

# Bee Campus USA - University of Illinois at Chicago

Report on 2022

## Pollinator Habitat Creation & Enhancement

• **New Gardens on the West Campus of UIC:** Two new native plant gardens were installed on the west side of UIC in 2022. Each of these gardens contain native plantings that will act as beneficial habitat to pollinators in the Illinois Medical District. • **Heritage Garden Internship:** The UIC Heritage Garden Internship cares for the on-campus satellite gardens and is a project of the UIC Centers for Cultural Understanding and Social Change, with infrastructure provided by the UIC Latino Cultural Center. Satellite gardens all have plants meant to enhance pollinator habitats. They also have signs with information on pollinators and how to request seeds from the seed library, as well as stories written by UIC undergraduate students about their connections to nature. In 2022 the UIC Heritage Garden provided over one thousand seed packets to students, staff and community members to increase biodiversity in the Chicagoland area. In the fall of 2022, the interns provided 10 tours that highlighted the importance of biodiversity, cultural diversity, and social justice with 196 people in attendance. And over the calendar year the interns were part of several public programs, including the Seed Swap and Harvest festival the students themselves organize, as well as other events the students co-sponsor, that drew a combined attendance of over 460 people. This summer in collaboration with Yollocalli Arts Reach and artist Mario Mena, students took part in painting a mural that has gone up on the side of the UIC Latino Cultural Center that draws on themes of pollinators, agriculture, restoration, water and more as part of a project to highlight pollinator conservation funded by the USDA. This mural will be incorporated into the tours and discussions. • **STEM Scholars Internship:** The UIC Energy Resource Center is a key member of the UIC Bee Campus USA Committee for their Sustainable Landscapes research cluster work. For the summer of 2022, the ERC paid 20 students from Chicago public high schools to work as paid interns through the STEM Scholars Internship program. During this program, interns helped to maintain the Stein Learning Gardens at St. Sabina Catholic Church and participated in the Field Museum Community Science program focused on monarch butterflies. At St. Sabina, the interns helped to maintain the gardens by weeding unwanted plants, trimming back plant overgrowth, and mulching the plots. Through the Field Museum, the interns monitored milkweed plantings across the city and recorded any eggs or caterpillars that were found. <https://stemscholars-erc.uic.edu/summer-2022-internship/> • **Little Prairie on the Campus and Arthington Mall:** The Office of Planning, Sustainability, and Project Management hosts a Biodiversity Internship, in which the student intern tends to the native pollinator habitats on campus, including the Little Prairie on Campus and Arthington Mall. The intern is responsible for weeding invasive species and other unwanted plants, as well as planting new native plants to maintain the gardens. Additionally, the intern for spring 2022 created a poster presentation based on data collected from surveying Arthington Mall for invasive species using quadrat sampling. This poster was presented at the Undergraduate Research Forum for UIC students. • **The Creation of a New Monarch Memorial Garden at 1101 W. Taylor Street:** On June 14, approximately 10 volunteers helped to plant a new monarch garden at 1101 W Taylor Street in honor of Stephenie Presseler, the former Sustainability Program Director of the Office of Planning, Sustainability, and Project Management. Volunteers learned about why the particular plants selected were

being installed and why not all flowers benefit monarchs equally, as well as the cultural significance of the monarch butterfly migration. Some communities relate the butterflies to the souls of their returning loved ones and the spirits of the forests when monarchs travel thousands of miles to hibernate in the Oyamel forest of Central Mexico.

*How many habitat projects did you help to create or enhance last year?*

7

*How many total square feet of habitat were created or enhanced?*

31190

*How many volunteers helped with those projects?*

47

*Please check all that describe the habitats your affiliate helped to create or enhance last year with pollinator benefit in mind.*

- Flower garden
- Pollinator-friendly lawn (with flowering clover, dandelions...)
- Native milkweed planting for monarchs and bees (where appropriate)
- Invasive/exotic plant species removal for habitat improvement
- Native pollinator-friendly tree planting
- Rain garden/bioswale



Volunteers from UIC pose after successfully installing a new monarch butterfly garden at 1101 W. Taylor Street. The plot was dedicated to Stephen Pressler, the former Sustainability Program Director at UIC who passed away suddenly in early 2022.



Volunteers install native plantings in the newest pollinator habitat at UIC, including species favored by monarch butterflies such as black-eyed susans, common milkweed, and bee balm.



Student interns in the Sustainability Internship program help maintain the gardens at Arthington Mall by removing weeds and invasive plant species. Interns also learned how to identify a native plant from a non-native plant during this workday.

## Education & Outreach

Earth Day Event at Arthington Mall On April 29, there was an Earth Day event hosted by the committee at Arthington Mall to educate volunteers about how to identify invasive species in a native plant garden. Volunteers learned how to properly remove invasive species and how to differentiate between invasive plants, weeds, and native plant species. Additionally, the volunteers participated in a beneficial bug release with the goal of improving the health of the trees in Arthington Mall. The bugs were provided by Bartlett Tree Experts and were specifically selected in order to help naturally manage pests that could damage the mature trees in Arthington Mall, particularly the honey locust trees.

Volunteer Cleanup Event at Arthington Mall Plaza Hands On Maintenance Workday On June 22, 2022, the committee hosted a Native Plants Hands-On Maintenance Workday event to educate the cohort of Sustainability Interns about how to maintain a native plant and pollinator habitat. During this event, the interns were taught about the value of creating green spaces in an urban environment and how it is possible to create habitats in a city which support pollinator biodiversity. Furthermore, the interns learned about urban agriculture (including practices like vertical gardening and hydroponics) and how these practices can help to address issues like food deserts in cities. Finally, interns learned how to identify a native plant from a weed or invasive plant using iNaturalist and removed unwanted plants from the garden. Interns learned to identify fifteen different species of plants. In total, thirteen student interns participated in this event and helped to weed three of the five gardens which comprise Arthington Mall, 21,000 square feet of pollinator friendly plants located on the west campus of UIC.

Educational videos for STEM Initiative students In an event hosted by the committee, three videos were created by the Biodiversity Intern for UIC's Office of Planning, Sustainability, and Project Management to educate the students participating in the STEM Initiative program about pollinator identification and the efforts UIC takes to support pollinator species. Each video was between three and five minutes in length and discussed a different topic

concerning how students can become involved with pollinator conservation and sustainability initiatives, both at UIC and in their communities. The first video provided an overview of all the pollinator habitats on campus, with special emphasis placed on the Little Prairie on the Campus and the recently renovated Arthington Mall. The Little Prairie on the Campus is a 2,000 square foot area with over 20 different species of native prairie plants and was established with a grant from the National Fish and Wildlife Foundation. Arthington Mall was recently renovated to include over 11,000 square feet of native pollinator habitat and rain gardens through a joint effort between UIC, the National Fish and Wildlife Foundation, and the Metropolitan Water Reclamation District. The second video explained the Sustainability Internship program and discussed opportunities for students to become involved with sustainability efforts and pollinator protection endeavors at UIC. The last video provided instructions on how to use the community science platform iNaturalist and its affiliated app Seek in order to identify pollinators and pollinator friendly plants. Monarch Garden Event with STEM Scholars On July 12, the Office of Planning, Sustainability, and Project Management hosted an educational event with students from the STEM Scholars program and gave them a tour of UIC's newest pollinator habitat, a monarch memorial garden at 1101 W Taylor Street. UIC recently installed a monarch garden on 1101 W Taylor Street in honor of Stephanie Presseller, the former Sustainability Program Director of the Office of Planning, Sustainability, and Project Management. This garden features a wide variety of native plants, including common milkweed (*Asclepias syriaca*), which provide a food source for the monarch caterpillars and a nectar source for the adult butterflies. Other native plants included in the garden which benefit monarchs and other pollinators are black-eyed susans (*Rudbeckia fulgida*), scarlet beebalm (*Monarda didyma*), and two varieties of coneflowers (genus *Echinacea*). Students had the opportunity to learn how to identify these plants and to learn about the importance of creating pollinator-friendly green spaces in urban areas.

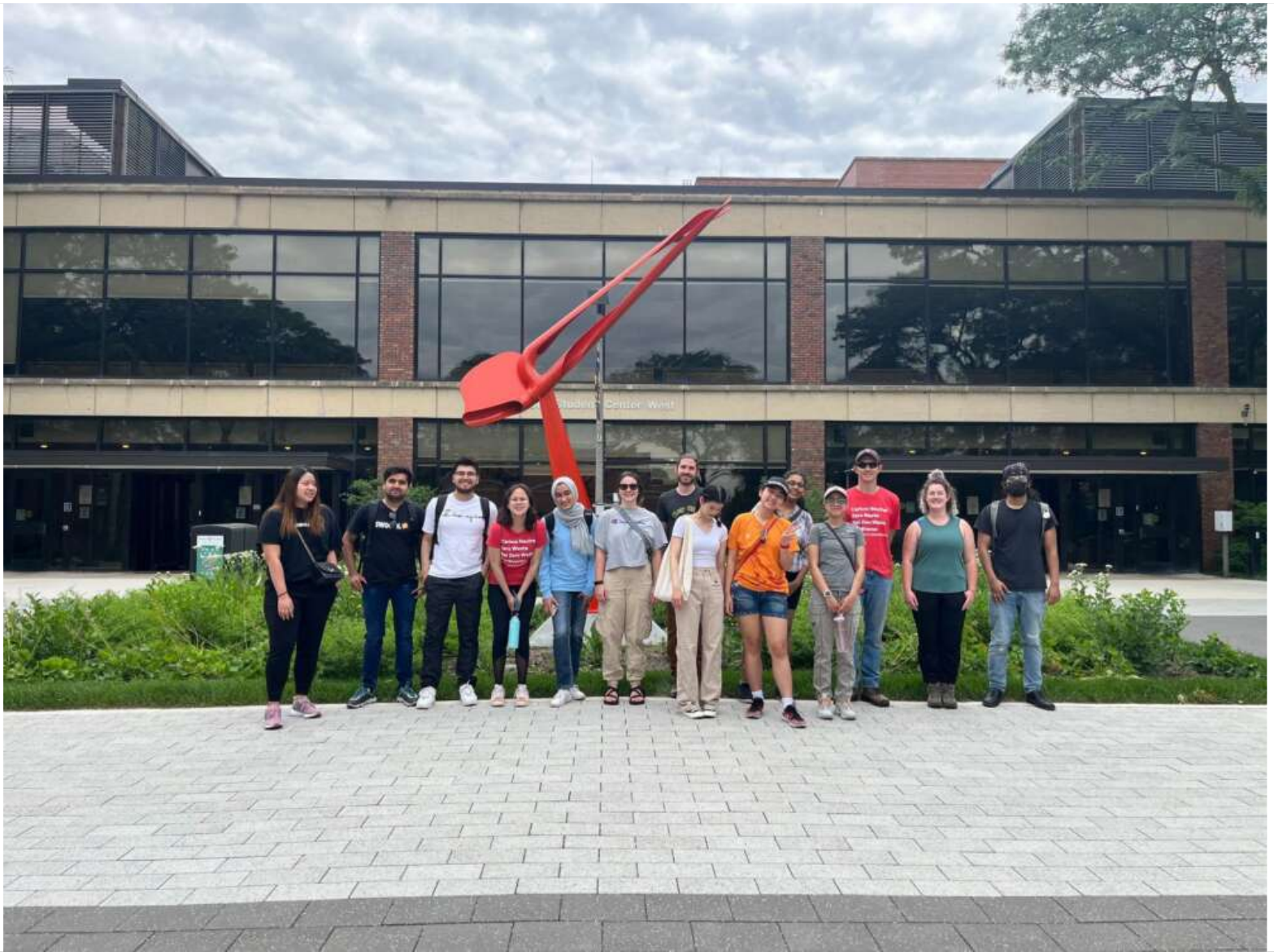
<https://sustainability.uic.edu/green-campus/grounds/pollinator-habitats/monarch-memorial-garden/> 2022 Dia de los Muertos Cempasuchil (Marigold) Cutting On October 24, the Heritage Garden at UIC organized and ran a marigold cutting event honoring Dia de los Muertos in collaboration with the UIC greenhouse. Marigolds are planted at the end of the summer which allows them to bloom throughout the fall and at the end of October. The UIC greenhouse grew marigolds throughout the summer and fall, and students and volunteers came to the greenhouse to cut the marigolds before Dia De los Muertos celebrations throughout Chicago. The marigolds offer local bees and pollinators a source of pollen and nectar that is available in the late fall, which is important for pollinators because most other plants and flowers have stopped producing flowers by autumn. Community partners with UIC were able to discuss the importance of marigolds to local celebrations and what they are able to offer to bees late into the season.

*How many pollinator-related events did your affiliate host or help with last year (in total)?*

5

*How many people attended those events (in total)?*

81



The Sustainability Internship 2022 summer cohort after completing a hands-on workday at Arthington Mall. The cohort learned how to identify invasive plant species and weeds in the garden and assisted with properly removing these plants from the habitat.

## Courses & Continuing Education

- In Bios 120, a for-majors, required, undergraduate course, which includes about 1200 students a year, there is a lecture on the Biology of Pollinators. This covers pollination syndromes, the basics of how pollination works, and the major groups of pollinators – including several families of bees, naturally.
- In Bios 340, Environmental Physiology, students read a paper on the thermal ecology of neotropical stingless bees. There is also some lecture material dedicated to the physiology of insects, and the chemical ecology of deceptive pollination.
- In Bios 294, Insect Evolution and Biodiversity, there is a two

week unit on the biology of pollinators, extensive readings on pollinator conservation, including the threatened Aztec bee and the non-honeybee *Apis*, and some new readings on how honeybees harm native pollinator networks. • In Bios 431, Plant-Animal Interactions, there is a two week unit on the biology of pollinators (not the same material), a lot of discussion of how pollinator networks function, and some new reading about how native honey bees in natural areas negatively impact biodiversity. • In Bios 305, Plant Evolution and Ecology, there is a fair amount of material on the history of pollination. Next year, the prairie will be open to the public for a Bee Tour. • In Bios 365, Human Ecological Systems, there is a week and a half which covers urban pollinators. • In Bios 437, Topics in Tropical Ecology, there is a unit that covers the production of coffee beans with a focus on how pollinator health in coffee growing regions is influenced by the method of coffee plantation that is employed. • In Bios 184, Basics of Neuroscience, students are introduced to the basics of bee eusociality and behavior. The relationship between bee behavior and local ecology is discussed with emphasis placed on the importance of bees in urban environments. • In Bios 236, Animal Behavior, students are also introduced to the basics of bee behavior and bee eusociality. There is an emphasis placed on the importance of bee behavior in urban environments and the importance of bees to local ecology. • In Curriculum & Instruction 401, Methods of Reading: Early Literacy in Urban Classrooms, students wandered the grounds of the UIC Greenhouse connecting observations, inquiries, and experiences of native areas with children's books about pollinators, green spaces, and ecology. Students also learned about the basics of beekeeping, bee behavior and their connection to urban ecology.

*How many of your for-credit courses included pollinator-related information last year?*

10

*How many students attended those for-credit courses?*

659

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## Service-Learning

- 2022 Summer CIM2AS Interns: Dr. Mary Ashley, a professor in the Department of Biological Sciences at UIC, is the director of an REU program titled Cultural Immersion in Monarchs and Milkweeds Advancing Science Education. Each summer, 14 students plant various milkweed varieties throughout the Chicagoland area and on UIC property to study the behavior and activities of adult monarchs and their offspring relative to the plants. During the course of this internship, the students learn and discuss the importance of native plant genetic diversity while observing pollinator and bee behavior responses to different native flower types.
- Heritage Garden Internship: The UIC Heritage Garden Internship cares for the on-campus satellite gardens and is a project of the UIC Centers for Cultural Understanding and Social Change, with infrastructure provided by the UIC Latino Cultural Center. Satellite gardens all have plants meant to enhance pollinator habitats. They also have signs with information on pollinators and how to request seeds from the seed library, as well as stories written by UIC undergraduate students about their connections to nature. In 2022 the UIC Heritage Garden provided over one thousand seed packets to students, staff and community members to increase biodiversity in the Chicagoland area. In the fall of 2022, the interns provided 10 tours that highlighted the importance of biodiversity, cultural

diversity, and social justice with 196 people in attendance. And over the calendar year the interns were part of several public programs, including the Seed Swap and Harvest festival the students themselves organize, as well as other events the students co-sponsor, that drew a combined attendance of over 460 people. This summer in collaboration with Yollocalli Arts Reach and artist Mario Mena, students took part in painting a mural that has gone up on the side of the UIC Latino Cultural Center that draws on themes of pollinators, agriculture, restoration, water and more as part of a project to highlight pollinator conservation funded by the USDA. This mural will be incorporated into the tours and discussions. • STEM Scholars Internship: The UIC Energy Resource Center is a key member of the UIC Bee Campus USA Committee for their Sustainable Landscapes research cluster work. For the summer of 2022, the ERC paid 20 students from Chicago public high schools to work as paid interns through the STEM Scholars Internship program. During this program, interns helped to maintain the Stein Learning Gardens at St. Sabina Catholic Church and participated in the Field Museum Community Science program focused on monarch butterflies. At St. Sabina, the interns helped to maintain the gardens by weeding unwanted plants, trimming back plant overgrowth, and mulching the plots. Through the Field Museum, the interns monitored milkweed plantings across the city and recorded any eggs or caterpillars that were found. <https://stemscholars-erc.uic.edu/summer-2022-internship/> • Biodiversity Internship in the Office of Planning, Sustainability, and Project Management: The Office of Planning, Sustainability, and Project Management hosts a Biodiversity Internship, in which the student intern tends to the native pollinator habitats on campus, including the Little Prairie on Campus and Arthington Mall. The intern is responsible for weeding invasive species and other unwanted plants, as well as planting new native plants to maintain the gardens. Additionally, the intern for spring 2022 created a poster presentation based on data collected from surveying Arthington Mall for invasive species using quadrat sampling. This poster was presented at the Undergraduate Research Forum for UIC students.

*How many service-learning projects did your campus host and/or support to enhance pollinator habitat on and off-campus?*

4

*How many students participated in service-learning projects last year to enhance pollinator habitat on or off-campus?*

49

## Monitoring Invasive Plant Species in an Urban Rain Garden

Catherine O'Reilly, B.S. Biological Sciences  
2023  
Lisa Sanzenbacher, M.S. Office of Sustainability  
Erin Faulkner, M.S. Biological Sciences



### Identifying Invasive Species

During August and October 2021, plant species surveys were conducted at the six rain garden plots at Arthington Mall. A professional herbarist assisted with identifying which unintended plant species present were weeds or invasive species. During one survey conducted in October, quadrat sampling was employed to conduct the percent cover of weeds and invasive plants in the two largest rain garden plots which had the highest diversity of unintended plants. To determine the percent cover, 0.25 m<sup>2</sup> quadrats were placed at every three meters and the plant species present and the approximate percent cover was recorded.



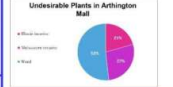
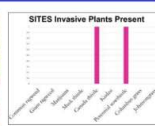
### Invasive Species Disrupt Ecosystems

Invasive species are among the most significant reasons for the global loss of biodiversity. While the official list defining specific invasive species for an area can vary between regulatory agencies, invasive species (also referred to as nonnative species, in the case of plant species) are recognized as organisms that are not native to the ecosystem under consideration and which causes or is likely to cause economic or environmental harm or harm to human, animal, or plant health. These species can outcompete native species for resources and territories because they do not face the same constraints in the new territory that they would in their native habitat, such as limiting abiotic conditions and predators. Invasive plants differ from weedy plants in their ability to outcompete native plants and their prolific rates of reproduction, while weeds, at a minimum, they do not have the same ability to dominate an ecosystem and shade out native plants. In a newly restored habitat, such as the rain gardens at Arthington Mall, high abundances of invasive plants pose a threat to the ability of the native plants to successfully establish themselves.



### 14 Noxious Plants Were Identified

In total, there were 29 unintentional plant species identified in the garden plots at Arthington Mall. Of these plants, 14 species were identified as either invasive plants in Illinois or invasive plants in the Midwest using guidelines provided by the Midwest Invasive Plant Network. The other 15 plant species were classified as weeds and pose less of a threat to the native plants.



### Site Context: Arthington Mall

Arthington Mall Plaza is a 37,000 square-foot biodiversity haven located in the middle University's Health Sciences College. Previously, the space served as a residential city block that included three four apartment buildings, alleys, and utilities. Since then, the space has been transformed into a pollution-free green space that personifies the goals of the UIC Climate Commitment. This space includes 11,000 square feet of rain gardens and nearly 14,500 square feet of native plantings which attract urban pollinators like the monarch butterfly.



### Management Strategies

Because the plants at Arthington Mall have only been through one growing season, the possibility to eradicate some of the less prevalent invasive species identified may be possible. Eradicating these species would entail removing the plants by the roots and being careful to avoid any accidental seed spreading (such as by touching the flower heads and scattering seeds) that could reestablish those species. When eradication is not possible, controlling the invasive species by attentive monitoring and weeding, in addition to consistent replanting and seed spreading of native plants, will be the key strategy to maintain the health of the gardens. Herbicides will not be used in order to protect the health of pollinators and to avoid further seed contamination of this site. For the 2022 season, the main priorities at Arthington Mall will be to continue monitoring the gardens for the invasive species identified, as well as any new potential species which may have become established. Furthermore, quadrat sampling will be used again to track changes in percent cover of the invasive species and weeds.



The undergraduate research poster presentation detailing the invasive plant species composition at Arthington Mall, which was presented at the Undergraduate Research Forum. Photo credits to Catherine O'Reilly.



The inauguration of the new mural on the side of the UIC Latino Cultural Center. This mural was created by a collaboration between the Heritage Garden, Yollocalli Arts Reach, and artist Mario Mena. Photo credits to the UIC Latino Cultural Center.

## Educational Signage

1 permanent sign was installed in the monarch memorial garden at 1101 W. Taylor Street that describes the cultural and ecological significance of the eastern monarch butterfly migration. 1 temporary sign was installed in Arthington Mall.

Number of permanent interpretive/educational/Bee Campus USA signs installed to date?

6

Number of temporary interpretive/educational/Bee Campus USA signs installed last year?

1





A temporary sign installed outside of Arthington Mall describing the indigenous history of the location and the story behind the renovation of the mall from a hardscape landscape to a greenspace with native plants and rain gardens.

## Policies & Practices

The UIC Heritage Garden manages 8 satellite garden sites on UIC's east campus. From tilling the soil to collecting seeds, interns are involved throughout the entire process of maintaining the gardens every season. They use mechanical removal (for example knocking aphids down), crop rotation (since some insects that like to eat the plants put in the soil like the squash vine borer), and interplanting (where we plant/leave different plants that attract pollinators and are habitat for insects that are predators to the other insects in the garden in between or close to the sections of vegetables). They also

leave some plant material behind in the winter to help insects overwinter, as well as seeds that even though will germinate and we may have to remove later, to provide food for the insects and other animals we share the space with. The Office of Planning, Sustainability and Project Management's (PSPM) Sustainability Internship Program (SIP) employs a Biodiversity intern each year which helps the UIC Grounds Department in the gardens funded by grant awards and uses IPM practices in those areas. These management practices include pruning off leaves showing symptoms then attempting to locate the source of the issue and consulting Pest Management for The Home Landscape for solutions. If these issues persist or the issue cannot be identified, interns contact the University of Illinois Extension for assistance. Details of the native garden maintenance is detailed here:

<https://sustainability.uic.edu/green-campus/grounds/pollinator-habitats/prairie-garden-maintenance-guide/>

*In your city or campus, are any policy initiatives underway to further protect pollinators, people or waterways from pesticides?*

*Please describe actions by your affiliate to attend training on ecologically-based Integrated Pest Management and/or to review IPM plans and programs considered of high quality by Bee City USA?*

**Integrated Pest Management Plan:**

<https://uofi.box.com/s/m1k45b5y1goizabx6q0ny95puo6rfbrc>

**Recommended Native Plant List:**

<https://uofi.box.com/s/m1k45b5y1goizabx6q0ny95puo6rfbrc>

**Recommended Native Plant Supplier List:**

<https://uofi.box.com/s/m1k45b5y1goizabx6q0ny95puo6rfbrc>



A hands on maintenance day at Arthington Mall highlighting the organic methods used to maintain the native plant habitats. Weeds and invasive species are pulled by hand and the plots are not treated with chemical pesticides.

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Learn More

<https://sustainability.uic.edu/green-campus/grounds/pollinator-habitats/bee-campus-usa/>

<https://www.instagram.com/sustainableuic/?hl=en>