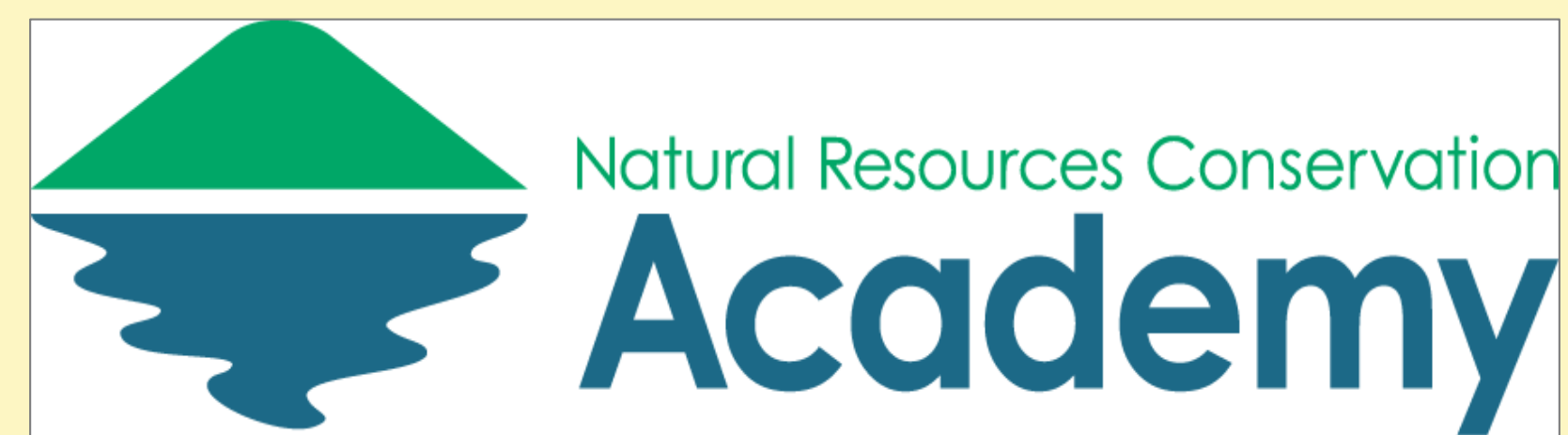


Educating Middle and High School Students About the Importance of Bees



NRCA Student: Tamara Cheriha¹
Community Partner: Amy Coan¹
¹East Catholic High School



SUMMARY

Bee populations are declining throughout the world. Without bees, over one third of our crops would suffer from productivity, threatening the agricultural systems we rely on for food. Resolving the issues surrounding declining bee populations is very complex, but environmental education of the next generation of environmentally-informed citizens is one action that we can do that is essential to bee conservation. With that in mind, I educated middle school and high school students about the importance of bees as pollinators and threats they face. Also, I worked with these students to help bee conservation efforts by planting a bee garden at my high school and at a local middle school.

I found that many students were uninformed about threats to bees and the societal effects of bees going extinct. As a result, most students were initially afraid of bees and actively killed them. Following my classroom activity, many students were interested in helping with bee conservation. Building the bee gardens proved to be an effective activity to demonstrate that anyone can help with local bee conservation efforts.

BEE ENVIRONMENTAL EDUCATION

WHAT I DID

- For part of my project I wanted to educate younger students about the threats to bees and why conservation is so important for this key taxa.
- I contacted local middle schools, and planned my classroom visit to St. Paul Middle School in Kensington, CT on October 25, 2016.
- During my classroom lesson, I taught (Fig. 1):
 - What kinds of benefits we get from bees;
 - Why humans rely so much on bees pollination; and
 - How to keep the bee population growing, and what we can do to stop the extinction of bees.
- Planted one bee garden at the middle school.

TAKE-AWAYS

- Many of the middle school students did not know the importance of bees, but quickly learned how we depend on them for pollination of our crops.
- Once I taught them, many were very determined to help with bee conservation by planting bee gardens.



Fig 1. St. Paul Middle School students participating in an activity on bees.

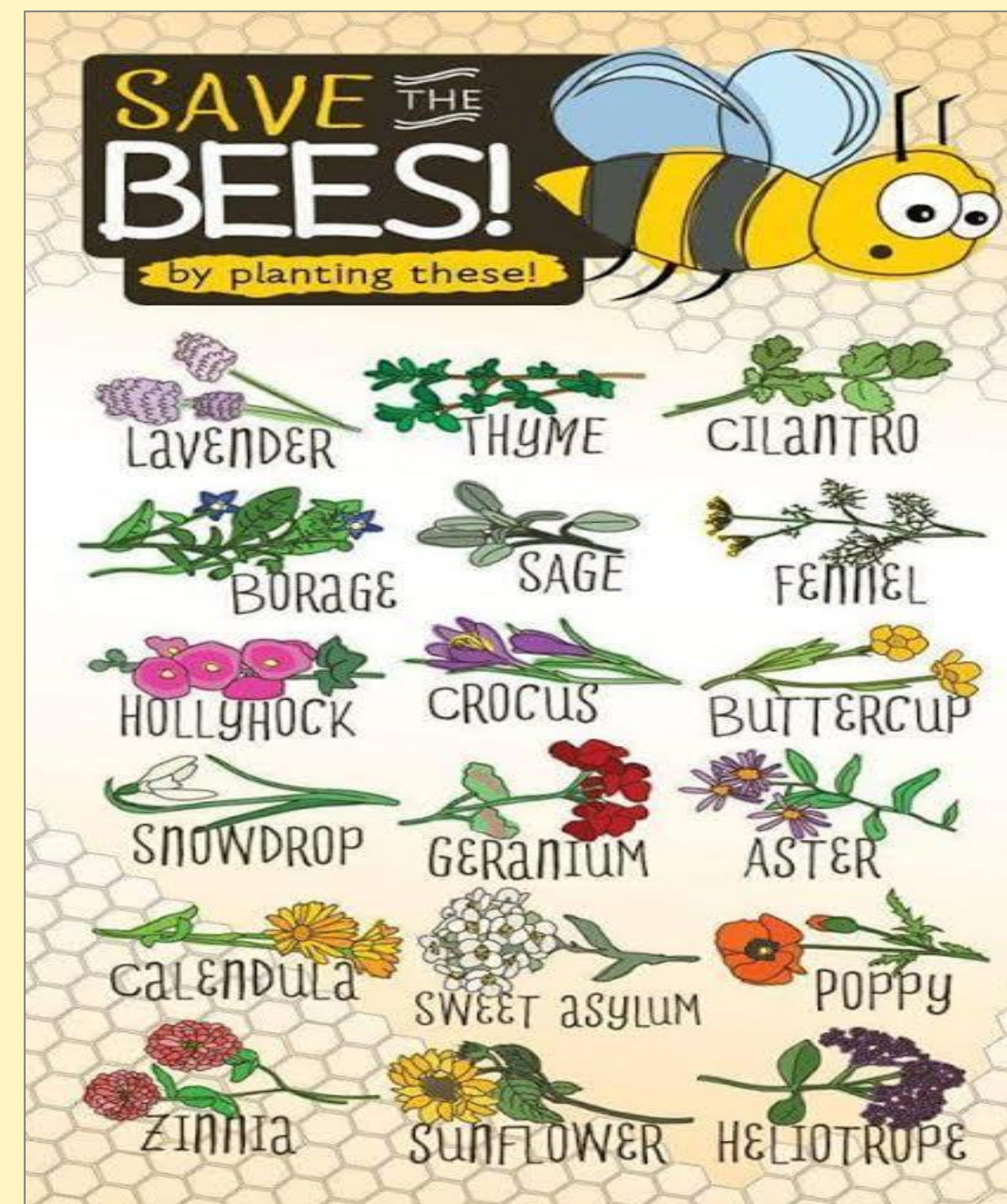


Fig 2. With different student groups, we planted 7 bee gardens at East Catholic High School and St. Paul Middle School. We selected plants that are bee-pollinated, which provides a food source for local bee populations (see infographic in upper left corner). In the above photos, we planted and maintained the bee gardens that consisted of Purple Aster.



INTRODUCTION

Bees are one of a myriad of other animals, including birds, bats, beetles, and butterflies, called pollinators. Pollinators transfer pollen from one flower to another, fertilizing the plant so it can grow and produce food. Cross-pollination helps at least 30 percent of the world's crops and 90 percent of our wild plants to thrive (1). Without bees to spread pollen, many plants—including food crops—would not be able to reproduce naturally. In addition, bees keep our economy humming. More than \$15 billion a year in U.S. crops are pollinated by bees, including apples, berries, cantaloupes, cucumbers, alfalfa, and almonds (2). U.S. honey bees also produce about \$150 million in honey annually (3). But fewer bees means the economy takes a hit: the global economic cost of bee decline, including lower crop yields and increased production costs, has been estimated at as high as \$5.7 billion per year (2). Keeping bee populations safe is critical for keeping American tables stocked with high-quality produce and our agriculture sector running smoothly (1).

Alarmingly, bee populations are declining globally (3), but many people are unaware of this and the potential repercussions of the loss of this vital pollinator. My project was a combined effort of educating students on how to help local populations of bees and why as well as engaging students in active conservation of bees via bee gardens.

PLANTING BEE GARDENS

WHAT I DID

- We planted six bee gardens at East Catholic High School in Manchester, CT, and one at St. Paul Middle School in October 2016 (Fig. 2).
- First I researched the types of plants bees are attracted to and selected Purple Aster to plant.
- I identified good spots for the garden, which were in public locations so that other could appreciate the flowering plants and notice the importance of bee pollination.
- I helped with routine watering/maintenance.

TAKE-AWAYS

- Students learned the importance of bees to our survival and nutrition.
- Students and school staff learned how to set up and maintain a bee garden.
- Students learned that bees like different plants in different seasons:
 - Crocus, hyacinth, borage, calendula, and wild lilac are best when bloom in spring.
 - Bees feast on bee balm, cosmos, echinacea, snapdragons foxglove, and hosta in the summer.
 - For fall, zinnias, sedum, asters, witch hazel and goldenrod are late bloomers that will tempt foragers.

ACKNOWLEDGEMENTS

Thank you to Miss. Ellen Devlin, Mrs. Amy Coan, faculty, staff and students of East Catholic High School and St. Paul Middle School, staff of UConn NRCA, maintenance crews at both schools.

REFERENCES

- ¹Tucker, J. 2014. Why bees are important to our planet. One Green Planet. [accessed 1/15/16] <<http://www.onegreenplanet.org/animalsandnature/why-bees-are-important-to-our-planet/>>
- ²CC Pollen Co. 2017. The importance of bees. Bee Pollen. [accessed 2/25/17] <<http://www.bee pollen.com/the-importance-of-bees/>>
- ³McDonnell, T. 2015. Here's why all the bees are dying. Mother Jones. [accessed 2/25/17] <<http://www.motherjones.com/environment/2015/07/climate-change-killing-bumblebees/>>