



Bittersweet Barcode

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PROBLEM

We are looking for biodiversity in the Massapequa Preserve around native vines and see how it compares to the biodiversity around invasive vines.

RESEARCH

An invasive species is a plant or animal that, once it is introduced to a foreign environment it grows at an exponential rate and severely damages the ecosystem it can kill the surrounding foliage. The oriental bittersweet is an invasive species that climbs up trees and entangles itself on the trunk/branches of the tree. It looks like vine on the trees that it entangles on, but unlike vines it kills the plants that is in its way such as herbaceous plants and trees. Oriental bittersweet causes trees to topple from the weight of the vines. The oriental bittersweet spreads rapidly on trees. The oriental bittersweet can change the soil which can threaten native plants. The plant can sprout through its own sprouts and berries. The berries of the oriental bittersweet are eaten by birds and small mammals. The oriental bittersweet can be used as medicine. The oriental bittersweet can also be spread by birds by birds eating seeds and digesting them. The purpose of our observation of the oriental bittersweet and other vines in the preserve is to discover were the most biodiversity.

HYPOTHESIS

We want to know if the area around the oriental bittersweet more or less biodiverse than the area around the other vines in the preserve.

MATERIALS

1. Plastic bags
2. Garden clippers
3. Camera
4. Taxonomic guide
5. Permanent marker
6. GPS to document Latitude and longitude
7. Freezer to store samples
8. tubes
9. micropipette
10. centrifuge
11. Agarose gel
12. water bath
13. electrophoresis machine

EXPERIMENTAL DESIGN

We are doing this study because we want to find out the biodiversity of the location of the oriental bittersweet and compare it to other vines in the preserve. Once we find the species we are going to barcode the oriental bittersweet and use the information we gathered to use it for further research. We want to know if the area around the oriental bittersweet more or less biodiverse than the area around the other vines in the preserve.

PROCEDURE

1. Find vines in the nearby preserve and cut a leaf from the vine and find several other plants near vines. Than document longitude, latitude, and altitude of the different locations of the species of vines and take pictures of vines and record lengths to document the information. After, store samples under pressure in order to keep them from decaying. Finally, determine which wine is in a more biodiverse region. After identifying, collecting, and documenting the specimen obtain small amount of specimen and place in labeled tube. Than, keep rest of specimen for taxonomic research and add lysis solution to break down membranes. Grind specimen with a pestle for 1-2 min. and incubate for 10 min. at 65 degrees celsius.
2. Centrifuge and transfer supernatant into a fresh tube (supernatant contains the DNA). Than, add silica resin which bind to DNA and Incubate for 5 min.
3. Centrifuge and remove supernatant because DNA is in pellet. After, add wash buffer and centrifuge to remove DNA from Resin and add disturbed water.
4. Incubate and centrifuge to save supernatant and transfer to clean tube. Finally, store at -20 degrees celsius. After, isolating the DNA and primers, polymerase, and nucleotides to extracted DNA. Than denature DNA to unzip it and anneal DNA: primers attach to targeted sequence. Finally add the extension: DNA is amplified. After, amplifying the DNA pour the agarose gel and let solidify. Than, put into electrophoresis chamber and add electrophoresis buffer which conducts the current load the DNA. Connect current run for 30 min. and check for presence of DNA using UV light. This is the final step for sequencing and analysing the DNA

DATA



Photo #1

This Photo shows what we believe is the oriental Bittersweet. Taxonomic guides confirmed this for us put due to the failed electrophoresis this could have been the american Bittersweet a close relative of the oriental.



Photo #2

This unidentified plant is an example of one of the plants near the vines we were trying to compare to determine the biodiversity near each.

DATA ANALYSIS

A total of seven plants were collected from the Massapequa Preserve and from around different vines from the preserve. The first gelelektrophorese trial the bars did not show because the Only one of the sequences did not work and was inconclusive for the data. The new results that were received shows data that is show us a probably genus but however the samples were not easily compared because we weren't sure what all of the samples were.

CONCLUSION

In this project we found that even though oriental bittersweet is an invasive species and dose in fact exist in the massapequa preserve it is not as common as we had once thought. After we had found limited samples of oriental bittersweet that we could identify based on appearance alone we used the lab technique of gellelercoferese to to determine whether or not the other vine samples that we collected were in fact either the same or closely related to oriental bittersweet from this we also determined that oriental bittersweet was not very common in the preserv that we tested but unfortunately we did not have enough time to test other areas but we can infer that they would have the same average population of oriental bittersweet if we were to test them as well because the biodiversity of most of the preserves in massapequa is similar and the amount of oriental bittersweet that the ecosystem can support would be about the same.

We wanted to test and prove our hypothesis by comparing the samples we collected. Unfortunately when we attempted to do gelelektrophorese none of the samples showed any results and this same thing happened each time. However this problem did not only happen to us, none of the group our class got any useable data. This could because the gel was not dense enough or we made a mistake while preparing the samples. Overall however the process we went though was interesting and I would be glad to continue with this in the future.

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