

Using DNA Barcoding to Determine Biodiversity of Macroinvertebrates in Forge Pond

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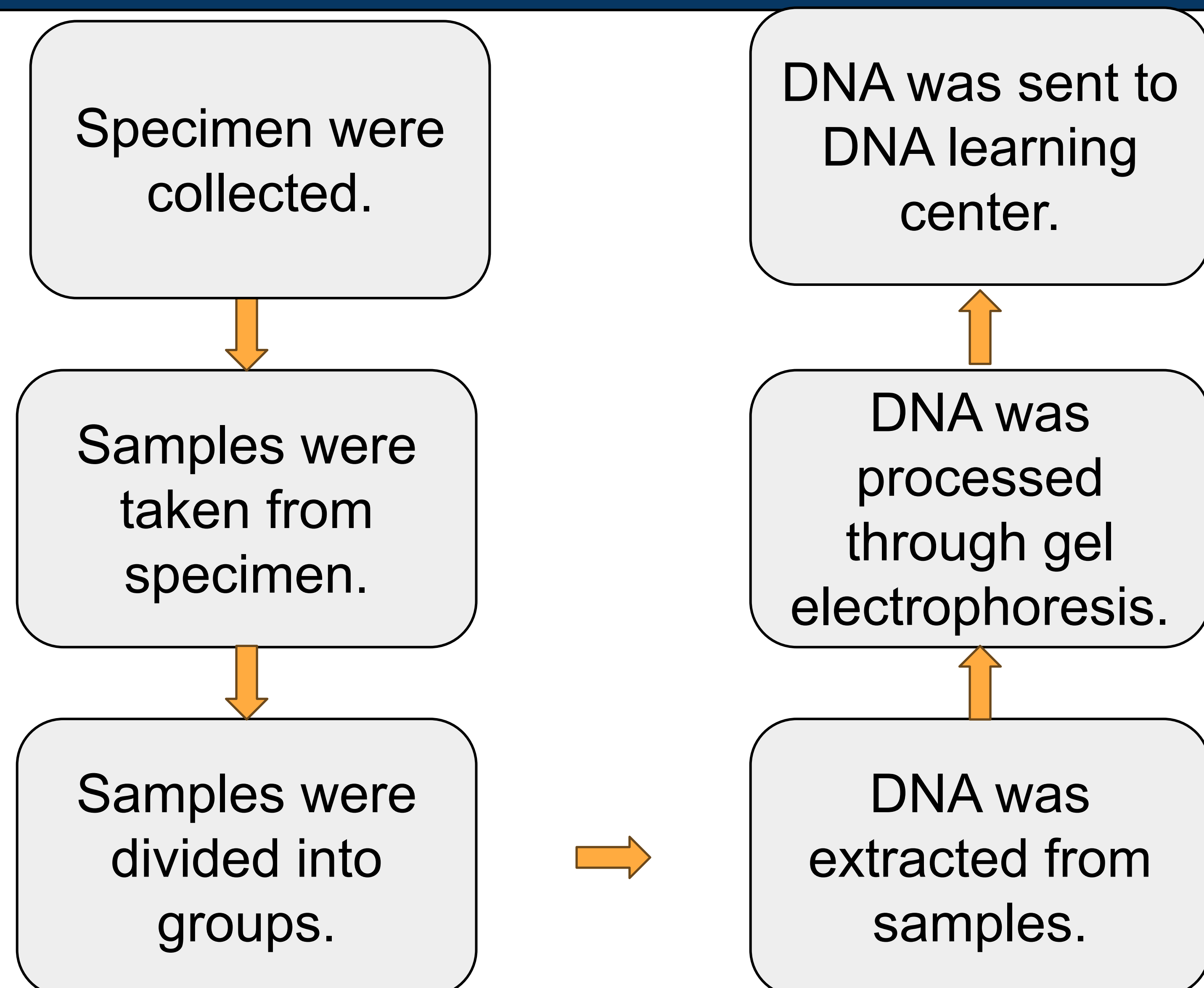
Abstract

The goal of this project was to find the biodiversity of the Peconic River. Samples were collected and analyzed to determine the DNA barcode and properly identify species. Several species were properly identified, along with a potentially novel species discovered.

Introduction

The question that this research set out to answer was "What is the level of biodiversity in the Peconic River?" This project is of importance because it can enable us to find a new species and teaches us valuable lessons about the scientific method. This project studied the Peconic River to protect its ecosystem. The major issues affecting the Peconic River, a habitat supporting diverse habitats like pine barrens, swamps, and tidal marshes, and its biodiversity include nutrient pollution, harmful algal blooms, toxic chemicals, habitat loss, invasive species, and climate change. These issues destroy important habitats and directly harm or kill native wildlife. Determining the biodiversity of the river will help determine overall health of the environment.

Materials and Methods



References



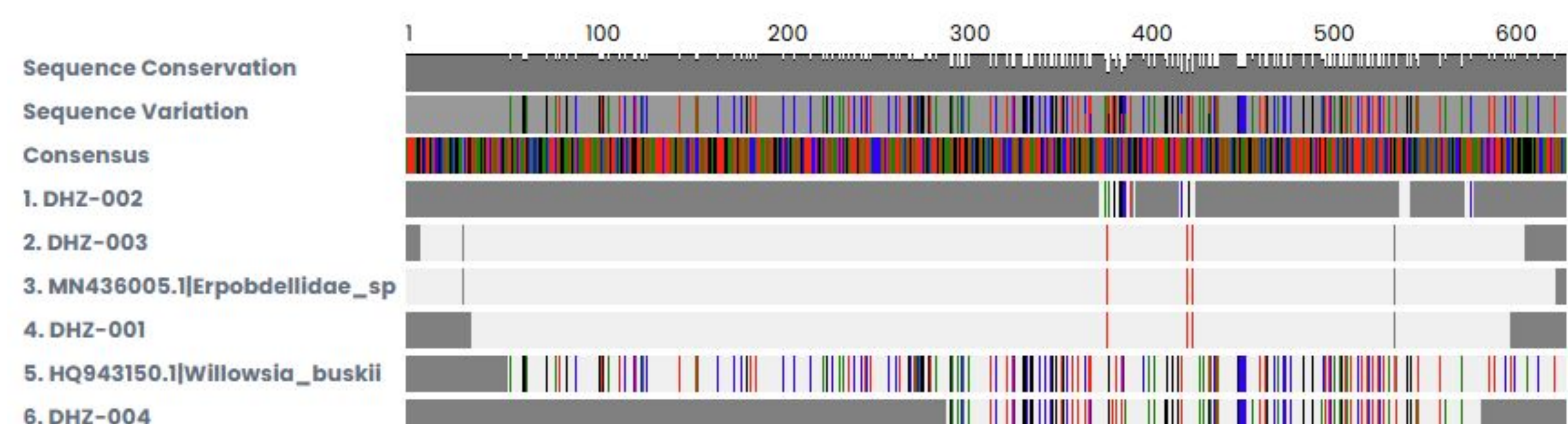
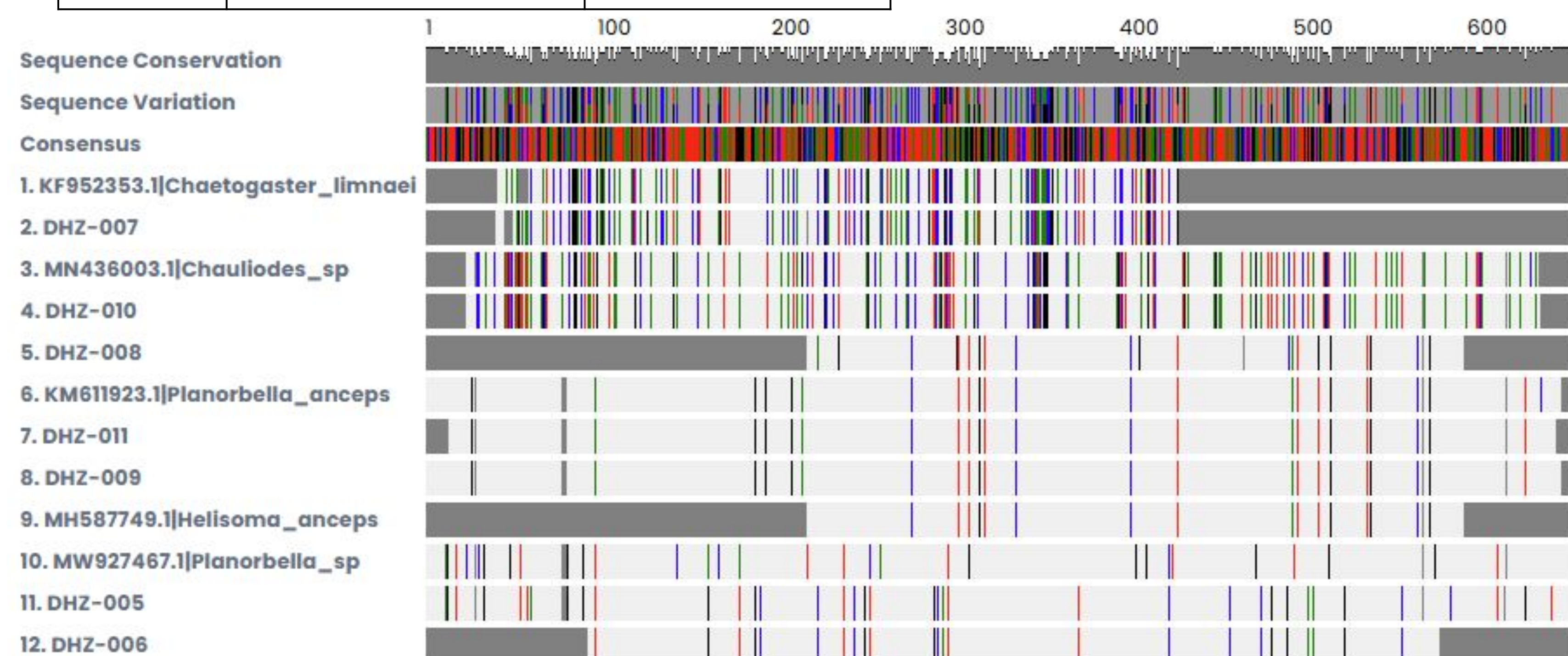
Results

Sample DHZ-007 was determined to be an Annelid worm species, potentially a novel sequence. Additionally, DHZ-001, DHZ-003, DHZ-004, DHZ-005, DHZ-006, DHZ-008, DHZ-009, DHZ-010 were successfully identified.

Sample #	Scientific Name	Common Name
DHZ-001 DHZ-003	<i>Erpobdellidae sp.</i>	Leech
DHZ-004	<i>Willowsia buskii</i>	Damp grain springtail
DHZ-005	<i>Planorbella sp.</i>	Freshwater snail
DHZ-006	<i>Planorbella sp.</i>	Freshwater snail
DHZ-007	<i>Chaetogaster limnaei</i>	Annelid worm
DHZ-008	<i>Helisoma anceps</i>	Two-ridge rams-horn
DHZ-009	<i>Planorbella anceps</i>	Two-ridge rams-horn
DHZ-010	<i>Chauliodes sp.</i>	Fishfly



DHZ-007
Chaetogaster limnaei



DISCUSSION

The samples tell that the Peconic Estuary does have a high range of biodiversity. These findings can be used to determine the health of the ecosystem and help protect it into the future. To the public, the main takeaway is that we are helping decipher more information about our environment of Long Island. The overall question has been answered and it was shown that the Peconic River shows a high level of biodiversity.

Future Directions

To make this process easier, more repeatable, and and more effective in the future, there may be a need to collect more samples to increase the sample size.

Acknowledgements

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