



## Abstract

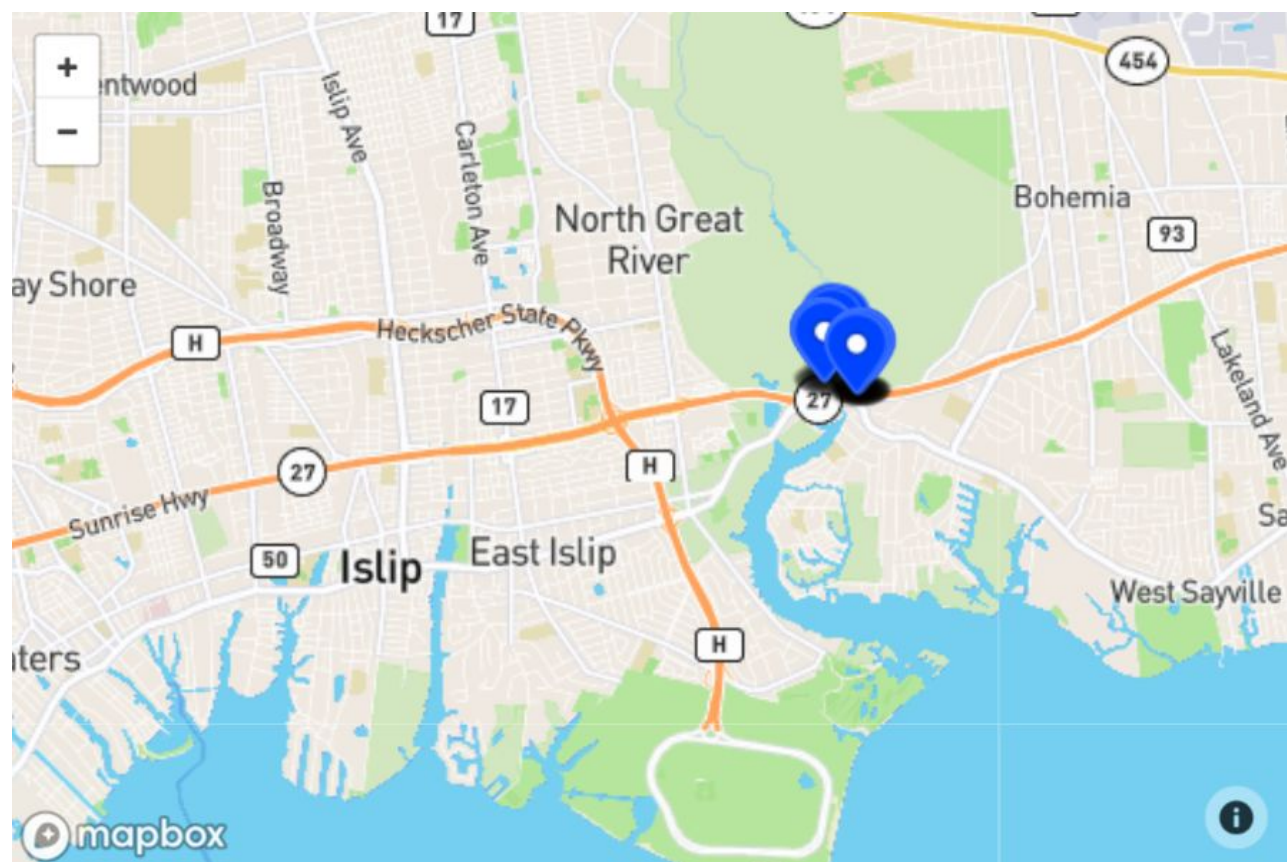
There are many different types of animals and plants that live on Long Island. However, there are some invasive species that intrude upon the natural environment and negatively affect the area, such as Eleocharis Dulcis. Our group hypothesized that this invasive species would decrease biodiversity in aquatic macroinvertebrates. This is because Eleocharis Dulcis blocks the sun from photosynthetic organisms in the water, which decreases food supply for aquatic macroinvertebrates. Permission was first obtained from Connetquot State Park to collect samples there. Then, Samples were gathered from areas in the park with and without Eleocharis Dulcis, and were documented. Next, the samples were barcoded and the information on their DNA was gathered in order to determine their identity. We used this information to conclude that water chestnut possibly has a correlation with a decrease in the biodiversity of aquatic macroinvertebrates, and may have a negative effect on the areas it is present.

## Introduction

- Invasive species, like Eleocharis dulcis, have been negatively affecting Long Island nature.
  - They grow exponentially due to a lack of predators and block out the sun for photosynthetic organisms.<sup>1</sup>
  - Many animals that rely on those plants die, including a majority of aquatic macroinvertebrates.
- Goal:**
- Document the diversity of aquatic macroinvertebrates in areas with and without Eleocharis Dulcis.
  - We hypothesize that aquatic macroinvertebrates will become less diverse, and some species that rely on native plants may struggle to survive in those environments.

### Materials & Methods

- freezing
- chilex
- extraction
- pcr
- gel electrophoresis
- results
- dna subway
- barcode & trees



## Results

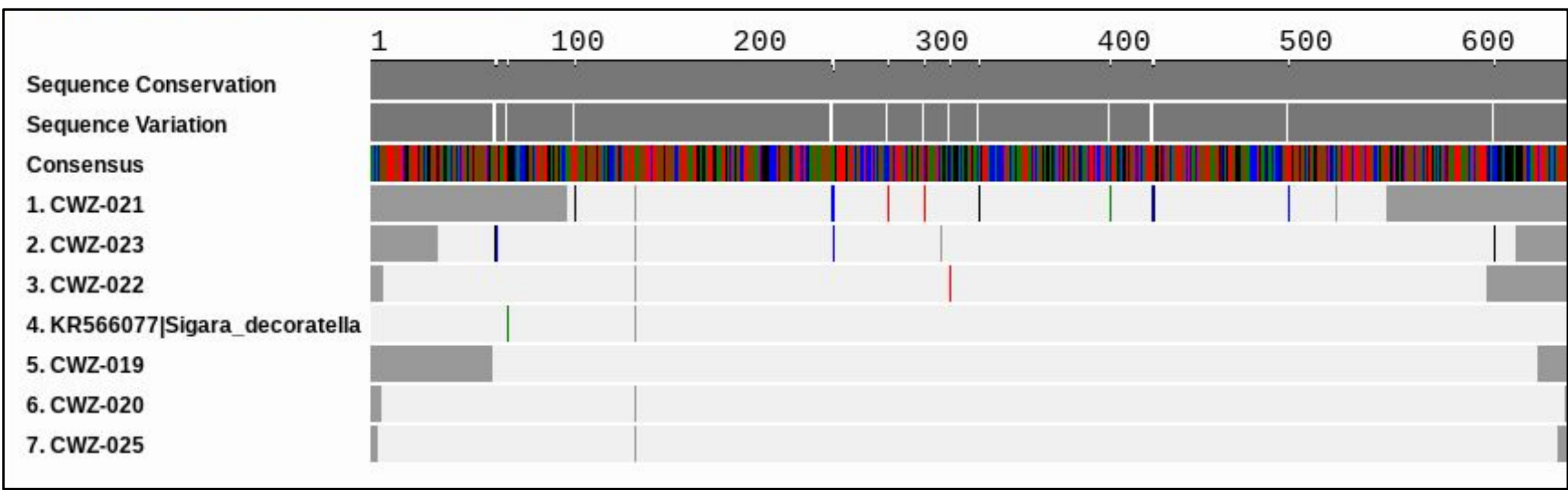
- In the Main pond we found more species that were most likely to be invasive. One species is Sigara Decoratella which had a high correlation with the presence of water chestnuts.
- Evidence from the barcode table suggests that all of our samples were similar to Segura Decoratella. The lines, or rather absence of lines shows that there is little to no difference between the samples.
- Our tree shows similar results, showing that there is very high similarity between samples and known species. There is no real outlier to this claim.
- In the East Brook their were more species like Staphylinidae or Calosilphia which are not invasive.

# Gene Sequencing of Macroinvertebrates

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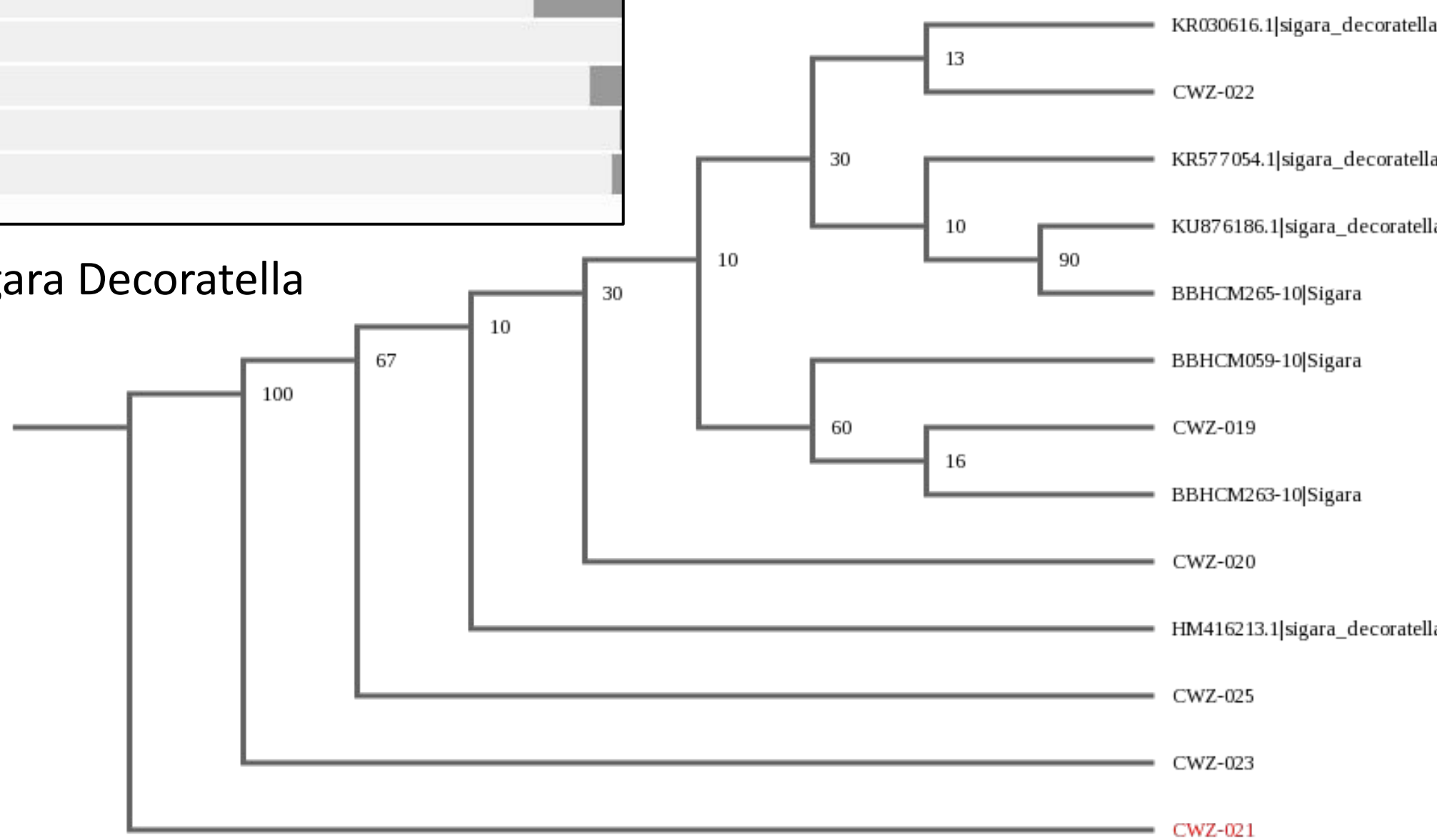
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## Tables & Figures



(Above) Barcode Sequences of Eleocharis Dulcis and Sigara Decoratella

(Right) Sequence Tree of Eleocharis Dulcis and similar samples



## Discussion

- The results show that when Eleocharis Dulcis is present, there is a high likelihood that the invasive species Sigara Decoratella is present.
- On the other hand, when Eleocharis Dulcis isn't present there is a low likelihood that there is Sigara Decoratella.
- Though the samples taken are few, there is enough evidence to claim there is at least a small correlation between Sigara Decoratella and Eleocharis Dulcis.
- because of this, water chestnut is not beneficial to the environment in Connetquot State Park.

## References

1: "Eleocharis Dulcis." Candlewood Lake Authority. <https://candlewoodlakeauthority.org/Water>

## Acknowledgements

We'd like to thank Mr. Halloran for helping to make this project possible and our parents for helping to drive us to Connetquot State Park to complete the project.

