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Bees and flowers decline in step

By Richard Black

Environment correspondent, BBC News website

Diversity in bees and wild flowers is declining together, at least in Britain and the Netherlands, research shows.

Scientists from the two countries examined records kept by enthusiasts dating back more than a century.

They write in the journal *Science* that habitat alterations, climate change and modern industrial farming are possible factors in the linked decline.

There is a chance, they say, that the decline in pollinating bees could have detrimental effects on food production.

"The economic value of pollination worldwide is thought to be between £20bn and £50bn (\$37bn and \$91bn) each year," said Simon Potts from the University of Reading, UK, one of the scientists involved.

While declines in Britain and the Netherlands might not indicate a global trend, the team says, it is an issue deserving serious future research.

Costs of specialism

Study leader Koos Biesmeijer from the UK's University of Leeds is not the first biologist to note the value of amateur enthusiasts to British conservation studies, and will not be the last.

"We have relied here on records kept by enthusiasts; just like bird-watchers keep records of bird-sightings, they keep records of bees and hoverflies and plants," he told the BBC News website.

"In the UK, insect records come from the Bees, Wasps and Ants Recording Society (BWars) and the Hoverfly Recording Scheme (HRS), while in Holland the Dutch Entomological Society does something similar.

"The records go back even into the last part of the 19th Century, and then some of

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these enthusiasts have gone back into the scientific literature and verified records."

From these records comes a picture of reducing diversity among bees and wild flowering plants.

Bee species which rely on certain plants, and plants which rely on certain bees, have fared worse; more flexible species of both have done better.



“ The ultimate drivers are changes in our landscapes; intensive agriculture, extensive use of pesticides, drainage, nitrogen deposition ”

Koos Biesmeijer

Pesticides blame for bee fall

In Britain, bee species which have increased since 1980 are those which were already common before.

The researchers also looked at hoverflies, and found a mixed picture, with diversity remaining roughly constant in Britain but appearing to increase marginally in the Netherlands.

Hoverflies do pollinate plants, but are less choosy than many bee species, and do not depend so directly on nectar to feed their young.

Overall, plants which pollinate via wind or water appear to be spreading, while those which rely on insects decline.

Holistic handling

If the diversity of bees and plants is decreasing, one question is: which declined first?

This study cannot provide an answer, though it appears the fates of both are intertwined; but the root causes of the decline are clear, Dr Biesmeijer argues.

"The ultimate drivers are changes in our landscapes; intensive agriculture, extensive use of pesticides, drainage, nitrogen deposition.

"All of these factors favour subsets of plants and subsets of bees.


"And if you want to prevent them you have to look at the ecosystem level, protecting the habitat and the groups of species."

Where habitats have been restored, for example under agro-environment schemes, bee and plant diversity has sometimes started to re-emerge, he said.

While such changes may have significant impacts nationally, the team points out that the environments of Britain and the Netherlands, with their high population densities and long histories of agriculture, contain two of the least "natural" landscapes on Earth.

Other countries, with a greater proportion of natural habitat, may not show the same declining trend, they say; but given the importance of bees for pollination, they suggest it would be worth finding out.

Richard.Black-INTERNET@bbc.co.uk

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