

Nuts to this: Squirrel foraging preference in an urban setting

Stefanie Lane, November 2019

Introduction

Common eastern grey squirrels (*Sciurus carolinensis* Gmelin) are the most common squirrel found in Metro Vancouver, the result of a non-native introduction in the early 20th century (Gonzalez, 2005). Grey squirrels maintain a wild population, but they are more abundant where humans live (Katz, 2002). In urban areas grey squirrels often forage for human food (Zheng, 2015). It is important to understand how squirrels forage in urban areas, as unhealthy diets may lead to higher rates of mortality (Ng *et al.*, 2008).

Historically, grey squirrels would have foraged for forest nuts from species like the American chestnut (*Castanea dentata* (Marsh.) Borkh.) (Richards, 1975). The purpose of my research is to test whether grey squirrels have a preference for food resembling their ancestral food types when foraging. I hypothesize that because plain peanuts are more similar to grey squirrels' natural diet, they will strongly prefer plain peanuts when offered a variety of peanut types.

Materials & Methods

Individual trays of plain, spicy, and sweet Planter'sTM peanuts were set out at five different areas ("tray stations") of the UBC campus on sunny days. Each tray contained 50 peanuts, and were spaced 10-30 cm apart from each other. Tray stations were spaced no more than 5 m from hedges or tree thickets, and at least 10 m from sidewalks where passersby might disturb foraging habits. All trays were set up at 12pm on weekdays, and each tray station was observed for one hour. Number of nuts consumed were recorded at the end of the hour observation window, and data from the five tray stations were averaged for each flavor type. Calculations and figure creation was performed in Excel. No statistical analyses were performed.

Results

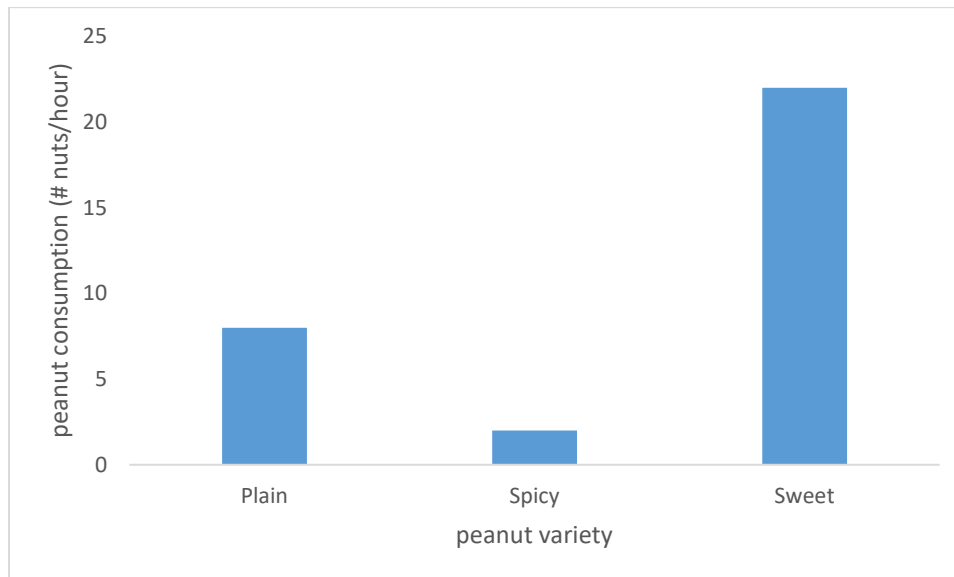


Figure 1. Squirrel peanut preference measured as number of nuts consumed per hour when offered three peanut flavors on UBC campus. $N = 5$.

Sweet peanuts were strongly preferred by squirrels, almost tripling the amount of plain peanuts preferred (Fig. 1). Spicy peanuts were chosen the least, with fewer than half the amount of plain peanuts selected (Fig. 1).

Discussion

My hypothesis that squirrels would have a preference for plain peanuts was not supported by the data. A strong preference for sweet peanuts was shown (Fig. 1), which may be explained by the presence of sweet taste bud receptors in mammals (Argyle *et al.*, 2018). Sugar is a scarce resource in nature (Jones, 1999), so the squirrels' choice of sweet peanuts may be the result of an evolutionary preference for sugar in foods.

Spicy peanuts were rarely chosen (Fig. 1), which may also be due to taste response in squirrels. Mammals have taste buds that sense spice (although birds do not) (Harris, 1984), and this plant defense mechanism is often effective for preventing herbivory (Patel, 1997). Squirrels may avoid spicy foods as the result of evolutionary preferences. However if no other food option is available, hunger may override taste preference. Additional tests may explore this concept. These results may help city managers better understand foraging habits, inform ways to target squirrel population control, or to prevent disease outbreak.

Literature Cited

*Please note these are not real citations (except for Gonzalez, 2005). But: they represent places where citations would be needed if this were a real assignment (note how many for such a short, silly report!). All biological claims made in this report are intended to be correct, based on the author's general understanding of biology and ecology.

Argyle *et al.*, (2018) Publication title name. Journal Name. Volume: pp-pp.

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Patel, S. (1997) Publication title name. Journal Name. Volume: pp-pp.

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Zheng, J. W. (2015) Publication title name. Journal Name. Volume: pp-pp.