

BAIT PREFERENCE OF SMALL MAMMALS

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ABSTRACT

Our investigation into the bait preference of small mammals, putting peanut butter against cheese, yielded compelling results. Across the board, from deer mice (*Peromyscus maniculatus*) to gray squirrels (*Sciurus carolinensis*) and opossums (*Didelphis marsupialis*), peanut butter emerged as the clear favorite. However, our study encountered unexpected interference from domestic cats (*Felis catus*), underscoring the challenges of field experiments. These findings carry significant implications, emphasizing the efficacy of peanut butter as a bait for attracting small mammals in ecological research and pest management endeavors. Selecting the right bait is crucial for successful field studies, necessitating considerations of both effectiveness and potential interference from non-target species. Moving forward, further exploration of bait options and their impacts on small mammal behavior could enhance our understanding of foraging dynamics. Our research underscores the importance of thoughtful bait selection in ecological investigations and wildlife management strategies, offering valuable insights into the complexities of animal behavior in natural environments.

Keywords: *Peromyscus maniculatus*, *Sciurus carolinensis*, *Didelphis marsupialis*, *Felis catus*

INTRODUCTION

What small mammals will enter the box for cheese and for peanut butter? Will different small mammals choose peanut butter or cheese? This is a worthwhile test to better understand small mammals' choices between food provided. Peanut butter and cheese are both common foods used to lure or treat small mammals. There are a variety of baits used to attract small mammals, but few studies have been done to evaluate the effectiveness of each bait. One study we found tested the success of peanuts, raisins, and bacon. This study showed that peanuts gave the best results. Another study used cheese, bacon fat and rolled oats, which showed that cheese was preferred. With peanut butter and cheese seemingly being popular choices as baits, we set out to test which would attract small mammals to pass through our tracking boxes, leaving their prints to be identified. We expect to see more variety and more prints in the boxes containing peanut butter.

FIELD SITE

To ensure an adequate number of small mammals to identify, we chose a location with dense, tall grass and surrounding shrubs and trees. The chosen location is close to the Peace Chapel, but off the main path to prevent excessive disruption and human traffic. We chose this location because it was

close to campus and was a suitable habitat for small mammals to live.

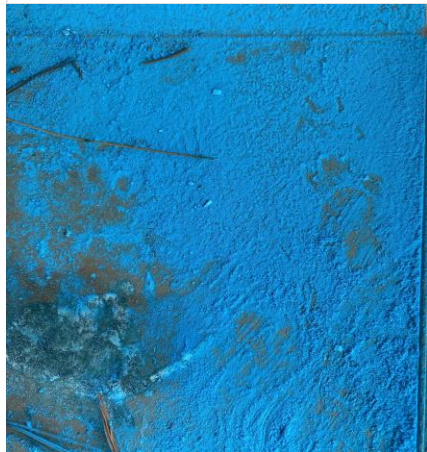
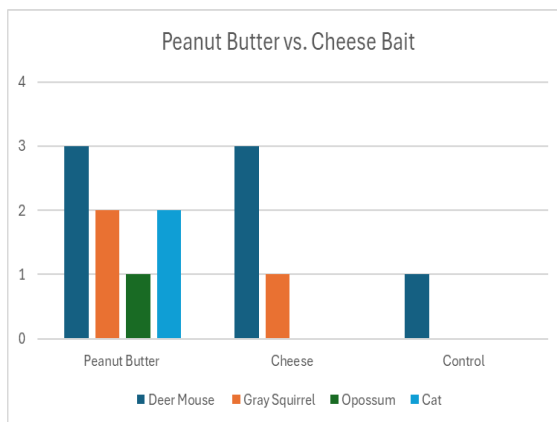
METHODS AND MATERIALS

The majority of the chosen materials were readily available to use, with the exception of blue chalk powder that had to be ordered. Small cardboard boxes were used to provide the mammals with a covered entry, to protect the bait and samples from weather, and prevent undesired mammals access to the bait. Using a spray bottle, we misted the bottom of the box, dusted the blue powder over the misted area, placed peanut butter, cheese, or left empty, then the boxes were placed in the chosen areas and weighed down with a dense rock on the bottom. After 2 nights of sitting in the location, with 9 boxes in a trap line format, the prints of each small mammal that entered could be identified. Our working hypothesis was that small mammal species would prefer peanut butter over cheese. Our null hypothesis was that small mammal species would feed off both the peanut butter and cheese boxes at a semi equal rate.

RESULTS

We found that each box of peanut butter had deer mouse (*Peromyscus maniculatus*) prints, two out of the three had gray squirrel (*Sciurus carolinensis*) prints, one out of the three had prints from an

opossum (*Didelphis marsupialis*) and two out of the three had cat (*Felis catus*) prints. Out of the three boxes containing cheese, all three had deer mouse prints and one had gray squirrel prints. The three boxes containing nothing, our controls, resulted in the expected lowest number of tracks with only one having prints from a deer mouse. We did have a few confounding variables such as rain that hindered the experiment the first time. We did not get any data the first time that we had the boxes out because the rain destroyed the boxes. On the second evolution of the experiment, we chose a two-day span that had clear weather and set the boxes out in the same spot that we had them the first time and were able to collect data as shown below.



DISCUSSION

Our results indicated that all species identified preferred the boxes that had peanut butter in them compared to the boxes that had cheese in them. Our results mean that we can accept our hypothesis that all species will favor peanut butter

over cheese and reject our null hypothesis that each species would prefer both cheese and peanut butter and consume them at a semi equal rate. One unexpected thing that we did not expect was someone's house cat to come and mess with our boxes. Group members worked to identify what kind of print it was and kept telling ourselves that it looked like a cat print which is exactly what it turned out to be twice on the peanut butter boxes. Some further research that could be done is to have more bait options for the small mammal species to choose from. For example, in the literature they used peanut butter, bacon, rolled oats, limburger cheese, ground raisins, berry jam, raw hamburger, canned sardines, and walnuts to trap *Peromyscus* for data collection. However, our results were similar compared to those in the literature. In the literature they found that *Peromyscus* was increased by about 150% by using peanut butter as bait. Our results were similar in the sense that peanut butter was favored most. Group members could assume that the overall presence of small mammal species increased over the small area that we had the trap line set. If we did have more bait options, we believe that peanut butter would still be the prime bait of choice based upon the literature. The literature proves this because they had multiple bait options out at once and peanut butter was still their favorite.

ACKNOWLEDGEMENTS

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