

Color Preference in Bumble Bee Foraging

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Introduction:

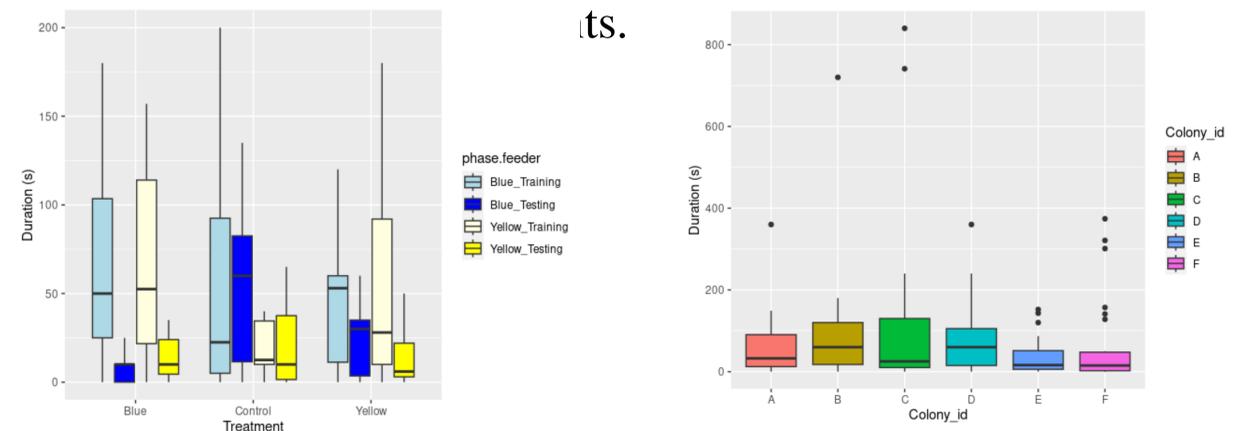
Bumble Bees have the cognitive ability to learn behaviors through trial and error or from example. This allows individual bees to pass on information about the condition of foraging areas. A colony's ability to learn quickly as a whole increases its foraging efficiency. The objectives of this study are to 1) determine if bumble bees can dentate between higher sugar concentrations and 2) create a color preference by associating a color with a higher sugar reward. We predicted that the bumble bees would prefer a feeder with a high sugar concentration, which we could then create a color preference by associating the higher sugar content with either a yellow or blue feeder.

Methods:

- Six arenas each with three bees, brood, a pollen log, a blue feeder, and a yellow feeder.
- Each day during the training phase two of the feeders would have the higher sugar reward corresponding to the yellow feeder, two corresponding with the blue feeder, and two control colonies where both feeders had the same sugar concentration.
- 30 Minute training phase and 20 Minute testing phase
- The feeders were changed by our TA to prevent observer bias.
- 12 hours before an observation period straws put over feeder wicks and honey pots emptied.

Results:

There was not statistically significant evidence to support the prediction that the bees would develop a color preference during the training phase. However, where was a significant p value when analyzing the training phase vs the testing phases. There is a variable that changed between these two phases that was not fully accounted for in our data. When looking at the individual colonies, we found that specific colonies had more foraging



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