Environment and Natural Resources Trust Fund
2010 Request for Proposals (RFP)

LCCMR ID: 164-F

Project Title:

Ecology of Climate Change School and Community Partnership

LCCMR 2010 Funding Priority:

F. Environmental Education

Total Project Budget: $ $225,000

Proposed Project Time Period for the Funding Requested: 3 years, 2010 - 2013

Other Non-State Funds: $ $27,000

Summary:

Improve environmental literacy among students and citizens through an innovative educators training program, using a unique integration of science with art, and establishing partnerships among school teachers and community educators.

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Sponsoring Organization: U of MN

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Location:

Region: Metro

County Name: Anoka, Chisago, Hennepin, Isanti, Ramsey, Sherburne, Washington

City / Township: Minneapolis & St. Paul

_____ Knowledge Base _____ Broad App. _____ Innovation

_____ Leverage _____ Outcomes

_____ Partnerships _____ Urgency _____ TOTAL

PROJECT TITLE: Ecology of Climate Change School and Community Partnership

I. PROJECT STATEMENT

WHY: A basic understanding of ecological processes is fundamental to understanding the potential impacts of human-induced environmental change, including changes to our climate. However, ecology continues to be difficult to effectively teach in both formal and non-formal environmental education situations, in large part because most science educators have not been properly trained in ecology. Secondly, students' different learning styles and cultural belief systems are almost never adequately taken into consideration when any science is taught and difficult issues, like climate change, are introduced. This gap in both environmental knowledge and teaching methods among educators is in part why environmental literacy is generally poor among our students and citizens. Highlighting this trend, the 2008 Minnesota Report Card on Environmental Literacy indicates that more than half of adult Minnesotans demonstrate "below average" knowledge when asked about basic environmental and energy-related issues. Meanwhile, results from the 2007-2008 Minnesota Comprehensive Assessment (MCA) show that statewide nearly 60% of high school students failed to meet the minimal proficiency in Biology, a third of which is based on ecological knowledge.

GOAL: Our goal is to improve environmental literacy among Minnesota's citizens in support of MN Statue 115A.073…"pupils and citizens shall have access to information and experiences needed to make informed decisions about actions to take on environmental issues." With improved ecological literacy, we also hope to inspire an active interest in and stewardship toward Minnesota's natural resources. *Our three key objectives:*

- To improve public school and community educators' effectiveness in teaching ecological science.
- To establish a partnership among higher education, public schools, and community learning centers.
- To engage the public's diversity of learning styles and cultural beliefs when teaching science.

IMPACT: We will serve all 90 secondary-level public schools and the surrounding communities located in the nine school districts within the urban core of Minneapolis and St. Paul, and within the rural fringe areas of Anoka, Washington, Chisago, Isanti, and Sherburne counties.

HOW: Empowering educators with sound, inquiry-based curriculum and pedagogy constitutes the core of our approach. Integrating science with interpretive art will engage the various learning styles of our diverse audiences. Learning ecological science in an outdoor environment, and through the lens of climate change issues, will bring context and relevance to learning. *Our three key activities:*

- Professional Development workshops for public school and community educators.
- Eco-Experience outdoor field trips for public school students.
- Interpretive Art workshops, and production of an Eco-Show performed for the community.

II. DESCRIPTION OF PROJECT RESULTS

Result 1) Science Educators' Professional Development Workshops **Budget:** $105,000

We will conduct one-week educators' professional development workshops, focusing on the ecology of climate change, at UMN's Cedar Creek Ecosystem Science Reserve (CCESR) and/or on UMN campus. The objective is to train at least one competitively-selected science teacher from each of our 90 target secondary schools to in turn serve as a mentor or Lead Teacher for his/her colleagues. The workshops will also serve 20 community educators, recruited from urban Community Centers and rural-based Master Naturalists. These Community Educators will in turn be partnered with Lead Teachers to foster a support network among formal and non-formal educators and encourage greater public school and community educational exchange.

Deliverable **Completion Date:** June, 2013 (all)

1. Provide five-day workshops to 90 science teachers, developing one Lead Teacher for each school.
2. Provide three-day workshops to 20 Community Educators, and partner them with Lead Teachers.
3. Provide one-day follow-up training workshops to all 110 participating educators.

Result 2) Eco-Experience Outdoor Field Trips for Science Students **Budget:** $75,000

We will conduct one-day field trips for the current students of each of our participating Lead Teachers. These will serve as a learning experience for the students, and as a workshop practicum for the Lead Teachers to instruct their own students with mentorship from our staff and assistance of a Community Education partner. The urban-based Lead Teachers will bring their students to a Metro "green space" and collaborate with their Community Educator partners, while rural Lead Teachers will partner with Master Naturalists and conduct the field trips at Cedar Creek. Activities at each site will focus on an inquiry-based, hands-on experience that guides the students toward developing their own investigation about the ecology of climate change.

Deliverable **Completion Date:** June, 2013 (all)

1. Provide one-day Eco-Experience field trips for public school students of 90 participating teachers.
2. Practice co-teaching partnership between Lead Teachers and participating Community Educators.

Result 3) Interpreting Science through Art Programs and Production **Budget:** $45,000

A unique and innovative component of this project will be the partnering of our educators with the renowned Minneapolis-based company, In the Heart of the Beast Puppet and Mask Theatre (HOBT). The objective is to accommodate diverse learning styles and cultural beliefs by interpreting the science of climate change through the art of puppet and mask theatre. First, select schools will receive a one-week Residency Program conducted by HOBT in which they will create their own interpretive art production focusing on the ecology of climate change. Second, a select team of our participants and staff will form a science advisory committee that will work with HOBT writers and artists to produce a complete Touring Show designed to interpret the ecology of climate change for a general public audience. Third, the resulting Touring Show will be performed for both public school and general audiences at various venues throughout the Greater Twin Cities area.

Deliverable **Completion Date:** June, 2013 (all)

1. Provide in-class, one-week HOBT Residency Programs focusing on ecology of climate change.
2. Produce a HOBT interpretive art Touring Show that teaches about the ecology of climate change.
3. Conduct performances of the Touring Show within public schools and community venues.

III. PROJECT STRATEGY

A. Project Team/Partners.

University of Minnesota: Jeffrey Corney, Associate Director of CCESR and Adjunct Assistant Professor of Ecology [Project Manager & Instructor]; Mary Spivey, Education Coordinator for CCESR [Project Coordinator]; Elisabeth Young-Isebrand, Education Coordinator for CFANS [Project Coordinator]; Karen Oberhauser, Associate Professor of Conservation Biology [Instructor & Master Naturalists Coordinator].
Minneapolis Parks & Recreation: MaryLynn Pulscher [Community Center Coordinator].
St. Paul Parks & Recreation: Stephanie Kappel [Community Center Coordinator].
In the Heart of the Beast Theatre: Kathee Foran, Executive Director [Interpretive Art Coordinator].
Public School Districts: Minneapolis, St. Paul, Anoka-Hennepin, Elk River, St. Francis, Cambridge-Isanti, North Branch, Chisago Lakes, and Forest Lake [Instruction Coordinators from each district].

B. Timeline Requirements. This project requires a three-year funding period (July, 2010 – June, 2013) to effectively conduct the professional development workshops, field trips, and art production.

C. Long-Term Strategy. This project is part of CCESR's overall education and outreach mission to improve public awareness and understanding of environmental issues through science education. This project is specifically designed to establish a permanent and self-sustaining partnership among higher education, public school, and community center participants in the Greater Twin Cities area. Training and supporting a cohort of Lead Teachers and Community Educators will insure that curricula and methods continue to be shared and utilized. CCESR will continue, beyond the funding period, to provide leadership and oversight for this project, and to monitor and assess its effectiveness in terms of improving ecological literacy and enhancing public insight and participation in environmental issues.

PROJECT BUDGET

Ecology of Climate Change School and Community Partnership

IV. TOTAL PROJECT REQUEST BUDGET (*3* years)

BUDGET ITEM	AMOUNT
Personnel:	
Education Coordinator, Mary Spivey, at UMN's Cedar Creek @ 35% FTE for 3 years (37.0% fringe)	$ 65,000
Education Coordinator, Elisabeth Young-Isebrand, at UMN's Main Campus @ 25% FTE for 3 years (14.9% fringe)	$ 41,000
Faculty Co-Instructor, Dr. Karen Oberhauser, for Summer Workshops @ 5% FTE (partial summer salary) for 3 years (32.3% fringe)	$ 16,000
Contracts:	
In the Heart of the Beast Puppet and Mask Theatre for conducting Residency Programs, and production and performances of Touring Show	$ 45,000
Minneapolis Parks & Recreation for instructional assistance with summer workshops and Community Center based field trips	$ 9,000
St. Paul Parks & Recreation for instructional assistance with summer workshops and Community Center based field trips	$ 9,000
Instructional Assistants for assistance with Cedar Creek based workshops and field trips @ $120/day	$ 6,000
Equipment/Tools/Supplies:	
Instructional supplies (e.g. field investigation kits, curriculum material, etc.) for program and 110 workshop participants @ $100 each	$ 11,000
Travel:	
In-state travel by UMN staff between Twin Cities venues and Cedar Creek, approximatley 120 trips averaging 76-mile RT @ $0.55/mile	$ 5,000
Additional Budget Items:	
Scholarships for 90 teachers for summer workshop participation @ $200 each	$ 18,000
TOTAL PROJECT BUDGET REQUEST TO LCCMR	$ 225,000

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	
In-kind Services During Project Period:		
UMN faculty co-instruction during professional development workshops, Dr. Jeffrey Corney	$ 17,000	
UMN project administrative oversight and evaluation, Dr. Jeffrey Corney and Dr. Karen Oberhauser	$ 10,000	

PROJECT MANAGER

Dr. Jeffrey Corney, Ph.D., is the Associate Director of the Cedar Creek Ecosystem Science Reserve and Adjunct Professor of ecological science in the College of Biological Sciences at the University of Minnesota. Dr. Corney will provide administrative oversight and evaluation of the project. Dr. Corney will also serve as a co-instructor for the professional development workshops. Dr. Corney has served as project director for a number of grant funded environmental education projects, including: a three-year (2001-2003) Jessie Ball duPont Fund project, a two-year (2003-2004) U.S. EPA funded project, an annual renewable (since 2006) National Science Foundation (NSF) funded Schoolyard LTER program, and recently a one-year (2009) Minnesota Association for Environmental Education ELM project.

ORGANIZATION DESCRIPTION

The project will be conducted primarily at the **University of Minnesota's Cedar Creek Ecosystem Science Reserve (CCESR)**. Cedar Creek is an internationally renowned ecological research and education facility, located 35 miles north of the Twin Cities, featuring 5,400 acres of land that encompasses a diverse mosaic of prairie, savanna, wetlands, open water, and forests. Since its establishment in 1942, the people of Cedar Creek have been dedicated to understanding our planet's ecosystems and how they are changing under human pressures. Through research, conservation, and education, Cedar Creek bridges the gaps between science, community, and government. Cedar Creek has been designated as one of the National Science Foundation's Long Term Ecological Research (LTER) sites since 1982. Long-term studies at Cedar Creek are focused on major areas related to human-driven global environmental change, including the impacts of elevated nitrogen in the soil, increased concentrations of carbon dioxide in the atmosphere, and loss of biodiversity on ecosystem function. [Please see our website at *www.cedarcreek.umn.edu* for more information.]