ANT BIODIVERSITY- BROOKLYN BRIDGE PARK

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Research Question

Do different areas near the pier at Brooklyn Bridge Park support different ant species?

Hypothesis

Location or area near the pier (independent variable - categorical) influences which ant species are found (dependent variable - categorical).

Null Hypothesis: Ant species distribution is independent of pier location.

Alternative Hypothesis: Certain ant species are associated with specific pier locations.

Research

Data was collected at Brooklyn Bridge Park (Brooklyn, NY) during the September Science Forward BioBlitz event. Multiple habitat types were sampled, ranging from paved recreational areas to grassy and wooded spaces. We also thoroughly researched the topic and used some of the information that we found in peer-reviewed articles, like the Springer Nature link, where we found that an unidentified ant species was discovered in the heart of New York City in 2011. (The European ant Lasius emarginatus.)

Methods

Study Site: Brooklyn Bridge Park, Brooklyn, NY
Sampling Period: September 13-14, 2025 (Science Forward BioBlitz)

Locations: Pier 1, Pier 3, Pier 5 (Up Lawn, Woody Trail, Triangle Trail), Pier 6

Sampling Times:
- Saturday 3:00 PM
- Sunday 9:00 AM & 1:00 PM

Data Collection:
- Visual searching of microhabitats (soil, pavement, tree bases, benches)
- Recorded: date, time, location, habitat, observer, field notes
- Tally counts for multiple individuals

Identification: iNaturalist platform for species identification to family Formicidae

Statistical Analysis: Chi-Square Test of Independence (α = 0.05)

Result Section

Sample Size: 35 ant specimens (N=35)
- Pier 1: 13 specimens
- Pier 3: 4 specimens
- Pier 5: 13 specimens
- Pier 6: 5 specimens

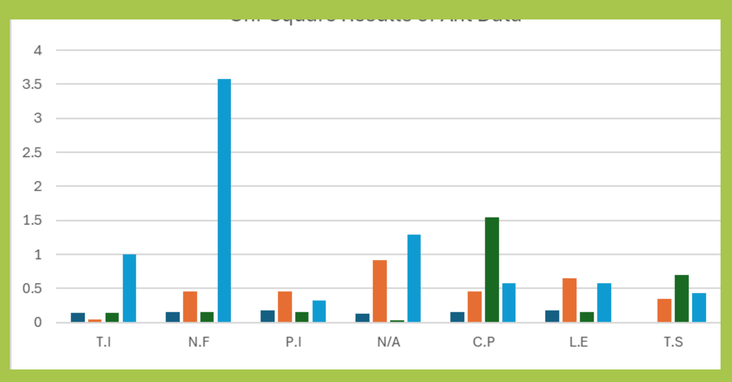
Species Identified (7 taxa):
- T.I (Tetramorium immigrans): 7
- N.F (Nylanderia flavipes): 4
- P.I (Prenolepis imparis): 4
- C.P (Camponotus pennsylvanicus): 4
- L.E (Lasius emarginatus): 4
- T.S (Tapinoma sessile): 3
- N/A (Unidentified/Others): 9

Conclusion

We could say that the distribution of ant species and pier location has no significant relationship (χ^2 = 14.93, df = 18, p > 0.05). Although the chi-square test lacks statistical significance, the patterns found through the data show a relationship between the location and ant species found. Environmental structures can be seen by the buildup of particular species at certain piers and the limitation of carpenter ants to vegetated regions. These environmental findings would probably be supported by significant patterns that would be found with a larger sample size.

Limitations: Small sample size, unequal sampling effort, identification challenges, seasonal focus (September)

Results

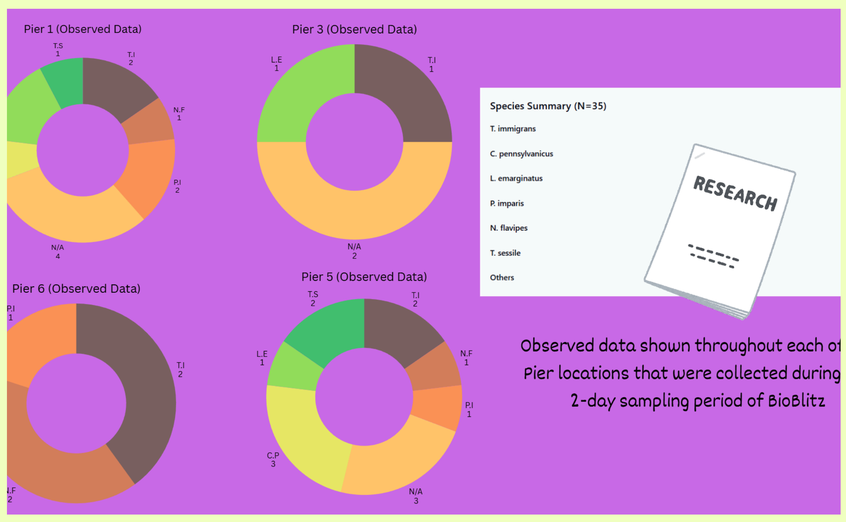


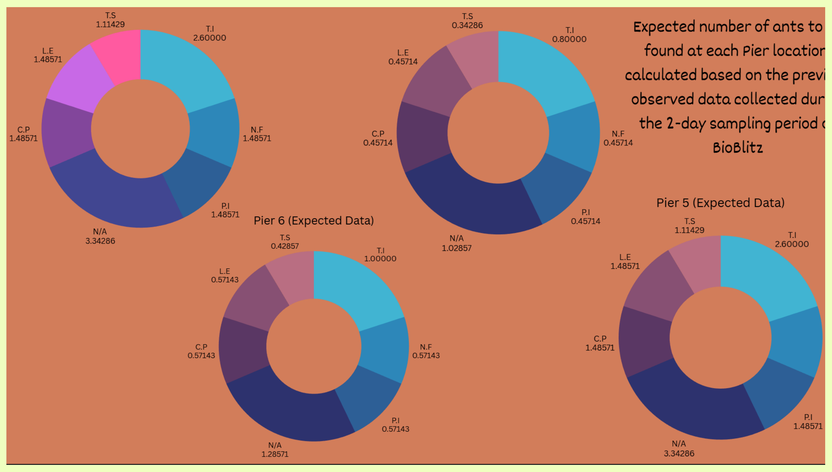
Chi-Square Test Results:
χ^2 = 14.93, df = 18, p > 0.05
Critical value (α = 0.05) = 28.87

Decision: Fail to reject null hypothesis (14.93 < 28.87)

Interpretation: No statistically significant relationship between ant species distribution and pier location. Ant species appeared relatively evenly distributed across sites.

Observed vs Expected





Resources