

# Bees capable of learning feats with tasty prize in sight

March 18 2014

---

They may have tiny brains, but bumblebees are capable of some remarkable learning feats, especially when they might get a tasty reward, according to two studies by University of Guelph researchers.

PhD student Hamida Mirwan and Prof. Peter Kevan, School of Environmental Sciences, are studying bees' ability to learn by themselves and from each other.

In the [first study](#), published in February in *Animal Cognition*, the researchers found bees capable of [learning](#) to solve increasingly complex problems.

The researchers presented bees with a series of [artificial flowers](#) that required ever-more challenging strategies, such as moving objects aside or upwards, to gain a sugar syrup reward.

When inexperienced bees encountered the most complex flower first, they were unable to access the syrup reward and stopped trying. Bees allowed to progress through increasingly complex flowers were able to navigate the most difficult ones.

"Bees with experience are able to solve new problems that they encounter, while bees with no experience just give up," said Mirwan.

She and Kevan consider the study an example of scaffold learning, a concept normally restricted to human psychology in which learners move

through increasingly complex steps.

In a [second study](#) recently published in *Psyche*, the researchers found bees learned by watching and communicating with other bees, a process called [social learning](#).

Mirwan made artificial flowers requiring the bees to walk on the underside of a disk to get a sugar syrup reward. These experienced bees foraged on the artificial flowers for several days until they became accustomed to feeding at them.

To see whether other bees could learn from the experienced foragers, Mirwan confined inexperienced bees in a mesh container near the artificial flowers where they could observe the experienced bees. When the naïve bees were allowed to forage on the artificial flowers, they took just 70 seconds to get the reward.

Control bees that had not observed the experienced bees could not access the syrup.

"Social learning in animals usually involves one individual observing and imitating another, although other kinds of communication can also be involved," said Mirwan.

"They could try for up to 30 minutes, but most gave up before then."

In a final test, Mirwan placed experienced bees in a hive with naive bees. When the naive bees were allowed to forage on the artificial flowers, they gained the syrup in just 3.5 minutes.

Behavioural scientists usually assume that observation and imitation are at the heart of social learning, but social insects such as bees can also transmit information through touch, vibration and smell.

The researchers said the communication method used by the bees is still a mystery.

"We can't quite explain how [bees](#) that had never even seen an artificial flower were able to become adept so quickly at foraging on them, but clearly some in-hive communication took place," said Kevan.

"It suggests that social learning in bumblebees is even more complex than we first expected."

Provided by University of Guelph

Citation: Bees capable of learning feats with tasty prize in sight (2014, March 18) retrieved 24 April 2024 from <https://phys.org/news/2014-03-bees-capable-feats-tasty-prize.html>

<p>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.</p>
--