

Introduced honeybee may pose threat to native bees

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Credit: Kit Prendergast

A Curtin University study has found the introduced European honeybee could lead to native bee population decline or extinction when colonies compete for the same nectar and pollen sources in urban gardens and areas of bush.

Published in the *Biological Journal of the Linnean Society*, the research

found competition between the native bees and the introduced European [honeybee](#) could be particularly intense in residential gardens dominated by non-native flowers, and occurred when the bees shared the same flower preferences.

Under these conditions, it would appear that European honeybees, being very abundant, and effective foragers, with the ability to exploit a wide range of flowers, can outcompete native bees for nectar and pollen resources.

Lead author, Forrest Foundation Scholar Miss Kit Prendergast, from Curtin's School of Molecular and Life Sciences said the research was conducted over two years in urban gardens and areas of native vegetation on the Swan Coastal Plain at Perth, Western Australia and revealed a complex relationship between native and introduced bees.

"Not all [native bee species](#) were impacted, but when native bees preferred many of the same flower species as honeybees or were of larger body size, meaning they needed more food, this was when honeybees had a [negative impact](#) on native bees," Miss Prendergast said.

"This occurs due to resource competition, where honeybees were more successful at exploiting food resources from flowers, leaving not enough nectar and pollen to support native bee populations.

Unlike native bees, honeybees occur in colonies of tens of thousands of individuals, and are better at telling other colony members where flower patches are. This communication is done by using a combination of movement and vibrations known as the "waggle dance" and using scent.

"Competition from honeybees was particularly fierce in residential gardens where there are lower proportions of the native wildflowers that our native bees have co-evolved to forage on," Miss Prendergast said.

"This impact of competition with a super-abundant, domesticated and feral introduced bee, when combined with pressures from [habitat loss](#) as a result of increasing urbanization and agriculture, especially livestock agriculture, places some native bee species at risk of becoming endangered or even extinct."

Miss Prendergast said planting more flowering plants, particularly those preferred by vulnerable species of native bees, could help prevent them from declining in number. Controlling the density of honeybees would also be critical in reducing the pressure on vulnerable [native bees](#).

"Native bees are an integral and important part of any ecosystem, including in the Southwest Australian biodiversity hotspot in which our research was conducted," Miss Prendergast said.

"European honeybees have been introduced around the world and pose an added threat to many native bee species already at risk of declining numbers or even extinction due to increasing urbanization."

More information: Kit S Prendergast et al. Interactions between the introduced European honey bee and native bees in urban areas varies by year, habitat type and native bee guild, *Biological Journal of the Linnean Society* (2021). [DOI: 10.1093/biolinnean/blab024](https://doi.org/10.1093/biolinnean/blab024)

Provided by Curtin University

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