A Study of Leaf and Root Extracts from Invasive Species Lonicera maackii on Microbial Growth

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Lonicera maackii, also known as Amur honeysuckle, is an invasive deciduous shrub that is commonly found in the mid-Atlantic region of the United States. This invasive species is an ecological threat to native environments with its widespread growth. In this study, the effect of Honeysuckle extracts (leaf and root) on soil bacteria from honeysuckle vs. no honeysuckle areas was tested. On July 9th, 2014, leaf, root, and soil samples were collected from a wildlife area. The leaf and root extracts were created in 20% solutions and were filter sterilized after 72 hours. The soil samples were taken as nine 5-inch samples per area (3 honeysuckle and 3 no honeysuckle). Bacteria were separated from the soil samples by measuring 3 g of soil into 27 mL of sterile water (per area), and the stock concentration was serial diluted to 1:1,000,000. This was followed by the application of leaf, root, and sterile water (control) treatments onto the LB agar plates overnight on the shaking bath incubator. The bacteria were then plated onto the corresponding Petri Dishes. The Petri Dishes were incubated for 36 hours at 30C. Both the leaf and root treatments inhibited the density and diversity of the bacteria colonies. A statistically significant difference was found when comparing the bacterial density of the control vs. leaf/root treatments and soil type (honeysuckle vs. no honeysuckle). When comparing bacterial diversity, analyzed by using a Shannon Diversity Index and species count, a statistically significant difference was evident when comparing the control vs. leaf/root treatments. Therefore, the presence of Honeysuckle has a negative impact on the biodiversity and density of soil bacteria colonies, which poses as a threat to native environments and crops.

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