

The Natural Inquirer



FORT HAYS STATE UNIVERSITY DEPARTMENT OF BIOLOGICAL SCIENCES

Volume 21, Issue 2

Spring Semester, 2023

Science Day for area Elementary Schools

Dr. Claudia Carvalho organized our first annual **Elementary Science Day** event on April 28th. The Biology department hosted over 170 elementary school students (3rd - 5th graders) who visited the department to learn more about the kinds of science that biologists do every day. Cooperation from many undergrad and grad students, faculty, staff, elementary school teachers, paraprofessionals, and administrators made the day a big success!



Congratulations to **Dr. Medhavi Ambardar**, who was promoted to Associate Professor this semester, and also received tenure!



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Meetings and Presentations

The 21st Annual Kansas-IDeA Network of Biomedical Research Excellence (K-INBRE) Symposium, January 14-15, Overland Park, KS.



Buffington, Z., and L. Patrick. Diet of Kansas bat communities using mini-barcodes and Illumina sequencing: Preliminary results (poster).

Cesur, R., and E. Gillock. Distribution of PERV-C among feral pigs in eastern Kansas (poster).

Duncan, L., M. Jungen, and L. Patrick. Range extension of the fulvous harvest mouse (*Reithrodontomys fulvescens*) in Kansas (poster).

Heizer, S., L. Smith, L. Duncan, C. Million, M. Sielaff, and L. Patrick. Genetic diversity of Kansas bats (poster).



Rymer, A. Comparing the Presence of Antibiotic Resistance Bacteria in Wastewater Systems to Assess the Population Health of Kansas Counties (presentation; honorable mention).



Smith, L., N. Stewart, and L. Patrick. Methylation patterns across tissue type and time in *Peromyscus leucopus*: A targeted museum study (poster).

Ulrich, A., C. Ballentine, L. Watson-Divittore, C. Crawford, J. Dinkel, L. Duncan, R. Jensen, C. Carvalho, and M. Ambardar. Is stress affecting the fitness of house wrens (*Troglodytes aedon*)? Understanding of the effects of stress on boldness, heterophil-to-lymphocyte ratios, and reproduction (poster).

Xu, M., K. Chen, G. Rueschhoff, and T. Phelps-Durr. Using CRISPR technology to generate mutations in genes encoding proteins required regulate cell differentiation during leaf development in *Arabidopsis* (poster).

Kansas Natural Resource Conference: February 9-10, Manhattan, KS.

Abrahamson, K., W. Stark, and T. Riley. A preliminary evaluation of stocking rates and sampling methods on population characteristics in small impoundments in Kansas .

Buffington, Z., and L. Patrick. Diet of Kansas bat communities using mini-barcodes and Illumina sequencing: Preliminary results.

Meetings and Presentations, continued

Mason, W. B., and W. Stark. Size and age structure of flathead catfish (*Pylodictis olivaris*) in four western Kansas reservoirs.

Mayden, B., C. Hinck, and L. Patrick. Kansas mammal activity patterns before and after a wildfire: Hadley Ranch camera survey.

Reh, M., and W. Stark. Preliminary results of Chihuahuan green toad, *Anaxyrus debilis*, surveying in western Kansas.

Rodriguez, M., L. Patrick, and J. Roemer. Relationship between bats and black-tailed prairie dog (*Cynomys ludovicianus*) colonies in western Kansas.

Russell, E., and W. Stark. Status and fine-scale movements of the red-spotted toad in Kansas.

Sielaff, M., C. Schmidt, and L. Patrick. Comparing bat activity and insect biomass at McConnell Air Force Base and nearby Wichita parks.

Smith, L., L. Patrick, and N. Stewart. Methylation patterns across tissue type and time in *Peromyscus leucopus*: A targeted museum study.

Midwest Fish and Wildlife Conference, February 12-15, Kansas City, MO.

Karki, V. MOTUS Wildlife tracking network in studying the fine-scale local movements of migratory birds.

Russell, E. Habitat preferences of the red-spotted toad in Kansas.

Capitol Graduate Research Summit, March 22, Topeka, KS

Mario Rodriguez was one of 6 FHSU graduate students to attend the Capitol Graduate Research Summit in Topeka. They had the opportunity to present their research experiences to state lawmakers, including State Representative Barb Wasinger, at the Kansas State Capitol Building!



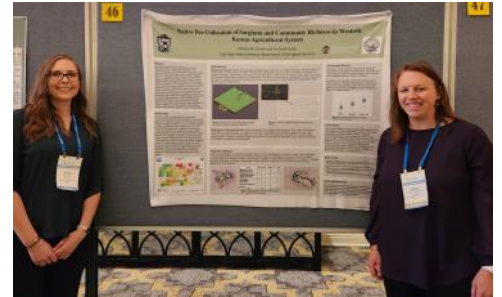
Meetings and Presentations, continued

North Central Branch meeting of the Entomological Society of America, April 16-19, Oklahoma City, OK:

Elzay, S., and K. Baum. The impacts of land cover along an urban to rural gradient on honey bee health (presentation).

Elzay, S. Buzzing in the short grass (presentation).

Strack, K., and S. Elzay. Native bee utilization of sorghum and community richness in western Kansas agricultural system (poster).



The 18th annual John Heinrichs Scholarly and Creative Activity Days (SACAD), April 17-21, Hays, KS.

Brandt, S., Relationships between environmental stressors and cliff swallow (*Petrochelidon pyrrhonota*) feather coloration and colony size (poster).

Chen, K., and C. Shippy. HIRA gene mutation in *Arabidopsis* via CRISPR (poster).

Franz, H. Study of RNA interference of HSPA1L in *Acyrtosiphon pisum* (poster).

Franz, H., A. Amend, and I. Knight. Using CRISPR vectors to study the molecular function of a mutated *Arabidopsis* AS2 gene (poster).

Reh, M., and S. Elzay. Preliminary movement and distribution model for Chihuahuan Green Toads, *Anaxyrus debilis*, in western Kansas (poster).

Rueschhoff, G. Preparing a CRISPR vector to mutate the AS1 gene in *Arabidopsis* (poster).

Sielaff, M., and L. Patrick. Bat activity at McConnell Air Force Base versus nearby parks in Wichita, KS (poster).

Strack, K., and S. Elzay. Native bee utilization of sorghum and community richness in western Kansas agricultural system. (2nd place graduate student empirical poster).

Welton, A., and E. Gillock. Presence of porcine endogenous retrovirus C in domestic pigs (poster).

Publication:

Patrick, L. E., J. M. Duggan, and L. Dizney. 2023. Integrating evidence-based teaching practices into the Mammalogy classroom. *Journal of Mammalogy*, gyado11, <https://doi.org/10.1093/jmammal/gyado11>

Welcome to our newest faculty member, Dr. Michael Gruenstaeudl!

Michael was born in Vienna, Austria, where he studied biology with a focus on botany and bioinformatics. For his doctoral studies, he moved to the University of Texas at Austin, where he completed his PhD in 2013. He then joined the Ohio State University as a postdoctoral researcher to develop bioinformatics tools for evolutionary research. From there, he moved to the Free University of Berlin where he worked as a postdoctoral researcher and senior lecturer in botany and bioinformatics.

Dr. Gruenstaeudl joined FHSU in January of 2023 as assistant professor and will conduct research in the areas of genetics, molecular plant biology, and bioinformatics. Unless he is in the lecture room or the research lab, you can find him doing home improvement or riding his cyclocross bike along the gravel roads of western Kansas.



Dr. Gruenstaeudl helps students test out a blue-gel electrophoresis unit in his Genetics class in April.



Grad Student News:

Congratulations to these students, who completed their master's degree

Connor Champney ("Grassland nesting birds and visual obstruction measurements in western Kansas on Smoky Valley Ranch").

Connor and Chloe also became parents!!!



Courtney Molleker was the first to complete our new 1-year M.S. degree, intended for students going on to professional schools.

Mario Rodriguez ("Relationship between bats and black-tailed prairie dog (*Cynomys ludovicianus*) colonies in western Kansas").



Elisabeth Russell ("Habitat associations and fine-scale movements of the Red-Spotted Toad (*Anaxyrus punctatus*) in Kansas and the efficacy of remote telemetry for monitoring small-scale movements").

Elisabeth has accepted a Position as a Natural Resource Specialist with The Natural Resource Conservation Service in Effingham, KS. She will be helping landowners solve natural resource concerns such as tackling soil erosion, dealing with encroaching and invasive plants, and creating habitat for wildlife.

Michaela Sielaff ("Comparing bat activity and insect biomass at McConnell Air Force Base vs. surrounding Wichita parks").



And to these students, who completed their preliminary exams:

Anthony Fast
Courtney Molleker
Loryn Smith

The following students have been accepted to professional programs:



Chris Crawford has been accepted to the Kansas Health Science Center's College of Osteopathic Medicine in Wichita, KS. Chris graduated in May 2022 with a B.S. in Biology-Health Professions.

Moriah Geschwentner has been accepted to the Medical Laboratory Sciences program at St. Luke's Hospital, Kansas City, MO.

Megan Lierz has been accepted to the Occupational Therapy Doctorate program at Colorado State University in Fort Collins, CO. Megan graduated this semester with a B.S. in General Biology.

Courtney Molleker has been accepted to the Psy D. (doctor of psychology) program at Kansas City University's School of Clinical Psychology, Kansas City, MO.



Alex Schremmer has been accepted to the Midwestern University College of Optometry in Glendale, AZ. Alex was also accepted to the Southern College of Optometry in Memphis, TN, and Northeastern State University College of Optometry in Tallequah, OK. Alex graduated this semester with a B.S. in Biology – Health Professions and a minor in Chemistry. Alex also played wide receiver on the FHSU football team, and was selected as Academic All-American 2nd Team for Fall 2022.



Brittane White has been accepted to the University of Kansas School of Medicine in Kansas City, KS. Brittane graduated in 2021 with a B.S. in Biology - Health Professions and has since been working as a microbiologist for Pfizer Pharmaceuticals in McPherson, KS.



Brynn Wooten, double majoring in Biology and Geosciences, has been awarded a \$147,000 graduate research fellowship from the National Science Foundation to support her graduate studies in paleontology. Wooten, also FHSU's first Barry Goldwater scholar, has been accepted to graduate programs at Vanderbilt University, Ohio State University, University of Kansas, and Idaho State University. She will attend Vanderbilt in Nashville, TN, this fall.

Other student news:



Brendan Mayden has accepted a position with Rocky Mountain Power, a division of PacifiCorp, as a compliance/wildlife field tech, in Glenrock, WY. Brendan, from Holyoke, CO, graduated this spring with a B.S. in Biology - Natural Resources.



Caleb Hinck has accepted a Position at Cedar Bluff Reservoir, where he will be conducting wildlife surveys, food plot plantings, and habitat improvement. Caleb, from Eskridge, KS, graduated this spring with a B.S. in Biology - Natural Resources.

Alumni News:

Vanessa Flores (B.S. 2022) extended her animal care internship at Turpentine Creek Wildlife Refuge (Eureka Springs, AR) another 6 months. Since August 2022, Vanessa has been working at the refuge, doing behavioral training, habitat maintenance, and educational



tours. The refuge works towards ending the illegal exotic cat trade and educating the public. Originally from Denver, CO, Vanessa says, "It's been an incredible experience and I couldn't be more thankful to be where I am and to have met wonderful people along the way".



On March 27th, **Dr. Bill Stark** presented “Fishes, Senses and Fishing” as part of the Science Café series. Dr. Stark explained the habitats of fish and explored some of the ways they experience their world differently than we do.



On April 28th, FHSU’s **Noyce Scholars** for 2023 were recognized. The National Science Foundation awards scholarships designed to help future STEM teachers succeed in small, rural schools. Noyce Scholars receive financial support, as well as assistance in building a professional network by attending conferences and workshops.

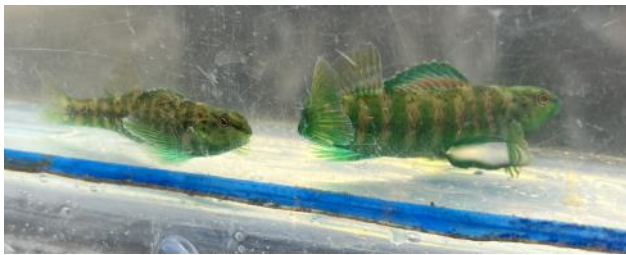
Twelve College of Education students received Noyce scholarships, including **Hannah Burks** (Biology-Secondary Education major from Jewell, KS, pictured 2nd from right), and **Gabrielle Hammer** (B.S. in General Biology, 2023, from Wallace, KS, pictured on far left). A new, 1-year post-baccalaureate scholarship help awardees with a bachelor’s degree, like Gabby, transition into a career as a secondary STEM teacher in a rural school. Gabby recently accepted an offer to teach high school biology at Sharon Springs High School.

Ichthyology class field trip

Dr. Bill Stark's Ichthyology class traveled to northeastern Oklahoma, April 20th - 23rd. Students included Kyle Abrahamson, Parker Dibble, Brendon Mason, Stephen Reed, Mackenzie Reh, Jacob Specht, and Kassidy White.



L-R: Parker Dibble, Dr. Stark, Stephen Reed, Kassidy White, and Brendon Mason



Kyle Abrahamson and Jacob Specht



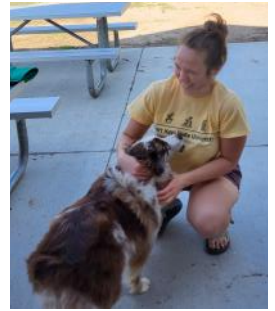
Ed Miller (KDWP) discusses mussel shells with Kassidy and Kyle.

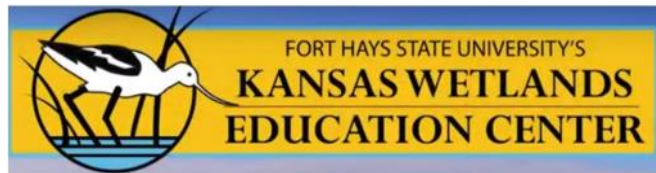


End of semester party !

On May 5th, the Biology faculty hosted a taco bar and cupcake party for the Biology students in Frontier Park.

Raffle prizes were given away to all graduating seniors and graduate students.





Despite recent light rains, KDWP reports that water level in all pools at Cheyenne Bottoms is dry or nearly dry. Drought has been ongoing the past 18 months and it will take a very significant rain event/events in order to have even minimal water in the area (<https://ksoutdoors.com/KDWP-Info/Locations/Wildlife-Areas/Southwest/Cheyenne-Bottoms/Cheyenne-Bottoms-Waterfowl-Report>)



An aerial photo shows the effects of the ongoing drought on Cheyenne Bottoms. With dryer than normal conditions, KDWP and Nature Conservancy staff are using the opportunity to make habitat improvements in areas not typically able to be accessed.

Photos courtesy of KWEC's Facebook page (<https://www.facebook.com/wetlandscenter>) and KDWP / Tom Bidrowski.

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