PENNSTATE

IGDP in Ecology Newsletter

Notes from the Field

PENN STATE Ecology

October 2010 Volume 8 No 1

Don't forget!
The Ecology Mini-symposium will be held on Wednesday, Dec 1, 4-7 pm in room 301D Life Sciences

Where in the world is Larry York?

Research Abroad in China

–Larry York, PhDc

Last spring, the College of Agriculture at PSU provided a fellowship allowing me to travel to the **South China Agricultural University** to do research with Dr. Hong LIAO in the Root Biology Center. While there, I taught plant nutrition in English and conducted a field experiment involving intraspecific intercrops of soybeans with contrasting root traits.

After almost 30 hours of travel, arriving in **Guangzhou, China** was one of the most exhilarating moments of my life. Thousands of miles from home and in a culture I've only seen on TV - it felt like flying blind. I could say "Hello" and "Goodbye" and "Thank you" in Mandarin. Imagine my disappointment when I found out most students simply say "Hi" and "Bye bye." After a few months I could count and express simple needs and desires. But no words in English, nor Chinese, can really express what happened on the inside during those months, try as I might to give you a short glimpse of my life in China.

I arrived before the New Year festival - on purpose. It was really cool to see this in its homeland - though I had been aware of the tradition from previous experiences with Chinese friends. I was in a city of 14 million people - the first time I stayed long in a metropolis - using the metro, walking down busy streets of shops and restaurants. The field site was 3 hours away by bus in a rural area - I was lucky to get to see such a huge contrast. I played a lot of ping pong and badminton - I will forever have a new understanding of ping pong diplomacy (if you've ever seen Forest Gump). I met scores of awesome people, and can not list all their names and express my sincere gratitude for their entry to my life. I'm happy to say I'm now completely proficient in the use of chopsticks. Oh, and I grew some soybean and played with some roots - check out my upcoming colloquium talk.

Larry York (front-row center) with Dr. Hong Liao (left of Larry), celebrating his birthday with new friends in Guangzhou, China.

Larry York will present his colloquium on Wednesday, December 1, in 10 Tyson

IUFRO Conference on Adaptation of Forest Ecosystems to Air Pollution and Climate Change

--Rebekah Wagner

In March I had the opportunity to travel to the International Union of Forest Research Organizations (IUFRO) 24th conference on "Adaptation of Forest Ecosystems to Air Pollution and Climate Change" in **Antalya, Turkey**. This conference was attended by 230 research scientists, forestry managers

and students from across the world. During the three days of the conference, 65 scientists from Europe, Asia and the Americas presented current and on-going research on the impacts of global change and forests. These talks ranged in scope from the genetic and physiological to long-term continental monitoring to social and political impacts of forests and climate change. Along with attending the meeting, I was selected to present my dissertation research on the morphological and physiological responses of seedlings to climate change. The experience of speaking in front of an international audience of scientists working in my field was invaluable and I gained new respect for the level of climate change research that has been occurring for decades and across the globe.

While the presentations and networking opportunities were an important part of this experience, the conference culminated in a scientific and technical excursion to explore the forests of the Antalya region of southern Turkey. We traveled to Thermessos National Park and were introduced to the Turkish Minister of Forestry as he discussed the increasing risk of climate change and fire to the pine forests in Turkey. Overall, the experience of an international scientific conference was unbelievably educational and inspiring.

My trip was partially funded by the Frank A. Andersen travel award and I am very thankful for that support.

Rebekah Wagner (Standing, top-left) with the IUFRO conference in an ancient amphitheater in Antalya, Turkey

ESA 2010, Pittsburgh

- Britta Teller, PhDc

This year at the Ecological Society of America meeting, grad students, post docs and PIs associated with Penn State's Ecology Program truly had the "home~~-court~~ - range advantage," in Pittsburgh. Many students gave well-attended, stellar oral and poster presentations during the day, and in the evening we were able to visit Pittsburgh's great restaurants and breweries *en masse*.

While the meeting was a great chance for students to bond with one another, it was also an astounding networking opportunity because Penn State students and alumni were more prominent than ever. Alumni from across the country were able to join with current Penn State students for a photo opportunity (shown above), and not everyone was even able to make it to the photo! Students rejoined with prominent speakers from past Ecology Seminar Series' to share experiences and network.

In fact, as students met with one another and with Alumni, many considered the plausibility of hosting a Penn State mixer at future meetings. A mixer would allow members of the Ecology Program to invite alumni, previous seminar speakers, and people interested in hiring future graduates and post docs from the program to share appetizers with current associates of the Ecology Program. If you would like to contribute suggestions about organizing such a mixer please email Britta Teller at bjt162@psu.edu

From the Field

--Jason Gleditsch

I spent much of my childhood in southwestern Pennsylvania, but moved to central Ohio when I was still in grade school. When the opportunity came for me to come back to Pennsylvania and study at Penn State University, I took it. I completed my undergrad degree in December of 2009 and while I was an undergrad worked on a research project in the Carlo Lab looking at how native bird populations responded to invasions of the woody shrub, honeysuckle (*Lonicera* spp.). My first step was to see if the abundance of birds mirrored that of honeysuckle. To do this, I sampled thirty points throughout the Happy Valley region, which meant that every morning at sunrise I went out into forests, field edges, and suburban areas and counted how many and what kind of birds and plants were present. These mornings were great with the sunlight breaking through the morning fog over Mount Nittany and birds filling the cool air with their songs. I saw hawks and falcons fly over head while listening to wrens and warblers sing.

We found that the abundance of birds and the composition of the bird community could be predicted by the abundance of honeysuckle fruit during the fall months. This study was just the starting point for many studies to come and gave me a giant push into continuing my education here at Penn State.

Cedar Waxwing eating a honeysuckle berry

Welcome to our new students!

The Penn State Ecology Program has a nearly unprecedented number of new graduate students this fall (16!!). Be sure to say hello and introduce yourselves when you see them:

Anjel Helms

I graduated from Pepperdine University in 2009 and spent the past year on a Fulbright scholarship at the Max Planck Institute for Chemical Ecology in Jena, Germany. I'm excited to be joining the Tooker and Mescher labs to study plant defenses and plant-herbivore interactions. I love cooking (and eating), live music, and being outside. I was born and raised on the flat plains of North Dakota so I am thrilled to be living in a place surrounded by both forests AND mountains. (Advisors: Mark Mescer & John Tooker, Entomology)

Catherine Airey

I am delighted to join Alan Taylor's vegetation dynamics lab to investigate patterns and characteristics of recent and historical forest fires in the western US. A native of Virginia, I've worked on projects in FL, NY, PR, and NC, and recently on a fire effects crew in Yosemite. Free time finds me outdoors, and I'm hoping there will be enough snow to take up cross-country skiing this winter. (Advisor: Alan Taylor, Geography)

David Watts

I am joining Eric Post's lab to work on plant ecology in Greenland. I am a native of Los Angeles, California, and I received my B.S. from UCLA and my M.S. from Texas A&M University, so I feel right at home in another enormous institution. I occasionally spend time writing bad poems, and I am generally fond of growing, harvesting,

cooking, and ultimately eating food. (advisor: Eric Post, Biology)

Denise Finney
I am a new PhD student in Jason Kaye's Soil Biogeochemistry Lab. My research will focus on soil microbial ecology, particularly the impacts of agricultural management on microbial community structure and function. I completed an MS at North Carolina State University and am excited to be back in my home state of Pennsylvania. (advisor: Jason Kaye, Crop & Soils)

Emily Almberg
I grew up in Chicago, IL, but am most recently from Yellowstone National Park and Bozeman, MT. I completed my master's at the University of Minnesota where I studied infectious disease ecology in Yellowstone's canid community. I am a new member of Peter Hudson's lab where I will continue to study infectious disease ecology in wildlife. I love spending my free time hiking, backpacking, and backcountry skiing with my fiancé and dog, as well as cooking and painting. (advisor: Peter Hudson, Biology)

Jason Gleditsch
I am from Dublin, Ohio but was born in southwestern Pennsylvania. I like everything about Pennsylvania including the cool dreary weather and the Pittsburgh sports teams. I finished my undergraduate degree here at Penn State and decided to continue in the Ecology program so that I can continue my undergraduate research on the response of bird communities to the invasion of fruiting shrubs. (advisor: Tomas Carlo, Biology)

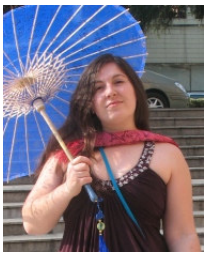
Jackie Harth
I'm a Jersey girl and just finished my B.S. in Biology at The College of New Jersey. I've traded the beach for the mountains in order to join the Stephenson lab as a Ph.D. student. I'll be studying the effect of herbivory on disease transmission in transgenic squash plants. When I'm not engrossed in ecology I enjoy eating, reading, and generally being with people. (advisor: Andy Stephenson, Biology)

Katie Gaines
I am a Ph.D. student in David Eissenstat's lab. I grew up in New Jersey and completed a B.S. in Horticulture at Penn State. After college, I spent time working in the environmental field doing laboratory and government consulting work. I am studying the environmental and physiological factors driving tree species distribution in the Shale Hills Watershed and the affect of tree distribution on the hydrologic cycle and soil formation. In my spare time, I enjoy bicycling, cooking, and crafting. (advisor: Dave Eissenstat, Hortoculture)

Kristin Haider
I am a Midwesterner at heart, having grown up in central Minnesota and receiving my B.S. from the University of Wisconsin – Eau Claire. I have lived in Connecticut, California, and Mississippi over the last few years. I am excited to be living in State College and to be a part of the PSU ecology program where I will be studying the impact of cropping and management strategies on arbuscular mycorrhizal fungi within a sustainable dairy cropping system. In addition to ecology, I enjoy cooking, biking, backpacking, reading, and live music. (advisor: Roger Koide, Horticulture)

Lauren Seiler

I recently completed my undergraduate studies at Penn State University where I double-majored in Environmental Resource Management and Agricultural and Extension Education. I am interested in plant ecology, disturbances, invasive species, and global climate change, and I am thrilled to be working with Dr. Decoteau in Horticulture on the effects of ozone pollution on terrestrial ecosystems. (advisor: Dennis Decoteau, Horticulture)



Maria Babakhanyan-Stone

My home department is Geosciences, where I am working on a dual PhD in Astobiology & Ecology with Jenn Macalady on Frasassi cave microbial communities. I moved here with my husband James Stone, who is also studying at PSU in the New Media Program. I love traveling around the world and learning about other cultures and languages. I have a BA French along with my BS Molecular Biology from San Jose State University, CA. In case you are wondering, I lived most of my life in Armenia, and that's why I have such a long last name which means in Armenian and Persian "king of the kings". (Advisor: Jenn Macalady, Geosciences)

Molly Steele

I recently graduated from Montana State University with a B.S. in ecology and evolution. My undergraduate research focused on West Nile virus epidemiology and the effectiveness of Fat Head minnows as a biological control for mosquitoes. I am now starting Ph.D. research in Isabella Cattadori's lab where I'll be studying the effects of infections on rabbit population dynamics. Some of my hobbies include knitting, reading, swimming and baking. (advisor: Isabella Cattadori, Biology)

Rachel Glenn

I am a recent transplant from South Carolina joining Tomas Carlo's lab. I will be looking at the relationship between invasive plant species and seed-dispersers and the impacts of that relationship on community structure. Most recently I spent a summer schlepping through a swamp in Aiken, SC categorizing suitable roosting sites for Rafineque's big-eared bat. Prior to that, I received a B.A. in Biological Sciences from Clemson University. I enjoy most everything that gets me out from behind a desk, especially food, wine, good company, and, of course, being outdoors. (Advisor: Tomas Carlo, Biology)

Steve Beri

I received a B.S. from Shippensburg University in the Ecology/Environmental Biology program. I've bounced back and forth spending several years in the US Army while working on my education, most recently returning from a deployment in Iraq. I am in the Braithwaite lab group with an interest in fish behavior in response to environmental change. (Advisor: Victoria Braitewaite, Fisheries & Wildlife)

Sean Cahoon

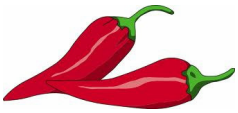
I am a Ph.D student joining Eric Post's lab. I'm from Anchorage, AK where I recently completed a M.S in Biology at the University of Alaska examining the interactive effects of large herbivore grazing and experimental warming on ecosystem CO2 flux in western Greenland. At Penn State I would like to broaden our current understanding of how climate change will affect arctic carbon dynamics and ecosystem community structure. Outside the lab, I spend my days playing with my dog, biking, skiing, and kicking the soccer ball around. (advisor: Eric

Post, Biology)

Dru Van Curan

Dru recently graduated from Penn State Altoona with a B.S. in Biology. He is working on Flying Squirrel parasitology and ecology. (advisor, Carolyn Mahan, Biology)

Ecology Cookbook



The Ecology Graduate Student Organization will be publishing its first-ever fundraiser cookbook, just in time for the holidays! The EGSO Cookbook will include some great local recipes, secret family recipes, and recipes for cooking up a few grow-your-own or forage-your-own ingredients-- all contributed by past and present Ecology faculty and students. The Cookbook will also include tips about how to be environmentally responsible in your food choices. The Cookbook will be available at the Fall Ecology Mini-Symposium. Proceeds will go to the Andersen Award fund. If interested in pricing and pre-ordering, contact Lindsay Swierk: lns146@psu.edu

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Penn State Ecologists, *in the news…*

Anna Starovoytov (*M.S. 2009*) was featured by the **American Society of Agronomy** for her recent publication describing how the use of hay and legume cover-crops can retain nitrogen in fields and reduce nitrogen leaching into agricultural run-off:

Anna Starovoytov, Rob Gallagher, *et al.* 2010. Management of small grain residues to retain legume-derived nitrogen in corn cropping systems. *Agronomy Journal*, 102, 895-903.

https://www.agronomy.org/news-media/releases/2010/0524/356/

Victoria Braithewaite was featured in a **National Geographic** report for a recent *Science* article. Victoria and her colleagues describe that a remarkable little fish, the bearded gobi, links jellyfish into the oceanic trophic-web in an area off the African coast that was considered too toxic to support fish due to effects of overfishing.

A.C Utne-Palm, A.G.V. Salvanes, B. Currie, S. Kaartvedt, G.E. Nilsson, **V. Braithwaite**, *et al*. 2010. Trophic structure and community stability in an overfished ecosystem. *Science* 329, 333-336.

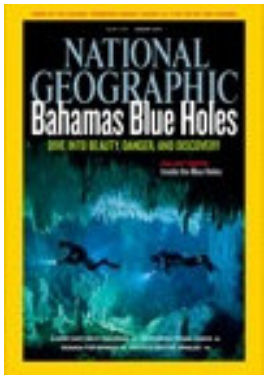
http://news.nationalgeographic.com/news/2010/07/100714-fish-jellyfish-swarm-bearded-goby-science-environment/

Susan Parks was featured by **Discovery News** for her research into how right whales cope with noise pollution. Susan and her colleagues found that whales increase their mating call amplitude in the presence of noise pollution, demanding more energy for mating and social activities that depend on vocalizations.

Susan Parks, *et al*. 2010. Individual right whales call louder in increased environmental noise. *Biology Letters*, doi:10.1098/rsbl.2010.0451

http://news.discovery.com/animals/whales-scream-noise-pollution.html

Jenn Macalady is one of the featured scientists in the cover story in the August 2010 issue of National Geographic. Jenn's research involves microbial interactions with the earth's material: soils, sediments, minerals, rocks, and atmospheric gases. One of her research interests is cave microbiology, which takes her to the blue holes of the Bahamas, underwater caves, with unique geology and chemistry, to study microbial ecology.



Congratulations to…

Penn State Ecology **STUDENTS** and **faculty/post-doc** achievements

KEVIN MUELLER and Aaron Diefendorf (Geosciences Department) for their recent ***PNAS*** publication, which uses novel stable carbon isotope techniques to help calibrate signals of plant responses to climate change:

A.F. Diefendorf**, K.E. MUELLER,** *et al*. 2010. Global patterns in leaf ^{13}C discrimination and implications for studies of past and future climate. *PNAS*, 13, 5738-5743.

LAURA RUSSO received a 2010 Network Science Exploration Grant and 2010 NASA Space Grant Fellowship to study the complex interactions of plant communities and associated insect communities.

BRADLEY CARLSON received a Sigma Xi grant-in-aid for his research into evolutionary ecology in amphibians.

KRISTINE AVERILL and **FRANKLIN EGAN**, along with Ben Crockett (Crop and Soils Department) won 3rd place graduate team in the Northeastern Weed Science Society Collegiate Weed Science Contest. **Kristine** won 3rd place graduate individual. The event was hosted by Cornell University in July.

Beth Shapiro was named a 2010 National Geographic Emerging Explorer as an early-career scientist making significant contributions to her field. Beth studies ecology and evolution including research with ancient DNA.

Peter Hudson, whose recent ***Nature*** paper examines the costs and benefits of the placement of roads within the Serengeti National Park, Tanzania:

A.P. Dobson, M. Borner, A.R.E. Sinclair, **P.J. Hudson**, *et al.* 2010. Road will ruin Serengeti. *Nature*, 467, 272-273.

Peter Hudson was also elected as a corresponding fellow to **the Royal Society of Edinburgh**. His research focuses on the ecology of wildlife diseases, including: how disease flows through wild animal populations, mechanisms that lead to disease persistence within populations, and the consequences of individual infections on host population

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Recent Publications:

(Alphabetically ordered with student pubs first).

KRISTINE AVERILL, *et al*. 2010. Establishment of the invasive perennial *Vincetoxicum rossicum* across a disturbance gradient in New York State, USA. *Plant Ecology* doi: 10.1007/s11258-010-9773-2

MARC GOEBEL, **D. Eissenstat** *et al*. 2010. Decomposition of the finest root branching orders: Linking carbon and nutrient dynamics belowground to fine root function and structure. *Ecological Monographs*, in press

STEPHANIE LESSARD-PILON, **C.R. Fisher** *et al.* 2010. Community composition and temporal change at deep Gulf of Mexico cold seeps. *Deep-Sea Research II* doi:10.1016/j.dsr2.2010.05.012

DANIEL GREAR, *et al*. 2010. Influence of genetic relatedness and spatial proximity on CWD transmission among female white-tailed deer. *Journal of Applied Ecology***,** 47, 532-540.

S. A. LESSARD-PILON, E.L. Podowski, E. Cordes, **C.R. Fisher**. 2010. Megafauna community composition associated with *Lophelia pertusa* colonies in the Gulf of Mexico. *Deep Sea Research II* doi:10.1016/j.dsr2.2010.05.013.

DAVE LIEB, R.W. Bouchard, and R.F. Carline. 2011. The crayfish fauna of southeastern Pennsylvania: distributions, ecology, and changes over the last century. *Journal of Crustacean Biology* 31, in press.

M. LUKE MCCORMACK, *et al*. 2010. Soil Fungi Respond More Strongly than Fine Roots to Elevated CO2 in a Model Regenerating Longleaf

Pine-Wiregrass Ecosystem. *Ecosystems*, 13, 901-916.

NICK POLATO, **I.B. Baums** *et al.* 2010 Location-specific responses to thermal stress in larvae of the reef-building coral *Montastrea faveolata*. *PLoS ONE*, 5, e11221.

N.R. POLATO, G.T. Concepcion, R.J. Toonen, **I.B. Baums**. 2010. Isolation by distance across the Hawaiian Archipelago in the reef-building coral *Porites lobata*. *Molecular Ecology*, no. doi:10.1111/j.1365-294X.2010.04836.x

RUSCENA WIEDERHOLT, **D. Diefenbach** *et al*. 2010. Modeling the impacts of hunting on the population dynamics of the Red Howler Monkey, *Alouatta seniculus*. *Ecological Modelling*, 221, 2482 - 2490.

L.T. Luong, **Sarah Perkins**, **D.A. GREAR**, A. Rizzoli, **Peter Hudson**. 2010. The relative importance of host characteristics and co-infection in generating variation in *H. polygyrus* fecundity. *Parasitology***,** 137, 1003-1012.

Suann Yang, Matt Ferrari, and **Katriona Shea**. 2010. Pollinator behavior mediates negative interactions between two congeneric invasive plant species. *American Naturalist*, in press.

W. Du, D.A. Warner, **Tracy Langkilde, Travis Robbins**, R. Shine. 2010. The physiological basis of geographic variation in rates of embryonic development within a widespread lizard species. *American Naturalist* 176: 522-528

And finally, the Ecology Program asks for your support:

Frank A Andersen Student Travel Award

Dr. Alan Andersen, an alumnus in Biophysics from Penn State and the current Director of Cosmetic Ingredient Review, recently donated funds to launch a student travel award in memory of his late father Franklin A. Andersen. In his letter of donation Dr. Anderson wrote, “My father long recognized the value of graduate education and supported me in my degree program at Penn State. He would have understood and applauded an effort that would allow Ecology Program students to participate at scientific meetings and ‘strut their stuff’ as he would have phrased it.” These funds will help our growing program by providing the opportunity to attend engaging meetings and workshops that might otherwise be missed due to financial constraints. While Dr Andersen’s generous gift initiated this fund, the Ecology Program needs to seek further support to ensure that this award continues to support student conference participation, like the opportunity Rebekah Wagner described at the IUFRO conference in Antalya, Turkey.

Ecology Gift Fund

We have now established a gift fund that the Ecology Program can use to support its various functions including stipend support, social functions and seminar speakers. As many of you know, our funds from the Graduate School are quite limited. Donations to this fund can allow us to continue to enhance our commitment to providing a quality graduate education for our students.

For more information about financially supporting the Ecology Program, please contact Dave Eissenstat, program Chair, dme9@psu.edu

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