

...and even better news for bumblebees

Farmers are making a difference. Until very recently, the survival of some of our rare species of bumblebees seemed very uncertain.

Up to the 1950s, bumblebees were a very common and familiar sight in the countryside. The disappearance of large tracts of suitable farmland habitat increasingly put their survival under threat.

One species was declared extinct in 2000. Another had become extinct along the whole of the South Coast, where formerly it was widespread. Like 3 other species, it had disappeared from over 70% of its pre-1970 haunts.

Today, there are reasons to be more optimistic — thanks to farmers and scientific research, backed by DEFRA. This showed the benefits to wildlife by planting legume and wildflower margins. These actions are now recommended and things are changing for bumblebees. Some of the rare species, such as *Bombus ruderatus*, are now starting to increase in numbers and expand their range. And it's all thanks to farmers! The new growing methods outlined in this leaflet can only make that better.



Bombus ruderatus. Once a widespread species, found throughout England and parts of Wales, it had become restricted at the end of the 20th century to just three areas in England. Following the adoption of legume margins, *Bombus ruderatus* is now increasing in numbers and expanding its range.



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8. *Bombus sylvarum* a BAP species formerly widespread but now extinct along the whole of the South Coast

9. *Bombus humilis* on White Deadnettle *Lamium album*, an important early flowering labiate, which can help some of our rare bumblebees establish a colony

The buzz you'll get

By planting effective field margins, you will be helping and enhancing the environment. You'll help save bumblebees from extinction and help maintain and expand bumblebee populations. You'll also help conserve other endangered farm wildlife. And if that isn't satisfaction enough, you'll be paid under the Environmental Stewardship Scheme (England) and in Scotland there may be support under the Scotland Rural Development Programme — Rural Priorities.

For more information and technical advice, please contact:

British Wild Flower Plants
Growers and suppliers of native plants
T/F 01603 716615 www.wildflowers.co.uk

Bumblebee Conservation Trust
University of Stirling, FK9 4LA
email: enquiries@bumblebeeconservation.org
web: www.bumblebeeconservation.org

Emorsgate Wild Seeds
Supplies and promotes the use of wild seeds for habitat creation and landscaping
T: 01553 829028 www.wildseed.co.uk

Cotswold Seeds
Suppliers of grass, clover and wild flower seed
T: 01608 652552 www.cotswoldseeds.com

IBRA
The International Bee Research Association (IBRA) promotes the value of bees by providing information on bee science and beekeeping.
Web site: www.ibra.org.uk

Scotia Seeds
Producers of Scottish origin native wildflower seed for wildlife gardening and habitat creation and restoration projects of all sizes.
T: 01356 626425 www.scotiaseeds.co.uk

Operation Pollinator
Operation Pollinator was instigated by Syngenta, based on scientific research and the experience of selected farmers. The aim is to help growers successfully establish and manage pollen & nectar habitats in key locations on farms - with dramatic recovery in the fortunes of pollinating insects.

Wildlife Farming Company
Provides advice and training on habitat creation and wildlife management.
T: 01869 253808
E: marek@wildlifefarming.co.uk

Natural England
Northminster House, Peterborough, PE1 1UA
T: 01733 455100/1/2
F: 01733 455103
E: enquiries@naturalengland.org

Scottish Natural Heritage
Great Glen House, Leachkin Road, Inverness, IV3 8NW
T: 01463 725000
E: enquiries@snh.gov.uk

Bumblebee Identification:
Field guide to the Bumblebees of Great Britain and Ireland, Edwards, M., Jenner, M.
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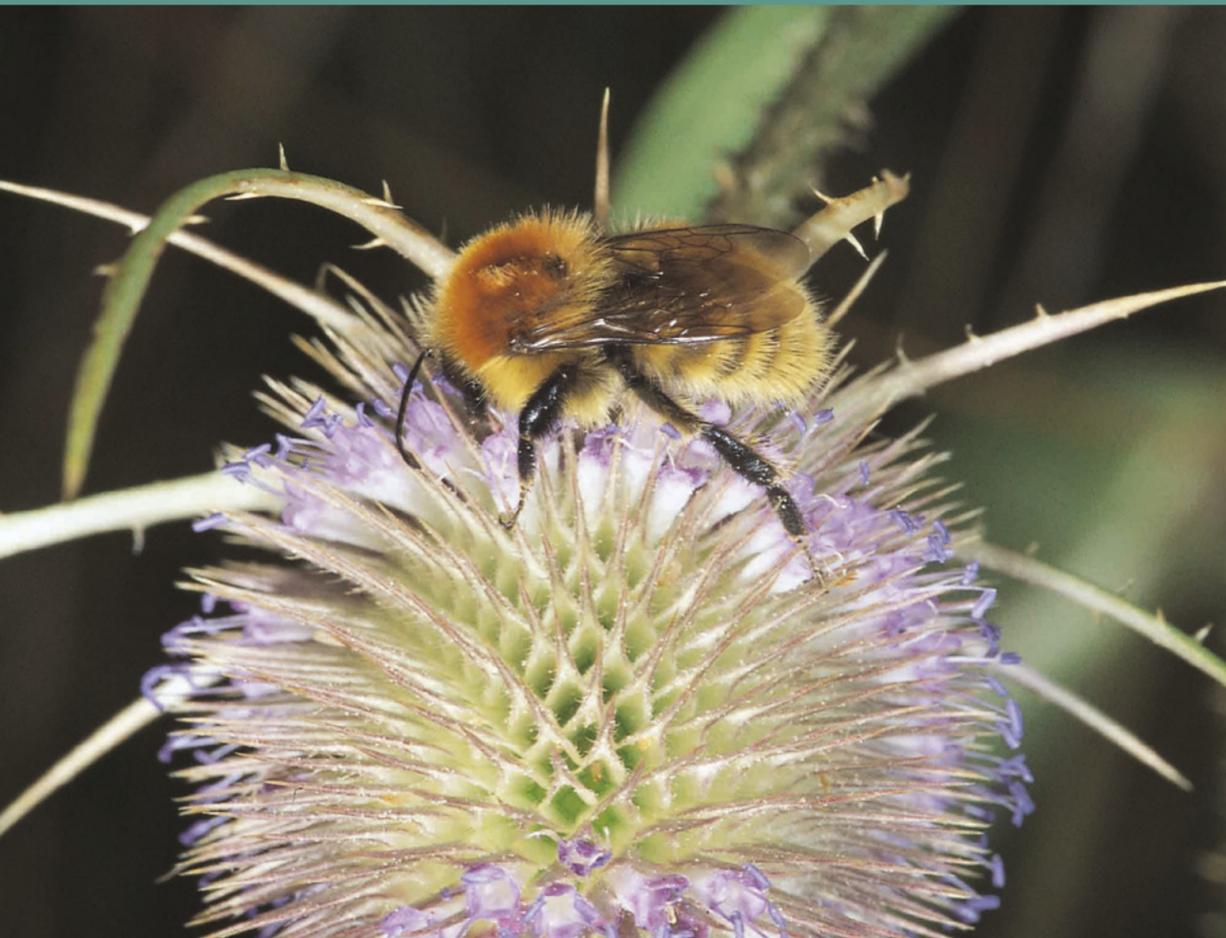
Una Fitzpatrick at the Irish National Biodiversity Data Centre, Waterford, for supplying Irish bumblebee distribution data.

Stuart Roberts, BWARS, for compiling the map data.

About Hymettus
Hymettus is a non-profit making charitable organisation. It is the leading source of advice regarding the conservation of bees, wasps and ants (aculeates) in the United Kingdom and Ireland.

The recognition of Hymettus as the UK's premier authority on aculeate conservation is based on the high quality of its research and its efficient dissemination of ecological and conservation information. Through its experience, expertise and scientific resources, Hymettus is a contributing partner on many important conservation projects involving aculeates and other insects throughout the British Isles.

Help save the Bumblebee... get more buzz from farming



Good news for farmers...

Now farmers are getting paid to help bumblebees. Planting legume mixes — using fodder species — in margins alongside arable crops makes a valuable addition to the wild flowers essential for the survival of bumblebee populations. Farmers can be paid to do this through environmental schemes, with real benefits to bumblebees and other farmland species.

Growing legumes successfully, like any other crop, requires knowledge and skill. The yield — number of flowering plants — during the season can make a huge difference to numbers of bumblebees and other wildlife. There has now been much scientific research done: in this leaflet we show you how to benefit from it and get the best results for you and your bumblebees.

In the future, the quality of environmental delivery, the number of different species of wildlife supported by margin schemes, will become increasingly important and are likely to be linked to payments — just as previously subsidy was linked to production.

❖ Farmers are being paid to help bumblebees by planting legume or wildflower mixes in field margins

❖ Research shows the majority of our rare species of bumblebees are dependant on legumes

❖ Bumblebees are important pollinators and can increase the yields of fruit trees and some arable crops

❖ Bumblebees are active in poor weather conditions and pollinate flowers at lower temperatures — when other insects are not present

❖ Less profitable parts of a farm can provide a greater financial return by growing margins for bumblebees

❖ Some rare bumblebee species are increasing in numbers and expanding their range, thanks to the actions taken by farmers

Hymettus



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Cover. Male *Bombus muscorum* on Teasel *Dipsacus fullonum* an important nectar plant for bumblebees

What bumblebees need from the environment

Bumblebees live in colonies comprising a queen and up to 150 workers. The lifespan of a colony can be three to four months and culminates in the production of new males and queens. The bumblebees require continual sources of forage, both pollen and nectar, from a variety of plants, throughout the colony's lifespan.

Analysis of the pollen carried by bumblebees has shown that legumes are critical for the survival of our rarer species. Using different species of legumes and controlled cutting or light grazing can prolong the flowering period of a legume sward.

The queen needs other flowering plants to found the colony prior to the flowering of clovers and vetches, like Pussy Willow *Salix caprea*, which can be planted in the gaps of hedgerows. Plants that can flower later than clovers such as Lesser



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Knapweed *Centaurea nigra* and Musk Mallow *Malva moschata* are important, too.

Bumblebees also require suitable nesting habitats. Many of our rare species are surface nesters. Ideally, they need tall – rather than thick – grass and make the nest from surrounding mosses or use an old vole or mouse nest. Grassy field margins and banks in open areas can be ideal habitats for these.

Bumblebees will fly more than one kilometre to find forage sources. The best environment for supporting bumblebee populations has lots of small areas of suitable plants, which flower at different times. Planting legume or appropriate wildflower mixes in field margins can help sustain enough suitable habitats for rare bumblebee populations to survive and expand.

1. Female *Bombus ruderarius* on White Clover *Trifolium repens*

2. *Bombus monticola* on Pussy Willow *Salix caprea*. This declining upland species of bumblebee uses the blossom from this tree before the flowering of Bilberry *Vaccinium myrtillus*, its main forage source. Other species of bumblebees also forage on Pussy Willow

3. Nest of the carder bumblebee *Bombus pascuorum*

4. Wildflower margin planted for bumblebees, The Upton Estate

5. Legume margin, Vitacress, Pinglestone



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What makes an effective margin

Successful field margins need to be grown and treated as any other farm crop. Their success (yield) can be measured by the variety and density of suitable forage (pollen and nectar) and the length of the flowering period. You also need to balance the seed cost of the various pollen and nectar mixes against the longevity and management requirements of the margin before you can arrive at a true cost. A cheap mix that has a short life may not actually be the most cost effective option.

Margins need to be at least 3 metres wide and the wider they are the easier they are to manage with modern agricultural machinery. Farmers with 6-metre margins automatically comply with LERAP and hedgerow protection legislation.

Getting the best results

As with all crops, appropriate soil preparation, time of sowing and position in the rotation need to be considered. Cutting is also essential in the first year to minimize the development of unwelcome plants. The adjacent table is a guide on how to get the best results and maintain a productive margin. You can obtain further information from the advisors listed on the back page of this leaflet.

PLANTING

Site situation and ground conditions

Wildflower or legume mixes are best sited in poor yielding areas but, as with other crops, water logged and shaded areas are not suitable.

Soil preparation

As in any crop, to get the best results and yields for the long term a firm fine seed bed is essential with the prior removal of all weeds.

Sowing times

Best sown mid July to end August or April to mid May.

Sowing

The plants have small seed and should, therefore, be broadcast on the soil surface and not drilled. Once sown, the site should then be ring rolled.

Note. *If grasses or perennial weeds such as docks, thistles or nettles are present prior to preparation of the seed bed or appear later, a selective herbicide may be required.*

MANAGEMENT

1st Year

To minimize the development of unwelcome plants in the first year, it is critical to mow before these dominate the sown crop. This needs to be done at least twice during the first year for both wildflower and legume mixes. Timing will depend on soil type and fertility.

2nd year and subsequent years

To extend the length of the flowering period of a legume margin, it is highly recommended to cut half the margin area just before it flowers, usually in late May.

General Information

It is paramount that no fertilizers are applied at any time. Ultimately, all margins will benefit from a complete annual cut or grazing at the end of September.

Ideally, cuttings should be removed – failing that, they should not be allowed to form a mulch on the crop.



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6. Yellow Hammer *Emberiza citrinella*. Yellow Hammers, Sky Larks, Barn Owls, Partridges, hoverflies and butterflies such as the Marbled White benefit from wildflower margins

7. Wildflower margin section with good stand of Red Clover *Trifolium pratense*

About pollen and nectar mixes

There are two main types of seed mixes suitable for bumblebee margins – agricultural legume or perennial wildflower. Both have merits which depend on the situation. It is also possible to plant both types side by side.

Agricultural legume mix

This is designed specifically for bumblebees and provides a highly concentrated forage resource. It is also excellent for butterflies and voles. However, it does not provide early bumblebee forage, which is essential for the development of the colony.

Do not include grass in this type of mix as this will severely limit the success of legume growth and regeneration, particularly during the second and third years.

Seed cost of the agricultural legume mix is lower than a flower mix but the longevity of the sward is usually only three to five years, which is significantly shorter than the perennial wild flower mix.

Perennial wildflower mix

The mix should contain Wild Red Clover, not a cultivar, together with a mixture of flowering plants. It should include early flowering species, such as Bird's Foot Trefoil, and grasses suited to the local soil type. Tussock-forming grasses such as Cocksfoot and False Oat Grass are not suitable, as they will eventually come to dominate the margin. The flowering period of wildflower mixes is much longer than a legume mix and the greater variety of plants is highly beneficial to other wildlife.

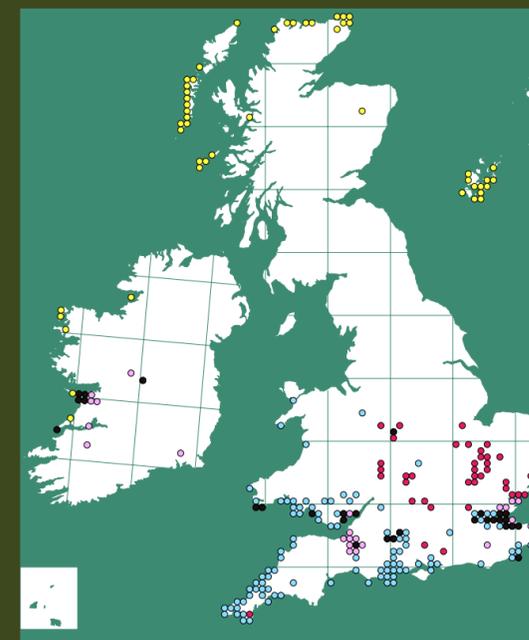
The initial seed cost is higher than a legume mix but, properly managed, these have a longevity in excess of ten years and are well suited for margins intended for perpetuity. They fit well in a rotational grazing regime.

Planting in combination

The best results for bumblebees and other farm wildlife come from using a combination of both agricultural legume and perennial wildflower margins. These can be planted side by side with a tussocky grass mixture along the outer edge of the field to form a sandwich or they can be planted individually in different parts of the farm.

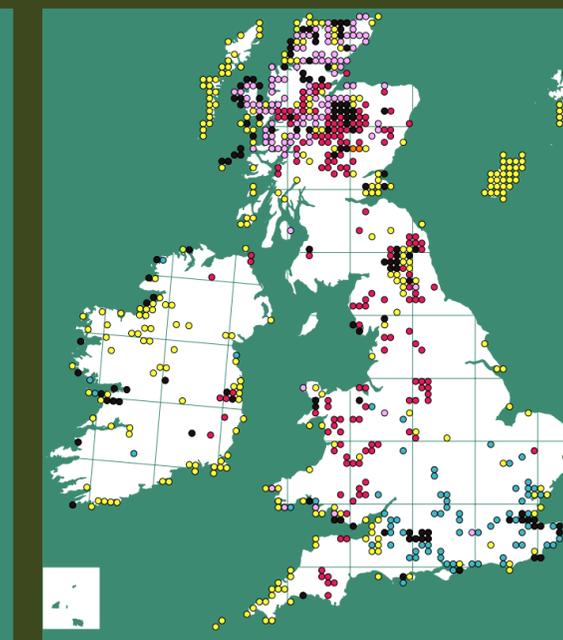
Rare bumblebees near you

These maps show recent distribution data (post 1990) of our rare species of bumblebees. The first shows a map of the original UK Biodiversity Action Plan (BAP) species. The second shows the two most recently agreed BAP species and two other species of conservation concern.



Post 1990 data for original BAP species

- *Bombus humilis*
- *B. ruderatus*
- *B. sylvarum*
- *B. distinguendus*
- More than one species



Post 1990 data for additional BAP species and two other species of conservation concern

- *Bombus ruderarius* (BAP species)
- *B. monticola*
- *B. soroeensis*
- *B. muscorum* (BAP species)
- More than one species

Get points for Environmental Stewardship

Planting pollen and nectar mixes or wildflower margins will help all bumblebee species and contribute points towards the Environmental Stewardship Entry Level Scheme, especially if any of the species in the maps above are within 10km of your farm. If these are present in your area, it provides a strong case for including a legume or wild flower mix for bumblebees as part of your Environmental Stewardship Higher Level Scheme, Farm Environment Plan.