Ecosystem Restoration through Interdisciplinary Exchange

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Greener Shade of Blue and You
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Ecological restoration is the process of assisting the recovery and management of ecological integrity.

Ecological integrity includes a critical range of variability in biodiversity, ecological processes and structures, regional and historical context, and sustainable cultural practices.
UB’s ERIE Program
www.erie.buffalo.edu

• Ecosystem Restoration through Interdisciplinary Exchange

• Goals
  – Contribute to the ecological recovery of the Great Lakes and Western New York landscape and communities
  – Build long-term research capacity in ecosystem restoration

• ERIE promotes research, education, and training that integrates science, engineering, and policy
ERIE Core Programs

• Supported by the National Science Foundation and private donors:
  – Doctoral traineeships (25 students, 5 years)
  – Undergraduate research (30 students, 3 summers)
  – ERIE undergraduate scholarships (4 in 2010)
  – ERIE Research Fund
Participants and Partners

University at Buffalo
The State University of New York

Buffalo State
State University of New York

Museums University
Purple Eagles

Department of Environmental Conservation
New York State

United States Environmental Protection Agency

US Army Corps of Engineers

U.S. Fish & Wildlife Service

NRCS
Natural Resources Conservation Service

Environment Canada

U.S. Department of Energy

USGS
Science for a Changing World

Lafarge
Aggregates, Concrete & Asphalt

Motorola

Buffalo Niagara Riverkeeper

Urban Nature Sanctuary

Buffalo Museum of Science
Academic Departments

UB Department of American Studies
UB Department of Biology
UB Department of Geography
UB Department of Chemistry
UB Evolution, Ecology and Behavior Program
UB Department of Civil, Structural and Environmental Engineering
BSC Biology Department
BSC Geography and Planning Department
UB Department of Philosophy
UB Department of Geology
ERIE Faculty Distribution

American Studies, 2
Evolution Ecology & Behavior, 1
Geography (BSC), 1
Geology, 2
Geography (UB), 3
Civil Engineering, 5
Biology (BSC), 5
Biology (NU), 1
Biology (UB), 3
Philosophy, 1
Chemistry, 1
Total = 25
ERIE Graduate Program

• Doctoral traineeship funded through the National Science Foundation’s Integrative Graduate Education and Research Traineeship (IGERT) program
• 25 trainees over 5 years; renewable in 2013
• Graduate stipend, tuition, travel allowance
• Training in ecological restoration perspectives and practices
ERIE IGERT Components

**Year 1: Foundations**
- Orientation Retreat (pre-Fall)
- Perspectives in Ecosystem Restoration (Fall)
- Practices in Ecosystem Restoration (Spring)
- Research and Professional Training (Summer)

**Year 2: Project Based Training**
- Ecosystem Restoration Practicum (Fall)
- Case Studies in Science Workshop (1 week/May)
- ERIE Internship (Summer)

**Year 3 and beyond:**
- Buffalo K-16 Science Education
- Doctoral Research

**Outreach**
- Case Study with another ERIE Fellow
- Buffalo K-16 Science Education

**ERIE Colloquium** (Weekly)

**ERIE Research Symposium** (Annual: 2 presentations)

Note: designates proposed ERIE Canadian Program components
ERIE IGERT Student Distribution

13 students total

- American Studies, 2
- Philosophy, 2
- Geography (UB), 3
- Chemistry, 2
- Biology (UB), 1
- Civil Engineering, 2
- Geology, 1
- Biology (UB), 1
- Geography (UB), 3
- Chemistry, 2
- Philosophy, 2
- American Studies, 2
- Civil Engineering, 2
ERIE Undergraduate Program

• Undergraduate summer research program
• NSF Research Experiences for Undergraduates (REU) program
• 30 students over 3 years
• Summer stipend, living expenses
• Training and research in ecosystem restoration
ERIE-REU Program: 2010

2010 ERIE REU students at Niagara Falls State Park
Summer Workshop Series in Ecosystem Restoration

Habitat improvement (18 Mile Creek)

Stream Restoration design (Elton Creek)

Water Quality Equipment Training
Research

• Stream Restoration
  – Habitat restoration
  – Large-scale industrial rivers restoration
  – Mined-lands reclamation
  – Riparian wetlands rehabilitation

• Great Lakes
  – Invasive species
  – Large-scale transport and circulation
  – Algae blooms

• Others
  – Groundwater remediation
  – Phyto- and Phycoremediation
  – Emerging contaminants
  – Traditional ecological knowledge
Phytoremediation at Machias Gravel Pit (Machias, NY)
Pollution abatement via algal growth

Buffalo State Great Lakes Center

120 Jarvis Hall
W Valley natural zeolite barrier

Construction scheduled for October 2010
Elton Creek Restoration (Delevan, NY)

Restoration of mine-impacted watersheds
ERIE
COMMUNITY OUTREACH
Earsing Sills Oxbow Wetland Restoration Plan
(W. Seneca, NY)
K-12 Education

Green to Clean Project
Futures Academy (Buffalo Public School #37)

Phytoremediation of urban lands
For more information:

www.erie.buffalo.edu