



## STUDENT SUSTAINABILITY COMMITTEE

### Funding Application – Step 2

Please submit this completed application, the supplemental budget spreadsheet, and any relevant supporting documentation by xxxxxDEADLINExxxxx to [Sustainability-Committee@illinois.edu](mailto: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 SSC Program Advisor, Micah Kenfield, at [kenfield@illinois.edu](mailto:kenfield@illinois.edu)

### General Information

**Project Name:** Native Plantings at the Arboretum Phase II

**Total Amount Requested from SSC:** \$50,000 for 'Land' (box not active)

**Project Topic Area(s):** Energy    Education    Food & Waste  
                                  xLand                    Water            Transportation

### Contact Information

#### Project Lead

Applicant Name: Kevin McSweeney  
Unit/Department: NRES/Arboretum  
Email Address: mcsween@illinois.edu  
Phone Number: 608 712 4101

#### Financial Contact *(Must be Full-time University of Illinois Staff Member)*

Contact Name: Kelly Sullan  
Unit/Department: NRES  
Email Address: sullan@illinois.edu  
Phone Number: 217 244 1621  
Organization Code: UIUC Organization Code (for CFOP) – Must not start with 9

#### Facilities Management Contact *(If Applicable)*

Contact Name: Name of Applicant or Project Lead  
Email Address: Preferred Email Address

#### Primary Project Team

Name	Department	Email
Kevin McSweeney	NRES/Arboretum	mcsween@illinois.edu
John Marlin	ISTC/PRI	marlin@illinois.edu
Jay Hayek	NRES/Extn Forestry	jhayak@illinois.edu
Lesley Deem	Entomology/Pollinatarium	lesleyd@illinois.edu

## **Project Description**

*Please provide a brief background of the project, the goals, and the desired outcomes:*

The former forest research area south of the main Arboretum grounds has been neglected for over 20 years and has largely been overtaken by invasive honeysuckle and other woody invasive plants (see Appendix I: Aerial images). The honeysuckle blocks sunlight from reaching the forest floor. The area now contains essentially none of the native flowering forbs and bushes that normally occur in healthy woodlands. Additionally honeysuckle is unpalatable to almost all native insects and mammals. The project area covers approximately 22 acres bordered by Windsor Rd., Lincoln Ave., The Pollinatarium, and the Pollinatarium road on the east. The Arboretum has recently assumed long term management of this site. The goal is to create a campus and community resource for education/outreach, applied research and recreation. The expectation is that through collective efforts among students, staff, faculty and community members we will create and sustain a revitalized green space on campus. In turn, we anticipate that as the area becomes more accessible and aesthetically attractive, use will increase and diversify as campus and the community assume greater ownership of the resource.

An effort began last year to find ways to restore some of the area's ecological, educational and research functions and begin rehabilitation of a small portion of the area by reintroducing native plants. The SSC provided funding for this initial project. Initial pilot work began in the spring of 2015 with several work periods removing honeysuckle using chain saws and loppers near the pollinatarium. Arboretum staff operated a rented chipper and over a hundred student and community volunteers hauled brush. The work was highly successful but very time consuming. Subsequently, Jay Hayak (State Extension Forestry Specialist) found a company with a machine (aka Forestry Mower) that shreds honeysuckle at a rapid rate and used it on the U of I Forest Plantation. The machine was used for two days in the Arboretum project area with impressive success. The work focused on broad scale removal of invasive brush avoiding zones close to desirable trees. We estimate that using the forestry mower, initial broad scale honeysuckle removal at the site can be accomplished in about two weeks. This compares to 3-5 years that we estimate using our current approach, which solely relies on hand-held tools and large crews of volunteers to haul brush to a chipper for subsequent disposal. We expect that using the forestry mower will achieve many benefits for the project. Importantly, tangible results will be achieved swiftly. This will result in removal of dense impenetrable brush opening a fresh canvas upon which a variety of ecosystem management practices will be designed and initiated to enhance biodiversity and other ecosystem services along with the aesthetic quality of the landscape.

Preliminary work in the Spring of 2015 shows that at least of year of follow up is needed to suppress regrowth of honeysuckle after the larger plants are removed. Therefore, most planting will not occur until 2017 except for some test areas.

## Project Timeline:

2016 –The main focus of activity will be eliminating invasive vegetation over the entire project 22 acre area. Contractors will use a forestry mower to remove most honeysuckle and other invasive woody vegetation, leaving the mature stands of trees. This will be followed by contract herbiciding to eliminate resprouting vegetation. Volunteers and hourly restoration technicians will then use chainsaws and hand loppers to remove vegetation the machine could not reach. Some stands of trees will be thinned to allow healthy growth. As the seasons progress they will hand remove and selectively herbicide newly emerging problem species. Additionally they will establish small native plantings of a variety of species, and begin growing some woodland wildflowers for transplanting.

2017 -- During this year suppression of invasive plants will continue as needed. Trees, shrubs, and wildflowers will be introduced to areas where invasive vegetation is sufficiently under control.

2018 – Planting will occur over larger portions of the project area. Plants will come from a variety of sources including donations. Suppression of invasive plants and thinning of tree stands will continue as necessary.

2019 -- Planting and management of native species will continue as will suppression of invasive plants.

Please note the schedule of activities aligns with a proposed budget that requests major expenses in 2016 for site clearance. The budget in subsequent years is much less and will be targeted towards follow up invasive species control and plant introductions. The requested funds will allow the initial part of the goal to be reached, but will not provide for all of the plant material envisioned. The project team will continue to seek other funds and donations of plant materials from commercial and other entities.

*How will the project improve the sustainability of the Illinois campus and how will the project go above and beyond campus standards?*

The goal is to turn the site into an outdoor laboratory as an example of a woodland that contains a diverse representation of native trees, shrubs, and flowering forbs. These plants will be selected to support a wide range of pollinators, other insects, fungi, lichens, birds, and other fauna.

The project is not designed as a classic restoration in which an attempt is made to recreate a representation of a native ecosystem. The site history and modifications to the surrounding landscape (e.g. drainage, urbanization) frustrate an attempt to recreate a wet prairie, the likely precursor native ecosystem to the subsequent drainage and establishment of 'european'

agriculture at this site. The site's more recent history as an experimental research forestry plantation adds further complexity to conceiving what might be a 'native' ecosystem. Our approach is to remodel the landscape through removal of undesirable species, protection of desirable species and introduction of management practices and new species that will enhance biodiversity and other ecosystem services. As such our project is a novel experiment in landscape remodeling that will test the feasibility of improving important ecosystem services and functions including: pollinator habitat and services, habitat for other insects, fungi, lichen, birds, small mammals etc., soil and biomass carbon storage, optimal water infiltration and storage. **In this sense the project is distinctive if not unique and will add a new dimension to the exploration and investigation of sustainability at UIUC.**

*Where will the project be located? Will special permissions be required to enact the project on this site? If so, please explain and submit any relevant letters of support with the application.*

Appendix 1 provides an image of the project site location, which is bordered to the west by Lincoln Ave and to the south by Windsor Rd. Project Team Leader, Kevin McSweeney is the Arboretum Director and responsible for activities on site. He will consult as needed with campus, F&S and ACES colleagues, Ameren and City of Urbana as specific needs arise. For example, Ameren has already been consulted about tree trimming along their utility right-of-way.

*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 will be benefitting from this project. Please attach letters of commitment or support at the end of the application.*

The Arboretum projects have received a considerable in-kind and volunteer support. The Arboretum staff has operated a large chipper and chain saws at work days. The campus extension forester, Jay Hayek, trains students in the use of chainsaws and herbicides and assists on workdays as a volunteer. Dr. John Marlin spends many volunteer hours coordinating this and several other native planting projects. The Departments of Natural Resources and Environmental Sciences and Crop Sciences contributed \$30,000 to purchase a chipper. UIUC South Farms and the Turf Research Center provide additional support in terms of expertise and short term equipment loans (grain trucks for hauling chips etc.). The Pollinarium provides a staging area and logistical support. Additionally, several staff and faculty members have contributed time and expertise and encouraged students to help with the projects.

The Red Bison student organization is the core of the volunteer effort scheduling regular work days. Other campus organizations and several classes have participated. Numerous community members join the students on work days. For example, the Master Naturalist

Program members receive volunteer credit for helping with campus native planting projects. On a Friday workday in November five Master Naturalists, two student volunteers, four student restoration technicians and four Arboretum staff removed honeysuckle. On another fall day nine student volunteers, three Master Naturalists and three restoration technicians worked.

*Please indicate how this project will involve or impact students. What role will students play in the project?*

Student volunteers and hourly workers, including recent graduates, have been heavily involved with phase I of this project. The student organization Red Bison regularly schedules work days at the site and several classes have provided credit opportunities for student participants. Additionally many community members have worked with the students at the site. This phase will expand the opportunities. In particular the campus forester will be providing interested students with basic chainsaw and herbicide application training. These technical skills provide valuable additions for building student resumes along with portfolios of 'hands-on' experience. The Arboretum staff has run a chipper on 5 occasions when groups of up to 20 student volunteers brought material to the chipper. In short the project has provided many students a firsthand look at a serious ecological problem and an opportunity to help correct it. Longer term, we anticipate developing classes that explore the theory and practice of restoration ecology using the site for field investigation and practical training.

Students will have the opportunity to participate in multiple aspects of site restoration, from brush removal, follow up herbiciding of honeysuckle re-sprouts, planting of native species, selective removal of trees and monitoring of dynamic changes in site characteristics. These sites are visited by many classes studying natural resources and landscape architecture.

Now that tangible success has been achieved in invasive brush removal, NRES and other interested faculty will be meeting in January 2016 convened by Profs McSweeney, Marlin and Hayak to discuss and develop strategies to use the area as an outdoor classroom. We are optimistic that this will lead to creation of on-going classes that will assist in monitoring phenology, changes in biodiversity and other measure of ecological change.

## 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?*

Soil Sampling for Sustainable Landscapes (\$4,295) Fall 2015

*If this project is implemented, will there be any ongoing funding required? What is the strategy for supporting the project in order to cover replacement, operation, or renewal costs?*

Our expectation is that once the majority of invasive brush is under control, we will have created a revitalized green space on campus that will be highly valued. As such, we anticipate that volunteer efforts along with class related projects will assist Arboretum staff in long term management of the area. In addition, we will aggressively seek grants and private funding to enhance the utility of the area for education/outreach, applied research and recreation.

Please note that SSC provides funding on a case by case basis annually and should not be considered as an ongoing source of funding.

See comments above.

*Please include any other sources of funding that have been obtained or applied for. Please attach any relevant letters of support as needed in a separate document.*

In kind support from the Arboretum, Pollinatarium, Crop Sciences and NRES, and the UIUC South Farms and Turf Grass Research Center has been referenced previously.

## **Environmental, Economic, and Awareness Impacts**

*In addition to the below questions, please indicate specific measurable impacts as applicable on the supplemental budget spreadsheet.*

*Which aspects of sustainability does your project address, and how? Does the project fit within any of the iCAP goals? If so, how does the project go beyond the university status quo standards and policies.*

The project addresses sustainable land management, ecosystem support and services including carbon storage, biodiversity enhancement, invasive species reduction and pollinator habitat enhancement. The project addresses iCAP goals dealing with Education and Outreach and Stormwater reuse (via maintaining/enhancing a porous space for infiltration and recharge).

*How will the environmental impacts of your project be measured in the near and long term? What specific monitoring and evaluation processes will you be using to track outcomes and progress?*

Imagery from low-level drone flights will be used to monitor extent/success of invasive species removal. A series of student-centered research projects will be developed to collect baseline and ongoing data on soil organic carbon storage, avian, mammal and insect ecology along with extensive surveys of plants including mosses, lichens and liverworts. Phenological observations will be recorded.

McSweeney has had preliminary discussion with Prof. Michael Woodley about engaging students in Computer Science 492 to develop a spatial/relational data base that could be used to collate data collected as part of the project. CS 492 students have already developed a smart-phone *app* for tree and shrub identification for the northern portion of the Arboretum

*What is the plan for publicizing the project on campus? In addition to SSC, where will information about this project be reported?*

We will use the soon to be launched, new Arboretum website as the hub for project information. NRES and ACES have already expressed interest in running stories about the transformations that are underway in the southern Arboretum. We anticipate that as the landscape transformations become more apparent in the area we will receive increased attention from local media.

Signage on-site will include one permanent fixture with SSC acknowledgement along with rotating signage designed to illustrate current project activities and seasonal ecological issues.

*What are your specific, measurable outreach goals? How will these be measured?*

Outreach goals include engaging more students both as volunteers and as part of classes on work in the area. Participation will and has already been documented. Similarly, we will do the same with community volunteers.

*Do you have any additional comments or relevant information to aid in evaluation of this application?*

These topics have been addressed throughout the preceding narrative.

APPENDIX I: IMAGES ILLUSTRATING UNDERSTORY INVASION IN PROJECT AREA DURING THE LAST 20 YEARS. Lincoln Ave. runs N-S along west border and Windsor Rd. runs E-W along south border of images.



March 2005



May 2012

# Arboretum Native Plantings Phase II Proposal Photos, November 2015



Woods near pollinatarium showing Honeysuckle.



Dense honeysuckle bordering small clearing in woods near Lincoln Ave



Access path cleared by machine in Phase II area.



Portion of Forestry Plantation after honeysuckle was cleared by machine

# Arboretum Native Plantings contd.



Pollinarium access road winter 2014 bordered by solid honeysuckle



Student and community volunteers hand removing honeysuckle April 2015.



Brush removal machine used during phase 1



Machine shredding invasive understory at U of I Forestry Plantation



Extension forester Jay Hayek conducting chainsaw training.



Cutting established honeysuckle with chainsaw.



Volunteers from Alternate Seasonal Break, Red Bison, Master Naturalists on a workday.



Maser Naturalists, Arboretum crew, student volunteers and hourly restoration technicians



Pollinatorium road border Nov. 2015.



Cleared woods Nov. 2015.