Notes from Field

The biannual newsletter of the Intercollege Graduate Degree Program in Ecology The Pennsylvania State University

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The wood frog, Lithobates sylvaticus, is found throughout the northeastern United States and up into Canada and Alaska, with some disjunct populations in the Rockies. The Miller lab monitors found this individual in a vernal pond in Scotia Gamelands (PA). Photo credit: Staci M. Amburgey

Greetings from the New Ecology Chair

by Dr. Jason Kaye

I wanted introduce myself as the new Chair of the Intercollege Graduate Degree Program (IGDP) in Ecology and share a bit of my vision for the program.

I am an ecosystem ecologist and my research focuses on soil and plant nutrient cycling in forest and agricultural systems. My Ph.D. is from an ecology IGDP at Colorado State University.

I joined the ecology faculty when I arrived at Penn State in 2005, and have been active in advising MS and Ph.D. students, chairing the Admissions Committee, serving on the Program and Curriculum Committees, contributing to Advances in Ecology many times, and teaching Ecosystem Nutrient Cycles. When I was promoted to full professor in

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Chair will be to work with students to discover how their leadership can improve their own degree programs and the Ecology IGDP as a whole. I think

our program needs to grow, but not by much; perhaps an increase of 1 to 2 students per year to foster cohort comradery and expand the number of

2016 I started thinking about ways I could give back to the communities that had fostered my success.

Chairing the IGDP in Ecology was at the top of the

most gratifying parts of my job and I look forward to

list. Working with graduate students is one of the

My vision for the Ecology IGDP is to build on our

two greatest strengths: empowered students and

engaged faculty. Empowered students make the program stronger for themselves, their fellow

students, and for faculty. One of my first jobs as

expanding this role as Chair.





faculty advisers. As we grow, we will continue to be inclusive and welcoming to a diverse group of graduate students.

As student cohorts come and go, the Ecology program has remained strong because of university-wide commitment from faculty. I'll be visiting with department heads in the coming months and reaching out to new and veteran faculty to maintain both the number and diversity of contributing departments. I look forward to working closely with the Ecology Institute to advocate for new faculty hires and to amplify the visibility of ecology throughout the university.

Beyond Penn State, I want to develop our reputation as an ecology program that includes world-renowned faculty in every domain of the discipline while also enabling its students to drive the program in new directions that merge their interests with changes in this dynamic field. Beyond academia, I want student outreach to project the value of ecology for society. I'd like to conclude with some thanks. First, thanks to Dave Eissenstat for his strong leadership over the past 10 years. I have learned a lot from him and his mentoring guides my approach to chairing the program. Also, thanks to the students and faculty that make it such a joy to be involved in this program. I am looking forward to working with all of you.



SPRING 2018 SEMINAR SERIES PREVIEW

by Melanie Kammerer Allen, Lake Graboski, and Sarah Isbell

For the last couple months, we've been recruiting a stellar group of speakers for the Spring 2018 Ecology Seminar Series, "Multi-Functional Ecology: Perspectives across Scales and Systems." Our goal is to bring together diverse perspectives on measuring and valuing multiple ecosystem services across a range of study systems and scales. Globally, we face a suite of ecological challenges, from biodiversity loss and land conversion to degradation and invasion, all in the context of global change. To address these problems, we believe it is crucial that we better understand strategies to promote multiple ecosystem services in both managed and semi-natural systems. To that end, the series will include contributions from leading ecologists studying longstanding ecological questions like 'How does ecosystem functioning respond to changes in biodiversity?', as well as more applied topics like 'How do vegetation and soil processes influence climate, pollution, water resources, aesthetics, and human comfort in urban landscapes?' and How does grassland plant diversity and productivity vary from field to landscape scale?". We hope to

provide relevant, creative ideas for research and management across ecological sub-disciplines. Please join us next semester, Mondays at 4:00 p.m.!



Woods lily (Lilium philadelphicum) is a beautiful native species underutilized in landscaping. Photo credit: Erynn Maynard.

NEW ECOLOGY STUDENT INTRODUCTIONS



Benjamin Dillner (Adviser, Jason Kaye) I am working on my M.S. in Jason Kaye's lab focusing on effects of forest disturbance (such as tree tip-up) on plant regeneration and nutrient availability in the Susquehanna Shale Hills Critical Zone Observatory. In my free time I enjoy mountain biking, hiking, kayaking and woodworking.

Monique Pipkin (Adviser, Victoria Braithwaite)

I work in the Braithwaite lab looking into the physiology of temperament, exploration, in particular. In my free time, I enjoy exploring art, music and theatre.



Sarah Rothman (Adviser, Andy Cole) My name is Sarah Rothman, and I am researching pollinator habitat restoration on surface mines with Andy Cole as my advisor and assistance from the Grozinger Lab. I love to canoe in the summer, bake in the winter, and dance year-round.

Elyse McMahon (Adviser, Michael Sheriff)

I am a Ph.D. student in Michael Sheriff's lab studying how fire impacts prey physiological and behavioral responses to predation. Outside of work I enjoy exploring and hiking around the central Pennsylvania area.

Vishnupriya Sankararaman (Adviser, David Miller)

I began my Ph.D. in Fall 2017 in the Applied Population Ecology lab under Dr. David Miller. I am broadly interested in community ecology, herpetology, freshwater ecosystems and conservation biology. My research work will examine the impact of habitat change on stream-dwelling amphibian community structure. I hope to go back to India and continue to study and conserve the fascinating biodiversity of the Western Ghats.



Madalyn Slook (Adviser, Paul Bartell)

I am interested in what regulates migratory behaviors in birds, and how the culmination of these behaviors are regulated by seasonal variation; particularly, I am attempting to look at how anthropogenic alterations to the environment, in the form of light pollution, can affect the behaviors and physiology of migration. When I'm not in lab I enjoy going for hikes and practicing yoga.

by Shannon White



Badlands National Park. Photo: S. White

I was standing in a convenience store in Bozeman, Montana wearing one of my many troutcentric t-shirts. From behind I hear an older man ask "do ya' fish much?" I laugh and answer to the affirmative, only I leave out the part about electricity being my fishing method of choice. Little does he know I am a fish biologist, I was winding my way through the Midwest on my way to West Yellowstone to present at the XII Wild Trout Symposium.

Having never attended this meeting, I had no idea what to expect. At the opening reception I reconnect with a few collaborators and shake hands with several more researchers I know only through name recognition. In this one room are many of the scientists whose work I have been admiring

ANDERSON AWARD REFLECTION

throughout my Ph.D. Only, no one is talking science. The topic of conversation seems to keep circling back to travel stories. Located at the very edge of Yellowstone National Park and nearly in the middle of nowhere, it's a given that no one traveled to West Yellowstone just to attend this meeting. Some went fishing, others got snowed in while camping, and a few went whitewater rafting. But, it's clear I take the trophy for most distance covered. Having never been to the Midwest, I merged this meeting with vacation and visited three national parks (Badlands, Yellowstone, and Grand Tetons), a national memorial (Mount Rushmore), a national monument (Craters of the Moon), and several state parks (including Great Salt Lake). All said, I visited eight states and logged nearly 3,000 miles.

The next morning everyone gathered for breakfast before the keynote address and it was clear a switch had been flipped. While the meeting is small and attended by less than 100 people, the room was buzzing with talks of the latest research and science - all on trout ecology, conservation, and management. And, everyone maintained the same electricity and excitement for nearly three days as we heard presentations from citizen scientists, watershed steward groups, graduate students, and federal scientists. While I have attended larger meetings of fisheries scientists, like the annual meeting of American Fisheries Society which is attended by up

4,000 people every year, this is one of the only international meetings of trout ecologists. Every presentation and conversation was relevant to the work I am doing, and attending the meeting helped put into perspective the more global significance of my dissertation research.



A look up the Grand Canyon of Yellowstone. Photo: S. White

In addition to learning about new research projects, the meeting also offered the opportunity to readily meet with group of researchers spread across the country. Over dinner, many of the east coast's brook trout biologists discussed future project ideas, bounced ideas off each other, shared on-going research, and swapped data. And, at breaks throughout the day, I got the opportunity to have in-depth discussions with Canadian trout biologists hoping to execute

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studies similar to those I completed for my dissertation. I've never attended a more productive, and inspiring conference as the Wild Trout Symposium. While at the meeting, I was also honored to receive the Marty Seldon Scholarship in recognition of excellence in graduate research in trout ecology. My attendance at the Wild Trout Symposium would not have been possible without receipt of this scholarship and the Andersen Travel Award. I am extremely grateful to Dr. Frank A. Andersen and the Andersen Travel Award Committee for affording me the opportunity to attend this meeting.



A view from Yellowstone's Grand Prismatic Spring, the third largest hot spring in the world, at sunset. Photo: S. White

Follow Shannon and the Stream Team www.thetroutlook.com and @TheTroutlook



Caught in the middle of a bison jam. Photo: S. White



Fish-eye photos used to estimate overstory canopy cover can be quite attractive! Photo credit: Erynn Maynard

WHEN THE SALAMANDERS COME MARCHING IN

by Courtney Davis

Each year, thousands of amphibians journey from their overwintering burrows to wetlands to breed. This is a spectacular phenomenon, particularly in the Northeast U.S., where warm, rainy evenings signal not only an end to winter but the start of my favorite season - spring amphibian breeding season! Despite the scale at which they typically occur, many people have never experienced or even heard of amphibian migrations. The most common species observed during these events include the: wood frog (Lithobates sylvaticus), spotted salamander (Ambystoma maculatum), Jefferson salamander

(Ambystoma jeffersonianum), spring peeper (Pseudacris crucifer), and Eastern newt (Notophthalmus viridescens). Unfortunately, these amphibians are most often seen crossing roadways on their way to breeding wetlands. Mortality associated with road traffic is hard to estimate and impacts are often species-specific, but can be mitigated by reducing traffic during nights of peak migration. Across the northeast U.S., countless community programs and citizen-science initiatives help protect migrating amphibians on their perilous journeys by serving as 'amphibian crossing guards,' while also gathering information

on the timing and magnitude of spring migration events.

We, the Miller Applied Population Ecology Lab, also take advantage of this breeding migration to gather a large amount of data in a relatively short period of time. The breeding season typically spans I to 3 weeks, with only 2 or 3 peak migration nights during that time. In Pennsylvania, spring wetland-breeding amphibian season typically begins in mid- to late-March but is heavily dependent on local weather conditions. As we experienced in 2017, warmer winters can lead to

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A spotted salamander that has been 'finger-printed' using the photograph identification software I3S. The unique dorsal spot patterns can be used to identify and track individuals through space and time. Photo credit: Courtney Davis

earlier spring migrations and may even extend the breeding season. The 2017 breeding season, for instance, started at the end of February and continued for 6 weeks! An unfortunate consequence of the warm winter and early spring rains was the death of numerous adult amphibians following a deep freeze in early March. Nevertheless, we still had one of our most productive seasons this year, with at least 4 peak migration days for our focal species: the spotted salamander.

The spotted salamander is a relatively common wetlandbreeding amphibian in Pennsylvania. This species is rarely observed outside of the spring breeding season when it migrates in large numbers to seasonallyinundated wetlands. Spotted salamanders can live up to 30 years and spend most of the year in the uplands, burrowed in the soil. As such, we know little about their overwintering biology, but much more about their breeding and larval ecology. However, large gaps still exist in our knowledge on this salamander's population ecology. Thankfully for us, these salamanders come pre-packaged for a capture-mark-recapture

study, with unique dorsal spot patterns that can be used to track individuals through time and



Spotted salamander found during the spring amphibian migration in SGL 176, Centre County, PA. Photo credit: Courtney Davis

space. We are primarily interested in estimating adult survival and population size, as well as understanding movement within and among breeding seasons across our network of monitored wetlands.

We began our study in 2014 and have since annually monitored 12 wetlands in State Game Lands No. 176. To capture breeding adults, we deploy minnow traps from the onset of spring thaw until capture rates decline to <5% of daily captures achieved at peak migration. Traps are placed in shallow water along the wetland perimeter and baited with 6-inch green glow-sticks, which have been shown to increase amphibian capture rates (check out the cool paper by Antonishak et al.¹). We then photograph all spotted salamanders each time they are captured, in order to determine individual ID using photograph identification software (Interactive Individual Identification Software I₃S). Our photographic database now contains >8200 capture events and 3300 recorded individuals!

On peak migration days, we easily capture and process over 1,000 individual spotted salamanders a day. Accomplishing such an incredible feat requires a small army of people to help both in the field and in the lab to process photographs. We have used this as an opportunity to give undergraduate and graduate students field experience with herpetofauna. As you can imagine, this field work often occurs in unfavorable weather conditions, namely cold temperatures, rain and sometimes snow. So, despite the chance to see an awesome vernal pool ecosystem and charming little salamanders, it can be a little tough to get people

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involved. This year, however, we had the help of 27 undergraduate students from Ecosystem Science & Management (ESM) and Biology and 10 graduate students from Ecology, ESM, Biology and Plant Pathology & Environmental



Ecology graduate students David Muñoz (left) and Staci Amburgey (right) processing spotted salamanders at 1 of our 12 monitored wetlands in SGL 176. Photo credit: Courtney Davis

Microbiology. In addition, Penn State faculty from University Park and Dubois campuses as well as Shaver's Creek staff and interns joined us throughout the season. We certainly would not have had such a successful season without all of this help! In addition to working with these volunteers, we also work with members of the local community to spread awareness about wetland-breeding amphibians, their spring migration and the impact humans have on this particular vernal pool ecosystem. The people who frequent the area now affectionately (I hope) call us 'the frog/salamander crew' and ask for updates on the migration and our research whenever we cross paths. When all is said and done, it is truly a rewarding experience, even if you frequently lose feeling in your fingers and toes while doing it.

If you are interested in helping or learning more about our research, please email me, Courtney, at <u>cld303@psu.edu</u>. It is, quite literally, a cool experience and we would love to have you – even for a day!

¹Antonishak M., Muñoz D., Miller, D.A.W. (2017). Using glow sticks to increase funnel trap capture rates for adult vernal pool amphibians. Herpetological Review 48: 544-549.



A lovely female wood frog captured at one of our monitored wetlands. Wood frogs are a sure sign of spring (despite the snow in this picture). Photo credit: Courtney Davis



(Left) Chicory (Cichorium intybus), is a very common weed native to Eurasia, but transported to many other places around the world by humans. It's leaves can be used for salad, and it's roots are roasted and used as a coffee replacement or additive, such as in the New Orleans-based coffee brand Cafe du Monde.

(Right) Moth mullien (Verbascum blattaria) is a relatively common weed of roadsides, edgy habitats, and old fields. It's named for the resemblance of the stamen to moth antennae, and is naturalized here from Eurasia and northern Africa.



ALUMNI NEWS: LIFE AFTER PENN STATE ECOLOGY

by Larry York, Assistant Professor at Noble Research Institute



www.noble.org/staff/larry-york/

My last year in the Ecology program at Penn State is largely a blur. I continued field work up until the spring of 2014 then wrote most of my dissertation over the next 9 months. Luckily I had invested a lot of time over the previous years in improving my R skills to achieve what I like to call high-throughput statistics and plotting, but nothing can replace a steadfast commitment to writing. Don't be like me; start writing early and stick to it. Chapter introductions and methods can be completed any time. My advice is to do your statistics and plotting before writing results, decide what figures would be required in a paper and stick to that. Give yourself time to read the literature deeply, as this will ensure you aren't reinventing the wheel, and you will surely uncover precious gems that will give you insights to your study system. Embrace your Eureka moments during research and cherish them, they are rare but provide the motivation we need to go on. While finishing my Ph.D. I used a task list on my phone to prioritize what to do each day and crossed them off as completed. It worked for me and I

wish I had kept up with it. So, what if you follow this advice and you actually finish, then what?

Well, life goes on. A Ph.D. is just the beginning. I moved to England for a postdoctoral position at the University of Nottingham after my successful defense but before I submitted my dissertation. One might argue it's better to be totally done, but there was a job opportunity I wanted to take so I just finagled it to work out. I revised my dissertation nights and weekends and submitted in December. Point being, sometimes things just work out and your path might not be the linear trajectory you imagined. My postdoctoral mentor in England was a collaborator of my Ph.D. adviser (Jonathan Lynch at Penn State), we had met once at a conference at the University of Missouri, and again at a research site in South Africa. I stayed in touch and contacted him about a position so learned about this one and applied. After interviewing several candidates, they chose me!



Larry York, wife Xinji Zhang, and 2 month old Wanda York in London, England to apply for Wanda's first passport in April, 2015.

I was in, and was a true Yankee in King Arthur's court. This position allowed me to keep my focus on roots while learning new skills, like X-ray computed tomography, and to apply my field methods to a new species, wheat. My wife was 5 months pregnant when we went to England, and my to-be daughter already motivated me to wrap up, and after being born to keep trying hard to provide for her. Not that I would recommend starting a family just to finish your Ph.D.

I had met my future second postdoctoral mentor at the same conference in Missouri where I met my first. I met him again while at a conference in Australia and mentioned I was looking to move back to the USA after finishing my position in England. Turned out, he had some 'soft money' and several projects I might be able to help tie up. So, again, we stayed in touch, I followed up, applied for the job, and got it. We moved back to the US after 2 years in England, this time with an 18 month old baby in tow. I was lucky in landing another position that gave me room to explore my interests while applying my skills to the projects of my mentor; this time both with a home-grown X-ray system and developing root phenotyping for soybean. You may see a common theme here. I attended conferences, and I networked. I followed up. I asked my contacts about positions directly. This is the type of advice you'll hear, and I guess it works. If it worked for

me, it will work for anybody, trust me. Bummer, but, life goes on.

After only a brief time in Missouri, I learned of a position available for a crop physiologist at Noble Research Institute. I had previously applied to a couple universities and interviewed at one, so I felt I could be competitive. I only applied to faculty positions that I thought were very relevant to me, but had plans to eventually seek government or seed company jobs if it didn't pan out. There just aren't enough faculty jobs for all Ph.D.s, so we need to be mindful of other career opportunities. On a related note, I've been advocating for a while that beefing up our R skills is a great way to be competitive in the 'data scientist' market which is growing quickly. In my application packages I tried to paint myself as a leader in an emerging field, for me it was 'functional phenomics.' Hiring committees are looking for vision and how you can advance their department, so go ahead and be explicit about it. I had invested time in writing a couple reviews that helped 'brand' me as a leader in my field as well, and I would suggest writing a review / synthesis piece as one of your first chapters to publish. There are lots of suggestions for interviews on the internet, so

have a gander – it's all good advice. I would also recommend the book 'The Professor is In' which covers everything from finishing the Ph.D., polishing your CV, to interviewing. Anyway, Noble was a great fit for me, even though it's not a teaching institution, I find the non-profit's common mission among our professors to apply our research to

benefiting agriculture to be very appealing.

So, I feel I'm living the academic's dream, I even got my first federal grant recently, but I will be the first to acknowledge there is a huge element of luck to landing a faculty position. You have to have the skills, the



Larry York with postdoctoral fellow Haichao Guo discussing the Root Phenomics Lab's first greenhouse experiment at Noble Research Institute in September, 2017.

connections, and be

at the right place at the right time. You can influence all this, but don't beat yourself up. Keep trying but be open to other ideas and paths. Life goes on and everything will work out.

CONGRESSMAN GLENN THOMPSON'S VISIT TO THE BAUMS LAB

by Andie Chan

When I was in Washington, DC last April, I visited our representatives in both the House and Senate as part of the AAAS/CASE Workshop. When I met with Congressman Glenn Thompson ("GT"), I invited him to visit our lab at Penn State. I then followed up with the Office of Government & Community Relations, and the Directors of Federal Relations both at Penn State and in DC helped our lab arrange the meeting.

While the House of Representatives was in recess in August, Congressman Glenn Thompson came to Penn State to visit some of the research labs on campus. The goal of the meeting was to share the importance of our coral research and show Congressman Thompson what we were doing with our federal funds. As a lab,

we provided an overview of how we use genetic tools to improve coral reef conservation and management, and how reefs provide important ecosystem services like tourism revenue and protection of coastlines from wave action and storms. We fed a coral some plankton under the dissecting scope and explained how corals are animals with symbiotic algae in their tissues. Then we had Congressman Thompson put on some gloves and learn to pipette. The whole visit was very positive, and we hope that Congressman Thompson will have real life examples to bring to the House floor when he speaks for funding for basic science.



RECENT PUBLICATIONS FROM ECOLOGY FACULTY, POST-DOCS & STUDENTS

- Amburgey, S. M., Miller, D. A., Campbell Grant, E. H., Rittenhouse, T. A., Benard, M. F., Richardson, J. L., ... & Hardin, C. R. (2017). Range position and climate sensitivity: The structure of among-population demographic responses to climatic variation. *Global change biology*.
- Barlow, K. M., Mortensen, D. A., Drohan, P. J., & Averill, K. M. (2017). Unconventional gas development facilitates plant invasions. *Journal of environmental management*, 202, 208-216.
- DiCaglio, J., **Barlow, K. M.**, & Johnson, J. S. (2017). Rhetorical Recommendations Built on Ecological Experience: A Reassessment of the Challenge of Environmental Communication. *Environmental Communication*, 1-13.
- **Goslee, S C**., Jeffery M. Gonet, and R. Howard Skinner. 2017. Freeze tolerance of perennial ryegrass (Lolium perenne L.) and implications for future species distribution. *Crop Science* 57(5): 2875-2880.
- Veith, Tamie L., S C. Goslee, Doug B. Beegle, Jennifer L. Weld, and Peter J.A. Kleinman. 2017. Analyzing the distribution of hydrogeomorphic characteristics across Pennsylvania as a precursor to Phosphorus Index modifications. *Journal of Environmental Quality* 46:1365–1371.
- Hamilton AV, **DA Mortensen**, **M Kammerer Allen**. 2017. The state of the cover crop nation and how to set realistic future goals for the popular conservation practice. Journal of Soil and Water Conservation. 75(5): 111A-115A.
- Rehfeldt, G.E., **L. P. Leites**, D. G. Joyce, A.R. Weiskittel. 2017. Role of population genetics in guiding ecological response to climate. *Global Change Biology*.
- Hamblin AL, Youngsteadt E, **López-Uribe MM**, Frank SD (2017) Physiological thermal limits predict bee community response to urban warming. *Biology Letters*, *13*(6), 20170125.
- López-Uribe MM, Fitzgerald AM, Simone-Finstrom M (Accepted) Inducible versus constitutive social immunity: Examining effects of colony infection on glucose oxidase and Defensin-1 production in honey bees. *Royal Society Open Access*.

- **López-Uribe MM,** Soro A, Jha S (2017) Conservation genetics of bees: Advances in the application of molecular tools to guide bee pollinator conservation. *Conservation Genetics*.
- Schapheer C, López-Uribe MM, Vera A, Villagra CA (2017) Distribution, habitat use and plant associations of *Moluchia brevipennis* (Saussure, 1864) (Blattodea: Ectobiidae): an endemic cockroach from Chilean Mediterranean Matorral biome. *Revista Brasileira de Entomologia*
- López-Uribe MM, Appler RH, Youngsteadt E, Dunn RR, Frank SD, Tarpy DR (2017) Higher immunocompetence is associated with higher genetic diversity in feral honey bee colonies (*Apis mellifera*). *Conservation Genetics*.
- Dorchin A, **López-Uribe MM**, Praz CJ, Griswold T, Danforth BN (2017) Phylogeny and new generic-level classification of the Eucera complex (Hymenoptera: Apidae: Eucerini partim). *Molecular Phylogenetics and Evolution*.
- López-Uribe MM, Fitzgerald AM[§], Simone-Finstrom MD. (2017) Glucose oxidase production after colony infection: Testing its role in honey bee social immunity. *Royal Society Open Science* 4:170224.
- Miller, W.L. and W.D. Walter. 2017. CWDPRNP: a tool for cervid prion sequence analysis in program R. *Bioinformatics* 33(19):3096–3097.
- Antonishak M, **Muñoz D, Miller D** (2017) Using Glow Sticks to Increase Funnel Trap Capture Rates for Adult Vernal Pool Amphibians. *Herpetological Review*, 48, 544–549.
- Nagle, L., S. Echols and K. Tamminga. 2017. Food production on a living wall: Pilot study. *Journal of Green Building* 12(3): 23-38.
- Carrollo, E.M., H.E. Johnson, J.W. Fischer, M. Hammond, P.D. Dorsey, C.W. Anderson, K.C. VerCauteren, and **W. David Walter.** 2017. Influence of precipitation and crop germination on resource selection by mule deer (Odocoileus hemionus) in southwest Colorado. *Scientific Reports* 7: 15234.

GRANTS, AWARDS, AND ACHIEVEMENTS

- Dr. Margarita Lopez-Uribe received the USDA Animal Health and Research Disease (\$995,522): PI, project in collaboration with Brenna Traver and Robyn Underwood.
- Melanie Kammerer Allen received the College of Agricultural Sciences Graduate Student Competitive Grant (\$3000), and a NE SARE Graduate Student Grant (\$15,000).
- Dr. Robert Brooks was elected a Fellow with Society of Wetland Scientists in June 2017.
- Dr. Marc Abrams is on sabbatical in Japan this semester as a

- Distinguished Visiting Professor at Kyoto University's Center for Ecological Research working on global change impacts on forests in Japan and southeast Asia.
- David Muñoz received the Best Student Poster at the PA Wildlife Society Meeting, the Best Student Presentation at the Northeast Partners for Amphibian and Reptile Conservation, and the Kennedy Student Paper Award by the Society for the Study of Amphibians and Reptiles.
- Chad Thomas Patrick Nibranz won the President's Prize for best

student presentation in the Host-Plant Resistance section at the 2017 Entomological Society of America conference in Denver, CO.

Congrats to Ellen Brandell, Curt McConnell, Asia Murphy, Ted Primka, Rachel Rozum, and Noah Winters who all recently passed the Ecology Candidacy Exam. Tim Gould, Matt Toenies, and Colbie Reed successfully defended their Ecology masters theses. Emilia Sola-Gracia and Ethan Davis successfully defended their Ecology dissertations.



Dr. Robert Brooks captured an adult loon pair bonding on a lake in Mid-coast Maine. Together they share a minnow (left), and then share it with their young (right). Loons only have two young per clutch, as this pair did, and they were able to raise one to at least 2 months.



A closing note from our outgoing chair

It's been a great run.

Over the last 10 years, the Ecology Graduate Program has continued making improvements in its overall program quality, both in number of students and in student achievements. We have maintained a highly student-driven program which strives for both excellence and collegiality. One area that has been my focus has been Ecology Colloquium where I have gotten to know each student, interact with faculty and challenge students to be the best they can be in communicating their science to a broad ecological audience. I have been constantly impressed with the quality of our students. This is reflected in their numerous awards and fellowships which has brought important recognition by the Graduate School and University. It is also reflected in the excellent talks that we have heard at minisymposium as the student departs for new adventures. Our students have made us all proud and I wish the Program every success in the coming years.

Dr. David Eissenstat