



# Notes from the Field

Fall  
2014

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## The Return of Science Café

By Courtney Davis

The Ecology Graduate Student Organization is pleased to announce the return of our Science Café series for Spring 2015! The Science Café initiative began in 2014 to: 1) to engage the broader community in discussions on ecological topics; and 2) to provide students with an opportunity to broaden outreach and communication skills in an informal setting. The spring series kicked off on **January 14** with a discussion on food security, hosted by Chad Nihranz and John Tooker. Our second event was on **February 11**, hosted by Megan Kepler-Schall and William Miller, who discussed how fish and wildlife diseases affect human interactions with the environment. Joe Keller and Katy Barlow led a discussion on **March 18** to examine ecological invasions in disturbed systems, using the Marcellus Shale development as a case study. Our series will conclude for the semester with a discussion on belowground interactions with Laura Radville and Alison Grantham on **April 8**. All events begin at 6pm at

## Spring 2015 Seminar Series: The Effects of Stress on Ecological Systems

By Jacquelyn Harth

Stress is a ubiquitous phenomenon influencing all levels of ecology from physiological processes to community interactions. Ecological systems constantly undergo stress from many sources, including predation, herbivory, pathogens, and abiotic conditions. The goal of the spring 2015 seminar series is to take an interdisciplinary approach to explore the topic of stress from a broad perspective, covering many ecosystem scales, types, and species. Our featured speakers have conducted research investigating how stressors affect individual organisms and alter the interactions between organisms, as well as studying topics such as the effects of predation on mammals, the effects of herbivory on plant responses, the effects of parasitism on host ecology, and the impact of invasive species stress on communities. These speakers have explored how anthropogenic sources affect the stress response within organisms, since increasing human activity is leading to environmental global change.

Seminars are Mondays at 4pm in 106 FRB. Speakers include Creagh Bruener, David Carr, Fred Allendorf, Steve Palumbi, Paul Lernhart, Michael Sheriff, Trinity Hamilton.

Websters Bookstore Café. We hope you will come support your fellow ecologists and engage the broader community in the ecological research conducted at Penn State. For questions, suggested topics or speakers, or to volunteer, please contact Courtney Davis (cld303@psu.edu).



Photo by Christian John

# Searching for Fire Ants in Paradise

By Gail McCormick

This past October, my labmate Chris Thawley and I had the wonderful opportunity to travel to the British Virgin Islands to continue our lab's research on fire ants. Our lab has studied the Red Imported Fire Ant on Guana Island since 2010, and our continued monitoring has allowed us to assess the spread of this invasive species on the island as well as potential impacts on native lizards...and tourists! Research in the Langkilde Lab typically focuses on how invasive fire ants affect morphology, behavior, and the stress response of Eastern Fence Lizards (*Sceloporus undulatus*) in the Southeastern United States. However, there are many ecological differences between mainland and islands, which can greatly affect the consequences of invasion. By studying the effects of fire ants on another species of lizard in this tropical pristine environment, we can better understand how native organisms respond to invasive predators.

Red Imported Fire Ants (*Solenopsis invicta*) have been introduced in over twelve countries and are predicted to spread globally. They outcompete native ants in their introduced range in the United States, and they

also prey on native vertebrates, including lizards, turtles, and their eggs. Some of Chris's dissertation research reveals that fire ants are capable of foraging at depths of fence lizard nests, and can puncture the shell of eggs in order to prey on the developing embryo. We were interested in determining if fire ants on Guana Island are capable of foraging at depths approaching those of the endangered Stout Iguana (*Cyclura pinguis*) nests, which are deeper than fence lizard nests. To accomplish this, we installed fake "nests" next to clear plastic tubes in the beach and the forested areas nearby, where iguanas are known to nest. This involved digging a hole roughly 16 inches into the soil (or sand!) and inserting a tube. We then placed slices of hot dogs (faux "eggs") along the outside of the tube at a standard depth and filled in the hole with sand. Every afternoon, we checked our mock nests by sliding a small camera down the tube and taking video of the hot dogs through the tube wall. We immediately checked these videos to determine if any fire ants were present (or beetle larvae, as we observed in one case!). If, for example, we were to observe fire ants



**Top left:** Chris installs a fake iguana nest on a beach on Guana Island (British Virgin Islands) to test whether invasive fire ants are capable of foraging at the depth of iguana nests (Photo by Gail McCormick). **Top right:** An endangered Stout Iguana hatchling eyes up the curious scientist with his odd black box (Photo by Chris Thawley). **Bottom right:** Though it may resemble a child's stick art, this trail was made by an iguana dragging its long tail through the sand (Photo by Chris Thawley).



## Searching for Fire Ants in Paradise (cont'd)

at only one of three habitat types, this might suggest an increased risk to nests in that habitat and could have important management implications. We are looking forward to analyzing our data to better understand the risk of fire ant predation on iguana nests.

During our stay, we also continued to survey the island for fire ant mounds. Our lab has collected GPS data for mounds since we started working on Guana in 2010, and the resulting maps help us to monitor the spread of fire ants on the island. We also conducted baiting trials to determine habitat types particularly favored by fire ants while foraging. Our results reveal that fire ants are spreading across the island and persist on

the main beaches frequented by tourists. This data can help inform management strategies on Guana. Baiting during particular seasons, during sensitive time periods such as when iguanas are nesting or hatching, and in habitats favored by fire ants can lead to effective targeted removal of invasive fire ants with the least negative effect on native ant species.

In our week on Guana Island, Chris and I worked hard and sweat way more than we knew was possible, but we also experienced some amazing views. Additionally, our research will help provide important insight into the ecological consequences of invasive fire ants.



**Top left:** Gail surveys for beach field sites from a cliff-side vantage point in paradise (Photo by Chris Thawley). **Top right:** A Puerto Rican Racer (*Alsophis portoricensis*) slithers its way through the forests of Guana Island (Photo by Chris Thawley). **Bottom left:** A male Saddle Anole Lizard (*Anolis stratulus*) flashes its brilliant dewlap, potentially to signal its territory and to attract females with whom to mate (Photo by Chris Thawley).





Ever the ecologist, Aliana takes a break from the ESA Meeting to explore biogeochemical cycling in the Capitol rose garden in Sacramento.

## 2014 Andersen Award Reflection

By Aliana Britson

You know you are in Sacramento California when you see the palm trees and sunny skies. You know you are at the 99<sup>th</sup> meeting of the Ecological Society of America when you run across a group of scientists outside the Sacramento Convention Center trying to identify a nearby insect. Despite the beautiful weather, many ecologists stayed indoors to see talks on a wide variety of topics including plant-insect interactions, ecosystem services, and community dynamics.

As for myself, I enjoyed many cutting edge talks on wetland ecosystems, plant matter decomposition, biogeochemical cycling, and ecosystem services before wrapping up the conference by giving my own talk on the effects of land-use regime on decomposition and carbon storage in wetlands. I was able to speak with many fellow ecologists interested in denitrification and decomposition in systems other than wetlands and learned about some exciting new hypotheses in plant matter decomposition. I even ran into quite a few Penn State Ecology alumni, and enjoyed both catching up with them and seeing familiar faces in a new place.

I would like to thank Frank A. Andersen, the Andersen Travel Award Committee and the Ecology Program for providing me with this opportunity to attend the 99<sup>th</sup> ESA. I was excited both to share the results of my Ph.D. research with the larger ecological community and for the opportunity to learn from the many presenters at the conference. With the new information I learned and the new connections I made, I am excited to take the next steps beyond my Ph.D. research.

## Ecology Discussion Group Sparks Publication in *Theoretical Ecology*

By Katriona Shea

A few years ago, a group of Ecology grad students, post-docs and a few faculty got together to start a dispersal discussion group. It has taken a while (most of those former students and postdocs now also have faculty, postdoc or government positions!), but a synthesis paper arising from that discussion group has just been published in *Theoretical Ecology* (Jongejans *et al.* 2014 <http://link.springer.com/article/10.1007%2Fsl2080-014-0245-5>). The first line of the acknowledgments reads "We thank the Intercollege Graduate Degree Program in Ecology of the Pennsylvania State University for creating a stimulating environment where faculty and students from a wide range of disciplines meet and interact."



*Sibbaldia procumbens* grows along the edge of a small body of water the Post Lab calls Fox Lake (Photo by David Watts).



# Wren's Adventure in Australia: An Unedited Google Search History in Chronological Order

By Wren Patton

- ethanol is how many kg/L
- class 3 flammable liquids
- define jerrican
- Pomacentrus moluccensis ID
- pheasant coucal
- huntsmen spider australia
- huntsmen spider bite
- alpenhorn meets dubstep
- thai cashew curry
- death by cone snail
- how to ID a cone snail
- can you get brewers yeast in australia
- Acanthochromis polyacanthus
- australian spider ID yellow body blue joints iridescent
- how to open paraformaldehyde ampoules
- sodium cacodylate fact sheet
- where the f\*\$@ did my comments go couldn't save document in reader for microsoft surface now it is gone is there a recovery option
- red backed spider bite
- can you die from red backed spider
- cheddar bacon pinwheels from scratch recipe
- can't stop bleeding causes australia
- 1kg flour is how many cups
- transporting liquid nitrogen more than 5L
- odds of stepping on a stonefish
- death by stonefish
- how big do potato cod get
- cobia vs ramora ID
- necrifying wounds
- monitor lizard bites
- goana bites bacterial infection
- goatfish ID
- fish brain anatomy
- gill arch 1 fish
- there has to be secret mad scientist society
- how to find mad scientist secret society
- blue ring octopus distribution
- italian pizza dough recipe
- how many cups is 375g
- Individual coping characteristics, rearing conditions and behavioural flexibility in pigs
- importing biological samples in fixative US fish and wildlife protocol
- unregulated biological material US fish & wildlife permit
- how to fill out USFWS Form 3-177 without an import/export license number
- neurointegration
- how long can you wait to get a tetnus shot
- how long are tetnus shots good
- synonym appealing
- what time is it in pennsylvania
- tiger shark
- tiger shark ID
- tiger shark attack frequency north queensland
- RAPTORS OF THE SEA
- define bonnyclabber



Photo by Christian John



## Tales from the Field: Desert Tortoises Gone Wild!

By Christina Aiello



Behavioral observations can be a drag, but sometimes your study animals help you get through the doldrums. While watching captive tortoises to document how behavior contributes to pathogen transmission, I witnessed this odd series of events: male tortoise A suffers a humiliating defeat from male B (**top left**)...while male B lets out a primal victory scream (or a yawn; **top right**)...male A begins to bulk up by fighting a rock (**middle left**). Next time he won't be caught unprepared! (Photos by Christina Aiello)



**Bottom left and right:** The tortoise and the hare: when friendship goes sour. OK, I admit that these are not the same individuals in both photos but the rabbit foot scavenge was not staged. In fact, captive and wild desert tortoises do infrequently ingest carcasses and bones as a dietary supplement, possibly in response to the high energy and calcium demands of egg production (Photos by Christina Aiello).



## New Ecology Student Introductions for 2014



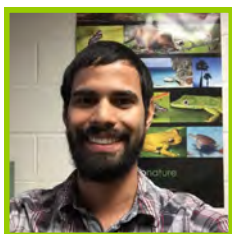
**Stacey Amburgey**

I am a Colorado native and long-time resident, getting my B.S. in Biology and Zoology and my M.S. in Zoology at Colorado State University. I previously looked at hormone pathways regulating molting in land crabs but decided to move into the more glamorous world of amphibians late in my undergraduate career. I have since done lots of fun projects involving the effects of climate change on hydroperiod, tadpole development, costs and benefits of developmental plasticity, and the effects of insect predation cues. I have also looked at factors regulating occupancy of boreal chorus frogs, disease dynamics and population monitoring of boreal toads, and broad-scale analyses of drivers behind amphibian decline through the USGS Powell Center. At Penn State, David Miller and I will be looking at range-wide effects of climate on amphibian abundance and the community dynamics of ephemeral pond breeding amphibians. When not doing science, I like to brew beer, consume cheese, and otherwise make my German ancestors proud.



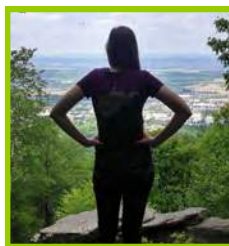
**Katy Barlow**

I am from Eastford, CT, and completed my undergraduate education in plant science at the University of Connecticut in 2005. Before graduate school I worked with an NGO in northern Thailand on agroforestry projects. I came to Penn State in 2009 to work with the Root Biology Lab and finished a master's degree under the guidance of Jonathan Lynch. My research in drought tolerance in common bean took me to field sites in South Africa and Honduras. I now work with David Mortensen in the Weed Ecology Lab while pursuing a degree in Ecology. My research projects are within the disciplines of invasion and restoration ecology. I am also exploring how rhetoric informs our understanding of issues and decisions in both fields. I love anything to do with plants, particularly spending my days keying out plants in the field, and making plant medicine.



**Omar Bonilla**

I was born and raised in Puerto Rico. I earned a bachelor's degree in biology at Universidad Metropolitana in San Juan, PR, and a master's degree in ecology and evolutionary biology at the University of Michigan in Ann Arbor, MI. Currently, I am a first year PhD student in the Carlo Lab. My research interests are generally oriented to plant-animal interactions and its implications in the "community," and I'm specifically working on understanding how frugivore-mediated seed dispersal influences plant diversity in tropical systems. I enjoy life in general.



**Lillian Hill**

I am originally from West Virginia. I received my bachelor's degree in Biology with a Microbiology minor from West Virginia University. I completed a research project in the Fernow Experimental Forest in Parsons, WV exploring the effects of nitrogen additions on microbial community ability to degrade soil organic matter. As a doctoral student at Penn State in Dr. Jason Kaye's lab, I am investigating the interactions between biota, soil and bedrock and furthering our knowledge of how weathering of bedrock affects the soil and above-ground ecosystems. When not digging soil pits or hiking through the forest field sites, I enjoy cooking, adventures with friends and reading.



**Christian John**

Originally from Camp Hill, PA, I came to Penn State to complete a BS in Biology. After a few years in two labs, I realized that ecology was for me, and decided to stay at PSU to pursue a master's degree with Eric Post's lab. My work will focus on climate change responses of an arctic system, specifically in relation to plant phenology and spatiotemporal aspects of caribou migration. Outside of work I like to spend time outside, and enjoy adventures anywhere between looking for salamanders, to biking and skiing.



**Doug Manning**

I attended Penn State for my BS in Forest Science and went on to work for the National Park Service for several years studying forest health and managing invasive species. I am now pursuing a MS in Ecology in Dr. Margot Kaye's lab. I plan to focus my studies on forest dynamics, specifically on how forests respond to wind-throw. When I am not working on schoolwork, you'll find me outside gardening, backpacking, hunting, climbing, boating, or working on homesteading projects.



**Erynn Maynard**

I grew up in western NY state where I received a double B.S. in Biology and Environmental Science at the University of Buffalo. At Penn State, I am interested in exploring the impacts that invasive understory shrubs have on native ecosystems with Dr. Andy Cole. My M.S. in Biology from the University of Mississippi at Oxford focused on the importance of perennial grasses for restoration of fire-

-managed, oak-dominated forests. Most recently, I was the lead technician on a field experiment attempting to elucidate relationships between 'invasiveness' and novelty (both phylogenetic and trait-based) out of Washington University in St. Louis. I spend my free time gardening, cooking, preserving food, brewing beer, biking, and backpacking.



### William Miller

I am originally from Gettysburg, PA. I attended Messiah College, near Harrisburg, PA, where I obtained an undergraduate degree in Biology. Following my time at Messiah, I completed a summer internship in molecular ecology at Au Sable Institute of Environmental

Studies, which spurred my interest in population genetics. This experience led to me pursuing a master's degree in Biology at Towson University, where my work focused on measuring the contribution of terrestrial dispersal to the genetic population structure of headwater salamanders. I am currently pursuing a doctoral degree in ecology and will be working under Dr. David Walter. My dissertation research will involve determining landscape-level variables that influence gene flow and genetic population structure in white-tailed deer populations. I am especially excited to be working on this project given the important ramifications that understanding dispersal patterns may have on managing chronic-wasting disease. When I am not in the lab, I enjoy spending time with my wife, kayaking the local rivers, mountain biking, skiing, and watching soccer.



### Lexie Orr

I am originally from Boulder, CO. I received a B.S. in Biology from Bucknell University in Lewisburg, PA. I am currently working in Dave Eissenstat's root ecology lab. My research focuses on determining key environmental influences of root distribution within a local catch-

ment. Outside of research, I enjoy hiking, running, cooking and fly fishing.



### David Villalta

I earned my BS at the University of California, San Diego in Ecology, Behavior, and Evolution and four Associate of Science degrees from College of the Sequoias in Biology, Chemistry, Mathematics-Science, and Physical Science. As an undergraduate

I was involved with research in an ecosystems ecology laboratory at UC San Diego and a coral reef ecology laboratory at Scripps Institution of Oceanography. I am currently a PhD student in Dr. George Perry's Anthropological Genomics Laboratory where my research broadly focuses on the sensory ecology and genomics of mammals. More specifically, I am investigating questions regarding insectivore olfactory receptor genes and evolutionary convergence as well as aye-aye foraging ecology.

I have also been actively involved with organizations and programs for underrepresented students and minorities such as SACNAS, MESA, PASEO, and LSAMP. I enjoy learning short-hand, reading for fun, music, spending time with my family, and being outdoors.



### Shannon White

Born near Richmond, Virginia, I spent my entire life convinced I wanted to be a doctor. One class in stream restoration during my freshman year of college corrected my misguided intents and I went on to double major in Biology and Environmental Studies at Randolph-Macon College in Virginia. Upon graduation, I started my Master's at Virginia Tech in Fisheries and Wildlife Science researching a new, extremely rare species of minnow impacted by coal mining. Though I find native minnow conservation a rousing topic, I am excited to now be co-advised by Tyler Wagner and Victoria Braithwaite studying how behavior influences habitat use and survival of brook trout. When I'm not held captive in FRB, I can be found sipping (?) on strong IPAs, watching the Baltimore Orioles lose, and cuddling with my 220-lb lap dog.



Above: Jennifer Macalady and Italian cave explorer Sandro Mariani, 400 m below ground surface looking for microbial slime in June 2014 (Photo by Camilla Leporoni).



## Recent Publications

Adams T.S., Eissenstat D.M.. 2014. The continuous incorporation of carbon into existing *Sassafras albidum* fine roots and its implications for estimating root turnover. *PLoS One* 9: e95321.

Adams T.S., McCormack M.L., Eissenstat D.M. 2013. Foraging strategies in trees of different root morphology: the role of root lifespan. *Tree Physiology* 33: 940-948.

Aiello C.M., Nussear K.E., Walde A.D., Esque T.C., Emblidge P.G., Sah P., Bansal S., Hudson P.J. 2014. Disease dynamics during wildlife translocations: disruptions to the host population and potential consequences for transmission in desert tortoise contact networks. *Animal Conservation* 17: 27-39.

Amsalem E., Malka O., Grozinger C.M., Hefetz A. 2014. Exploring the role of juvenile hormone and vitellogenin in reproduction and social behavior in bumble bees. *BMC Evolutionary Biology* 14:45.

Amsalem E., Teal P., Grozinger C.M., Hefetz A. 2014. Precocene-I inhibits juvenile hormone biosynthesis, ovarian activation, aggression and alters sterility signal production in bumble bee (*Bombus terrestris*) workers. *Journal of Experimental Biology* 217: 3178-3185.

Becker E.L., Cordes E.E., Macko S.A., Lee R.W., Fisher C.R. 2014. Spatial patterns of tissue stable isotope contents give insight into the nutritional sources for seep communities on the Gulf of Mexico lower-slope. *Marine Ecology Progress Series* 498:133-145.

Bohnenblust E., Egan J.F., Mortensen D.A., Tooker J. 2013. Direct and indirect effects of the synthetic-auxin herbicide dicamba on two Lepidopteran species. *Environmental Entomology* 42: 586-594.

Bucksch A., Burridge J., York L.M., Das A., Nord E.A., Weitz J.S., Lynch J.P. 2014. Image-based high-throughput field phenotyping of crop roots. *Plant Physiology* 166: 470-486.



Photo by Katy Barlow

Cowart D.Q., Halanych K.M., Schaeffer S.W., Fisher C.R. 2014. Depth-dependent gene flow in Gulf of Mexico cold seep *Lamellibrachia* tube worms (Annelida, Siboglinidae). *Hydrobiologia*, 736: 139-154.

DePasquale C., Wagner T., Archard G.A., Ferguson B., Braithwaite V.A. In press. Learning rate and temperament in a high predation risk environment. *Oecologia*.

Detar J., Kristine D., Wagner T., Greene T. 2014. Evaluation of catch-and-release regulations on Brook Trout in Pennsylvania streams. *North American Journal of Fisheries Management* 34:49-56.

Deweber J.T., Tsang Y., Krueger D.M., Whittier J.B., Wagner T., Infante D.M., Whelan G. 2014. Importance of understanding landscape biases in USGS gage locations: Implications and solutions for managers. *Fisheries* 39:155-163.

Deweber J.T., Wagner T. 2014. A regional neural network model for predicting mean daily river water temperature. *Journal of Hydrology* 517:187-200.

DeWeber J.T., Wagner T. 2015. Predicting brook trout occurrence in stream reaches throughout their native range in the eastern United States. *Transactions of the American Fisheries Society* 144:11-24.

Douglas M.R., Rohr J.R., Tooker J.F. 2015. Neonicotinoid insecticide travels through a soil food chain, disrupting biological control of non-target pests and decreasing soya bean yield. *Journal of Applied Ecology* 52: 250-260.

Egan J.F. Herbicide-resistant crop biotechnology: potential and pitfalls. 2014. In *Plant Biotechnology: Experiences and Future Prospects*. Ricroch A. (ed.) Springer Verlag, New York.

Egan J.F., Graham I.G., Mortensen D.A. 2014. A comparison of the herbicide tolerances of rare and common plants in an agricultural landscape. *Environmental Toxicology and Chemistry* 33: 696-702.

Egan, J.F., Barlow K.B., Mortensen D.A. 2014. A meta-analysis on the effects of 2,4-D and dicamba on soybean and cotton. *Weed Science* 62: 193-206.

Egan, J.F., Bohnenblust E., Goslee S., Mortensen D.A., Tooker J. 2014. Herbicide drift can affect plant and arthropod communities. *Agriculture, Ecosystems, and Environment* 185: 77-87.

Fashing P., Nguyen N., Venkataraman V., Kerby J. 2014 Gelada feeding ecology in an intact ecosystem at Guassa, Ethiopia: Variability over time and implications for theropith and hominin dietary evolution. *American Journal of Physical Anthropology* 155: 1-16.

Filstrup C.T., Wagner T., Soranno P.A., Stanley E.H., Stow C.A., Webster K.E., Downing J.A. 2014. Regional variability among nonlinear chlorophyll-phosphorus relationships in lakes. *Limnology and Oceanography* 59:1691-1703.

Fisher C.R., Demopoulos A., Cordes E.E., Baums I., White H., Bourque J. 2014. Deep-sea coral communities as indicators of ecosystem-level impacts resulting from the Deepwater Horizon oil spill. *BioScience*. 64: 796-807.

Fisher C.R., Hsing P-Y., Kaiser C., Yoerger D., Roberts H., Shedd W., Cordes E.E., Shank T.M., Berlet S.P., Saunders M., Larcom E.A., Brooks J.M. 2014. Footprint of Deepwater Horizon blowout impact to deep-water coral communities. *PNAS*. 111: 11744-11749.

## Recent Publications

Hill J.M., Egan J.F., Stauffer G.E., Dieffenbach D.R. 2014. Habitat availability is a more plausible explanation than insecticide acute toxicity for U.S. grassland bird species declines. *PLoS ONE* 9: e98064.

Jongejans E., Skarpaas O., Ferrari M.J., Long E.S., Dauer J.T., Schwarz C.M., Rauschert E.S.J., Jabbour R., Mortensen D.A., Isard S.A., Lieb D.A., Sezen Z., Hulting A.G. and Shea K. 2014. A unifying gravity framework for dispersal. *Theoretical Ecology*: 1-17. DOI 10.1007/s12080-014-0245-5.

Kepler M.V., Wagner T. Sweka J.A. 2014. Comparative bioenergetics modeling of two Lake Trout morphotypes. *Transactions of the American Fisheries Society* 143:1592-1604.

LeBoeuf A., Grozinger C.M. 2014. Me and we: the interplay between individual and group behavioral variation in social collectives." *Current Opinion in Insect Science* 5: 16-24.

Levy O., Ball B.A., Bond-Lamberty B., Cheruvilil K.S., Finley A.O., Lottig N., Punyasena S.W., Xiao J., Zhou J., Buckley L.B., Filstrup C.T., Keitt T., Kellner J.R., Knapp A.K., Richardson A.D., Tcheng D., Toomey M., Vargas R., Voordeckers J.W., Wagner T., Williams J.W. 2014. Approaches to advance scientific understanding of macrosystems ecology. *Frontiers in Ecology and the Environment* 12:15-23.

Lottig N.R., Wagner T., Henry E.N., Cheruvilil K.S., Webster K.E., et al. 2014. Long-term citizen-collected data reveal geographical patterns and temporal trends in lake water clarity. *PLoS ONE* 9: e95769.

Malcolm G.M., Camargo G.C., Ishler V.A., Richard T.L., and Karsten H.D. 2015. Energy and greenhouse gas analysis of northeast U.S. dairy cropping systems. *Agriculture, Ecosystems, and Environment* 199: 407-417.



Photo by Christian John

Above: This arctic fox is on the prowl for new publications. Opposite: Sunset over Katy Barlow's research plot at Rock Springs Agronomy Farm .

McCormack M.L., Gaines K.P., Pastore M., Eissenstat D.M. 2014. Early season root production in relation to leaf production among six diverse temperate tree species. *Plant and Soil* 1-9.

Midway S.M., Wagner T., Tracy B. 2014. A hierarchical community occurrence model for North Carolina stream fish. *Transactions of the American Fisheries Society* 143:1348-1357.

Muli E., Patch H.M., Frazier M., Frazier J., Torto B., Baumgarten T., Kilonzo J., Kilmani J., Mumoki F., Masiga D., Tumlinson J., Grozinger C.M. 2014. Evaluation of distribution and impacts of parasites, pathogens, and pesticides on honey bee (*Apis mellifera*) populations in East Africa. *PLoS ONE* 9: e94459.

Perles S.J., Wagner T., Irwin B.J., Manning D.R., Callahan K.K., Marshall M.R. 2014. Evaluation of a regional monitoring program's statistical power to detect temporal trends in forest health indicators. *Environmental Management* 54:641-655.

Russo L.A., Memmott J., Montoya D., Shea K., Buckley Y.M. 2014. Patterns of introduced species interactions affect multiple aspects of network structure in plant-pollinator communities. *Ecology* 95: 2953-2963.

Schmehl D.R., Teal P.E.A., Frazier J.F., Grozinger C.M. 2014. Genomic analysis of the interaction between pesticide exposure and nutrition in honey bees (*Apis mellifera*). *Journal of Insect Physiology* 71: 177-190.

Sen A., Podowski E.L., Becker E.L., Shearer E.A., Gartman A., Yücel M., Hourdez S., Luther III G.W., Fisher C.R. 2014. Community succession in hydrothermal vent habitats of the Eastern Lau Spreading Center and Valu Fa Ridge, Tonga. *Limnology and Oceanography* 59: 1510-1528.

Shea K., Tildesley M.J., Runge M.C., Fonnesbeck C.J., Ferrari M.J. 2014. Adaptive Management and the Value of Information: Learning via Intervention in Epidemiology. *PLoS Biology* 12: e1001970.

Sheriff M.J., Thaler J.S. 2014. Ecophysiological effects of predation risk; an integration across disciplines. *Oecologia* 176: 607-611.

Soranno P.A., Cheruvilil K.S., Bissell E., Tate-Bremigan M., Downing J.A., Fergus C.E., Filstrup C., Lottig N.R., Henry E.N., Stanley E.H., Stow C.A., Tan P.N., Wagner T., Webster K.E. 2014. Cross-scale interactions: A conceptual framework for understanding multi-scaled cause-effect relationships in macrosystems. *Frontiers in Ecology and the Environment* 12:65-73.



## Recent Publications (cont'd)

**Teller B.J., Campbell C., Shea K.** 2014.

Dispersal under duress: Can stress enhance the performance of a passively dispersed species? *Ecology* 95, 2694-2698.

**Teller, B.J., Miller A.D., Shea K.** Conservation of passively dispersed organisms in the context of habitat degradation and destruction. *Journal of Applied Ecology* 52: 514-521.

**Tennessen J.B., Parks S.E., Langkilde T.**

2014. Traffic noise causes physiological stress and impairs breeding migration behaviour in frogs. *Conservation Physiology* 2, cou032.

**Vaudo A.D., Patch H.M., Mortensen D.A.,**

**Grozinger C. M., Tooker J.F.** 2014. Bumble bees exhibit daily behavioral patterns in pollen foraging". *Arthropod-Plant Interactions* 8: 273-283.

**Wagner T., Deweber J.T., Detar J., Kristine**

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**Wagner T., Midway S.R.** 2014. Modeling

spatially varying landscape change points in species occurrence thresholds. *Ecosphere* 5:145.

**Zhang C., Postma J.A., York L.M., Lynch**

J.P. 2014. Root foraging elicits niche complementarity-dependent yield advantage in the ancient "three sisters" (maize/bean/squash) polyculture. *Annals of Botany* 114: 1719-1733.

## Grants

**Britta Teller** received funding to host a working group at NIMBioS.

**Iliana Baums and Chuck Fisher** received

\$935,949 from the Gulf of Mexico Research Initiative .

**Katriona Shea, Ottar Bjornstad and Matt**

**Ferrari** received an NSF RAPID grant on "Value of Information and Structured Decision-Making for Management of Ebola."

## Awards, Honors, Fellowships & Achievements

**Lindsey Swierk** received the 2014 Penn State University Alumni Association Dissertation Award.

A manuscript published by Margaret Douglas, **John Tooker** and colleagues in the *Journal of Applied Ecology* (cited above) received Editor's Choice. Also, **John** received the 2013 Early Career Innovation Award from the Entomological Society of America.

A manuscript published by **Jennifer Tennessen, Tracy Langkilde** and colleagues in *Conservation Physiology* (cited above) received Editor's Choice.

**Franklin Egan, Katy Barlow, and Dave Mortensen** were awarded the 2014 Outstanding Paper honors by *Weed Science* for the manuscript (cited above).

**Jeff Kerby** gave an invited lecture at Centro de Investigación Científica y de Educación Superior de Ensenada's First Annual Environmental Biology Symposium in Baja, Mexico in November 2014. Also, a manuscript published by **Jeff** in the *American Journal of Physical Anthropology* was featured in the cover photo.

**Xin Peng** received second place for her oral presentation at the 17th Annual Environmental Chemistry and Microbiology Student Symposium (ECMSS) in March 2014.

**Michael Sheriff** guest edited a special topic published in *Oecologia* 176 (3) entitled 'Ecophysiological Effects of Predation Risk'.

**Andie Chan** was awarded a 2014 NSF Graduate Research Fellowship.

**Christopher Thawley** received the Henri Seibert Award for Best Student Paper in Ecology at the 2014 Annual Meeting of the Society for the Study of Amphibians and Reptiles.

**Megan Kepler Schall** received a Snieszko Student Travel Award to attend the 2014 International Symposium of Aquatic Animal Health in Portland, Oregon.

**Iliana Baums** received the 2014-15 Humboldt Fellowship for Experienced Researchers, and was selected to receive the Wissenschafts-Kolleg Fellowship for the 2016-2017 academic year.

**Jonathan Lynch** was a 2014 Nonresident Fellow of the Samuel Roberts Foundation.

**Ken Tamminga** received the Astorino Fellowship from the College of Arts and Architecture.

**Marc Abrams** received a 2013 Guest Researcher Fellowship from the Japan Society for the Promotion of Science.

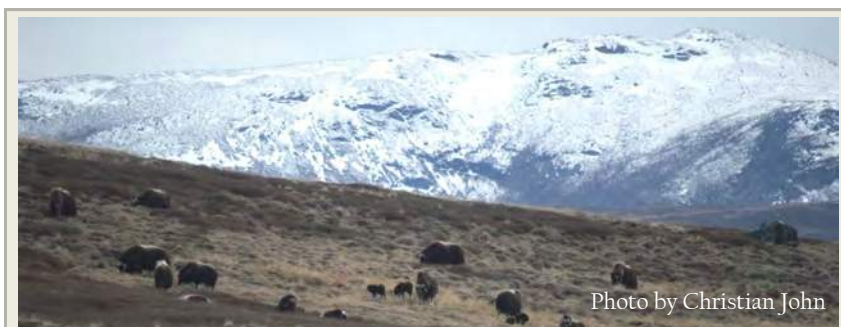


Photo by Christian John

# Ecology Program News

## Outreach

Joe Keller and Colin Campbell (Shea lab) hosted several middle school students who visited Penn State as part of the Higher Achievement Program. They gave two 1-hour lessons on food webs and the stability of ecological communities, involving interactive, hands-on activities.

Chris Thawley, Emilia Sola-Gracia, Chad Nihranz and Staci Amburgey led ecology-themed science activities for students at Exploration-U: Bellefonte Family Science Night at the Bellefonte Area High School, an annual program run by Eberly College and aimed at sparking interest in STEM fields among kids in grades K-12.

Christina Aiello helped run an outreach event at the Desert Discovery Center in Barstow, CA, to teach local youth about desert tortoise ecology.

Science Café continues its 2nd season, following the huge success of its spring 2014 debut. Run by the Ecology Graduate Student Organization, Science Café engages the broader community in ecologically-themed discussions. See page 1 for more details.

## Recent Program Graduates

Warm congratulations to all of the summer and fall 2014 graduates!

### Summer 2014:

Tom Adams (Ph.D.)  
Kristine Averill (Ph.D.)  
Kristin Haider (M.S.)  
Christine Rollinson (Ph.D.)  
Morgan Weichmann (M.S.)

### Fall 2014:

Tom Bentley (Ph.D.)  
Aliana Britson (Ph.D.)  
Brittany Teller (Ph.D.)  
Larry York (Ph.D.)

This publication is available in alternative media upon request. Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce.

U. ED. # GRD15-21



Photo by D. Watts



Photo by J. Tennesen



Photo by C. John



Photo by J. Tennesen

## Welcome to the new Ecology babies !

Maeve Almberg O'Connell, 2/10/14 (Emily Almberg & Mike O'Connell)

Penelope Tennesen, 4/30/14 (Travis & Jenny Tennesen)

Rosalyn Clair Egan, 10/17/14 (Glenna Malcolm & Franklin Egan)

Jane Elizabeth Finney, 7/21/14 (Matt & Denise Finney)

Wanda Jianmei York, 2/1/15 (Xinji Zhang & Larry York)

Quincy Averill Ryan, 4/24/15 (Matt Ryan & Kristine Averill)



This mother and calf pair of musk oxen wish the new parents much happiness and joy! (Photo by Christian John)

## Supporting the Ecology Program

The Intercollege Graduate Degree Program in Ecology Gift Fund supports various elements that have made Penn State Ecology one of the nation's top graduate programs. Gifts to Penn State Ecology support student stipends, seminar speakers, faculty/student social events and opportunities for students to attend meetings and workshops. This fund enhances Penn State's commitment to providing a quality graduate education for our students. Your philanthropic support is beneficial and appreciated. To make your gift on-line, go to <http://www.giveto.psu.edu/GradEcology>

The Ecology Program values the philanthropic support of its alumni, parents and friends, and has developed specific programs based on donor interest, such as the Andersen Travel Award. For more information about how your financial support can positively impact the Ecology Program, please contact Dave Eissenstat, program chair, at [dme9@psu.edu](mailto:dme9@psu.edu) or [814-863-3371](tel:814-863-3371).