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Respondent

4

Kevin McSweeney

01:25

Time to complete

Final Project Report

1. Date of this final project report submission *

11/8/2024

2. Name of project exactly as it was listed in your award letter *

Enhancing Ecosystem Services in the Southern Arboretum Woodlands: Habitat Improvement and Reusing Lumber

3. Date (or semester/year) of original award letter *

5/1/2020 Funding established 5/2021

4. Expiration date of award as listed on original award letter or approved scope change letter - whichever is more recent *

12/31/2023

5. Enter the amount of the award, including any budget increases as a result of a previous scope change. *

\$113066.00

6. How much (in dollars) of your award (including previous approved budget increases) is remaining? *

\$34730.15

7. Briefly describe the goals of your project. *

- 1) Establishment of species rich mosaics of savanna and woodland communities with complex structure providing an array of habitats/niches for organisms (fungi,...small mammals) that enhance ecosystem services.
- 2) Aesthetic improvement of the existing plantation landscape by creating more diverse and architecturally complex structure through irregularly shaped woodland/savanna mosaics.
- 3) Sustainable re-use of harvested wood for production of lumber for construction projects and reuse of woody debris for mulching projects.
- 4) Opportunities for students to engage in the process of targeted landscape transformation and learn skills related to land management and production of lumber grade wood products.
- 5) Establishment of an outdoor laboratory that is used by a broad cross-section of campus departments and other approved groups.

8. Did you complete your project (i.e., as it was outlined in the original award letter or in a subsequent approved scope change)? *

- ☐ Yes, the project was completed as outlined.
- ☒ No, the project was not complete as outlined.

9. Describe, in detail, the challenges / obstacles your project faced. *

The project was originally scheduled to start in May 2020 and terminate in May 2022. However, project funding was activated in the NRES Departmental account in January 2021, which resulted in the loss of a field season and commensurate delay in pursuing project goals. The reasons for the delay in establishing are unclear.

A no-cost extension to address an unexpected delay in scheduling milling of the harvested lumber and the delay in fund activation was requested in March 2022. Jay Hayak (Project Co-Investigator & Extension Forester) resigned his university position in March 2023 to take a job elsewhere. Hayak was originally responsible for arranging the milling of the harvested lumber. The milling arrangements he had made for the Spring 2023 had to be cancelled owing to the retirement of the contractor.

Professors McSweeney and Ward (Faculty Advisor, Red Bison) worked with Mark Shupe (Shupe's Woodworks & Sawmill, Toledo, IL) to establish a provisional arrangement for milling of the harvested lumber. However, the logistics involved in fulfilling this arrangement were unsuccessful due to cost of transporting lumber from campus to Toledo, IL. Other contractors who were contacted to provide on-site harvesting and milling were unwilling to participate because of their perception of the administrative burden of conforming with University of Illinois contractual requirements.

In the meantime, two important changes have occurred that are promising for revitalizing the lumber reuse component of the project.

1. SSC has funded the 'Campus Lumber Project' led by Lowell Miller, Quinn Connolly and Scott Schmidt. This project includes the purchase of a Wood Mizer sawmill. The mill will be located at the Illini Experimental Forest (see map).
2. Justin Vozzo has been hired as NRES-Extension Specialist in Forestry and Director of the Illini Experimental Forest and Juan Cruz has been hired as Arboretum Visiting Scientist and Outreach Specialist.

Vozzo and Cruz are experienced arborists and willing to lead an initiative to harvest additional millable lumber from the Arboretum and the adjacent Illini Experimental Forest for use in the SSC-funded 'Campus Lumber Project'.

10. Describe, in detail, the successes your project experienced. *

The project has made appreciable progress towards achieving all project goals listed in item 7 except for goal 3. The project goals 1 & 2 have been guided by native plant lists compiled by Emeritus Professor Ken Robertson and Jamie Ellis (UI Natural Areas Coordinator). Species planted are native to east central Illinois and include fruit and nut bearing shrubs for the purpose of providing food and shelter for birds, mammals and other fauna. A prairie planting along Lincoln Ave. is showing promise but still requires suppression of Canada Thistle. Removal of tracts of non-native species such as Norway maple has provided patches for introduction of native trees and shrubs and in some areas establishment of savanna. Student involvement and community outreach is illustrated in item 12.

The SAW is used by a variety of classes for 'hands-on' outdoor learning and learning about targeted landscape transformation (goals 4 & 5). For example, in Spring 2024, Prof. Jim Miller's Restoration Ecology class planted 12 white oaks in recently cleared areas of the SAW as part of their class field work. The previous Spring the class painted and caged native fruit and nut bearing shrubs. This represents a valuable and constructive use of the SAW through provision of 'hands-on' student experience. Arboretum staff staged these activities, so that it was safe, efficient, and rewarding for the students.

11. Describe, in detail, how your project addressed sustainability. *

The project is based on the assumption that transforming the SAW from a degraded woodland dominated by non-native trees and understory invasive plants to a woodland composed largely of native plants will improve biodiversity and ecosystem services. The experiment is still in progress and will require monitoring and evaluation to determine if significant changes in flora and fauna are progressing in a positive direction. Our approach to utilizing woody material that is being cleared on-site requires improvement. The bulk wood unsuitable for milling has been burned, woody debris (branches, leaves etc.) has been chipped, stockpiled and/or used for mulch. A promising approach for disposing of woody biomass is to convert it to biochar and use it as a soil amendment. This would reduce the carbon footprint associated with removal of non-native trees. This would require acquisition of a pyrolysis reactor to produce the biochar.

12. Describe, in detail, how your project integrated student involvement and community outreach. *

Eight Student Hourlies funded by SSC worked on the project between May 2021 and January 2023 on either summer and/or semester appointments. In addition, four students funded by the Arboretum have been working on this project. Students assisted with all aspects of field work including - logging, planting, invasive species management, mulching and monitoring of project objectives. Three other students were funded using other Arboretum funds. All of the students obtained State of Illinois pesticide applicator certification and four of them also obtained Illinois Arborists Association certification in chain saw safety. These certifications are considered as valuable 'resume builders' for students focused on natural resource management.

Red Bison members have conducted group and individual work in support of the project. Activities include assembling piles of woody debris for burning, invasive species suppression and native seed collection.

Campus ROTC use the SAW periodically for training exercises. In turn, Lt. Colonel Johnson (Emeritus Professor & Head, Military Science) has organized teams of ROTC cadets to collect garbage along the Lincoln Ave. and Windsor Rd. boundaries of the SAW.

The Arboretum hosts the annual NRES Freshman Field Day at the Arboretum and the majority of activities occur within the SAW. This event introduces many new students to their first 'hands-on' exposure to the challenges and importance of restoration ecology and various aspects of promoting biodiversity.

The Arboretum hosts a broad range of professional and K-12 school groups for field activities. During Fall 2024, groups have included about 100 students from the Rochelle Area Schools Future Farmers of America (FFA), 36 field staff from the Illinois State Archaeological Survey and 15 staff from the USDA-Natural Resource Conservation Service. In each case, Arboretum Staff have provided an overview of the restoration activities underway in the SAW.

13. Describe how the project engaged individuals from underrepresented groups and/or how it promoted diversity, equity, and inclusion. *

The focus of the project was on sustainable land management. An inclusive approach was pursued in hiring practices for students and welcoming diverse groups of individuals to engage with the project.

14. What key takeaways should the campus community know about your project? *

Transforming a tract of degraded woodland dominated by non-native trees and invasive understory plants such as honeysuckle and garlic mustard is time consuming and labor intensive. Establishing native flora as framework for creating habitat for other species is promising approach for enhancing biodiversity and improving ecosystem services. However, suppression of invasive species remains an a continuous imperative and challenge.

15. Describe the marketing material developed for promotion of your project, including but not limited to advertising (including digital) and/or signage related to this project. All marketing must include SSC's logo and/or a statement of which fee funded the project. Projects must coordinate with SSC to ensure the promotion appropriately highlights the SSC's contributions to the project. *

Project and SSC recognition is highlighted in the News Gazette article below. Please note I referred to SSC and the Student Sustainability Council as opposed to Committee. Actually, I prefer the designation of Council to Committee.

https://www.news-gazette.com/toms-mailbag/toms-mailbag-march-19-2021/article_25fb4569-755e-5115-a561-457f423490db.html?utm_medium=social&utm_source=email&utm_campaign=user-share

New Student Field Day has been recognized in NRES and ACES news articles. Illinois Farm Bureau recently produced a podcast featuring Ron Colman (USDA, State Soil Scientist) filmed at one of the soil pits in the SAW.

16. Upload project marketing and/or media not previously submitted in semester progress reports. *

 [SSC Photos 2024 Report_Kevin McSweeney.docx](#)

17. Complete and upload the final financial documentation for your project. You should reflect all expenditures since your last semester project report. We strongly suggest that you also upload supporting financial documentation from Banner for your award's CFOP. Any remaining funds will be transferred back to the SSC. It is the sponsoring department's responsibility to close the CFOP after the account is at a zero balance.

<https://studentengagement.illinois.edu/sites/default/files/2024-09/SSC-Budget-Timeline-FINAL-PROJECT-REPORT-template.xlsx>

 [McSWEEN 304396-875219_Kevin McSweeney.xlsx](#)