Bee Campus USA - University of Wisconsin–Madison

Report on 2023

Pollinator Habitat Creation & Enhancement

Please describe pollinator habitat creation or enhancement projects in your community in 2023, and whether your committee hosted them or not.

Multiple pollinator habitat projects have been funded through the UW–Madison Green Fund, a program through the Office of Sustainability that supports student-initiated sustainability projects (https://sustainability.wisc.edu/greenfund/). Among these include native plantings and pollinator lawns in multiple areas of campus, investigation and collaboration towards Re:wild Your Campus certification (https://www.rewildyourcampus.org/) and bee hotel implementation. Students proposed planting a pollinator lawn that includes not only grass but also low-lying flowering plants like white clover, self-heal, violets, dandelion, and plantain that offer forage for pollinators even as the lawn spaces continue to be used for recreation. The pilot site is beside Tripp Residence Hall, on the shore of Lake Mendota, a large lake. UW–Madison Arboretum staff have maintained their lawn areas of the horticultural garden as pollinator-friendly spaces by mowing less frequently, at a higher height, and utilizing intentional spot treatment instead of broad application of synthetic herbicides and pesticides. UW–Madison Arboretum staff have shared their best practices with UW–Madison Grounds staff for this pilot site. Dr. Paul Koch, a plant pathology professor and Bee Campus Committee member, brought his Sustainable Turfgrass Management class out to observe the planting process and learn directly from Grounds staff. At Allen Centennial Garden, an on-campus botanical garden, students are designing and installing a native bee hotel to increase pollinator nesting places and to educate visitors about native bees (https://sustainability.wisc.edu/greenfund/green-fund-projects/green-fund-projects-2022-2023/). We are in the process of designing and installing interpretive signage at the Tripp Pollinator Lawn and Allen Centennial Garden Bee Hotel sites so that the campus community can learn about Bee Campus USA's efforts and particular projects. We anticipate installing these signs in the Summer of 2024. Across campus, roughly three acres of stormwater treatment areas have been established to collect, infiltrate, and clean stormwater. These areas are planted with native species that support pollinators. The Grounds Team maintains these rain garden spaces with hand pulling, drainage inspection, and needed backfill planting. Herbicide use is limited and focused on plants that are not controlled with hand weeding alone. Within 2023 Allen Centennial Garden implemented and established their Wyman Kitchen Garden. The Wyman Kitchen Garden included new vegetable and herb gardens and orchard plants. The edible landscape is a teaching and learning tool focused on culturally significant plants to the garden's growing partners. Additionally, Allen Centennial Garden introduced more pollinator plants in their tapestry lawn which highlights low-growing, flowering plants as a traditional lawn alternative. Old material and detritus from past projects, garden work, and non-compostable plant growth were repurposed with volunteer help to create a stumpery area in the garden. The Lakeshore Nature Preserve staff, contractors, student interns, and both UW and community volunteers removed invasive woody plants from 34

acres in addition to the removal of herbaceous invasive plants from across 150 acres. Prescribed burns were used to enhance 15.5 acres of prairie and savanna habitat. Additionally, the team planted 640 native flowering plant plugs and seeded 15 acres with native prairie, woodland, and savanna species. The Arboretum manages and enhances pollinator habitat over hundreds of acres (https://arboretum.wisc.edu/). Habitat features and types include natural areas with tree snags and stumps, bare areas for ground-nesting species, pollinator-friendly lawns, native milkweed planting for monarchs and bees, invasive/exotic plant species removal for habitat improvement, pollinator-friendly trees and shrubs, and rain gardens. Conservation and restoration methods include forestry mowing, prescribed fire, seed harvesting, and broadcasting, removing woody and herbaceous invasives, and monitoring.

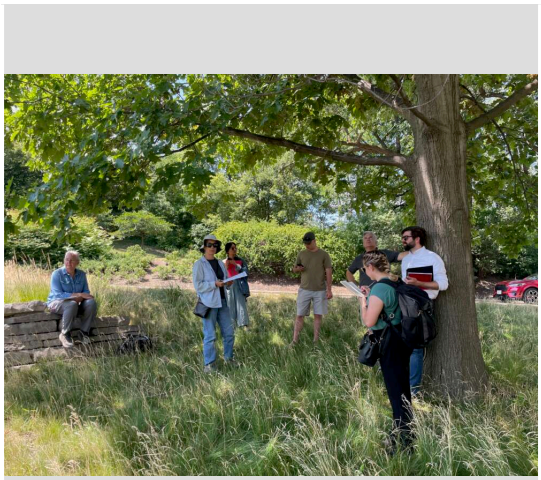
How many habitat projects did you help to create or enhance in 2023?
10

How many people (staff, volunteers, students, partners, etc.) helped with those projects?
500

How many projects benefit monarchs, milkweed, or nectar plantings?
1

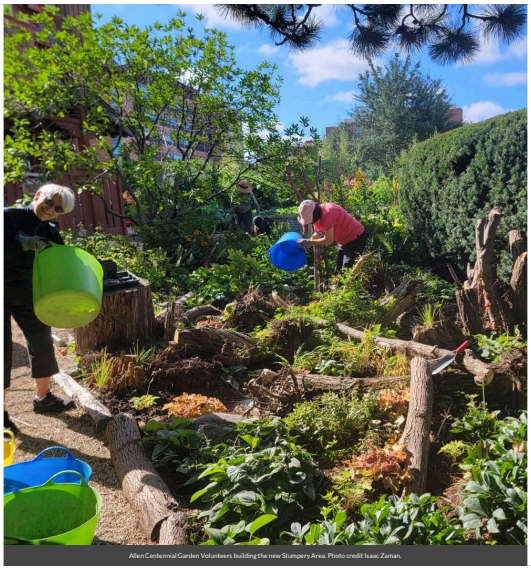
Please check all that describe the habitats your affiliate helped to create or enhance last year with pollinator benefit in mind.

- Vegetable garden
- Natural area with tree snags and stumps, and bare areas for ground nesting species
- Pollinator-friendly lawn (with flowering clover, dandelions...)
- Herb garden
- Invasive/exotic plant species removal for habitat improvement
- Rain garden/bioswale



School of Education Native Plant Garden Green Fund team scouting out viable areas for future planting. Photo credit Ian Aley, July 2023.

Examples of Temporary Research Bee Hotels in Allen Centennial Garden. Photo credit Ian Aley.



Allen Centennial Garden Volunteers building the new Stumpery Area. Photo credit Isaac Zaman.

Education & Outreach

Please describe pollinator conservation events or outreach activities in your community in 2023, indicating whether your committee hosted them or not.

The University of Wisconsin–Madison (UW–Madison) advanced our commitment to pollinator-related outreach and education events across multiple departments and organizations in 2023. Below is a summary of some of the key events offered by UW–Madison, going forward the Bee Campus Committee is working on updated processes to better track events and attendees. The UW–Madison Entomology Department held Wisconsin Insect Fest (https://entomology.wisc.edu/outreach/wisconsin-insect-fest/), a one-day family-friendly event, which featured an interactive booth about insects by the department's Insect Ambassadors and Meet Wisconsin's Wild Pollinators, a talk by Masters student and Bee Campus committee member, Eliza Pessereau. Additionally, the department's Insect Ambassadors Program, a graduate student-led outreach group, put together a Community Science Series hosted at the Lakeshore Nature Preserve from May through August, which included full-day topics of Monarch Larval Monitoring, Wisconsin Butterfly and Dragonfly Monitoring, and the Wisconsin Department of Natural Resources' Bumble Bee Brigade Program (https://entomology.wisc.edu/outreach/insect-ambassadors/community-science-series/). The UW–Madison Entomology Gratton Lab hosted a WiBee citizen science project outreach event at the Allen Centennial Garden in May. UW–Madison's Horticulture Department participated in Pollinator Partnership's 2023 Pollinator Week: hosting online webinars discussing pollinator-friendly practices featuring UW–Madison faculty and staff across multiple departments and the local 4H chapter (https://hort.extension.wisc.edu/pollinators/). In addition to departmental efforts, UW–Madison's education and outreach spanned across campus, the internet, and over the airwaves. At the UW–Madison Arboretum, Native by Design, a Native Gardening Conference featured keynote speaker Heather Holm and her talk Creating and Managing Landscapes for Native Bee and workshops on native plant garden design and management, native trees and shrubs, native plant identification and invasive species

(https://arboretum.wisc.edu/event/183173/). For public audiences, the Arboretum held 2 half-day bumble bee workshops covering biology, identification, and field surveys, as well as 6 native plant garden tours. Other outreach included teaching pollinator modules for 3 Master Naturalist trainings, and presentations for the Green Industry Short Course, Master Gardener Conference, Necedah National Wildlife Refuge, and UW Extension Pollinator Week, reaching over 1000 people across Wisconsin. UW Extension hosted an online class series titled Green Thumb Gardening including cover crop information (https://dane.extension.wisc.edu/horticulture/greenthumb/). UW Extension efforts were also featured on Wisconsin Public Radio with an episode of Garden Talk titled Planting for Pollinators (https://www.wpr.org/shows/garden-talk/planting-pollinators).

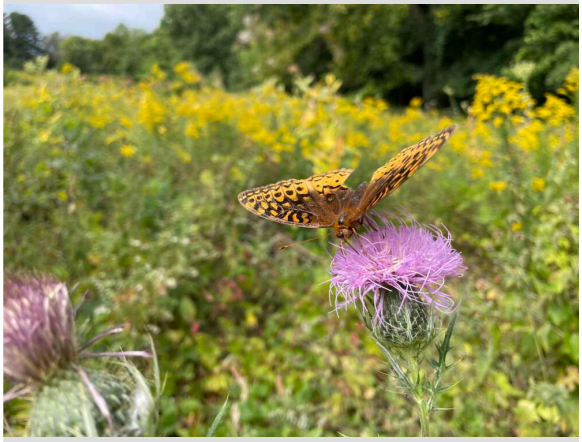
How many pollinator-related events or outreach activities did you host or help with in 2023 (in total)?
20

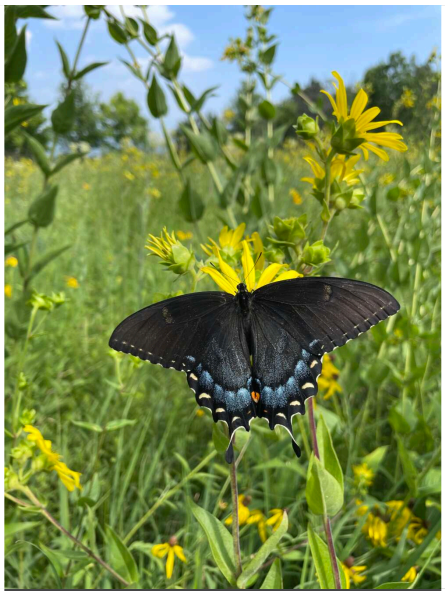

UW-Madison's Entomology Department Insect Ambassador Interactive Booth at Wisconsin Insect Fest. Photo credit UW-Madison Insect Ambassador Program.


Insect Ambassador Community Science series: Dragonfly Monitoring. Photo credit UW-Madison Insect Ambassador Program.


2023 Bumble Bee workshop at the Arboretum. Photo credit Susan Carpenter.

Due to planned 2024 Interpretive Sign Implementation, no 2023 signage photos are available. To supplement the Policy and Practice Section, here is a Map highlighting the UW-Madison Arboretum's pollinator habitat in natural areas (the areas shaded in red comprise 175 acres of good pollinator habitat with documented bee use) Image Credit UW-Madison Arboretum.


Due to planned 2024 Interpretive Sign Implementation, no 2023 signage photos are available. To supplement the Policy and Practice Section, here is a Fritillary on Native Pasture Thistle (Cirsium discolor), a thistle species native to Wisconsin, in the old field at the base of Picnic Point - Lakeshore Nature Preserve. Photo credit Adam Gundlach.


Due to planned 2024 Interpretive Sign Implementation, no 2023 signage photos are available. To supplement the Education and Outreach section, here is a photo of a Tiger swallowtail (black morph female) from the August 4 2023 Insect Ambassador Butterfly event in Blocore Prairie of Lakeshore Nature Preserve.

Curriculum, Continuing Education, & Service Learning

Please describe the curriculum your campus engaged in 2023, indicating whether it was part of a for-credit course or continuing education.

Across 5 different departments and their affiliate programs, in and out-of-class pollinator curriculum was provided in 2023 for undergraduate and graduate students. A total of 14 different for-credit courses incorporated pollinator content within its curriculum. Among these courses are: Entomology: The Entomology Department provided six courses in 2023 that featured pollinator content. Among these was ENTOM 450: Basic and Applied Insect Ecology. Within the course, students engaged in multiple different avenues of pollinator education including orchid-bee-orchid evolution, multi-order pollination, and hands-on pollinator activities including, pollinator surveying and analysis of host preference and behavior differences among bee genera (Apis and Bombus sp.) in the local Allen Centennial Garden. Soil Science: Within the Soil Science Program, the Capstone course Soil Management (SOIL SCI 499) engaged students in project-site analysis and native planting designs for Upham Woods, a UW Extension Outdoor Learning Center. The final presentation to Upham Staff and campus members included soil analyses and vegetation recommendations for a large planting to support pollinators. Horticulture: Sustainable Turfgrass Use and Management (HORT 261) curriculum provides content on sustainable practices including the minimization of pesticides and species selection. Additionally, this HORT 261 class in collaboration with the Grounds Team assisted in the Tripp Pollinator Lawn planting. Landscape Architecture: The Restoration Ecology (LAND ARC 668) curriculum provides instruction on native species, plants, and ecosystems. The course highlights the intersection of conversation and human interests and impact. Botany: One of the three courses that the Botany Department taught with a pollinator-relevant curriculum, The Vegetation of Wisconsin (BOT 455) provides instruction on the ecology of Wisconsin plant communities and connects pollinators with host plants. For a list of all associated for-credit classes: https://sustainability.wisc.edu/certifications-and-awards/bee-campus-usa/ Additionally, UW–Madison provided two Continuing Education (CE) opportunities that had a pollinator focus within the curriculum. The first was the Allen Centennial Garden 2023 Winter Class Series offered through Zoom (https://allencentennialgarden.wisc.edu/2022/12/05/winter-class-series-2023/). The second was UW Extension's Green Thumb Gardening Class Series (as previously stated in the Education & Outreach section)

How many of your for-credit courses included pollinator-related information in 2023?

14

How many students attended those for-credit courses?

823

How many of your continuing education courses included pollinator-related information in 2023?

2

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

How many students participated in service-learning projects in 2023 to enhance pollinator habitat on or off-campus?
400

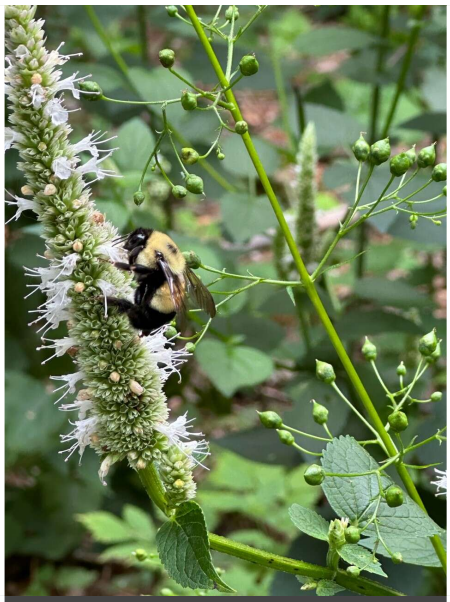
Please describe the service-learning projects your students were engaged in 2023, indicating which, if any, were associated with a course.
In addition to UW–Madison Green Fund projects (discussed above in the Enhancing Pollinator Health & Habitat) undergraduate service-learning on campus through Badger Volunteers, a semester-long program, featured pollinator-forward action in multiple formats. In the Fall, two Badger Volunteers cleared buckthorn and invasive species to assist in the restoration of the natural oak savannah at a local Madison school. These efforts helped to support pollinator education through student-formed native plant and flower seed balls and integrated pollinator curriculum. Additionally, the Allen Centennial Garden Team in collaboration with Badger volunteers had students assist in seed saving and garden care throughout 2023. Badger volunteers helped create exhibits about how to save seeds that were featured at community gardens throughout the Madison area. Allen Centennial Garden intern, Pearl Pincus created an activity booklet that corresponded with new interpretive signs that will allow visitors to interact with the reciprocal relationships found within the garden (set to be integrated this upcoming spring). Among the signage and interactive activity is a station centered around the relationship between bees and flowers and the mutual resources they gather through their relationship. At the Arboretum's native plant garden, 42 community volunteers (completing 552 hours of service) and 2 student employees participated in land care and gardening activities that promoted pollinator habitat and learned about pollinator conservation. During the summer, the native plant garden curator and 2 students conducted the Arboretum's 13th year of bumble bee surveys, conducting surveys Monday through Friday (weather permitting). In other Arboretum areas, over 650 volunteers (including UW–Madison students) participated in over 2,300 hours of land care, mainly removing invasive species in prairies, savannas, and woodlands. At Lakeshore Nature Preserve, roughly 380 UW–Madison student volunteers participated in the restoration of native plant communities by removing invasive plants and collecting and sowing native seed. In July, the Preserve's intern crew engaged in a bumble bee ecology and ID session led by Susan Carpenter, the Arboretum's Wisconsin Native Plant Garden Curator and Bee Campus Committee member.

Photo of Bombus sp. during the Fall 2023 ENTOM450 Field Exercise in Allen Centennial Garden. Photo credit Victoria Salerno.

Sustainable Turfgrass Use and Management (HORT 261) students learn from Grounds staff as they plant the Tripp Pollinator Lawn. Photo credit Ian Aley.

Vegetation of Wisconsin (BOT 455) students on their field trip to Spring Green Preserve. Photo credit Eliza Pesserreau.

Allen Centennial Garden Intern Pearl Pincus showing off and education about Bombus sp. during the Farmer's Market Science Program.



Rusty Patch Bumble Bee gyne nectaring on Giant Purple Hyssop. Arboretum 2023 Bumble Bee training group observed emergence from natal nest, grooming, feeding, and flight of Bumble Bee.. Photo credit N. Colley, an Arboretum Bumble Bee monitor.

Field session led by Susan Carpenter at the Lakeshore Nature Preserve in July 2023 for the student Natural Area Assistants and the Prairie Partners intern crew. Photo by Adam Gundlach.

Policies & Practices

Please describe actions taken to make pest management more pollinator-friendly.

The Grounds team manages the majority of the main campus. Grounds has made strides in promoting and implementing pollinator-forward practices within their work. Grounds established and implemented an Integrated Pest Management Program (IPM) in 2023 and eliminated pesticide use within their management of greenhouse spaces. The IPM program includes multiple different avenues of pest control. Methods used as alternatives to chemical application include (1) cultural methods focused on sanitization of tools and material and optimized plant care, (2) physical/mechanical methods such as hand pest removal and scouting, and (3) biological methods including biopesticide, beneficial insects, and mycorrhizae treatments. These methods are combined to decrease chemical use and promote safer environmental practices. Beyond the greenhouse, Grounds's pesticide use is largely limited to spot

treatments.

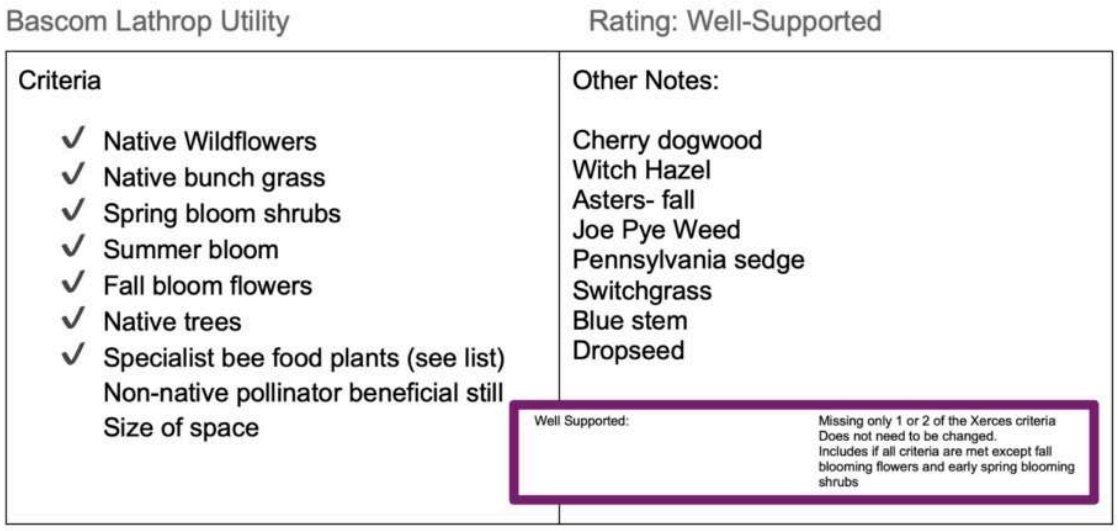
In your city or campus, are any policy initiatives underway to further protect pollinators, people or waterways from pesticides?
Grounds: Planned next steps for Grounds include organic-focused management and diversification of lawn plants. Among these are organic management of the Chancellor Residence landscape (still in planning) and planting of micro-clover around the new VetMed building as a pilot test for other micro-clover installations. As a part of the Bee Campus initiative Grounds is collaborating with Campus Planning and Landscape Architecture to develop a Pollinator Inventory List that details the criteria put forth by the Xerces Society for Pollinator Landscaping for the Great Lakes Region and assesses how well designated areas across campus meet the criteria (see example snapshot in Policy and Practice Photo section). The goal of this assessment is to guide future landscape planning and management to expand pollinator support across campus and at all times of the year. UW–Madison Arboretum: The UW–Madison Arboretum consists of 1,200 acres in Madison, including remnant and restored prairies, savannas, woodlands, wetlands, a native plant garden, and a woody plant collection. Over the last 5 years, the Arboretum's primary goal for managing prairie and oak savanna units has been to maintain and where possible enhance natural biodiversity. Efforts have largely been focused on managing invasive and over-abundant species through a wide variety of methods including mowing, girdling, cutting, hand-pulling, and judicious pesticide use. Pesticide use across the Arboretum consists of spot treatment, with broadcast limited to areas with single species composition when needed. Spot treatment targeting is highly selective and focused on individual species or suites of species. A section of the Arboretum, the Native Plant Garden, rarely uses herbicides and never uses insecticides or fungicides. Within the Arboretum's Longenecker Horticultural Gardens, Finalsan, a herbicidal soap, has been used since 2021 and has reduced glyphosate use within the area by 25% (https://www.neudorffpro.org/products/us-finalsan.html). Within subsections of the Longenecker Garden glyphosate use has been reduced by 90%. The land managers carry a battery-powered string trimmer with them as they go about their day. This allows them to use mechanical control to set back or kill herbaceous weeds without the use of any herbicide. Because the trimmer is battery-powered, fossil-fuel-powered trimmers are not needed. This ease of use lets staff catch weeds when they are younger and easier to control. Please see this article for an example of the Arboretum's lawn care perspective:
https://arboretum.wisc.edu/news/arboretum-news/longenecker-lawns-more-than-grass/ Lakeshore Nature Preserve (https://lakeshorepreserve.wisc.edu/): The Lakeshore Nature Preserve is a 300-acre natural area on the south shore of Lake Mendota that is managed for biodiverse native plant communities and wildlife habitat including pollinator habitat. Due to the size and the need for invasive species intervention, management on this site is centered around an Invasive Plant Handbook that is used for decision-making and control of the natural habitat. This decision-making tool assesses the severity and priority of treatment dependent on the invasive plant type and multiple avenues for intervention including physical methods such as weeding and prescribed burn and chemical use focused on targeted spot treatments. Broadcast pesticide application is not used in this area and additionally, chemical use is limited to herbicides with no insecticide or fungicide use. In 2023 the Lakeshore Nature Preserve updated its Master Plan, highlighting vegetation management plans. This plan is considered a living document to be re-evaluated regularly.

Did your committee participate in any continuing education on ecologically-based Integrated Pest Management planning?
N/A

Please check actions you have taken to make pest management practices more pollinator-friendly.

- Implemented non-chemical pest prevention and management methods on city or campus grounds

Any lessons learned you would like to share?
Throughout our Renewal Process, we sat down and talked with the groups on campus highlighted in this report. In our conversations we found a repeated sentiment of hopefulness and excitement. Each group shared the wonderful progress and steps they had made towards a more pollinator-friendly campus and expressed how the buy-in across campus is promising and genuine. We are thankful for the structure provided by the Bee Campus certifcation to help us build such a strong foundation for our continued efforts to support pollinators.



Snapshot of Grounds Pollinator Inventory List with Bascom Lathrop Utility as the location under assessment. Insert is of Criteria for to be considered a Well-Supported Pollinator area. Image Credit UW-Madison Grounds.

2023 UW-Madison Bee Campus Committee

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AN INITIATIVE OF THE XERCES SOCIETY

XERCES SOCIETY
for Invertebrate Conservation

Learn More

Integrated Pest Management Plan:

Recommended Native Plant List:
https://dnr.wisconsin.gov/topic/endangeredresources/nativeplants
Recommended Native Plant Supplier List:
https://widnr.widen.net/s/rfsbfc22w6/nh0698

https://sustainability.wisc.edu/certifications-and-awards/bee-campus-usa/
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