Observing the Organisms Found in Sediment To Study BARCOD Massapequa Preserve Biodiversity Cold pring larbor Jaiya Arjune, Emily Tesar, Snowe Ma, Grace O'Daly Laboratory

Abstract

The current investigation will determine what aquatic invertebrates are present in the Massapequa Preserve. This information is vital in the conservation and quantification of biodiversity in the environment. Biodiversity continues to decrease due to increasing average climate temperatures and human interference. The data collected will prove useful as it will contribute to the ecological history of the preserve. Biodiversity signifies the sustainability of the ecosystem for the future and is essential to supporting life. Collecting samples of the invertebrate present in the preserve can help scientists get a better understanding of what is present in the creeks and rivers. Nets of mud were acquired from the creek and dissected to find invertebrate. 20 samples were collected and the DNA was extracted.

Introduction

Biodiversity has been on a decline as of the past several years his phenomenon is observed more severely with the growtl of urbanization, and the Massapequa Preserve is a site in which information about developing changes in biodiversity can be studied. Biodiversity is very important to maintain balance ir ecosystems. Biodiversity is stated to be vital to humans' health Mareselle, 2021). As the Massapequa Preserve is affected by urbanization, the process of making an area more urban studying and collecting samples in the area over a long period of time would assist in the identification and potential gains and losses of biodiversity. We collected organisms, mainly aquatic invertebrates, at the Massapequa Preserve. This has been done over the last six years and by using DNA barcoding the specimens collected can be identified and analyzed to understand the development of species and biodiversity in relation to the urbanization of the area.

Procedure

. Arrived at the Massapequa Preserve, collected sediment around the river and placed specimens into tubes with ethyl alcohol.

2. The samples were placed inside microcentrifuge tubes containing chelex, then grinded.

- 3. PCR was done on the samples
- 4. Tubes were centrifuged, then pipetted into a gel electrophoresis trav

5. Gel electrophoresis was done on the samples. 6. DNA from the samples were sequenced using Sanger sequencing

7. Data was uploaded onto DNA Subway to be analyzed









Specimens were collected in the Massapequa Preserve

CSX-012 CONTAMI . CSX-016 Crematogaster-lir . CSX-001 Sparganophilus-s 4. CSX-013 Caecidotea-racovitza 5. CSX-019_Caecidotea-racovitzai 6. CSX-014 Trochosa-ruricola . CSX-007 Neoporus-clypealis 8. CSX-011 Microvelia-americana 1. CSX-015 Orchesella-villosa

12. CSX-018 Porcellio-scabe







Phylogenetic Tree of collected

CSX-001_Sparganophilus-

CSX-019_Caecidotea-racovitza

CSX-013_Caecidotea-racovitza

CSX-011_Microvelia-americana

CSX-009 Microvelia-american

CSX-007 Neoporus-clypeal

CSX-018 Porcellio-scabe



Specimens were placed into microcentrifuge tubes with chelex solution and crushed



Centrifuge tube for 30 sec.



Pipette solution Sequence DNA Input data into into gel electrophoresis tray and the DNA will be sorted by size.





DNA Subway.

Results	
CSX-001	Sparganophilus sp.
CSX-002	Microvelia americana.
CSX-007	Neoporus clypealis.
CSX-009	Microvelia americana
CSX-012	Contaminated
CSX-013	Caecidotea racovitzai.
CSX-014	Trochosa ruricola.
CSX-015	Orchesella villosa.
CSX-016	Crematogaster lineolata
CSX-018	Porcellio scaber.
CSX-019	Caecidotea racovitzai.

Discussion

Some of our species were not able to be identified and were difficult to see after the gel electrophoresis process. One of the samples was falsely identified as bacteria, which could be caused by contamination that occured sometime during processing. No new species were discovered, though that does not necessarily suggest that the biodiversity in the Massapequa Preserve is low. As shown by the pie chart, there appears to be a significant variety of species, which provides evidence that the Massapequa Preserve has a fairly high amount of biodiversity. The biodiversity in the preserve may be greater than seen in this experiment. Biodiversity is essential because it is the foundation of healthy ecosystems.



SUBWAY

Acknowledgements/ References



