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Managing farmland for pollinators

Farmland provides a wide range of habitats and features that are beneficial to pollinators. Ensuring these features are well managed and connected to one another across the farmed landscape can help pollinators to move around more easily; enabling them to access and pollinate crops and wildflowers, and ensuring the resilience of their populations. Several hundred species of pollinators use farmland, including butterflies and moths, bees, wasps, hoverflies, sawflies, beetles and bugs.

Important habitats of farmland and their management

Hedgerows are often an integral feature of farmland. They provide food, shelter, overwintering sites and corridors for pollinators to move around. Other features associated with hedgerows such as raised banks, flower-rich margins, deadwood and ditches all provide additional habitat for pollinators.

- ◆ The combination of shrubs and trees that flower early in the year, and climbing species such as Ivy, which flowers late in the year makes hedgerows a crucial component of the blossom sequence pollinators depend upon. The availability of spring blossom may dictate the number and density of bumblebee nests that become established.
- ◆ Shrubs provide a food source for the larval stages of many butterflies and moths, and older trees may contain decaying wood that provide larval habitat for some hoverflies.
- ◆ Hedgerows provide shelter from the wind and an important retreat during droughts and heat-waves.
- ◆ Hedgebanks can provide sunny and sheltered nesting sites for ground-nesting bees, and often contain rodent holes, which are re-used by bumblebees

Rotating the cutting of individual hedgerows on a three (or more) year basis will ensure continuity of food resources, as blossom production is often lowest the first couple of years after cutting. When planting new hedgerows, use species appropriate to the local landscape and choose a combination that will provide a long blossoming sequence.

Arable margins and headlands can be naturally flowery; especially on chalky or sandy soils. Where the existing flower community is good quality it should be retained, as pollinators interact more strongly with native flowers.

- ◆ Uncultivated flower-rich margins of at least 5m width are recommended. These should not be cut until after flowering in autumn, with cut material removed.
- ◆ Flowery margins may shift with the crop rotation, however the aim should be to provide the same amount of habitat across the landscape (no more than 500m between patches).
- ◆ Permanent margins can benefit from occasional scarification to maintain diversity of flowering plants.

Seeding margins with artificial mixes can provide vital late summer / early autumn foraging. Mixes should comprise a variety of native and naturalised plant species to encourage pollinator diversity. It is best not to rely entirely on plants such as *Phacelia*, which may only benefit a limited range of pollinators.



Pollinator friendly mayweed, thistle and hogweed

Knapweeds, Marjoram, bird's-foot-trefoils and Oxeye daisy are all good for pollinators. Most artificial mixes do not start flowering until June and these should be used to complement rather than displace naturally occurring spring wildflowers.



A Creeping thistle strip

Crops such as Oilseed rape, Borage, flax, beans and lavender can be important sources of pollen and nectar for bees and flies during spring and early summer.

- ◆ Sowing oilseed rape in the spring rather than winter can extend its value to foraging pollinators into mid-summer; helping to sustain their abundance.
- ◆ Wildflowers such as mayweeds, dead-nettles, poppies and pansies within crops provide additional sources of food, and can provide a valuable late-summer bloom between harvesting and ploughing.
- ◆ Fodder crops, wild bird seed and 'bumblebird' mixes often contain valuable food plants for pollinators, such as legumes, brassicas, borage and fodder radish.

There is a growing body of evidence showing the use of neonicotinoids to control pest insects rarely helps crop yield, however they are having a serious impact on pollinators and the wider environment; contaminating the pollen of wildflowers and accumulating in the surface dust of arable fields.

Hay meadows full of wildflowers and native grasses are now rare in the countryside having been replaced by more improved grasslands.

The range of wildflowers in less improved meadows can accommodate for species ranging from long-tongued bumblebees to tiny hoverflies.

- ◆ Existing flower-rich meadows should always be protected from ploughing, spraying or fertiliser input.
- ◆ Delaying hay-cutting until late-summer will extend foraging value for pollinators as well as providing better seed production from meadow flowers.
- ◆ Leaving patches or margins uncut can create tussocks and areas of tall herbs which provide a refuge for invertebrate and over-wintering opportunities within woody stems.

Meadows can be restored or created with green hay or seed harvested from a local meadow, or by using native seed mixes and plant plugs appropriate to the soil type and local landscape. Introducing Yellow-rattle can help to suppress dominant grasses, and its flowers are often visited by bumblebees.

Permanent pasture can be a good source of flowers, from Cowslip, Daisy and buttercups in spring through to knapweeds, thistles and Yarrow in late summer. It may also have features such as anthills that provide breeding sites for some butterfly and hoverfly species.

- ◆ Common ragwort poses little threat to livestock under normal pasture conditions, and along with thistles provides an important foraging resource for pollinators that should be accommodated wherever possible.
- ◆ The larvae of many pollinators develop in animal dung.

Grazing levels have a huge impact on the flower-richness and structural diversity of pastures; two important factors that impact pollinators. Lighter grazing regimes, rotational grazing and summer stock removal can all result in superb flowery conditions for pollinators. A grassland sward with varied plant heights, patches of bare ground and some 'thatch' or plant 'litter' will provide habitats for a wider range of pollinator species. It is important to maintain some of this sward structure through the winter months, providing overwintering sites for pollinators and other wildlife.



A created wildflower meadow helps boost populations of pollinators such as the solitary bee *Colletes daviesanus* and the Common carder bee

Wet habitats such as ditches, ponds, watercourses and seepages provide valuable wetland flowers along with larval habitat for pollinators such as hoverflies. Meadowsweet, willowherbs, Water mint and Purple loosestrife can all provide summer foraging resources.

- ◆ Ditch and pond management should be carried out in sections, ensuring resources and refuge are always available for the invertebrates inhabiting them.
- ◆ Stock trampling can create useful areas of bare ground for some invertebrates however access for stock around entire water margins should be avoided.
- ◆ Wet habitats such as ponds or scrapes should be created on farms where they do not occur.
- ◆ Waterside trees can provide important sources of food and deadwood, however they should be prevented from over-shading all of a water feature.

Fallow fields can produce a wonderful show of wildflowers such as dead-nettles, dandelions, thistles, and umbellifers that provide flowers from spring through to early autumn. Fallow areas can be the most pollinator-rich areas at certain times of the year and should be included in the farming system wherever possible.



Short-term legume and herb-rich swards will provide much greater benefits for pollinators than grass swards. Legumes are particularly important for bumblebees, while Yarrow, Ribwort plantain and knapweeds will be used by other pollinators.

Other features such as farm tracks, watercourse edges, old quarries and pits can all provide resources for pollinators. The importance of common plants such as dead-nettles, buttercups, clovers and umbellifers should not be under-estimated. A wide variety of floral resources can substantially increase the quantity and diversity of pollinators in the landscape.

Woody habitats from isolated trees to patches of woodland can provide sources of deadwood used as nesting locations by many bees and flower-visiting solitary wasps, as well as providing valuable sources of spring food.

Banks and ditches can be used as nesting sites for bees; particularly when they support warm, well-drained and sparsely-vegetated slopes. Existing flood defence banks can be particularly valuable features and support some of our richest bumblebee communities.



Rested arable land on chalky soils can produce wildflowers naturally. Bramble strips can be particularly attractive to hoverflies and bumblebees

How do pollinators use farmland?

Food - farmland can provide a good variety and density of flowers from spring to autumn; providing important nectar and pollen. These resources are used not only by species breeding within the farmland, but may attract pollinators from some distance away.

Larval food plants for many butterflies and moths, grow on farmland along with invertebrate prey for parasitic wasps and predatory hoverflies. Hoverfly larvae also thrive in ditches and swamps, as well as in dead wood.

Carrion and dung provide an important resource for pollinating flies such as dung flies and blowflies.

Breeding - farmland can provide breeding and nesting habitats required for a wide range of pollinators. Old burrows and dense vegetation are used by bumblebees, with sunny slopes and dry ground used by ground-nesting bees such as mining bees, and their bee-fly parasites and nomad bee cuckoos.

Overwintering - dense vegetation such as tussocky grassland, scrub, mature trees, and piles of wood and stone can provide essential habitat for hibernating pollinators. Many species overwinter as adults including queen bumblebees, and some butterflies and hoverflies, others as eggs, larvae or pupae. Queen bumblebees and species such as the Marmalade hoverfly and Small tortoiseshell butterfly are usually the first pollinators to emerge in the spring, and can be important pollinators of Oilseed rape and orchard trees.

Wildlife corridors - linear flower-rich features such as watercourses, hedgerows, ditches and farm tracks have an important role in connecting fragmented remnants of wildlife-friendly habitat. These corridors enable pollinators to spread, helping populations to become more resilient to threats such as climate change.

Seasonality of flowering

Farmland exhibits strong seasonality in the food resources they provide to pollinators. The variety and combination of flower resources, along with the availability of habitats for breeding and overwintering, will impact the pollinator community present.

Spring - spring-blossoming shrubs and trees are vital for early pollinators including queen bumblebees and wasps, butterflies, moths, and many flies and beetles. Goat willow and Cherry-plum typically start blossoming from March, with Blackthorn, Wild cherry, Crab apple and Wild pear peaking in April. Rowan, Hawthorn, Elder, Dogwood and Bramble start to flower in May. Blossoming shrubs in sheltered, sunny locations can attract huge numbers of pollinators.

Herbs such as dead-nettles, dandelions and buttercups begin to appear during April, and their presence in close proximity to flowering crops such as Oilseed rape may boost crop pollination. As spring progresses plants such as Cow parsley, Comfrey and brassicas provide important forage, and the greater the abundance and variety of flowers, the more pollinators you are likely to see.

Summer - wildflowers such as legumes, composites and umbellifers along with shrubs such as Elder, Bramble and roses are key food sources for pollinators during the summer months. Stands of Hogweed, teasel and thistles can be particularly important during June and July, and this time of year also brings flowering climbers such as Traveller's-joy, bryonies and bindweeds.

Autumn - most wildflowers start to wane during August but some, such as Creeping thistle, Yarrow, scabiouses and sowthistles persist into autumn; attracting good numbers of late-flying pollinators. Ivy is often the most important autumn flower, attracting huge numbers of butterflies, bees and flies, some of which will overwinter as adults, making this final feast vital.



Blackthorn blossom, White dead-nettle, Vestal cuckoo bee on Dandelion, *Bibio anglicus* on Alexanders, Ivy blossom and the Comma butterfly

Rare and scarce pollinators may turn up on farmland, sometimes as visitors, but also as breeding residents. Where these species are known to breed it is important to identify any particular needs such as food plant or nesting sites and incorporate these in management decisions.

Some scarcer pollinators known to occur on farmland include Small scabious mining bee (*Andrena marginata*), Shrill carder bee (*Bombus sylvarum*), Silver-spotted skipper (*Hesperia comma*), the soldierfly *Villa cingulata* and the hoverfly *Myolepta potens*.



Further reading

- Buglife Farm Advice website: <https://www.buglife.org.uk/farmland-advice>
- Buglife Managing farmland habitats for invertebrates (four leaflets: Grassland, Woodland, Hedgerows and Cereal Field Margins, and Ponds and Ditches. Available online: <https://www.buglife.org.uk/farmland-advice>
- Buglife (2013) Promoting habitat mosaics for invertebrates – Chalk downland. Available online: <https://www.buglife.org.uk/farmland-advice>
- Buglife (2013) Promoting habitat mosaics for invertebrates – Coastal grazing marsh. <https://www.buglife.org.uk/farmland-advice>
- Farm Wildlife: <https://www.farmwildlife.info/>
- Campaign For The Farmed Environment. Pollinator campaign web portal: <https://www.cfeonline.org.uk/home/>
- DEFRA Agriculture - tailored advice on managing land for pollinators. Available online: http://www.wildlifetrusts.org/sites/default/files/6192_defra_info_sheet_agriculture_final_with_organic.pdf
- Crofts, A. & Jefferson, R.G. 1999 Lowland Grassland Management Handbook. English Nature/The Wildlife Trusts.
- Gardiner, T., Picher, R. & Wade, M. 2015 Sea Wall Biodiversity Handbook. RPS
- Hedgelink UK website: <http://hedgelink.org.uk/index.php>
- Kirby, P. 1992. Habitat Management for Invertebrates: a practical handbook. RSPB.
- RSPB Advice for Farmers web portal: <http://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/>

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