



An Unexpected Abundance of the Water Boatmen Macroinvertebrates Species Hides Beneath the Surface of the Expected Caddisflies at Wantagh’s Twin Lakes Preserve



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ABSTRACT

Twin Lakes Preserve in Wantagh New York is a freshwater lake derived from the Hudson River, with a wide variety of native vegetation. My goal was to find what species of freshwater macroinvertebrates are most abundant at the Preserve. I went to the lake to find around 40 samples, to portray a more accurate representation, but could only collect 22 due to the time allotted and weather conditions. When there, I was to scoop algae and seaweed in the water for samples. Afterwards, I put the samples in test tubes for measurement and keeping. The results showed that along with the most common freshwater macroinvertebrates, the Caddisfly and the Water Boatmen, there was still diversity amongst them [freshwater macroinvertebrates]. Due to data distribution maps and research done by the New York State Government, I proposed there would be a high population of Mayflies and Stoneflies as well as Caddisflies (dec.ny.gov). This situation perplexed me as to why both the Mayflies and Stoneflies wouldn’t accompany the Caddisflies in an ideal environment. My most surprising find was the abundance of the Water Boatmen along with the Caddisflies, due to research I’ve done that had no mention of such an organism.

Introduction

In New York state where we have numerous freshwater sources, it is extremely important to know what risks it may contain such as pollution and low oxygen levels. These things can kill off the aquatic organisms that live in freshwater, such as aquatic macroinvertebrates. I have chosen to study freshwater macroinvertebrates since their presence, or lack thereof, can indicate a potential polluted area. They play an important role in consuming plants, algae, and other organic materials, so their population is a key indicator of water conditions. Macroinvertebrates can be carriers of diseases or bacteria in the water, such as cholera and giardia. I will look for these organisms within the freshwater of the Twin Lakes Preserve, sourced from the Hudson River. The most abundant species for freshwater macroinvertebrates in New York are, Stoneflies (Plecoptera), Caddisflies (Tricoptera), and Mayflies (Ephemeroptera) (dec.ny.gov).

Since algae plays a key role in all of their diets, I expected there to not only be a high population of freshwater macroinvertebrates generally. I also expected a high population of caddisflies, mayflies, and Stoneflies because of the high vegetation, and optimal growing and breeding conditions I observed at Twin Lakes. The objective of my assessments was to find the most abundant species at Twin Lakes Preserve, and to see what factors may be causing their abundance.

Materials And Methods

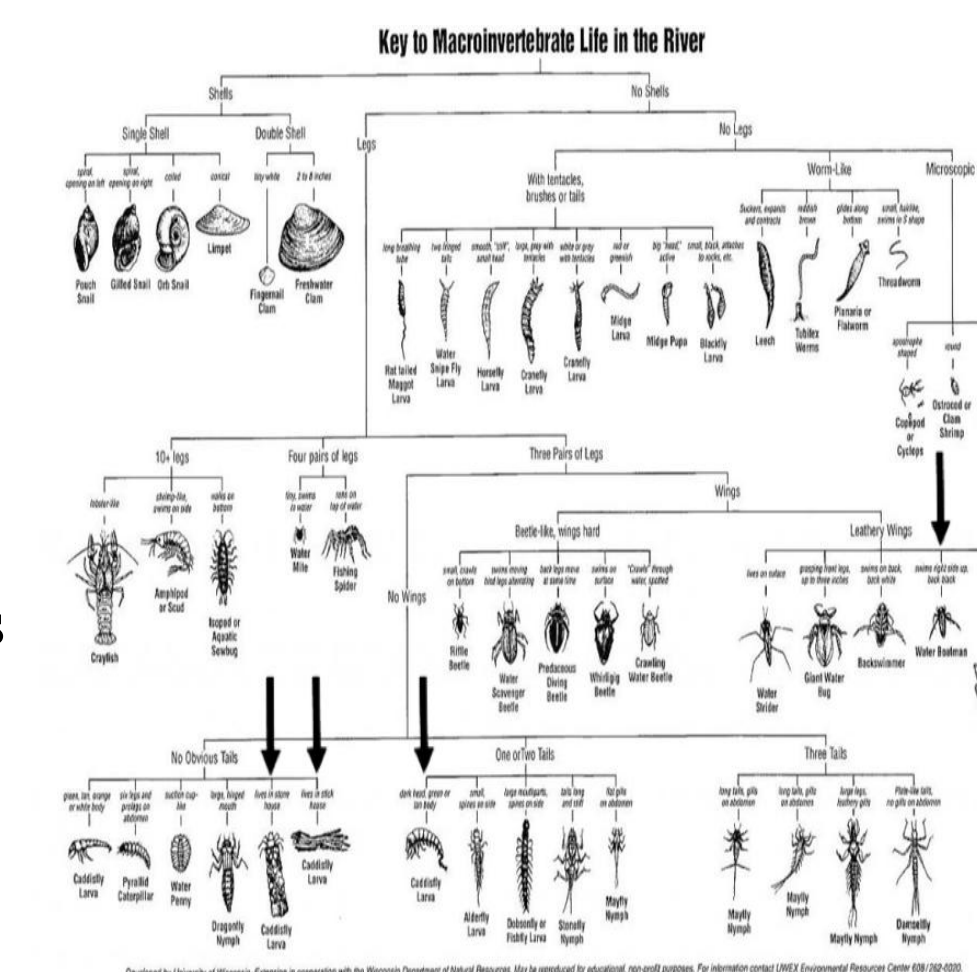
My studies were completed at the location of 40.6771° N 73.5145° W (Figure 1), in Twin Lakes Preserve on the 17th of April, 2018. I obtained my samples within an approximately twenty-foot radius from the shore where I worked. I used a net and a bucket to catch my samples by scooping up algae both above and below the surface of the water since that’s where most of the freshwater macroinvertebrates will cling to, breed on, or eat, yet to still accurately represent the results. I then sorted through the algae and put the organisms I found in miniature test tubes. I collected 22 samples of freshwater macroinvertebrates. To identify my organisms, I used a taxonification key for Freshwater Macroinvertebrates.



Figure 1: This is the exact location my samples were taken.

Results

Out of the 22 samples I found, I mainly identified Aquatic Sowbugs (Isopoda), Caddisflies/ Caddisfly Larvae, and Water Boatmen (Corixidae). Along with those organisms, I also recorded Freshwater Clams (Corbicula fluminea), Crane-fly Larvae (Tipulidae), and Water Pennies (Psephenidae). Corbicula fluminea are considered a pest species and can cause billions of dollars yearly to be removed from piping (Allen,cabi.org/isc/datasheet/88200). This species of clams are an alien species, and do not originate in North America.



Discussions

My results have revealed not only a diversity in freshwater macroinvertebrates but some abundant species in the region of the Twin Lakes Preserve. Water Boatmen and Caddisflies have proven to be extremely abundant in Twin Lakes. I predict that the reason for their abundances is due to the vegetation of the Lakes, and the high algae population, necessary for both Caddisfly and Water Boatmen life. This means that as I observed, the algae population in Twin Lakes is still abundant, and healthy enough to support organisms who feed off of it. This may be filtering the pollution in Twin Lakes Preserve. Against my hypothesis, there were unexpectedly little to no Mayflies or Stoneflies that I observed. Further research should be conducted to see why this is so, considering the optimality of their living situation in this region.

References

“Freshwater Macroinvertebrate Atlas.” Freshwater Wetlands Program - NYS Dept. of Environmental Conservation, www.dec.ny.gov/animals/84568.html.

“Corbicula Fluminea (Asian Clam).” Diseases Caused by Phages., Singapore Botanic Gardens, www.cabi.org/isc/datasheet/88200.

Acknowledgements

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