

GWCT Guide: Farming Habitat Issues

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Conservation headlands and field margins

In the 1980s we ran a series of trials asking farmers to reduce the sprays along the six-metre crop margin - the headland.

The results were astonishing: arable flowers that had been lost for a generation reappeared, insect abundance increased and consequently young partridge chicks survived as well as they had in pre-war days.

The aims of conservation headlands are to encourage the growth of a number of broad leaved weed species and hence the insects which live on them. These insects in turn are vital food items of gamebird chicks and other birds. The weeds and their seeds provide food for small mammals and the flowers are important nectar sources for butterflies. Conservation Headlands are also a refuge for rare and declining plants, once common members of the arable flora, and for many species of beneficial insects.

For maximum benefits, attention should also be given to adjacent field boundaries. Correct management will provide nesting sites for gamebirds and songbirds, breeding sites for butterflies and other insects, overwintering habitat for beneficial insects, and help to prevent these areas from becoming potential sources of weed infestation.

For more advice about headlands and field margins please [contact our advisory department](#).

A diagram of a conservation headland, detailing how one is composed, can be downloaded [here](#).



Winter stubble

Traditional crop rotations involved winter and spring crops with a grass ley break or root crop. This gave a patchwork quilt landscape where game could always find cover and food. Modern rotations mostly comprise only winter crops like wheat and oilseed rape, so the land gets cultivated all at once immediately after harvest.

Within a few weeks a summer landscape can become little more than cultivated soil. Leaving some small areas of stubble is an easy way of providing an early winter refuge for field living animals. Further, where you want to provide a little extra game cover you can hand sow in some patches of mustard into the crop. This provides autumn cover before it is killed off by the first frosts.



Hedgerow

A hedge is a wildlife haven year-round. A thicket of hawthorn, blackthorn and other shrubs hides and protects songbird nests. The same shrubs provide berries for birds and small mammals. Adjacent to it, perennial grasses and herbs make nesting cover for pheasant, partridge and yellowhammer. Butterflies like comma, gatekeeper and small tortoiseshell live on the knapweed, scabious and nettle found along hedgerows.



Key features to look after are:

- A variety of shrubs, some of which provide berries and fruit.
- A square profile, which does not invade the adjacent bank and which is trimmed in alternate years to allow half of the farm hedges to retain their berries through winter.
- An adjacent bank (at least 1 metre in width) which contains perennial grass and flowers. This bank should be protected from herbicide drift and crop fertilizer otherwise it can degrade into a blanket of sticky cleavers or invasive sterile broom. The hedgerow can also create the sheltered conditions suitable for a wildflower or pollen and nectar area.

Ditch

Small wet areas around the farm should be cherished. If protected, they can be rich in wildlife, providing spawning areas for frogs, habitat for newts, and for many insects like dragon and damsel flies. Ditches are favourite feeding places for herons, but they are also nesting places for mallard and, if you are lucky, maybe snipe too. In some places the now very scarce water vole will use ditches with plenty of aquatic vegetation.



The key to looking after ditches is to protect them and not to treat them like farm drains. Protect the best ditches with grass buffer strips, 4 or 6 metre buffer strip or a wildflower strip which will fulfill the LERAPS requirement for agrochemical use near water.

Ditches that are wet for most of the year are more valuable than those that dry out or simply channel field run-off. Clean out ditches with care. Thinning aquatic vegetation annually may be necessary to allow water flow, but excavating the bottom sediment should only be done infrequently - if at all. The sediment is full of aquatic life and is where most of it overwinters.

Keep livestock out of ditches - especially avoid allowing sheep recently treated with a pyrethroid-based insecticide to come into contact with the water. Small traces of this insecticide are capable of killing all aquatic insect life over a big area.

Woodland edge

The **best woods for game** are open, mixed woods. The trees are well spaced and allow a shrub and ground flora to develop, where **pheasant** and **woodcock** can nest. Unthinned blocks of closely planted trees are next to useless. While there has been a strong reaction against planting stands of conifer, a few softwoods, mixed with deciduous trees is ideal. Under the trees some evergreen shrubs too help to provide shelter and warmth in winter. But the best way of warming a wood is giving it a good shrubby edge.



A woodland edge can be improved by pulling back the field boundary away from the wood, and by thinning and cutting back the trees. This latter is especially important on northern aspects, where little may grow under over hanging branches and tall trees. Grass cover and typical hedgerow species like hawthorn and beech make good woodland edge species, but also consider some evergreens like gorse.

Remember gamebirds like **pheasant** and, in the uplands, the rare **black grouse**, make their home along the woodland edge. More woodland edge means more game.

Undersown cereals

A traditional crop rotation is two or three years of cereals followed by an extended period of ley grass. Grass leys are usually mixtures of grasses and legumes, and are either cropped for hay or grazed by livestock.

The traditional way of establishing a ley is by undersowing. After a spring barley crop is conventionally drilled, grass and legume seed are spun and lightly harrowed in over the top. The barley is harvested normally and the grass and clover that has established beneath the crop is exposed.



Undersown leys are good for wildlife:

- They provide an uncultivated overwinter bridge which allows many insects to complete their life cycle in the soil. Sawflies pupate in the soil and emerge as adults from underown leys in spring. These adults lay eggs all through the neighbouring cereal crops and, by the time the game chicks hatch in mid-summer, there are lots of small sawfly caterpillars around for them to eat.
- Undersown barley, because it also contains clover and grass, supports a wider range of cereal insects than a conventional crop and is therefore better for game chick survival.
- They provide an instant fresh green sward in late summer when most of the rest of the landscape has turned a post-harvest brown.

Pollen and nectar flower mixtures

These are typically a mix of legumes including clovers, trefoil and vetches. This is one of the most crucial agri-environment options, helping to encourage a broad range of insects that are of conservation interest or perform essential functions, such as pollination and pest control. A wide range of insects feed on pollen and nectar, but it is especially important for bumblebees, butterflies and moths, all of which are in serious decline on farmland.



Some of the legumes are also important host plants for butterflies. The reproductive capacity of insects which help control crop pests, for example hoverflies and parasitic wasps, is improved when they have access to flowers.

Establishment and management

Fodder varieties are usually sown as these are much cheaper than native ones. Seed mixes must contain at least three species under ES regulations, but more species is better, selecting them to maximise the period over which the area is in flower. The flowering period can also be extended by cutting half the area in June. Seed mixes are available with and without grasses, but the grasses usually start to dominate the sward after two years and we now recommend sowing just legumes.

An autumn cut, done when the legumes have finished flowering will also help prevent grasses from establishing. Existing swards can be rejuvenated by applying a clover-safe gramminicide in early spring.

To reduce competition from annual weeds, the seed should be sown into a weed free seed bed, preferably after a stale seedbed. Avoid sowing after broadleaf crops to reduce the risk of volunteers. Sow either between March and May or July and mid-September.

Wildflower mixtures

This habitat can be one of the most beneficial and attractive habitats, if properly established, and should be a feature on all farms. The aim is to provide a mixture of native grasses and wildflowers that will support a broad range of invertebrates including pollinating insects, plant feeding insects such as grasshoppers, bugs and butterflies, and predatory invertebrates such as spiders and beetles.

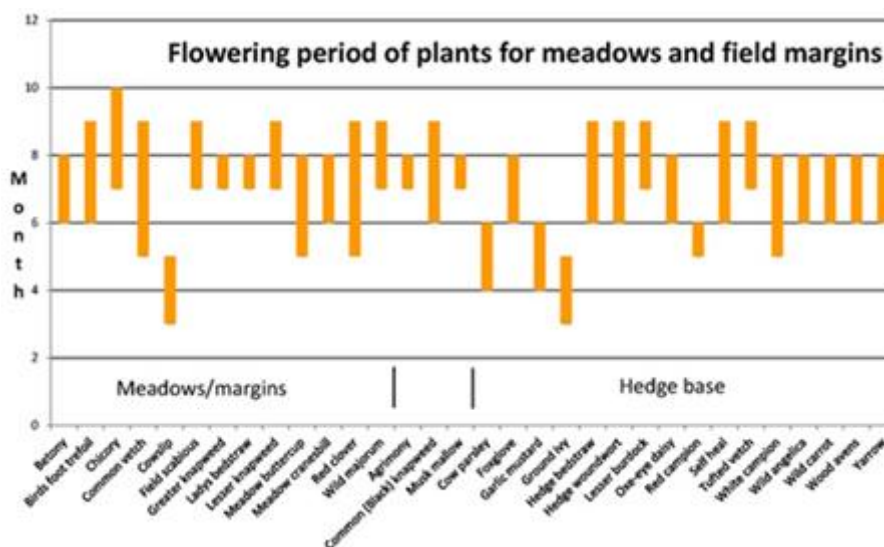
Birds will make use of it for foraging and nesting, however, for the birds to gain access to the insects the sward must be relatively open. It will also become home to a variety of mice. Most of these groups have declined in recent decades on farmland and are in need of help.

Wildflowers can be established either by sowing or through natural regeneration. However, we would recommend sowing because natural regeneration will most likely just develop into a grass sward unless the area was previously rich in wildflowers.



A range of seed mixes are available and most are comprised of species typically found in hay meadows and as such require the same management. We would recommend that advice be sought from suppliers so that a mix appropriate for the soil type, fertility, soil moisture and budget can be made up. Seed mixes wherever possible should be from native seed and preferably locally sourced. Aim to provide a range of different flower structures varying from those with simple structures and so the nectar and pollen is easily accessible (e.g. yarrow) to more complex but widely used flowers (knapweed).

The habitat also needs to provide flowers for as long a period as possible over the spring and summer, which can be achieved using the appropriate species. It is worth looking around locally as plant species that already do well are likely to be the easiest to establish.



A cheaper option is to spread green hay sourced locally as big bales, but this must be spread within 24 hours, but preferably sooner. As a guideline 1 ha of hay is needed to cover 2ha of the recipient site.

Some of the rarer species are difficult to establish and not all emerge within the first year so patience is needed, however, there are a few banker wild flower species that should always provide a display. These are knapweed, bird's foot trefoil, self-heal, yarrow and ox-eye daisy. Only fine, less competitive grasses (e.g. bents, sheep's fescue) should be included otherwise the habitat will degenerate into a grass-only sward.

The wildflower seed mixtures cannot compete with vigorous annual weeds therefore care must be taken when establishing and siting. Avoid shady areas or those adjacent to patches of aggressive perennial weeds that may reinvade over time, such as sterile brome, thistles and nettles. For this reason also wider strips or small blocks will in the long-term be better and easier to manage. Such areas will also be less prone to drift of agrochemicals which should always be prevented. It would also be prudent to avoid areas with a high annual weed burden. In any case we would always recommend a fallow period (preferably one year) before sowing with several stale seedbeds to try and reduce the weed seedbank and reduce soil fertility.

Sow on the soil surface between late-March and mid-September when the soil is warm and there is sufficient moisture to allow establishment. The seed is best broadcast onto a fine seedbed and then rolled. During the first year the area should be topped 6-10 cm to reduce competition from the annual weeds and seed set of noxious weeds, and thereafter topped on an annual basis. If at all possible any cuttings should be removed to reduce soil fertility otherwise the grasses will dominate the sward. Grazing in late autumn is also beneficial and permitted. If the grasses are starting to take over, in some schemes, a graminicide application is allowed. Propyzamide or Fluazifop-p-butyl are both suitable.

To extend the provision of wildflowers further across the farm wildflower seed may also be added to buffer strips and to field corners, although no extra points or payment will be received. Seed for some of the more common species (knapweed, birdsfoot trefoil) is relatively cheap and can add much interest to otherwise

rather dull grass margins. Wildflowers will however struggle to survive in any seed mix that includes tussock forming grasses (cocksfoot, timothy, Yorkshire fog) and should only be sown with fine-grasses.

Floristically enhanced margins would be fine as a buffer for water courses. What we recommend is 2 to 3 metres next to the water course of tussocky grasses – not cut - and 3 or 4 metres next to a crop of fine grasses and flowers which is cut annually. This offers great diversity and the taller uncut grasses help give “height” to the buffer too.

Buffer strips

Buffer strips are a useful filler for an ELS plan. They protect and enhance important features such as streams, ponds, ditches and woods. They can also be used to reduce soil run-off and may therefore be part of a soil management plan. In the right places too they can provide additional nesting cover for game and animals like hares. But they are not a panacea, and it would be a huge lost opportunity if these strips were the sole option on any farm. So, use with care, and remember the following:



- Buffer strips are worthless as cover for broods of pheasants or partridges. The grass sward is too dense and often too wet for them to forage in, and yet neither does it provide enough cover to protect them from aerial predators. Alternatively, a **wildflower mix** could be sown but only if soil conditions are appropriate (light, infertile soil) and the position is open and sunny (south facing or adjacent to a ditch).
- Field edges, especially on light soils that have been cultivated for generations, often contain the last vestiges of an ancient arable flora of wild flowers. These annuals survive because of annual cultivations and the partial effectiveness of herbicides along field margins. This flora can recover by adopting **conservation headlands** and, especially, uncropped cultivated margins. On the right land use these options instead of grass buffer strips.
- ELS buffer strips are best built into a plan in two phases. Firstly, map in only those that are essential to protect and enhance existing features. Then move on to plan other ELS options, including especially **wild bird seed crops** that will give a significant boost to birdlife. Finally, at the end, perhaps include one or two more buffer strips or widen the planned ones to make up the points if needed.

Fodder brassicas

Modern arable systems, with winter cereals and break crops, create a landscape which is uniformly in full growth in spring, but ripening and drying by mid-summer. After an August harvest, the autumn landscape is largely devoid of greenery.

The traditional practice of drilling a brassica, like turnip, into a barley stubble provided some early winter grazing for sheep and cattle on many a mixed farm. These crops also provide a refuge for wildlife. When it is short and newly established it is grazed by hares and deer, as it gets thicker these same animals use it as shelter. By late autumn and early winter such crops are holding **pheasants**, **partridge** and flocks of thrushes, redwings and fieldfares. These all enjoy foraging under the protection the brassica provides.



Brassica fodder crops are a good conservation choice for farmers with livestock and arable crops.

Field corners

Field corners tend to be unproductive areas of crop because they are difficult to work and subject to a good deal of compaction. A good solution is to square off the field and take the awkward corners and irregular edges out of cultivation. These areas can then be developed for wildlife.

On farmland where there is little or no hedgerow cover, these field corners can become important habitats for grey partridge and pheasant. They can be turned into nesting cover by sowing with tussock-forming grasses like cocksfoot. Once established, these can be left without further cutting. On other field corners, or on other sections of the larger field corners, one could sow a **wildflower mix** which can be cut each year. Although this will not be tall enough to be good brood cover, it will make feeding and dusting places for the birds after they have fledged. This will also create good grazing for **hares** and **deer**, and the perennial wild flowers will support butterflies and other insects.



Corner management is a valuable option for arable farmland. Most farms certainly have one or two places where this option would be worthwhile.

Uncropped cultivated margins for rare plants

Arable crops were once home to a broad array of flowering annual plants, but unfortunately these have declined hugely with the advent of herbicides and harvesting machinery that removes weed seeds. As a consequence, these arable plants include some of the most endangered species in Britain. A rich understorey of annuals can provide food and cover for an immense diversity of insects, and these along with the annual weed seeds in turn are essential food sources for farmland birds and mammals.

This habitat will encourage the common annual arable plants and also the rare species that may still be present on some farms. Annual plants will most likely occur around the field edges and corners where herbicide and fertiliser inputs are typically lower and soils are poorer, thus this option is best located in these areas. Before deciding where to locate this habitat it is well worthwhile checking for the occurrence of rare arable plants; a local wildlife group may be willing to conduct a survey, therefore ensuring the most appropriate areas are included. However, also try to avoid locating them where aggressive grass weeds are present.

The margin can be cultivated annually in either spring or autumn to a depth of 15cm. Arable plants can be spring or autumn germinating, but the species that survive will be those that have adapted to traditional practices and therefore this is the timing that should be followed. For example, light chalky soils were traditionally cultivated in the spring and consequently spring germinating species are most likely to be found. If however, undesirable weeds start to build-up then the timing and depth of cultivation may be changed for a year or the margin rotated around different edges of the same field.

No fertilisers or manures should be applied. Noxious weeds can be controlled using spot treatments or with a weed wiper, however, if they build up to severe levels then a targeted, broad-spectrum herbicide may be applied once the annual have set seed which is usually by September.

Uncropped cultivated areas for ground-nesting birds on arable land

Lapwing, once a common bird on farmland, have declined hugely (45%) since 1970 and they are now a “red list” species. One of the main factors behind the decline has been the widespread switch from spring-sown to autumn-sown crops since the 1970s, which has dramatically reduced habitat suitability for nesting.

Uncropped, cultivated land can provide suitable nesting and foraging areas and were previously supported under Countryside Stewardship. These areas are also used by a variety of other farmland birds that prefer to forage in open ground (skylark, stone curlew, turtle dove), by hares and encourage annual arable plants.



Each uncropped plot must be at least 1ha (no greater than 2.5ha) and located within an arable field of at least 5ha. Ground nesting birds are very vulnerable to predatory birds such as crows, magpies and gulls. It is therefore crucial to site the plots away from any feature (trees, posts, pylons) that can be used as a perch by these predators to overlook the plot. They must also be located away from field edges to reduce predation by foxes and only in fields larger than 10ha if bounded by trees.

They are created by cultivating in early spring (20 March at latest) to produce rough fallow. Plots can be rotated around the farm, so helping to reduce the build-up of pernicious weeds, but the same hectareage must be maintained each year. Undesirable weeds can be controlled with herbicides prior to making the rough fallow. Plots must be maintained until the 31 July.

Lapwing take their young to forage in vegetation that provides some cover, ideally rough grassland that provides a rich source of their preferred food (insect larvae, beetles, worms). Chick survival will therefore be improved if the uncropped plots are located near to such foraging areas. Alternatively, if sufficient vegetation develops on the uncropped plot then this may be suitable. We are currently investigating whether sowing a suitable cover will improve chick survival.

Reduced herbicide cereal crops followed by overwintered stubble

Few weeds normally survive in traditionally managed cereal crops, however these weeds support insects and produce seed both of which are important food sources for farmland birds and other wildlife. In addition, not all farmland wildlife can be encouraged through the use of margin habitats, some species prefer to live or forage within fields during the spring and summer including birds such as **grey partridge**, corn buntings and skylarks which are seeking out insects and weeds, **brown hares** feeding on weeds and mice searching for weed seeds. In winter, many more bird species and small mammals forage within fields for seeds. This option provides food-rich habitats throughout the year for wildlife and was used very successfully to encourage **circus bunting**.

Cereals can be either or autumn or spring sown, straw must be chopped or baled. When few weeds are present then a light cultivation is permissible before the end of September or within a month of harvest if later. No topping or grazing of the stubble is permitted.

Some herbicides are allowed including the use of amidosulfuron to control broad-leaved weeds between 1 February and 31 March. Grass weeds can be controlled with gramminicides comprised of the following active ingredients: tri-allate, fenoxaprop-P-ethyl, diclofop-methyl + fenoxaprop-P-ethyl, tralkoxydim, clodinafop-propargyl or pinoxaden.

No insecticides are allowed after 15 March until harvest, and neither can crop desiccants or fertilisers of any type be applied.

This option can be rotated around the farm but maintaining the same hectarage and fields can be returned to the rotation after 15 February.