

TIE Environmental Planning Grant

Sustainable Landscapes and Environmental Education at Tufts

Richard M. Vogel, Civil and Environmental Engineering
Michael Reed, Biology
Jeff Licht, Lecturer in Experimental College and UCCPS
Duncan Cheung and Alexander Sherman, undergraduate students

Introduction

The Tufts Campus offers a unique opportunity for integrating environmental education with sustainable landscapes. Combining sustainable landscapes and environmental education is the subject of a new Tufts course titled “Sustainable Landscape” which was offered during the Fall 2003 semester to 9 students and is currently offered to 14 students during the Spring 2004 semester. The course is supported by the Experimental College, University College of Citizenship and Public Service and the Department of Civil and Environmental Engineering and involves collaboration among four Tufts faculty members. The course involves students in real-life sustainability challenges in the form of site restoration projects suggested by the Operations staff at Tufts. The course also involves an effective collaboration among students, faculty and Tufts Operations staff.

For example, during the Fall 2003 semester, students redesigned the landscape between Hill Hall and Lane Hall to enhance storm water runoff and landscape aesthetics using native low-maintenance vegetation, bioretention, infiltration galleys, and other approaches. The goal was to solve existing maintenance and stormwater runoff problems at the site as well as to increase evapotranspiration, lower water usage and increase its aesthetic value. As part of their coursework, students learned how to propagate native plants. Some of these native plants will be used in applications on campus and off campus in a host community watershed restoration project. Due to the success of the fall course, two greenhouses were purchased by Operations and will be erected in April 2004 to create a permanent facility to serve current and future Tufts and host community landscape restoration needs. Lectures in the spring class cover such topics as environmental restoration, horticulture, low impact development, storm water management, and soil science. Students are designing several additional restoration projects for the spring and students from last semester will be invited to checkpoint observations for the Hill/Lane restoration effort. Both the fall and spring courses offer a unique opportunity to integrate environmental education, service to the Tufts and host communities, and to support Tufts’ mission to maintain a leadership role in environmental programs. Furthermore, students, faculty, and staff interest in these projects is like a rising tide; it appears likely that these courses will create additional research, community outreach and public relations opportunities in the future.

Proposal

We propose to use the existing courses and their associated ongoing restoration, service, and research projects as a basis for larger Campus Restoration Projects (CRPs). These CRPs would serve as case studies to be used as teaching opportunities in Environmental Studies and other courses, and to be the focus of undergraduate internships and research opportunities.

The proposed CRPs could be integrated into Mystic River Watershed planning. We also plan to expand the CRP goals to include projects on the Grafton Campus, combining with current

efforts on that campus to document biodiversity, initiate long-term research, and involve the local community.

Internship and Research Opportunities

Sustainable landscapes are truly interdisciplinary projects requiring expertise in ecology, horticulture, geology, landscape architecture, hydrology, construction, environmental policy, science, and engineering. Fortunately, Tufts University has experts in each of these disciplines. We envision using CRPs to develop internships to satisfy the existing internship requirement for undergraduate Environmental Studies students. We also envision internships and research assistantships for undergraduate (letters of interest and resumes are attached) and possibly graduate students in a number of disciplines. Some research opportunities include:

1. Study of the impacts of introducing more pollinators and seed dispersers to campus through selected use of native plants (F. Chew, P. Starks, and M. Reed in Biology)
2. Study of the ecological value of vegetation for stormwater management (R. Vogel, M. Reed, J. Durant, J. Licht)
3. Study of the value of rain gardens, bioretention and other 'best management practices' for improving quality and quantity of stormwater (R. Vogel, J. Durant, P. Kirshen and J. Licht).
4. Quantification of increases in evapotranspiration derived from native species (J. Durant, J. Licht and R. Vogel)

The Environmental Planning Grant funds we are requesting from TIE would provide the necessary funds for Jeff Licht (Tufts Lecturer) and both undergraduate and graduate students to respond to RFP's in support of the activities described above. There are no current RFP's in this area which have deadlines after the start of this Environmental Planning Grant (July 1, 2004). Instead, we include a few RFP's which have earlier deadlines, simply as examples of the types of grants we hope to prepare using funds from this TIE planning grant.

Potential Grant Opportunities:

1. Title of grant: EPA P3 Award: A Student Design Competition for Sustainability

Funding opportunity: EPA and 34 partners from industry, NGOs, and other government agencies, offer a student design competition to respond to the scientific and technical challenges in moving towards the goal of sustainability. The competition is open to teams of undergraduate and/or graduate students attending U.S. colleges, universities and other post-secondary educational institutions.

Funding level: \$10,000 with matching contributions from industry or NGO partners that may or may not be affiliated with EPA's *P3 Award*.

Due date: March 25, 2004

Granting agency: U.S. EPA (see http://es.epa.gov/ncer/P3/fact_sheet.html)

2. Title of grant: The Office of Solid Waste and Emergency Response Innovation Pilots: OSWER 0401

Funding Opportunity: Proposals are solicited which test innovative approaches to waste minimization, energy recovery, recycling, land revitalization, and homeland security related to chemical emergency, preparedness, and response that may be replicated across various sectors, industries, communities, and regions.

Funding level: \$500,000 **Due date:** March 25, 2004

Granting agency: U.S. EPA (see <http://www.epa.gov/oswer/iwg/announcement.htm>)