



# Mosquitoes

Rio Arengo, Robert Ortiz, Shirley Sanchez

Long Beach High School

Mentor: Onufrock



SEPA SCIENCE EDUCATION PARTNERSHIP AWARD  
Supported by the National Institutes of Health

## Abstract

This project was an attempt to identify the different types of mosquitoes living on Long Beach, New York. We observed and cataloged them using taxonomic insect guides and DNA barcoding, and for population information purposes, capture locations were mapped to determine areas of greater and less population density and their proximity to large bodies of water. No correlation was found between location and insect density or diversity.

## Materials & Methods

Insects were collected in the yards of houses in suburban neighborhoods. One of the backyards is near a saltwater bay and has lots of vegetation nearby. Another backyard is near the beach and has slightly less vegetation. Originally, mosquitoes were collected using homemade traps. They were made of a two liter bottle, which was cut in half and had the upper half flipped upside-down and taped onto the bottom half. Yeast and brown sugar were placed into the trap, which creates CO<sub>2</sub>. The CO<sub>2</sub> release from the trap mimics human breathing, which lures mosquitoes and other biting insects into it. This was not very effective. Later on, a commercial mosquito trap (A BG-Sentinel trap to be precise), was provided. After the biting insects were trapped, they were frozen in ethanol to preserve them.

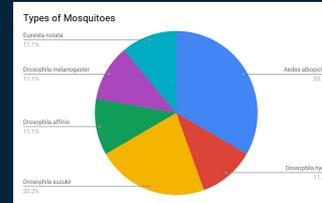
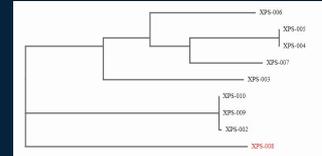
## Tables & Figures

Sample #	Latitude	Longitude
XPS-002	40.589955°N	-73.670112°W
XPS-003	40.586375°N	-73.640709°W
XPS-004	40.589955°N	-73.670112°W
XPS-005	40.589955°N	-73.670112°W
XPS-006	40.586375°N	-73.640709°W
XPS-007	40.586375°N	-73.640709°W
XPS-008	40.589955°N	-73.670112°W
XPS-009	40.586375°N	-73.640709°W
XPS-010	40.589955°N	-73.670112°W



The blue mark on the left is Shirley's house: 40.589955°N 73.670112°W  
The blue mark on the right is Rob's house: 40.586375°N 73.640709°W

## Results



Sample #	Species	Bit Score	Mismatches
XPS-002	<i>Aedes albopictus</i>	1267	2
XPS-003	<i>Drosophila hydei</i>	1249	0
XPS-004	<i>Drosophila suzukii</i>	1269	1
XPS-005	<i>Drosophila suzukii</i>	1269	1
XPS-006	<i>Drosophila affinis</i>	1182	1
XPS-007	<i>Drosophila melanogaster</i>	1270	0
XPS-008	<i>Euxesta notata</i>	1187	0
XPS-009	<i>Aedes albopictus</i>	1274	1
XPS-010	<i>Aedes albopictus</i>	1274	1

## Discussion

Our results showed little correlation whether the types of mosquitoes found on Long Beach Island varied depending on whether they were near the beach or the bay. This may be because of the small size of the island, and the proximity of the ocean to the bay (Long Beach Island is a barrier island, and the maximum width on the island is only just under a mile). Misconceptions also occurred when initially trying to identify bug XPS-004, which may have further skewed data.

## Acknowledgements

We would like to thank our mentor, Mr. Onufrock, for guiding us as we completed this project. We would also like to thank Cold Spring Harbor Laboratory for allowing us to use their equipment when preparing our bugs for PCR.