

Watermite Biodiversity at the Base and Head of The Forge River



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Results

Using a dichotomous key, three types of water mites were identified from the head of the forge river, Tomocerus vulgaris, (common name Collembola), Bdellidae (a type of snout mite), and Harpacticoida and two species were identified from the base Eupodoidea, and cyst like mini mites. Figure 1 below demonstrates the concentration of oxygen and nitrogen in ppm at the different sites of collection. The figure indicates oxygen is more abundant at the head of the river and nitrogen is more abundant at the base.

Abstract

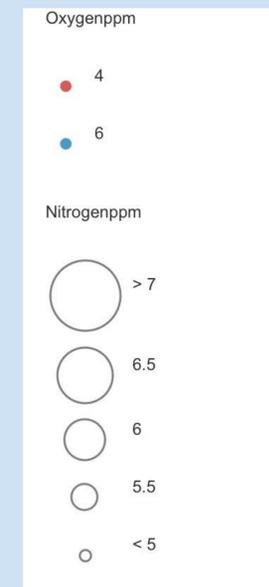
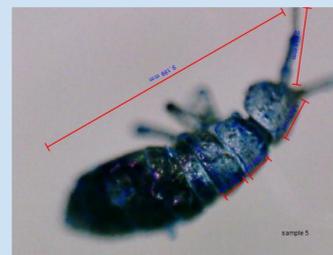
Water mites are the most plentiful, varied, and ecologically essential group of freshwater arachnids and have a life cycle that includes a parasitic larval stage and predatory nymphal and adult stages. Samples were taken from the head and the base of the Forge River on Long Island to test the biodiversity of water mites present in the varying locations of the Forge River. Using a dichotomous key 3 species of water mites have been identified from the top of the Forge River and 2 species from the bottom.

Introduction

Research question: Is the biodiversity of Water Mites greater at the top or the bottom of the Forge River?

Hypothesis: There will be a greater biodiversity of water mites at the top of the Forge River because there is more aquatic vegetation.

- The Forge River is the major freshwater tributary of Moriches bay, holding a wide variety of aquatic life.
- A water mites life cycle is impacted by the presence of vegetation nearby. The top of the Forge River offers more aquatic vegetation for mites to eat due to algal blooms and eutrophication which may allow biodiversity to be greatest at the top.
- This area of study is uncommon but carry a huge effect on humans and other aquatic animals.
- This experiment allowed for the better understanding of a water mites biodiversity and preferences at different locations at a river.



Concentration of Nitrates and Dissolved Oxygen at the Head and Base of Forge River

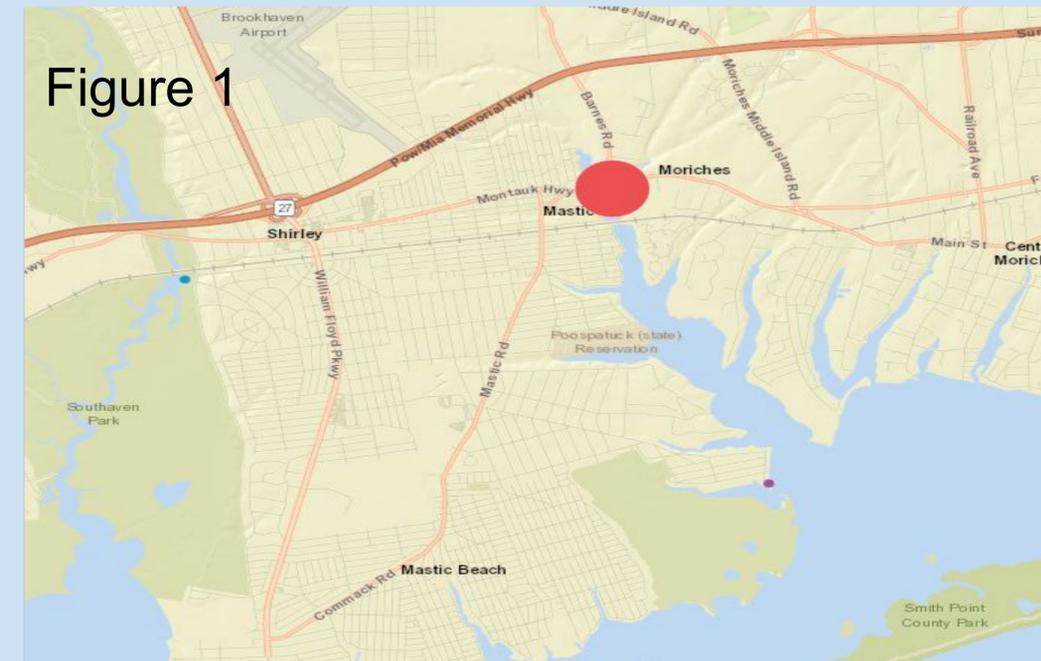
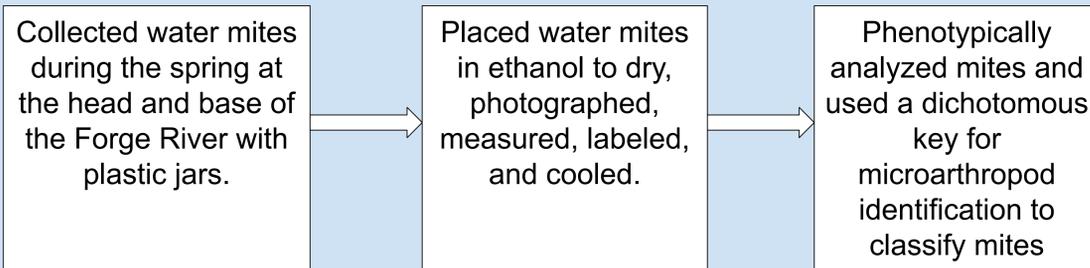


Figure 1

Materials & Methods



Acknowledgements

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Discussion

Since DNA barcoding was not successful, a dichotomous key was used to identify mites. Three species were found at the head of the Forge River and two at the base. These findings support our hypothesis and prove water mites may have a higher biodiversity at the head due to more vegetation. In the future, it would be more efficient to collect and transport the mites in a different way because of their small size. The loss of some mites could have also been a major factor contributing to the results. Also, a notable error was a previous failed attempt in DNA amplification that occurred and prevented more species from being discovered correctly. Using a Chi squared analysis, the data was indicated to be statistically insignificant due to the chi squared value being less than the critical value.

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