

# Earlham Biology Alumni News Letter

## Biology Department



*All things must happen for a first time, and so it is for our first alumni newsletter. We have so many amazing alums and we would like to be better at keeping you all abreast of the incredible things that happen at Earlham in the Bio department. In addition to starting a newsletter, we will also be starting several initiatives to increase communication out of our department via social media - so stay tuned. All of these initiatives have a common thread, community. Our community is as strong as ever, but also as dispersed as it has ever been. We are working to*

*bridge the gaps of physical space by keeping you up to date on what is happening here, and in doing so, also make sure you know you are always welcome here and feel a part of our Bio family. The Bio faculty feel empowered by the success of our alums, and every day we embrace the passion, wonder, and drive of our students. We are truly lucky to be here with these students engaged in the common mission of discovery and finding a path toward a life well-lived. Thank you for giving us the opportunity to learn with you, currently, in the past, and on into the future.*

## Osiris genes and ant colonies

by CHRIS SMITH

We recently wrapped up a year-long study involving 200 ant colonies, spanned two species on two continents, and involving >10 EC students. That study highlights the scaling of life-history trade-offs from organisms to superorganisms (the manuscript is currently in revision). We are still maintaining a similar study on harvester ants (started with 150 colonies) that is in its second year - while very similar to the above, it focuses on the manipulation of phenotypes using nutrition with the goal of mapping the genes under-



lying queen-worker differentiation. Lastly, I continue work on the amazing Osiris genes - a family of genes that seem to hold many secrets that help explain the amazing diversity of the insects - our new review on these genes should be coming out in late summer 2019.

## Icelandic Microbes

by EMMETT SMITH

I am getting ready to head back to Iceland for the third year in a row, this time with 12 students in tow. Charlie Peck (CS) and I are expanding our research goals to include an array of microbial soil sampling. We will continue to monitor the microbial populations at the retreating glacier Sólheimajökull to help us learn how the land recovers once it is exposed from under the ice. Additionally, we will be sampling throughout the nature reserve Skálanes to interrogate differences in microbes in a variety of landscapes, such as old farmland, native heath, ground cov-

ered in invasive lupine, and in areas with old and new trees. We hope to learn more about the health of the soil in these different environments. We will also be sampling from two cores we plan to drill to see if we can identify when sheep appeared!



with its core components of Tibetan Culture and History and Buddhist Philosophy. I will add a course and experiential programming in Tibetan Medicine and Global Health. Hopefully, this adventure will be transformative and parasite free.

## Mager Lab Conservation Research

by KAREN MAGER

It has been a great year of large mammal conservation research in the Mager lab!



## Parasites still Parastitizing

by PETER BLAIR

I am pleased to share that parasites are still parasitizing my research agenda.



In the Fall semester, we were able to publish our phylogenetic work comparing a local parasitic trematode from Clear Creek (on *Earlham's* back campus) with geographically separated strains from central Kentucky. This summer we will continue this work and also revisit codon usage and codon bias in malaria genomes. The Blairs are excited to be leading the Fall 2019 Tibetan Studies Program in Northern India. The program will continue

Three students worked with me on a collaborative project funded by the Government of the Yukon, Canada, to study genetic relationships between caribou herds. Several herds of different ecotypes, with different conservation designations, come together in the Central Yukon and provide fascinating (if difficult) questions about how to manage populations at the boundaries of conservation units when gene flow among them is occurring. Locally, we continue to use camera traps to study wildlife activity patterns in local private protected areas.



Students presented their work examining deer vigilance behavior in response to human hunting pressure at the Natural Areas Conference in Fall 2018, and another student and I had quite a lot of fun beginning to characterize coyote behaviors and daily activity patterns from the hundreds of photos we have of coyotes howling, hunting, scent marking, playing, and more. I look forward to developing this project further when I complete a professional workshop at the Smithsonian-Mason School of Conservation this summer.

## New Addition to the Family

by BOB ROSENBERG

For the first time in 38 years, I'm not going to do research this summer. The main reason is that our daughter in Philadelphia will be having a baby and I want to be able to be a hands-on grandfather as much as possible. [begincenter](http://begincenter.com)



I am really looking forward to it! But my research on spinal cord injury



in lamprey has been productive this year – Maren Schroeder published the results of her senior Neuroscience research on “The effects of curcumin on glial morphology following spinal cord injury in lampreys” in *IMPULSE* – and research will continue in 2020.

## Birds Migrants

by WENDY TORI



Bird migrants are in town! So, I am in the field as much as I can getting ready for Birding Big Day. This year I will team up with Bill Buskirk and I am sure we will have a blast together raising funds for the college. This year has been a good year in my Lab. I have been working with two groups of students/alumni writing two manuscripts, one about the evolution of lek mating systems in White-crowned Manakins, and the other about the identity and importance of feather as lining in Tree Swallow nests.



My summer also will be very exciting. I will start by co-leading a course with Jose I. Pareja for first generation students in Italy. This course will have many “firsts” for me and many of my students. For me, this will be the first time I teach a non-biological course focused in Borders, Adventure, People and Culture. For my students, many have not traveled outside the country, some have never been in a plane, and most haven’t been in Europe before. After this, I will travel to Tanzania for a month (Tarangire Region) and will co-lead an EPIC Term with Brent Smith. The course focuses in Animal Behavior, Human Wildlife Conflicts, and Conservation. What could be better! Student will conduct behavioral research projects, will do homestays with the Maasai, and will see first-hand the complexities of conservation. Finally, I will come back home for two weeks, see if I can squeeze in some volunteer work with the canine program at Reid Hospital, and then head out again to do research with two students and one alumni in Papua New Guinea. Our goal in Papua New Guinea will be to examine how the patterns of malaria infection and vector pressure (i.e., mosquitoes and biting midges) vary along the Mount Wilhelm elevation transect. As you can see, my Research Group has been busy and we are very excited about the next months to come!

## New Employee

by KIM ALLEN



I’m new to the Earlham community. I am taking over Kim Wills’ (she will be

missed... enjoy retirement Kim W!) position as the administrative assistant in the Biology department. I finished my studies at University of New Mexico with a background in Biology, Anthropology, and Data analysis.

## First year at Earlham

by DAN ATWATER



This was my first year at Earlham and it has been fun and productive for the Earlham Plant Ecology Lab! The greenhouse student workers organized a record setting plant sale. We have seen five papers published during the academic year (in *Functional Ecology*, *New Phytologist*, *Journal of Applied Ecology*, *Oikos*, and *American Naturalist*), and have sent two other papers out for review. This fall, a student researcher has developed ecological models to forecast how over 800 invasive plant species will respond to climate change. We are analyzing the results now and look forward to writing the paper soon. I am enthusiastic for my first summer of Student Collaborative Research at Earlham! We will start two exciting projects. First, we will measure gas exchange in the carbon sequestration plantation, to record how much carbon dioxide these student-planted trees are removing from the atmosphere and how efficiently they are using water. Second, we will conduct experimental evolution experiments in the Hill Memorial Greenhouse to explore how competitive ability evolves in plant communities.

This has been a great year and I am thrilled to see where the next year takes us.

## Bahamas and Iguanas

by JOHN IVERSON

“Retirement” is great, though the office hours are still as long. I leave shortly for the Bahamas with Earlham undergrads for our 40th year of iguana research there. NSF will support me and colleagues on this work for the next three years, focusing on the physiological impacts of tourists feeding the iguanas inappropriate items.



Following the Bahamas I head to western Nebraska (also the 40th year of that work) to continue our turtle studies there. I am also trying to carve out the time to really exploit these two long-term data sets, which are unmatched in the herpetological world. Colleagues and students and I published a ton of papers over the last year (check google scholar), thanks to my flexibility and time to focus on research. I’ll take a break from formal academia in August with an 18-day tourist trip to Zimbabwe.

## Retirement and Wildman Woods

by BRENT SMMITH

I, too, have “retired” – last spring, in fact. This past fall I was able to pursue one of my passions nearly full time: wood working, though I



remained as the volunteer Coordinator of Natural Areas for the College. This spring semester was hardly retirement from Earlham, however! I taught Field Botany while Dan got a course release to develop his research program, co-planned an EPIC Advantage program to Tanzania with Wendy where we will spend the month of June with 12 students researching animal behavior and the role of indigenous Maasai in wildlife conservation efforts (see Wendy’s note), AND taught two sections of AWPE – Trail Building and Invasive Species Control, where we cleared trails, rebuilt bridges and stairs at Wildman Woods, and killed lots of honeysuckle. In the future, I will continue with the natural areas, working with the department’s property managers, Thomas Hill ’19 and Annie McClung ’19.



I will also continue to work on manuscripts of my research (with alums!) on black cherry competition and old growth forest ecology. Recently I published a paper with four alums (Kasun Bodawatta, Caitlin Clark, Ashley Hedrick and Andrew

Hood, all EC ’15) in the Journal of the Torrey Botanical Society that compared the degree of herbivory and timing of spring leaf-out and fall leaf-drop on native vs. invasive forest shrubs. This research began as a Population and Community Ecology project, followed by independent study, and was conducted in Earlham’s Wildman Woods.



## Lab Manager Conference

by DANIEL THOMPSON



With so many faculty and students performing research I can honestly say that my days are never boring! I will attend two conferences this summer, Lab Manager Leadership Summit and National Association of Scientific Materials Managers. Each conference specializes in different areas of supporting teaching and research labs, and I hope to bring back new ideas and practical skills as well as add to my invaluable network of lab managers at colleges similar to Earlham.