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BEE RESEARCHER CHALLENGES PREVAILING THEORIES

Bees communicate by odor and not language, dance, wiggle or waggle, according to a researcher at the University of California, Santa Barbara. Adrian M. Wenner continues to find facts that fly in the face of what he refers to as prevailing "dogma" in the science of bees and their presumed "language" of dance.

In a series of three articles recently published in the American Bee Journal, Wenner, professor emeritus of natural history, continues his decades-long efforts to debunk the theory of the dancing bees, originally proposed by German scientist Karl Von Frisch in 1946.

Wenner's new articles, entitled, "Odors, Wind and Colony Foraging," outline the results of his long-term research project studying wild honey bee colonies on Santa Cruz Island, 25 miles offshore from Santa Barbara, and include results of largely unacknowledged studies published by Larry Friesen in 1973.

Among bees, odor -- and not language -- is the key to communicating about food sources according to Wenner. He casts doubt upon the dance language theory.

"Without an odor cue searching bees cannot succeed," says Wenner."Conservatively, then, we can assume that all 'recruitment' experiments have included such an odor cue, either deliberate or unintentional. That means that bee 'language' proponents can never be certain that the searching bees in their

experiments had depended on dance maneuver information in their search rather than (or as well as) an odor marker."

Wind also comes into play, he says. All five of the bee colonies that Wenner analyzed on Santa Cruz Island and the experiments done by Friesen demonstrate the importance of both odors and wind patterns for recruitment of bees to a food source. Yet, he points out that none of the results of those experiments would have been expected according to the 1946 von Frisch dance language hypothesis.

Wenner points out that odor molecules, being physical particles, continually form an "odor plume" that can only travel downwind. He states, "Thus, wind direction, a factor nearly completely overlooked this past half century, is critical for the success of searching bees and, hence, must influence the foraging patterns of colonies."

From the Friesen studies he cites two lessons. "Searching bees found a crosswind station with great difficulty and only by exploiting odor," he states. "A station any appreciable distance downwind from the colony, one visited by only a few foragers, would likely receive little or no recruitment, since the target odor molecules then travel away from the hive."

Why has it taken 50 years for these apparently basic points to be made? Wenner explains that to become a bee researcher, students follow a sort ofapprenticeship system, one which discourages divergent thinking.

"Instead of receiving an in-depth education in the process of science, a bee-oriented graduate student works in the laboratory of an established mentor," he says. "That student thereby becomes a member of what is known as a 'thought collective.'" In the studies of bees, those collectives are deeply influenced by the theories of Von Frisch, a Nobel laureate.

But Wenner is upbeat about recent developments in information technology, and believes that e-mail is "inserting" democracy into the whole system of understanding the science of bees, "breaking open" the existing paradigms. "The gatekeepers can't control what you say," he states. Wenner is currently involved in two related on-line research communications groups, the honey bee network and the social insect network.

About UC Santa Barbara

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