



# A Biodiversity Study of Plants at Fuchs Pond Preserve Using DNA Barcoding

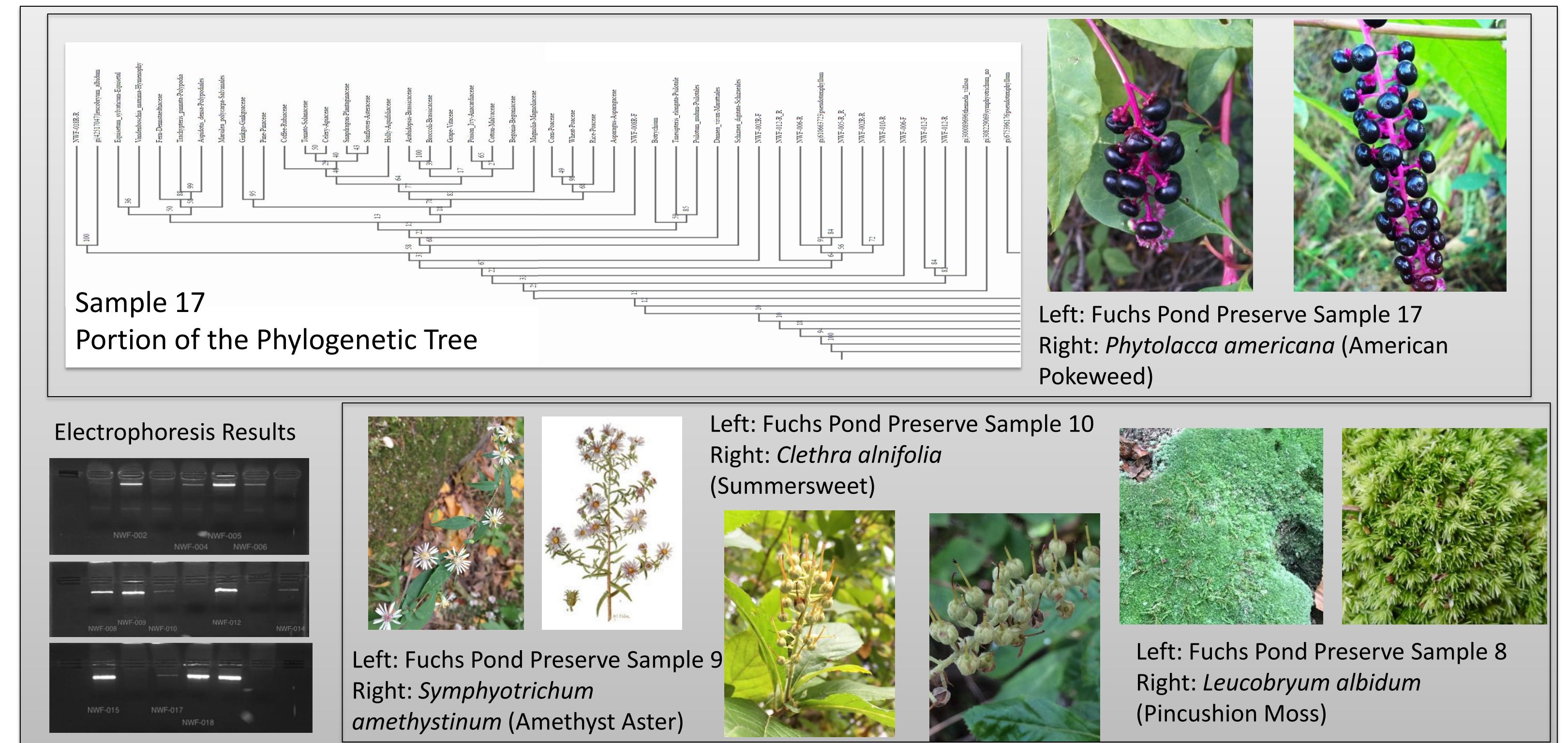


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## Abstract

During our hiking experiences through Fuchs Pond Preserve as counselors at a marine camp for children, we often noticed unique plants and saw some children acquire rashes. This led us to hypothesize that the preserve contains invasive and poisonous plant species. Following the Barcode LI DNA analysis process, we performed DNA isolation with PCR amplification and electrophoresis on samples collected in the Preserve. Through the DNA subway system we were able to confidently match 6 of our specimen with certainty. Overall, we successfully discovered 1 of our samples to be highly dangerous and found that 5 other samples were non-invasive.



## Introduction

Determined to discover more about our frequently hiked terrain which could help us educate future campers and avoid possibly dangerous specimen, we arrived at the research question, what kind of unique plant species reside in Fuchs Pond Preserve?

## Materials & Methods



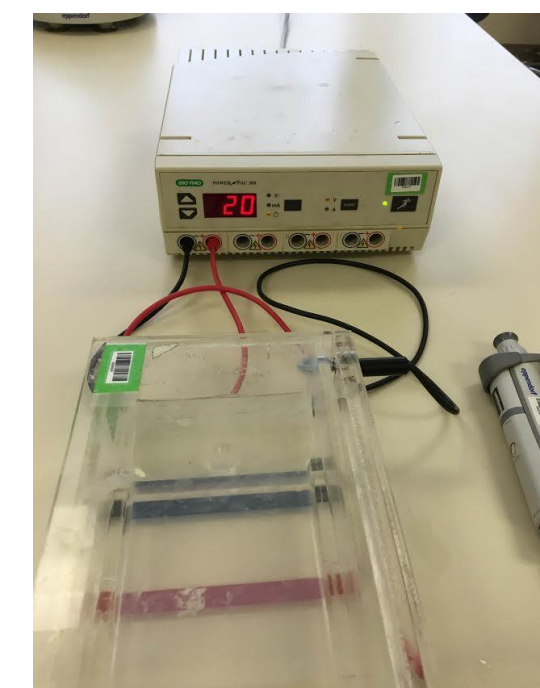
Collected 18 plant samples from the Preserve



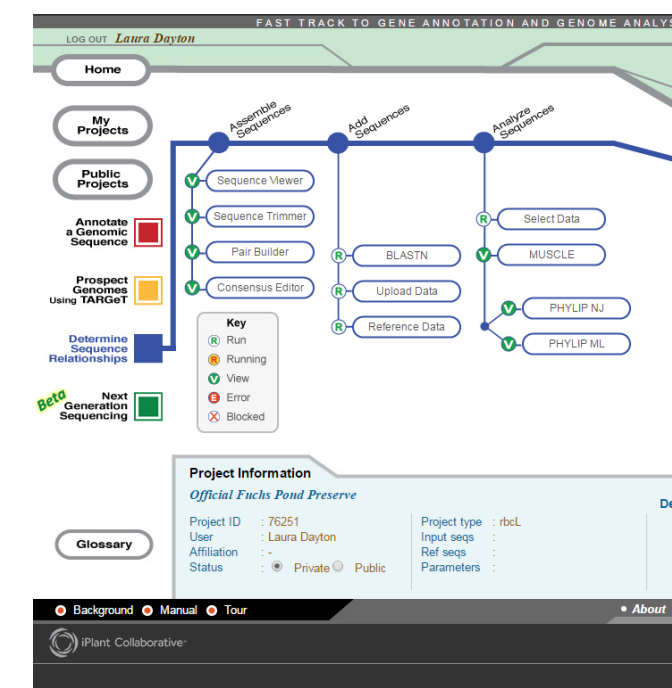
Isolated DNA from samples using centrifuge



Amplified DNA by PCR in thermal cycler



Analyzed PCR products by gel electrophoresis



Sequenced PCR products and analyzed results using bioinformatics

## Results

Through the DNA subway system we were able to confidently match 6 of our specimen with certainty both to the genus and species level. These samples matched up with very low mismatch values and findings were confirmed with photos.

## Discussion

- Our motivation for this project was to identify certain species located along the nature trails that we hike during the summer as counselors at Sea Stars Marine Camp, as children are exposed to these potentially harmful plants throughout the entire summer. Identifying certain species would be beneficial in educating our campers.
We identified our sample NWF-017 as American Pokeweed. Although this wasn't a new species in the database, we discovered that it is toxic with high health risks. Now, we can advise campers to avoid this plant on the trails. We found that our other 5 samples were species native to North America, especially in marshy/ swampy areas. This is consistent to what would've been expected due to the marshy location of the trails we collected our samples from, showing us they are non-invasive.

## References

- O'brien, William. "Fuchs Pond Preserve." Crab Meadow News. N.p., 16 Mar. 2011. Web. 05 June 2016.
"NPIN: Native Plant Database." Lady Bird Johnson Wildflower Center. N.p., n.d. Web. 05 June 2016.

## Acknowledgements

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