

## Expanding the Living Laboratory on East Campus

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### **Project Budget:**

**\$12,000**

### **Abstract:**

The East Campus Hillside area, including the meadow, raised bed garden plots, raised bed pollinator plots, and edible forest garden, has proven a valuable addition to teaching and learning on campus over the past 10 years. The meadow, as the longest standing project on the hillside, has been particularly effective at engaging students, with over 3,000 students in ISAT, Geography, Biology, IdLS, and other JMU campus programs reportedly using the site for research or other academic purposes.

Recently, a third of this meadow was removed to facilitate the addition of a 300-kilowatt solar panel system. In replacement of the lost meadow area, we have approval from the University to expand meadow into a nearby triangular lawn space located on the hillside. Funding to support grass removal, seed for cover crops and meadow plants, and contract work is being requested in this application. The new meadow will allow continued teaching with classes and student research projects that study ecological processes, scientific monitoring techniques and technologies, and the links between ecosystem health and human health.

Since establishing the Hillside Meadow in 2011, the east campus hillside has served as a field site for analyses of soil quality, plant identification and diversity studies, pollinator identification and diversity studies (butterflies, bumble bees, and other lesser-known pollinators), and the history of land use. Students have also investigated the importance of Hillside Meadow as a habitat for ecological processes such as pollination that are critical for human food crops. They monitor monarch butterfly migration that is important as a cultural and physical environment phenomenon. They also document wildlife seed dispersal that contributes to forest growth, learning about the importance of green vegetation in reducing atmospheric carbon that contributes to human-induced climate change. A faculty team is presently working on a scholarly paper to highlight the educational value of the entire Hillside area, which includes a restored stream. In addition to the students' learning essential ecological processes, the JMU community appreciates the aesthetics of having a campus meadow filled with flowering plants.

In 2021, JMU received funding to replace an existing solar panel system adjacent to Hillside Meadow with higher quality panels. This welcome expansion resulted in a loss of approximately one-third of Hillside Meadow. While Facilities Management will plant a shade-tolerant meadow mix below and around the new solar panels, the University also recognizes the value of the former meadow space for education and has offered a triangle-shaped lawn section bordered by three sidewalks for a new meadow.

The proposed new meadow area with its different mixture of annual and perennial flowers and grasses will allow the comparison of ecological processes that take place between it and the Hillside Meadow. This will permit students and faculty to expand the types of uses and the number of classes that use the East Campus Hillside. The new meadow will be mowed once a year in the late winter, following the pattern of maintenance on the Hillside Meadow.

This proposal requests assistance in establishing additional meadow space, emphasizing the importance of the setting as a teaching and learning laboratory. It also proposes the modification of the raised pollinator garden beds for increased accessibility, tasks which require support. Students will monitor the establishment of the Triangle Meadow and consider changes in the composition of plant species over time through surveys of species diversity that are repeated each semester in core courses. Students in resource management courses will remove invasive plant species as the meadow matures, gaining needed knowledge and skills for enhancing biodiversity. An environmental science course will examine soil properties and soil carbon changes through time as well as keeping an ongoing inventory of plant species. A biogeography course will survey diversity of butterfly and pollinator species, specifically bumble bees, on the site, to monitor these important insects. Such work furthers JMU's identity as a certified affiliate of the Bee Campus USA program, a designation awarded in 2019 in large part due to the Hillside Meadow. It also allows students to contribute their sightings to national databases of biodiversity, which are critical to monitoring the effects of climate change on ecosystems.

The raised beds for pollinators presently require reworking of the beds themselves and then replanting the pollinator species. The species used will include those known to attract rare butterfly and bee species, including the previously mentioned monarchs. We also want to make this area accessible to people with disabilities. Presently the slope makes access to people in wheel chairs or on crutches difficult. By building a nearly level pathway covered with mulch or gravel from the nearest walkway we can solve the problem. This pathway will also provide access to the lowest of the four existing meadow plots.

**Project Budget Amount:** \$12,000

Personnel: \$6,500

Supplies/Materials: \$5,500

**Additional information to explain or expand on budgetary needs:**

There are some local companies that have experience in sod removal and meadow planting so these would be invited to bid on the project. The seed mix and cover crops have been discussed by the faculty involved and we will direct the chosen company concerning what to plant. The pollinator beds require additional wood and more soil and compost, which will come from off campus sources, as will any other planting stock required.