Analysis of Magnetoreception and the Foraging Behavior of Pogonomyrmex Using an Altered Magnetic Field

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The purpose of this experiment was to observe the impact an altered magnetic field had on harvester ant's foraging behavior which would help determine if harvester ants have magnetoreception. The hypothesis was that in the presence of an altered magnetic field, harvester ant's foraging choices and time would be impacted, demonstrating the ants have magnetoreception.For each trial one ant was placed in a container, and had the choice to go to the side with helmholtz coils around the food or the side without the coils around the food. For 20 the trials, the coils were turned on to create an altered magnetic field and for 20 trials they were turned off. The time spent looking for food and the side chosen was recorded. Through a chi-squared goodness of fit test, it was determined that there was a difference in the distribution of which side the ant chose when the coils were on. A T test showed there was no difference in the mean time it took the ant to find food when the coil were on versus off. The ants chose the side without the coils 75% of the time when the coils were on. The chi-squared test and the proportion of ants that chose the side without the altered field when the coils were on, supports that harvester ants have magnetoreception, and that magnetic fields impact their foraging choices, but not the time it takes them to find food.