

The early bird gets the worm: Determining food preference in Black-Capped Chickadees (*Poecile atricapillus*)

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Introduction & Objective

- ❖ Previous research has suggested that there may be several factors that impact food preference in birds such as:
 - ❖ Individual nutritional requirements (Støstad et al., 2017)
 - ❖ Sheer convenience (Willson, 1971)
 - ❖ Profitability by volume (Templeton, 2011)
 - ❖ Taste (Støstad et al., 2017)
- ❖ The aim of the current study was to determine food preference in black-capped chickadees by observing and quantifying consumption. This was done to establish a more favourable food and a less favourable food for future studies.

Methods

- ❖ Total of 12 birds (6 male, 6 female) and 4 types of food.
- ❖ In the sound chamber, 2 birds (1 male, 1 female) were individually tested for each combination of foods, totaling 6 combinations.
- ❖ Individual food types were presented to each bird on opposite sides of the chambers.
- ❖ Testing included ~24 hour acclimatization period followed by 1 hour of testing.
- ❖ Response was measured by:
 - ❖ (a) Calories consumed
 - ❖ (b) Movement towards food



Figure 1. The interior of the chamber. The chamber contained five perches, two platforms each holding five food cups, and speakers mounted on the walls over the platforms; the speakers were not used, but will become important during a future study.



Figure 2. A row of food cups which contained equal amounts of food types during the study.



Figure 3. (Left to right) Suet, worms, peanuts, sunflower seeds.

Average Calories By Food

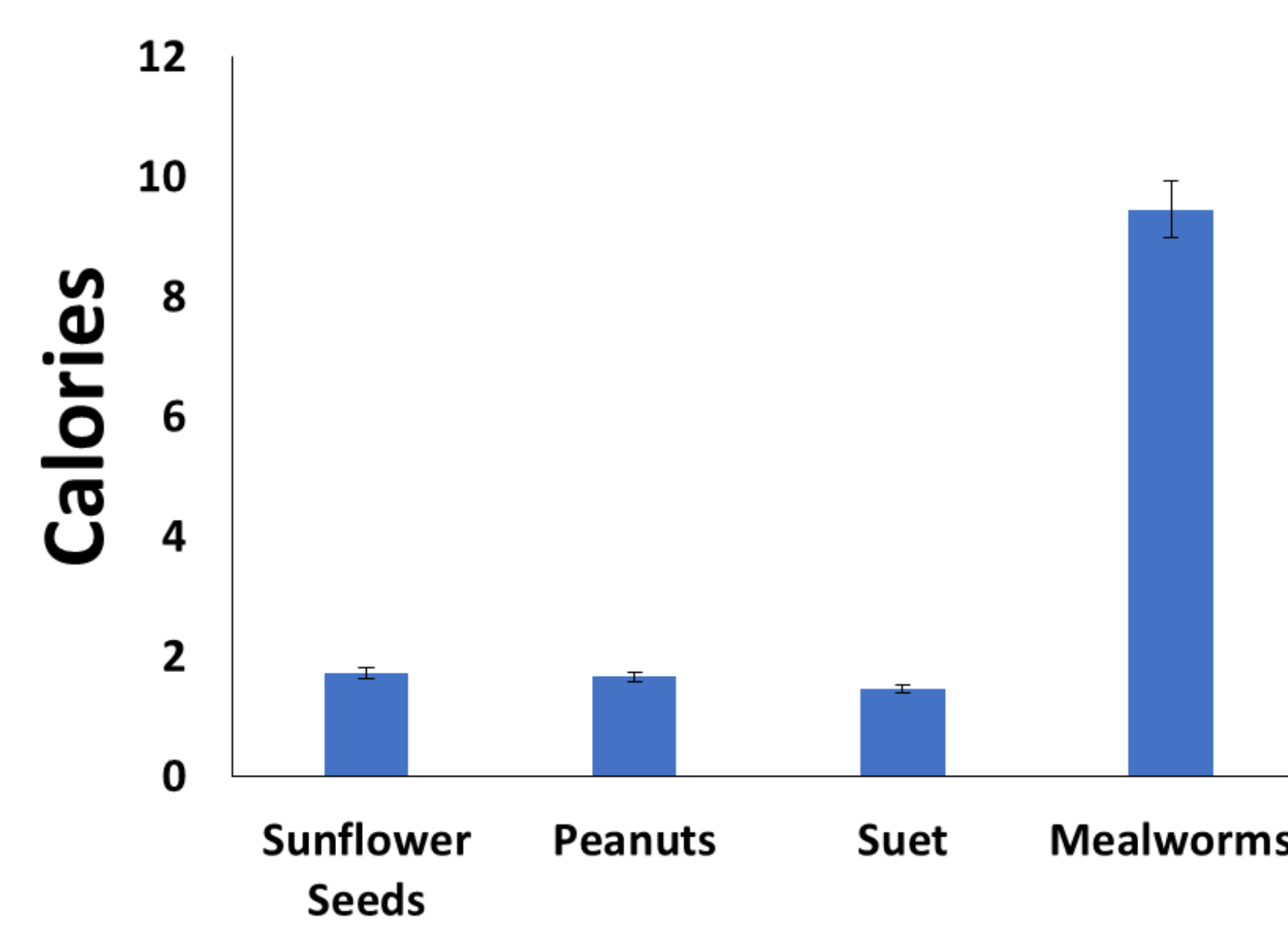


Figure 4. Subjects consumed far more calories by weight from mealworms than they did from any other food type.

Average Time Spent on Perch

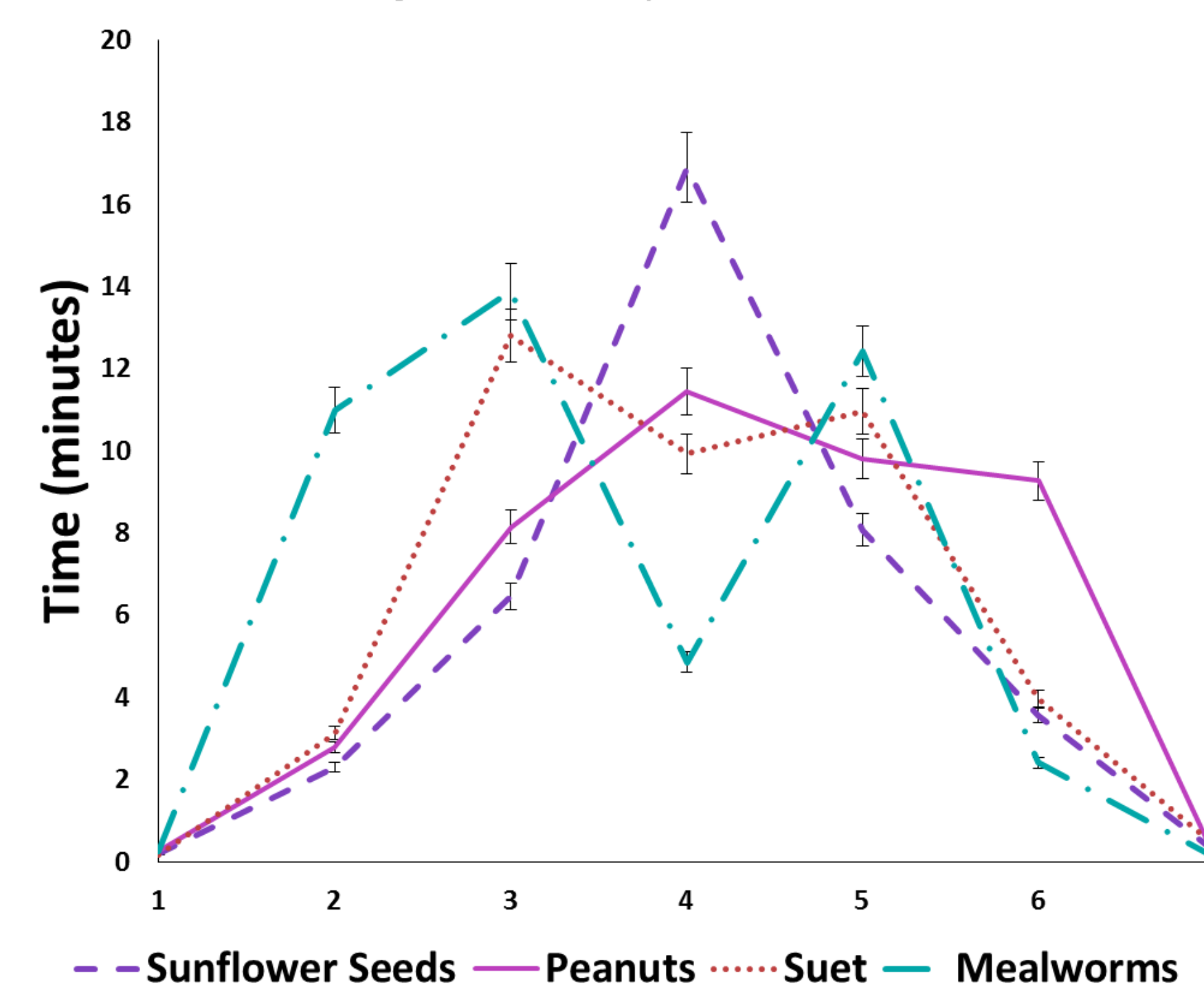


Figure 5. When subjects were presented with mealworms, they spent considerably more time on the perches closest to the mealworms compared to other food types. In this case perch 1 is closest to the food and perch 7 is farthest.

Average Visits to Perch

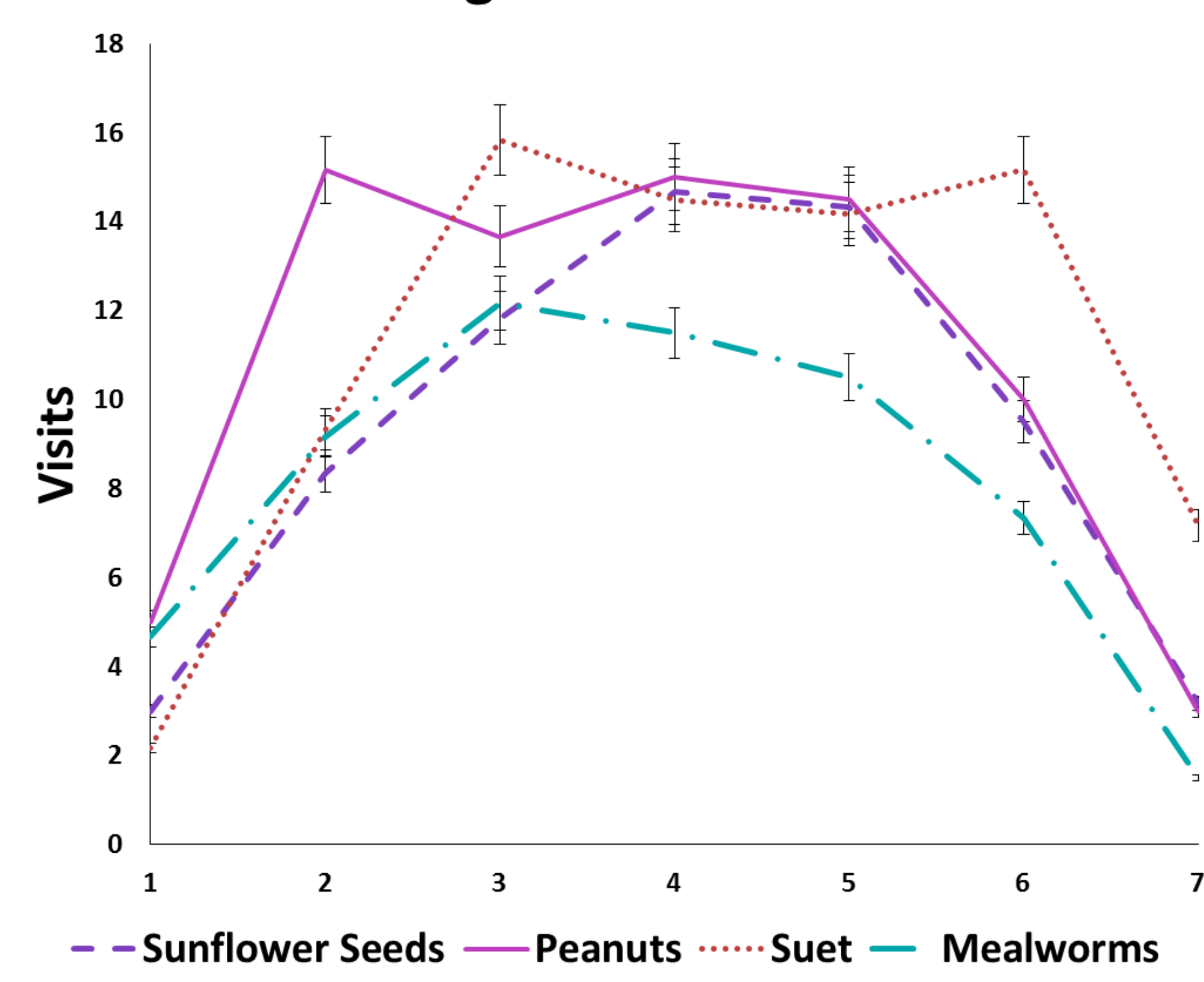


Figure 6. Birds visited perches towards the middle of the chamber more often than those at the far sides or the food platforms. Perch 1 is closest to the food and perch 7 is farthest.

Results

- ❖ There is a significant difference between calories consumed from mealworms versus suet ($p = .0001$; Figure 4) and mealworms versus sunflower seeds ($p = 0.004$; Figure 4), but not between mealworms and peanuts ($p = 0.219$; Figure 4).
- ❖ Figure 5. Perches 1 and 2 show that mealworm birds spent more time closest to that food. All other foods elicited varied responses from the birds.
- ❖ Figure 6. Shows that although time spent may vary per perch based on food, the average number of visits to each perch showed a modal distribution with a peak amount of visits towards the middle of the chamber.

Discussion

- ❖ There are a few factors that could be affecting the preferences of the chickadees:
 - ❖ **Caloric/nutritional value** - the birds may be more attracted to foods with higher nutritional/caloric value.
 - ❖ **Time of day** - the birds may prefer different foods at different times of the day.
 - ❖ **Movement** - predatory animals are attracted to movement.
 - ❖ **Familiarity** - the birds have daily experience eating worms, and may be more readily inclined to accept them as being edible or beneficial.
 - ❖ **Risk of escape** - the birds may have consumed the worms first, leaving the seeds and suet for later since they cannot get away like the worms can.
- ❖ We are likely observing a combination of factors. We believe that the most influential factors in this context are movement and familiarity.

Future Directions

- ❖ Current data will be used in a future study investigating the impact of anthropogenic noise (i.e., manmade noise) on risk-taking behavior (i.e., feeding during predation) in chickadees.
- ❖ We will also examine if anthropogenic noise impacts the way chickadees react to predator calls (Chan & Blumstein, 2011).
- ❖ Future studies can be applied to wildlife conservation and management fields as well as the animal science field.

References

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