The Effect of Anthropogenic Noise on Bumblebee Foraging Patterns: Further Investigated

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Ecosystems depend on essential native bumblebee pollination to maintain biodiversity. Concerningly, bumblebee populations in the United States and around the world have been dwindling. Noise pollution, an understudied concept, may harm these insects and contribute to their decline. The goal of the present study was to identify any positive or negative effects of anthropogenic (human-synthesized) noise on bumblebee foraging patterns. The hypothesis stating anthropogenic noise harms bumblebee foraging patterns, causing a decrease in the amount of foraging or avoidance of high-noise areas was tested. During testing, bumblebees were allowed to forage in an arena with a grid of numbered artificial flowers containing PCR tubes supplemented with sugar water. Two experimental theories were studied: sound gradient (foraging proximity to the source of noise) and binary (active choice of a quieter or noisier side). The variable measured was the volume of sugar water consumed from each modified artificial flower. Results neither supported nor refuted the hypothesis, however, statistical significance was presented suggesting bumblebees increase foraging in a noisy environment. A further study eliminating the starvation period set in the procedure is required to verify the interpretation of the significance. Nevertheless, the study suggests that bumblebees may feel threatened when exposed to noise and instinctually induce a fight or flight stress response by increasing foraging. Ultimately, additional research on anthropogenic noise and bumblebees is necessary to identify if noise pollution contributes to the detrimental decline of bumblebee populations.

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