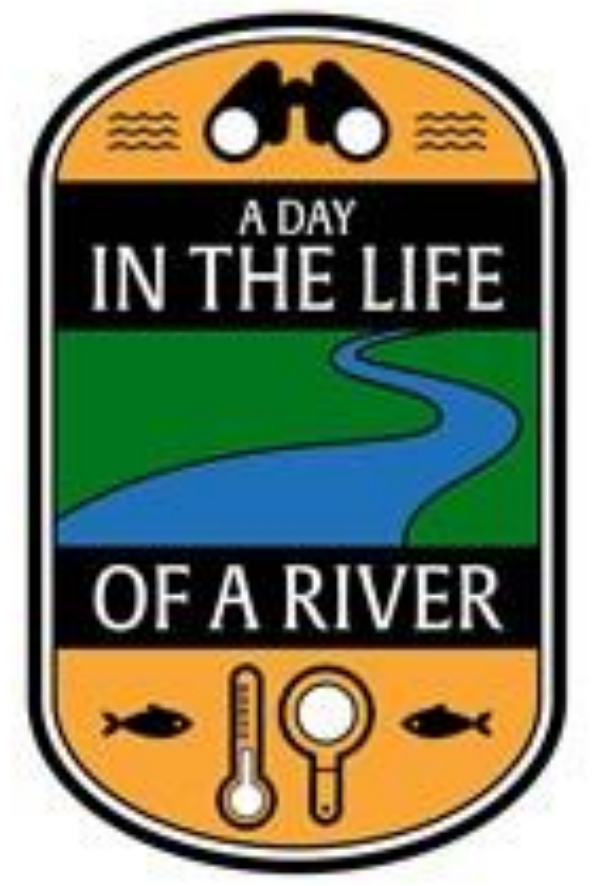


Exploring and Barcoding the Invertebrate Organisms of the Peconic River Estuary

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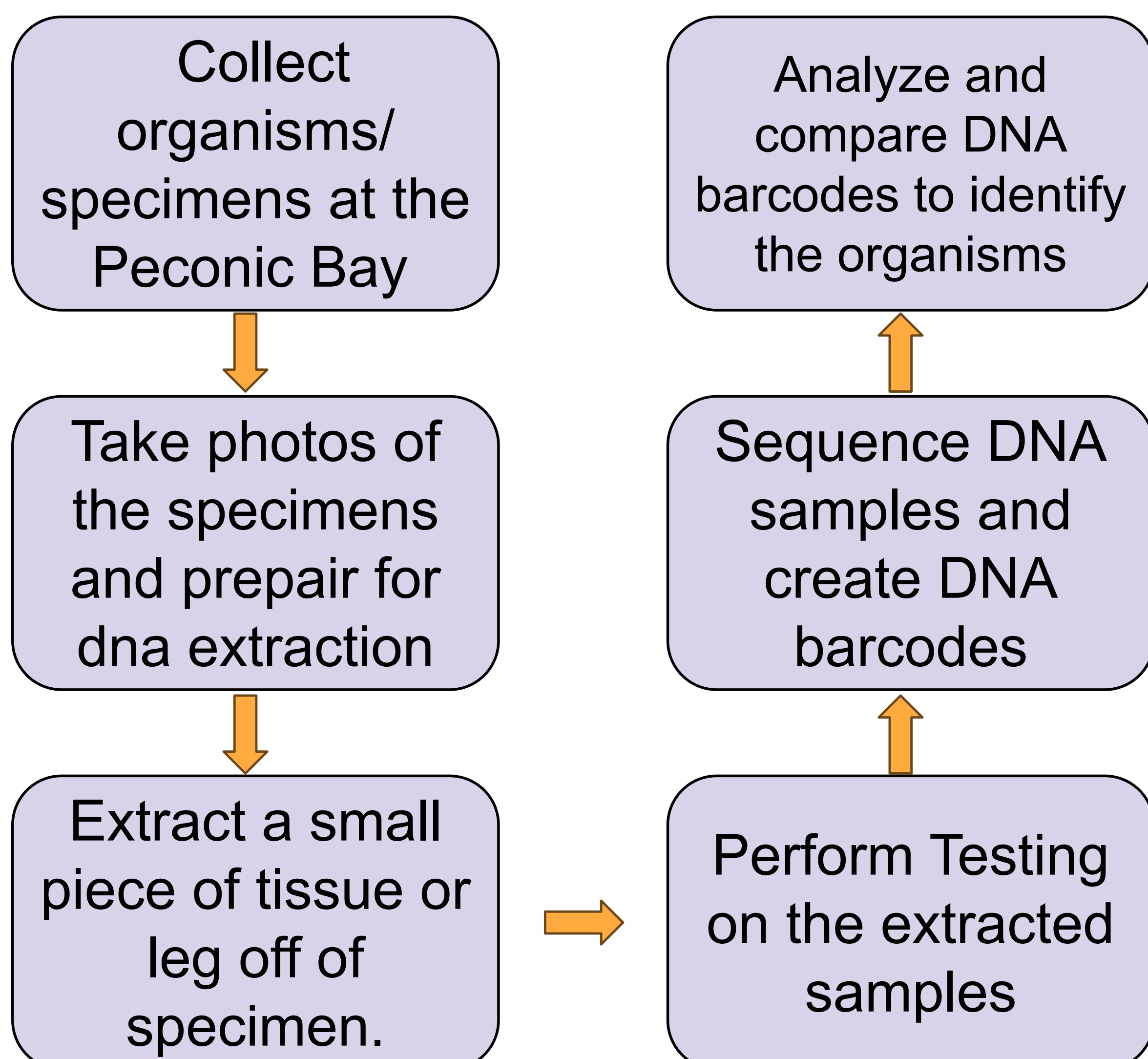
Abstract

This research was intended to determine the level of biodiversity in the Peconic River. Samples of macroinvertebrate organisms were collected and analyzed using PCR to identify the CO1 mitochondrial gene and ultimately DNA barcoding to determine species identity. Only two of 11 samples collected and tested yielded DNA barcoding results, identified as the Common Green Darner and a Backswimmer. This did not provide sufficient evidence to suggest a high level of biodiversity in the Peconic River.

Introduction

This project focused on determining the biodiversity of the Peconic River. The importance of the Peconic River is that it is the main source of freshwater for the Peconic Estuary, along with providing critical habitat for fish and eels that migrate down the river. One major issue in the river is pollution in the water, which can harm living organisms. Additionally, this research can help discover different species within an ecosystem, identifying invasive and non-invasive species that are present. With invasive species being a major issue in the Peconic River, this research can help to determine the current level of biodiversity and overall ecosystem health.

Materials and Methods



References



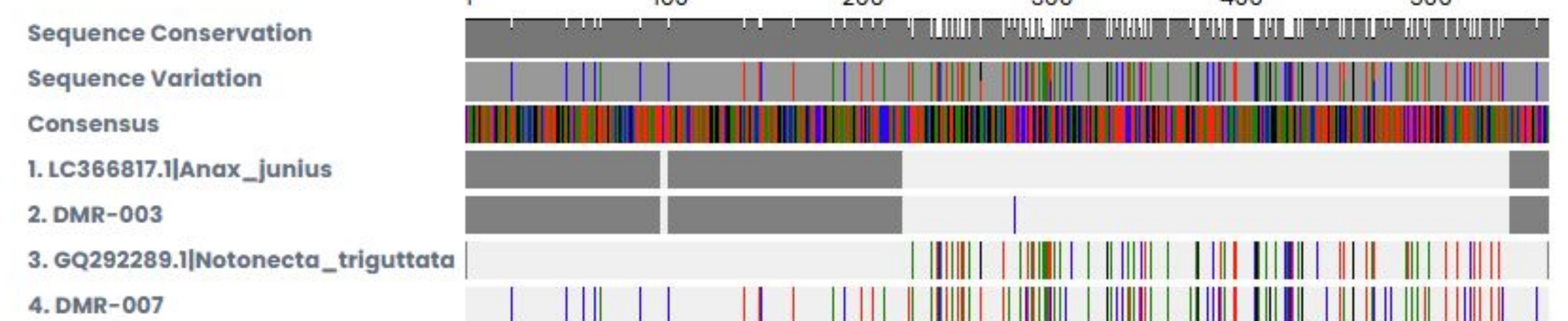
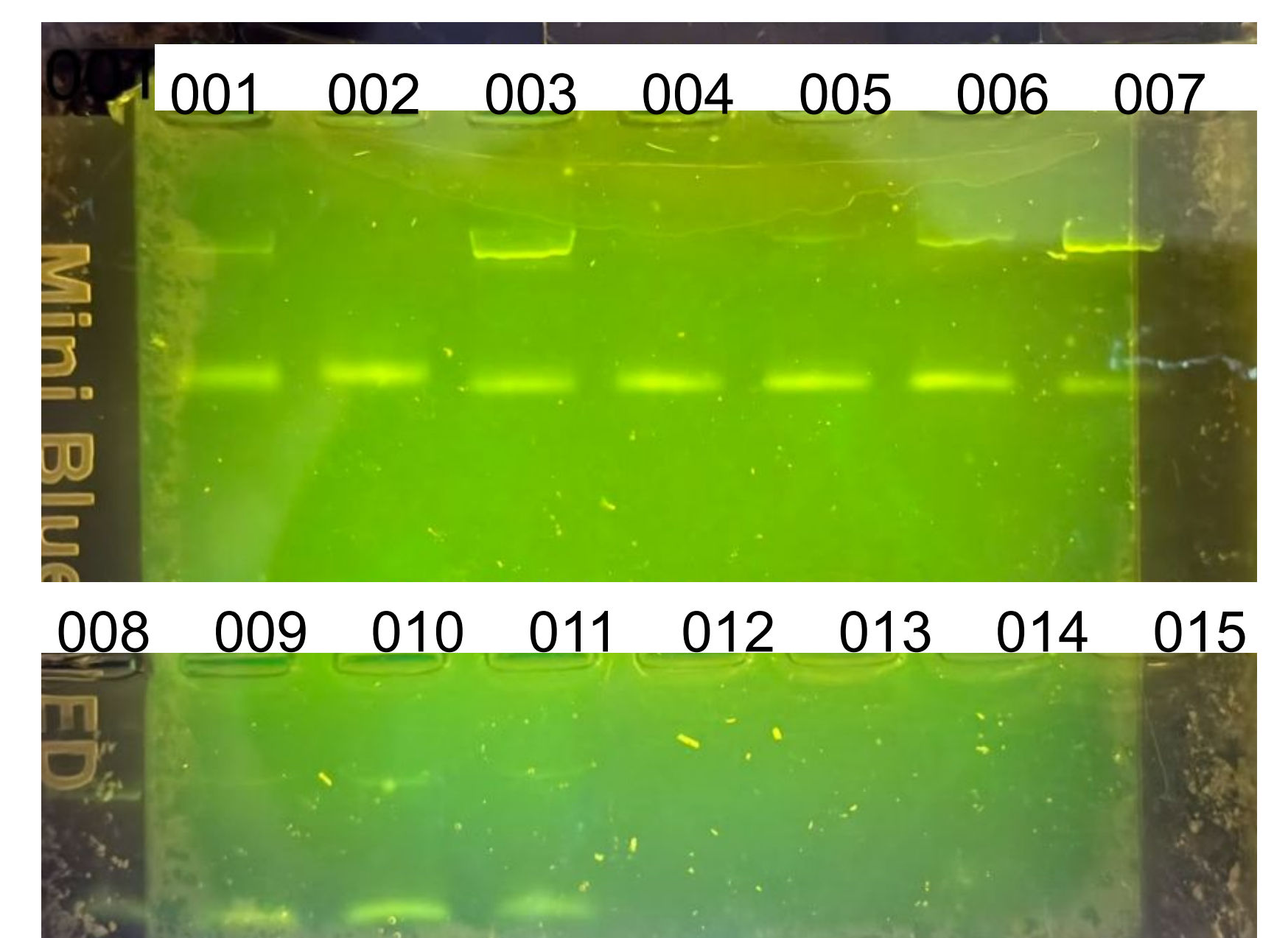
Acknowledgements

Thank you to the DNA Learning Center Staff for support with proposals, providing laboratory equipment, and supporting sequence analysis.

Results

The PCR for the analyzed samples worked properly, as shown in the gel image, indicating that DNA was successfully extracted and amplified. However, the DNA barcoding results yielded only two samples with sufficient barcoding data. Given the low success of the barcoding it cannot be confidently determined that there is a high biodiversity of species in the Peconic River. Species that were identified were the Common Green Darner (DMR-003) which is the most common type of dragonfly larvae and the Backswimmer (DMR-007) which is a very common predatorial insect found in fresh bodies of water.

Sample Number	Scientific Name	Common Name
DMR-003	<i>Anax junius</i>	Common Green Darner
DMR-007	<i>Notonecta triguttata</i>	Back swimmer



DMR-003 - Common Green Darner



DMR-007 - Backswimmer

Discussion

The lack of DNA barcoding results of this experiment did not allow for a conclusion on the biodiversity in the Peconic River. Although this study did not result in a conclusion about biodiversity in the River, two species were successfully identified.

Future Directions

It is planned to continue this project by barcoding organisms from different Long Island ecosystems. Important next steps needed are comparing the current barcode results to results from previous years.