

Headbanging Aussie bee takes a heavy metal approach to pollination

December 14 2015



Research has for the first time revealed the heavy metal secret behind an Australian bee's unique approach to pollination: high-speed headbanging. Credit: Callin Switzer, Harvard University

Research has for the first time revealed the heavy metal secret behind an Australian bee's unique approach to pollination: high-speed headbanging.

In an effort that would put metal fans to shame, the native blue-banded bee has been filmed head banging flowers up to 350 times a second.

The technique causes vibrations that release pollen into the air similar to the motion of a salt and pepper shaker, helping pollinate the flower.

More than just a biological curiosity, the discovery could open the door to advances in areas ranging from improving the efficiency of certain crop pollination to better understanding muscular stress and the development of miniature flying robots.

The joint RMIT, University of Adelaide, Harvard University and University of California, Davis study compared the pollination techniques of Australian native blue banded [bees](#) with North American bumblebees, which are commonly used overseas to commercially pollinate tomato plants.

While their American counterparts grabbed the anther of the tomato plant flower with their mandibles before tensing their wing muscles to shake the pollen out, super slow motion footage revealed the bee from down under prefers a "hands-free" approach.

The research team found that by recording the audio frequency and duration of the bees' buzz, they were able to prove the Aussie bee vibrates the flower at a higher frequency than overseas bees and spend less time per flower.

RMIT researcher Dr Sridhar Ravi, from the School of Aerospace, Mechanical and Manufacturing Engineering along with colleagues Callin Switzer (Harvard) and bee specialist Dr Katja Hogendoorn (School of Agriculture, Food and Wine, University of Adelaide), said it was the first time the phenomenon had been observed.

"We were absolutely surprised. We were so buried in the science of it, we never thought about something like this. This is something totally new," he said.

With bumblebees not found on the Australian mainland, local greenhouse tomatoes are pollinated mechanically.

"Our earlier research has shown that blue-banded bees are effective pollinators of greenhouse tomatoes," Hogendoorn said.

"This new finding suggests that blue-banded bees could also be very efficient pollinators—needing fewer bees per hectare."

The research will be published in an upcoming print edition of scientific journal *Arthropod-Plant Interactions*.

More information: Callin M. Switzer et al. Shakers and head bangers: differences in sonication behavior between Australian *Amegilla murrayensis* (blue-banded bees) and North American *Bombus impatiens* (bumblebees), *Arthropod-Plant Interactions* (2015). [DOI: 10.1007/s11829-015-9407-7](https://doi.org/10.1007/s11829-015-9407-7)

Provided by RMIT University

Citation: Headbanging Aussie bee takes a heavy metal approach to pollination (2015, December 14) retrieved 11 May 2024 from <https://phys.org/news/2015-12-headbanging-aussie-bee-heavy-metal.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.