Safe(bee) in numbers

April 29 2014

Where danger lurks on flowers, bees are best advised not to go it alone: a pollinator in the fangs of a crab spider. New research from Queen Mary University of London suggests bumblebees can distinguish between safe and dangerous environments, and are attracted to land on flowers popular with other bees when exposed to perilous situations. Credit: Queen Mary University of London

Bumblebees can distinguish between safe and dangerous environments, and are attracted to land on flowers popular with other bees when

exposed to perilous situations, according to new research from Queen Mary University of London.

The study published in the journal *Proceedings of the Royal Society B*, shows that past experience of predation causes bumblebees to join other bees already safely feeding on flowers.

Co-author and PhD student Erika Dawson said: "Our experiment shows for the first time that when bees find themselves in these predator-infested environments they locate safe places to eat by joining other bees that are already safely feeding on flowers."

The scientists trained bees to differentiate between safe and dangerous environments: when bees landed on a flower associated with danger, foam pincers would trap the bee and prevent it from foraging. This simulates an attack by a crab spider, a predator that lurks on flowers to catch pollinators, and can hide by changing its colour, like a chameleon.

In safe environments, the bumblebees subsequently chose to feed from flowers at random, but in dangerous environments, the bees specifically flew to flowers that were occupied by other bees.

Erika added: "It's similar to walking through a bad neighbourhood – you're more likely to choose a busier route, where there are lots of other people around than a deserted street, to get to your destination, since your chances of being attacked are probably lower."

New research from Queen Mary University of London suggests bumblebees can distinguish between safe and dangerous environments, and are attracted to land on flowers popular with other bees when exposed to perilous situations. Here, a bumblebee is caught in the fangs of a crab spider while foraging for food. Credit: Queen Mary University of London

Bumblebees face similar danger when foraging for food. Avoiding being eaten can be tricky as predators are often disguised or undetectable. The authors suggest that bees use information from other bees to help them to avoid these dangerous situations.

"These results show a remarkable flexibility in pollinators' strategic foraging decisions. Bees normally spread themselves out among flowers to minimise competition, but when danger lurks they dine together to seek safety in numbers," commented co-author Professor Lars Chittka

from Queen Mary's School of Biological and Chemical Sciences.

More information: 'Bumblebees (Bombus terrestris) use social information as an indicator of safety in dangerous environments' is published in the journal *Proceedings of the Royal Society B*, 30 April 2014.

Provided by Queen Mary, University of London