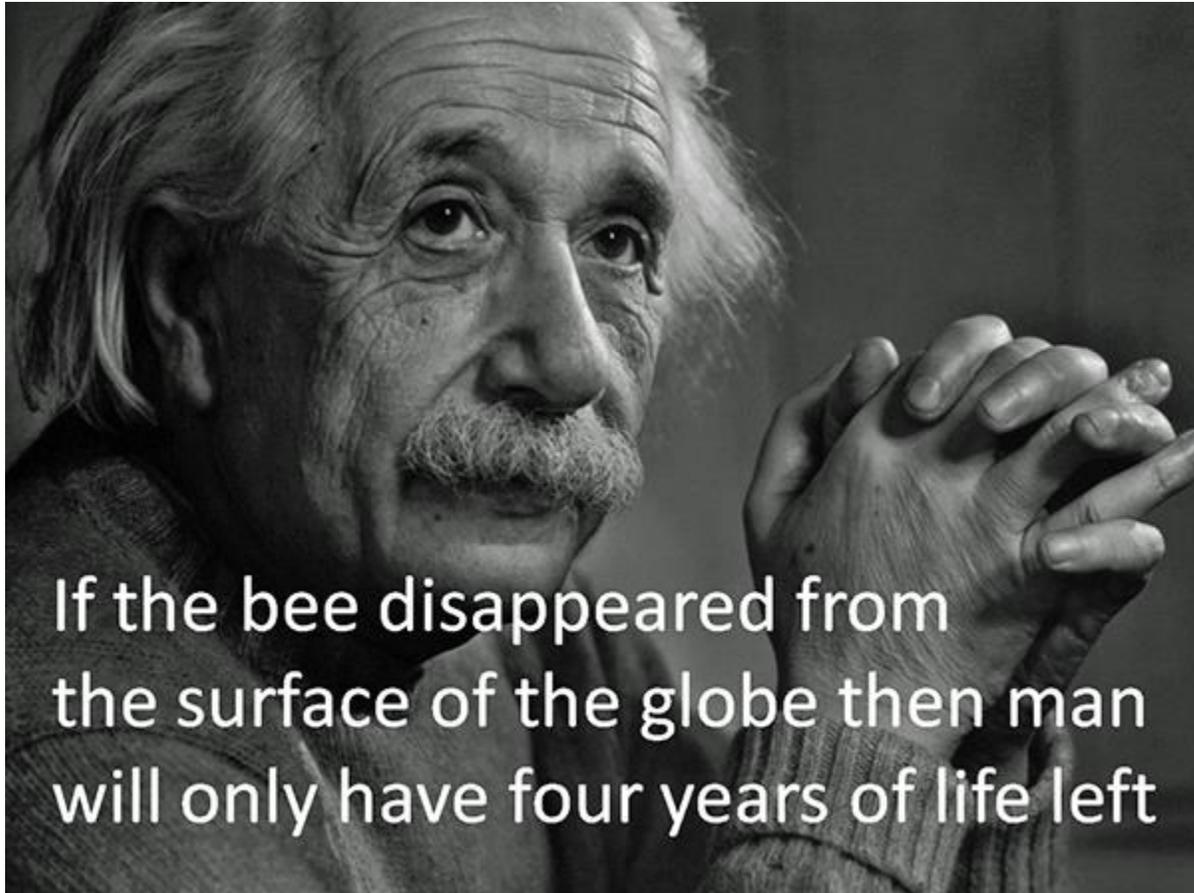


Neonic pesticide link to long-term wild bee decline

By Matt McGrath Environment correspondent



The large-scale, long-term decline in wild bees across England has been linked to the use of neonicotinoid insecticides by a new study.

Over 18 years, researchers analysed bees who forage heavily on oilseed rape, a crop widely treated with "neonics".

The scientists attribute half of the total decline in wild bees to the use of these chemicals.

Industry sources say the study shows an association, not a cause and effect.

Weighing the evidence

In recent years, **several studies**, conducted in the lab and in the field, have identified a negative effect on honey bees and bumble bees from the use of neonics.

But few researchers have looked at the long term impacts of these substances.

This new paper examined the impacts on populations of 62 species of wild bees across England over the period from 1994-2011.

The team, from the **Centre for Ecology and Hydrology (CEH)**, used distribution data on wild bees, excluding honey and bumblebees collected by the **bees, ants and wasps recording scheme**.

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We know what's killing the bees.



They're being

poisoned

by

**neonicotinoid
insecticides**

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They were able to compare the locations of these bees and their changing populations with growing patterns of oilseed rape across England over 18 years.

The amount of this crop being sown has increased significantly over the period of the study, from around 500,000 hectares in 1994 to over 700,000 in 2011.



A key innovation was the commercial licensing of neonicotinoid insecticides for the crop in the UK in 2002. Seeds are coated with the chemical and every part of the plant becomes toxic to pests.

Manufacturers hailed the development as a major advance, reducing the need for leaf spraying with other insecticides. Around 85% of the oilseed rape crop in England now uses this method for pest protection.

'Long term, large scale'

But this new work suggests, for the first time, that the detrimental impacts seen in the lab can be linked to large scale population extinctions of wild bees, especially for those species of bees that spend longer foraging on oilseed rape.

"The negative effects that have been reported previously do scale up to long-term, large-scale multi-species impacts that are harmful," said Dr Nick Isaac, a co-author of the new paper.

"Neonicotinoids are harmful, we can be very confident about that and our mean correlation is three times more negative for foragers than for non-foragers."

There was a decline in the number of populations of 10%, attributable to neonicotinoids, across the 34 species that forage on oilseed rape. Five of the species showed declines of 20% or more, with the worst affected declining by 30%. Overall, half the total decline in wild bees could be linked to the chemicals.

"Historically, if you just have oilseed rape, many bees tend to benefit from that because it is this enormous foraging resource all over the countryside," said lead author Dr Ben Woodcock from the CEH.

"But this co-relation study suggests that once its treated with neonicotinoids up to 85%, then they are starting to be exposed and it's starting to have these detrimental impacts on them."

"What we can't say is what these detrimental impacts are but what it does suggest is you can have these population declines and they can be big - I mean 30% is a big decline."



The authors acknowledge that their study finds an association and doesn't prove a cause and effect link between the use of neonicotinoids and the decline of bee populations.

Intensive farming at fault?

The manufacturers of the chemicals agree that it is an interesting statistical study, but they argue that intensive farming and not just a single insecticide might be the real cause of the decline.

"Since most of the oilseed rape grown in the UK was treated with a neonicotinoid seed treatment during the years that this study looked at, we believe its findings would be more correctly headlined that intensive agriculture is causing some issues with pollinators," said Dr Julian Little, from Bayer Crop Science in the UK.

"Whether this is due to the use of insecticides is not clear; a lack of nesting sites and pollen and nectar sources in these areas may also be critical factors."

Other scientists, though, believe that the new study is some of the strongest data yet for the impact of these substances over the long term.

"This is the first good evidence that bees are affected at the population level by the widespread use of neonicotinoids," said Prof Henrik Smith from Lund University in Sweden, who was not involved with the research.



"It is the combination of evidence that is persuasive, that the effect depends on neonicotinoid exposure and affect species known to forage on oilseed rape more than other species."

The European Food Safety Authority is currently conducting a review of the scientific evidence about neonicotinoids.

An **EU-wide moratorium** on their use was implemented in 2013 and is still in place. This new work is likely to be part of that review, along with another, major field study due out in the Autumn. However, the National Farmers Union (NFU) say that it doesn't make a convincing case about the extinction of bees in England.

"While this study claims to provide an important contribution to the evidence base underpinning the current EU moratorium on some uses of neonicotinoids, experts reviewing all the evidence have concluded that there are still major gaps in our knowledge and a limited evidence base to guide policymakers," said Dr Chris Hartfield from the NFU.

The scientists involved in the wild bee study caution against "simplistic solutions" to the problems of pollinators. They say a "holistic" approach to the use of insecticides must be taken and they are lukewarm about the idea of banning chemicals.

"When you grow oilseed rape you can't do it without pesticides, there's an underlying reality to this," said Dr Woodcock.

"Just because you say 'don't use neonicotinoids anymore', the likelihood is that another pesticide is going to have to be used to compensate for that, that is going to have impacts on runoffs into waterways and on other species that you can control for."

"It needs to be taken in a very holistic perspective, you can't just say as long as we can save the bees everything else can go to hell, that's not where you want to be at."

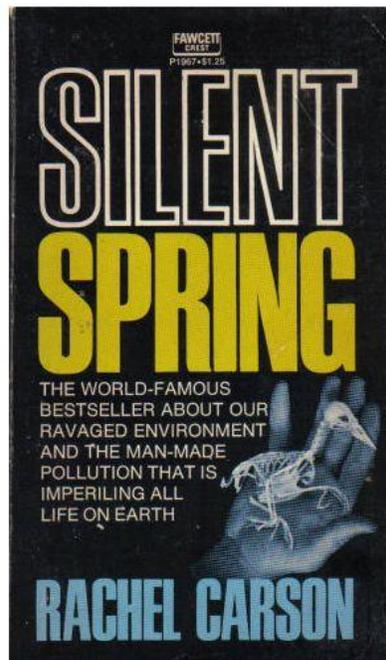
The **study has been published** in the journal Nature Communications.

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Shocking Facts

- Pesticides are a major threat to bees. The systemic poisoning of flowers has killed scores of bees.
- We're simply losing too many of them. The bees and butterflies among others are pollinators and they represent a natural tour de force in perpetuating plant cycles and evolution.
- You see, they do cross pollination naturally. More than 25% of the bee colonies died in winter 2006/07. That translates to a loss of tens of billions of bees.
- And it's estimated that this loss will negatively impact the agricultural economy to the tune of \$8 to \$12 billion.





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