Tribal Colleges and Lac Courte Oreilles Ojibwe Community College (LCOOCC) Curriculum, Projects and Collaborations for Training Tribal Environmental Staff

EPA Tribal Water Workshop
Oct. 4-6, 2016
Nottawaseppi Huron Band of the Potawatomi, Battle Creek, MI

Presentation by Debra Anderson, Ph.D.
Lac Courte Oreilles Ojibwe Community College
Life Science and Water Resources Faculty
Tribal Colleges-Background

- Tribal Colleges Map | Native American Colleges | U.S. Canada
- American Indian Higher Education Consortium
LCOOCC has it’s main campus on the Lac Courte Oreilles Reservation and outreach sites at the St. Croix Reservation, Lac Du Flambeau Reservation, and in Washburn, Wi. serving the Bad River and Red Cliff Reservation areas. The outreach sites have classes delivered face-to-face, via interactive Television (ITV) or online.

Our mission is to provide Anishinaabe communities with post-secondary and continuing education while advancing the language, culture and history of the Ojibwa.

Currently 13 tribal fish hatcheries and/or rearing components in Great Lakes region. All of the reservations we serve have modern fish hatcheries and numerous water resources.

Lakes, rivers, streams and wetlands cover approx. 20% of the LCO reservation (the Chippewa Flowage which comprises 15,300 acres).
LCOOCC Students at the Northern Aquaculture Demonstration Facility near the Red Cliff Reservation
Local Initiatives

-LCOOCC has various grant sponsored paid student internships in the areas of environmental restoration, monitoring and water quality work.

-LCOOCC has an Assoc. of Applied Science degree in Ag/Natural Resources Management with two emphasis tracks-Land Resources, and Water Resources. The water resources tract has offered courses since fall 2004 and the land resources tract since 1995.

-Water resources tract courses include Intro. to Water Resources, Fisheries and Aquaculture, Hydrology, and Freshwater Ecology. Curriculum development and program initially funded by NSF-Alliance for Minority Participation Grant managed by Salish Kootenai Tribal College.

-EPA Guest speakers for the water resources courses from 2014-2016 and visit to EPA Research Vessel the Lake Guardian
LCOOCC Degrees and Certificates

- http://www.lco.edu
LCOOCC Internship Opportunities

- From 2005-2016 – LCOOCC has funded 163 internships at various federal, state, tribal, and non-profit agencies in the STEM fields.

- Funding has been through: NSF-TCUP, NIFA 1994 Land Grant funding (Equity and Tribal College Research), NSF-Alliance for Minority Participation (AMP), Work Based Learning, American Indian College Fund, etc.

- Locations/Agencies: GLIFWC, LCO Conservation, US Forest Service, WI DNR, St. Croix NRD, Bad River NRD, Lac du Flambeau Forestry, LCOOCC Sustainable Agriculture Research Station, EPA and ECO (Env. Careers Org.).
National Initiatives

- National Initiatives: Tribal College and Universities (TCU) National Facilitation Project for Increasing Tribal Involvement in the Water Quality Network

  - Formation of TCU Water Resources Coalition to collaborate with CSREES National Water Quality Program System-Funded April 2004 through Salish Kootenai College (8 TCU’s initially involved and opportunities for TCU participation through mini-grants, summits)
3 Water Resources Research, Education and Extension Projects at LCOOCC

- Chippewa Flowage Invasive Species Education and Management Project: 2004-2008
- Aquatic Invasive Species Entry Points Research Project: 2006-2008
Cranberry Marsh Nutrient and Pesticide Effects on Receiving Lake and Groundwater

- Collaboration between Lac Courte Oreilles Ojibwa Community College, Lac Courte Oreilles Conservation Dept. and Lac Courte Oreilles Cranberry Marsh

- Research funding provided the Lac Courte Oreille Tribe, and the Natural Resources Conservation Service, LCOOCC Equity Grant

- Graduate tuition and travel funding by American Association of University Women Career Development Grant
Conclusions and Management

Recommendations

- There is evidence, based on the pesticide study that pesticides discharged in the water from LCO Cranberry marsh are subsequently present in receiving water. The pesticide pulse was tracked using the toxicity tests with a flow rate of 3.15 m/min. as the pulse moved down the channel to site I-1.

- Pesticides are reaching the lake and pulse through in approximately 24 hrs. following release of the waters from the cranberry marsh. Organisms in the path of this pulse are adversely affected.
Conclusions and Management Recommendations

- The sediment toxicity tests show low levels of toxicity and the sediment chemical tests show the levels of pesticide are below confidence levels. There are probably very small residual levels of pesticide present in the sediment of the receiving water.

- There was no movement of chemicals detected from the marsh into the groundwater.
Conclusions and Management

Recommendations

- Based on the nutrient study results there is significantly more P entering the lake at site I-1 when compared to the other sites in the lake. The other sites are clearly P limited. Therefore, nutrients are being discharged into the receiving water and having the most effect where they enter the lake at site I-1.

- The results of the hydrologic and phosphorus modeling show that watershed runoff is likely to have a significant impact on water quality in Cranberry Lake. The total annual load of phosphorus is 64 kg per year of which 17.2% is contributed by the LCO Cranberry Marsh, with 65.6% (the majority) being contributed by the forested portion of the watershed most likely through surface runoff. The modeling predicts that the conversion of natural wetlands to cranberry farmland should only cause an increase of 14% total in-lake phosphorus loading annually and that amount should not result in a noticeable water quality change in the receiving waters on an annual basis.
Management Outcomes

- LCO Cranberry Marsh is now an organic producer of cranberries.
- LCO Cranberry Marsh is diversifying and converting unproductive beds into wild rice production.
- Collaborators involved in the LCO Cranberry Marsh on the conversion to wild rice include LCO Conservation, GLIFWC, etc. has worked directly with since
SUMMER 2000
LCOOCC Student Interns
Melissa Ahmed, Agnes

SUMMER 1999
LCOOCC Student Interns
Wendy Sue Hagins, Tom Shanowat

SUMMER 2000
LCOOCC Student Interns
Adrienne Beighley, Natalie Bracklin
Chippewa Flowage Invasive Species Education and Management Project

- CSREES 406 Grant
  Integrated Research, Education and Extension Competitive Grants Program, National Integrated Water Quality Program
- 2004-2008
“The Chippewa Flowage Invasive Species Education Initiative”

- Map the existing areas of Eurasian water-milfoil and purple loosestrife infestation on the Chippewa Flowage.

- Explore and promote discussion and deliberation on public policy, educational, and management options to develop integrated and collaborative solutions for invasive species management. Assess and recommend management options for control and eradication of the invasives with Steering Committee input.

- Provide targeted education and leadership to organizations, stakeholders and volunteers to implement selected management strategies.
Research and planning

Initial meeting participants contacted and invited a core group of stakeholders to form a grant writing team. Regular meetings were conducted between Jan.-April 04. All participants had prior working relationships and knew each other. After grant was funded a Steering Committee was established and met 2004-2008.

Grant Writing Team Members include:

- UW Extension Community Resource Development Educator for Sawyer County/LCO Tribe- David Berard *
- LCOOCC Community Development/Extension Director-Monica White
- LCOOCC Community Development/Extension Staff-Jennifer Bunker
- LCOOCC Life Science and Water Resources Faculty-Deb Anderson *
- LCOOCC GIS Lab Manager/Faculty- Tracey Mofle
- LCOOCC Office of Sponsored Program Director-Dan Gretz
- LCO Conservation Dept. Environmental Engineer- Dan Tyrolt *
- LCO Conservation Dept. Environmental Specialist–Brett McConnell
- LCO Conservation Dept. Wetland Ecologist- Kristi Maki *

*Steering Committee members listed above and Other Steering Committee Members include:
- LCOOCC Water Quality/Natural Resource Specialist- Erik Olson
- WI DNR Aquatic Ecologist- Craig Roesler
- WI DNR Chippewa Flowage Manager- Neal Kephart
- Chippewa Flowage Property Owners Association Chair- Doug Kurtzweiler
- Sawyer County Lakes Forum Chair-Waldo Asp
- US Forest Service Plant Ecologist- Steven Spickerman
- Great Lakes Indian Fish and Wildlife Commission (GLIFWC) AIS Specialist- Dara Olson
- Resort Owners Association- Cheryl Treland
The LCOO Community College Extension Project was innovative as it was one of two tribal programs funded nationally under the water quality (406) program at that time (2004). Funding received for the project was $300,000 for a 3 year period. LCOOCC was the first tribal individual 1994 land grant college funded under this program.

The project served as a vehicle to implement priorities identified in the national award winning Chippewa Flowage Joint Agency Management Plan.

A LCOOCC Water Quality/Natural Resources Extension Specialist, Erik Olson was hired with funds from the grant by LCOOCC Extension Program. His job was building local environmental and water education capacity, facilitating the implementation of the grant project and enhancing LCOOCC College Extension’s visibility. This project was LCOOCC Extension’s first foray into environmental and water education since its inception in 1997.

Student interns, and local volunteers were incorporated into the program building long-term leaders in environmental sustainability.

The project results were published in Chippewa Flowage Aquatic Plant Management Plan Sept. 12, 2008 Authored by Erik R. Olson and Daniel D. Tyrolt
Aquatic Invasive Species Entry Points Research Project

Funded by: USDA CSREES Tribal College Research Grant Program
2 Year Grant, 2006-2008

Main Goals
- Research the inflow rivers/streams to see if they are entry points for aquatic invasive species
- Develop an online web mapping system to support community based research and to disseminate research findings

Steering Committee
Entry Pts. Project Collaborators

- LCO Ojibwe Community College (LCOOCC)
  - Chippewa Flowage Invasive Species Education and Management Project
  - LCOOCC Extension
  - LCOOCC Sustainable Living Institute
- University of Wisconsin – Madison
- LCO Conservation Department
Outcomes and Management Options

- Targeted Control and Management Activities
- Increased the amount of information available for community research
- Documented AIS Entry Points
- Extensive list of native and invasive species commonly found in streams for our area.
- Baseline data for future research or education
- Development of an online web mapping system to support community based research and to disseminate research findings
LCOOCC STUDENT INTERNS 2005: Agnes Helsper, Autumn DeWall, & Don Miller
LCOOCC STUDENT INTERNS 2006: Dan Pearson, Michelle Miller, Shannon Wilber, Keith Groeler, & Shannon Krause
LCOOCC STUDENT INTERNS 2007: Charlie Braege, Maria Giddley
2006 Research Assistants: Glenda Roman & Ben Spaier, UW Madison Graduate Students
2007 Research Assistant: Paul Christel, LCO Conservation Dept. Fisheries Biologist