [Magnificent Meadows technical note](#) gives more information on ground preparation and the process of harvesting seed (magnificentmeadows.org.uk).

This method ensures more viable seed as it is freed from the heating effect of the cut green hay, it also allows for multiple visits so a wider species range could be harvested, and it ensures local provenance seed that is adapted to the local conditions and wildlife. However, harvest amounts can be unpredictable, leaving the hay means you are not transferring beneficial fungi with the seed and this method relies on careful monitoring of the donor site in order to harvest at the optimal time when the seed heads are ripe.

Commercial seed mixes

This is the most expensive option and should only be used if other avenues are not possible. If you do not have suitable donor sites nearby, or if you have missed the window for brush-harvested seed or using green hay then purchasing a seed mix may be your only option. You must ensure that you are buying from a reputable supplier and that the seed is British and contains only native, appropriate species.

Many suppliers will provide mixes based on soil type but it is always worth checking what species are present and how the mix corresponds to naturally occurring species in your area. We would recommend not using colourful, pictorial meadow mixes that are full of brightly coloured annuals, these will soon disappear as the bare ground they require reduces and they are not as beneficial to invertebrates as native, perennial wildflowers. They also promote a false image of what our native meadows look like, they may be suitable for some urban planting but should never be sown as a 'wildflower' mix or be sown close to habitats hosting native species-rich grassland.



Brush harvester © Christa Nelson



Nesting habitat for solitary bees and wasps © Liam Olds

Other habitat features

Verges offer a diverse range of habitats and features that can support a wide diversity of pollinators and provide them with the necessary resources to complete their complex lifecycles.

Leaving an uncut area of grass

This will provide cover as well as nesting habitat for bumblebee species like the Common Carder Bumblebee (*Bombus pascorum*) that weave their nest from long grass. It also provides grassland butterflies like Meadow Brown (*Maniola jurtina*) and Ringlet (*Aphantopus hyperantus*) with their larval foodplants. Remember to rotate the areas you leave long, so no area is left uncut for longer than a couple of years. Unless a site is very nutrient poor, tussocky grass left uncut for too long will soon turn to scrub.

Bare ground

Bare ground is a crucial habitat feature for many pollinators providing basking areas for butterflies and nesting sites for solitary bees. Creating scrapes of bare ground on road verges will not only provide this but also allow areas of open space for wildflower seeds to germinate. Creating them in a sunny location where there is a soft substrate like sand or clay soils makes them suitable for burrowing invertebrates. Avoid creating bare ground on areas with a high presence of Common Nettle, thistles, dock, or bramble as these plants will proliferate. Avoid causing compaction to the areas and keep relatively free from vegetation each year.

Successional scrub

This document focusses mainly on grassland, but often scrub is present on verges and it provides a fantastic resource for

pollinators, especially when structural diversity is maintained. Many scrub species provide larval foodplants and forage for specific invertebrate species, as well as the open flowers of species like Blackthorn, bramble, Hawthorn and Ivy providing forage to a wide range of pollinators. Scrub including willow, Blackthorn, Hawthorn and Crab Apple can be particularly important in spring, with diverse areas of scrub providing a useful continuity of forage from spring to early winter. The interface of scrub and grassland provides microclimates offering shelter and refuge for pollinators. Maintaining a varied structure and open patches within the scrub, through pruning and cutting towards the end of the year, will provide ecological niches for a variety of species.



Red Admirals (*Vanessa atalanta*) on Ivy in September © Rachel Richards



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Light pollution

Perhaps less acknowledged when it comes to managing road verges for pollinators is the impact of lighting. Many invertebrates, particularly moths, beetles and flies, are attracted to artificial lights, this disrupts their natural movements including migration and mate searching and makes them more vulnerable to predation, particularly from bats.

Light pollution has been linked to invertebrate declines but we still have a limited understanding of how powerful the impact of light pollution is on invertebrates, we certainly know it is one of the many drivers in invertebrate declines and mitigation measures need to be implemented.

Understandably light is an important safety measure, but there are steps that local authorities can take to mitigate against the effects of light pollution (see 'Reducing light pollution' opposite).

Further reading and helpful resources

[Plantlife : Managing Grassland Road Verges](#)

Plantlife have done some incredible work on road verges and have put together this comprehensive guide that runs through assessing what you have, implementing appropriate management, and monitoring results.

[Don't Mow Let It Grow \(dontmowletitgrow.com\)](https://dontmowletitgrow.com/)

This exciting project is led by Causeway Coast to focus on the conservation of semi-natural grassland over the next three years. Don't Mow Let it Grow is a three year project focussing on the conservation of semi-natural grassland with a particular focus on road verges and amenity grassland. They have a fantastic toolkit which shares the learning and reports from the project including numerous site management plans.

Reducing light pollution

Natural - Aim for natural darkness, avoid artificial light at night where and when possible.

Need - Only use artificial lighting where there is a specific purpose/need.

Time - Lights should be turned off when not in use (automatically via timers, sensors, or manually).

Direction - Lighting should be directed away from important habitat areas i.e., trees, hedgerows, and wildflower meadows. Installing covers on streetlights helps to reduce light 'leakage'.

Wavelength - The science is moving fast in this area and there is no one wavelength of light that is good for all wildlife. Generally avoid shorter wavelength LEDs (UV and Blue) or apply suitable filters. Warmer colours are preferable, but not universally friendly. Efforts should be made to establish the other measures before addressing this one.

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