

Steps

sample collection

- Once receiving permission to get samples at the Garden City Bird sanctuary, we will go and collect the samples of the infected tree and samples from around the tree.

DNA extraction

- extract DNA from both the plants and insect samples using chemical methods that break down cell membranes and/or cell walls and release genetic material. Part of safety precautions that we will were gloves and goggles for protection:

PCR amplification

- use PCR to amplify specific gene regions in the plant and insect fly DNA. PCR is a method to make copies of a specific DNA region to study it in detail.

gel electrophoresis

- run the amplified DNA samples through gel electrophoresis, a technique that separates the DNA based on the size of the fragments. This will allow us to identify the species in the next step of sequencing if the PCR reaction is successful.

DNA barcoding

- Use DNA barcoding, which identifies species based on unique, genetic markers. This will help us identify the exact species collected..

data analysis

- Use DNA Subway for Bioinformatics

conclusion

- Determine whether the infestation affects the plants and insect DNA distribution.

Results

Clear and concise presentation of the results is important. The results can be presented using tables, charts, graphs, or any other type of visual aid. Add brief textual explanations into the images which illustrate the significant findings. A reminder that while the images offer supporting evidence, the text should summarize the most important findings.



Garden City High School

Investigating the Impact of Invasive Species on the Distribution of Plants and Animals at Garden City Bird Sanctuary.

Elizabeth Melgar, Teresa Gregory, Emily Racich, Isabelle DeNoto

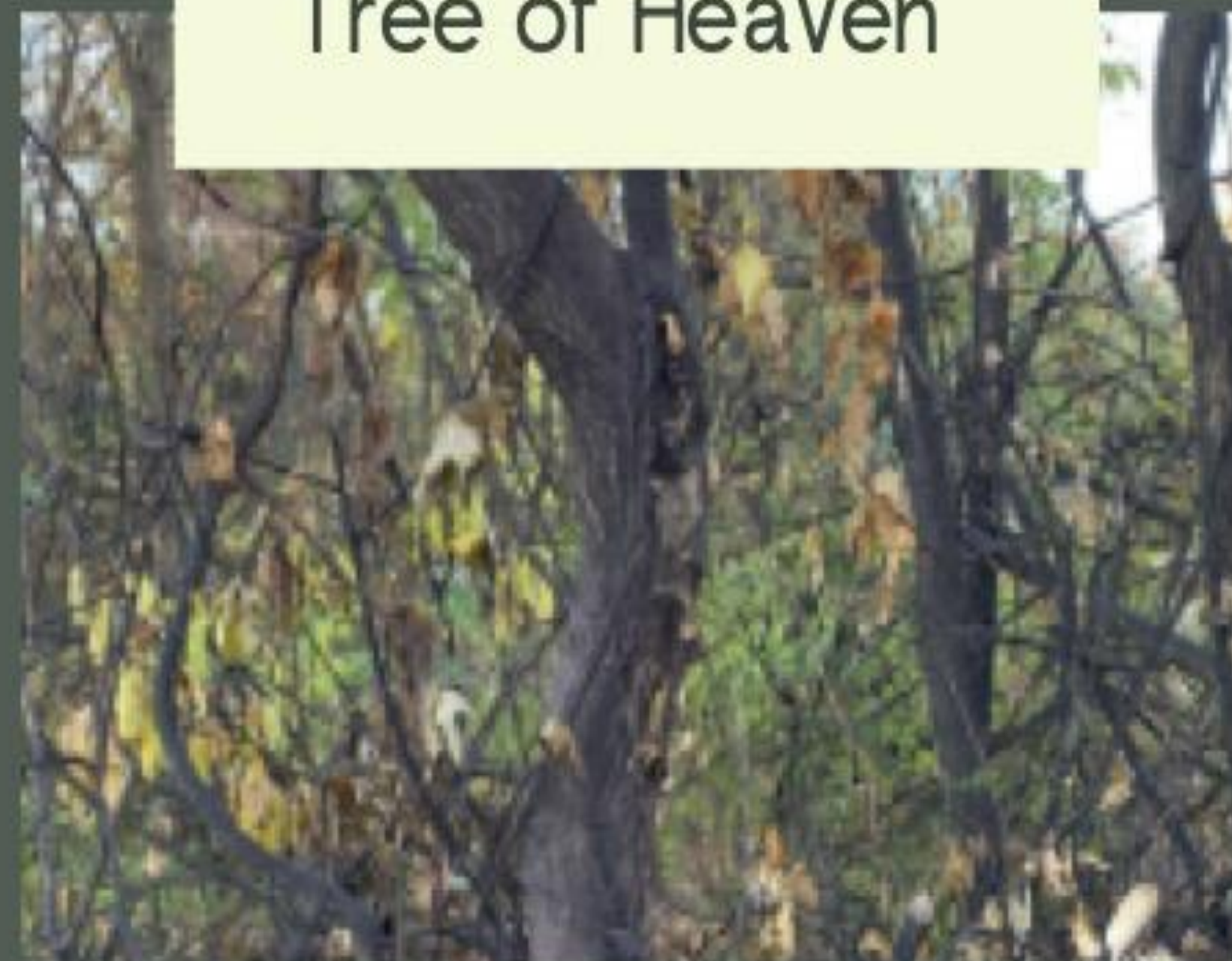
Question

Does the tree of heaven attract lantern flies or do the plants adjacent attract them?

How?

We plan to analyze the DNA around the infected tree and in the plants and animals found near the tree to help identify their species.

Tree of Heaven



Hypothesis

infested areas may exhibit unique biodiversity patterns, possibly due to changes triggered by the insects' infestation.

Garden City Bird Sanctuary

Our study

This study will analyze DNA from both infected plants and plants in close proximity to the infected plant. We will use this by focusing on identifying genetic markers (the rBCL gene)unique to plants to assess if the fly may impact host plant distribution. Insects will also be collected and barcoded, to see what the insect biodiversity is in the Garden City Bird Sanctuary.

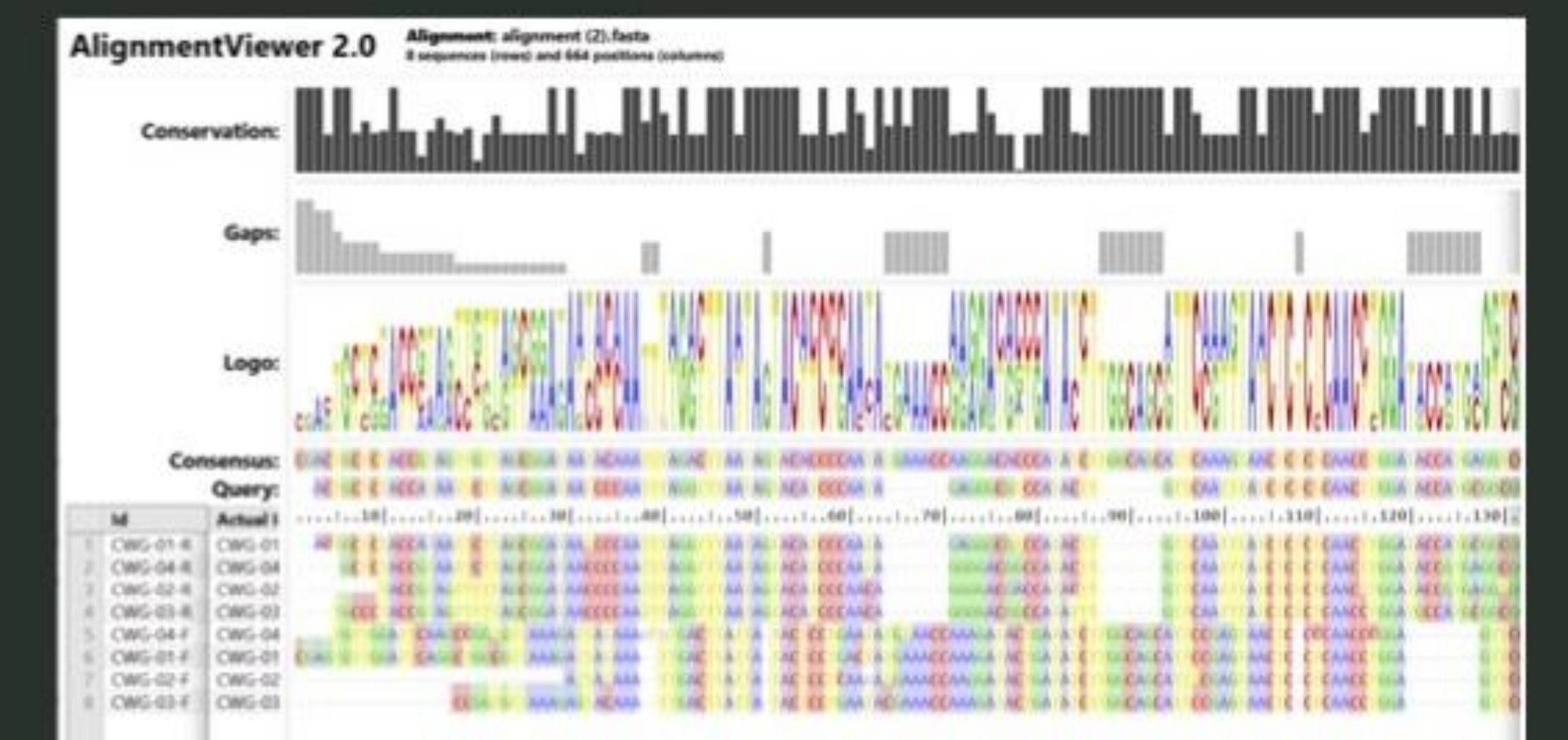
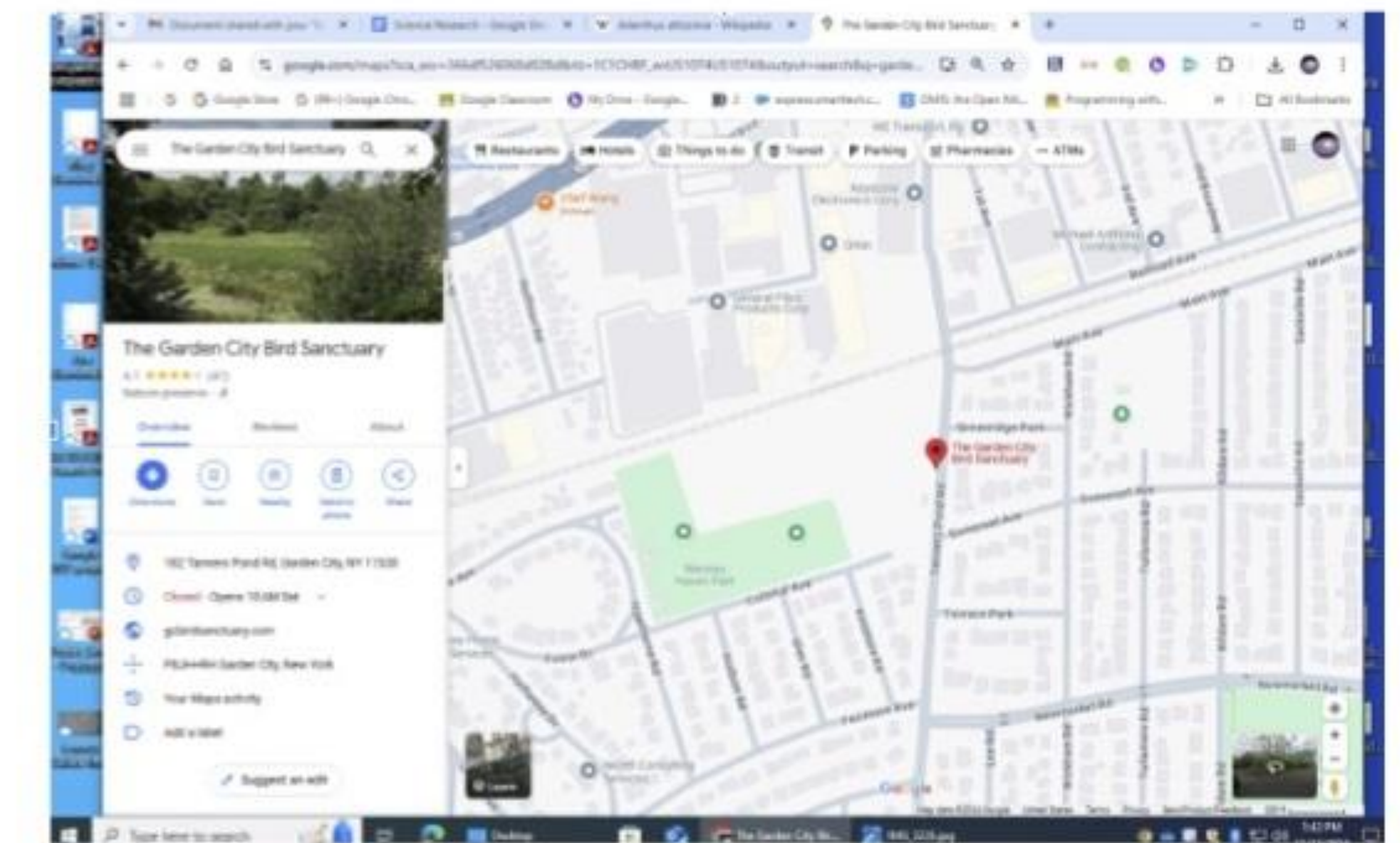
Samples will be collected from multiple native species known to be infested by lantern flies and plants nearby the infected tree. DNA from both the insect samples and plant samples will be preserved, extracted and processed using PCR to amplify specific genetic markers.

Intro

Little is known about how lantern fly infestations affect native plant distribution. Our research will investigate if spotted lanternfly presence on the tree of heaven(Ailanthus Altissima) alters local plant diversity, as observations at the Garden City Bird Sanctuary show the infestations concentrated at this tree, with signs of sooty mold. Understanding these effects could help improve strategies for managing invasive species and preserving native ones.



Garden City Bird Sanctuary



DNA Subway



Conclusion

The Lantern Flies around the Tree of Heaven (Ailanthus Altissima) are attracted to the toxic sap from the White Snake Root Tree (Ageratina Altissima) rather than the Tree of Heaven itself.