

Knowns:

- Eastern grey squirrels are invasive species and threaten native Eurasian red squirrels and Western grey squirrels (Johnston et. al 2020).
- Urban squirrels demonstrate higher intraspecific aggression compared to rural squirrels (Parker & Nilon, 2012).
- Urban squirrels living in urban areas show decreased wariness towards humans (Merrick et al, 2016).
- Population sizes and densities of squirrels increase in urban areas due to artificial food sources and low predation (Merrick et al, 2016).
- Genetic differentiation is higher in urban squirrel populations, more gene flow (DeMarco et al, 2021).
- Squirrels in an urban environment had increased rates of juvenile and adult survival (McCleery 2009).
- Urban adapted squirrels showed increased reproductive rates (Goldstein et al, 2015).
- In urban environments, squirrels were found to be active throughout the day where they are typically bimodal in the wild (Parker et. al 2014) This could be attributed to increased intraspecific competition due to high densities and reduced predation risks.
- Squirrel reproduction rates and breeding patterns are affected by annual temperature change (Tattoni et al, 2006)
- Infectious disease introduced by non-native species causes native population declines (Chantrey et al, 2014).

Unknowns:

- How well subpopulations of urbanized squirrels are capable of surviving in their native environment (Adams et. al 2004)
- The interactions between Longwood college students and squirrels on campus (Peplinski, 2020)
 - How often do you see squirrels on campus?
 - Positive, negative, or neutral interactions?
- Is there a correlation between squirrel diet and behavior in urban environments? (Williamson, 1983).

Question:

What is the distribution, abundance, and behavior of squirrels on campus at Longwood University?

Hypothesis:

Squirrels will be most abundant in patches with high canopy cover on campus and are unaffected by human activity.

Treatment:

- Canopy cover in a given patch
 - Stubbs Lawn
 - Cox
 - Willet

Response:

- Distribution
- Behavior
- Abundance

Experimental component:

- Survey Longwood students on distribution, frequency, and activity/behavior of squirrels throughout campus
- Field studies observing squirrel behavior

Replicates:

- Multiple observation sites within a larger patch
- Multiple patches throughout campus
- Time - weekly

Peplinski J, Brown JS. 2020. Distribution and diversity of squirrels on university and college campuses of the United States and Canada. *Journal of Mammalogy*. 101(4):930-940.

Where do you see squirrels most often on campus?

- Stubbs
- Cox
- Willet
- Other

When you see squirrels, what are they usually doing?

- Active
- Feeding
- Resting
- Interacting with other squirrels

What is an approximate average for the number of squirrels you see on campus per day?

<https://docs.google.com/forms/d/1LG2L5x8CvIOw-tUXGdVoEvINfostTGxBjWme6Q0KqwQ/edit>



Results:

- Mean squirrel sightings = 2.3

Abstract:

In this project, we aim to analyze the distribution, behavior, and abundance of squirrels on Longwood's campus. We hypothesize that squirrels will be most abundant where canopy cover is high, and that these campus squirrels are generally unaffected by surrounding human activity. Multiple sites on campus were observed, and a survey was used to gather data about squirrel activity and sightings from Longwood students. The results indicate that Cox & Wheeler and Stubbs have the highest frequency of squirrels, and that squirrels are most commonly observed being active. Canopy cover was found to have no correlation with abundance of squirrels. Squirrels are highly active and adaptable to various locations on Longwood's campus.