

Using Tardigrade Biodiversity Across Long Island As Environmental Bioindicators

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Abstract

The purpose of this experiment is to help further expand heterotardigrada (terrestrial tardigrades) biodiversity. Although specimens have already been collected across the country, New York has had very little research impacting this field. Tardigrade samples will be collected at various parks across Long Island. The samples will include moss, lichens, and other ground litter. Scientists will scrape the samples into brown paper bags. Samples will be stored in the brown paper bags until they can be transferred to a sterile environment. When the samples are transferred to a sterile environment, scientists will soak the samples in a water/ethanol solution within a petri dish. 2 dishes will be used for each location. With barcoding, the DNA will be extracted from samples, allowing for classification of species. Each location in which a specimen was collected was marked using a Global Positioning System. Terrestrial tardigrades can serve as very effective bioindicators. This is due to the fact that these organisms absorb the particles around them. When there is a lack of terrestrial tardigrades in an area it is most likely due to heavy urbanization. The colonies of lichens or moss on trees dwindle as well since. For example a park with a factory in the surrounding area will have a fewer amount of tardigrades than a “natural” park. To help bring this research to a local scale this project will shine light on the effects of urbanization on terrestrial tardigrade species.

Methods



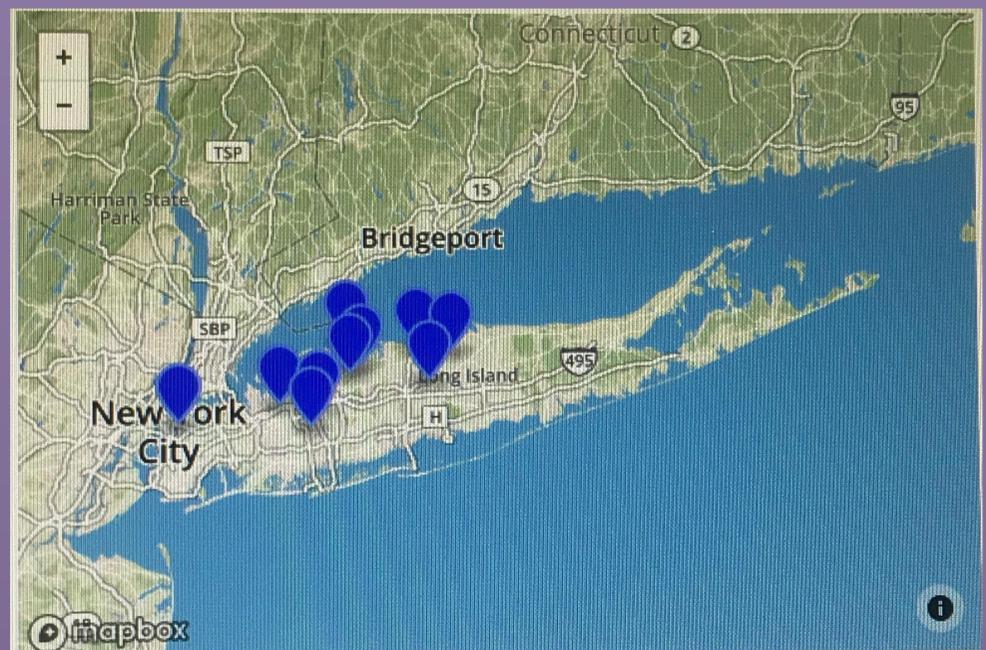
Bradford, A. (2017, July 14). Facts About Tardigrades. Retrieved from <https://www.livescience.com/57985-tardigrade-facts.html>

Materials

1. Brown paper bags
2. Medical gloves
3. Petri dishes
4. Laboratory
5. Paint scrapers
6. Pipettes
7. MU Series Camera
8. Ethanol
9. Needle-Nose Tweezers
10. Plastic bags
11. PCR tubes
12. Centrifuge
13. Thermal cycler
14. AmScope



What the World's Toughest Animal Is Really Made Of. (2015, November 28). Retrieved from <https://news.nationalgeographic.com/2015/11/151128-animals-tardigrades-water-bears-science-dna/>



Collect, Document, and Identify Specimens

Isolate DNA: Silica DNA Isolation

Amplify DNA by PCR

Analyze PCR products by Gel Electrophoresis

Isolate DNA: Rapid DNA Isolation