

**Environment and Natural Resources Trust Fund  
2011-2012 Request for Proposals (RFP)**

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**LCCMR ID: 193-G**

**Project Title:** Educating Under-represented Groups About Careers in ESPM

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**Category:** G. Environmental Education

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**Total Project Budget:** \$ \$49,966

**Proposed Project Time Period for the Funding Requested:** 1 yr, July 2011 - June 2012

**Other Non-State Funds:** \$ 0

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**Summary:**

Produce 12 web-based educational modules for high school students, outlining careers in environmental resources management, and provide information for parents of under-represented groups of students about careers in environmental management

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**Name:** Leonard C. Ferrington Jr.

**Sponsoring Organization:** U of MN

**Address:** 1980 Folwell Ave  
Saint Paul MN 55108

**Telephone Number:** 612-624-3265

**Email:** ferri016@umn.edu

**Web Address:** \_\_\_\_\_

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**Location**

**Region:** Metro

**Ecological Section:** Minnesota and NE Iowa Morainal (222M)

**County Name:** Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Wright

**City / Township:**

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_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ Employment	_____ TOTAL _____%

## 2011-2012 LCCMR MAIN PROPOSAL

**PROJECT TITLE: *Educating Under-represented Groups About Careers in ESPM***  
**(=Environmental Sciences, Policy and Management) (submitted by L. C. Ferrington Jr.)**

**I. PROJECT STATEMENT: *WHY this project needs to be done:*** Effective management of environmental resources requires an influx of newly trained employees to replace retiring staff and others lost through career changes and other attrition. At the University of Minnesota the Environmental Sciences, Policy and Management Bachelor's Degree program is designed to produce graduates that are highly trained in the newest techniques and concepts for managing environmental resources, and our graduates form a pool of potential employees for state, federal agencies and private sector companies charged with, or providing services related to, managing environmental resources. A highly diversified workforce is necessary to provide equitable access to opportunities in environmental resources management, and to provide diversity of opinion and approaches to developing plans and strategies for resource management. As co-director of the Environmental Sciences, Policy & Management Program, I am involved in recruitment of freshmen students and efforts to achieve collegiate diversity goals. I interact with high school students and their parents, provide information about the degree program, and receive feedback from students and parents regarding perceived career opportunities in environmental resources management. Recruitment of high achieving students of under-represented groups, especially of groups recently immigrated in the Minneapolis/Saint Paul metropolitan area is difficult, in part because of parental expectations that their children "*can live the American Dream and become physicians, dentists, engineers and lawyers,*" which are professions that equate in the eyes of parents with academic success and future prosperity. It has been my observation that this type of parental attitude, although clearly an understandable aspiration by parents for their children, acts to minimize the stature of careers in environmental resources management and consequently lessens the interest among academically talented high school students that might otherwise choose and be highly successful in an environmental sciences, policy and management undergraduate curriculum.

***Opportunity, challenges, issues, or need the project addresses:*** In order to increase the number of academically talented students of under-represented groups in our undergraduate Environmental Sciences, Policy and Management degree program, I would like to develop a series of 12 educational web-based pod-casts, coupled with power-point files and interactive web pages that use both video and audio to demonstrate the types of careers available in environmental sciences areas. These educational resources will be developed in tandem, but with two different target audiences. The first audience will be 11<sup>th</sup> and 12<sup>th</sup> grade high school students at high schools specializing in or providing expanded study of environmental sciences. The second set of educational resources will be produced for parents, and will include versions in Spanish, Hmong, and Somali so that parents can access "user friendly" materials to learn about current careers in environmental resource management and projected careers into the future. The intent of targeting parents is to help them better understand the types of careers, the prospects for employment, and the professional regard that the public has for career professionals working in environmental resources management at state and national levels and within the private sector. I expect that with more information about careers in environmental resources management, parents can better appreciate the opportunities that their children will have if they choose to train for a career in environmental sciences, policy and management.

***Overall GOALS of the project:*** My primary goal is to provide 12 web-based educational modules that will outline careers in environmental resources management and how the University of Minnesota undergraduate degree program in Environmental Sciences, Policy and

Management is designed to provide college-level training to become a professional employee in environment-related fields. A secondary goal is to provide information to parents of under-represented groups of students about careers in environmental resources management.

**HOW the project will achieve those goals:** Web-based educational resources will be advertised to local community citizens groups, high-schools, and neighborhood associations in order to reach target audiences. I will work with our Office of Equity & Diversity and the Director of Diversity Programs in my college to set up evening meetings with groups in order to take our information to them and to interact in question and answer forums. I will integrate students of under-represented groups into filming of videos and the making of pod-casts and other distance delivery modules. I will use salaries identified in the proposal for the undergraduates to provide research positions, work-study employment and/or paid internship opportunities.

## II. DESCRIPTION OF PROJECT ACTIVITIES

**Activity 1: Filming in field settings**      **Budget:** \$ 8,000      **Completed:** November 2011  
Outcome 1: Filming of videos of “Students in Action in Environmental Careers”

**Activity 2: English Script & Audio**      **Budget:** \$ 9,400      **Completed:** December 2011  
Outcome 2: Written drafts of scripts & production of audio overlays in English

**Activity 3: Translation of Script & Audio**      **Budget:** \$ 6,030      **Completed:** January 2012  
Outcome 3: Fully translated scripts, integrated translated audio overlays

**Activity 4: Module Development**      **Budget:** \$ 11,000      **Completed:** March 2012  
Outcome 4: Production of fully integrated web-based audio/video modules

**Activity 5: Beta-test & Revise Modules**      **Budget:** \$ 5,400      **Completed:** April 2012  
Outcome 5: Beta-tested and refined final versions of modules

**Activity 6: Meet with Target Audiences**      **Budget:** \$ 5,600      **Completed:** June 2012  
Outcome 6: Completion of meetings with groups that represent targeted audiences

**Activity 7: Web posting & advertisement**      **Budget:** \$ 4,536      **Completed:** June 2011  
Outcome 7: All distance-delivery modules placed on-line & follow up advertisement completed

## III. PROJECT STRATEGY

**A--- Project Team/Partners:** Almost all work will be done with a graduate student in my lab and teams of students of under-represented groups that are majoring in Environmental Sciences, Policy & Management. I will coordinate with the University Digital Media Center, Departments of Spanish & Portuguese, and programs in Native American, Hmong and Somali studies.

**B--- Timeline Requirements:** This project will require 12 months to complete.

**Long-Term Strategy and Future Funding Needs:** I will continue to build modules and refine existing ones using resources that are obtained by budgeting educational expenses into grants that I routinely submit to other funding agencies such as NSF, Minnesota SeaGrants and U. S. EPA. Although I do not expect there to be substantial maintenance and development expenses beyond the current proposed project, if the modules are highly successful locally and if extensive positive feedback is received from groups across Minnesota, I will consider expanding the target audiences and possibly seek follow-up funding from LCCMR in subsequent year to develop additional educational resources.

## 2011-2012 Detailed Project Budget

Project Principle Investigator: Leonard C. Ferrington Jr.  
University of Minnesota, Department of Entomology

### PROJECT TITLE: Educating Under-represented Groups About Careers in Environmental Sciences, Policy and Management

#### IV. TOTAL TRUST FUND REQUEST BUDGET: One calendar year

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
<b>Personnel:</b> Leonard C. Ferrington Jr. (5% of time dedicated to management of project for one year. Salary = \$4,897. Fringe benefit rate is 33% of salary = \$1,631) Duties are project management and scheduling and overall project QA/QC.	\$ 6,528
<b>Personnel:</b> One Graduate Research Assistant (Appointment @ 50% time for 12 months. Total stipend amount = 20,166. Fringe benefits are 16.86% of salary. Graduate tuition payment costs = \$ 12,012). Duties are coordination and assistance filming, developing English versions of script, voicing and recording audio, producing modules and coordinating/leadership in Beta-testing.	\$ 35,578
<b>Personnel:</b> Two undergraduate student hourly technicians for 10 hours/week/assistant, X 32 weeks x \$ 10.45/hour = \$ 6,688. Fringe benefits @ 7.5% of salary = \$ 502.) Undergrads will be involved in filming, translating script, production of modules and advertising activities	\$ 7,190
<b>Contracts:</b>	NA
<b>Equipment/Tools/Supplies:</b>	NA
<b>Acquisition (Fee Title or Permanent Easements):</b>	NA
<b>Travel:</b> Several local trips to film students participating in field activities. Total of 500 miles @ \$0.62/mile	\$ 310
<b>Additional Budget Items:</b> Filming will be done in field settings and will require that we pay for lunches and dinners for Ferrington, Grad Student RA and Undergraduate Technicians. Costs estimated to be 15/person/day for 4 persons for 6 days of filming	\$ 360
<b>TOTAL ENVIRONMENT &amp; NATURAL RESOURCES TRUST FUND \$ REQUEST</b>	<b>\$ 49,966</b>

#### V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
<b>Other Non-State \$ Being Applied to Project During Project Period</b>	NA	NA
<b>Other State \$ Being Applied to Project During Project Period</b>	NA	NA
<b>In-kind Services During Project Period</b>	NA	NA
<b>Remaining \$ from Current ENRTF Appropriation (if applicable)</b>	NA	NA
<b>Funding:</b> Ferrington has been a TEL grant recipient and was selected for participation in a Faculty Fellows Program of the Digital Media Center (both U of MN). Both programs are designed to provide education, instruction and practical experience applying new digital technology & web-based resources to aid in teaching. My projects dealt with Citizen Volunteers in Environmental Monitoring and distance delivery of educational resources.	\$ 20,000	Successfully completed activities for both awards, and digital products and on-line resources presently are being used by local Citizens Volunteers

## **Project Manager Qualifications and Organization Description**

**Leonard C. Ferrington Jr.** has maintained an active research program dealing with responses of aquatic invertebrates to water quality conditions for 30 years, and is a specialist in the ecology, taxonomy and systematics of aquatic insects. He is a professor in the Department of Entomology at the University of Minnesota (2000-2010) and co-director of the Environmental Sciences, Policy & Management undergraduate degree program in the College of Foods, Agricultural and Natural Resources Sciences. He previously served as Director of the Biological Water Quality and Freshwater Ecology Program, University of Kansas, Kansas Biological Survey, (1986-2000) and as the Head of the Entomology Section of the Kansas Applied Mesocosm Program, University of Kansas (1989-2000).

He has been PI or Co-Pi on 3.6 million dollars of grant-funded research projects, with current or past funding from the NSF, USGS, National Park Service, US EPA, US Department of Energy, SeaGrants and various private contract labs involved in environmental monitoring and assessment. He has published 76 peer-reviewed journal articles and 38 technical articles. He has contributed chapters to three editions of the Aquatic Insects of North America (the primary identification text for aquatic insects in North America) and wrote two sections in "*Freshwater Animal Diversity Assessment*" (Developments in Hydrobiology 198, 2008), a collective effort of 163 experts commissioned by the international Convention on Biological Diversity and funded by DIVERSITAS.

Dr. Ferrington has held a highly competitive Faculty Fellowship Program Award from the Digital Media Center to learn new web-based technologies and received an Information Technology Grant to develop on-line resources for use by Citizen's Volunteer Groups that are involved in water quality monitoring. His on-line resource pages have been embraced by the United States Environmental Protection Agency, the Minnesota Pollution Control Association and numerous volunteer groups across the United States and are recognized as a primary resource at the national level for stream monitoring using aquatic insects as indicators of water quality. His web-sites have received more than 2.5 million hits since going on-line, with participation by persons from each of the 50 states and 123 other countries across the world.

