Bumblebee Conservation Trust

Factsheet 4
Land management series

Grassland restoration and creation... for bumblebees

The loss of over 97% of our wildflower-rich grasslands has had a huge impact on bumblebees, which have seen simultaneous dramatic declines. Even with good management, many grasslands have lost their wildflower seed bank, and seed introduction is one method of bringing the flowers back. Restoring or creating a meadow will, over time, help to increase the range and number of flowers that it supports, increasing the quantity and quality of foraging habitat for bumblebees.

Why restore a wildflower meadow?

Wildflower-rich grasslands are the most important habitat for bumblebees as they provide flowers throughout the summer and contain many nectar- and pollen-rich plant species favoured by bumblebees.

Plants such as red clover, yellow rattle, bird's-foot-trefoil and red bartsia are great pollen sources for queen and worker bumblebees, whilst knapweed and scabious are important nectar sources.

One step at a time...

Grassland restoration is not a quick process. Whilst it may only take a single application of fertiliser to destroy one, the few remaining flower-rich grasslands in the UK are the result of many decades of traditional management.

However, there is a lot that can be done to quickly increase the value of grassland for bumblebees and other biodiversity. In time this could go some way to replacing the precious flower-rich grasslands that have been lost.

Grassland restoration and creation

Establishing a sustainable grazing regime to control scrub or prevent over-tramping of the ground can help restore a flower-rich grassland. Likewise, if there is a nearby flower-rich site, or a flower-rich seed bank, implementing good management could provide the opportunity for more flowers to establish.

Unfortunately, in many cases the seed bank is depleted and sites are too fragmented for a variety of flowers to return through patience alone. In these cases it is necessary to give nature a 'helping hand' by introducing seed of appropriate species. For more information on sourcing, harvesting, preparing and sowing seeds, please see Factsheet 5 in our land management series: Sourcing wildflower seed.

Key facts

Upkeep
Annual mowing and grazing

Suitable for
Permanent grassland

Sustainablility
Long-term option

Bumblebee rating

Site selection

Not all grasslands are suitable for seed addition. The main requirements include low soil fertility and a low/no weed burden. In some cases several years of careful management will be needed to bring weeds or fast-growing grasses under control to provide good conditions for meadow flowers to establish.

A site assessment is recommended to help decide what action is appropriate to restore or create your wildflower meadow. For more information please contact your local BBCT Conservation Officer.

Yellow rattle: This plant is a great pollen source for bumblebees and helps to create good conditions for other wildflowers by suppressing fast-growing grasses.

Grassland restoration – adding value to existing permanent grassland... for bumblebees

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Restoring species-poor grassland to moderately flower-rich grassland

Species poor grassland is classed as having one to nine species per square metre. Where a field has been receiving high or regular applications of chemical fertiliser the soil fertility is likely to be high and this will take time to deplete. Fertile soils do not support wildflowers because fast-growing grasses and weeds take advantage of the nutrients and grow quickly, at the expense of slower-growing wildflowers. Ceasing muck or chemical fertiliser application and taking one or more cuts for hay or silage will reduce fertility over time, providing better conditions for flowers to establish.

Where the land is particularly thick and overgrown with coarse grasses you can help break up the grassland with appropriate machinery, such as a chain harrow or flail (October – February).

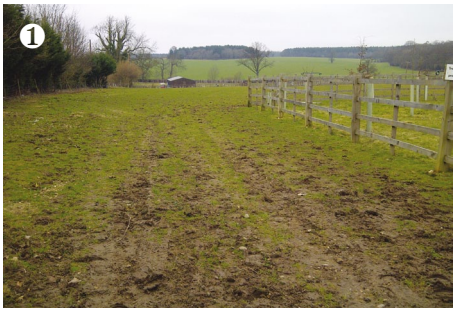
Restoring moderately species-rich to species-rich grassland

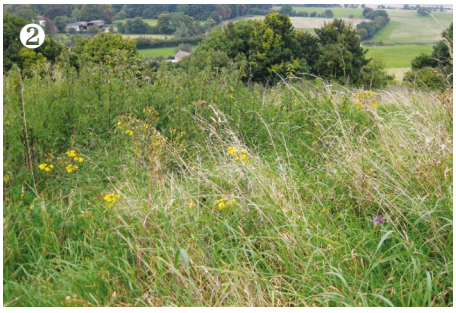
Moderately species-rich grassland is classed as having between nine and fifteen plant species per square metre. Once a field has been in favourable management for some time and soil fertility has reduced, it may be necessary to introduce seed. This is especially important if the seeds of key species, like yellow rattle, sweet vernal grass, red clover and meadow buttercup, are not available nearby. These species have been identified as playing a key role in the development of flower-rich grasslands as they interact with soil fungi and provide better conditions for other flower species to establish.

Enhancing species-rich grassland to high value species-rich grassland

Species rich grassland is classed as having 15-20 plant species per square metre. Once plants like yellow rattle have established and sensitive management has been in place for a few years other characteristic grassland species could be added, if there is no available seed source nearby.

The ground can be prepared for the addition of wildflower seed by hay cutting or grazing the site at the end of the summer to create a short grassy area. The aim is then to create approximately 50% bare ground using livestock or machinery. Alternatively, the ground can be lightly raked by hand. Sowing seed onto a dense grassland is extremely unlikely to be successful.





❶ Overgrazed grasslands.

❷ Under managed rank grasslands.

❸ What a meadow should look like.

Grassland creation – creating flower-rich grassland from arable and amenity land

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Site assessment and preparation

If you are planning to create a wildflower meadow, it is important to consider the physical characteristics of the site, such as soil pH and structure, hydrology and soil fertility. Choosing a piece of land or a field with low soil fertility, or where the topsoil has been removed, is likely to produce the best results.

A site dominated by vigorous grasses (e.g. perennial ryegrass) and pernicious weeds (thistles, nettles, docks) indicates soil fertility may be too high to sow wildflower seeds straight away. Similarly, lawns or amenity areas often have high soil fertility due the grass being regularly mowed and cuttings not being removed.

Knowledge of the past and current management and plant communities present may give an idea of the type of grassland that could be successfully created.

Ground preparation – non arable land

In preparing sites it is likely that sowing or spreading will need to take place on a fresh seed bed. Herbicide treatment and/or deep-ploughing may therefore be necessary prior to seed introduction. Soil disturbance through ploughing can lead to an increase in soil fertility and may also bring seeds of weed species to the surface, so expect to undertake weed control for the first few years after creation.

Soil fertility can be reduced using the following methods:

– Hay cut – take two or three hay cuts and remove cuttings.

– Top soil stripping – reduces fertility and removes weed and vigorous grass seeds.

Where soil is brought in to create a meadow, it is important to use sub soil, rather than top soil. It should be from a reliable source and there should be no invasive species or weeds in the seed bank.

Ground preparation – arable land

The ground should be firm, manageable and level before seed is sown. There are a number of ways to reduce soil fertility in preparation for sowing seed, including:

– Cropping – continue to grow crops without the application of fertiliser. Over time this will deplete the nutrient levels in the soil.

– Soil inversion – soil is deep ploughed and inverted to bury the fertile topsoil and bring the subsoil to the surface.

The rare Moss carder bumblebee feeding on tufted vetch.

Weed treatment

Pernicious weed species such as nettles, thistle, ragwort and docks are a sign of high nutrient levels, and will out-compete wildflower species. Weeds can be treated by spot spraying with herbicide, or alternatively by topping (cutting weeds when they are in flower). On a small site, weeds can be pulled or topped by hand.

A White-tailed bumblebee feeding on lavender; one of the most popular plants among bumblebees.

Sensitive grassland restoration and creation to help conserve bumblebees

Management	*When*	*Why*
Implement a more sensitive management regime: no/very light application of farm-yard manure; no chemical fertilisers.		Sensitive management will help more wildflowers to establish, and will reduce the dominance of coarse grasses.
Cut for hay at least once annually.	Mid-July to August	Cutting before mid-July would prevent many important wildflowers from flowering and producing seed.
Consider taking additional hay cuts depending on the dominance of coarse grasses and weeds.	Autumn and spring	To help further reduce nutrient levels in the soil and stop coarse vegetation becoming dominant.
Chain harrow (or flail) thick tussocky vegetation.	October to February	This helps to break up the coarse grass.
Clear scrub/bracken.	October to February	Opens up more area for grassland management and halts scrub encroachment.
Sensitive grazing regime – may need to adjust levels and timing of grazing. See Factsheets 2 and 3 of our land management series.	All year	Grazing levels need to be balanced. Overgrazing would lead to a very short grass with patches of weeds. Undergrazing results in a thick area of coarse grasses.
Introduce locally sourced native seed.	Late-summer /early-autumn	Introducing locally sourced wildflower seed such as yellow rattle, meadow buttercup, selfheal and red clover, as well as wild grasses such as sweet vernal, helps to establish a more diverse grassland.
Control pernicious weeds through spot spraying, topping, or pulling by hand.	Summer	Pernicious weeds can be very vigorous, and will out-compete and dominate wildflower species.

Ongoing management

Don't forget, once your grassland has been restored or created, you need to ensure that you continue to manage the grassland as a meadow or pasture, otherwise all your good work will be wasted.

Funding

Funding to support grassland restoration and creation may be available under agri-environment schemes or through local projects. If your land is in an agri-environment scheme please discuss any changes with your agreement advisor. For advice on how to manage your land sensitively for bumblebees, please contact BBCT.

Get in touch

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