Can you dance the waggle?

By Rebecca Bracken

You are the dancing queen…or dancing bee? Have you ever seen a bee shimmy and shake, and walk in a figure eight? There's a name for that dance! Honey bees perform what researchers have termed the waggle dance. While we humans dance for fun or to show off (anyone else not coordinated enough to do the flossing dance trend that went around a while ago?), bees dance for for a different reason – to direct other bees to where food can be found!

Back in the mid-1900s, Austrian scientist Dr. Karl von Frisch made several observations about bees that would change our understanding of their behavior. First, he discovered that a bee's sensitivity to sweet taste isn't that much stronger than humans, but that bees can tell if a plant is blossoming based on the plant's scent. He also demonstrated that bees had color vision! But he is most known for learning that bees are able to use the sun, the polarization pattern of blue sky, and the Earth's magnetic field for orientation.

These discoveries alone were impressive, but Dr. von Frisch went even further. He learned that bees use their orientation and senses to relay information about feeding places from bee to bee. The created movements were termed dances, and there are actually two of them! While not as well known, the round dance is used when food is close by. A bee will start whirling in a narrow circle, constantly changing direction in quick succession, while in the busiest portion of the hive. This dance does not include information about what direction the food is from the hive, but because the dancing bee is so close to many other bees, it is able to relay what type of food is nearby through scent.

The more famous dance is called the waggle dance. This dance is used when food sources are much further away. There are two components to the waggle dance, and the bee will do the dance up to 100 times or more. The dancing bee will move forward a certain distance, then trace a half circle back to the starting point. During the first forward movement, the bee will waggle her posterior. The direction of the movement contains information about direction of the food source, while the time bee takes to complete the straight movement indicates the distance from the hive. During the return half circle, the bee alternates returning on the left and right, creating a figure eight design when the whole dance is put together.

Dr. von Frisch ended up winning a Nobel Prize in Physiology of Medicine with Drs. Konrad Lorenz and Nikolaas Tinbergen for their achievements in behavioral physiology and pioneering research in insect communication. Drs. Lorenz and Tinbergen are often considered to be some of the founders of ethology, the study of animal behavior. Ethology has become a really intriguing field of study for wildlife researchers as it combines laboratory and field science.

I know many of us tend to swat away bees or not want them around our homes, but they really are fascinating creatures! Bees are incredibly important in agriculture and for plant biodiversity, as they are responsible for naturally pollinating at least one-third of the plants used for human consumption. But bee populations are declining because of climate change and our continued use of pesticides. So next time you see a bee, instead of running away from it, take a closer look and let yourself be amazed by their capabilities and behaviors. We should all be thankful for them!

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Image Caption: Honey Bee sitting on a lavender bloosom