

## Abstract

Biodiversity, various organisms interacting with each other in an ecosystem, is vital to the environment. In recent years, biodiversity has been declining because of human activities, causing changes of climate and habitat for these organisms (Marseille, 2021). The hypothesis is that biodiversity has been majorly affected by urbanization. Using DNA barcoding, in the Massapequa Preserve, the aquatic invertebrate species collected will provide insight on the biodiversity in this environment. Considering the preserve is surrounded by a residential area, the effects of urbanization could be seen the in biodiversity, decreased levels of when compared to historic observations. We found three specimens whose DNA was closely related to *Proasellus italicus*, one whose DNA was closest to *Myrmica punctiventris.*, and the rest of the specimens were inconclusive.

Sequence Conservation Sequence Variation Consensus 1. DDN-006

2. DDN-001

3. DDN-002

## Introduction

Biodiversity is the variety of life on earth. Preserving it is important in maintaining a stable ecosystem (how). Factors such as urbanization, the growth of cities, can drive organisms out of their habitats and cause them to struggle. If too many of these animals die, biodiversity will decrease. We aim to display the biodiversity of a local temperate deciduous forest through DNA barcoding, a method of identifying species from a section of its DNA in its genome.

Collect samples in the Massapequa Preserve using kicknets, waders, shovels, sieves, and scoopers



Place the specimen in disposable test tubes with ethanol, label with sample number, and record the coordinates

Use iPhone to take pictures and record the measurements of the specimens



# The Effect of Urbanization on the Biodiversity of the Massapequa Preserve Utilizing DNA Barcoding Authors: Markella D'Angelo, Sophia Gumieniak, Rachel Koplar, Anamilena Serrano Mentor: August Eberling



100.000	2	71.000	100.000	
		100.000	• DDN-001	
100.000	• DDN-006			

Results DDN-001's DNA sequence closest to *Caecidotea racovitzai*. DDN-002's DNA sequence was closest to *Caecidotea* racovitzai.

DDN-006's sequence was closest to *Myrmica punctiventris* DDN-007's sequence was closest to *Caecidotea racovitzai*. DDN-003, DDN-004, DDN-005, and DDN-008 were inconclusive in finding their kingdom to their species.

## Materials & Methods



Isolate DNA using chelex and amplify the CO1 region using PCR

Run gel electrophoresis in order to verify that the PCR was successful in generating the CO1 region.





Sanger Sequence results are ran through DNA subway to be able to test for the unknown organism's genus and species.









DDN-002 DDN-007-F



## Discussion

Of all of the four organisms that were able to be matched to a specific genus and species, three of them turned out to be Caecidotea racovitzai. The CO1 failed to amplify in the following samples: DDN- 003, 004, 005, and 008. Consequently, the blasting and sequencing of these samples was not successful. Overall, the biodiversity of the Massapequa Preserve has been sacrificed through the influence of urbanization.

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