

PREVALENCE OF INVASIVE SPECIES IN OLD GROWTH AND NEW GROWTH FORESTS

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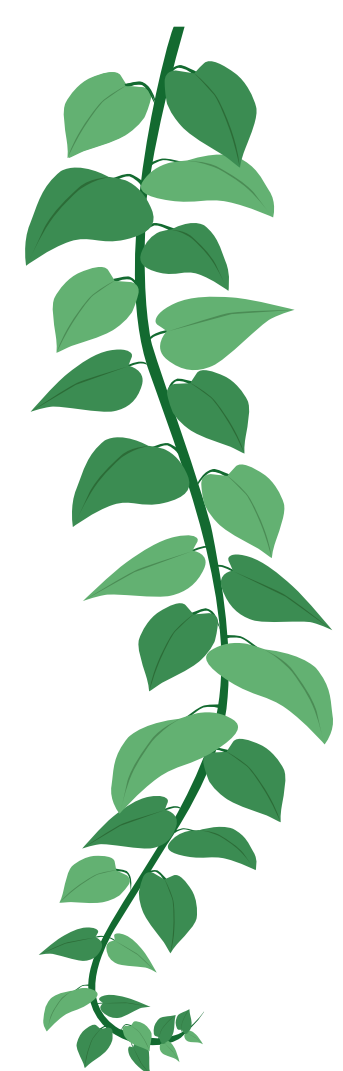
Introduction

- Central Park has become increasingly threatened by invasive plant species which outcompete native vegetation.
- Black Rock Forest (BRF) in Cornwall, NY, hosts invasive species, particularly in high-traffic areas.
- These non-native plants spread rapidly due to human activity, and contribute to ecosystem instability.

Objective

- We seek to understand the diversity and effects of invasive species in Central Park's plants compared to those in Black Rock Forest.
- We hope to uncover the invasive species that are harming the native species in New York parks.
- We seek to understand how the surrounding environment plays a role in the spread of invasive species.

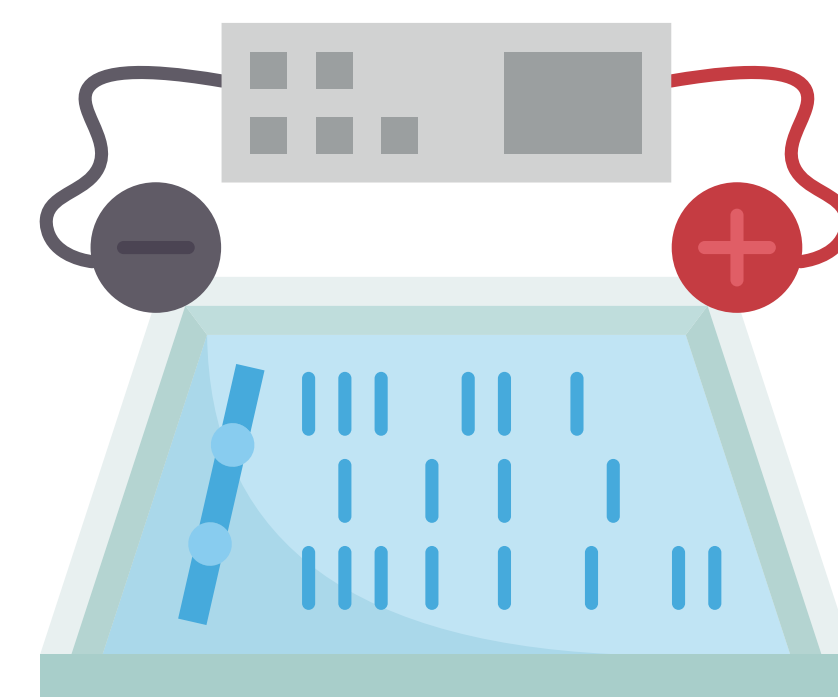
Methods



- 1 We surveyed BRF and Central Park and collected 1 leaf from 15 different plants in each area, focusing on areas in the forest that face increased foot traffic and human activity.
- 2 We extracted DNA from each leaf using the silica DNA extraction protocol provided by the DNA Learning Center.
- 3 Using DNA Subway, we processed the DNA sequences and ran them through the BLAST database for species identification, determining if they're invasive or not.

BLAST

DNA Subway²⁰



Results

Central Park:
11.1% of collected species were native
88.9% were invasive

Black Rock Forest:
22.2% were native
66.7% were invasive
11.1% were inconclusive

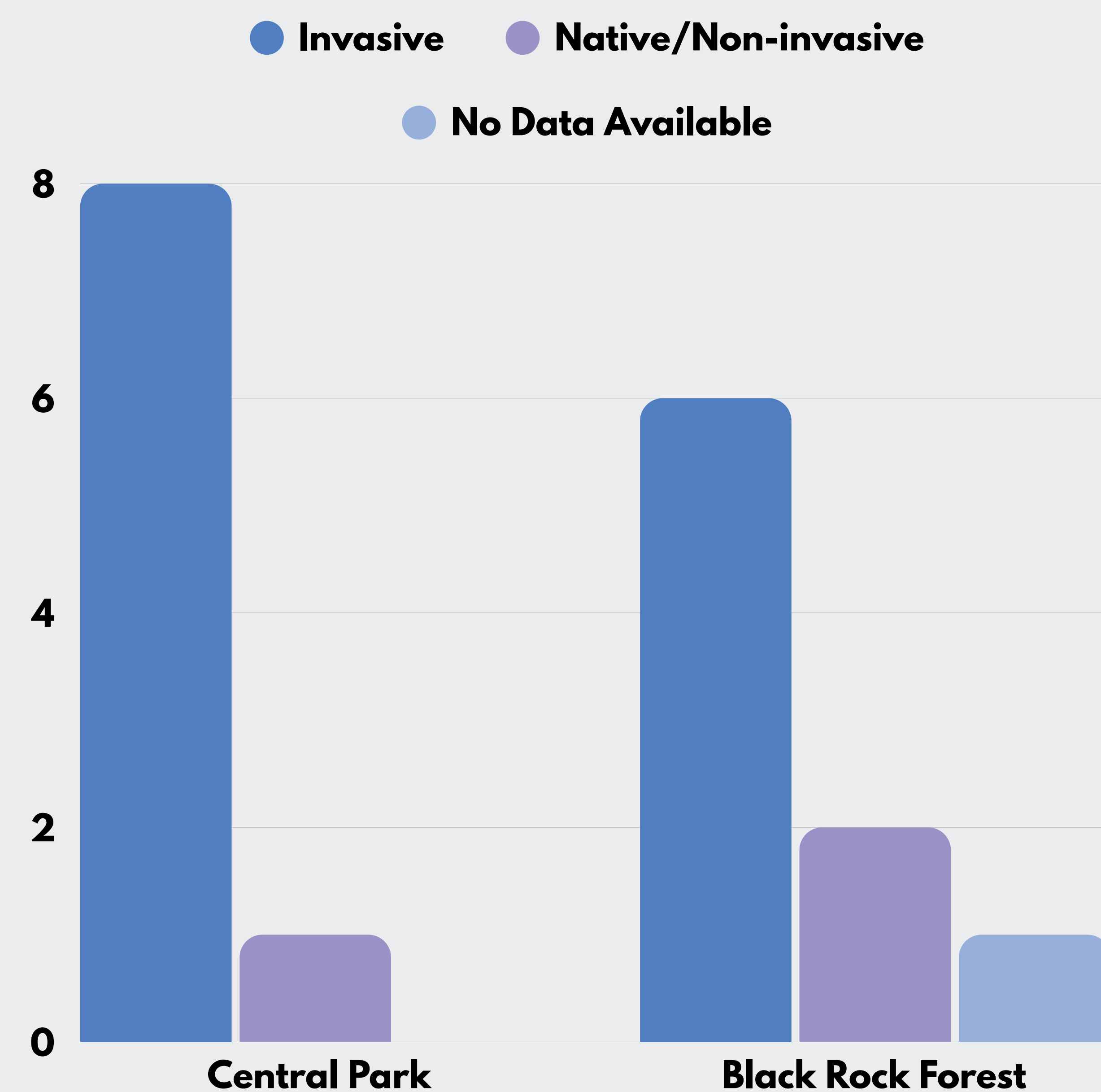


Figure 1. Bar graph detailing presence of invasive, native, and neither invasive nor native species in Central Park and Black Rock Forest (BRF) based on the samples collected from both locations. The results of DNA barcoding for the plants were cross referenced with the New York State Invasive Species Tiers list to determine whether or not they are invasive.

Discussion

Black Rock Forest has a lower prevalence of invasive species compared to Central Park.

- The majority of the collected species in Black Rock Forest were invasive, demonstrating how invasive species endanger native species not only in urban areas, but also in old growth forests.
- Black Rock Forest has less foot traffic, though invasive species can still spread through visitors and researchers.
- This comparison shows that human activity plays a major role in the spread of invasive species. Human disturbance can disrupt plant habitats and introduce seeds into new areas, promoting invasive plant growth.
- Central Park's constant use and high traffic make it more likely to have invasive species than Black Rock Forest.
- The higher number of invasive species in Central Park may be explained by heavy foot traffic (walking and biking), which spreads seeds.
- So what?
 - Managing human activity could help reduce invasive species.
 - Protecting less-disturbed environments is important for preserving native ecosystems.

Future Research

- Further studying the ways that invasive species interact in their environment and how different invasive species influence native plants differently.
- Comparing the prevalence of invasive and native species in both locations in different years to understand how the prevalence of invasive species changes (if at all) across time.

Key Sources & Acknowledgements

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