

The Role of Pollinator Plants in the Improvement of a Restored Site



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INTRODUCTION

In September 2012, the Landscape and Arboretum Committee (LAC) at Housatonic Valley Regional High School (HVRHS) formed to address invasive species management on campus. The committee, composed of local ecologists and invasive species management specialists, began restoration of the north campus plot (Fig 1; Fig 3). Initial tasks included site mapping and invasive species identification and management. Following the initial restoration efforts, other professionals became involved in the project.

In August 2017, a team of entomologists from the Connecticut Ag Experiment Station (New Haven, CT) completed a survey of bee species at the site. The results of the survey showed that the site provided habitat for 19 species of bees representing five out of six bee families native to North America. As a result of the survey, the committee determined that the site should include a faux meadow to increase pollinator presence on HVRHS campus.

The focus of this project was to work closely with the LAC to design the faux meadow as the beginning phase of the restoration efforts. Instead of a traditional meadow, the goal of the faux meadow was to evenly distribute plants throughout the site, taking into account appropriate soil types and pollen preferences for the bee families that were observed at the site.

Our goal is that the faux meadow will provide an excellent opportunity to educate HVRHS students on the importance of attracting pollinators to restored land.



Fig 1. The faux meadow in 2013 before the full restoration of the site (top); the faux meadow in 2017 with restoration still in progress (bottom).

UTILIZING EXISTING BEE DATA

- In August 2017, Dr. Kim Stoner and other volunteers monitored various flowering plants and bee traps to determine the distribution of bee families and species present on the North Campus Restoration Site at HVRHS
- Utilizing this data set (kindly provided by Dr. Stoner), the feeding preferences for bee families found at the HVRHS site were investigated and determined (Rhen et. al 2017)
- The feeding preferences were taken into account when deciding what plants to use in the faux meadow (Fig 2; Fig 4)
- Our research showed that bees in the Adrenidae, Halictidae, Apidae, and Colletidae families had similar feeding preferences, while Megachilidae had differing preferences

Bee Family	Golden Rod	Butterfly Weed	Smooth Oxeye	Common Birdfoot Trefoil	Black eyed susan
Andrenidae					
Halictidae					
Megachilidae					
Apidae					
Colletidae					

Fig 2. This heat chart shows the preferences for each bee family; pink shading in a box represents a feeding preference for the associate plant.

DESIGNING THE FAUX MEADOW

- Once the bee family plant preferences were determined, we could begin designing the faux meadow
- Photos from HVRHS Site Management were provided for reference of the land and important features to design around, and Mr. Tom Zetterstrom generously provided soil photos of the site
- Then, qualities, drainage type, and precipitation of each soil type were researched to help determine where plants would thrive best in each soil type
- Each colored dot represents 5 plants to be planted in a given location (Fig 3-4)



Fig 3. Aerial view of the faux meadow site. Depiction of the soil types present in the faux meadow area (left); suggested location of plants based on soil requirements and distribution of soil types in the faux meadow. See Fig. 4 for legend.

INTERPRETING THE FAUX MEADOW PLANS

Key	Soil Type
22B	Hero Gravelly Loam
31B	Copake Fine Sandy Loam
39E	Groton Gravelly Sandy Loam

Color	Plant
Black	Black Eyed Susan
Purple	Butterfly Weed
Cyan	Smooth Oxeye
Yellow	Canadian Golden Rod
Red	Birds-Foot Trefoil

Fig 4. Legend for interpreting the faux meadow landscape plan: soil types (left) and plant types (right).

CONCLUSIONS

When creating this landscape management plan, we utilized data on existing bee families and soil types. It's important to note that regardless of the type of bee species, they will likely be attracted to and pollinate plants within the faux meadow. In the future, the hope would be to have the site spark conversation on pollinators' role on managed land that would generate ideas involving pollinators.

If the faux meadow plans are utilized at the site, I would recommend a yearly monitoring of the pollinators and species that are observed in the faux meadow. These data could then contribute to an analysis of biodiversity in the faux meadow each year.

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