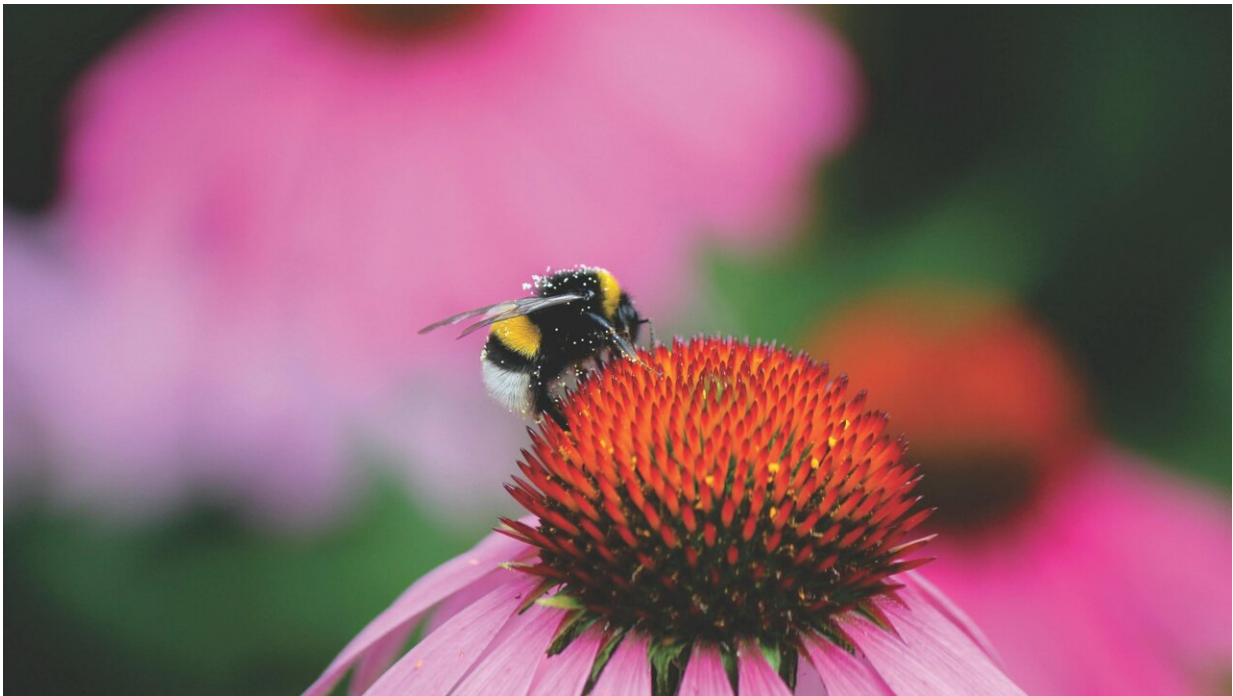


Dutch landscape is losing insect-pollinated plants, 87 years of data show

April 22 2024, by Hilde Pracht



Credit: Matthias Zomer from Pexels

The Netherlands is losing plant species that rely on pollination by insects. Leiden environmental scientist Kaixuan Pan demonstrates this after analyzing 87 years of measurements from more than 365,000 plots. The news is alarming for our biodiversity and food security.

We've known for some time that insects in the Netherlands are in

decline. "With this research, we show that there are also fewer and fewer plants dependent on those insects for pollination," explains Ph.D. candidate Kaixuan Pan. "The proportion of insect-pollinated plants has declined while that of wind-pollinated plants has increased."

And that's a problem. Insect-pollinated species make up the majority of plants in the Netherlands. "If these plants disappear from the landscape, it not only means fewer plant species remain, but also significantly fewer seeds and fruit for birds and other animals," says Pan. "In other words: a significant decrease in biodiversity." Additionally, these plants are plentiful on our menu: "75% of crops are plants pollinated by insects. Losing these species would pose a threat to our food security."

The findings are [published](#) in the *Journal of Applied Ecology*.

Nearly 90 years of data

Pan's work mainly involved analyzing a vast amount of data. "A huge task," says supervisor Geert de Snoo from Leiden University and the Netherlands Institute of Ecology (NIOO-KNAW). "Kaixuan data mined 87 years of data collected from a staggering 365,768 plots to find as many trends and patterns as possible. We looked at different plant species but also factors like nitrogen, moisture levels, and pH, combining that with insect data. This combination, and the large time scale, make this research unique."

"I may have studied Dutch nature, but I mainly sat behind a computer," Kaixuan says jokingly. "Fortunately, I could occasionally help a colleague with fieldwork. Searching for bees and studying plants. A welcome variation."

If the decline in insect-pollinated plant species were solely due to factors like moisture or nitrogen, wind-pollinated plants should have shown

similar trends. But that wasn't the case. Pan states, "Within the same habitat type, under the same conditions, we often saw a greater decrease in the number of insect-pollinated species compared to wind-pollinated species. So, that difference is likely due to a lack of pollination: there are not enough pollinators left to provide these plants with sufficient pollen."

Less nitrogen in nature helps

The scientists propose various measures to reverse the trend. Pan says, "Think about nitrogen, which is now well-known. If we ensure that less of it ends up in nature, it can help local plants and insects." Pan also advocates for better protection of our natural grasslands. "Because they harbor many of the insect-pollinated [plant species](#) that have experienced declines in recent years."

Supervisor Koos Biesmeijer from Leiden University and Naturalis Biodiversity Center says, "And we must continue monitoring to see if these protection measures have the desired effect. Both on [insects](#) and plants, because they are interdependent. That way, we can learn from the past, monitor the present, and positively change the future."

More information: Kaixuan Pan et al, Dutch landscapes have lost insect-pollinated plants over the past 87 years, *Journal of Applied Ecology* (2024). [DOI: 10.1111/1365-2664.14649](https://doi.org/10.1111/1365-2664.14649)

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