

Bee Campus USA - James Madison University

Report on 2021

Pollinator Habitat Creation & Enhancement

On October 15, 2021, volunteers were called to help plant 100 fruit trees and shrubs on JMU's East Campus Hillside in front of the ISAT/CS Building to start the JMU Edible Forest Garden. Approximately 60 people came out for the planting with an estimated 45 students participating. The JMU Edible Forest Garden project is led by Mikaela Schmitt-Harsh, a professor of interdisciplinary liberal studies and biology at JMU and an ISA Certified Arborist. "The primary purpose of a forest garden (also known as a food forest) is to produce nutritious food in a sustainable way, in a way that is modeled after forest ecosystems. We want to provide habitat for wildlife, build soil, sequester carbon, improve water and nutrient cycling and provide areas of beauty for visitors of the site." The JMU Edible Forest Garden merges design principles that are common to permaculture orchards and natural woodland systems. Trees will be planted in rows, though a diverse assemblage of fruit trees, nitrogen-fixers and fruiting shrubs will be planted. The planting of the understory layers, including herbs, ground cover, root crops and other pollinator plants is expected to begin in the spring of 2022. The project is intended to serve as an educational resource for the James Madison University campus. The design includes an outdoor learning space, which can be used to host classes, workshops and training programs. In the long term, Dr. Schmitt-Harsh would like for this project to serve as a model for other urban food forestry initiatives, whether it be on college campuses or in community spaces. "As urban areas expand and the number of people residing in cities expands, urban forests – including food forests – will become increasingly critical to sustaining environmental quality and human well-being. By teaching students how to plant and care for trees, we hope to empower them as environmental stewards and engage their interests in sustainability." The project was made possible by a generous donation from Danone N.A. through JMU Foundations, with additional support coming from the Virginia Department of Forestry. More about this project is available here: <https://sites.lib.jmu.edu/foodforest/>



Photo of volunteers getting trained to plant trees for the Food Forest project



Photo of volunteers planting trees for the Food Forest project



Photo of proposed tree layout for the Food Forest project



Education & Outreach

In 2021 the EJC Arboretum, who also has a member on our Bee Campus Advisory Committee hosted the following events:

- (2) Arboretum Explorer Camps, with 39 students ages 5-10. The students did a butterfly release as well as plant flowers. For summer 2022, they will also visit the Food Forest and the pollinator meadow on east campus.
- (3) Science Explorers Camps with 101 students from grades 1-12 and did various activities that involved pollinators including pollinator scavenger hunts, constructing seed balls, and bird feeders to hang on campus.
- A "Nature All Around Us" College for Kids course with 10 students that did pollinator related art projects and activities such as scavenger hunts, coloring the parts of a flower, making seed balls, making bird feeders



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Photo of participants in the Arboretum Explorer Camp constructing bird feeders

Courses & Continuing Education

For-credit, JMU undergraduate courses • Amy Goodall co-advised (with Zack Bortolot, Geography) Robby Cordyts Geographic Science honor's thesis: Influence of the Surrounding Environment on Sulphur Butterflies in Harrisonburg VA. The project included study of butterfly species presence and abundance on the east campus hillside and E.J. Carrier Arboretum. • Spring 2021 classes: GEOG 210 (24 students) and GEOG 340 (24 students). Use of east campus hillside



and EJC Arboretum for studies of pollinators, to meet requirements for lab and field experiences. GEOG 210 and 340 learned of bumble bee life cycles and VA bumble bee species. One team of the GEOG 340 class found a queen bumble bee during field observations in the arboretum (photo of the GEOG 340 student team included). • GEOG 490 (senior Research) Fall 2021. Four students surveyed butterfly populations in habitat patches throughout east campus and the EJ Carrier Arboretum, from early September until frost. Two GEOG 490 students are continuing the project this semester (spring 2022), with analysis of collected data. Senior research project title: Multiple Spatial Scale Analyses of Butterfly Habitat in Harrisonburg, VA. • GEOG 490 observed a new species of butterfly on campus. It was the first confirmed, documented sighting of a White M Hairstreak (*Parrhasius m-album*) on JMU's east campus and in the Harrisonburg/ Rockingham County area. Continuing Education As outlined in the Education and Outreach section, the following activities were undertaken regarding continuing education: • Through the summer of 2021 the Professional & Continuing Education's Youth Programs hosted two Arboretum Explorer Camps for 39 participants from the ages of 5-10. The students did a butterfly release as well as plant flowers. For summer 2022, they will also visit the Food Forest and the pollinator meadow on east campus. • Additionally, Professional & Continuing Education's Youth Programs organized three Science Explorer camps for 101 participants in 1st-12th grades that involve pollinator activities including pollinator scavenger hunts, constructing seed balls, and bird feeders to hang on campus. • A "Nature All Around Us" College for Kids course with 10 students that did pollinator related art projects and activities such as scavenger hunts, coloring the parts of a flower, making seed balls, making bird feeders



Photo of the GEOG 340 team that found a queen bumblebee in the EJC Arboretum



Photo of a white M hairstreak photo was taken by student Michael Farber. It was observed in the riparian vegetation by the west retention pond (hotdog pond) near King Hall.



Service-Learning

• An estimated 45 students assisted with tree planting for the Edible Food Forest Project. See description in Enhancing Pollinator Health & Habitat above. • 7 students in GEOG 340 weeded the pollinator beds on the East Campus Hillside during spring 2021. • On September 24, 2021, the JMU Geography Club Buzzing for Pollinators, hosted a pollinator BioBlitz event. This event was in conjunction with a Harrisonburg city-wide BioBlitz and attended by JMU Geography Club members and Harrisonburg Parks and Rec. Observations of pollinators (butterflies and bees) were submitted to iNaturalist.

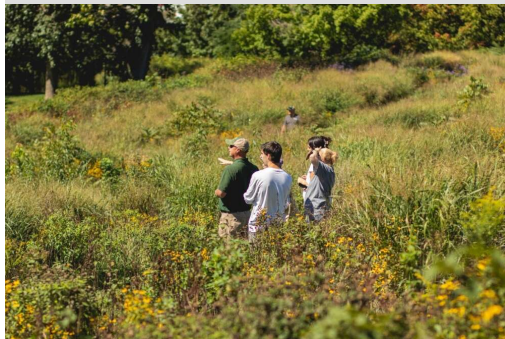
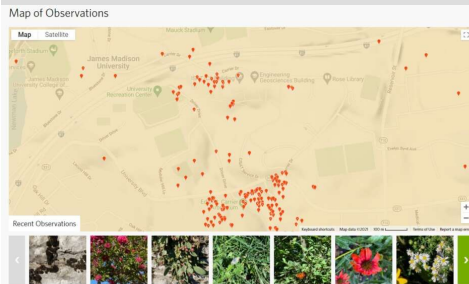


Photo of students working with City staff in surveying the East Campus Hillside from the Buzzing for Pollinators event in September 2021



Map that shows the pollinator observations recorded on iNaturalist during the month-long BioBlitz event

Buzzing for Pollinators!

FRIDAY September 24th, 2021
12:30 PM – 1:45PM @ East Campus James Madison sculpture by the ISAT/CS building



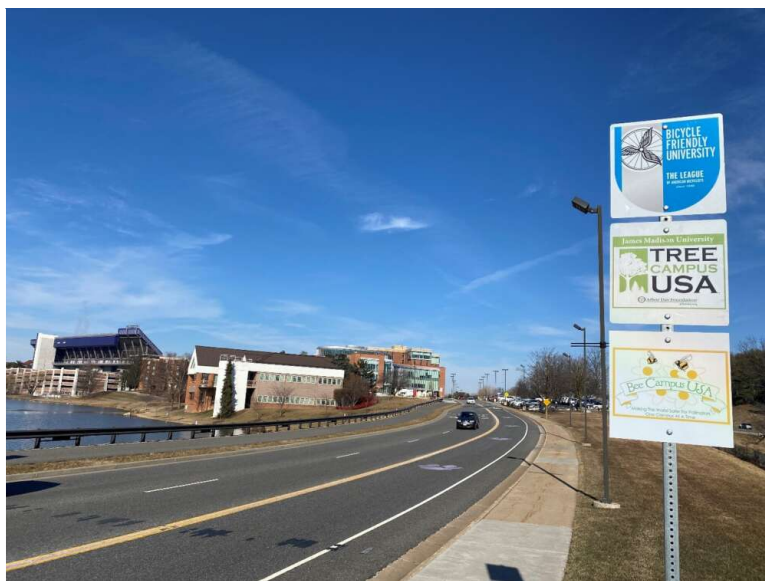
- Gathering data on pollinators around campus
- Done via iNaturalist app (downloading is free, we'll help you!)
- Led by Geography Club; all majors welcomed!
- Campus-wide event in conjunction with a nation-wide competition for documenting pollinators. Come help us win the competition!
- Most importantly, have fun!!

Photo of the Buzzing for Pollinators Event poster from fall 2021 organized by Amy Goodall

Educational Signage

No new signage was installed in 2021. In 2020, six signs were installed at the entrances to campus that highlight our participation with the Bee Campus USA program and an additional (4) signs were installed adjacent to our pollinator areas on campus to highlight their importance. The signs were funded with a gift to the ISNW for environmental stewardship from Scott Electric.





Example of signage installed at the (6) primary entrances to campus denoting our participation in the Bee Campus USA Program



Signage designating our pollinator conservation and education area at the perennial meadow on the ISAT Hillside.

Policies & Practices

To make pest management practices more pollinator-friendly, JMU has implemented an Integrated Pest Management (IPM) Plan that serves as a guideline for the following: (1) Outline the goals of pest management at JMU (2) Identify the responsible parties for pest management (3) Outline performance measurement, quality assurance and control strategies (4) Outline steps to identify pests at JMU (5) Outline the practices and strategies used to enforce pest control at JMU (6) Outline how pesticides are stored and applied on campus grounds (7) Outline preventive strategies for pest infestation. The JMU IPM plan applies to all 770 acres of the university campus grounds. This include JMU designated habitat areas. The University aims to protect habitat areas on campus by using pesticide conservatively across campus and to minimize site management practices on habitat areas. The IPM promotes the use of a range of preventative and non-chemical approaches to control pest populations and stave off infestation. If an infestation with unacceptable impacts occurs, thereby warranting additional treatment, IPM favors the use of least-toxic pesticides. Chemicals and pesticides are used only in targeted locations and for targeted species. The targeted application of a toxic pesticide is allowed only after all other reasonable non-toxic options are exhausted. The type and quantity of all pesticides used on campus is tracked and the location of each use is also documented. To reduce pesticide use, mechanical practices are also employed. These include baiting, trapping, using pest monitors, and rodent stations. Another strategy to reduce pesticide use and protect habitat areas is through preventing pest infestation. Strategies include: cleaning trash regularly, clearing debris, and provide adequate drainage. In addition, new plantings are selected in habitat areas based on appropriate climatology. The IPM policies are executed by trained technicians who receive certification every two years with a four-hour training.



Integrated Pest Management Plan: [ipm.pdf](#)

https://www.jmu.edu/facmgt/sustainability/Bee_Campus/jmu-pollination.shtml

Recommended Native Plant List: [habitat.pdf](#)

<https://svswcd.org/wp-content/uploads/2016/08/Native-Plants.pdf>

Recommended Native Plant Supplier List: [habitat.pdf](#)

https://www.jmu.edu/facmgt/sustainability/Bee_Campus/jmu-pollination.shtml



Photo of our recently planted land bridge meadow

Learn More

<https://www.jmu.edu/beecampus>

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Committee member Mikaela Schmitt-Harsh leading our volunteer tree planting day for the Food Forest project

