



Abstract

The purpose of this project was to characterize the biodiversity of insects and invertebrates in a new nature trail being established at Longwood High School. We addressed the question of whether the species detected were native to the area, and also whether they were typically found in our pine barrens environment. Twenty samples were collected and the DNA was extracted using the Qiagen DNeasy Blood & Tissue Kit. PCR was performed using the CO1 primer for all samples. In general, the species detected were native to the region and typical for a pine barrens environment. Many species (such as the common woodlouse, redhead worm, brown centipede, snake millipede, brown millipede, striped woodlouse, and European earwig) were originally introduced by European colonists. These results will be used to design further studies aimed at exploring the roles of these species in the nature trail habitat.

Introduction

Longwood High School is establishing a new nature trail on campus. To determine whether the insects and invertebrates present are representative of our pine barrens environment, samples were collected and species were identified. The study was modeled after other "bioblitz" projects aimed at characterizing species present in a particular environment (1). The species were compared to those expected to be present in a typical Northeastern pine barrens habitat. We attempted to collect any species suspected of being invasive to the habitat (2-6).

Materials & Methods

- Twenty insect/invertebrate samples were collected from the nature trail.
- DNA was prepared using the Qiagen DNeasy Blood and Tissue Kit. PuReTaq PCR beads with CO1 primer were used to generate products for sequencing.
- The DNA Subway program was used to identify the best match for genus and species.
- BugGuide.Net was used as the main source of information for distribution and native origin of the species (7).

Results

The insect and invertebrate species detected in this study are pictured at the right. All species were typical for our pine barrens environment. These results indicate that the insect and invertebrate species present in the nature trail represent a good model for a typical pine barrens habitat on Long Island.

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References: 1. "DNA barcoding Brooklyn (New York): A first assessment of biodiversity in Marine Park by citizen scientists." PLOS ONE, July 18, 2018. 2.<u>https://news.climate.columbia.edu/2017/01/06/how-climate-change-is-affecting-new-yorks-plants-and-animals/</u> 3.<u>https://www.cnn.com/2022/09/24/us/spotted-lanternfly-habitat-expanding-climate</u> 4.https://www.dec.ny.gov/animals/99331.html

Longwood HS Nature Trail Bioblitz: Insects/Invertebrates

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Nature Trail Image Captured via Trailcam, 2022

Discussion

The purpose of this project was to initially characterize the insect and invertebrate species present in Longwood High School's new nature trail. The results indicated that the species detected are a typical representation of species present in the Long Island pine barrens habitat. While all species detected are native, many of these organisms were originally introduced by European colonists (common woodlouse, redhead worm, brown centipede, snake millipede, brown millipede, striped woodlouse, and European earwig). Our study did not detect any invasive species, such as the Southern Pine Beetle. These results will be used to plan future projects related to studying the particular impact of these species on the nature trail environment.

5.https://www.pinebarrens.org/bridge-to-the-barrens/invaders-of-long-island/

- 6.https://nyis.info/species-information/
- . https://bugguide.net/

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Lumbricus rubellus (redhead earthworm)



Lithobius forficatus (brown centipede)



Ophyiulus pilosus (brown millipede)



Forficula auricularia (European earwig)



Prenolepis imparis (American winter ant)