

Flower-enriched farms boost bee populations

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Bumblebees are important pollinators. Credit: Dave Goulson

A two-year study of farms in West Sussex and Hampshire found that England's most common bumblebee species saw significant population growth where targeted, bee-friendly planting schemes were in place.

A number of 'agri-environment' schemes have been introduced to try to halt and reverse the decline of bumblebees, whose numbers have been falling because of changes in agricultural practices that have largely removed flowers from the landscape, leaving the bees with little to feed upon.

Across the European Union, such schemes are now funded as part of the Common Agricultural Policy. In England, two tiers of environmental

stewardship were in place between 2005 and 2014; Entry Level Stewardship (ELS) was open to all farmers, whereas Higher Level Stewardship (HLS) provided greater financial rewards for more substantial and rigorous schemes involving planting bee-friendly plots or strips along the sides of fields.

Plants were chosen for the popularity with foraging bees and included common bird's-foot trefoil (*Lotus corniculatus*), common knapweed (*Centaurea nigra*), red clover (*Trifolium pratense*) and Alsike clover (*Trifolium hybridum*).

University of Sussex PhD researcher Thomas Wood, supervised by bumblebee expert Professor Dave Goulson, compared farms with and without HLS schemes to measure the abundance of [bumblebee colonies](#).

He found significantly greater numbers of common bumblebees on HLS farms and, crucially, evidence of far higher nesting density, indicating [population growth](#).

This is the first evidence that these schemes can actually boost the size of bumblebee populations.

Thomas said: "A consistent problem in assessing the response of bumblebees to agri-environment schemes has been that it is unclear whether a high observed abundance of bumblebees was merely an attraction of workers to sown forage patches or a genuine population level increase.

"Here we show for the first time that the management of uncropped land under Higher Level Stewardship can significantly increase the size of bumblebee populations."

However, while [common species](#) the Garden Bumblebee (*Bombus*

hortorum), Red-tailed Bumblebee (*Bombus lapidarius*) and Buff-tailed Bumblebee (*Bombus terrestris*) fared well, there was little recorded benefit to rarer species - such as the Large Garden Bumblebee (*Bombus rudericus*) - that tend to stay closer to their nests when foraging food.

Thomas added: "The flower-rich strips on farms may be too few and too scattered in the landscape to benefit those species unable to cover larger distances.

"These rarer species could be helped by targeting planting on land near existing colonies and improving the plant quality of existing buffer strips and hedgerows."

Bumblebees are among the most ecologically and economically important pollinators in temperate regions but, like other pollinators, are declining worldwide. Of the 25 UK [bumblebee species](#), two have become extinct and eight have declined substantially since 1940.

More information: "Targeted agri-environment schemes significantly improve the population size of common farmland bumblebee species."
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Provided by University of Sussex

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