'Stop' signal in honey bee communication discovered by biologist

By ANI *February 12th, 2010*

WASHINGTON - A biologist at UC (University of California) San Diego has discovered that honey bees warn their nest mates about dangers they encounter while feeding with a special signal that's akin to a "stop" sign for bees.

The discovery resulted from a series of experiments on honey bees foraging for food that were attacked by competitors from nearby colonies fighting for food at an experimental feeder.

The bees that were attacked then produced a specific signal to stop nest mates who were recruiting others for this dangerous location.

Honey bees use a waggle dance to communicate the location of food and other resources.

Attacked bees directed "stop" signals at nest mates waggle dancing for the dangerous location.

The stop sign is a brief vibrating signal made by the bee that lasts for about a tenth of a second with the bee vibrating at about 380 times a second.

"It is frequently delivered by a sender butting her head into a recipient, although the sender may also climb on top of the receiver," said James Nieh, an associate professor of biology at UCSD.

Bee researchers originally called it a "begging call," because they believed the signaling bee made it to obtain a food sample from the receiver.

But Nieh discovered in his experiments that one trigger for this signal-which caused the waggle dancers to stop and leave the nest-was attacks from bee competitors and simulated predators.

The more dangerous the predator or competitor, he found, the more the stop signals bees produced to stop other bees from recruiting to that location.

"This signal is directed at bees who are recruiting for the dangerous food location and decreases their recruitment," explained Nieh.

"Thus, fewer nest mates go to the dangerous food site. This is important because an individual experiences danger and stops recruiting, but the stop signal enables her to 'warn' nest mates who have not yet experienced danger and are still recruiting," he said.

"The end result is that the colony will reduce or cease recruitment to the dangerous food patch in proportion to the danger experienced," he added.

Nieh found in his experiments that during aggressive food competition, attack victims significantly increased their production of stop signals to nest mates, some by more than 40 times.

"What's interesting to biologists about the discovery of the stop sign is that it's

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an example of a negative feedback, in which the colony's actions are stopped for the good of the colony," Nieh aid. (ANI)

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