

The bee, the flower and the electric field

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Abstract

Insects use several different senses to forage on flowers, and detect floral cues such as color, shape, pattern, humidity and chemical volatiles. This presentation will present our discovery of a previously unappreciated sensory capacity in bumblebees (*Bombus terrestris*): the detection of floral electric fields. We show that these floral fields act as informational cues, and that they can be affected by the visit of naturally electrically charged bees. Like visual cues, floral electric fields exhibit variations in pattern and structure, which can be discriminated by bumblebees. We also show that such electric field information contributes to the complex array of floral cues that together improve a pollinator's memory of floral rewards. Floral electric fields arise from complex interactions with the surrounding atmosphere, an interaction between plants and their environment that not well understood. Because floral electric fields can change within seconds, this new sensory modality - electrostatic field detection- may facilitate rapid and dynamic communication between flowers and their pollinators.

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