Proposal for Xavier University Sustainability Fund

**Project Title:** Increasing Community Engagement and Teaching Opportunities by Labeling Campus Plants

**Applicant:** Kathryn Barto, Assistant Professor, Department of Biology, 745-3554, Bartok@xavier.edu

**Amount requested:** $996.21

**Abstract:** Xavier University has an incredible resource in the collection of plants maintained on campus. We propose to increase the visibility and usefulness of those plants for community engagement and teaching by creating high quality labels for many campus plants. Labels will contain a QR code linked to a website providing more information. Websites will follow a standard format containing general horticultural information such as the plant’s regional sustainability score, and more specific information such as identifying characteristics, ecological importance (ecosystem services), and economic value of the plant. GPS coordinates of each labeled plant will also be recorded and entered in a central, openly accessible website. Our beautifully landscaped campus already attracts gardeners and landscapers looking for inspiration, and providing easily accessible information about the sustainability of the plants on campus in a standard format will make it easier for visitors to identify attractive sustainable plants to use in their own plantings. Faculty could use this resource to enhance student learning by developing self-study ‘scavenger hunts’ where students must visit specified plants and complete an activity such as answering a question correctly, taking a specified picture, or scanning the QR code. In summary, the labels and associated web pages will provide a resource that can be used by the community and by faculty to increase the appreciation and understanding of issues related to the sustainable use of plants represented on campus.

Required signatures as outlined in the application guidelines.

_______________________________________________  Signature

Project Director Name

_______________________________________________  Signature

Department Chair Name

_______________________________________________  Signature

College Dean Name
Narrative: meeting Campus Action Plan Goals - Xavier University has an incredible resource in the collection of plants on campus. This collection is of obvious interest to biology faculty who use the grounds as a teaching laboratory, and Xavier is in a more unique position of also having a campus that attracts visitors simply because of the beauty of the grounds. Walt Bonvell and his crew have twice received prestigious honors from the Professional Grounds Management Society acknowledging the exceptional nature of the grounds. Because of this high visibility we have an opportunity to be a voice of “inspiration to the broader community” and to “establish regional best practices”, meeting two of the most basic goals of the Sustainability Committee. We propose to create high quality, long lasting labels for many of the plants on campus in order to create an area where people (community members, faculty, students) can quickly and easily learn about plants and the sustainability issues associated with them.

Description - We will identify 100 individual plants on campus that are representative examples of their species or of some relevant ecological process such as attack by invasive insect pests. Separate QR (Quick Response) codes will be generated for each plant, and professionally printed on a high quality, long lasting label. QR codes are two-dimensional barcodes that encode information such as plain text or a URL (see Fig. 1). There are many free apps that will decode this information and present it to a smartphone user. QR codes are ideal for this application because they have a high level of redundancy, meaning that up to 30% of the code can be damaged without reducing readability, so the labels should remain functional for years. By linking the QR

Figure 1. A QR code that will automatically navigate to a specified webpage when scanned with a QR code reading app on a smartphone.
code with a website we can update the information associated with each plant without needing to print new labels. This ensures that the information we provide to students and to the public will remain current with little to no additional expense past the initial printing of the labels. This technology does rely on access to a smartphone, and to reduce any limitations this might have we will also include the name of the plant on labels in high traffic areas of campus likely to attract visitors. Labels for plants off the beaten path will only contain a QR code so that students have an opportunity to practice their skills in identifying plants before looking up the correct name. A recent survey by Michael Hanley of Ball State University found that 69% of college students currently have smartphones (72% in a Xavier biology course), with that number projected to rise to 80% in 2013 and 90% by 2014. Among the general public smartphone use is not quite this high (50%), but will also likely increase substantially over the next few years, suggesting that by the time this is implemented in the summer of 2013 the majority of visitors to campus will be able to fully utilize this resource.

Each informational website will follow a standard format and contain general horticultural information such as the plant’s regional sustainability score, its growth requirements, and recommended USDA planting zones. More specific information such as identifying characteristics, ecological importance (ecosystem services), and economic value of the plant will also be included. The specific details of the standard format will be decided on by Kathryn Barto (Assistant Professor, Biology), Walt Bonvell (Grounds Foreman), Pam Roy (Instructor, Biology), and Mollie McIntosh (Assistant Professor, Biology). These people will also identify the plants to be labeled and obtain their GPS coordinates. Construction and development of the webpages will be overseen by Gary Lewandowski (Professor,
Computer Science). A group of biology students will assist with compiling information needed to complete the websites. This project will be completed primarily during the summer of 2013, and the completed resource will be used in courses in the fall of 2013.

There are numerous free apps to create scavenger hunts, and one in particular is especially appropriate for this application. Using SCVNGR it is easy to specify locations that must be visited and challenges that must be completed at each location. Templates for challenges requiring visitors to answer a question correctly, take a picture of a specific item, or scan a QR code are already built into the app. Point values can be assigned to each challenge, and the platform could be used to quickly create guided tours of certain plants on campus that were relevant for a particular class or meeting.

**Impacts** - We envision three main impacts of this project. First, this resource will make it easier for the grounds crew to keep track of the sustainability of plants on campus by creating a central database that new plants can be easily added to. Second, this project should inspire gardeners and landscapers in the local community by showcasing sustainable plants. Third, this resource will provide faculty with a technologically attractive tool to help students engage with the outdoors. The grounds and the QR codes can be used during local sustainability conferences to demonstrate how sustainability issues can be highlighted both horticulturally and academically.

**Assessment** - We will assess the impact of this project through user surveys. An online survey will be presented to a select proportion of visitors to the websites. Survey questions will be developed to ask the purpose of the visit, rate functionality, and rate the likelihood of another visit. This will provide one platform that can assess impacts within the grounds crew, throughout the local community, and across the student body.
**Budget:** $996.21

See attached quote