

## INTRODUCTION

**Understanding our local environment** is best done through hands-on experiences in the field. There are many different aspects to understanding and influencing our environment and these are always changing, especially with the prominence of climate change in today's world.

It is important that we first observe what is needed or will be effective for the particular place that we are trying to influence. When determining what action should be taken in a specific environment, the two most important factors to consider are **preservation** and **adaptation**.

When observing the different aspects of an ecosystem one must take into account the influences on the environment from the past and compare that to other places with similar features and characteristics.

From there, a plan of action that utilizes the information and data that has been collected should be constructed. Ultimately, this plan will continue to protect the environment as it had been before the intervention and work on fostering growth and prosperity for the future of that ecosystem.



Removing the invasive species, Japanese Barberry, with a shovel



Sprinkling native flower seeds in an area filled with non-native flower species



## REINTRODUCTION OF NATIVE PLANTS

It was brought to our attention that a piece of land in Woodstock, CT known as the Roseland Park Reflection Garden, was facing some **issues with non-native plants**. A few years ago, this garden was the project of an Eagle Scout and the flowers that he chose to plant there were all non-native to the environment.

The problem presented with this is that they have no function for local wildlife, meaning that they don't supply food or shelter to the animals and insects that used to occupy this space.

To combat this, we sprinkled the seeds of a wide variety of native flowers in order to encourage the reintroduction of some of the wildlife that was once present and create a habitat that will be sustainable for them in future years.

## THE GOAL

The goal of this project was to expose ourselves to a variety of different aspects of nature and develop explanations and solutions for the phenomena we witnessed.

We explored four different natural occurrences and discussed the best approaches for addressing them. These four areas of focus were **adaptations** of plant species, **removal** of invasive species, **reintroduction** of native plants, and **introduction** of plants for human enjoyment/usage.

## REMOVAL OF INVASIVE SPECIES

### Japanese Stiltgrass

It was noted that an invasive species of grass known as Japanese stiltgrass was growing rapidly on the sides of a dirt driveway in Woodstock, CT. This grass:

- is not native to the Americas;
- prevents native species from being able to occupy the space that it is in;
- thrives in a wide variety of habitats; and does best in levels of low light.



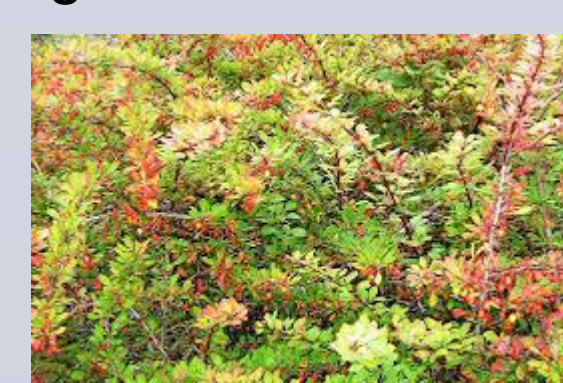
The roots of Japanese stiltgrass are very short and thin, meaning that it is only loosely rooted in the ground and can be easily removed. Knowing that, we decided to test a variety of tools to see which made removal the easiest. We tested a sickle, a scythe, a hand-weeder and simply pulling the grass up by hand. In the end, we found the hand-weeder to be most effective for removal as it was able to grab on the grass and rip it out with ease. However, the grass has spread so much in this area that removal of all of it was almost impossible. The information we obtained would definitely be useful for those who are burdened by the presence of Japanese stiltgrass.

### Japanese Barberry

Another invasive plant species was causing a disturbance at a privately owned property in Woodstock, CT. This invasive species, Japanese Barberry, is unwanted because it takes up space and resources that another native plants could be utilizing instead.

We were tasked with finding the best way to remove this plant and decided that the most effective way was to use a shovel and pull the roots up. This proved to be a difficult task because the plant is covered in thorns. To overcome this obstacle we used a pair of loppers to cut the branches with thorns and then we were able to pull the plant up.

After we cleared out a large area we sprinkled the seeds of a beautiful native red flower to ensure that the Japanese Barberry would not reappear. Similar to the Japanese stiltgrass, we were unable to remove all of the Japanese Barberry that was present in that area, however we made remarkable progress and reintroduced some native species while ridding a few areas of the property from invasive ones.

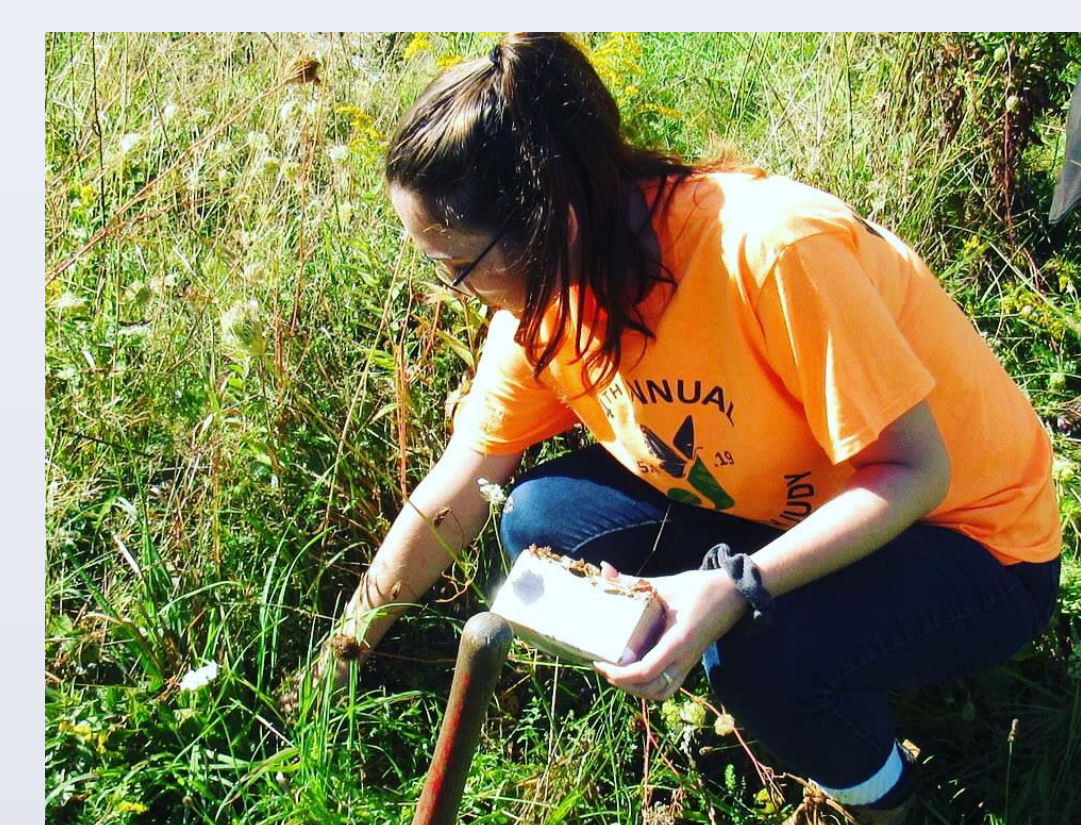


## ADAPTATIONS OF PLANT SPECIES

For our first project, we focused on **oak trees** located on the New Roxbury Land Trust in Union, CT. This area of the country has oak trees all around and for many years they were thriving. However, as of relatively recently our climate and ecosystems have changed to a point where plants that have been here for hundreds of years are **no longer thriving** like they used to.

In this particular case, it was observed that the oak trees in this area were not responding to the climate that is changing and becoming more like that of the Midwest, meaning that there are bitter cold winters and brutally warm summers.

That is why we decided to plant Burr Oak acorns which come from that area of the country. These acorns are extremely resilient to temperature change which allows us to be hopeful that they will thrive in this environment. We will be able to see if our prediction for this particular area is true, in about a year when the trees begin to grow or fail to do so.



Planting Burr oak trees in an open field in Union, to provide future shade and habitats to wildlife

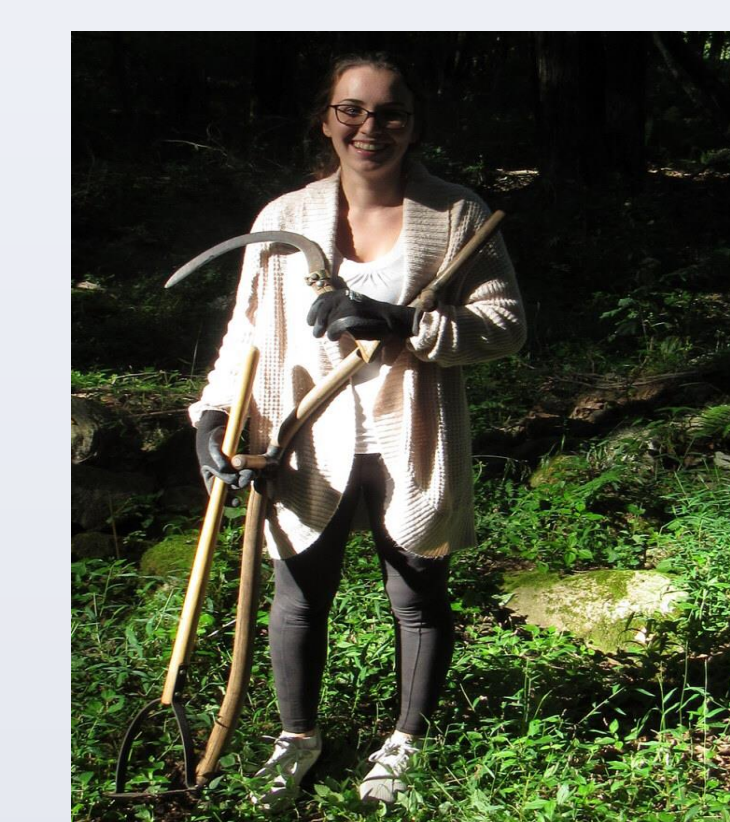


## INTRODUCING PLANTS FOR HUMAN ENJOYMENT/ USAGE

The owners of a property known as "The Fen" in Woodstock, CT were looking for a way to indicate the driving/walking path on their property so that it was very clear where people should be traveling. We thought that an interesting idea would be to plant purple **cone flowers** around the outer edges of the path. Not only are they beautiful but they are also great tools to indicate where people can walk and drive, as they almost act like traffic cones. We felt that this was extremely important for the owners' property enjoyment and usage. The environment around the cone flowers was left relatively untouched for more accuracy when studying or examining it.



Planting cone flowers to indicate a driving/walking pathway on a private property



Holding a variety of tools that were tested to remove Japanese stiltgrass



## CONCLUSION

- By exploring our natural environment, we were able to identify potential or prominent issues and **craft solutions** to them that will hopefully be effective. Many of projects will not truly yield results for some time however. From prior knowledge and experience, we have reason to believe that our experiments will be successful and benefit the environment.
- The Burr oak trees that we **planted** are predicted to grow and thrive in the climate to which they were introduced.
- The **removal** of both the Japanese stiltgrass and Japanese barberry should allow for more native plant species to occupy the environment that they were in, which will prevent the reintroduction of these invasive species.
- The **reintroduction** of native flowers in the reflection garden will likely improve the natural environment of that area and allow us to see a rise in native animals occupying this area.
- The **planting** of the cone flowers will allow the owners of the property to indicate where their walking/driving paths are, which will hopefully allow them to maintain the integrity of their property while still enjoying it.

## ACKNOWLEDGMENTS

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