

Bee Campus USA - University of Michigan-Dearborn

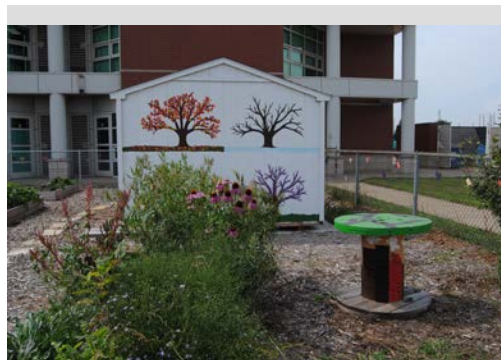
Report on 2020

Pollinator Habitat Creation & Enhancement

Each year, the Environmental Interpretive Center at the University of Michigan-Dearborn maintains and enhances a number of ongoing pollinator-friendly sustainability projects. Such projects collectively include several acres of rain gardens, a prairie garden, a pollinator garden, and an apiary (beeyard), as well as a 300-acre Environmental Study Area, which consists of meadows, upland woods, floodplain beech-maple forest, an old field, a swamp, and other natural habitats. Weedy and/or invasive species, such as buckthorns and honeysuckles, are monitored and actively removed by community and student volunteers, student interns, and EIC staff during monthly Stewardship Saturdays and Adopt-a-Habitat management events. For the past several years, Professor (and Bee Campus USA Chair) David Susko has been designing and helping to install schoolyard gardens as outdoor learning environments at Dearborn Public Schools as part of his role in the Dearborn SHINES Project. This project aims to encourage and improve student health and nutrition through several healthy living initiatives, one of which involves the creation of schoolyard gardens. In 2020, faculty, students, and staff from UM-Dearborn and its collaborators from Wayne State University, managed to install new gardens at eight Dearborn Public Schools, bringing the total number of gardens created via this project to 16 since its inception. Each school garden includes multiple raised beds for growing herbs, fruits and vegetables, a raised bed for pollinator-friendly native plants, and about 6-8 fruit trees (apple or pear) in a mini orchard. Students at these schools are provided with seeds, planting and composting options and instructions, garden lesson plans, and general information about soils, plants, and associated wildlife, like pollinators.



A schoolyard garden is installed at Stout Middle School, one of 8 Dearborn Public Schools gardens built in 2020 as part of UM-Dearborn's involvement in the Dearborn SHINES Project.



The schoolyard garden at Salina Elementary School in Dearborn shows its development in its second year as pollinator plants continue to grow and new garden elements like murals and benches are installed. In the past several years, UM-Dearborn has helped create new gardens at 16 Dearborn Public Schools as part of the Dearborn SHINES Project.



A view of the Environmental Interpretive Center's Pollinator Garden with its Go Blue! Insect Hotel

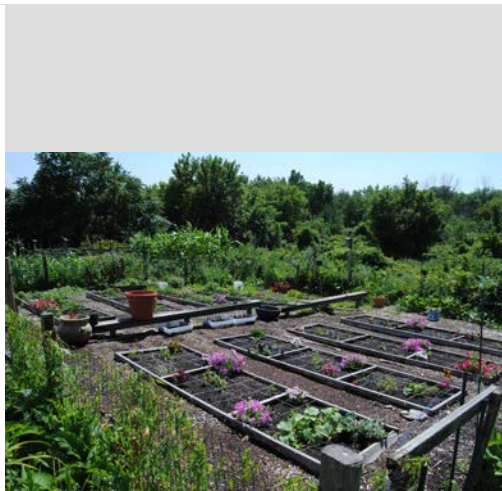


Education & Outreach

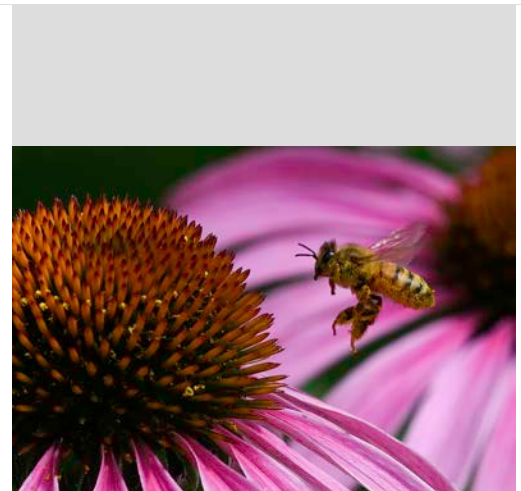
The Environmental Interpretive Center at the University of Michigan-Dearborn offered 36 K-12 and community educational programs about pollinators and the habitats that support them to more than 900 participants in academic year 2019-2020. These programs were led by interpretive staff and students studying in environmental fields, such as environmental studies, environmental science, and biology. Specific programs included Plant Identification and Ecology, Pollination Partnerships, Understanding Insects and Spiders, Sprouts (Children's Gardening Program), and Young Naturalists. When the pandemic forced the closure of campus for in-person activities, the UM-Dearborn Bee Campus USA Committee and the Environmental Interpretive Center sponsored their first ever Pollinator Photo Contest. The public was invited to submit photos in three categories: pollinators up-close, pollinator-flower interactions, and pollinator landscapes. 139 photos were submitted, including from other countries, such as Finland, Germany, and Lebanon.



UM-Dearborn student, Chelsea Parmenter, watches as children attempt to catch and identify insects during the Environmental Interpretive Center's Young Naturalist Program



Space used for Children's Gardening "Sprouts" Program at University of Michigan-Dearborn's Community Organic Garden. Children meet biweekly in the garden throughout the growing season to learn about fruit and vegetable plants, and their interactions with soil and other creatures, especially pollinators



This photo of a honey bee about to land on a purple cone flower was one of three winners in the first ever Pollinator Photo Contest sponsored by the UM-Dearborn Bee Campus USA Committee and the Environmental Interpretive Center

Courses & Continuing Education

A variety of courses that include pollinator-related information are regularly taught at the University of Michigan-



Dearborn. In academic year 2019-2020, these included the 5 courses Principles of Biology (BIOL 100), Introduction to Organismal Biology (BIOL 130), Ecology (BIOL 304), Plant Biology (BIOL 333), and Plant Physiology (BIOL 335). More than 500 students who were enrolled in these courses learned about such topics as the classification and taxonomy of plants and pollinators, types of pollination syndromes, classes and chemistry of secondary plant compounds for pollinator attraction, integrated pest management techniques, and principles of organic farming/gardening.



Students analyze the products of pollinator-flower interactions during a flower- and fruit-dissection exercise in the undergraduate course called Plant Biology at UM- Dearborn



Service-Learning

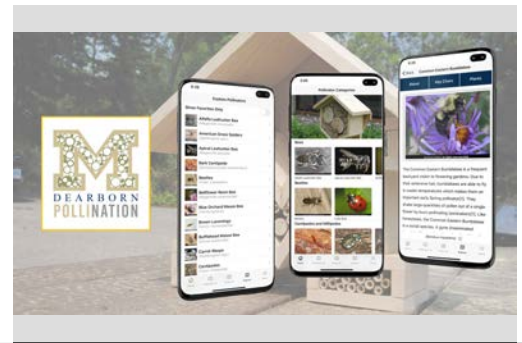
With financial support of a Ford College Community Challenge Grant from Ford Motor Co. Fund, the university's Environmental Interpretive Center (EIC) initiated the PolliNation Project. The project is a campus and community-wide initiative to build insect hotels in order to promote pollinator awareness and conservation. Insect hotels are human-made structures created to provide shelter and nesting sites for beneficial native pollinators. Such homes for pollinators will help a) raise awareness and educate citizens about the threats to and benefits of pollinators in our environment and b) mitigate the declines of pollinator populations in our urban landscape. During academic year 2019-2020, two volunteer events were dedicated for construction of small-scale insect hotels for public distribution. About 30 volunteers managed to assemble more than 160 of these hotels. People participating in the project will be educated to recognize the importance of pollinators and the ecosystem services they provide with the intent for them to partake in sustainable practices and other green initiatives in the city. At 16 Dearborn Public Schools, our insect hotels will annually serve as an educational tool about local pollinators for more than 9000 students. As many as an additional 180 hotels may be made available in residential, commercial, and recreational spaces, thereby providing learning opportunities for pollinator conservation and management to thousands more residents throughout Dearborn. Professor Bruce Maxim's senior student computer science design teams (CIS 4951/4952) from the CECS-CIS College were recruited to create two apps for the PolliNation Project. The first is a Pollinator ID app that allows users to identify visitors to insect hotels using photos processed by AI. A second PolliNation Hotels App maintains an online database and map featuring insect hotel locations and construction designs, along with information about local landscape features, including type of habitat, plant species inventories, and types of pollinators observed on site. The general design, layout, content, and functionality of the apps were discussed and evaluated in an iterative, collaborative process, which ultimately culminated in the production of the two apps available for download for Android and iOS operating systems. Originally, the installation of schoolyard insect hotels, the distribution of individual insect hotels to the public, and the delivery of on-campus insect hotel workshops were scheduled to take place in spring 2020. However, due to the COVID-19 pandemic, all of these activities were cancelled. Planning is currently underway to reschedule these events for spring 2021.



Volunteers help to assemble insect hotels for the PolliNation Project



This insect hotel was presented as a gift to UM-Dearborn Chancellor, Domenico Grasso, in recognition of UM-Dearborn's certification as a Bee Campus USA affiliate.



Several screen shots show some of the features of a Pollinator ID App developed by computer science students working on the PolliNation Project



Educational Signage

Two permanent interpretive pollinator-related signs are installed on the campus of the University of Michigan-Dearborn. One is situated in a rain garden outside the university's Environmental Interpretive Center building. It explains the benefits of using native plantings in rain gardens for storm-water retention, as well as providing food and habitat for beneficial native pollinators. The second sign is situated within the Environmental Interpretive Center's Pollinator Garden which has been recognized as a certified Monarch Waystation by Monarch Watch. This certification indicates that the Pollinator Garden provides a suitable number and diversity of native nectar and host plants to support visiting monarch butterflies. A temporary student poster about the university's pollinator education and conservation initiative, called the PolliNation Project, is also on display in the exhibition space of the Environmental Interpretive Center.



**Ford College
Community
Challenge**



The PolliNation Project: using citizen science to promote our pollinators

Kaitlyn Tatro and Dr. David Susko



Summary

Our pollinators are disappearing. Habitat loss and fragmentation, pollution and pesticides, and the spread of invasive species and diseases have caused global reductions in insect populations. This directly impacts plant reproduction and food chain dynamics.

Pollinators are an important group of insects that save us the equivalent of billions of dollars in labor costs. Nearly all fruiting plants require some form of animal aided pollination. In order to educate the community and engage them in healthy land practices supporting native pollinators and insect populations, we applied for a grant through the international 2019 Ford Community College Challenge and became one of ten student projects to receive funding.

The PolliNation Project is run by students. Our main goal is to distribute free insect hotels to SE Michigan homeowners and have them submit data on which species use these structures as part of a conservation science project. So far, students have:

- Designed and built nearly 200 public insect hotels
- Developed content identifying the major types of native pollinators in SE Michigan and the types of host and nectar plants that they need
- Developed two apps for iOS and Android that map insect hotels and allow users to identify and submit records on the local pollinators using them

Our pollinators worked tirelessly for us. It's time we do something for them. Here are a few small ways you can help:

- Planting a native garden
- Refraining from pesticide/insecticide use
- Installing an insect hotel
- Supporting local farms
- Providing a water source

Learn more at www.umdearborn.edu/PolliNationProject

ABOUT THE AUTHOR

Kaitlyn is a 2020 graduate in economics and environmental science. She wrote the grant for and currently coordinates the PolliNation Project. Her career interests are in sustainability, green economics, and urban greening. Her personal goal is to instill the same love and respect for the environment that she has in others. For more info, contact ketatro@umich.edu

Insect Hotels: "Bird-houses of the insect world"

Cavity-nesting species

- Megachilidae Family
 - Leafcutter, Mason, Rustic, & Wool-carder bees
- Apidae Family
 - Carpenter bees
- Halictidae Family
 - Sweat bees

...and more!

Materials

- Hollow reeds and plant stems
- Bamboo
- Drilled blocks
- Straws

... and more!

In the wild, solitary insect species, like wood-boring beetles and solitary bees, search for cavities in wood to lay eggs. These cavities are typically left by burrowing beetles, woodpeckers, or the tree's own natural growth. Some species, like carpenter bees, will chew their way through wood to make a nesting cavity. Insect hotels are man-made replicas of the natural habitats these organisms search for in the wild.

Creating an insect hotel is an easy way to add a creative and functional feature to your garden or landscape. The most important feature of the hotel should be to keep it as natural as possible. A wooden frame can be filled with natural materials for nesting sites. Find out below which materials attract different beneficial insects!

Building Item	Possible visitor(s)
sawn logs or wooden blocks with pre-drilled holes	solitary bees, such as mason bees and leaf-cutter bees
bamboo or reed stems	solitary bees, such as mason bees and leaf-cutter bees; wasps, such as thread-waist wasps
dry leaves	centipedes, beetles, harvestmen
sticks	ladybird beetles
strips of bark	beetles, woodlice, centipedes, millipedes, spiders






PolliNation Project Goals

Citizen-science

- Distribute 200 public insect hotels
- Hold public workshops
- Install 16 large schoolyard insect hotels

Student driven

- Pollinator ID and Geospatial App ✓
- Insect Hotel design, construction, and installation ✓

Bee Campus Certification ✓

First public university in Michigan!





Student volunteers came to help at two workshops to build the frames for the assembled insect hotels seen in the middle photo.

This poster educates visitors to the Environmental Interpretive Center about the PolliNation Project



Policies & Practices

The Grounds Department employs pest management strategies which include public education, sanitation, biological and mechanical controls, and when necessary, chemical pesticides. Turf & Irrigation: The university Grounds Crew maintains 58 acres of turf grass on campus, including fertilization, aeration, and disease prevention and treatment. The Grounds Crew maintains the university lawns at a taller height to reduce weeds and irrigation needs. Lawn clippings and leaves are mulched to provide additional fertilizer. Yard waste is composted whenever possible. Soil testing is done annually to determine the needed fertilization requirements. Irrigation is monitored by a weather system that uses current weather conditions and plant requirements to determine the amount of water used. The Grounds staff also includes several employees that are certified in Integrated Pest Management (IPM). This training reduces the amount of pesticides used to control pests. Tree and Shrub Management: The Grounds Crew manages the wide variety of trees and shrubs on campus and treats for diseases and insect infestations. Existing plantings are maintained through scouting, pruning, trimming, fertilizing and sanitation. Pest infestations on all landscape materials are only chemically treated when other means are unsuccessful. New plants on campus are chosen by considering disease resistance, maintenance requirements, and environmental requirements. Ornamental Plantings: The Grounds Crew employs a master gardener who is responsible for maintaining and planting a variety of flowers and flower beds on campus, with an emphasis on using native species. The wide variety of perennial and annual plants adds beauty to the campus grounds. The Natural Areas Manager of the Environmental Interpretive Center stewards the 300-acre Environmental Study Area. A habitat management plan for this space has been developed and is in the process of being implemented.

Integrated Pest Management Plan: [Habitat Management Plan for Environmental Study Area at UM-Dearborn.pdf](#)

Recommended Native Plant List: [Pollinator-Friendly Native Plant Species List at UM-Dearborn.pdf](#)

Recommended Native Plant Supplier List: [Native Plant Supplier for the Environmental Interpretive Center at UM-Dearborn.pdf](#)





A student volunteer demonstrates the cut and paint IPM technique for managing invasive shrubs like honeysuckle and buckthorn in the University of Michigan-Dearborn's Environmental Study Area

[Learn More](#)

