Elephant hawkmoth © Rob Wolton, Hedgelink

Butterflies & moths

Butterflies and moths are among the most strikingly bright and beautiful insect species found in the British countryside. They need specific plant species for the caterpillars to feed on, flowers as nectar sources for the adults, and safe places to shelter and overwinter. Butterflies and moths can be regarded as indicators of habitat quality on a farm: the more butterflies and moths there are, the more likely the farm will have a rich variety of wildlife.

Key points

- **Butterflies and moths need nectar sources, specific foodplants for the caterpillars, and sheltered areas**
- **Grassland, hedgerows, field margins and woodland habitats are all valuable**
- **Creating a variety of habitat types will benefit the widest range of species**

Butterflies & moths

Around 60 species of butterfly are seen regularly in the UK, comprising less than 3% of British Lepidoptera (butterflies and moths). The remaining 2, 500 or so species are moths but, as most of them fly at night, they are far less well known. Farmland is the main habitat for over three quarters of British butterflies. Many butterflies and moths, both common and rare, have suffered population declines, but a range of measures can help encourage them and increase their numbers on farmland.

Moths and butterflies, such as these marbled whites, require suitable breeding habitat as well as nectar sources © Tara Proud

Close-up of comma butterfly eggs on common nettle © Gilles San Martin CC BY NC 3.0

Silver-spotted skippers have precise requirements for egg-laying
© Mark Kilner CC BY NC SA 2.0

Butterflies and moths have complex life cycles, comprising egg, caterpillar, pupa, and adult stages. Some species live as adults for only a few days or weeks, while others live for many months and hibernate over the winter. Some moths live as caterpillars for a few years. The most important requirements of adult butterflies and moths are suitable sites for laying their eggs and sufficient nectar sources to supply them with food. Sheltered areas are particularly important. Butterflies and moths will make use of all areas of the farm - hedgerows, margins, meadows and grassland, wet flushes and patches of woodland.

Butterflies will take nectar from a range of plants, but plants such as knapweeds, scabious, thistles, marjoram, teasel, fleabane and bird's-foot trefoil are especially favoured. Because different butterfly and moth species are on the wing at different times throughout the spring and summer it is important to have a succession of flowering plants through the season. Early nectar sources include sallow and blackthorn blossom, self-heal, primrose and lady's smock, while important late sources of nectar are bramble and ivy. Berries, including blackberries, are also useful. Moths are important pollinators and some plants, such as the campions, have evolved to be pollinated by moths.

Breeding requirements vary according to the species. Some moths and butterflies have very precise needs for egg-laying. Female silver-spotted skippers, for example, are extremely fussy, laying single eggs on the leaf blades of sheep's fescue in short turf, up to 4cm, and often next to patches of bare ground. This, and other so-called specialist species, often depend on tailored management to maintain the correct habitat.

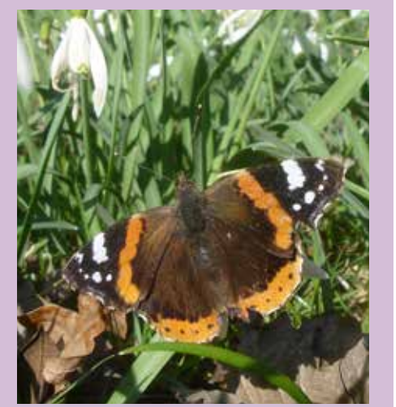
Caterpillars of the gatekeeper butterfly feed on grasses © Mark Kilner CC BY NC SA 2.0

The most common butterflies and moths are those that are less demanding, whose caterpillars feed on a common plant or a number of different plants. Meadow brown and gatekeeper butterflies, for example, lay their eggs on grasses, while commas, peacocks and small tortoiseshells lay on nettles. Widespread species such as these will benefit from management that encourages a diversity of plants and habitat types on the farm.

Butterflies and moths vary in their mobility, with the more widespread species often able to travel large distances to feed and lay eggs. Others, usually the habitat specialists, may be weak fliers and will need all their habitat requirements met in a small area.

Butterflies and climate change

The red admiral butterfly used only to be seen as a summer visitor to Britain but, since the 1990s, it has been recorded overwintering here in ever-increasing numbers. They are now seen in every month of the year, even flying amongst snowdrops in February! This is a sign of one impact of climate change on British wildlife. UK Butterfly Monitoring Scheme data show that other butterflies, such as the speckled wood, are expanding their ranges northwards in response to warmer temperatures. By linking habitats such as hedgerows and woodlands to facilitate movements across the farmed landscape, butterflies and other wildlife can be helped to adapt to the changing climate.



© Martin Warren, Butterfly Conservation

Butterflies & moths

The chalkhill blue butterfly is confined to calcareous grasslands
© Mark Kilner CC BY NC SA 2.0

Unimproved calcareous grasslands should be managed to create mosaics of grassland and scrub © Ruth Feber

Damp grasslands can support rich communities of plants and butterflies, such as this marsh fritillary
© nutmeg66 CC BY NC ND 2.0

Habitat management

Semi-natural grassland

Semi-natural grasslands containing wild grasses and flowers, such as unimproved calcareous or wet grasslands, are some of the richest habitats for butterflies. Semi-natural grasslands provide breeding habitat for over 90% of resident butterfly species, with just under half of these largely relying on calcareous grassland.

Management of calcareous grasslands should aim for a mosaic of different habitats, with patches of bare ground and scrub, variations in sward height, and abundant nectar sources. Most often this is achieved through stock grazing. Management prescriptions are usually site specific and, in all situations, the right grazing pressure is vital for creating the desired habitat.

Damp, unimproved grasslands, such as the culm grasslands in the south-west of England, are strongholds for some declining species such as the marsh fritillary butterfly. These and other species-rich wet grasslands, such as floodplain meadows, rely on the continuation of traditional grazing or hay-cutting management to maintain their special flora and fauna.

Semi-improved grassland

Any grassland that contains some native grasses and wild flowers can be important for butterflies and moths. Damp grassland with rushes will support green-veined white and orange tip butterflies, while acid or neutral grassland will be used by ringlets, meadow browns and common blue butterflies. Leaving some areas of grassland uncut during the spring and summer will allow plants to flower and provide undisturbed breeding habitats. Where possible, avoiding or reducing fertiliser and pesticide use will increase plant and butterfly diversity.

Orange tip butterflies use cuckooflower both as a nectar source and a caterpillar foodplant
© Guido Gerding CC BY SA 3.0

Brown hairstreak overwinters as eggs on blackthorn hedges © Paul Gee CC BY NC ND 2.0

The figure of eight moth may have suffered from intensive hedgerow management
© Nigel Jones CC BY NC ND 2.0

Hedgerows and field margins

Hedgerows are vital for these insects on farmland. Butterflies will make great use of hedgerow nectar, such as bramble, and caterpillars of many butterflies and moths will feed on hedgerow species. Hedgerows provide important shelter in exposed agricultural landscapes. Leaving hedges uncut, or cutting not more than once every three years, helps eggs and caterpillars to survive. Brown hairstreak butterflies, for example, lay their eggs on young blackthorn, and the eggs need to overwinter safely before the caterpillars hatch and feed on the new leaves in spring. Butterflies and moths have suffered from overly intense hedge management. The figure of eight moth, for example, has declined by 95% over the last 35 years.

Field margins are very important for butterflies and moths, especially in arable areas (Box 21). Field margins that contain wildflowers (either sown or naturally regenerated) will be much more valuable than grass-only strips. Common blue butterflies, for example, use bird's foot trefoil both as a nectar source and a caterpillar foodplant, and orange tips use cuckooflower in the same way. Leaving some field margins uncut each year will allow plants to flower, and provide undisturbed breeding habitats. A variety of sward heights will also benefit more species; for example, retention of nettle patches of different heights in sunny locations will help small tortoiseshell and peacock butterflies. Field margins adjacent to hedgerows or ditches are especially valuable as these provide shelter and food. Organic farming has been shown to have benefits for some butterfly species (Box 22).

Woodland and scrub

Many moth species are largely restricted to woodlands, and others use it in addition to other habitats. Native tree species often support their own suite of moths, with deciduous oaks alone supporting about 220 species. Butterflies such as the declining pearl-bordered fritillary also depend on woodland, particularly if it is managed by coppicing. Moth and butterfly diversity can be increased by creating a diverse woodland structure. This should include areas of active management such as ride creation, coppicing and glades, in addition to retention of existing dark woodland areas. This will help shade- or moisture-loving woodland specialists, whilst at the same time helping species of mixed and more open woodland habitats. Scrub, cut in patches, provides shelter and breeding habitat for many species.

Pale shining brown moth © Dave Green

Oxfordshire farmland stronghold for rare moth

An exciting discovery of a very rare moth, the pale shining brown, was made in 2006 during moth surveys in Oxfordshire. This moth has undergone massive declines in Britain since the 1970s, and had been thought to exist only in small numbers on Salisbury Plain, and at a handful of sites in Wiltshire, Norfolk and Hertfordshire.

Eighty-eight individuals were caught in West Oxfordshire, making it the largest colony known in Britain. The field in which 57 were captured was next to a block of mixed woodland, had tall hedges, and 6m wide field margins. The landscape was largely arable, with 2m margins, sparse trees and low hedges, on well-drained calcareous soil. Little is known about the moth, although in captivity the caterpillars will eat a variety of herbaceous plants. Caterpillars have never been found in the wild.

It is perhaps surprising that such a large population had been overlooked, but arable farmland may often be under-recorded. The landscape in which the moths were found also suggests that agri-environment scheme options such as field margins may benefit rare and localised species as well as more widespread ones.

Key results

- Large colony of rare moth found in Oxfordshire
- Arable farmland may often be overlooked as a habitat
- Field margin options may be valuable for rare as well as widespread species

Pale shining brown moths were discovered on arable farmland © Rosalind Shaw

Meadow brown butterfly © Annies Pics CC BY NC 2.0

Butterflies on organic farms

Organic farms differ from non-organic farms in several ways. As well as the lack of pesticides and artificial fertilizers, organic farms have more complex crop rotations, and tend to be mixed (arable and grass) farms. We investigated whether these differences might affect their biodiversity.

We monitored butterflies on organic and non-organic farms in southern England, over three summers. Uncropped field margins had more butterflies than crop edges, for both farm types. For both field margins and crop edges, there were more butterflies, and more butterfly species, on organic farms.

Important factors were larger hedgerows on organic farms, lack of pesticide usage, and rotational cropping. Grass leys helped increase numbers of butterflies. Species such as the meadow brown and common blue all prefer sheltered grassy areas, and more of these butterflies were found on organic farms.

Some of these benefits, such as hedgerow creation and management, may readily be achieved on non-organic farms, for example through agri-environment schemes. However, there are other benefits for wildlife that are particularly associated with organic farming, such as those derived from different patterns of cropping and cessation of artificial pesticide use.

Key results

- Butterflies were more abundant and species-rich on organic farms
- Larger hedgerows, rotational cropping and lack of pesticide use were important factors
- Agri-environment schemes create some similar benefits through hedgerow and buffer strip management

Hedgerows are important for butterflies © Rob Wolton, Hedgelink

Butterflies & moths

Management summary

	Key actions	Potential benefits
Grassland	• Semi-natural grassland management depends on situation and history • In other grasslands, reduce fertiliser, leave some areas uncut for 2-3 years, and encourage diversity of grasses and wild flowers	Will benefit many butterfly and moth species
Hedgerows and field margins	• Cut hedgerows not more than once every 3 years • Field margins with mixtures of native grasses and wildflowers, and areas that are left uncut, will benefit butterflies and moths	Provides shelter and food for butterflies and moths Provides nectar sources and larval foodplants
Woodland and scrub	• Woodland edges, rides and shadier woodland centres are all important, so aim for a diverse structure, with lighter and darker areas • Try to link areas of woodland or semi-natural habitats	Some rarer moths need dark woodland while most butterflies and other moths benefit from lighter conditions Helps species move through landscapes

Options especially relevant for butterflies & moths

Code	Countryside stewardship options / capital items	Tier
AB1	Nectar flower mix	Mid
AB8	Flower-rich margins and plots	Mid
AB16	Autumn sown bumblebird mix	Mid
BE3	Management of hedgerows	Mid
GS1	Take small areas out of management	Mid
GS2	Permanent grassland with very low inputs (outside SDAs)	Mid
GS4	Legume and herb-rich swards	Mid
GS6	Management of species-rich grassland	Higher
GS7	Restoration towards species-rich grassland	Higher
GS8	Creation of species-rich grassland	Higher
SW1	4-6m buffer strips on cultivated land	Mid
SW2	4-6m buffer strips on intensive grassland	Mid
TE1	Planting standard hedgerow tree	Mid
TE4	Supply and plant a tree	Higher
WD1	Woodland creation - maintenance payments	Higher
WD2	Woodland improvement	Higher
WD3	Woodland edges on arable land	Mid
WD8	Creation of successional areas and scrub	Higher

Find out more at:
www.butterfly-conservation.org www.mothscount.org www.ukbutterflies.co.uk

Bumblebee ©Rosalind Shaw

Beneficial invertebrates

Many of the thousands of invertebrate species found on farmland are beneficial to agriculture, providing vital ecological services such as pollination and natural pest control. Insect pollinators include honeybees and bumblebees, hoverflies, moths and butterflies, while hundreds of species of beetles, spiders and other invertebrates are important predators of crop pests. Sympathetically managing a diversity of cropped and non-cropped areas of the farm will enhance populations of beneficial invertebrates and increase the ecological services they provide.

Key points

- **A diversity of crops and non-cropped habitats on the farm will encourage beneficial invertebrates**
- **Flower-rich areas will help pollinators, and a range of other beneficial invertebrates that regulate crop pests**
- **Non-cropped areas, such as hedgerows and field margins, provide shelter for nesting and overwintering species**

Beneficial invertebrates

Hoverflies are important pollinators
© Miles Wolstenholme CC BY NC SA 3.0

Insect pollination can increase seed set of oilseed rape
© Julian Dowse/Natural England

The carder bee is one of Britain's 24 species of bumblebee
© Rob Wolton, Hedgelink

Pollinators

Pollinators are vital both for native plant communities and for the productivity of many crops. There are many wild pollinating insects in Britain, including bumblebees, hoverflies, various other flies, moths and butterflies, as well as the domesticated honeybee. Insect pollination in the UK is thought to be worth over £400 million to the economy. Crops such as beans and soft fruit are pollinated primarily by bumblebees, and seed set, and thus oil yield, of oilseed rape is enhanced by pollinators.

Both honeybees and bumblebees have struggled in recent years. Many bumblebee species have undergone declines in the UK, and areas of intensive farming have seen some of the biggest declines. It is generally agreed that loss of wildflowers (both abundance and diversity) in the landscape has been a major factor contributing to these changes. Honeybees have suffered particularly from disease and it is also thought that environmental factors, including use of some pesticides (particularly neonicotinoids), may be involved in colony losses. Less information is available on other pollinators such as hoverflies, but it seems likely that these have also suffered reductions in number. Declines in other pollinator groups, such as wider countryside moths, are well documented.

Habitat management for pollinators

Encouraging a diversity of plants is important for pollinators, since different species have different requirements. For example, bumblebee species tend to feed on different flowers, with long-tongued and short-tongued bumblebees generally feeding on deep or shallow flowers respectively. Clovers, vetches and trefoils are particularly important.

Red clover is a valuable nectar source for bumblebees © Rosalind Shaw

Bumblebees also need underground or tussocky places to nest
© Nigel Jones CC BY NC ND 2.0

Valuable nectar sources such as tufted vetch are found at hedge bases and on field corners
© Rob Wolton, Hedgelink

Nectar and pollen also need to be available to bumblebees and other pollinators throughout the flight season from March through until September. By encouraging a range of suitable wildflowers it is more likely that this continuity will be achieved. A diversity of plants will also benefit other pollinators, such as butterflies and moths, which need larval foodplants as well as nectar sources for the adults.

Bumblebees also require undisturbed nesting sites and refuges in which to hibernate over the winter. Bumblebee nests can be large (containing around 50-400 sterile workers) but only the queen overwinters. Most bumblebees nest underground, often using disused small mammal burrows, while others need tussocky, above ground vegetation for their nests. Protection from farm operations is important for all species and this may be provided in the form of uncropped buffer strips, beetle banks and sympathetic hedgerow management.

Hedgerows can provide good early sources of nectar, for example, blackthorn and hawthorn blossom, as well as rich hedge base flora if managed sympathetically. Hedges also give shelter and protection, and hedge bases and banks often provide suitable nesting sites for bumblebees. Plants growing within wet areas, such as ditches, can provide rich pollen and nectar sources, and ditches themselves provide sheltered habitats (Box 13).

Although pollinators differ in their precise requirements, habitat management that encourages diverse flowery swards and leaves some uncropped areas undisturbed for nesting and overwintering (such as flowery uncropped field margins and field corners) will benefit a whole range of pollinator species. Several Countryside Stewardship options will help provide these resources, with pollen and nectar mixes being one of the most important. All options that create uncropped areas, especially floristically rich ones, will be of great benefit.

Many pollinators are not especially mobile, and so managing larger areas of farmland sympathetically will ensure that populations do not become isolated and at risk of local extinctions. By providing the resources they need across the landscape, bumblebee and other pollinator populations will be much more likely to survive and flourish.

Beneficial invertebrates

Ladybird larvae feed on aphids in the crop
© Dean Morley CC BY ND 2.0

Linyphiid, or 'money' spider, are tiny spiders that can disperse on air currents high above the landscape © James Bell

Predatory invertebrates

Many beetles (particularly ground and rove beetles), spiders, harvestmen and other invertebrates (such as hoverflies and nematodes) that occupy arable farmland are vitally important in helping control pests, such as aphids and slugs, that attack crops. There is a great diversity of species which differ in their life-histories and habitat requirements. For example, some species reside in the crop throughout the year, while many others will colonise the crop in the spring from other, uncropped, areas such as field margins, where they have overwintered. The diets of predatory invertebrates differ. A great number are generalists, feeding on a range of prey, while others are more specialist - ladybirds and lacewings, for example, prefer to feed on aphids.

The mobility of predatory invertebrates also varies enormously. Some spiders such as linyphiids ('money' spiders) are able to travel for many miles using a dispersal method known as 'ballooning'. These spiders let out a line of silk which, if the air currents are favourable, drags them to great heights from where they are carried to new locations. Other, less mobile, species, such as some ground beetles and ground-dwelling spiders, will move within only two or three fields during their lifetime. The management of the landscape as well as the local surroundings will thus influence the diversity of predatory invertebrates found on a farm.

What are parasitoids?

Parasitoids are similar to parasites in that they spend at least a part of their life obtaining nourishment from a host organism. However, unlike parasites, parasitoids ultimately kill their host and prevent it from reproducing. For this reason, parasitoids are very important for helping control agricultural pests. The grain aphid, for example, infests the ears of wheat, barley and other cereals, reducing yields. In the UK, there are 9 species of parasitoid wasp that lay their eggs inside the grain aphid. Once hatched, the parasitoid larvae will consume the aphid host from the inside, helping to control these pests. Furthermore, while aphids can develop resistance to insecticides, they remain susceptible to parasitoids.

Almost all parasitoids are insects, most are wasps, and the largest group are ichneumon wasps. Pollen and nectar are important food for parasitoid wasps, providing energy and nutrients. Important nectar sources for parasitoids are flowers with an open structure, such as umbellifers, for example, cow parsley and hogweed.

Parasitoid wasp (top) and mummified aphid host (below).
Photos: Gilles San Martin CC BY NC 3.0

This wolf spider has spiderlings on her back. Spiders benefit from good vegetation structure © Peter Wheelwright

Field margins will enhance predatory invertebrate populations. Adding wildflowers to a mixture will increase its value
© Keith Edkins CC BY SA 2.0

Ground beetles will overwinter in tussocky grass strips or beetle banks © James Bell

Habitat management for predatory invertebrates

Tussocky grasses support high densities of overwintering beetles and spiders. If they are positioned around arable fields, or across fields as beetle banks, they can aid colonisation of the crop in the spring, as well as increasing numbers of other invertebrates that can act as alternative prey for beneficial predators when pest species are not available. Margins and beetle banks should only be cut occasionally to control scrub, as taller and more complex vegetation structure will support more invertebrates (Box 23). Cutting in summer should be avoided. Where wildflowers are added to a seed mixture used to establish buffer strips, this will help further to provide other sources of food for predatory invertebrates, such as nectar, pollen, and other insect prey.

Hedgerows and hedge bases are very important habitats for beneficial invertebrates, providing shelter and a refuge from farm operations, as well as sources of alternative prey. As well as providing resources in their own right, buffer strips help protect the hedgerow from pesticide drift.

Many beneficial invertebrates are vulnerable to insecticide use, and sensitive to cultivation and soil disturbance. Insecticide use should be reduced wherever possible, or targeted so as to minimise effects on non-target beneficial invertebrates. Beneficial populations are most vulnerable to damage from insecticides and molluscicides in spring and summer, when they are active within the crop. Even in autumn, though, insecticide may drift into non-cropped overwintering areas and reduce survival. If herbicide inputs are reduced within fields this will encourage beneficial invertebrates (Box 24).

Minimum tillage and other techniques that reduce soil disturbance will have significant benefits for some species, such as the larvae of some ground beetles that overwinter in the soil within the field. Different crop types will support different communities of predatory invertebrates, so having a variety of crops will help raise their overall diversity.

In general, aiming to create a mosaic of habitats across the farm and reducing pesticide use where possible will increase the habitats and resources needed by different beneficial invertebrates and a range of other wildlife.

Linyphiid spider © James Bell

Spiders on field margins

Spiders are mobile and almost entirely carnivorous, and this predatory lifestyle makes them of potential benefit to farmers. The web-building activity of many species suggests they might be particularly sensitive to the structure of vegetation in uncropped areas of the farm such as field margins or buffer strips.

We looked at spider abundance and number of spider species on experimental field margins around arable fields at Wytham, Oxfordshire. The field margins were managed in contrasting ways, differing in the timing and frequency of mowing, and whether they were established by sowing with a grass and wildflower seed mixture, or by natural regeneration.

The key result was that spiders were found to be much more abundant on field margins that were not cut in the summer. Avoiding mowing the margins in the summer preserved the structural complexity of the vegetation, with positive impacts on the spider communities. Where field margins were mown, spiders fared better when mowing took place in spring and autumn compared to those margins mown in spring and summer. The lower number of spiders found on margins that were cut in the summer persisted into the following year.

Leaving field margins uncut, or cutting infrequently (every 3-4 years) to control scrub, and never cutting in the summer, will encourage populations of these beneficial invertebrates on farmland.

Key results

- **Field margins and buffer strips that are left uncut increase spider populations**
- **Structural complexity of the vegetation is very important for spiders**
- **If possible, cut only infrequently to control scrub, and do not cut in summer**

Vegetation with plenty of structure encourages web-building spiders
© Peter Wakely/ Natural England

Barley © Peter J Dean CC BY NC ND 2.0

Spiders are more abundant on organic farms

Previous studies have suggested that biodiversity on organic farms is higher than on non-organic farms. Over three years, we studied cereal fields and their field margins on 89 pairs of organic and non-organic farms across England. The aim was to find any differences between the farm types in terms of two groups of beneficial invertebrates, spiders and carabid beetles.

The results were quite complex, with numbers and species richness of spiders and carabid beetles varying with time of year, crop type, location (whether margin or crop), and the nature of the surrounding landscape. In general, though, spiders showed consistently positive responses to organic farming. Carabid beetles also showed some positive responses to organic farming but these were generally less consistent. Individual species were affected in different ways by organic farming. An important factor seemed to be the structural complexity of the crop and its understorey vegetation, with greater complexity of vegetation especially benefitting spiders.

The study confirmed that organic systems were generally beneficial to the invertebrate groups in the study, particularly so for spiders, especially within crops before harvest.

Key results

- **Eighty-nine pairs of organic and non-organic cereal fields were sampled for spiders and carabid beetles**
- **Spiders showed the most consistently positive responses to organic farming**
- **Organic farming may have benefits for both these groups of beneficial invertebrates**

Carabid beetles (left) and spiders were monitored on organic and non-organic farms
© James Bell

Beneficial invertebrates

Management summary		
	Key actions	Potential benefits
Pollinators	• Create flower-rich patches around the farm, including field corners and buffer strips, ditch banks, and semi-improved grassland	Pollinators need supplies of high quality nectar and pollen throughout the season
	• Include legumes and trefoils in pollinator seed mixes	These plants are especially good for bumblebees
	• Protect hedge bases and establish tussocky field margins and beetle banks	Will help provide suitable sites for bumblebees to nest
	• Reduce pesticide inputs	Increases invertebrate and plant diversity (pollinators are sensitive to insecticide use and herbicides reduce flower availability)
Predatory invertebrates	• Aim for mosaic of different crops and non-cropped habitats	Provides food and shelter for wide range of predatory invertebrates
	• Hedgerows, uncropped field margins and beetle banks are especially important	Provides overwintering habitat and helps crop colonisation
	• Reduce mowing of field margins to increase vegetation structure	Enhances populations of spiders, especially web-building species
	• Reduce or target pesticide use and adopt minimum tillage where possible	Predatory invertebrates are sensitive to pesticide use and soil cultivation

Options especially relevant for beneficial invertebrates		
Code	Countryside stewardship options	Tier
AB1	Nectar flower mix	Mid
AB3	Beetle banks	Mid
AB6	Enhanced overwinter stubble	Mid
AB7	Whole crop cereals	Mid
AB8	Flower-rich margins and plots	Mid
AB10	Unharvested cereal headland	Mid
AB11	Cultivated areas for arable plants	Mid
AB14	Harvested low input cereal	Mid
AB15	Two year sown legume fallow	Mid
AB16	Autumn sown bumblebird mix	Mid
BE3	Management of hedgerows	Mid
GS1	Take small areas out of management	Mid
GS2	Permanent grassland with very low inputs (outside SDAs)	Mid
GS4	Legume and herb-rich swards	Mid
GS17	Lenient grazing supplement	Mid
OR1	Organic conversion - improved grassland	Mid
OR2	Organic conversion - unimproved grassland	Mid
OR3	Organic conversion - rotational land	Mid
WD7	Management of successional areas and scrub	Mid
WD8	Creation of successional areas and scrub	Higher

Find out more at:
www.bumblebeeconservation.org www.gwct.org.uk www.soilassociation.org www.leafuk.org
www.buglife.org.uk