

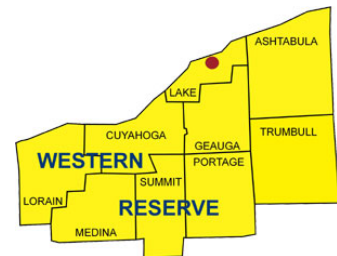
Integrating Civic Engagement and the Undergraduate Environmental Science Curriculum: Regional Perspectives, Opportunities and Challenges

Glenn C. Odenbrett, Coordinator

CLEAN

Collaborative Learning for Environmental Action Network

Western Reserve Resource Conservation and Development Council



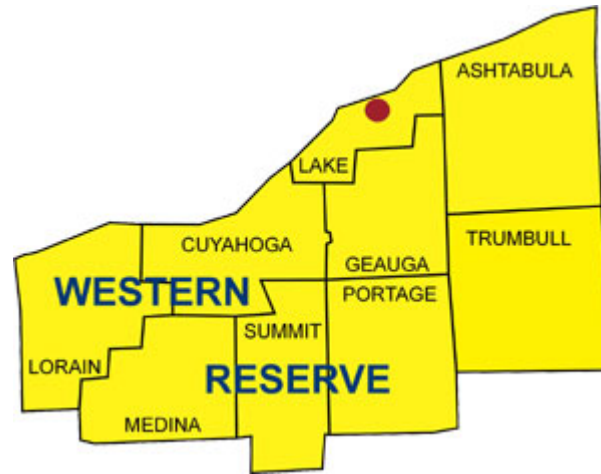
What is an RC&D Council?

- Congress passed legislation in 1962 that authorized the US Department of Agriculture to provide a program that empowered local, grass-roots organizations to help themselves. Oversight of the program was given to the Soil Conservation Service (now the Natural Resources Conservation Service or NRCS).

What is an RC&D Council?

- RC&D, which is an acronym for Resource Conservation and Development, is a synergistic relationship between government (USDA-NRCS) and local citizens to help improve, protect and develop their economic, natural and social resources.

Vision:



"A sustainable regional community with wild and open spaces, creeks and lakes, clean water and air, in balance with a viable mixed economy that includes agriculture, commerce, industry, and tourism."

***What are Northeast
Ohio's
Environmental
Challenges?***



THE PLAIN DEALER

BREAKING NEWS: CLEVELAND.COM *** 416 HOME DELIVERY | 50¢ NEWSSTAND

THURSDAY, AUGUST 23, 2007

STOMACH SURGERY WORKS

Study: Stapling, other operations keep weight off, save lives. **A7**

SEX AND SENIORS

They're having more fun than you think. **A7**

COLLECT YOUR INDIANS MEDALLION

Details, coupon in Sports



TODAY: JAKE WESTBROOK

NEWS MINUTE

SPORTS

Indians hold on, beat Tigers, 11-8

The bats finally come alive for the Tribe. Details, D1

PLUS: The Texas Rangers become the first team in 110 years to score 30 runs in a game in a 30-3 rout of the Baltimore Orioles. Details, D4

METRO

Arrests end 2-man crime wave, police say

For years they targeted cars to strip them of catalytic converters, air bags and other accessories, authorities say. Details, B1

ARTS & LIFE

New-wave pools

Boing city pools yield to those with all the bells, whistles and hi-tech walks. Details, E1

FORECAST, B10:

An afternoon thunderstorm in spots. High 92, low 74.



BREAKING NEWS ALL DAY

BROWNS
Latest news as the Browns prepare for the

STATE OF EMERGENCY DECLARED IN NINE OHIO COUNTIES

Flood, tears



MARY POND/THE PLAIN DEALER

Emergency workers were still floating Findlay residents to safety Wednesday afternoon after the Blanchard River crested at 19.1 feet, the worst flood the city has seen in more than 100 years. Resident Laura Hinton went out in a boat with her brother Wednesday evening to see his flooded home on Clinton Court.

MICHAEL SANGIACOMO, BRIE ZELTZER AND GRANT SEGALL
Plain Dealer Reporters

FINDLAY — Ninety-year-old Ruth Hittetpole remembers her parents talking about the great flood that hit here four years before she was born.

Now she has her own story to tell.

On Wednesday, the Blanchard River crested about 8 inches higher than it did in 1913, leaving half the city underwater.

More than 1,000 people had been evacuated from the city in two days, 700 of them on Wednesday. Area hotels were full.

The flood left hundreds of residents homeless, buildings unsalvageable and roadways a shambles.

The surge damaged bridges and flooded Interstate 75, the main north-south route through Findlay.

"It looked like the asphalt had been in an earthquake," said

Hancock County Commissioner Emily Walton in a telephone interview. "It was in waves."

By late afternoon, county safety crews still were rescuing about 100 people per hour.

Volunteers in a fishing boat rescued a mother, her 2-week-old daughter and the family dogs, according to the Associated Press.

"That was the catch of the day," said Angel Sanchez, a neighbor.

Findlay emergency workers rescued residents in city dump trucks that could safely clear the 3 feet of standing water.

SEE FLOOD | A6



cleveland.com/weather
Get the latest weather conditions, plus post your weather photos

Vandals cut local Internet trunk line

Repair delays slow online traffic for millions

SHAHEN SAMAVATI
Plain Dealer Reporter

Notice your Internet connection acting up earlier this week? You weren't alone.

Cleveland vandals — possibly copper thieves — probably caused delays for millions of Internet users around the world on Sunday night and much of Monday.

Near Euclid Avenue and East 65th Street, someone apparently used a chain saw Sunday afternoon to cut through a high-capacity Internet trunk line, part of the backbone of the Internet. Although the thieves may have been seeking copper, there is no copper in fiber-optic cable.

When workers went to fix the underground cables, they found that the coil of replacement cable they brought from a warehouse had been damaged by a gunshot, making it unusable.

The setback meant things weren't brought back up to speed until Monday afternoon.

The damaged trunk line is owned by Adesta LLC of Nebraska but is leased by several Internet wholesalers, including Cogent Communications, Level 3 and Telstra.

Those companies control access to the Internet backbone, which is made up of ultra-high-bandwidth connections among major cities around the world, and sell it to local service providers such as Time Warner Cable and AT&T.

Cleveland is one of the country's biggest Internet hubs, with trunk lines — bundles of fiber-optic cables — running from here to Chicago, New York and Washington, D.C., said Scott Rourke, president and chief executive of Cleveland's broadband initiative, OneCommunity.

The sabotaged trunk line didn't entirely cut people off from the Internet, said Dave Shaeffer, chief executive of Cogent. Instead, Internet traffic was rerouted until the problem was fixed.

SEE INTERNET | A6

What are Northeast Ohio's Environmental Challenges?

Top “issues of concern” based on responses from 7 of the 9 counties represented by the members of the WRRC&DC:

Farm conservation and viability (6/7)

Flooding and stormwater management (6/7)

Land use planning (6/7)

Sprawl and loss of community character (6/7)

Wetland Protection (6/7)

Invasive plant species (5/7)

Environmental Education (5/7)

What do Northeast Ohio's Watershed Stewardship Organizations Need Help With?

- assembling and interpreting data, mapping, and conducting natural feature inventories such as canopy coverage and native aquatic species trends (using both GIS and remote sensing techniques), to assist with stressor assessment and remediation

What do Northeast Ohio's Watershed Stewardship Organizations Need Help With?

- outreach to multiple and disparate target audiences regarding the "what, why and how" of Lake Erie ecosystem "stressors" (including invasive species, suburban sprawl, sources of pollution such as landfills) and how to address them from a variety of perspectives (scientific, legal, etc.)

What do Northeast Ohio's Watershed Stewardship Organizations Need Help With?

- developing and implementing problem-solving programs focused on remedial action such as restoring wetland and riparian areas as well as dam removal and
- providing age-appropriate environmentally-based K-12 informal science education to the next generation of potential environmental stewards.

CLEAN Goals

(1) to convene and support a regional inter-institutional team of undergraduate faculty in STEM (Science, Technology, Engineering, and Mathematics) disciplines who will engage their students in collaborative environmental service-learning and community-based research at the undergraduate level

CLEAN Goals

(2) to foster the development and implementation of undergraduate environmental-service learning and community-based research curricula and courses

CLEAN Goals

(3) to provide venues for public environmental education *by* the region's undergraduates as well as enhance access to environmental careers *for* those undergraduates and

CLEAN Goals

(4) to meet needs of the region's non-profit and government-sponsored environmental organizations addressing natural resource conservation and development issues associated with Lake Erie and its Northeast Ohio tributaries.

CLEAN ***Strategies***

- inter-institutional, team-based faculty development

-inter-institutionally linked courses and collaborative projects

CLEAN Strategies

- environmental service learning pathways from 2-year to 4-year institutions
- region-wide dissemination of project outcomes
- mentoring and professional networking leading to employment and “brain gain” in Northeast Ohio

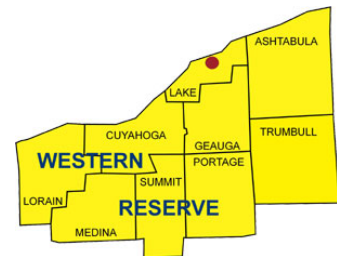
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What is Service Learning?

Service-learning is a credit-bearing educational experience during which students

- participate in an organized service activity meeting identified community needs and
- reflect on that activity in order to
- enhance their understanding of course content, appreciation of the academic discipline, and sense of civic responsibility.

SIX MODELS FOR SERVICE- LEARNING

- “Pure” Service-Learning
- Discipline-Based Service-Learning
- Problem-Based Service Learning
- Capstone Courses
- Service Internships
- Undergraduate Community-Based Action Research

“PURE” SERVICE- LEARNING

Courses which send students out into the community to serve, and have at their intellectual core the idea of service to communities by students, volunteers, or engaged citizens.

Not typically associated with any one discipline.

DISCIPLINE-BASED SERVICE-LEARNING

Students expected to have a presence in the community throughout the semester and reflect on their experiences regularly, using academic course content as a basis for their analysis and understanding.

PROBLEM-BASED SERVICE-LEARNING

Students (or teams of students) relate to the community like “consultants” working for a “client” to understand and address a particular community problem or need.

PROBLEM-BASED SERVICE-LEARNING

This model presumes that the students will have some knowledge they can draw upon to make recommendations to the community or develop a solution to the problem (e.g., architecture students might design a park, business students might develop a business plan, or botany students might identify non-native plants and suggest eradication methods).

CAPSTONE COURSES

Courses generally designed for majors and minors in a given discipline and offered almost exclusively to students in their final year.

The goal of capstone courses is usually either to explore a new topic or to synthesize students' understanding of their discipline.

CAPSTONE COURSES

Capstone courses ask students to draw upon the knowledge they have obtained throughout their coursework and combine it with relevant service work in the community.

These courses offer an excellent way to help students make the transition from the world of theory to the world of practice by helping them establish professional contacts and gather personal experience.

SERVICE INTERNSHIPS

Like traditional internships, and more intense than typical service-learning courses, with students working as many as 10 to 20 hours a week in a community setting.

SERVICE INTERNSHIPS

As in traditional internships, students are generally charged with producing a body of work that is of value to the community or site. However, unlike traditional internships, service internships have regular and on-going reflective opportunities that help students analyze their new experiences using discipline-based theories. These reflective opportunities can be conducted with small groups of peers, in one-on-one meetings with faculty advisors, or even electronically with a faculty member providing feedback.

SERVICE INTERNSHIPS

Service internships are further distinguished from traditional internships by their focus on reciprocity: the idea that the community and the student benefit equally from the experience.

UNDERGRADUATE COMMUNITY- BASED ACTION RESEARCH

An independent study option for the rare student who is highly experienced in community work, but also appropriate for small classes or groups of students. In this model, students work closely with faculty members to learn research methodology while serving as advocates for communities.

What is Community-Based Research?

Comparison of Traditional Academic Research and
Community-Based Research

Primary Goal

Traditional Academic Research: Advance knowledge within a
discipline

Community-Based Research: Contribute to the betterment of
a particular community or group/lead to social and
economic equality

What is Community-Based Research?

Comparison of Traditional Academic Research and
Community-Based Research

Role of Researchers

Traditional Academic Research: Outside expert

Community-based Research: Skilled collaborator, committed participant, facilitator, and learner

What is Community-Based Research?

Comparison of Traditional Academic Research and
Community-Based Research

Role of Students

Traditional Academic Research: Research assistants to pass
along faculty expertise

Community-based Research: Co-collaborators, capable of
taking ownership of research project

What is Community-Based Research?

Comparison of Traditional Academic Research and
Community-Based Research

View of Community

Traditional Academic Research: Object to be studied
(community as laboratory) or problem to be fixed

Community-based Research: Knowledgeable partner in
solutions, capable of teaching important lessons to faculty
and students in higher education

What is Community-Based Research?

Comparison of Traditional Academic Research and
Community-Based Research

Choice of Research Methods

Traditional Academic Research: Predetermined; usually
either quantitative or qualitative

Community-based Research: Eclectic; methods selected
based on their ability to address the research issue

What is Community-Based Research?

Comparison of Traditional Academic Research and
Community-Based Research

Researcher-Researched Relationship

Traditional Academic Research: Short-term,
detached

Community-based Research: Respectful, reciprocal,
and long term relationship

What is Community-Based Research?

Comparison of Traditional Academic Research and
Community-Based Research

Beneficiaries of Research

Traditional Academic Research: Researcher's career (i.e., tenure)/institutional advancement; discipline as a whole (ground-breaking)

Community-based Research: Community members and groups

What is Community-Based Research?

Comparison of Traditional Academic Research and
Community-Based Research

Measure of Success

Traditional Academic Research: Acceptance by academic peers (publications in journals, disciplinary conference presentations)

Community-based Research: Usefulness for community partners/contribution to social change

Advantages and Challenges

Service Learning (including CBR)

- motivates students to learn course concepts more thoroughly, as they see their relevance to the “real world”
- provides valuable service/information to organizations that might otherwise not benefit due to limited resources
- offers opportunities for interdisciplinary collaboration
- helps HE institutions address teaching, research AND service functions articulated in their missions
- helps students understand their roles as citizens who are both enlightened and engaged

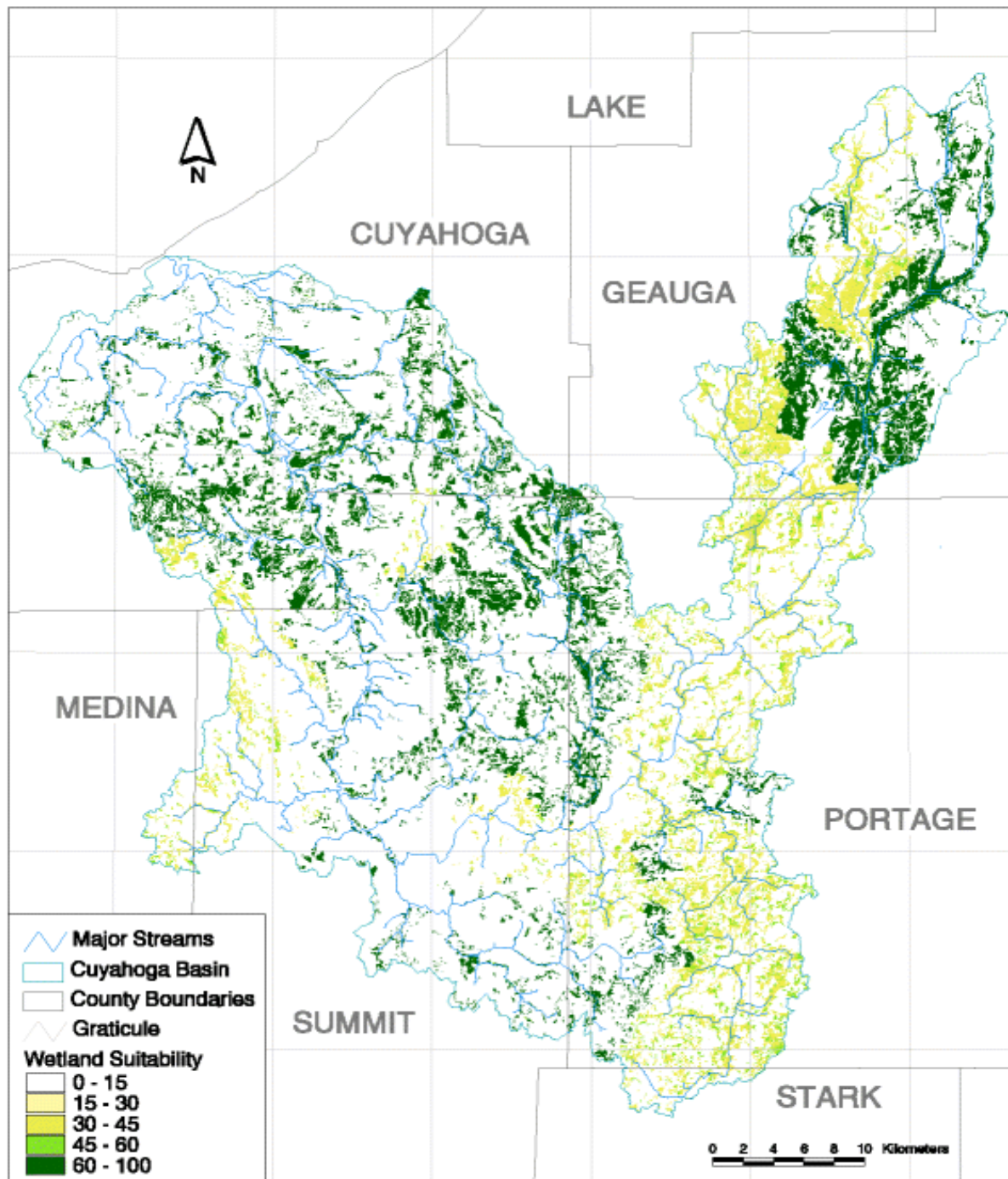
Service Learning (including CBR)

- may turn students off if perceived as “forced and uncompensated” labor
- may be interpreted as the manifestation of a “liberal agenda” associated with the transformation of society and higher education institutions
- may result in negative experiences if the community partner is too under-resourced to offer needed support
- may result in feelings of exploitation if service/research outcomes expected by the community partner are not achieved
- is often of the greatest interest to junior faculty, for whom the investment of time needed may detract from other activities considered more critical for promotion and tenure

So.....where do we go from here????

What are Northeast Ohio's Environmental Challenges?

Let's compare what you think they are with what leaders in 7 counties in Northeast Ohio think they are.



Overview

-Who we are; why we're here

-Northeast Ohio's environmental challenges and needs of environmental organizations

-Service learning and community-based research in the STEM disciplines as a potential response to these challenges

- CLEAN as a coordinated, collaborative mechanism for linking watershed-focused environmental organizations and Northeast Ohio's STEM faculty and students