Beetles in the Light

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SEPA Science Education Partnership Award

Supported by the National Institutes of Health

Abstract

Our goal was to collect beetles to identify and determine if light attracts beetles and/or affects the diversity of insects found. Results were inconclusive as we too few samples were collected and none were identified as beetles.

Introduction

Research Question: *How does the presence of light affect the quantity and diversity of beetles?*

Hypothesis: *In the presence of light, a greater quantity and diversity of beetles will be found.*

Beetles are a very common insect on Long Island. There are 350,000 discovered species of beetles and 124 species found in New York. There are still many species not known to science. Our research relates to human health because beetles are common garden insects and, as agricultural pests, they affect the health of our crops and food.

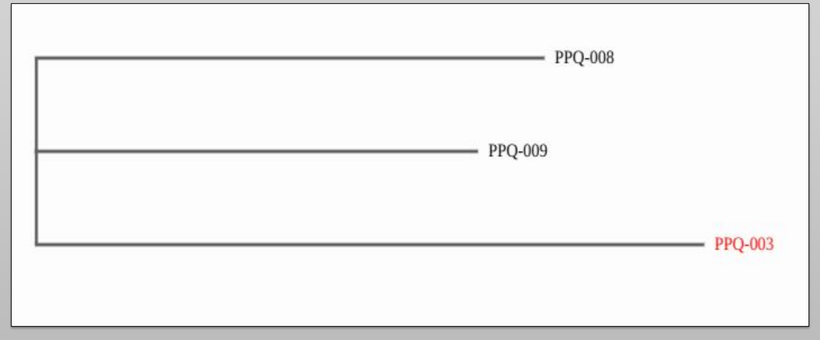
Materials & Methods

To test our hypothesis, we collected beetles, recording where they were found: under rocks and shrubs (in the absence of light) or in open areas of yard (with the presence of light). In addition, we made two pitfall traps, one with a flashlight to create light and another without a flashlight. This collection of beetles continued over a period of 2 weeks. After collected, the samples were preserved in at least 95% ethanol. DNA barcoding protocol was used to identify the species.

Results

The pitfall traps were ineffective. We were unable to collect any beetles using this method, with and without light. Out of the insects we were able to collect, only 3 of the 9 specimens were able to be positively identified using DNA barcoding, none of them being beetles. In the end, our results were inconclusive because we were unable to identify any beetles in light nor dark.

Sample Number	Initial ID	Species of Specimen (Best match on BLASTN results)	Picture of Specimen
PPQ-003	*Cetoniinae*	*Armadillidium vulgare*	
PPQ-008	*Dynastinae*	*Taylorilygus apicalis*	
PPQ-009	unknown	*Sciaridae sp. BIOUG20628-B11*	



The diagram to the left is a phylogenetic tree, showing the relationship between barcoded specimens.

Discussion

Being that we were unable to answer our research question, we have looked back at our project to see our errors. In the future, we need to collect and identify more samples in order to have results. In addition, we should have researched beetles more when we started the project to ensure that we were collecting beetles, rather than other insects.

Acknowledgements

We would like to thank our mentor, Cody Onufrock, for guiding us throughout our project. In addition, we would like to thank Barcode Long Island for holding the symposium, especially during these difficult times.