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Honey Bees Avoid Predators, Opt for Safer, Lower Quality Food

Most of us fear bees, always juking and jiving away from them in fear of getting stung by their painful stings. But what about the bees themselves? Knowing that they have the power to sting as a last resort, are these bees fearless creatures?

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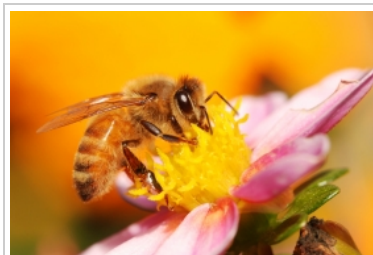
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Turns out, honey bees have many predators waiting to ambush them as they fly from flower to flower collecting nectar. From frogs to spiders, birds, and other larger insects, honey bees also feel threatened and are forced to change their daily actions. As a result, the honey bees' fear of predators drives them away from food sources closely associated with these hunters, and according to a new study, this causes colonies of bees to be less risk-tolerant than individual bees.

"This strategy of colonies collectively exhibiting significantly more caution than the riskier individual foragers may help honey bees exploit all of the available food sources, with some intrepid foragers visiting more dangerous food while the colony judiciously decides how to best allocate its foraging," says James Nieh, a professor of biology at UC San Diego.

Nieh worked with scientists at Yunnan Agricultural University in China to study the impact on foraging Asian honey bees of the monstrous-looking Asian Giant hornet, *Vespa tropica*, and a smaller hornet species known as *Vespa velutina*, which has invaded Europe and now poses a threat to European honey bees.

"The Asian Giant hornets are dangerous, heavily armored predators," says Ken Tan, the first author of the paper, who also works at the Chinese Academy of Science's Xishuangbanna Tropical Botanical Garden.

The researchers found that bees treated the bigger hornet species, which is four times more massive than the smaller species, as more dangerous. In a series of experiments, they presented bees with different combinations of safe and dangerous feeders — depending on their association with the larger or smaller hornets — containing varying concentrations of sucrose.

"Bees avoided the dangerous feeders and preferred feeders that provided sweeter nectar," says Nieh. "However, predators are clever and can focus on sweeter food, ones which bees prefer. So we also tested how bees would respond when sweeter food was also more dangerous. What we found was that the individual bees were more risk-tolerant. They avoided the giant hornet at the best food, but continued to visit the lower quality food with the smaller hornet."

The study is published in this week's issue of the open-access journal [PLOS ONE](#).

Read more at the [University of California](#).

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