STUDENT SUSTAINABILITY COMMITTEE

Funding Application – Step II

Funding Criteria

A. General Rules

1. Students, faculty, and staff are encouraged to submit requests for funding. Student-led projects require a faculty or staff sponsor in order to have funds awarded.
2. Funding can only go to university-affiliated projects from students, faculty, staff, and departments.
3. All SSC projects must make a substantial impact on students. This may be a direct impact or an impact through education and engagement. All SSC funding is 100% from student green fees, so the projects funded by the students must benefit them.
4. SSC encourages innovation and new technologies – creative projects are encouraged to apply.
5. Unless a type of expense is specifically listed below as having restrictions, SSC can generally fund it. The items referenced below should not be taken as comprehensive list.

B. Things SSC Can Fund, On A Case-By-Case Basis

1. SSC can fund feasibility studies and design work; however, it must work toward ultimately addressing a sustainability need on campus.
2. SSC can fund staff positions that are related to improving campus sustainability. Strong preference will be given to proposals receiving matching funding from departments and/or plans for maintaining continuity of the position after the end of the initial grant.
3. SSC can fund outreach events with a central theme of sustainability, provided their primary audience is the general campus community.
4. SSC discourages funding requests for food and prizes but will consider proposals on a case by case basis that prove significant reasoning.
5. SSC can fund repairs and improvements to existing building systems as long as it works toward the goal of improving campus sustainability; however, a preference is shown to projects utilizing new or innovative ideas.
6. SSC can provide departments with loans for projects with a distinct payback on a case by case base. Loans will require a separate memorandum of understanding between SSC and departmental leadership pledging to repay the award in full and detailing the payback plan.

C. Things SSC Will Not Fund:

1. SSC will not fund projects with a primary end goal of generating revenue for non-University entities.
2. SSC will not fund personal lodging, food, beverage, and other travel expenses.
3. SSC will not fund any travel expenses.
4. SSC will not fund tuition or other forms of personal financial assistance for students beyond standard student employee wages.

Your Step 2 funding application should include this application, the supplemental budget form, and any letters of support.

Please submit this completed application and any relevant supporting documentation to Sustainability-Committee@Illinois.edu. The Working Group Chairs will be in contact with you regarding any questions about the application. If you have any questions about the application process, please contact the Student Sustainability Committee at sustainability-committee@illinois.edu.

General & Contact Information

Project Name: Identifying the campus benefits of a large-scale prairie experiment
Total Amount Requested from SSC: $75,000

Project Topic Areas: ☒ Land & Water ☒ Education ☐ Energy
☐ Transportation ☐ Food & Waste

Applicant Name: Alexandra Harmon-Threatt
Campus Affiliation (Unit/Department or RSO/Organization): Entomology
Email Address: aht@illinois.edu

Check one:
☒ This project is solely my own ***OR***
☐ This project is proposed on behalf of (name of student org., campus dept., etc.):

Project Team Members

Name	Department	Email
Alexandra Harmon-Threatt	Entomology	aht@illinois.edu
Anthony Yannarell	Natural Resources & Environmental Sciences	acyann@illinois.edu
Name	Department/Organization	Email Address
Name	Department/Organization	Email Address

Student-Led Projects (Mandatory):
Name of Faculty or Staff Project Advisor:
Advisor's Email Address:

Financial Contact *(Must be a full-time University of Illinois staff member)*
Contact Name: Penny Broga
Unit/Department: School of Integrative Biology
Email Address: broga@illinois.edu

Project Information

Please review the proposal materials and online content carefully. It is highly recommended you visit a working group meeting sometime during the proposal submission process.

Please provide a brief background of the project, its goals, and the desired outcomes:
You may copy and paste your Step 1 application answer if nothing has changed.

Near campus exists an under-utilized living laboratory that could contribute significantly to student education and improve campus sustainability initiatives like iCAP. This 13-acre prairie experiment was established in 2018 with funding from a USDA grant. Across 96 plots, the project was designed to examine interactions between soil, microbes, prairie plants, agrochemicals, and bees with the goal of identifying best prairie restoration practices for habitat adjacent to crops. *As an extension of this we are proposing to have students lead efforts to track ecosystems services within the plots including carbon sequestration in plants and soils.* Over the last 3 years, 5 students conducted guided and independent research in this habitat and with funding from SSC we will significantly expand student involvement (5-10 per year) and research opportunities. In particular, we will make access to summer research more equitable by ensuring fair pay for students engaged. The outlined budget is largely allocated to student funding both during the summer and the semester (~$17.5K per year). This should allow a more diverse group of students participate. With supervised guidance by the research technicians that oversee the project, students will lead insect, soil, and plant sampling initiatives (costing ~$2K per year to dry large quantities of plant biomass) that will expose them to ecological and plant research techniques. Advanced students will also conduct independent research projects within the system and funds have been requested to support their independent projects (~$3K per year). *At the end of the project we will have valuable data on carbon sequestered across treatments, other ecosystems services within the plots, and recommendations for future campus prairie plantings.*

Where will the project be located? Are special permissions required for this project site?
If special permission is required for this location, please explain and submit any relevant letters of support with the application.

The project will primarily be located at the Phillips Tract Pollinator Habitat Restoration experiment, which is located on a University-owned and managed property just outside of Urbana's NE city limits (N Cottonwood Rd, between E Airport Rd and E Anthony Dr). This site is approximately a 15-minute drive from campus. No special permissions are required for this project site but we have requested an additional $5000 per year to support CNA management of the site as additional management will be required during this term to support research and student projects. The project will utilize an existing ecological experiment established by the team members (Drs. Harmon-Threatt and Yannarell) in conjunction with the University of Illinois' Committee on Natural Areas (CNA). The project team works closely with the CNA Coordinator with respect to land management and scientific activities at this site. Additional work for the project will take place on the U of I campus, in the labs of the team members, as required by the specific needs of student-led research projects.

Other than the project team, who will have a stake in the project? Please list other individuals, groups, or departments affiliated directly or indirectly by the project. This includes any entity providing funding (immediate, future, ongoing, matching, in-kind, etc.) and any entities that benefit from this project.
Please attach letters of commitment or support at the end of the application.

The primary beneficiaries of this project will be undergraduate students who are passionate about sustainability, ecology, and the environment. Our project will provide financial support and faculty-mentored, student-centered research experiences for students who would not otherwise have easy access to these

resources. The results generated by these student research projects will provide new information about the University's carbon footprint and carbon sequestration efforts, and the student research projects will also contribute to a better understanding about best practices for pollinator habitat restoration and its knock-on effects on supporting and regulating ecosystem services. As a result of this increased knowledge, we will learn how to become better stewards of campus lands and sustainable campus landscapes, so the University community will also have a stake in this project. We are requesting some support for land management of the Phillips Tract Pollinator Habitat Restoration experiment plots (mowing, invasive species control, maintenance of experimental treatments); the Coordinator of the University's Committee for Natural Areas (CNA) oversees this maintenance, and so the contributions of this project will benefit the CNA.

How will this project involve and/or benefit students?
This includes both direct and indirect impact.

Student research opportunity is the centerpiece of this project, and its success depends on direct student involvement. Team members Harmon-Threatt and Yannarell will work hard to recruit students from environmentally minded Registered Student Organizations and SIB and ACES classes, and we will provide training prior to the summer field season and continued mentorship over the course of the research process. Students will lead the data collection efforts. Team members will provide support and mentorship to empower the students to carry out data analysis, interpretation of results, and communication of results with the campus community and beyond. Through these experiences, students will be able to participate in the complete research "pipeline." They will learn a wide array of ecological sampling techniques, they will also learn data management and analytical techniques. There will also be opportunities to conduct group research that will allow students leadership, planning and management skills. Further, our long-term goal is to make the site available for teaching and research for more students and this step will allow us to seek future funding for long-term maintenance. During summer 2020, even with covid restrictions, we were able to have students safely and easily work in the site. Because the site is large and close to campus students were able to transport safely and socially distance at the site and we anticipate that regardless of COVID next summer to be able to offer a full research program in summer 2021. While most summer programs were cancelled due to the unique situation at Phillips Tract we were able to continue with our original plan with only slight modifications for safety.

How will you bring awareness and publicize the project on campus? In addition to SSC, where will information about this project be reported?

A key initial step of this project will be recruiting students for summer research projects, and it will be necessary for us to quickly publicize this project on campus. Our recruitment efforts will initially focus on students enrolled in classes such as NRES 201 Introductory Soils, NRES 285 "field experience" classes, IB 451 Conservation Biology, IB 401 Entomology, IB 203 Ecology, and NRES 420 Restoration Ecology. We will also reach out to relevant student organizations such as Red Bison, the Soil and Water Conservation Society, Students for Environmental Concerns, and the Fish and Wildlife Society. Team members Harmon-Threatt and Yannarell will visit these classes and student organizations to describe the project and to solicit applications for summer research projects. We will also advertise broadly on campus in the form of flyers, emails to student organization lists, and "news" blurbs in the IB student newsletter spotlight, the NRES news bulletin, the Green Observer, and the Institute for Sustainability, Energy, and Environment newsletter.

As our project generates data, we will feature student research outcomes at the Undergraduate Research Symposium. Our goal is to provide students with high-quality, professional research experiences, so we anticipate that these student projects will lead to publications in scientific journals and talks at professional

science society meetings (e.g. Ecological Society of America). We are hopeful that students involved in this project will be interested in taking their research "all the way" to publication, and our team members will mentor them through data analysis, reporting, manuscript preparation, and presentation skills needed to widely disseminate their findings.

Financial Information

In addition to the below questions, please submit the supplemental budget spreadsheet available on the Student Sustainability Committee website. Submission of both documents by the submission deadline is required for consideration of your project.

Have you applied for funding from SSC before? If so, for what project?

No.

If this project is implemented, will you require any ongoing funding required? What is the strategy for supporting the project in order to cover replacement, operation, or renewal costs?
Please note that SSC provides funding on a case by case basis annually and should not be considered as an ongoing source of funding.

The primary objective of this project is to increase student research opportunities. We seek to provide financial support for student-led and faculty-mentored research projects to take place at the Phillips Tract Pollinator Habitat Restoration experiment, both over the summer and the academic year. Because these projects are student-facing, they will be designed with the student experience as the primary focus. Thus, the timeframe of this project is based on enhancing the students' academic careers with hands-on, faculty-mentored research experiences, and the success of this project will not require ongoing funding. There are no replacement costs to cover, and the project will not require ongoing operations or renewal costs.

However, the nature of research is that it tends to raise new questions and lead to new research opportunities. We fully expect this project to be no different. Thus, while this project is primarily designed to enhance the short-term research experiences of a "cohort" of students, we are optimistic that the work of those students will open up new opportunities for future research (e.g. research experiences for upcoming students, medium-term graduate-level research projects, and preliminary data for external grant applications). We plan to build on the foundations of this project by seeking funding for those new opportunities. We will pursue on-campus sources of funding through the Institute for Sustainability, Energy, and Environment seed funding grant program, the College of ACES Future Interdisciplinary Research Explorations award program, and the Campus Research Board. We will also use the data generated by these research activities as preliminary results to support Federal grant applications to the National Science Foundation (Division of Environmental Biology) and the USDA National Institute of Food and Agriculture.

Please include any other obtained sources of funding. Have you applied for funding elsewhere?
Please attach any relevant letters of support as needed in a separate document.

The centerpiece of this project -- the Philips Tract Pollinator Habitat Restoration experiment -- was established in part with funding from a USDA-NIFA grant that is ongoing until January 2023. This research grant is available to provide additional support (field/lab consumables, sample analysis, travel) for student research projects and assessments of ecosystem service benefits to campus that are outside of the scope of the funds requested in the original proposal. In addition, team member Yannarell has funding from the USDA-Hatch program to conduct plant-microbe research at the Phillips Tract Pollinator Habitat Restoration experiment, and this funding could support student research needs where appropriate.

Environmental, Economic, and Awareness Impacts

How will the project improve environmental sustainability at the Urbana-Champaign campus? If applicable, how does this project fit within any of the Illinois Climate Action Plan (iCAP) goals?

The Phillips Tract Pollinator Habitat Restoration experiment is not currently included in the carbon sequestration audit for the university (iCAP chapter 7 section 5). However, it has potential to contribute both directly and indirectly to campus carbon sequestration goals. Replacing human-dominated ecosystems that release greenhouse gases with ecosystems that have net carbon storage potential are a key part of climate change mitigation efforts. The Phillips Tract Pollinator Habitat Restoration experiment is a prime example of this. The site was previously a corn field, and the restoration of prairie habitat on this site will substantially alter the carbon sequestration benefit to the university. The Habitat Restoration experiment itself is focused on using native plantings and prairies (24 distinct plant communities) to improve habitat for pollinators, and so the project also addresses features of iCAP's *Sustainable Landscape Plan* (Bee Campus USA and Native Plantings & Prairies). Additionally, the experimental design of assessing plant, soil, microbe interactions will also help inform best practices for establishing future prairie strips and buffers such as the one installed around the solar farm. By identifying the best restoration and management practices for former corn fields will significantly benefit for future plantings. Because one of the goals of this project is to determine the carbon savings, we do not know the exact values but estimates place it at .30 to 1.7 Metric Tons of carbon sequestered per acre of prairie and thus between 3.9 and 22.1 MT of carbon. We will be able to report the exact figures at the end of the project. Lastly, planting prairie has numerous other environmental benefits including increasing habitat for other animals. We will be tracking the animal return to the land as well. While this is not explicitly included in the Climate Action Plan it is part of the Sustainable Landscapes Plan for campus.

How will you monitor and evaluate the project's progress and environmental outcomes? What short-term and long-term environmental impacts do you expect?
Some examples include carbon emissions, water conservation, green behavior, and reduced landfill waste.

This project will help us estimate the carbon sequestration potential of the various treatment plots at the Phillips Tract Pollinator Habitat Restoration experiment. This will provide a deliverable outcome that is relevant to the iCAP carbon sequestration audit. Thus, a short-term environmental impact of this project will be to provide a better understanding of the University's carbon footprint and how this restoration project can figure into greenhouse gas mitigation plans. However, the Phillips Tract Pollinator Habitat Restoration experiment involves a number of different treatments (plant community composition and diversity, soil amendments, microbial community manipulations) that can be evaluated against each other to understand how management practices influence the success of habitat restoration. Thus, while we will generate a site-wide estimate of carbon sequestration potential, we will also be able to explore best management practices (by comparing treatment plots) that can lead to differences in carbon sequestration potential. A medium-to-long term environmental impact of this project will be better-informed practices for restorations designed to maximize their impact on carbon storage. Furthermore, the student-led research projects will focus on a variety of ecosystem services, including pollinator health and diversity, soil nutrient cycling, plant-microbe interactions, biodegradation of agriculture pesticides, invasive species control and enhanced diversity of native plants. A long-term environmental impact will be a better understanding of these important supporting and regulating ecosystem services and how they respond to different management practices.

What are your specific outreach goals? How will this project inspire change at UIUC?

Recruiting students to participate in the program will be our primary outreach. The project will provide enhanced research opportunities for students interested in environmental sustainability, ecology, and habitat restoration. We hope that the hands-on experiences and training provided by this project will inspire many of these students to continue in environmental and/or research-oriented careers, and the outcomes of this project will "ripple outward" as the students progress. In the nearer term, our outreach will involve other members of the campus community as the team members and the students communicate their results at the Undergraduate Research Symposium, to environmentally oriented student organizations, and to local community groups such as the Grand Prairie Friends. The student-led research projects will highlight the diverse ecosystem services benefits -- in addition to carbon sequestration -- that derive from native habitat restoration. We hope that our project will inspire additional restoration projects on campus and in the community, and we hope that our project will provide guidelines on best practices for native habitat restoration.

If applicable, how does this project impact environmental injustice or social injustice?

Undergraduate research experience is one of the most important features of successful graduate school applications. We seek to provide these research experiences for undergraduate students who might not otherwise have access to them, particularly students who come from underrepresented minoritized and marginalized communities. By working specifically with the McNair scholars program on campus we hope to help recruit students interested in sustainability. In particular, by providing students with financial support over the summer (and beyond), we seek to remove one of the barriers to summer research that disproportionately affects students from underrepresented groups. Our project will provide fair pay stipends, seeking to make research opportunities more broadly available to a more diverse group of future environmental leaders.