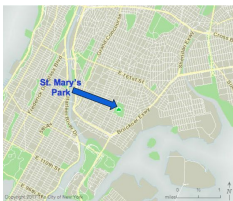


Investigation of Invasive Species in St. Mary's Park

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Abstract

This project was carried out using DNA barcoding to investigate, identify, and document the multitude of plant life found in St. Mary's Park, located in the South Bronx. We set out to identify possible species of invasive species in the park, and any non-native species.



Introduction

Our hypothesis is that we will be able to identify some plant species that are not native to the NY environment, not purposefully planted by the NY Parks Department, and present in the park due to the large immigrant population here in the South Bronx. The majority of the immigrant populations in our community are from African and Caribbean countries, and we are hoping to identify at least one plant species from these origins.



Materials & Methods

All samples were collected in the months of September, October, November from St. Mary's Park. A permit for sample collection was obtained from the NYC Parks Department. Samples were stored in ziploc bags, labeled with the GPS coordinates of where the sample was collected, and stored in a freezer. The standard DNA extraction method was utilized, using footlocker materials for the Cold Spring Harbor Laboratory PCR DNA extraction protocol lent out by the Harlem DNA Learning Center. Samples from the DNA extraction were mailed to a lab for sequencing. Results from those DNA sequences were analyzed using DNA Subway.

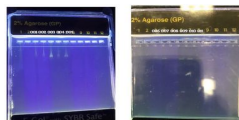
Results

We found a non-native species called *Celastrus paniculatus*, commonly referred to as "the Intellect plant", Malkangni, or Jyotishmati. It comes from India, and is used for ayurvedic cognitive medicine.



- ❖ Black oil made from seeds
- ❖ Seeds possess emetic, diaphoretic, febrifugal, antioxidant, hypolipidemic and nerve properties
- ❖ Oil used to treat joint pain, paralysis, rheumatism, arthritis, support memory
- ❖ Facial cleanser
- ❖ Powerful tranquilizer
- ❖ Seeds are bitter and emit unpleasant odor
- ❖ Leaves have wound-healing properties

Tables and Figures



Accession	Image	Species	Date	Origin of collection (if available)	Notes
KRA-001		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.
KRA-002		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.
KRA-003		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.
KRA-004		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.
KRA-005		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.
KRA-006		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.
KRA-007		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.
KRA-008		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.
KRA-009		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.
KRA-010		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.
KRA-011		<i>Urtica dioica</i>	February 3, 2017	United States, New York State, Westchester County, New York	Native, non-invasive, herbaceous, biennial, perennial, stinging nettle, common, widespread.

Database	DNA Subway Results
KRA-001	
KRA-002	
KRA-003	
KRA-004	
KRA-006	
KRA-007	
KRA-008	
KRA-009	
KRA-010	
KRA-011	

Discussion

Celastrus paniculatus is a plant that is non-native to New York City, or to North America. The plant may have appeared in St. Mary's Park as a result of anthropogenic activity from the Southeast Asian community, who have mostly migrated to Bronx areas like Kingsbridge Heights, Fordham Heights, and University Heights.

Our data also revealed the invasive species *Taraxacum officinale*, or the common dandelion, to be present in St. Mary's Park. All other plants sampled were native and non-invasive plants. Samples KRA-007 and KRA-010 could represent species that have not yet been catalogued, with 12 mismatches each, and bit scores of 987 and 994 respectively.

References

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Acknowledgements

We would like to thank Cold Spring Harbor for lending us the equipment that allowed us to conduct this experiment and participate in this Urban Barcoding Project.