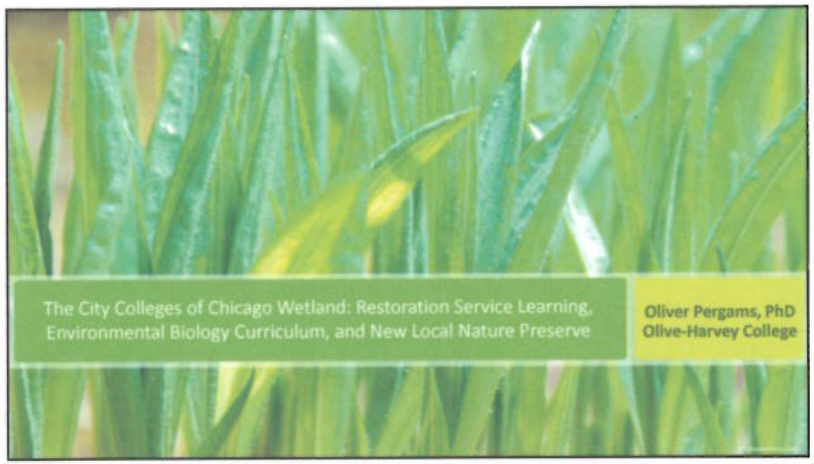
The City Colleges of Chicago Wetland: Restoration Service Learning, Environmental Biology Curriculum, and New Local Nature Preserve. Oliver Pergams, PhD. Olive-Harvey College, City Colleges of Chicago.

Dr. Pergams designed a rigorous Environmental Biology Associate of Science concentration (EBIO), and restored the City Colleges of Chicago Wetland as an integral part of EBIO providing service learning and research. The wetland is a 10+ acre natural area on campus. Over two years Dr. Pergams held 15 workdays with over 300 students, faculty, and community members volunteering a over 800 hours. They removed numerous invasive weed species with tools, herbicide, and prescribed burning, and removed thousands of pounds of debris. Dr. Pergams secured $350,000 to build a ½ mile wetland boardwalk with interpretive signage, as a community resource.

EBIO prepares students to transfer to environmental programs at four-year institutions, and the program's rigor increases the variety of schools to which OHC graduates can transfer. Students may choose Laboratory or Field Biology Tracks. Internships with government agencies and NGOs are incorporated. Restoration of the wetland has been going on for two years now. Dr. Pergams first built a website to attract volunteers, document activities, and promote restoration of the wetland: www.cccwetland.org. He took censuses of birds, mammals, and invasive plant species. Dr. Pergams discovered several rare native bird and plant species, including Great Plains Ladies Tresses (Spiranthes magnicamporum). Utilizing money from various grants he applied for and received, he held 15 workdays with over 300 students, faculty, and community members volunteering a total of over 800 hours. During these workdays they removed the invasive weed species Phragmites australis (common reed, invasive haplotype M), Rhamnus cathartica (common buckthorn), Elaeagnus umbellate (autumn olive) and Dipsacus fullonum (common teasel). Removal was performed manually, through application of herbicide, and through prescribed burning. They replanted with seed from numerous native plant species. Dr. Pergams and students removed literally thousands of pounds of debris and garbage. Utilizing another grant, undergraduate research students and developed a rough draft of a wetlands research curriculum under Dr. Pergams' guidance. He also secured $350,000 in funding to build a ½ mile boardwalk through the wetland with interpretive signage, to turn the wetland into a community resource as well as a resource for scientific research and service learning.



To start things off...

A video by Dr. David Marshal, VP of Instruction at OH:
http://www.youtube.com/watch?v=Hy4ULRCmIEo

Outline of Talk

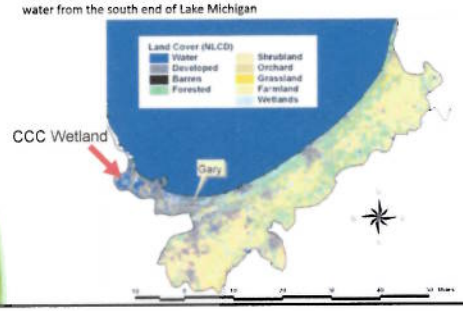
- Short history of Calumet natural areas
- What use are wetlands?
- OH Environmental Biology AS Concentration
- Student research
- Wetland nature preserve project
- Service learning
  - What to expect at a workday
  - www.cccwetland.org
  - Schedule of workdays
  - Student handouts
  - Contact Information

Short History – The CCC Wetland & the Calumet Region

- Five factors have contributed to some preservation of SE Chicago (Calumet Region) natural areas:
  - Stronger environmental laws
  - A 30-year downturn in industry that has resulted in slowed/stopped land development
  - The closing of many landfills
  - The concentration of high-quality remnants, such as Burnham Prairie and Powderhorn Lake Marsh & Prairie
    - This is largely due to heavy industry and rail prohibiting access or making access difficult, as well as providing regular burning
  - And, of course, volunteer advocacy and efforts!

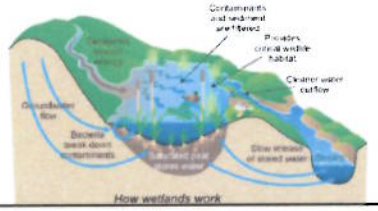
Wetlands Are Parts of Watersheds

- Wetlands exist as part of a watershed. A watershed is the area of land where all of the water that is under it or drains off of it, goes into the same place
  - The CCC Wetland is at the extreme NW corner of the Galien-Little Calumet Watershed, which collects water from the south end of Lake Michigan



What Wetlands Do For You!

- Wetlands have the amazing ability to remove harmful impurities from the water we drink and use every day—long before it reaches the pipes that carry it to our homes
- Wetlands clean water by removing chemicals & sediments
  - Phosphorus, nitrogen, and sediments (including sometimes heavy metals) enter the water system from agriculture and industrial development, and can seriously pollute water and harm the life that depends on it
- Wetlands filter water by trapping and absorbing harmful bacteria
  - Wetlands can filter up to 90% of bacteria in water
- Preserving and restoring wetlands means fewer water purification plants have to be built!



What Wetlands Do For Wildlife!

- Seasonal or ephemeral wetlands (like the CCC wetland) provide crucial breeding habitat for amphibians
- Wetlands provide important breeding habitat for migratory birds
  - Of the 21 bird species recently censused 30% were migratory or aquatic species
- CCC Wetland provides habitat for a large amount of native wildlife
  - White-tailed deer, coyotes, red-winged blackbirds, prairie crayfish, butterflies, dragonflies, and many native plants


White-Tailed Deer


Northern Water Thrush


Spring Peeper


Great Plains Ladies Tresses

Wetlands Have Special Protection

- Image of the CCC Wetland from the National Wetlands Inventory of the U.S. Fish and Wildlife Service
- The CCC Wetland is designated PEM/SS1C, meaning it is an inland, freshwater, nontidal wetland characterized by the presence of deciduous trees, scrub, and shrubs; and that it floods seasonally
- All these reasons, including water filtration for people and providing habitat for wildlife, are the reasons that the US Clean Water Act exists, protecting wetlands!

Increasing College Success!

Through Environmental Initiatives at OH

New & current initiatives

- New Environmental Biology Associate of Science Concentration
- CCC Wetland Nature Preserve Project
- Integration of the CCC Wetland
  - Student Research
  - Restoration: Service Learning

Future initiatives

- Community garden

Expected outcomes: College success!

- Increasing enrollment by engaging local K-12 schools
- Increasing graduation and transfer rates through rigorous academics
- Increasing job success: "Employment of environmental scientists and specialists (with BA degree & above) is expected to increase by 28% between 2008 and 2018, much faster than the average for all occupations"[1]

[1]Occupational Outlook Handbook, 2010-11 Edition, Environmental Scientists and Specialists, U.S. Dept. of Labor Statistics

OH Environmental Biology (in a Nutshell)

- **Academically highly rigorous to maximize transfer to local 4-year colleges and universities**
- Utilizes only courses already available in the CCC system, except for two new electives
  - Environmental Biology II
  - Applied & Environmental Microbiology
- Students may choose electives from Laboratory or Field Biology Tracks
- **Internships**
  - **U.S. Environmental Protection Agency**
  - **Forest Preserve District of Cook County**
  - **Field Museum**
  - **Chicago Municipal Water Reclamation District**
  - Black Oaks Sustainability Center
  - Volunteer Stewardship Network
- **Research Component**
  - Environmental Research Project
- **The CCC Wetland**
  - **On-site ecological and environmental laboratory**
  - **Restoration of the wetland will also contribute to Service Learning**
- Annual Program Evaluation
  - Metrics of degree completion, progress towards Baccalaureate and graduate degrees, and job attainment

Ongoing Student Wetland Research

(Biology 299 – Independent Research)

- Determined history of CCC Wetland and OH campus using historical maps
  - Found on 1938 maps, so it's been around at least since then
  - Use results to guide soil sampling for heavy metals, etc.
- Non-native *Phragmites* is a perennial, aggressive wetland grass that outcompetes native plants and displaces native animals. However, there is also a native species.
  - Determined that "our" *Phragmites* is the non-native haplotype, using DNA sequencing
- Determine if insecticide spraying of wetlands in the Chicago area has resulted in rapid evolution of pesticide resistance in mosquitoes

CCC Wetland: Nature Preserve Project

Community Resource:

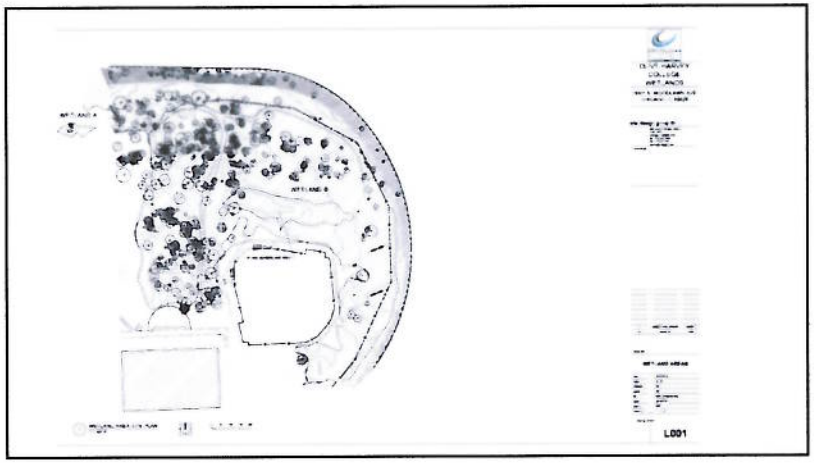
- *1/3 mile boardwalk*
- *Interpretive signage*
- *Fenced w/ gravel path*

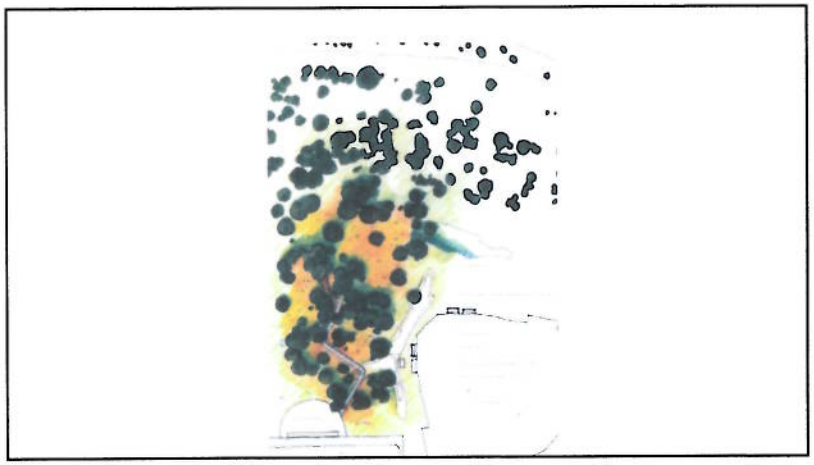
Our vision :

- *People from the neighborhood could walk the Wetland with their children, listening, watching, and learning.*
- *They'd hear frog mating calls and watch red-winged blackbirds defend their territories. They'd see different wildflowers every month. They would learn how wetlands clean our water.*
- *They would leave the Wetland a little more knowledgeable, a little more environmentally friendly, and a little more relaxed than they were before.*

CCC Wetland Nature Preserve Project

- Chancellor Cheryl Hyman and CCC are supporting this project
- $350,000 of seed money has been allocated towards approximately $500,000 total cost
  - It is thought that full funding through corporate donors and other sources is likely
- We have hired architects Site Design Group, Ltd. to design and oversee the project, and are meeting weekly with them
  - We now have initial architect's plans





Service Learning
(we're going online from here on)

www.cccwetland.org

Schedule of workdays
http://www.cccwetland.org/Restoration.html

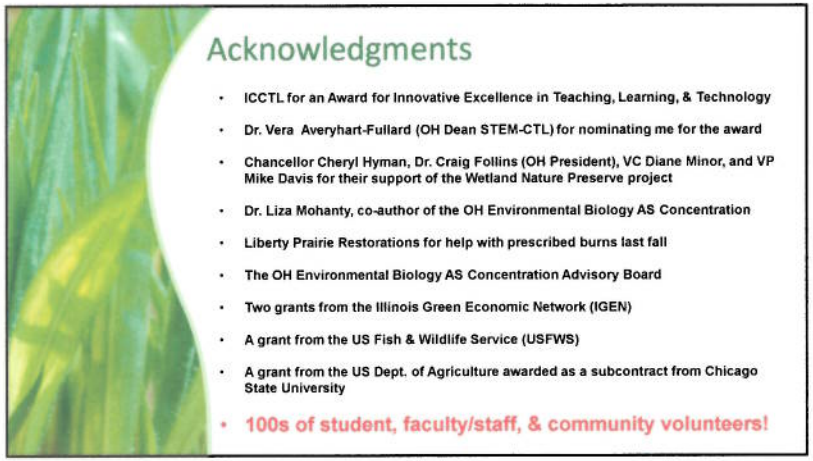
Student handouts
http://www.cccwetland.org/uploads/student_workday_handout.pdf

Student online signup
http://www.cccwetland.org/VolunteerSignup.html

Pergams contact info:
http://www.cccwetland.org/uploads/PERGAMS_CONTACT_INFO.pdf

To close...

A video by Mr. Juan Jimenez, OH student & videographer
http://www.youtube.com/watch?v=X1A3KoMWvx0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The OH Environmental Biology AS Concentration Advisory Board
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