

“The Dance Language of Bees”
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Fourth Place/Honorable Mention

Hey everyone, make a “bee line” to the dance floor! Let’s do the new dance craze, “The Waggle” and then we can learn a little bit of the medieval “Round Dance”!! This is what goes on in the hive on a daily basis. The honey bees appear to be having fun while doing their work, but is there more meaning to this entertaining dance? Would you think that bees were creative enough to communicate through dance?

Karl von Frisch Professor of Zoology at the University of Munich in Germany found out by accident. He did his initial studies on bees in the 1940’s with the intent to determine if honey bees were color sensitive or color blind. By setting up a glass observation on his hive and marking the backs of bees to be studied with paint, von Frisch wanted to see how the bees reacted to the different color coded feeding stations. Fascinatingly, as he was conducting this study, the study suddenly changed focus. He discovered something that was far more interesting; von Frisch noticed that after the worker bees arrived back in the hive with their honey sacks, they did an expressive circular dance and interestingly, this dance encouraged the other foragers to fly out to find the new feeding source. [1]

With extensive observation von Frisch noted that certain movements depicted the distance and the direction of the pollen and nectar location. The “circular dance” was initially noticed. The bee would run in narrow circles and then reverse its direction. After many days of intensive examination, it was discovered that this dance meant that there was a feeding location close to the hive, approximately less than 50 meters away. If the source was 50 to 150 meters away from the hive, the bee would do a sickle dance or a crescent shaped dance. Finally, if the source of pollen or nectar was greater than 150 meters away, the bee would do a “waggle dance” which informed the other bees of the distance, as well as the direction. In a waggle dance, the bee would run straight forward with her abdomen wagging from side to side and then she would do a semicircle to the starting point, run straight through again wagging and then do another semi-circle in the opposite direction, forming a figure-eight pattern.

The dancing during the straight portion of the waggle dance gives the direction of the food in relation to the sun. The angle the bee stops in is the direction from the sun indicating where the flower source is located. [2] The more vigorously the bee danced during the waggle dance was found to indicate that the food source was more desirable.

Honey bees are not silent when they dance, nor are they deaf as many scientists speculated. The sounds made during the waggle dance from the vibrations of the bee’s wings helps attract other bees to the forager. These vibrations are also felt throughout the comb to help the bees find each other in the dark hive. On cloudy days, it may be necessary for the honey bees to rely on the scent of the flowers and the taste of the nectar that they are foraging on for the direction and location of the nectar source. [3]

Rapid dancing bees were more attractive to the recruits going out to the food supply. If a bee danced straight up the comb, this meant the food was in the direction of the sun, if dancing down, it meant go searching away from the sun. It was noted that the directions of the bees dance was constantly changing as the sun moved across the sky.

Another reason for the bee to use dance expression is to describe the location of a new home site. Researchers were unable to distinguish the difference in dances alerting workers of new food locations and that of a dance informing a group of swarming bees the location of their new home. [4]

Another dance that was observed was the “tremble dance,” which was done by the receiver honey bees. This dance is similar to the waggle with more vibration and it encourages more receiver honey bees to collect the nectar from the workers. Karl von Frisch described this dance, but Wolfgang Kirschner noticed that when this dance was done, the workers stopped flying off to gather more nectar and helped unload the nectar. [5]

Just like mom coming home from the grocery store with her bags of food; if you help her unload the groceries, she is happy and if she cannot get anyone to help, she may get grumpy. If the bees bringing in the food to the hive did not get help taking the nectar in, they were less likely to dance or won't dance at all to indicate the pollen source. They just want help unloading the food. [6] Everyone likes a happy bee and a happy mom! The next time you are observing your beehive, take a little time out, pull out a frame, kick back and relax and watch the dance or just join in and *dance*!!

Footnotes

1. Karl von Frisch, *Decoding the Language of the Bee—Lecture* (University of Munich, Federal Republic of Germany, Nobel Lecture 1973). P. 75-77.
2. <http://www.cals.ncsu.edu/entomology/apiculture/PDF%20files/1.11.pdf>, 01/2009
3. http://en.wikipedia.org/wiki/Bee_learning_and_communication, 01/2009
4. Roger A. Morse, *The New Complete Guide to Beekeeping* (The Countryman Press Woodstock Vermont 1994). P. 176-178
5. http://en.Wikipedia.org/wiki/Bee_learning_and_communication, 01/2009
6. Roger A. Morse, *The New Complete Guide to Beekeeping* (The Countryman Press Woodstock Vermont 1994). P. 176-178

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Bee Learning and Communication. Wikipedia. Retrieved January 11, 2009 from http://en.wikipedia.org/wiki/Bee_learning_and_communication.

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