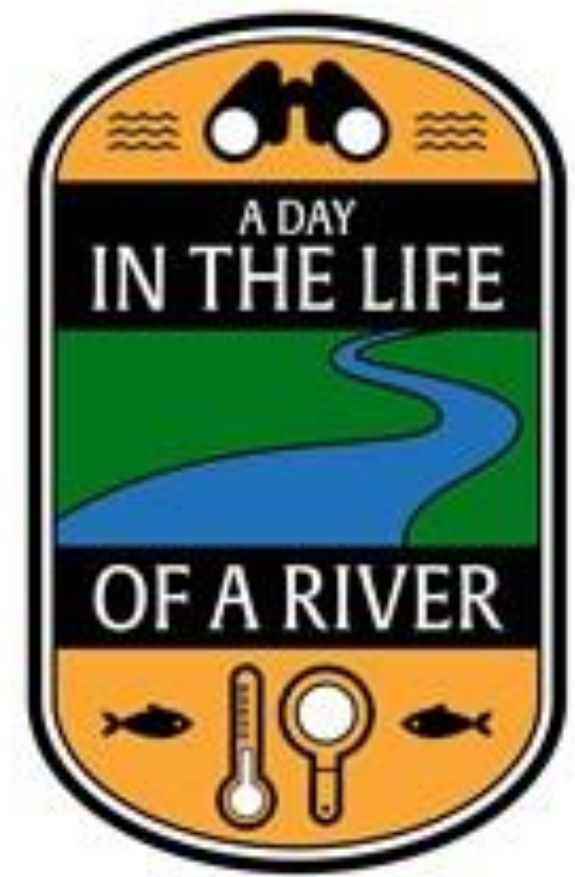




Using DNA barcoding techniques to identify biodiversity of Macroinvertebrates In Forge Pond

Samuel Nowak, Evan Baldini, Tyler Capra, Samuel Zheng
Ms. Neville - Eastport South Manor Junior-Senior High School



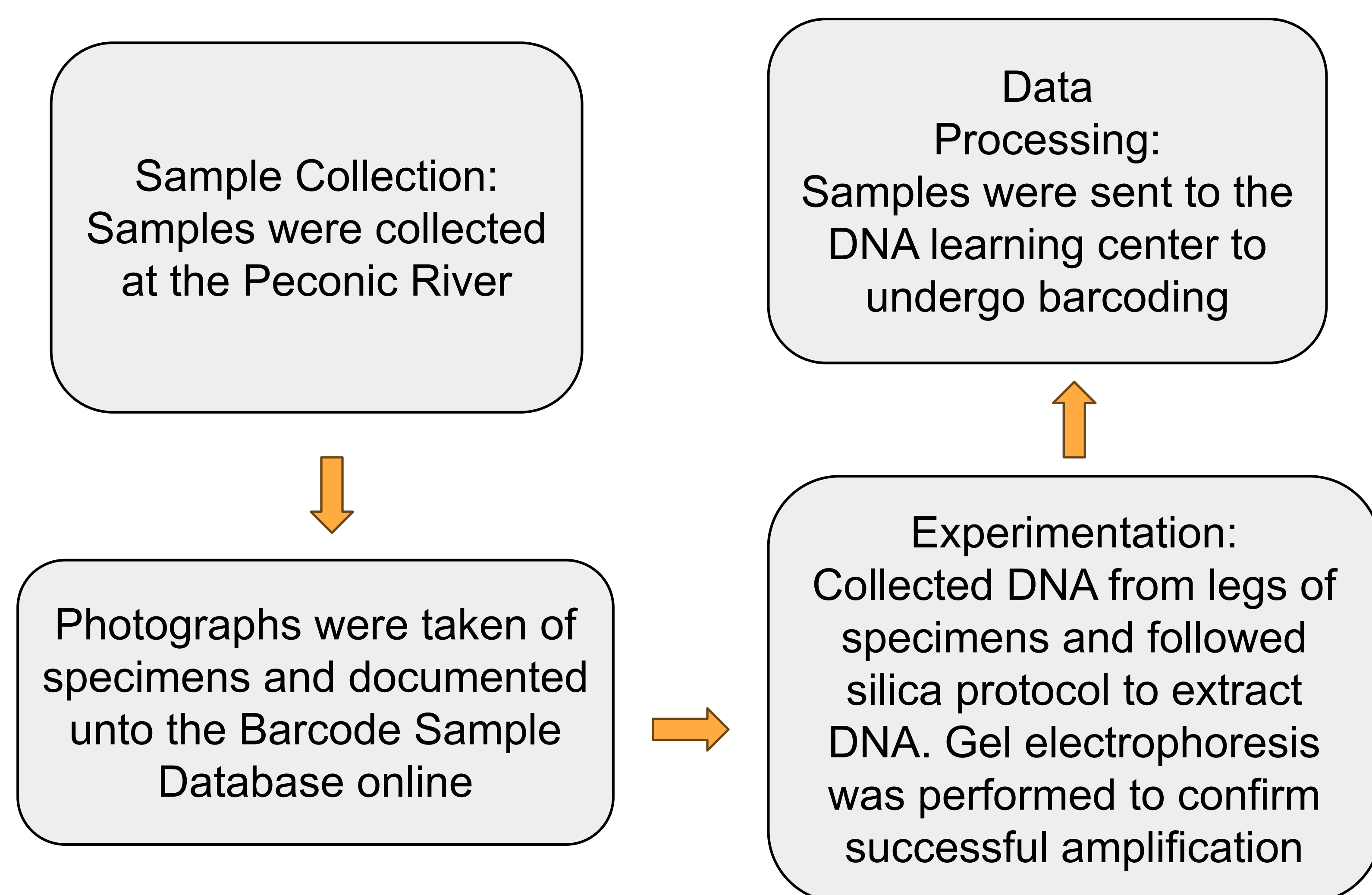
Abstract

The Peconic River is an important part of the environment on Long Island. This goal of this research is to determine the biodiversity of the Peconic River to help understand the overall habitat biodiversity. To do this, DNA barcoding was used to identify several species. The expected outcome is that many different species will be collected for DNA analysis and find a high level of biodiversity in the Peconic River. This will help to understand the biodiversity at the pond and the overall health of the ecosystem.

Introduction

Forge Pond in the Peconic River is an important and vital habitat of many aquatic species. A few major problems of the Peconic River include nitrogen pollution as well as invasive species, which can harm the water quality and also affect the ecosystem. Additionally, excess pollution such as littering plastic in the river continues to impact the habitat. Maintaining biodiversity is crucial for all life on earth, including humans. A wide range of organisms is needed for a healthy ecosystem, because a stable ecosystem contains many essential resources that we need to survive. It is expected that this study will identify several species using DNA barcoding and may identify invasive species that do not have DNA sequence identified in a database, showing a great biodiversity.

Materials and Methods



References



Results

Results identified samples shown in the table below. Other samples did not provide sufficient DNA for a positive identification. This lack of data prevents an accurate conclusion from being drawn about the biodiversity of the Peconic River.

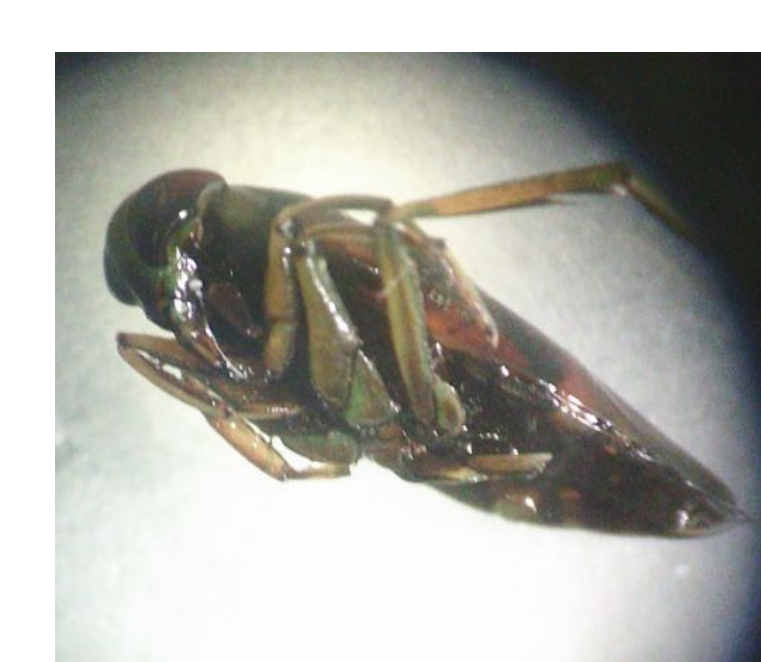
Sample #	Common Name	Scientific Name
DKD-008	Leech	<i>Erpobdellidae sp.</i>
DKD-009	Leech	<i>Erpobdellidae sp.</i>
DKD-010	Creeping Water Bug	<i>Naucoridae sp.</i>
DKD-011	Two-ridge Rams-horn	<i>Planorbella anceps</i>



DKD-008



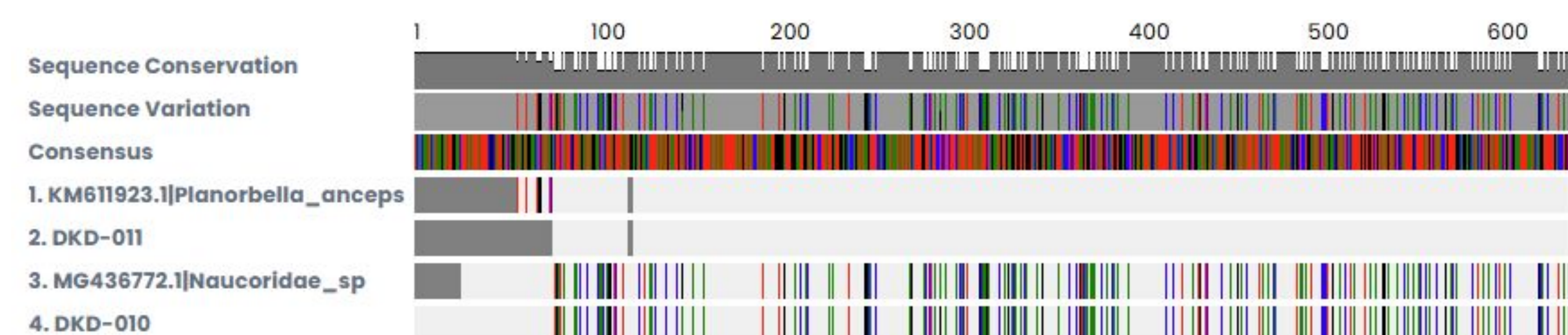
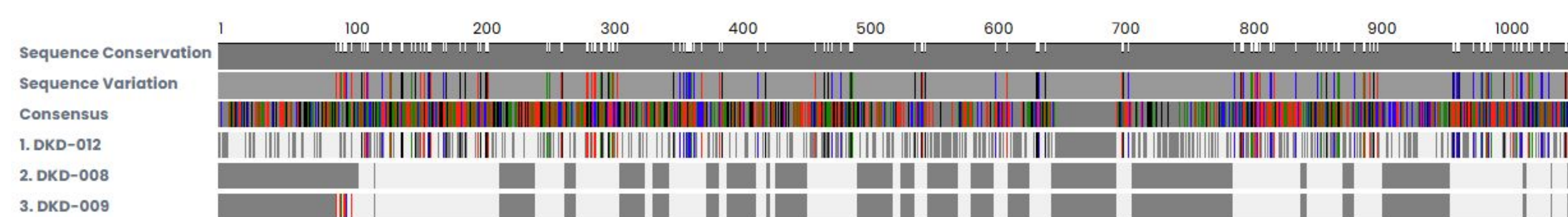
DKD-009



DKD-010



DKD-011



Discussion

While some species were successfully identified using the DNA Barcoding techniques, the DNA collected was not sufficient to read for several samples. This indicates that an accurate assessment of the biodiversity of the Peconic River could not be made based on these results.

Future Directions

In the future, it is recommended to complete DNA extraction at a slower pace and with precision to ensure DNA is correctly extracted.

Acknowledgements

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

