



Notes from the Field

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Know of any accomplishments by Ecology graduate students, postdocs or faculty? Send them along to Stephanie Lessard-Pilon (sal275@psu.edu) to have these accomplishments published in the newsletter!

New student-taught class a success

-Ruscena Wiederholt

A student-organized introductory Ecology course, called Concepts in Ecology (ECLGY 597E), was offered for the first time this Fall. The objective of the course was to provide an overview of basic ecological concepts and theory for new Ecology graduate students or interested students from other departments. The course was taught by a number of Ecology graduate students and post-docs and covered a variety of topics including population, community, and quantitative ecology. When possible, the course paralleled the topics discussed in Classical Ecology in order to provide background on the classic papers and articles discussed that week.

The course was the brainchild of Marc Goebel and Stephanie Lessard-Pilon, who also organized and administrated it. Besides helping new graduate students gain a good overview of ecology, it was also a learning experience for the instructors. The students enrolled in the course evaluated each lecturer and provided advice on how to improve the lectures and presentation styles. For my part, I have a newfound appreciation for all professors and the time required to organize one measly lecture!

Comments from people involved with the course:

"It was a great opportunity to get some lecturing experience, especially on topics I hadn't taught before, and the immediate feedback from the students was extremely helpful". -Angie Luis (instructor)

"I thought it was an excellent course and a great idea. My liberal arts education in undergrad was great in a lot of ways, but it was weak in ecology. This class allowed me to learn about the fundamentals of the science. I used what I learned in this class in my classical ecology course every week, and also in designing my own research proposal. I also think it is a great opportunity to meet other ecology colleagues, from the first year students taking the class to the students farther along in their research that are teaching it, to post docs that are working in the programs." -Laura Russo (student)

"The course was fun to teach, because the grad students taking it represented a diverse group, including ecology, rural sociology, and wildlife and fisheries. It was also a great opportunity for real teaching experience, which can be hard to come by early in the career of aspiring scientists". -Glenna Malcolm (instructor)

Don't Be Such a Scientist: Randy Olson Lectures on Scientific Communication

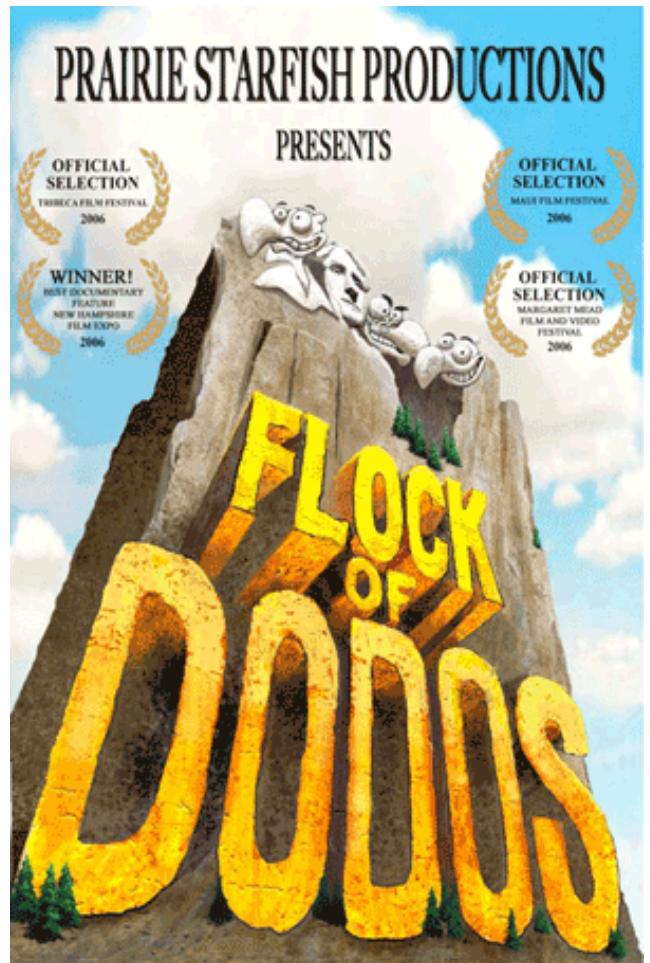
-Kristen Granger

In September, the Eberly College of Science hosted Randy Olson for the 2008 A. Dixon and Betty F. Johnson Lecture in Scientific Communication. Olson's visit was a unique three-day series: the former marine ecologist is now a filmmaker, and the first two days involved screenings of his documentaries, *Flock of Dodos* and *Sizzle: A Global Warming Comedy*, followed by discussion sessions. The official lecture was held on the third day.

Flock of Dodos examines the controversy surrounding the teaching of evolution in American schools, paying particular attention to the Kansas debates in the 1990's. In the film, Olson explores the apparent success of the intelligent design movement in winning followers. He argues that while intelligent design proponents, and particularly the Discovery Institute, make a concerted effort to convey their message in a way that the public can understand, scientists generally do not. Scientists are failing public relations on a basic level, and as a result, scientific education and policy are suffering.

The basic dilemma of communication (one explored to a greater extent in *Sizzle*) is how to strike a balance between the substance of your message and the stylistic way it is conveyed. Scientists, Olson argues, often struggle because they try to cram too much substance into their message. Boggled down by a relentless deluge of facts, their audience becomes lost or bored. Olson offered these words of advice for how scientists could begin to communicate more effectively: don't be such a scientist! In practice this means:

Don't be so cerebral. To connect with a broad audience, scientists must learn to filter their message from their head, and ensure that it contains sincerity, emotion, and, of course, sex appeal.



Don't be so literal. Scientists tend to think the facts will speak for themselves, but unfortunately, communication is not always so simple. Olson cited as an example the Pew Oceans report, which had a great deal of information, and an important message, but little impact outside of the scientific community. In the movie industry, Olson pointed out, studios spend almost as much money marketing a film as they do making the movie. The scientific community needs to learn to market their science.

Don't be such a lousy storyteller. In a way, scientists already know how to write a story—it is inherent in the structure of research papers. However, scientists need to learn how to transfer that to a format that will reach a broader audience. Olson points out that he tried to follow a mythic structure in *Flock of Dodos*, with a real dilemma and antagonist. In transferring their message to a compelling format, however, scientists risk two types of error: “errors of fact, and errors of boredom.”

Though Olson is not advocating anything other than complete accuracy, he said he pared down the information contained in the Flock of Dodos to prevent from boring his audience, but what is there is accurate. (Sizzle was his experiment with including even less information; a choice that has made it rather unpopular with scientific reviewers.)

Don't be so unlikeable. The major error Olson saw scientists commit while filming Flock of Dodos was that their rude and condescending attitudes made them lose the sympathy and attention of the general public. Scientists can be smart and sympathetic to a broader audience, without dumbing down their message.

It behooves scientists to learn to communicate, regardless of whether they are interested in policy-making or reaching the general public. Olson's visit highlighted the potential scientists have for using their expertise for the benefit of society. Modern society is increasingly dependent on science and technology, and many of the most pressing issues we face will require a sound understanding of science in order to make intelligent decisions. For this reason, Olson's message is pertinent and timely: it is more important than ever for scientists to learn how to win the information wars.

Some opportunities in scientific communication and outreach for Ecology students:

- Great Insect Fair
- Ag Progress Days
- Biodays
- Courses in scientific writing
- WISER programs
- Governor's school

Doing Soil Ecology in Poland and Germany and finding the money to pay for it

-Kevin Mueller

My first two years at Penn State were spent in the classroom or at my laptop making official pleas for research dollars to EPA, NSF, DOE, NASA and anyone else who would listen. After year two I had zero dollars, so I sent out another round of proposals with my fingers crossed with extra fervor. One of the goals of my proposals was to support a sampling trip to an experimental forest in Poland and subsequent lab work in a soil science laboratory in Germany. Luck and lots of help from my collaborators and advisors at Penn State (David Eissenstat – Ecology; Kate Freeman – Geosciences) helped make the third time a charm.

The gullible parties were NSF's Office of International Science and Education (OISE), which provided \$18,000 via a Doctoral Dissertation Enhancement Proposal (DDEP), and the European Association of Organic Geochemists, which provided €5,000 via an international travel scholarship. The NSF OISE DDEP is similar to NSF's Division of Biological Sciences Doctoral Dissertation Improvement Grant (DDIG), having similar requirements but the goal of promoting international research experiences for graduate students and, I suspect, a more favorable funding rate.

So my family and I headed to Europe for 3 months of work and fun, along with 1000 pounds of luggage, soil sampling equipment, very breakable glass jars, and a strange-looking carry-on which made me popular in security lines; a LICOR 6200 for measuring carbon dioxide. Two weeks in Poland were sufficient to collect my samples and do the initial sample processing. Then I packed my rental car floor to ceiling and headed to Germany with a one-year old as navigator. It took almost a month of back and forth with my German collaborators to settle on a

'middle-ground' methodology for one of my primary research objectives, separating the soil samples into different physical fractions with unique biogeochemical and ecological properties. During this discussion I learned much about the differences between doing science in America and Germany and the pros and cons of each system.

In the end, I'm certain I was able to conduct my research at a higher level as a result of the resources and expertise that were uniquely available in Poland and Germany. The grand statements I made in the proposals about the benefits of international, interdisciplinary research still seem a little rosy, but I actually believe them now. I'm grateful to the funding agencies for buying those rosy statements, and to PSU and the Ecology program in particular for providing an environment that encourages students to seek scientific independence both intellectually and financially. Now I have enough samples and research dollars to keep me busy for at least two years, and I look forward to writing manuscripts instead of proposals.



Kevin Mueller's field site in Poland.

Please welcome our new faculty members!

Dr. Andrew Read

is a professor in the Biology and Entomology Departments, and an Eberly College of Science Distinguished Senior Scholar. His research focuses



on the ecology and evolution of infectious disease. His work exploits modern notions of adaptive evolution to attack biomedically and theoretically challenging phenomena like virulence and infectiousness, adaptation to new hosts, and vaccine escape, and drug and insecticide resistance. His research group works on questions involving evolutionary biology, ecology, parasitology, microbiology, genetics, and immunology. Currently, much of the work concerns the three players that cause malaria (the parasite, vertebrate host and mosquitoes), as well entomopathogenic fungi and Marek's disease of chickens. In the past, he has also worked on the parasites of Daphnia, African trypanosomes, and parasitic nematodes of mammals. He comes to us from the University of Edinburgh, where he was a professor of Natural History from 1993 to 2007.

Dr. John Tooker,

an assistant professor in the Entomology department, focuses his research on ecological applications of chemical ecology. He is specifically interested in tri-trophic interactions, especially



in agricultural systems, in induced host-plant defenses, and in gall-inducing insects. Dr. Tooker received his PhD from the University of Illinois at Urbana-Champaign.

Dr. Tomas Carlo-Joglar is an ecologist who makes connections between ecological patterns and processes and who studies biotic interactions such as mutually beneficial relationships between different organisms. He has worked extensively with birds and is interested in how they influence plant distributions by eating fruit and dispersing seeds. More recently, Carlo has been collaborating on a project to study the evolutionary ecology of wild chilies in Bolivia, developing a method for that uses stable isotopes to track the dispersal of chili seeds. He also is conducting research on the ecology of invasive Green Iguanas in Puerto Rican mangrove forests. He hopes that his work not only will contribute to advancements in theoretical ecology, but also will help guide restoration and conservation efforts. Dr. Carlo received his doctoral degree in ecology and evolutionary biology from the University of Colorado in 2005, and comes to us after completing an NSF Postdoc at the University of Washington.



Dr. Dale Holen, who presented a paper, "Mixotrophy in two species of *Ochromonas*" for the British Society for Protist Biology spring meeting in Gregynog, Wales.

Dr. Jason Kaye, who received the 2008 Honored Alumnus award from the Graduate Degree Program in Ecology at Colorado State, where he received his PhD in 2000. The program at CSU is a cross-campus, interdisciplinary program similar to IDGP in Ecology at Penn State.

Dr. Susan Parks, who received the Office of Naval Research Young Investigator Award this spring. ONR Young Investigators are considered among the best and brightest young academic researchers in the country. The awards recognize research achievements, potential for continued outstanding research efforts, and strong support and commitment from their respective universities and research institutions. Young Investigator Awards provide recipients with up to \$100,000 a year for a period of three years with additional funding for equipment or collaborative research with a Navy lab. ONR's Young Investigator Program seeks to identify and support academic scientists and engineers who have received Ph.D. or equivalent degrees within the past five years and who show exceptional promise for doing creative research. The objectives of this program are to attract outstanding faculty members of institutions of higher education to the Department of the Navy's research program, to support their research, and to encourage their teaching and research careers.

In other news...

The new Ecology Graduate Student Organization webpage is up and running! The URL is <http://clubs.psu.edu/up/egso>. If you have any suggestions for what you'd like to see on the website, please email Leah Wasser (law155@psu.edu).

Congratulations to...

Britta Teller, who recently co-authored a paper, titled "Consequences of Density Dependence for Management of a Stage-Structured Invasive Plant (*Alliaria petiolata*)", by Eleanor A. Pardini, Brittany J. Teller and Tiffany M. Knight, which was published in the *American Midland Naturalist*.

Dr. Jason Rohr and Dr. Hunter Carrick, who recently published a paper with several colleagues in *Nature*. The paper was titled "Agrochemicals increase trematode infections in a declining amphibian species", and was authored by Jason R. Rohr, Anna M. Schotthoefer, Thomas R. Raffel, Hunter J. Carrick, Neal Halstead, Jason T. Hoverman, Catherine M. Johnson, Lucinda B. Johnson,

Camilla Lieske, Marvin D. Piwoni, Patrick K. Schoff & Val R. Beasley. The paper ties the application of commonly used fertilizers and pesticides to disease in a declining amphibian (leopard frogs). The work cautions about the use of these chemicals and provides another explanation for declining amp. populations that may be applicable to other places in the world.

Dr. Paul Bartell, who was invited to give a presentation titled, "Circadian Clocks and Zuginruhe," in Mara, Kenya this July at the 4th International Conference for Comparative Physiology & Biochemistry. The theme of the meeting was "Molecules to Migration".

Randa Jabbour, who defended her PhD dissertation, titled "*Management effects on epigeal arthropods and soil-dwelling communities during the transition to organic agriculture*", and who also recently received the ESA President's Prize for Poster Presentation in the Biological Control Section. Randa will be beginning a postdoc at Washington State University, and we wish her the best of luck in her future!

Eric Nord, who recently defended his PhD dissertation, titled, "Patience is a virtue: Delayed phenology is an adaptive response for plants in soils with low phosphorus availability" and will graduate this semester.

Katherine Marchetto, who recently defended her Masters thesis, titled, "*Abiotic and Biotic Factors Affecting Seed Release and Dispersal of the Invasive Thistles Carduus nutans and Carduus acanthoides*".

Anna Starovoytov, who recently defended her Masters thesis, titled, "*Residue management for enhancing sequestration of legume-based nitrogen*".

Evolutionary Ecology Spring Seminar Series Preliminary Schedule

Please reserve time for next semester's seminar series! Seminars are tentatively scheduled for 4 o'clock on Monday afternoons. The theme of the seminar series is Evolutionary Ecology to commemorate the 200th anniversary of Darwin's birth and the 150th anniversary of the publication of The Origin of Species. This seminar series looks to be very exciting! It is supported by contributions from the PSIEE, ENRI, and will have speakers co-sponsored by Biology, Plant Biology and the Huck Institute. Current speakers and dates are as follows:

February 9th - Beth Shapiro
February 16th – Warren Abrahamson
March 2nd - Andrew Read
March 16th – Norm Ellstrand
March 16^{th*} - Judge John Jones (tentative date)
March 23rd – David Winkler
March 30th – Fred Gould
April 6th – Susan Kalisz
April 13th – Al Savitsky
April 20th – Steve Hubbell
April 28th – Craig Benkman

*Have a very good
break and a Happy
New Year!*