

BioNews 2024

Department of Biology Pittsburg State University

From the Chair's Desk



Wilson's Warbler

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A Diana Fritillary (*Speyeria diana*) photographed within Pittsburg city limits. This is the first record in southeast Kansas, and only one of a handful of records this conservation-priority species in the state

Dr. Christine Brodsky



Greetings friends of the Pitt State Department of Biology.

The Fall 2024 semester has been one of many new starts at Pittsburg State. It has been my absolute honor to transition into the Chair role for the Departments of Biology and Chemistry. A big thank you to Dr. Winters for steering the ship for the past three years! I also owe a large thank you to our Administrative Specialist, Libby Graham, for all of her help as I learn the ropes.

While Biology and Chemistry remain separate Departments, we have moved to one centralized office loca-

tion: Heckert-Wells 101. If you find yourself in Pittsburg, please do stop by and say hello!

I would like to extend a warm welcome to our newest faculty member in the Department: Dr. Jamie Phelps (Assistant Instructional Professor). Dr. Phelps arrived in August 2024 from Louisiana State University and has been teaching our Environmental Life Science and General Biology courses. Other exciting news to report from our faculty is that Dr. Phil Harries and I were recognized as two of the three recipients of the Outstanding Faculty Awards for 2024. Additionally, Dr. Christopher Ward will transition to a tenure-track line starting in the New Year – kudos to Dr. Ward!

One of our new and exciting programs in the department is our AMP-UP Program, which is an accelerated pathway program with Kansas City University - Joplin. In October, we welcomed 35 high school students to campus for our first Explore Pre-Med Day, led by Dr. Peak. We are also looking forward to our annual Science Day in April, led by Dr. Chung, which will bring Biology, Chemistry, and Physics high school students to campus for a friendly competition and games. Other exciting programs like Nature Reach, Dr. Zurek's medical mission trip to Belize, and various field biology trips to Nebraska (sandhill crane migration with Dr. George) and New Mexico (fish sampling with Dr. Whitney) keep providing transformational experiences for our students. The future is very bright for Pitt State Biology!

Another exciting development coming our way is the \$5 million in congressionally designated funds to support the "STEM Ecosystem" of Heckert-Wells and Yates Hall. These funds will contribute to building renovations and equipment purchases, benefiting faculty and students within Biology, Chemistry, Math, and Physics. Keep an eye out for more announcements!

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Research in the Biology Department is still one of the strongest programs on campus. Exciting faculty projects span from microbial community analysis for Irritable Bowel Syndrome patients (Dr. Ghosh), tracking gray bats with the Motus network (Dr. George), redspot chub surveys (Dr. Whitney), bioinformatics assays to assess cancer aggressiveness (Dr. Ward), vascular plant surveys (Dr. Snow), etc., many of which you may read about below in our faculty's greetings. As of November 2024, we currently have \$1.4 million in active grants in Biology.

The newest grant that I've been involved with is our NSF-funded Louis Stokes Alliances for Minority Participation (LSAMP) program, which supports underrepresented minority students in STEM fields to get involved in research on campus. Additionally, our long-running K-INBRE project was renewed by NIH this past summer, providing 5 more years' worth of funding. We currently have 19 K-INBRE Scholars working alongside Biology, Chemistry, Psychology, and Health, Human Performance, and Recreation faculty.

This past Spring, I was lucky enough to take a sabbatical to work closely with my collaborator, Dr. Ian McGregor-Fors at the University of Helsinki. We were able to get a handful of papers wrapped up and submitted – a few that we started years ago! One new project we were able to complete was a study on the differences in House Sparrow vo-calizations across their native and introduced range. Alumni Khloey Stringer and Taylor Michael were able to help me measure hundreds of House Sparrow beaks at the KU Natural History Museum before I headed off to Helsinki – a big thanks to both of them!

Before getting my sabbatical underway, my most recent graduate student, Daniel Benson, successfully defended his Master's thesis on Plains Spotted Skunks in Kansas. Daniel (MS 2024) and Jenell de la Peña (MS 2023) have been publishing their results of their massive camera trap study. They have reported findings about county records of gray fox (Benson et al. 2024), a unique behavioral interaction between a spotted skunk and raccoon (de la Peña, et al. 2024), and a long-term monitoring effort of spotted skunks (Benson et al. *Accepted*). Ten students (9 undergraduates, 1 graduate) and I presented our research through oral and poster presentations at conferences like KNRC, American Society of Mammalogists, Urban Biodiversity and Design Network meeting, and more.

Best wishes to all of you for 2025!



Left: Dr. Brodsky in Helsinki, Finland, during her sabbatical. Right: Libby Graham presenting her workshop at the Professional Development Day.

In Memorium: Dr. James R. Triplett



Members of the Department of Biology, colleagues at Pittsburg State University, and the community of Pittsburg were saddened to learn of Dr. Triplett's recent passing.

Jim earned was a PSU grad and later earned his doctorate from the University of Kansas in 1976. He joined the faculty at The Ohio State University but relocated to PSU in 1981 and became departmental Chair in 1985. His service as Chair for a period of 23 years is almost unheard of in academia. Jim was a visionary and had a can-do influence at PSU.

His professional interests included limnology, marine biology, aquatic toxicology, ecolo-

gy, and fishes. He authored many publications and was known regionally and nationally for his expertise and dedication to the advancement of fisheries biology in the widest sense; a small selection of his publications are cited below.

Dr. Triplett went considerably beyond the expected teaching, service and administrative expectations at PSU. With Drs. Catherine Hooey, Alicia Mason-Collins and Joey Pogue, he was a founding member of the Sustainability, Society and Resource Management degree program at PSU. The Southeast Kansas Recycling Center on S. Joplin Street in Pittsburg recently was named the James L. Triplett Building in his honor. He was elected Chair of the Grand/Neosho River Committee and was appointed Chair of the Special Commission on Surface Water Quality by Governor Bill Graves.

After retirement Jim remained active on campus and in the community. He was highly respected amongst his professional peers, some of whom have shared their comments below:

"I will always remember how welcoming and helpful JT was as I began the fisheries faculty position he had excelled at for so many years. Those were some big shoes to fill! He showed me some of his fish honey holes in the Missouri Ozarks during my first semester teaching Ichthyology. While driving to and from some of Jim's best spots for finding fish, he told me many stories about his past field trip adventures. These stories, as well as later talking to some of his former students, really highlighted for me how many lifelong memories he had created for his students by having the willingness and dedication to take them on field excursions all over the south-central U.S. Jim was truly a legend, and he will be missed." — Dr. James Whitney (Associate Professor, PSU)

"Dr. Jim Triplett was Biology Department Chair when I was hired. Under his leadership, we built one of the best pre-health programs in the nation. Our success rate for student admissions into professional schools was phenomenal. Jim let faculty decide what they wanted to teach as long as the core classes were covered. He was a strong supporter of faculty research. His hands-off approach was unusual for Chair but exactly right for those who wanted independent careers. I owe many years of happiness to his leadership in the Department. Thank you Dr. Jim Triplett." — Dr. Virginia Rider (University Professor Emeritus, former Dept Chair, PSU)

"[He] was instrumental in my coming down to PSU and was a strong supporter. In those days, he regularly walked the hallways and visited with us, keeping a pulse on things. Jim made a huge positive difference in the lives of many students. He put the "field" in field biology in our department and gave us recognition throughout the state. " — Dr. Joe Arruda (Retired, PSU)

"My first introduction to PSU was from Jim Triplett who became a good friend, mentor, and inspiration. He was a visionary who was not just a dreamer, but had a talent to engage people to strengthen the field biology program, develop an environmental education outreach, initiate a sustainability student curriculum, institute a regional recycling program, and negotiate water issues in the state. Jim was in his element working with students, particularly on extended field trips to Arkansas; south Texas; Big Bend National Park, TX; southern Arizona; Dauphin Island, AL; Great Smoky Mountains, TN; and barrier islands off Georgia. As a co-instructor on many of these field trips, the adventures we had will remain in my favorite memories. Jim wanted to make a difference and he succeeded admirably." – Dr. Cindy Ford, Professor Emeritus

"Charismatic, intelligent, generous, capable - all terms and many more that describe Jim Triplett, but as a 40year friend and fellow field biologist, I was most impressed with Jim's abiding dedication to educating students in the field. They lined up for his extended spring break field trips to the Gulf Coast and desert southwest. He made field biology fun, exciting, and, well, eventful: I accompanied him in the back of a New Orleans police car, stood by as he was bitten by a black-tipped shark on a Georgia barrier island, held a flashlight as he changed out a U - joint on an old Biology Department van in a Texas campground (on two occasions!). Jim was one of those teachers who students never forget. He was an exceptional friend." – to Dr. Steven Ford (Professor Emeritus)

"Along with the many tributes that outline Jim's accomplishments and causes, I also hope we will remember that he was a kind and empathetic mentor, friend, and colleague. Yes, Jim chose projects and causes with environmental impacts, and I heard him speak of "making a difference" more than once. However, for those of us that worked with him in "everyday life," he was a mentor in every sense of the word. He wanted faculty to be successful, and he took the responsibility of being a Department Chair in the sciences to heart. His office door was almost always open. (And if it wasn't we knew he was up against an important deadline!) He was our cheerleader: My office was right down the hall from the main Biology Office, and I often overheard him declaring, "Why do it if you're not having fun? Life's too short!" Of course, he was right about that. However, as important as his work life was, I don't think work was his whole life. He took time to go fishing with Harv, to travel with Shirley, eat cookies and DQ Blizzards, and keep up connections with many friends and graduate students. I think it is appropriate to describe Jim as inspirational, and I will always think of him as one of the few people I have met who squeezed every bit of life out of his time on Earth." — Dr. Dixie Smith (PSU, retired and former Department Chair)

Selected publications

- Haslouer SG [+ 9 others, including J. Triplett). 2005. Current status of native fish species in Kansas. Trans. Kansas Acad. Sci.: 32–46.
- Hooey CA, Mason A & Triplett J. 2017. Beyond greening: Challenges to adopting sustainability in institutions of higher education. The Midwest Quarterly.
- Kaemingk MA, Essig R, McMullin SL, Bonds C, DeBruyne RL, Myrick C, Phelps QE, Sutton TM & Triplett JR. 2016. Examining the relevancy and utility of the American Fisheries Society Professional certification program to prepare future fisheries professionals. Fisheries 41: 458–461.



Kansas State Fish: Channel catfish (*Ictalurus punctatus*). Duane Raver - U.S. Fish and Wildlife Service (public domain)



Dr. Mandy Peak Bryan

Hello Gorillas! In March, PSU and KCU announced our new accelerated med school and dental school program. This partnership is called AMP-UP (Accelerated Medical Path Undergraduate Program) and has the potential to save eligible students a year of academic study and a year of tuition at Pitt State. Students in our 3 + 4 program will complete 90 hours and all required prerequisites at PSU, then matriculate to KCU medical or dental school. Upon completing their first year at KCU, the students will be granted a bachelor's degree in biology by Pitt State. The application and additional information are here: https://www.pittstate.edu/science/biology/ampup-application.html

In October, local high school students visited campus and participated in our inaugural Explore Pre-Med Day. The students had the opportunity to learn suturing, take vitals, and toured the cadaver lab. We are appreciative to Drs. Bryan, Ward, and Schmidt for teaching the events. In addition, we are grateful to KCU medical students, Tyler, Mason, and Sara,

and to PSU pre-med students, Hannah, Riley, Kip, Jack, and Walker for assisting with the activities. Finally, thank you to Dr. Zach Krumsick for discussing his journey through Frontenac HS, Pitt State, KU med, and EM residency.

I am pleased to report we had a successful year for students applying to professional schools. The following students started school in 2024: Madeline DeRousse, Louie Dill, Drew Windsor, Kevin Smith, Marcus Yoakam (KCU College of Medicine); Morgan Blubaugh, Kadyn Matlock, Ashlyn Potter, Taylor Wixson, Paul Worsley, Bella L'Heureux (KU-School of Medicine); Quinn Smith (NYIT College of Osteopathic Medicine-Arkansas); Wes Jameson (LSU-Shreveport School of Medicine); Cassie Wheeler (ATSU Osteopathic Medical School); Mattie Flanagan (OU College of Dentistry); Brock Marquardt & Nakoa Warren (UMKC School of Dentistry); Jadyn Jackson & Jaiden Smith (OU- PA School); Brant Trease (Missouri State PA School); Jordan Vogt (Chamberlain Uni PA School); Carson Shockley (NSU Denver AA School); Ryan Wilhite (Missouri State PT); and Lucy Holland (KU Genetic Counseling). Several of our senior pre-health students have been accepted into various medical, dental, and PA schools and others are awaiting acceptance notifications in March. We will update you next year on the students' decisions!

Finally, several of our Pitt State Biology alumni graduated from professional schools in 2024, including: Dr. Abigail Frazier (University of North Carolina MD), Dr. Joseph Morris (ATSU DO), Dr. Tyson Roderique (ATSU DO), Dr. Tucker Morey (KU MD), Dr. Sarah Veesart (KU MD), Dr. Quinnlyn Walcott (KU MD), Dr. Drew Phillips (Creighton Dental), Dr. Glenn Sigler (ATSU Dental), Dr. Lindsey Stander Clark (UMKC Dental), Dr. Dylan Waugh (UMKC Dental), and Dr. Sammy Knoblaugh (UM St. Louis Optometry). Also, Emily Paterni (KU) and Sydney Wade (Texas Tech) graduated with their Doctor of Physical Therapy; Rocky Kyser (UMKC) graduated with his MS in Anesthesia; and Monica Jirak (Wichita State) and Chad Merando (Kansas State) graduated with their MS in Physician Assistant Studies.



Congratulations PSU Biology! Here's our Spring Class of 2024 Graduates!



Left: Students, faculty, and PSU alumni at Kansas Natural Resources Conference. Right: Mammalogy students deploying Snapshot USA cameras for the 6th sampling year.



Above left: K-INBRE Scholars and Faculty Mentors at the 2024 Symposium in Manhattan, KS. Above right: K-INBRE graduates Spring 2024.



Left: Khloey Stringer ('24) and Taylor Michael ('23)) assisted Dr. Brodsky with her sabbatical research project on House Sparrow vocal evolution. They traveled to the KU Biodiversity Institute and Natural History Museum to measure hundreds of House Sparrow specimens. **Right**: Riley Teutsch, Gabe Jones, Alesha Lawson, Heather Burrow, and Khloey Stringer presenting their Research Colloquium poster on their Prairie State Park winter internship.



Dr. Andrew George

Greetings. Here are a few highlights from 2024.

The Ornithology class field trip in March was once again a great success. Thirteen students traveled to Nebraska to observe the Sandhill Crane migration. It is hard to describe the experience of being so close to tens of thousands cranes as they take flight at sunrise along the icy Platte River. The students have the opportunity see the cranes' graceful courtship and staging behavior while they refuel for the journey farther north. This year, the Crane Trust generously allowed our group to join one of their evening viewings on short notice. Despite wintery weather for much of the weekend, the students had a fun and memorable experience that also included a visit to Loess Bluffs National Wildlife Refuge and an active Greater Prairie Chicken lek.

<u>The Kansas Motus Project</u> has continued to grow. Motus is an international network of automated telemetry stations for studying movements of migratory animals. Receiver stations placed across North America (and beyond) detect and log tagged animals when they fly within range of antennas, and the data are automatically uploaded and made freely available to researchers. Since 2021, I have worked with Alice Boyle (KSU) and Bill Jensen (ESU) to raise funds and develop the Motus infrastructure in Kansas. We now have more than 20 stations within the state, with several more planned for 2025. As of fall 2024, there have been more than 300 unique detections of tagged animals in Kansas, including 27 species tagged by researchers in 4 countries. We have two new tagging projects underway in the state focused on Grasshopper Sparrows and Gray Bats. In January 2025, undergrad Heather Burrow and I will begin tagging Harris's Sparrows to track their movements between Kansas and Canada. Learn more HERE, including how you can contribute!

Speaking of Motus, one of our tagging projects aims to document Gray Bat migration between southeast Kansas and their hibernation caves in the Ozarks. Undergrad Braidy Hunt recently placed Motus nodes (short-range detectors) at hibernation caves throughout Missouri. We then attached Motus tags to 40 Gray Bats prior to their fall departure, and we will attach 20 more in fall 2025. If all goes well, the nodes will help us determine the timing of the bats' migration, routes taken, and connectivity among caves. Special thanks to Shelly Colatskie from MDC, Giorgia Auteri from MSU, and all of the other bat biologists who came out to help with tagging, and to KDWP and USFWS for financial support. Braidy recently received the best undergraduate presentation award for her talk on this project at the Central Plains Society of Mammalogists meeting in Hays!

We are excited to welcome new graduate student Gabe McClain into the department. Gabe's project will focus on population demographics of Prothonotary Warblers on mined lands. The Sperry-Galligar Audubon Society recently



coordinated donations and built more than 250 nest boxes to be used in Gabe's project. Field work will begin this winter – stay tuned for updates.

Our field students once again participated in Delta Waterfowl's University Hunting Program, which introduces non -hunting Wildlife majors to hunting. This year, the five PSU students were joined by three students Wichita State University. After completing a Hunter Safety course and a shooting clinic, the semester culminated in a weekend mentored hunt, hosted by the generous Delta Waterfowl volunteers. This fun-filled weekend was a highlight of the semester.

Above right: Braidy Hunt examines a Gray Bat near Pittsburg. Braidy won the best undergraduate presentation award at the annual meeting of the Central Plains Society of Mammologists.



Dr. Anu Ghosh

Greetings to everyone! Another eventful year!

As we have now the Public Health Certificate available, our next goal is to establish agreements with reputed Masters in Public Health (MPH) programs. My epidemiology class this spring hosted teaching and admission personnel from **K**-State Olathe campus MPH program. Their presentation provided students a better understanding of the scholarship opportunities, emphasis areas, and future perspectives of this graduate degree.

Our High School Outreach activities were continued this year as well. Several Biology faculty and current students visited Girard High School for an informal interaction with their junior and senior students. In addition, I attended their Mock Interview Day, which is another way to connect with the High School community.

We co-hosted with Nursing about 80 middle school students and their teachers in the spring

from Frontenac. Our graduate students John Bear, Brayden Letterman, and Levi Carrico conducted fun lab activities along with Dr. Nonnenmacher showcasing animal and plant diversity.

Kudos to Dr. Brodsky for all her efforts to bring in another great undergraduate research program funded by NSF. Our lab welcomes freshman Luke Battagler as the ASTER-LSAMP research scholar this fall. We hope that the research experience will boost his credentials as a pre-med student.

An important aspect of our research is to strengthen collaborations with exchange visits. This year we were able to connect our students with larger research institutes by having short visits, inviting speakers, etc. I am thankful to Dr. Virginia Rider for her generous gift for hosting departmental seminar speakers in future; this will enhance our networking and provide opportunities to our students to explore academia and research.

Another MS student, Shelby Aikins, who is a GTA for Anatomy and Physiology labs, has been accepted to Kansas City University Osteopathic Medical School (Joplin, MO) and will join the program in fall 2025.

My previous MS student Bobbi Monroe's research work has been continued by Ayushee Dasgupta. She presented a poster on her work at K-INBRE (Manhattan, KS) as well as at Arkansas INBRE (Fayetteville, AR) annual symposia. She has received the K-INBRE Star Trainee Award this year and has been selected to give an oral presentation in January at -KINBRE annual symposium in Kansas City.

We successfully completed 5 years of the NSF-EPSCoR funded tick project and are in the process of publishing manuscripts. A couple of papers have been published already, with one having three PSU undergrads as co-authors for their contribution to the intensive fieldwork.

I was awarded an NIH-K-INBRE Curriculum-based undergraduate research experience (CURE) funding this year that involves two semesters of microbiology courses. Students enrolled in this course will work on a study that investigates poultry litter collected from commercial farms in southeast Kansas with a focus on antibiotic resistant and foodborne pathogens using metagenome analysis.

Behold a glimpse of the bright future of our mentees: Corey Humble, a junior double majoring in Biology and Mass Communication, was accepted to the Scholars in Rural Health program at KU. This program identifies undergrads from rural Kansas who are interested in building successful future careers as primary care physicians serving underserved rural areas throughout Kansas. Sara Goins, a previous researcher in our lab, is pursing MPH at Mizzou alongside her job at Children's' Mercy at Kansas City. Alex King was accepted to the PhD program in Biological Sciences at University of Arkansas, Fayetteville. My former graduate student Dr. Rachel Bechtold is now working as a lecturer at KU.

It was a privilege to be invited as a speaker at the K-INBRE annual symposium at Manhattan (KS) alongside my collaborators from the National Institute of General Medical Sciences - Team Science Project. I presented our past lab research and discussed how this new funding is advancing our undergraduate research. It was a pleasure to serve on the search committee to fulfill the position of our General Education Instructor. We are happy to have Dr. Jamie Phelps aboard. We bid farewell to Dr. Winters for his support and service to Biology while we welcome our new Chair, Dr. Brodsky (Way to go!) And, thank you, Libby, for hosting a great Holiday Party and all you do for us and our students around the year.

Lastly, on behalf of our departmental scholarship committee, I would like to reach out to all our alumni and wellwishers for the purpose of recruitment and retention of students with biology major. Any support in terms of scholarship/gift is highly appreciated. Please feel free to contact me (<u>aghosh@pittstate.edu</u>) or our chairperson (<u>cbrodsky@pittstate.edu</u>) for information. **Dr. Richard Schooler Life Sciences Scholarship for KCU pre-health partnership programs and Michael and Carol Robbinson Scholarship for studying the field sciences:** two newly established scholarships this year. Our sincere gratitude to the donors for their passion!



Delia Lister

Hi everyone!

This has been an exceptionally busy year for me as I am (hopefully) wrapping up my doctoral program at the University of Missouri – St. Louis. I certainly could not have done that without the help of my wonderful student staff. Most of my student workers and volunteers graduated or moved on to student teaching last spring, so the Fall of '24 has brought several new students. It will be great fun to watch them develop some amazing skills over the coming months and years. I especially want to give a shout out to student Kate Tyree who has worked especially hard. She has come up with great ideas to help move the program forward and has really stepped up when I needed extra help.

I am wrapping up my term as Board President of the Kansas Association for Conservation and Environmental Education (KACEE). This organization is doing such wonderful things for environmental education, and I am so happy to be part of such an amazing team. For the teachers out there, I encourage you to check out their micro

-credential program. I am also now into my third year as Commissioner for Kansas Department of Wildlife and Parks. It has been an interesting year to say the least, but I hope I can continue to be of service to the state.

I am always on the hunt for grants and outside funding to keep Nature Reach going. I hope you will consider donating to the program. For more information you can always visit our website: <u>www.pittstate.edu/naturereach</u>. This program wouldn't have existed for the past 40 years without the generosity of donors!



Nature Reach workers (left to right). Kate Tyree, Enza McMahon, Owen Long, Katie Ussery, Alivia Baker, Meg Norman, Hannah McCoy. Not pictured: Colton Crotwell and Matt Aufill.



Top: Faculty and students of the Department of Biology visit to Girard High School (Spring).

Center: Visit to Pittsburg wastewater treatment plant for Dr. Ghosh's Environmental Health Class (Spring).

Bottom: Jaiden Smith, Ashlyn Potter, Drew Windsor, Brock Marquardt, Morgan Blubaugh, and Mattie Flanagan participated in a Q & A panel in pre-health orientation. They discussed DAT/MCAT prep courses, letters of recommendations, interview processes, medical & volunteer experiences, and the overall application process. Thank you for providing an insightful experience to our sophomore and junior students!



Dr. Jamie Phelps

I joined the Pittsburg State Biology Department this Fall 2024 semester! I started the year out at Louisiana State University where I finished up my PhD and graduated in August of 2024. I'm very excited to be bringing my passion for biology, especially questions addressing the how's and why's of the maintenance and origin of traits in insects, and science education to the Pitt State Team.

At Pitt State, I am teaching Environmental Life Science and General Biology as well as coordinating the ELS labs. I am also excited to be teaching a topics course on US science policy in Spring 2025. Additionally, I participated in the Hunting and Conservation topics course this fall which included a hunting trip in south central Kansas. It has been great getting to know and work with the students here.

My dissertation research explored drivers of phenotypic variation in arthropods including physiological and morphological responses to environmental cues. I hope to have a research group at Pitt addressing community and organismal level questions regarding the ecology and evolution of insects, butterflies in particular. I hope to mentor undergraduate students and potentially masters' students in conducting biological research. Some planned research includes investigating patterns of ecological succession and assemblages in urban areas, exploring mimicry in butterflies, testing the thermal melanism hypothesis in kingsnakes using citizen science, and assessing the impact of reclaimed mine lands on butterfly populations. I am also excited to be part of the ASTER-LASMP mentorship group to provide research opportunities for students from underrepresented groups in STEM.

This past year, I presented my research at two conferences, the regional meeting for the Southeastern Branch of the Entomological Society of America in Augusta, Georgia and the Annual Meeting of the Lepidopterists' Society in Ithaca, New York. At both of these conferences, I gave oral presentations on my research exploring evolutionary patterns of sexual dimorphism in Checkerspot butterflies. Additionally, I was an invited seminar speaker for the Department of Entomology at Louisiana State University. I gave a talk on my research identifying the cue for increased pupal melanization in the bordered patch butterfly as well as my research on sexual dimorphism. I also gave my exit seminar at LSU where I gave a presentation on all of my dissertation research. Finally, I was a seminar speaker for the Pittsburg State Biology Department in which I presented on my dissertation research.

My dissertation entitled "An Exploration into the Drivers of Intraspecific Phenotypic Variation in Arthropods" was published by Louisiana State University. My research entitled "Identifying the proximal cue for increased pupal melanization in the bordered patch butterfly, *Chlosyne Iacinia* (Nymphalidae: Lepidoptera)" was also published in the *Annals of the Entomological Society of America*. I look forward to continuing to publish and share my research.





Left: Dr. Phelps in the field. Right: *Chlosyne lacinia*, one of the species of butterflies studied by Dr. Phelps for her dissertation research.

EXPLORE PRE-MED DAY



Top: Explore pre-Med day at PSU.

Above left: Dr. Gary Doolittle (BS '80) was awarded the PSU Meritorious Achievement Award Meritorious Achievement Award in April. He discussed his journey "On Being a Cancer Doctor" with Dr. Peak's students this past Spring.

Above right: PSU grad student John Baer assisting with lab activities for Middle Schoolers on their visit to PSU.



Top: Invasive Plants class at Prairie State Park in early spring with natural resources manager, Andrew Braun (right).

Center left: Ayushee Dasgupta with her poster at K-INBRE symposium. **Center right**: Erick Jantz with his poster at PSU Research Colloquium.

Bottom: Ornithology students after viewing displaying Greater Prairie Chickens on a cold and drizzly March morning, north of Grand Island, Nebraska.





Dr. Neil Snow

New classes taught this year included Invasive Plants and Plant Diversity.

2024 included more personal fieldwork than normal, including surveying with Rylan Mason in Bates County, Missouri. Rylan (below, right) has internal funding from K-INBRE and thus far has documented approximately thirty county records.

Clarissa Wedman has been re-surveying PSU's Monahan Field Station and found several dozen plant species not recorded there previously. All branches of organismal biology recurrently survey organisms, and my time at PSU has illuminated how many state, county, and more localized records can be made with more fieldwork. The incomplete knowledge of species' distributions is known as the Wallacean Shortfall.

Help in the Sperry Herbarium this year has been wonderful; for more details please see its 2024 newsletter on the herbarium website. With help from Kylie Price, Alaina Fulkerson, Mike Robbinson and Rylan Mason, we mounted nearly 2300 specimens and filed about the same number. We greatly appreciate new internal funding from the Dean's office that covers student employment in support of routine curatorial efforts. It was a pleasure to give an herbarium tour to President Dr. Shipp, VP for Research Dr. Ram Gupta, Interim Dean for Arts and Sciences Dr. Chris Childers, and our new Chair of Biology and Chemistry, Dr. Brodksy.

Seminar speakers from all career stages gave presentations to the Department in 2024, including MS and PhD students, post-docs, early-career faculty, and a University Distinguished Professor from KU, Dr. Town Peterson), who spoke of ecological changes in the Great Plains the past 150 years.

I spent three days in June collecting in eastern Oregon as part of the 28th Annual University of Washington Botanical Foray, coordinated by Dr. David Giblin (photo, below left). About 25 botanists and volunteers gathered some 700 specimens in the vicinity of the North Fork of the John Day River in Grant County. In late July I assisted Marguerite Trost collecting about 360 specimens on the Kootenai National Forest in Lincoln County, Montana. She is a new graduate student at the Rocky Mountain Herbarium at the University of Wyoming (my MS alma mater).

I presented the *Peter Raven Award for Outstanding Contributions to Public Education in Systematic Botany* of the American Society of Plant Taxonomists to Dr. John T. Kartesz at BOTANY 2024. John is founder and director of the *Biota of North America Program* (BONAP), which is used by students, taxonomists, ecologists and conservation officials for tracking species' distributions and taxonomic synonymy. We reported 6 state and 48 county records to BONAP in 2024, hailing from KS, AZ, MO, MT, and OK.





Top: Students in Taxonomy of Vascular Plants, Fall semester. **Center left**: PSU students retrieve harvested ducks from a wetland in Sedgwick County during their first hunt. **Center right**: Brayden Letterman giving his presentation at the PSU Research Colloquium. **Lower left**: A juvenile Ruby-throated Hummingbird, captured and released at the Monahan in August. **Lower right**: Garlic mustard pull at Prairie State Park in April as part of the *Invasive Plants* course.



Dr. Chris Ward

Greetings to Students and Alumni. I would like to introduce myself as a proud alumnus of Pittsburg State University and the University of Kansas Medical Center. I currently serve as an Assistant Professor of Biology and lead courses in Human Physiology, General Biology, and Developmental Biology. I also am a co-teacher of the Introduction to Bioinformatics course. I am excited to expand my teaching contributions by leading a course in Epidemiology and co-teaching Immunology soon.

My research interests involve cancer biology, biostatics, and bioinformatics. My emphasis is on cancer growth receptors and tyrosine kinase signaling pathways. I believe these pathways hold essential information to understanding cancer development and disease progression. By combining bioinformatic techniques with traditional eukaryotic cell culture methods, we aim to identify novel therapeutic targets and contribute to the fight against cancer. I also actively

mentor and collaborate with students on impactful research projects, in a student-centered environment. We've had a productive year, with several noteworthy research presentations:

"Characterization of an NGS Panel Assessing EGFR Isoforms: Amplicon Discovery": This project, presented at both Research at the Capitol Day in Topeka, KS, and the PSU Research Colloquium, showcased the unconventional use of a blastn algorithm to establish an index of similarity between EGFR isoforms. This work yielded decent in silico evidence of EGFR isoform sequence similarity. This identified likely transcripts as soluble and membrane-bound. This work could have important implications for diagnosis and targeted cancer treatment.

"Transcriptomic Analysis of EGFR and Downstream Pathway Expression in A549 and Healthy Lung Epithelium": Presented at the 2024 Arkansas INBRE Conference, this research identified expression patterns of EGFR and its associated pathways in lung cancer cells. This suggested that Classical and alternative MAPK/ERK, JAK/STAT, and PI3K pathways were upregulated. This also indicated JNK pathway downregulation. This is all in the context of a physiological expression of the upstream receptors. This contributes to a deeper understanding of lung cancer biology and further supports further investigation into isoform analysis.

I am also invested in guiding students through epidemiological studies. Recently, I mentored a student-led meta-analytical project investigating the effect of oral contraceptives on the prevalence/incidence of ovarian cancer, presented at the PSU Research Colloquium. This experience exemplifies my dedication to fostering student research and addressing public health concerns.

My commitment to student development extends beyond the classroom and the lab. I serve as the faculty advisor for the Health Occupation Students of America (HOSA) and am actively involved with the Kansas Idea Network of Biomedical Research Excellence (K-INBRE) and ASTER-LSAMP research organizations.

I hope that my research, student mentorship, and teaching reflect the ideal of our great university and illustrate an ongoing commitment to the field of biomedical sciences and to fostering the next generation of physicians and scientists.



Left: Drs. Brodsky, Ghosh and Ward at the 2024 K-INBRE symposium in January. Right: Sebastian Henry and Dr. Ward at K-INBRE.



Above: The 2024 Fisheries Management class assisting the Kansas Department of Wildlife and Parks with a boat electrofishing survey on the Mined Land Wildlife Area. Evie Parsons is in the top right while Christine Helman is in the bottom right holding a 5.5 Ib Largemouth Bass. **Below left**: Josh Holloway and Alesha Lawson search for freshwater mussels in the Spring River of Kansas during the summer of 2024. **Below right**: Specimens of several species of mussels arranged after sampling.







2024 Ichthyology field trip pictures. Clockwise starting from the top left: Alesha Lawson, Khloey Stringer, Jordan Haworth, and James Leeper.



Dr. James Whitney

2024 was another busy year filled with research and teaching activities.

Josh Holloway completed the second year of his thesis project during 2024. The objective of his project is to assess the current prevalence freshwater mussels in the Spring River of southeast Kansas, and to compare this data with historical information to examine changes over time. We are doing this because there is preliminary data that suggested mussel populations in the Spring River have plummeted over the last decade. Josh, with the help of Alex King, Alesha Lawson, and myself, completed the second year of mussel sampling for this project over the summer. We found more species (24) and many more individuals (990) during 2024 compared to 2023 (22 species and 397

individuals), which was very exciting! Although, overall numbers were still lower compared to historical data. Josh is currently analyzing the data and writing up the results for his thesis, which he plans to defend in February 2025. We then plan to complete the third and final year of this project during summer 2025.

During 2024 Alesha Lawson began her thesis research, which is focused on the imperiled Redspot Chub. A 2018 population assessment of Redspot Chub in Kansas found that it was only hanging on in about 4 stream miles within the state, leaving the species precariously close to being extinct in Kansas. Over the summer of 2024 we performed surveys searching for Redspot Chub in 26 sites in the Spring River and its tributaries in Kansas, Missouri, and Oklahoma. This sampling will help us identify potential sites in Missouri and Oklahoma where we could collect broodstock that could be propagated at the Kansas Aquatic Biodiversity Center (KABC) near Farlington, KS, and evaluate the suitability of sites in Kansas where individuals propagated at the KABC could eventually be stocked. During 2024 we only found four individuals in KS, but Redspot Chub was more abundant in MO (21 individuals) and OK (12 individuals). We plan to complete the second year of this project in the summer of 2025, then Alesha will defend her thesis in the fall of 2025.

In October 2024, Josh Holloway, Alesha Lawson, James Leeper, and I traveled out to the Gila River in southwest New Mexico to help with fall monitoring of the fish community. This sampling has been occurring since the 1980s to document long-term population trends in response to drought, floods, and wildfires. There is an opportunity for PSU to continue assisting with this monitoring into the future, so hopefully this fall sampling trip will become an annual event.

Speaking of annual trips, for the third year in a row PSU sent a group of students to South Padre Island, TX over spring break to assist with sea turtle conservation activities. Students that went on the trip in 2024 included Konya Halle, Josh Holloway, Gabe Jones, Alesha Lawson, Belle Pfeifer, and Khloey Stringer. While there the students helped Sea Turtle Inc. with repairing a corral that is used for protecting sea turtle nests, and went on several sightseeing excursions (e.g., dolphin boat tour). We are in the planning stages of repeating this trip during spring break 2025.

During 2024 we attended the Kansas Natural Resources Conference in Manhattan, KS, the Interior Highlands Mussel Meeting in Springdale, AR, and the PSU Research Colloquium. We gave a variety of oral and poster presentations at these conferences.



In the spring I taught Ecology, Ichthyology, and Biometry, and during the fall I did Ecology, Environmental Life Sciences, and Fisheries Management. Both aquatics classes included a lot of exciting field trips, including a joint camping trip we did with the Kansas State University Ichthyology class during April, and the Fisheries Management class getting to help out with seasonal fish surveys conducted by the Kansas Department of Wildlife and Parks in September and October.

Above left: Fall monitoring of fish populations in the Gila River of southwest New Mexico during October 2024, with Josh Holloway (left) and Alesha Lawson (center-left).



Scenes from the PSU spring break trip to South Padre Island, TX to volunteer with Sea Turtle Inc. Top panel from left to right: Josh Holloway, Gabe Jones, Alesha Lawson, Khloey Stringer, Konya Halle, and Belle Pfeifer.

Masters' Thesis

Daniel Benson. 2024. "Habitat associations and species distribution modeling of the plains spotted skunk (*Spilogale interrupta*) in Kansas".

Publications (students underlined, faculty in bold)

- Benson D, de la Peña J, George AD & Rega-Brodsky CC. 2024. County records and noteworthy detections of gray fox (Urocyon cinereoargenteus) in Kansas. Transactions of the Kansas Academy of Science, 127(1-2), 1-8. https://doi.org/10.1660/062.127.0101
- Benson D, de la Peña J, Cordes Z, Durbin C, George AD & Rega-Brodsky CC. In Press. Declining detections of the plains spotted skunk in Kansas: Conservation implications for the central Great Plains. Journal of Mammalogy. https://doi.org/ 10.1093/jmammal/gyae147
- Buckardt EM, Rega-Brodsky CC & George AD. Accepted. To glow or not to glow: Glow sticks may not increase capture rates of larval amphibians. Herpetological Review.
- Bhandari D, Adepu KK, Anishkin A, Kay CD, Young EE, Baumbauer KM, **Ghosh A** & Chintapalli SV. 2024. Unraveling proteinmetabolite interactions in precision nutrition: A case study of blueberry-derived metabolites using advanced computational methods. Metabolites. Aug 3;14(8):430. doi: 10.3390/metabo14080430.
- Boroughs KL, Whitney JE, King AD, Holloway JA, Clemens AN & Thompson AD. 2024. Comparison of threatened Neosho Madtom (*Noturus placidus*) densities between riverscapes differing in anthropogenic stressors, with a particular focus on recovery from mining-derived metal pollution. Environmental Biology of Fishes 107: 59-73.
- Cobos ME, Winters T, Martinez I, Yao Y, Xiao X, **Ghosh A,** Sundstrom K, Duncan K, Brennan RE, Little SE & Peterson AT. 2024. Modeling spatiotemporal dynamics of *Amblyomma americanum* questing activity in the central Great Plains. PLoS One.19 (10):e0304427.

Daines M & Snow N. 2024. Noteworthy Collections: Idaho. Madroño 71: 10–11.

- Evilsizor DF & George AD. In press. Ecological factors influencing chestnut blight infection and reproductive success in Ozark chinquapins (*Castanea ozarkensis*). Natural Areas Journal.
- Grass Phylogeny Working Group III [including **Snow N**]. 2024. Nuclear phylogenomics of grasses (Poaceae) recovers current classification despite gene tree incongruence. New Phytologist <u>http://doi.org/10.1111/nph.20263</u> (open access)
- Jiménez-Mejías P [+ 1562 coauthors, including **Snow N**]. 2024. Protecting stable nomenclatural systems enables universal communication: A collective international appeal. BioScience. <u>https://doi.org/10.1093/biosci/biae043</u>
- Kays R, Snider M, Hess G...**Rega-Brodsky CC** ...Parsons A. 2024. Climate, food, and humans predict communities of mammals in the United States. Diversity and Distributions, 30(9), e13900. <u>https://doi.org/10.1111/ddi.13900</u>
- King AD, Whitney JE, Boroughs KL, Holloway JA, Clemens AN & Thompson AD. In press. Cleansing our waters: how riffle fish communities in the Spring River of Kansas responded to pollution legislation, mining remediation, and improved water quality. Environmental Management.
- Ng'eno E, Alkishe A, Romero-Alvarez D, Sundstrom K, Cobos ME, Belgum H, Chitwood A, Grant A, Keck A, Kloxin J, <u>Letterman B</u>, Lineberry M, McClung K, Nippoldt S, Sharum S, Struble S, Thomas B, **Ghosh A**, Brennan R, Little S & Peterson AT. 2024. Phenology of five tick species in the central Great Plains. PLoS One.19(5):e0302689.
- Pejchar L., **Rega-Brodsky CC**, Vazquez L-B & MacGregor-Fors I. Accepted. Bird-mediated ecosystem services and disservices in cities and towns. Frontiers in Ecology and Evolution.
- **Phelps JM**, Santiago-Rosario LY & Kelly MW. 2024. Identifying the proximal cue for increased pupal melanization in the bordered patch butterfly, *Chlosyne Iacinia* (Nymphalidae: Lepidoptera). Annals of the Entomological Society of America 117: 323-331.
- Scholes SA, Buckardt EM, Rega-Brodsky CC, & George AD. 2024. Getting to the root of the newt: Larval occurrence patterns of a newly discovered Eastern Newt population in southeast Kansas. Transactions of the Kansas Academy of Science, 127(1-2), 25-30. <u>https://doi.org/10.1660/062.127.0103</u>
- Shamon H., Maor R, Cove MV...**Rega-Brodsky CC** [+133 coauthors] & McShea WJ. 2024. SNAPSHOT USA 2021: A third coordinated national camera trap survey of the United States initial trends. Ecology, 105(6), e4318. <u>https://doi.org/10.1002/ecy.4318</u>
- Whitney JE, <u>Hansen BH</u>, Bonjour SM, Bell AM & Fishback MG. 2024. Fish behavior, mortality, diet, and movement following a monsoonal spate in the San Juan River, Utah, USA. Western North American Naturalist 84: 233-242.
- Zuntini, A. [+ 126 others, including **Snow N**]. 2024. Phylogenomics and the rise of the Angiosperms. Nature: <u>https://doi/10.1038/</u> <u>s41586-024-07324-0</u>

Posters (* indicates presenter; students underlined; faculty in bold)

- Benson D*, George AD & Rega-Brodsky CC. 2024. Species distribution modeling of the plains spotted skunk (Spilogale interrupta) in Kansas. Kansas Natural Resources Conference, Manhattan.
- <u>Dasgupta A</u>*, Monroe B, **George A** & **Ghosh A.** 2024. Exploring the gut microbiota of gray bats in Kansas following culturable and metagenomic approaches. 22nd Annual KINBRE Symposium, Manhattan, KS. (iPoster) & Arkansas INBRE, Fayetteville, AR.
- <u>Haworth J</u>*, Whitney JE, Starks T, <u>Holloway JA</u> & Waters R. Using shell attributes to explain variation in Monkeyface and Fragile Papershell abundance in the Neosho and Spring Rivers. Kansas Natural Resources Conference, Manhattan.
- Hunt BG* & George AD. 2024. Tracking Gray Bat Migration Using the Motus Network. PSU Research Colloquium, Pittsburg.
- Loomis J*, Rega-Brodsky CC & George, AD. 2024. Evaluation of the AHDriFT camera trap system for long-term herpetofauna monitoring on reclaied mined lands. Kansas Natural Resources Conference, Manhattan.
- Jantz E*, Letterman B, Petro E & Ghosh A. 2024. Tick and tick-borne pathogen surveillance as a public health tool updating Kansas geographic distribution map. PSU Research Colloquium.
- Simmons C*, Benson D, & Rega-Brodsky, CC. 2024. Urban heat islands are present in small Midwestern cities, but unrelated to residents' sociodemographics. K-INBRE Symposium, Manhattan.
- <u>Khloey S</u>*, <u>Teutsch R</u>, <u>Burrow HK</u>, <u>Lawson A</u>, <u>Jones G</u>, Braun A, **Rega-Brodsky CC** & **George AD**. Beyond the Fire: Natural Resource Management Techniques at Prairie State Park. PSU Research Colloquium.
- <u>Wedman C</u>* & **Snow N**. 2024. The significance of leaf venation patterns in the genus *Uromyrtus* (Myrtaceae) in New Caledonia: A poorly known genus currently under taxonomic revision. K-INBRE, Manhattan.
- Whitney JE, Leahy J, & <u>Holloway JA</u>. Stream fish and crayfish communities of Kansas's newest state park. Kansas Natural Resources Conference, Manhattan.

Oral Presentations (*presenting author)

- Barberá P* [+ ca. 25 coauthors, including **Snow N**]. 2024. Digitization and enrichment of U.S. Herbarium data from Tropical Africa to enable urgent quantitative conservation assessments. International Botanical Congress: Madrid, Spain.
- Benson D*, de la Peña J, Cordes Z, Durbin C, George AD & Rega-Brodsky CC. 2024. Minimal detections hinder conservation efforts for the plains spotted skunk (Spilogale interrupta) in Kansas. American Society of Mammalogists, Boulder, CO.
- Benson D*, de la Peña J, Cordes Z, George AD & Rega-Brodsky CC. 2024. Status of the Plains Spotted Skunk (*Spilogale interrupta*) in Kansas: Minimal detections hampering conservation efforts. Kansas Natural Resources Conference, Manhattan.
- <u>Burrow HK</u>* & **George AD**. 2024. Abandoned mined lands provide stopover habitat for migrating birds. Kansas Ornithological Society 75th Annual Meeting. Lawrence.
- <u>Burrow HK</u>* & **George AD**. 2024. Seasonal use of abandoned mined lands by non-breeding birds: Preliminary findings. Central Ecology and Evolution Conference. Hays.
- <u>Burrow HK</u>* & George AD. 2024. Use of mined lands by non-breeding birds in southeast Kansas. Inland Bird Banding Association Annual Meeting. Little Rock, AR.
- George AD. 2024. Bird conservation in managed forests: Insights from a 100-year ecological experiment. Wichita State University, Biological Sciences Seminar Series, Wichita, KS.
- George AD. 2024. Gray Bats: Research and Monitoring. Kansas Bat Working Group, Hays.
- George AD, Jensen WE & Boyle WA. 2024. Developing a Local Motus Network to Study Grassland Bird Movements. Inland Bird Banding Association Annual Meeting. Little Rock, AR.
- Ghosh A. 2024. Diagnostic applications of the microbiome: NGIMS-Team Science Project. 22nd Annual KINBRE Symposium, Manhattan. (Invited Talk)
- <u>Holloway, JA</u>*, Whitney JE & <u>Hinds H.</u> Spatiotemporal changes in the imperiled and diverse mussel assemblage of the Spring River in Kansas in response to known and emerging pollutants. Kansas Natural Resources Conference, Manhattan; <u>and</u> Interior Highlands Mussel Meeting, Springdale, AR; <u>and</u> Pittsburg State University Research Colloquium, Pittsburg (**Best oral presentation by** a graduate student in Category A: Primarily Sciences and Technology)
- Hunt BG* & George AD. 2024. Using Automated Radio Telemetry to Track Gray Bats in Southeast Kansas. Annual Meeting of the Central Plains Society of Mammalogists. Hays, KS. (Best undergraduate presentation award)
- Hunt, BG*, George AD. 2024. Tracking Gray Bat Migration Using the Motus Network. Kansas Natural Resources Conference. Manhattan.
- Letterman, B* & Ghosh A. 2024. Prevalence of ticks and tick-borne pathogens in mined land areas of southeast Kansas. PSU Research Colloquium.
- Pejchar, L, **Rega-Brodsky CC***, Vazquez L-B & MacGregor-Fors I. 2024. Bird-medicated ecosystem services and disservices in cities and towns. Urban Biodiversity and Design, Columbia, MO.
- **Rega-Brodsky, CC**. 2024. Nearby nature: Trends in urban biodiversity from the global to local scale. Missouri River Bird Observatory Winter Learning Series, Virtual.

Oral Presentations (continued)

- **Rega-Brodsky, CC**. 2024. The varying shades of green: Examining the links between biodiversity and social values in urban greenspaces. University of Helsinki, Helsinki, Finland.
- Rega-Brodsky, CC. 2024. Searching for the elusive spotted skunk in Kansas. Ozark Gateway Audubon Society, Joplin.
- Rega-Brodsky CC. 2024. Urban ecology: An introduction. Missouri Master Naturalist Chert Glades Chapter, Joplin.
- <u>Simmons C*</u>, <u>Benson D</u>, & **Rega-Brodsky, CC**. 2024. Urban heat islands are present in small Midwestern cities, but unrelated to residents' sociodemographics. Kansas Natural Resources Conference, Manhattan.
- <u>Stringer K*</u>, <u>Benson D</u>, <u>de la Peña J</u>, **Whitney J** & **Rega-Brodsky CC**. 2024. The cat's out of the bag: Comparing the habitat preferences of bobcats and domestic cats across southeast Kansas. Kansas Natural Resources Conference, Manhattan, KS, <u>and</u> PSU Research Colloquium, Pittsburg.
- <u>Trout L*</u>, Lister D. & Rega-Brodsky CC 2024. How to train your opossum: Captive Virginia opossum (*Didelphis virginiana*) responds to the color red after positive reinforcement training. PSU Research Colloquium, Pittsburg.
- <u>Trout R*</u>, Lister D. & Rega-Brodsky CC 2024. Introduction of a novel food resource and obstacle are promising enrichment tools for the captive prairie kingsnake (*Lampropeltis calligaster*). PSU Research Colloquium, Pittsburg.

Scholarships and Awards

Josh Holloway received \$300 from the J.A. Otto Tiemeier-Frank Cross Student Scholarship Award from the Kansas Chapter of the American Fisheries Society.

<u>Brayden Letterman</u> was awarded summer research stipend worth \$1000 from Council for Research and Creative Endeavors Award for his thesis project titled "Surveillance and distribution of bacterial tick-borne diseases in parks of southeast Kansas".

Recent MS alum <u>Emma Buckardt</u> was recognized by the Kansas Herpetological Society with the prestigious Suzanne L. & Joseph T. Collins Award for her outstanding 2023 publication in Wetlands: "Post-mined wetlands provide breeding habitat for amphibians." The Collins award the largest annual state award for any biological, wildlife, or conservation organization in Kansas.



Left: A recent visit with PSU alumni Linnan Chen and Dr. Hannah Rae Thomas before their relocation to China, where Thomas is now on the faculty in the Department of Horticulture at Zhejiang University. **Right**: Students in Taxonomy of Vascular Plants collecting specimens in early October.