

New York Botanical Gardens

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DATA SNIPERS

The Team



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Overview

- Thain Family Forest at New York Botanical Garden (NYBG) is located in Bronx, New York (**Co-ordinates: 40.8644° N, 73.8757° W**)
- The 50 - acre forest was founded in 1895. The forest is one of the largest old-growth forest



Project objectives

- To understand the nature of the growth of the forest
- To determine how the growth of Invasive species over the years has impacted the overall growth of the forest
- To determine how management efforts have made any changes in the process of Forest Restoration

Data Sources and How we used it (1/2)

Comprehensive Species Tally

Data pointing to the species that were observed in the surveys conducted during the years - 1937, 2002, 2006, 2011 and 2016.

Species Inventory

Species Inventory covers the number of plants recorded by the survey years. The sheet records the details such as Scientific & Common Names as well as Plant Feature Type (Herb, Shrub, Tree, etc.)

Data Sources and How we used it (2/2)

Forest Management

Data pointing to the number of hours put into the Forest Management Efforts over years by Volunteers/Staff (Invasive plant management, Trail Maintenance, Restoration Planting, Pesticide applications)

Forest Restoration Planting

Data pointing to the restoration initiatives since 2007 till 2018 that provided information on Quantity, Species, Plant Type (Herb, Shrub, Tree), Height, Location, Grid, Date Planted

Who should care

- Employees , volunteers and patrons of New York Botanical Garden
- Citizens of United States

Understanding the problem

Question 1

How has the species composition changed over the years (Native, Non-native, Invasive)?

Question 2

How has the management efforts changed over the years?

Question 3

How has the restoration programs impacted with the help of volunteers and staff?

Question 1:

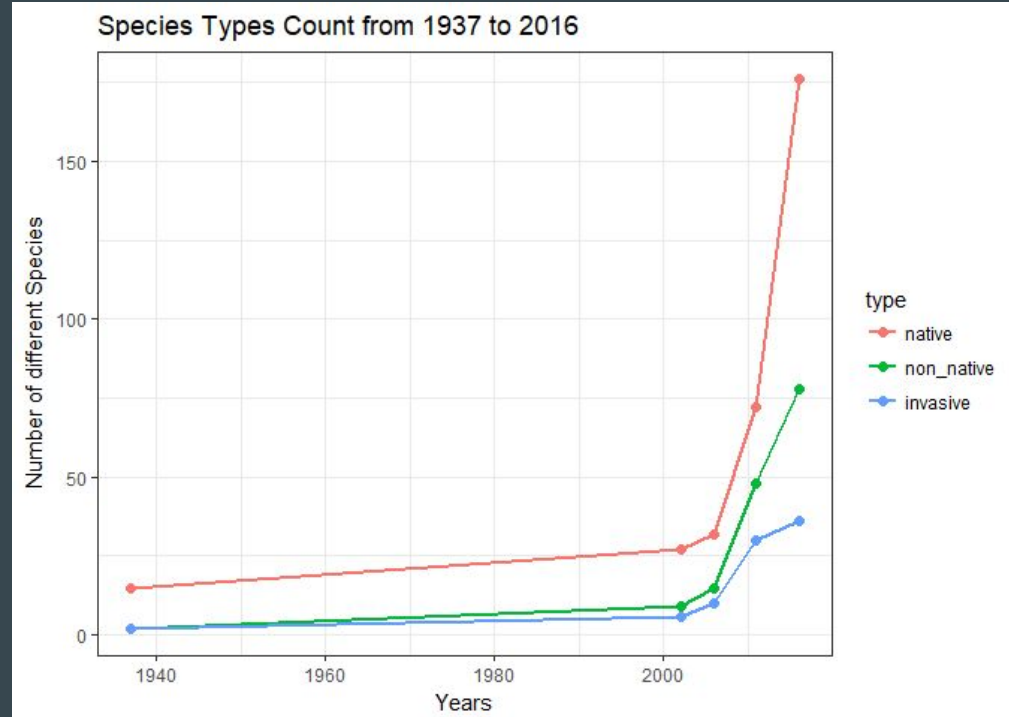
How has the species composition changed over the years (Native, Non-native, Invasive)

Species Composition (1/3)

Findings

The number of native, non-native and invasive species have increased drastically from 1937 to 2016.

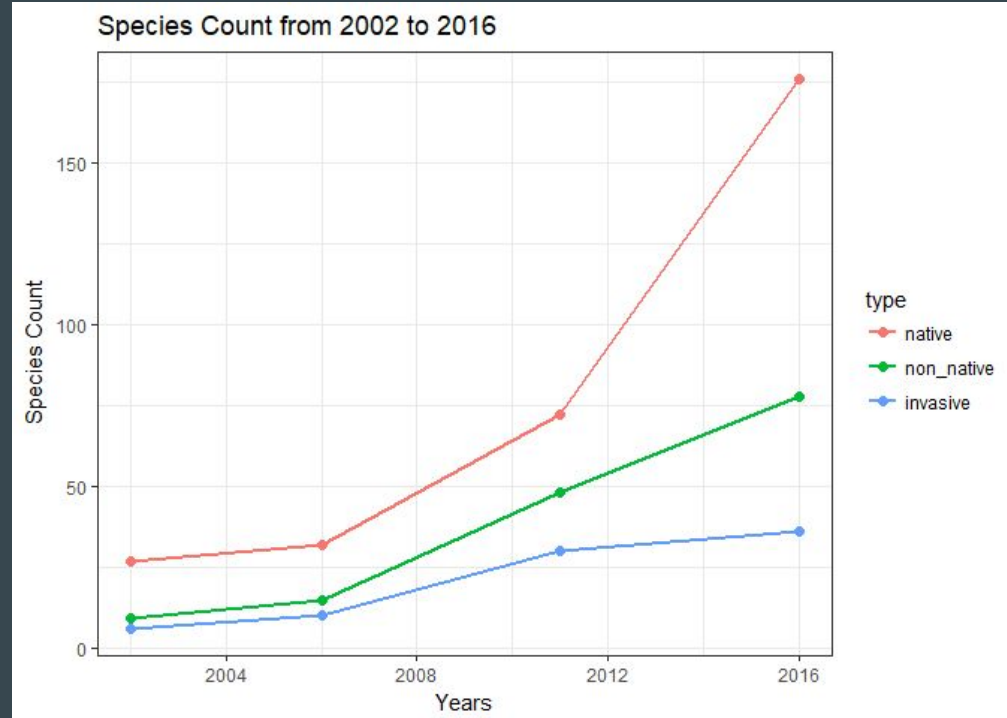
It would be wiser to analyze the growth pattern after 2002, from where the data is more frequent.



Species Composition (2/3)

From 2002 to 2016

The growth of native species is more pronounced. While there is a consistent growth in number of non-native species, the growth rate of invasive species seems to have decreased after 2012.

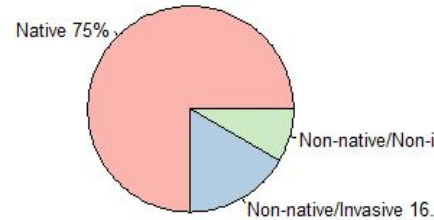


Species Composition (3/3)

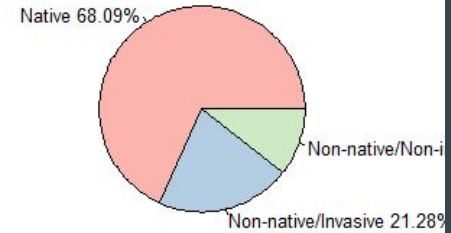
If we analyze the percentage change over the years, we can see that even though the overall count of species found have increased for all three - native, non-native and invasive, the percentage change is not very pronounced.

Although, the forest has diversified in all the three types, the invasive species types have decreased from 25% in 2011 to 14% in 2016.

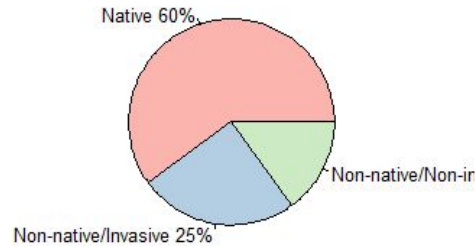
Percentage of species type in 2002



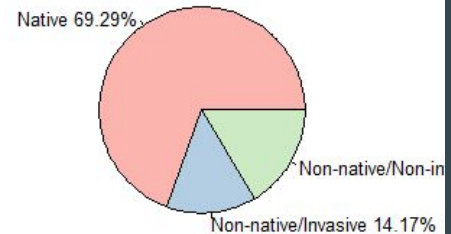
Percentage of species type in 2006



Percentage of species type in 2011



Percentage of species type in 2016

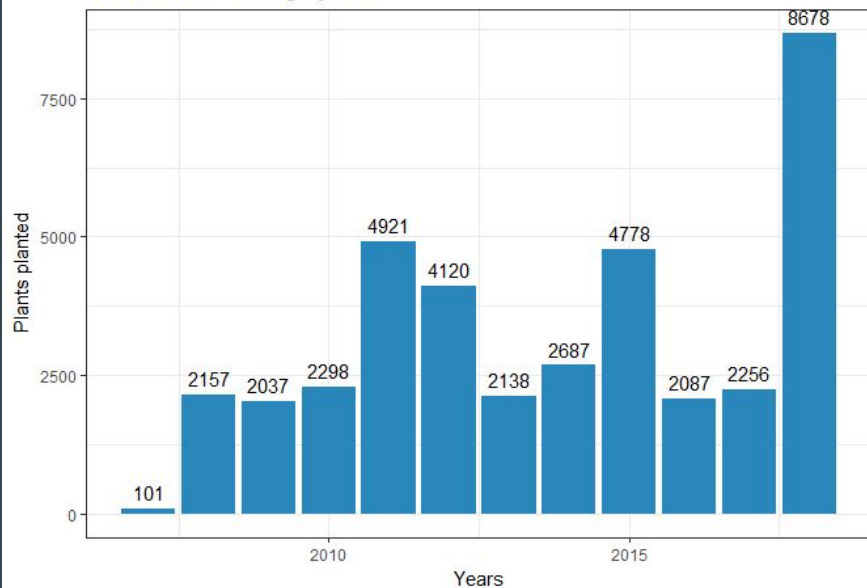


Question 2:

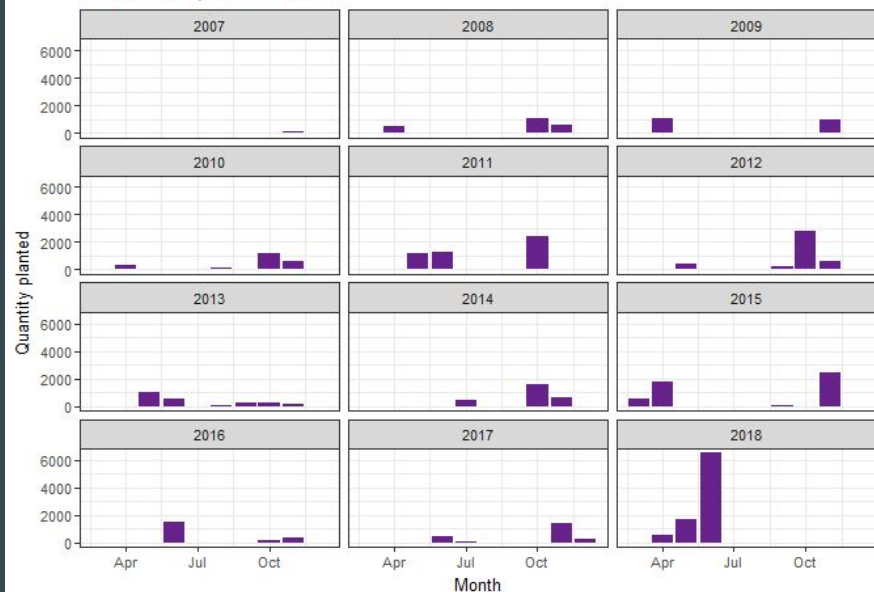
How has the management efforts changed over the years?

Restoration Planting

Restoration Planting by Years

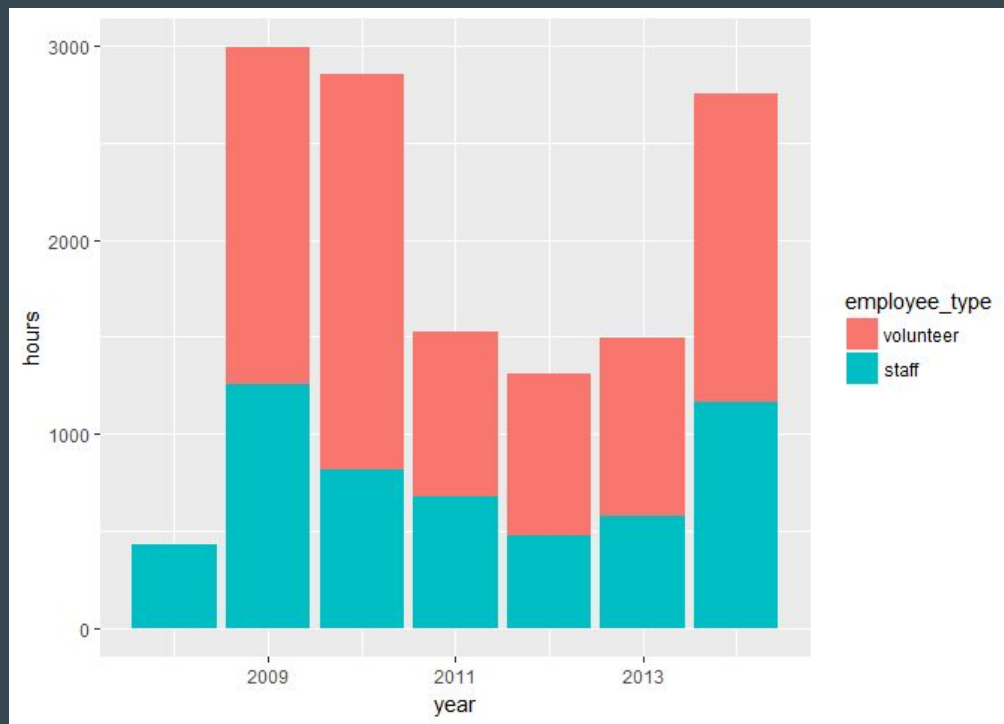


Plantations by Months/Year



Invasive Plant Management

The trend in the hours spent for invasive plant management does not tell us a lot, given that the data is only available from 2008 to 2014.



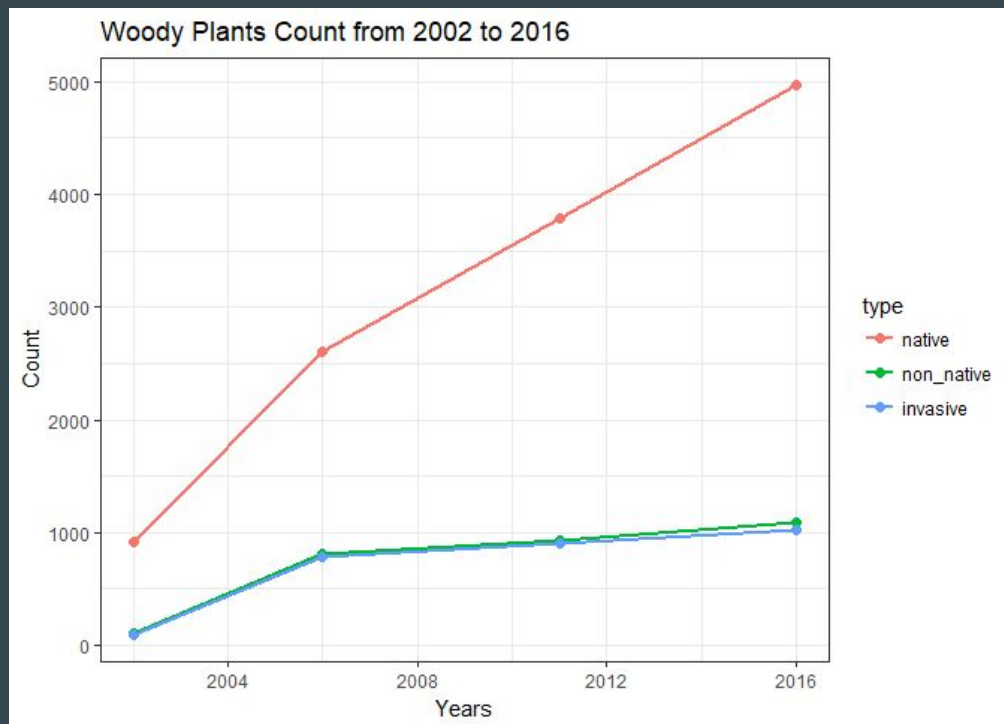
Question 3:

**How has the restoration
programs impacted with the help
of volunteers and staff?**

Forest Composition

As per the Woody Plant survey, the number of native plants has increased drastically over the last decade.

The non-native and invasive plants have recorded a very limited growth.



From 2002-2016

The number of native species has increased by

652%

From 2012-2016

The percentage of invasive species has decreased from

25% to 14%

Decision that can be made

Control Invasive Species Types

In 2002 - 16% of species were Invasive compared to 14% in 2016

Restoration Planting is making a difference

The number of plantings have increased by 394% from 2017 to 2018. The efforts have made great difference in the count of native species, which has been increasing consistently since 2002.

Conclusion

Recap

Attempt to establish a correlation with the forest management efforts, restoration planting and inventory data

Findings

The data points analyzed led us to conclude the restoration planting is making a significantly positive impact to the overall forest ecosystem

Area of opportunities

NYGB has gathered some GIS data related to plots and transects. Our suggestion for the future is to attempt to overlay and correlate it with the other data points provided.