



Examining How Different Environments Affect The Biodiversity of Ants

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Abstract

→ Will the amount of biodiversity present in ant populations change in varying parts of Long Island?

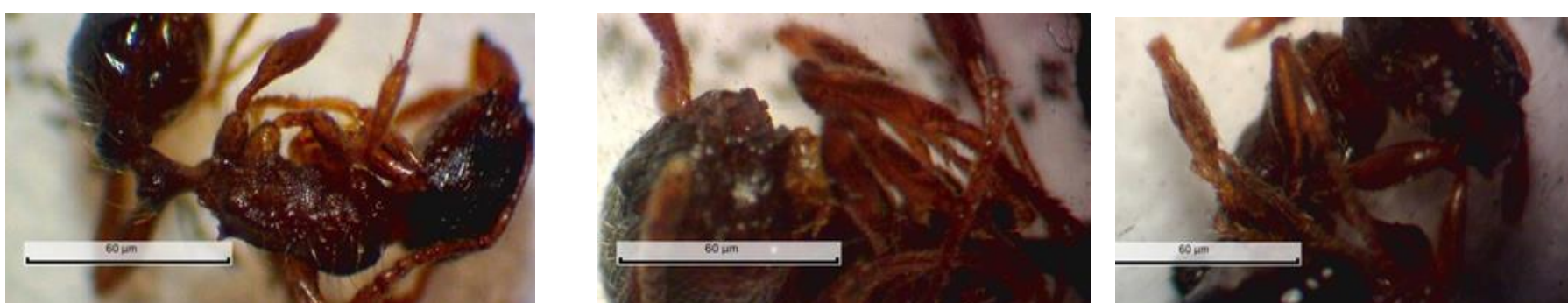
→ Our results indicate that little biodiversity of ant species on Long Island, *tetramorium caespitum* is the primary ant existing on Long Island

Introduction

Does the species diversity of the ants differs significantly based on where they live on Long Island?

→ The purpose of this research project is to further understand the biodiversity and nature of living insects on Long Island, helping us understand their ecosystems is beneficial because ants are an indicator of healthy ecosystems and ants are decomposers that help keep the environment clean

→ Biodiversity of ants is important to our local ecosystems because they help to maintain balance by aerating soil



XRF-212, XRF-341, XRF-342

Figure 1; pictures created using smz-168 zoom dissecting scope

Figure 6 image taken at CHS during collection



Materials & Methods

→ The ant traps consisted of sandie cookies placed on an index card on a pavement/patio surface, figure 6

→ pictures were taken using smz-168 motic microscope as seen in figure 1

→ After the traps were collected from different locations, as seen in figure 2, the ants were frozen to preserve DNA

→ “DNA extraction was performed using silica based method developed by Barcode LI”¹. COI based primer was used which was added to the DNA samples extracted from the ants.

Results

→ We determined that our samples were identical to each other and were all the same species, *tetramorium caespitum*, using bold systems²

→ All samples have mismatches lower than 10, samples have an average phred score above 20, meaning there is a 1 in 100 chance of being inaccurate

→ Figure 4, alignment viewer indicates closely related species between because lines are aligned with one another



Figure 4- alignment viewer in DNA Subway that shows ant relations

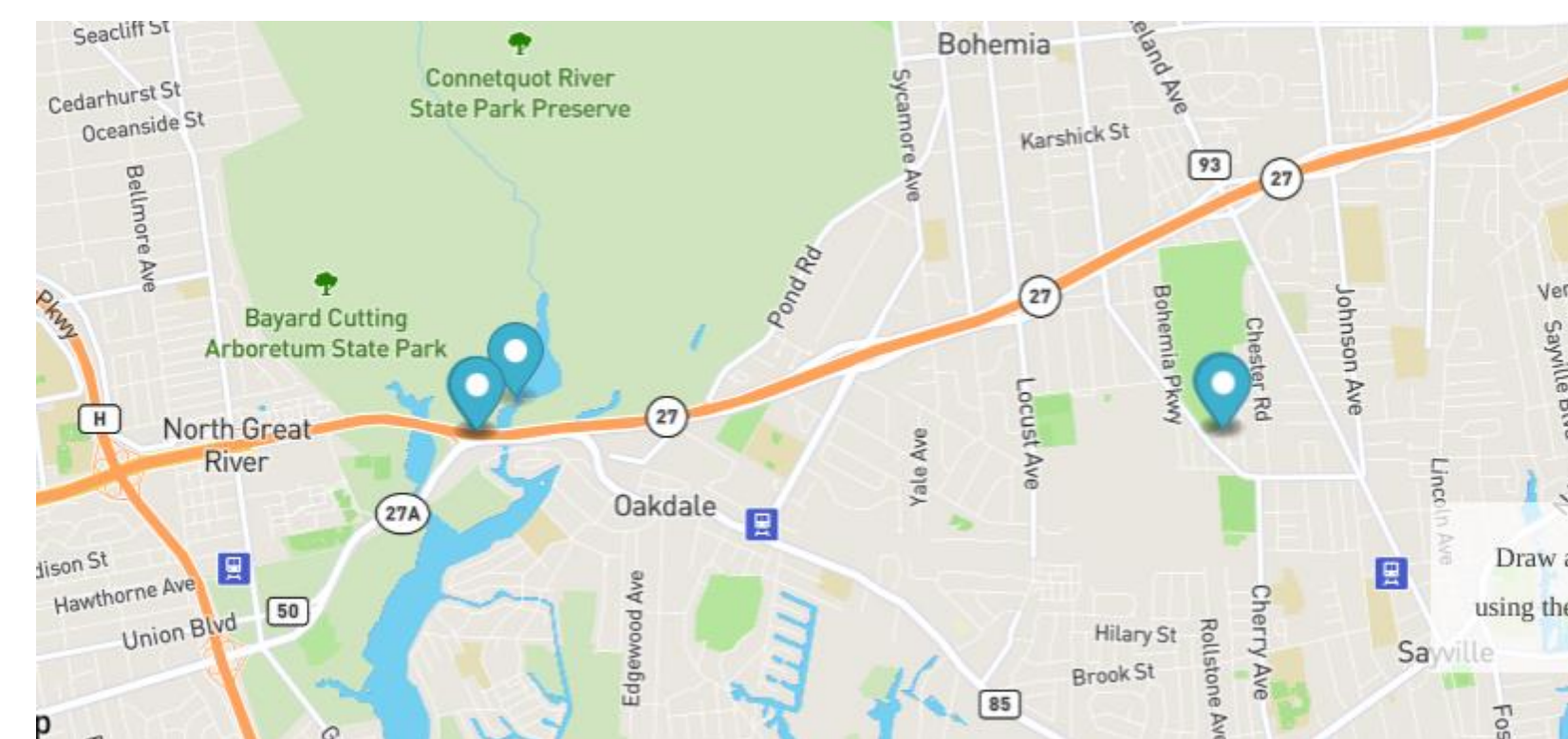


Figure 3- map of barcoded tetramorium ants from past years in our local area; barcode LI



Figure 5- map of other tetramorium ants on Long Island, barcoded and uploaded in past years; map provided by barcode LI

→ Specifically, samples 339873-339872 have bands exactly alike, these samples derive from genebank and were analyzed because they are the alike to our original collected samples XRF-212, 341 and 342

Discussion

→ An interesting finding from bold systems² was that our documented ants are similar to ants from Europe.

→ Tetramorium ants originate in Europe and migrated from Europe to the US. Immigrans is the new name they were given and caespitum is the old

→ A future project idea for my group is examining the variety of different genes to distinguish sub populations in different parts of the country and researching the reason for location differences.

References

1. DNA Learning Center Barcoding 101. Dnabarcoding101.org. [accessed 2021 May 13]. <https://dnabarcoding101.org/programs/bli>
2. Bold Systems v4. Boldsystems.org. [accessed 2021 May 13]. <https://www.boldsystems.org/>

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