



EARS IGERT newsletter

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EARS IGERT Newsletter

Greetings!

During the fall semester, the IGERT cohorts have been actively engaging in their individual and team projects, some of which are featured in this newsletter. The experiences gained by those in the 2009 cohort have been of great value to new trainees enrolled in the 2010 cohort. All trainees are extremely dedicated and focused on achieving their project goals. We are now recruiting for the 2011 cohort.

We hope that you enjoy this third issue of the IGERT newsletter. You are invited to submit, through the upcoming semester, your achievements, projects and photos by contacting mlnagell@kent.edu.

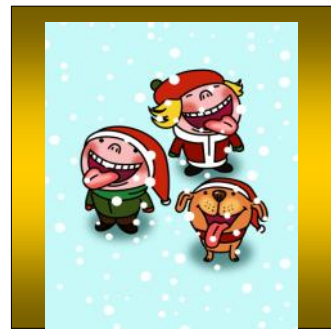
We wish you all a relaxing and safe holiday season .

LACAWAC WORKSHOP

Figure Legend. Below, gathered in the inglenook in the Lacawac Lodge, the eleven NSF EARS IGERT students are now engaged in the second year of the Environmental Aquatic Resource Sensing program.



LET IT SNOW!!



EARS IGERT is funded by NSF



Lakes as Sentinels of Climate Change: Second NSF Faculty-Student Workshop at Lacawac

by Craig Williamson, September 20, 2010

For the second year in a row, scientists at Miami and Kent State Universities in Ohio held a “hands-on” workshop at the Lacawac Sanctuary. A total of 20 faculty and student fellows gathered at the Lacawac Lodge over the weekend of September 9-12. The National Science Foundation (NSF)-sponsored program is “all EARS” (Environmental Aquatic Resource Sensing), part of the NSF’s Integrated Graduate Education and Research Training (IGERT) program. Student and faculty expertise ranges from development of new sensors to the deployment of advanced sensors in lakes and other aquatic ecosystems. The purpose is to create new insights into how these ecosystems function and to help protect valuable freshwater resources.



an alpine buoy that was deployed in two different lakes in the Beartooth Mountains of Wyoming this past summer. Perhaps more importantly, these buoys can be linked into the Global Lake Ecological Observatory Network (GLEON), a group of limnologists (lake scientists), ecologists, information technology experts, and engineers who have a common goal of building a network of lake ecology observatories. See www.GLEON.org for more information on this network.



This year the primary focus of the EARS IGERT workshop was on “*Lakes as Sentinels of Climate Change*”. With evidence growing about how climate change will alter life on Earth, concerns about freshwater resources are central. One of the biggest challenges of understanding the impacts of climate change is trying to figure out the best place in the complex landscape to detect ecosystem responses. As the lowest points in the surrounding landscape, lakes are excellent places to sample. The temperature, water clarity, and microscopic plankton with their short generation times and high reproductive rates are just a few of the characteristics of lakes that make them highly responsive sensors in the landscape. The students deployed sensors and collected, analyzed and presented the data they collected. The sensors the group used on Lake Lacawac have “relatives” on other lakes across the country through the IGERT program. These include four buoys in Ohio as well as



Above, and right, a senior IGERT fellow, Kevin Rose, leads students and faculty in a discussion of how to use advanced instruments to sample lakes, while nearby, Lacawac founder, Arthur Watres (above and left), who attended most of the workshop sessions, talks with an IGERT associate. For more information about the NSF EARS IGERT program and more photographs of Lacawac workshops, see the photo gallery at:

<http://bioweb.biology.kent.edu/igert/Home.h>

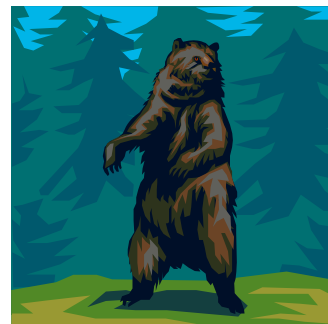




Lacawac



Workshop



VIEW MORE PHOTOS AT <http://bioweb.biology.kent.edu/igert/>

Meet Our Faculty and Trainees

Dr. Craig Williamson
Miami University



Craig Williamson leads the Global Change Limnology Laboratory in the Department of Zoology at Miami University. He is also the lead PI in the EARS IGERT at Miami University. Williamson received his PhD from Dartmouth College and was a faculty member doing research in limnology and aquatic ecology at Lehigh University before taking on his current position as the Ohio Eminent Scholar of Ecosystem Ecology in 2005. Williamson's expertise is in the ecology of ultraviolet radiation, and his current interests are centered on understanding the value of lakes as sentinels of climate change, and working with comparative lakes research through the Global Lake Ecological Observatory Network (GLEON).

As the lowest point in the landscape lakes provide signals of change in local, regional, and global environmental conditions. The focus of the EARS IGERT program on advanced sensors has enabled IGERT fellows in Williamson's lab to develop and deploy mobile buoy systems with advanced sensors to examine changes in alpine lakes. These high elevation lakes have very short ice-free seasons and are some of the best sentinel systems of climate change due to the relatively low levels of local disturbance in their watersheds, their very low nutrient concentrations, and their high water transparency, all of which make them highly responsive to environmental change. Kevin Rose and Jeremy Mack are two PhD students who have been leading the IGERT efforts in Williamson's lab in recent years. For more details, see the text, photos, and videos at:

<http://www.users.muohio.edu/willia85/>.

Susanna Scott
Miami University Trainee
2009 cohort

Susanna Scott is a second year PhD student at Miami University, working under Dr. Mike Vanni. Susanna works in Acton Lake, the site of the Miami buoy, and is actively involved in the Acton buoy project. Susanna is currently using data collected from the buoy to investigate the influence of storm events on lake ecosystem metabolism. She will be presenting findings from this study at the 2011 American Society of Oceanography and Limnology (ASLO) meeting this February in San Juan, Puerto Rico.

Susanna received her BS in Ecology, Evolution and Behavioral Biology in 2002 from the University of Texas at Austin. She then spent 5 years working as a technician in a diversity of systems around the United States.



Some of Susanna's previous work includes: tagging endangered species in Oregon, studies of grassland nutrient cycling in Montana, fire ecology in California and fish habitat associations in West Virginia. Susanna received her MS from Texas State University in 2009, where she studied the influence of invasive armored catfish (*Hypostomus* sp.) and native big claw river shrimp (*Macrobrachium carcinus*) on ecosystem function in spring dominated rivers.

Meet Our Faculty and Trainees, continued

Patricia Johnston
KSU Trainee
2010 cohort

From the Peruvian Amazon Forest to Ohio

In Perú, Patricia received her Bs. Sc. in Forest Sciences and a Forest Engineering degree in 2000. She conducted dendrology, timber harvesting and forest ecology in the Peruvian Amazon Forest and worked as a park ranger in the Paracas Natural Reserve, along the Peruvian Coast. She also taught undergraduate classes to Forestry majors at the Universidad Nacional Agraria La Molina, Lima, Perú. In 2001, Patricia chose Ohio as a good place to learn English and pursued a Master of Science in Environmental Studies (2003-2005) at Youngstown State University. Some of Patricia's previous work includes water quality and benthic community studies in Zoar Valley, New York and use of environmental sensors in San Salvador, The Bahamas. Patricia worked for 3 years as a research scientist at BioRemedial Technologies Inc., a bioremediation company in Pennsylvania.

At KSU, Patricia started her graduate degree in Aquatic Ecology at KSU under Dr. Leff's supervision. Her interests are freshwater ecosystems and their microbial components, bioremediation, restoration and conservation of aquatic ecosystems. She is currently an EARS-IGERT Trainee working on her Ph.D. dissertation research: Microbial communities of anaerobic river sediments contaminated with PAHs.

When she is not working at the lab or collecting samples she teaches Spanish at Youngstown State University at Department of Foreign Languages and Literature. Patricia enjoys traveling, playing piano, swimming, cardio kickboxing and yoga.



Setting up anaerobic incubations



Field trips!



IGERT Trainee Internship at Crystal Diagnostics

BY SARAH HICKS

My internship is at Crystal Diagnostics, formally know as Pathogen Systems. I got hired as an intern in early October of this year. The company researches and develops biosensors using liquid crystal materials in hopes to detect pathogens in water samples. Its headquarters are located in Boulder, Colorado, but the research is being conducted here in NEOUCOM and soon their manufacturing facility will be at the Centennial Research Park in Kent (formally the bus garage). Crystal Diagnostics has a long standing partnership with NEOUCOM and the Liquid Crystal Institute. My work there is proprietary, but all I can say is that am doing research in liquid crystals there in hopes to improve their biosensor performance. I also work with the technicians in their cell fabrication and assembly. Their website can be found here: <http://www.crystaldiagnosics.com/>.

IGERT Trainees in the Rocky Mountains

Kevin Rose and
Jeremy Mack;
Miami U. EARS
IGERT, 2009
cohort, in the
Rockies with
their buoy!!



Learn more about Kevin's and Jeremy's "mountaintop experiences" in an article written by Kevin and published by Fondriest Environmentals in *Environmental Monitor*, Fall 2010, "Research in the Rockies — Mountaintop lakes may serve as environmental sentinels." This is a great example of research that students can aspire to do with EARS IGERT - working with environmental instrument companies to develop new sensor systems to characterize environmental change in aquatic ecosystems.

IGERT November 15 Workshop

On November 15, the KSU EARS IGERT hosted the final workshop in a series of three Science Professional Development workshops offered this fall entitled, "Career Pathways in Industry, Government and Entrepreneurship." The audience was primarily students enrolled in science programs. The Miami IGERT participated via Skype. Speakers included industry leaders who shared their experiences and expertise within government, academia and private sector corporations. Topics included exploring career options, strategies for navigating career pathways and entrepreneurship. Speakers also focused on the nuances of the interviewing and hiring processes. Presentations were followed by Q&A sessions. We are grateful for the participation of the following speakers and their valuable contributions:

1. Kelvin F. Rogers, Environmental Specialist, EPA
2. Donald Davis, Manager of Process Innovation at Kent Displays, Inc. in Kent, OH
3. Donald Diehl, Visiting Scientist, LCI, KSU
4. Christopher Woolverton, Professor of Environmental Sciences, College of Public Health, KSU
5. Jonathan Selinger - Professor, LCI, KSU
6. John Krusinski, President and CEO, The Orin Group



Donald Davis



Kelvin Rogers



Donald Diehl



Chris Woolverton



Jonathan Selinger



John Krusinski

Thanks to everyone who participated in the success of the EARS IGERT workshop series!!



Want more information? Contact us at the address , phone number or e-mail below. You can also go to the web page to get contact information for our faculty participants and find links to our participating

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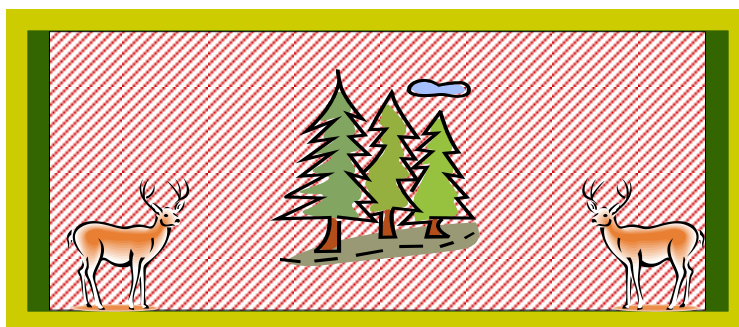


For information on all
Department Research
Seminars

[http://
bioweb.biology.kent.edu/
igert/](http://bioweb.biology.kent.edu/igert/)

Upcoming events—2011

- January 22 Joint KSU/MIAMI cohort meeting at Miami University
- February 1 Applications for Fall 2011 due
- Spring 2011 Meeting with LCI faculty and KSU/MIAMI cohorts in Columbus



Please feel free to share information about IGERT with your colleagues and friends, Copies of the newsletter can be downloaded from our web page at <http://bioweb.kent.edu/igert/> . Ask us about marketing materials, too!

Thanks to the members of the EARS INTERNAL COMMITTEE! We've got one representative in each of the participating departments in Kent State and Miami.

Miami

Geography, W. Renwick
Geology, H. Dong
Microbiology, R. Morgan-Kiss
Zoology, C. Williamson

Kent

Biology, A. Leff
Chemical Physics, Q. Wei
Chemistry, R. Twieg
Geology, A. Smith
Geography, M. Munro-Stasiuk

THANK
YOU!!

