

***2007-2008 Annual Report and Progress Towards Goals for the University of Toledo's
Lake Erie Center
July 1, 2007 – June 30, 2008***

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Prepared July 11, 2008**

Progress on Ongoing Goals for the Lake Erie Center

1. Hone Direction and Increase Visibility of the LEC, towards realizing goals of our 5 and 10 year plans.

Primary 2008-9 goal: Hold successful 2009 International Association for Great Lakes Research (IAGLR) Conference, May 18-22, on the main UT campus. Theme: “Bridging Ecosystems and Environmental Health Across Our Great Lakes” (~550-600 scientists and students anticipated).

Goal for 2006-8 was: Formulate and hold workshops for developing and implementing 5 and 10 year plans for the LEC, with internal and external Scientific Advisory Boards and the Education & Outreach Advisory Board members. We worked to develop our architectural expansion needs. (progress: completed preliminary plans in spring 2008, submitted grant for funding \$500,000 to the National Science Foundation (NSF); next large internal & external joint board meeting planned for fall 2009, following IAGLR 09 in May 2009)

Progress to date:

- 1) Large workshops for the LEC's joint internal and external advisory boards (Science and Education-Outreach) were held on April 28, 2006 and on February 8, 2008, to lay the groundwork for architectural expansion plans, and fine-tune the LEC's 5 and 10 year plans. The first workshop led to the NSF FSML (Field Station and Marine Lab) Planning grant, which was funded in fall 2006 and then to an application to the same program to begin to fund the LEC's architectural expansion (pending, submitted March 2008).*
- 2) The LEC director, in conjunction with the LEC staff and boards, Provost Haggett, Assoc. Dean Morrissey, Dean Theodosiou, Dean Lee, Chuck Lehnert, and architect Joseph Kunkle developed architectural plans for the LEC expansion, which was submitted to the NSF in March 2008.*
- 3) The LEC signed a formal agreement of collaboration with University of Wisconsin, Milwaukee Great Lakes Water Institute on October 2, 2007 for research program partnership. This partnership further developed throughout 2007-8, and our group visited them in June 2008. (Dr. Stepien originally visited them in November 2006).*
- 4) IAGLR 2009 conference committees were formulated and met several times, including a site visit meeting from the IAGLR director on Nov. 29, 2007, and with conference committee members in March and April 2008.*

Goals for 2008-9:

- a) Hold successful 2009 IAGLR conference and develop our team networking and interfacing.*

- b) *Work on funding for architectural expansion (continue from spring 2007 LEC expansion grant to NSF, resubmit if necessary; meet with BP and others for private funding)*
- c) *Further develop collaboration with UWM WATER institute.*
- d) *Hold Great Lakes Field station special session at IAGLR 2009.*

2. Continue to increase research and education grant funding; and grow collaborations and positive visibility for the LEC. Particularly develop collaborative work with our Health Sciences campus, other colleges, and other departments.

Progress to date:

- 1) *Most significant outcome was the funding of our new \$2.4 million NSF Gk-12 program, "Graduate fellows in high school STEM education: An environmental science learning community at the land-lake ecosystem interface", which supports 8 graduate fellows and 8 high school teachers per year, 5 years. PI: Stepien, co-PIs: Moorhead, Bridgeman, Fisher, Gruden.*
- 2) *The LEC submitted a grant for its architectural expansion to the NSF FSML program for \$500,000 in March 2009, based on the outcome of our planning grant that was funded in 2006. PI: Stepien, co-PIs: Czajkowski, Gruden, Mayer, Egan.*
- 3) *The LEC was awarded a Research Experiences for Teachers award for high school teacher Tim Bollin to conduct research on fish genetics in Stepien's lab and work with her graduate student Amanda Haponski. This team provided a successful transition to the GK-12 program. The RET built off the LEC planning grant.*
- 4) *A large NSF URM (Undergraduate Research and Mentoring) proposal was resubmitted in March 2008 and is in review. PI: Sigler, co-PI: Stepien (note: Stepien was asked by NSF to reverse the order, as she has the Gk-12 program to run)*
- 5) *We developed a new fish viral grant proposal plan with faculty from the Health Sciences Campus, for which we applied for and are slated to receive USDA earmark funding. We held several meetings and collaborative activities with researchers from the Health Sciences campus. PI: Stepien, co-PIs: Wiley, Bossenbroek. We plan to expand this program in future years, pending funding, and to involve UWM WATER Institute.*
- 6) *The LEC, especially through the Gk-12 program has sponsored Dr. Wanda Penamon from the UT3 Teacher Education program, through Drs. Bridgeman and Stepien.*
- 7) *Our LEC Public Lecture Series has been well-attended, and attracts a regular following. This program is being utilized as part of the Gk-12 Environmental Science Learning Community in 2008-9*
- 8) *We have been contributing feature articles to the bimonthly publication EarthWatch Ohio.*
- 9) *We published an LEC FOLEC newsletter (Friends of the Lake Erie Center) and plan to now publish it 3 times per year.*

Goals for 2008-2009:

- a) *Operate year 1 of the GK-12 program.*
- b) *Continue to revise and resubmit any pending grants that are not funded.*
- c) *Continue to contribute bimonthly articles to EarthWatch Ohio and 3 times yearly the LEC FOLEC newsletter.*

3. Continue to build research productivity, especially output of top scientific publications and conference presentations. Increase visibility of the LEC, its researchers, graduate students, and programs in the Great Lakes Community, as well as throughout the University of Toledo.

Progress (through 6-08):

- 1) *Research productivity, including output of scientific publications and conference presentations, has continued to climb by LEC researchers and students. We have significantly increased positive visibility of the LEC, its researchers, graduate students, and programs in the Great Lakes Community, as well as throughout UT and our neighboring institutions.*
- 2) *Our website has grown to feature our many efforts and highlight our output.*
- 3) *We had a strong presence at the May 2008 IAGLR (International Association for Great Lakes Research) annual meeting held at the University of Trent, Ontario, Canada. Students from multiple LEC labs presented their research at the conference. Dr. Stepien also presented the plans for the 2009 conference to be held at UT.*
- 4) *Ph.D. student Amanda Haponski won the IAGLR scholarship award. Our LEC students have now won 5 of these prestigious awards since 2005.*
- 5) *We established a publication numbering system for the LEC, which was implemented in 2007, and was fruitful in 2007-8.*
- 6) *We won the bid to host the 2009 IAGLR annual meeting at UT, which we are in the midst of planning. Drs. Stepien, Mayer, Moorhead, and Lawrence are co-chairing the conference, which is projected to have about 550-600 attendees.*
- 7) *Through the NSF Gk-12 program, we are developing our Environmental Science Learning Community.*

Goals for 2008-9:

- a) *We will continue to plan and implement the 2009 IAGLR annual conference, working with our local committee, including agencies and other nearby universities and colleges. We are booking all needed facilities for the conference and developing plans for plenary speakers. We are encouraging our UT network and neighboring university and agencies to develop sessions for the conference.*
- b) *We will continue to feature our publications and programs on our website, and will continue to upgrade and enhance the website.*
- c) *Our new NSF Gk-12 program will help build an Environmental Science Learning Community, and is working with the TMACOG Student Watershed Watch program. At IAGLR 2009, we will feature a special part of the poster presentations for high school teachers and students throughout the Great Lakes.*

4. Continue to build graduate and undergraduate and postdoctoral-level research and education at the LEC, along with sponsoring high school science projects. Help to increase Ph.D. student enrollment and participation in the LEC.

Progress 2007-8:

- 1) *We continued to build graduate and undergraduate and postdoctoral-level research and education at the LEC, which was evidenced by our record number of 20 graduate*

students working at the LEC and our new Gk-12 funded program. We had several MS students defend their theses this year at the LEC (Betsy Bodamer, Colleen Wellington, Amanda Haponski, Pamela Struffolino).

- 2) The LEC was funded for a new \$2.4 million 5 year Gk-12 program for graduate fellows.*
- 3) Ms. Kristen DeVanna, a Ph.D. student, wrote and received a Lake Erie Protection Fund grant for her summer 2007 work, as well as a Sigma Xi grant. Ms. Amanda Haponski also received a Sigma Xi grant and Joshua Brown is being awarded a 2009 Sea Grant Knauss Fellowship to work in Washington D.C.?*
- 4) The NSF-sponsored summer REU (Research Experiences for Undergraduates) program (headed by Drs. Alison Spongberg and Christine Mayer) continued in 2007 and 2008. Dr. Stepien had an NSF REU supplement award for undergraduate Emily Sopkovich, who also received an Ohio Environmental Science scholarship award from the Ohio Academy of Sciences and the Ohio EPA.*
- 5) In summers 2006 and 2007, the LEC was home to guest researchers from the University of Waterloo, who used our boat and laboratory facilities. We have an application pending for the NSF URM (Undergraduate Research and Mentoring) program in Biology.*
- 6) High school student programs included the Maumee Watershed Watch program, and two middle school week-long interns from the Westside Montessori School (in Dr. Stepien's lab, with 2008 being the fourth year for this program).*
- 7) Dr. Stepien helped to facilitate placement of a Pharmacy intern with Dr. Bridgeman and Dr. Randy Ruch (Health Sciences Campus) for summer 2007 at the LEC. This is another example of our growing collaborations.*
- 8) UT3 teacher in training Dr. Wanda Penamon was sponsored by the LEC by Drs. Bridgeman and Stepien, and worked with the new Gk-12 program.*
- 9) We taught 3 summer 2007 courses at the LEC despite no funding given by UT for the instructors. We are hoping to resolve this important issue. Three courses were taught in summer 2006. We taught 2 through the new Gk-12 program for 18 teachers and students in summer 2008.*
- 10) A week-long summer camp for grades 4-5 was taught at the LEC to local elementary school children.*

Goals for 2008-9:

- a) Develop increased Graduate recruitment plans, in conjunction with the Departments of Environmental Sciences, Geography and Planning, Public Health, and Civil Engineering, showcasing these at the IAGLR 2009 conference.. Increase recruitment appeal and efforts on the web and at scientific conferences. (ongoing, website and displays have been developed, director has assigned Communication Coordinator to this task)*
- b) Obtain UT funding and support for the LEC summer courses. These will be necessary to facilitate and develop the NSF GK-12 program, the URM program, and others; and is required by our NSF FSML grant. We anticipate that the new provost likely will be amendable to helping to secure funding for the instructors, as she has run such programs for the NSF. (progress: stymied by UT administration to date, director is working on with Provost and dean)*

- c) *Increase LEC library acquisitions to feature LEC dissertations and theses. Include these in our website. (progress: Director has assigned communications coordinator to this task)*

5. Further develop website and LEC foyer display area (posters, displays, lake aquarium) as well as utilize existing space wisely and efficiently at the LEC. Make the LEC more user-friendly to its researchers, students, collaborators, and visitors.

Progress to date:

- 1) *The LEC website was further developed and visual displays in both of the classrooms were beautifully upgraded, to include satellite images, aerial photographs, and maps.*
- 2) *We developed attractive framed posters around the LEC atrium aquarium.*
- 3) *The pole barn was built using the changes implemented by the new UT administration.*
- 4) *We upgraded the wetlab for several graduate student experiments, and the running lake water system.*
- 5) *We developed an online facility manager request site through the university and have been having monthly Facility Committee meetings with all LEC PIs, technicians, and representative graduate students.*
- 6) *Developed plans for reasonably priced remodel/renovation of LEC kitchen area, using existing funds. (completed 7-08)*
- 7) *Created memorial garden in front of LEC with bench, flagpole, native plants, and sundial (completed 6-08)*

Goals for 2008-09:

- 1) *Continue to upgrade and update the LEC website (ongoing, facilitated by hire of communications coordinator in Jan. 2008)*
- 2) *Develop plans for upgrading the LEC pond area and eradicating invasive plants. Help LEC facility manager to headline these efforts. Increase plantings and displays of native plants. Sponsoring Eagle Scout project to replant natives and eradicate invasives in summer-fall 2008 – director assigned communications coordinator for this)*
- 3) *Help LEC facility manager to develop a LEC volunteer docent program to help lead tours, help out, and aid P.R. (update: facility manager did not do, will try for 2008, director will put communications coordinator on this to help)*

REPORT OF LAKE ERIE CENTER ACTIVITIES

JULY 1, 2007 – JUNE 30, 2008

PUBLIC EDUCATION

- 4/21-4/25/08 Two Student Interns from West Side Montessori Middle School – Stepien Lab
- 6/9-6/13/08 Summer Science Camp, 12 Students from Wynn and Jerusalem Schools,]
4th & 5th Grades – J. Savino

UT CLASSES, SEMINARS AND WORKSHOPS

- May-July 2007 REU Program – National Science Foundation – A. Spongberg and C. Mayer
- 7/09-7/13/07 “Phytoremediation: An Investigative Field Approach to Developing a New Technology” – D. Dwyer
- 7/26-7/30/07 “Field Geology of the Lake Erie Region” – M. Camp
- Fall 2008 “Biogeography” – C. Stepien
- Spring 2008 “Invasive Biological Risks Assessment” – C Mayer & J. Bossenbroek
- Spring 2008 “Conservation Genetics” – C. Stepien
- 6/16-6/20/08 GK-12 Course – “Water Quality of Lakes & Streams” – T. Bridgeman
- 6/23-6/27/08 GK-12 Course – “Environmental Science: Land-Lake Interface” – D. Moorhead

PUBLIC OUTREACH AND LECTURES

- 07/18/2007 Public Talk Series. Diversity and Source Tracking of Bacteria at our Beaches and Streams. Dr. Jeffrey Ram, Wayne State University. Wednesday July 18, 2007 at 7:00 PM (Open to the public).
- 08/21/07 Meeting with Clay High School Science Faculty – J. Savino
- 09/19/07 Public Talk Series. Modeling and Forecasting PCBs and Atrazine in Lake Michigan. Dr. Russell G. Kreis, Jr., U.S. Environmental Protection Agency. Wednesday September 19, 2007 at 7:00 PM (Open to the public).

- 10/23/07 Public Talk Series. "Magical and Mysterious Monarchs" . Dana Bollin, Maumee Bay State Park Nature Center. Tuesday October 23, 7:00 PM (Open to the public)
- 10/23/07 LEC Photography Contest
- 10/23/07 Eisenhower Middle School Career Day – Graduate Students: DeVanna, Bodamer & Brown
- 11/08/07 Public Talk Series. "Thinking Sustainingly: What Would That Be Like? ". Dr. Charles V. Blatz, Department of Philosophy, University of Toledo. Thursday November 8, 7:00 PM (Open to the Public)
- 12/06/07 Documentary Screening. "Thunder on the Farm". Cap Averill II, Mantis and Moon, Inc. Film Company. December 6, 7:00 PM (Open to the Public)
- 01/17/08 Documentary Screening. "Invaders from the Sea," A BBC Worldwide-IMO Production. January 17, 2008, 7:00 PM (Open to the Public)
- 02/07/08 Public Talk Series. "Great River, Great Lakes: Demonstrating Great Lakes Restoration in the Maumee River Basin," Margaret O'Dell, Senior Program Officer, The Joyce Foundation. February 7, 2008, 7:00 PM (Open to the Public)
- 3/15-7/08 LEC Art Contest
- 03/20/08 Public Talk Series. "Davids vs. Goliaths: How the Phosphate Detergent Ban was passed," Dr. Robert Sweeney, Executive Director, International Association for Great Lakes Research. March 20, 2008, 7:00 PM (Open to the Public)
- 04/10/08 Public Talk Series. "Management Strategies for Lake Erie Walleye Fisheries that Balance Risks and Benefits," Dr. Michael Jones, Professor, Dept. of Fisheries and Wildlife, Michigan State University. April 10, 2008, 7:00 PM (Open to the Public)
- 05/08/2008 Portage River Student Watershed Congress – LEC staff instructed a one hour workshop on the fish and mussels of the Portage River and Western Lake Erie (~20 students)
- 05/15/08 Public Talk Series. "Coming Home: Return of Western Lake Erie's and Detroit River's Charismatic Megafauna," Dr. John Hartig, Refuge Manager, Detroit River International Wildlife Refuge. May 15th, 2008. 7:00 PM (Open to the Public)
- 06/19/08 Public Talk Series. "Sustainability Revolution in its Infancy: What Scientific and Engineering Resources and Analysis Approaches are Currently Available?" Dr. Defne Apul, Assistant Professor, Dept. of Civil Engineering, University of Toledo. June 19, 2008, 7:00 PM (Open to the Public)

- 6/20-6/21/08 Setup and manned an LEC display at the Earth Voyager festival located at the Skyway Marina, Toledo, OH.
- 06/30/08 Portage Soil and Water Summer Teacher Workshop – LEC staff taught a three hour workshop on the freshwater mussels of the Western Lake Erie watershed (15 local teachers)

UT MEETINGS AND CONFERENCES (INCLUDING LEC DIRECTOR'S MEETINGS)
OUTSIDE MEETINGS, CONFERENCES, WORKSHOPS AND SEMINARS at the LEC

- 7/11-7/16/07 ASIH Meeting in St. Louis – C. Stepien
- 7/27-7/28/07 OEC - LAMP Conference in Cleveland – C. Stepien
- 8/6/07 Maumee Bay State Park Wetland Restoration Project Management – Dwyer Lab
- 8/9/07 Western Lake Erie Basin Meeting w/Marcy Kaptur – J. Savino
- 8/24/07 VP Burns Quarterly Staff Meeting
- 9/12-9/17/07 OBFS Meeting in Junction Texas – J. Savino
- 9/14/07 Ohio Third Frontier Meeting – C. Stepien
- 9/26/07 UT Enrollment Services Meeting
- 10/1/07 Visit by Univ. Wisconsin Madison Water Institute to discuss collaborative efforts
- 10/20/07 Meeting with NRCS – K. Czajkowski
- 11/14/07 Student Watershed Watch Summit at Toledo Zoo – C. Stepien
- 11/29/07 IAGLR Site Visit
- 2/27-3/1/08 NSF Meeting and Great Lakes Meeting in Washington DC – C. Stepien
- 2/28/08 Meeting with Voinovich Aide & Meeting w/Marcy Kaptur – C. Stepien
- 3/4/08 Channel 11 Ecotrack 11 Television Interview
- 4/3/08 WLEB Meeting in Lasalle MI – J. Grabarkiewicz
- 4/4/08 UT Government Relations Group Tour
- 5/20/08 Maumee Bay Bacterial Task Force Meeting – Dwyer Lab

5/19-5/23/08 IAGLR 2008 in Peterborough Ontario Canada – C. Stepien & 9 Grads

6/2-6/3/08 Collaborative Visit to UWM Water Institute – C. Stepien

OUTSIDE MEETINGS

7/20/07 Ohio Environmental Services Meeting

8/29/07 USCG Western Lake Erie Committee Meeting

9/17/07 Duck & Otter Creeks Partnership Meeting

9/24/07 ODNR Fishing Regulations Meeting

9/25/07 Great Lakes Information Network (GLIN) Meeting

10/17/07 League of Women Voters Meeting

10/22/07 Duck & Otter Creeks Partnership Meeting

12/5/07 Rain Garden Initiative Meeting

12/12/07 Maumee River Watershed Group Meeting

1/29/08 TMACOG General Assembly Meeting

3/17-3/20/08 International Joint Committee Meeting & Workshop & Great Lakes Roundtable

3/24/08 Tour for the Chevron Energy Group

3/31/08 Lake Erie Economic Development Summit

4/9/08 Great Lakes Restoration Planning Meeting

4/9/08 Wes Fahrback – Senator Voinovich’s Aide, meeting and tour

4/9/08 Clean Marina’s Workshop – Ohio Lake Erie Commission

4/10/08 Duck & Otter Creeks Partnership Meeting

4/21/08 Senator Voinovich Meeting regarding Environment and Public Works

5/8/08 Portage River Student Congress – J. Grabarkiewicz

5/20-5/22/08 USCG Shoreline Assessment Meetings and Workshops
5/29/08 Duck & Otter Creeks Partnership Meeting
6/11/08 EnviroSAFE Public Meeting
6/18/08 US Army Corps Engineers Beneficial Use of Dredge Material Mtg – Dwyer Lab

RESEARCH ACTIVITIES

Lake Erie Monitoring Program - Ohio Lake Erie Commission - T. Bridgeman

Sludge Grant - USDA - K. Czajkowski

REU Program - NSF - A. Spongberg (with C. Mayer)

Phytoremediation - USDA - D. Dwyer

Stream Gage Installation and Monitoring - NRCS - D. Dwyer

Maumee Bay State Park Wetland Restoration - ODNR - D. Dwyer

Benthic Microbial Communities of Lakes - C. Mayer

Neogobiin Fish Research - NSF - C. Stepien

Research Experiences for Undergraduates – NSF – C. Stepien (with E. Sopkovich)

Walleye/Perch Research - Ohio Sea Grant - C. Stepien

Fish Stock - US EPA - C. Stepien

Research Experiences for Teachers – NSF RET – C. Stepien (with T. Bollin)

Brazil Visiting Graduate student – NSF deepfin project – C. Stepien

NSF Gk-12 Project: Graduate Fellows in High School STEM Education: An Environmental Science Learning Community at the Land-Lakes Ecosystem Interface – C. Stepien, T. Bridgeman, D. Moorhead, C. Gruden, and T. Fisher

List of LEC 2007-8 publications

| | Authors *=students, postdocs, techs Bold=LEC members or board | Pub date | Journal, issue, pages (when available) | Title |
|---------|--|---------------|--|--|
| 2007-01 | Stepien, Murphy*, and Strange* | 2007 April | Molecular Ecology 16:1605-1624 | Broad to fine scale population genetic patterning in the smallmouth bass <i>Micropterus dolomieu</i> across the Laurentian Great Lakes and beyond: An interplay of behavior and geography |
| 2007-02 | Qin, Mayer et al | 2007 | Limnology and Oceanography | Ecological stoichiometry in benthic food webs: Effect of light and nutrients on periphyton food quantity and quality in lakes |
| 2007-03 | Lohner* , Von Sigler, Mayer , & Balogh | 2007 April | Microbial Ecology 54:469-477 | A comparison of the bacterial community within and surrounding <i>Dreissena</i> clusters in lakes |
| 2007-04 | Strange* & Stepien | 2007 April | Fishery Bulletin 105:592-295 | DNA analysis distinguishes North American and Eurasian yellow perch (<i>Perca flavescens</i> and <i>P. fluviatilis</i>) in unknown fried fillet samples |
| 2004-05 | Moorhead, Bridgeman, & Morris | 2007 | Book: Pulse of Lake Erie | Changes in Water Quality of Maumee Bay 1928-2003 |
| 2007-06 | Strange* and Stepien | 2007 April | Canadian Journal of Fisheries & Aquatic Sciences, 64:437-448 | Genetic divergence and connectivity among river and reef spawning groups of Walleye (<i>Sander vitreus vitreus</i>) in Lake Erie |
| 2007-07 | Zhu, et al (Mayer) | 2007 | Journal of Great Lakes Research | Quantification of historical changes of submerged aquatic vegetation cover in two bays of Lake Ontario with three complementary methods |
| 2007-08 | Haponski* Marth* and Stepien | 2007 | Journal of Great Lakes Research 33(3): 117-126 | Genetic Divergence across a low head dam: A preliminary analysis using logperch and greenside darters |
| 2007-09 | Zhu, B. C.M. Mayer, S.A. Heckathorn, and L.G. Rudstam | 2007 | Journal of Aquatic Plant Management. | Can dreissenid attachment and biodeposition affect submerged macrophyte growth |
| 2007-10 | Evans and Gottgens | 2007 | Journal of Great Lakes Research 33(3) | Contaminant stratigraphy of the Ballville Reservoir, Sandusky River, NW Ohio: Implications for dam removal. |
| 2007-11 | Kvach* & Stepien | 2007 | Journal of Applied Ichthyology 24:103-105. | The invasive round goby <i>Apollonia melanostoma</i> (Actinopterygii: Gobiidae) – a new intermediate host of the trematode <i>Neochasmus umbellus</i> (Trematoda: Cryptogonimidae) in Lake Erie, Ohio, USA |
| 2007- | Ohayon* & Stepien | 2007 | Journal of Fish | Genetic and biogeographic |

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|---------|----------------------------------|------|---|---|
| 12 | | | Biology 71(Sup. C) :360-370 | relationships of the racer goby from introduced and native Eurasian locations |
| 2007-13 | Kvach* & Stepien | 2008 | Journal of Great Lakes Research 34:23-35. | Metazoan Parasites of Introduced Round and Tubenose Gobies (<i>Apollonia melanostoma</i> and <i>Proterorhinus semilunaris</i>) in the Great Lakes |
| 2007-14 | Rofkar, Dwyer, and Frantz | 2007 | Communications in Soil Science and Plant Analysis | Analysis of arsenic uptake by plant species selected for growth in northwest Ohio by inductively coupled plasma-optical emission spectroscopy |

| | Authors *=students, postdocs, techs Bold=LEC members or board or Gk-12 | Pub date | Journal, issue, pages (when available) | Title |
|---------|---|-----------------|---|---|
| 2008-1 | Barnswell* & Dwyer | 2008 | Ohio Journal of Science Ohio 107:91-103 | Vascular flora of the King Road Landfill in northwest Ohio |
| 2008-2 | Zhu, Mayer , Rudstam, Mills, & Ritchie | 2008? | Aquatic Botany 88:358-62. | Experimental examination of light and phosphorus effects on submerged macrophytes: implications for ecosystem changes in North American lakes. |
| 2008-3 | Morzillo et al. (Bossenbroek) | 2008 (April) | ESA Bulletin | A young scientist's guide to gainful employment: recent graduates' experiences and successful strategies |
| 2008-4 | Brown* & Stepien | 2008 | Molecular Ecology 7(12): 1757-1769 | Ancient divisions, recent expansions: Phylogeography and population genetics of the round goby <i>Apollonia melanostoma</i> |
| 2008-05 | Bodamer* & Bossenbroek | 2008 | Freshwater Biology | Wetlands as barriers effects of vegetated waterways on downstream dispersal of zebra mussels |
| 2008-06 | Cecala, R.K. Mayer, C. M. , Schulz, K.L. and Mills, E. L. | 2008? | Journal of Integrative Plant Biology | Increased benthic algal primary production in response to the invasive zebra mussel (<i>Dreissena polymorpha</i>) in a productive ecosystem, Oneida Lake, NY. |