

Can compost attract pest species?

Brady Romano, Daniel Quick, Ava Lithgow Mentor: Mr. Onufrock
Long Beach HS

Abstract

Compost is a critical component of organic systems and increasingly found in suburban backyards. The project goal was to determine beetle species diversity found in compost compared to regular soil. Samples were collected and DNA barcoding was utilized to determine ID of species.

Materials & Methods

Materials: shovel, and soil screens. Our method to find the beetles was to go to the compost pile, shovel out approximately ½ ft³ of compost, put in into the screens and proceeded to screen the compost, looking for any organisms inside, and then stored them in microcentrifuge tubes. This same procedure was carried out on soil samples. We then cataloged and identified species using taxonomic keys and followed DNA barcoding protocol for unknown specimens.

Results

Our results for the experiment are shown below:

Organism “XQC-001” was closest to *Syrirta pipiens*, with an Aln. length of 588, bit score of 1061, and had 0 mismatches.

Organism “XQC-002” was closest to *Philoscia muscorum*, with an Aln. length of 559, bit score of 1009, and had 0 mismatches.

Organism “XQC-003” was closest to *Conoderus lividus*, with an Aln. length of 505, bit score of 818, and had 19 mismatches.

Organism “XQC-005” was closest to *Prenolepis imparis*, with an Aln. length of 613, bit score of 1094, and had 3 mismatches.

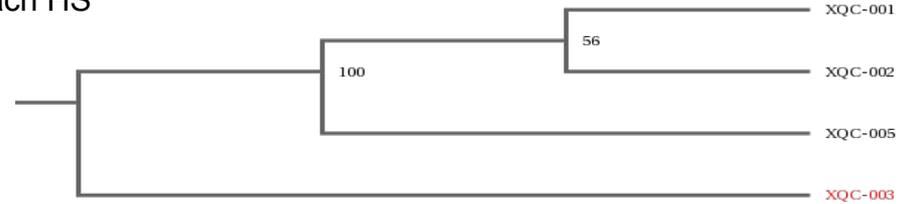


Figure 1: Phylogenetic relationships between barcoded species



Discussion

Though we were able to get samples from both the compost pile and the regular soil. Our sequencing requests for the samples in the soil were not successful and therefore we can only conclude that there is great diversity between species in the compost piles, but to form a greater conclusion, a larger sample size would be needed.

Citations

Common striped woodlouse Philoscia muscorum (. (n.d.). Eakring Birds.

<https://www.eakringbirds.com/eakringbirds5/isopodinfofocusphilosciamuscorum.htm>

Conoderus lividus. (n.d.). Wikidata. Retrieved May 27, 2020, from <https://www.wikidata.org/wiki/Q2014201>

Prenolepis imparis - AntWiki. (n.d.). https://www.antwiki.org/wiki/Prenolepis_imparis

Syrphid - Syrritta pipiens - BugGuide.Net. (n.d.). Welcome to BugGuide.Net! - BugGuide.Net.

<https://bugguide.net/node/view/22752/bgimage>