

The Natural Inquirer

FORT HAYS STATE UNIVERSITY DEPARTMENT OF BIOLOGICAL SCIENCES

Volume 17, Issue 2

Spring Semester, 2019

Prescribed burn

On April 7th approximately fifteen students and faculty members (including the Rangeland Restoration class) conducted a prescribed burn of the Sternberg Natural Area. The burn began at 11am and was completed by 2pm. The crew spent another two hours mopping up the area. The burn went as planned and the city and local fire crews who were on site had only to watch, which is what they prefer. The burn was very complete and should bring some much needed ecological benefits to the area.



Dr. Mitch Greer's **Ecology lab** class conducted stream sampling near campus in April.



Publications:

Betzen, B. M., C. M. Smart, K. L. Maricle, and B. R. Maricle. 2019. Effects of increasing salinity on photosynthesis and water potential in Kansas salt marsh species. *Transactions of the Kansas Academy of Science* 122:49-58.

Galliard, M., N. Bello, M. Knapp, J. Poland, P. St. Amand, S. Baer, B. Maricle, A. B. Smith, and L. Johnson. 2019. Local adaptation, genetic divergence, and experimental selection in a foundation grass across the U.S. Great Plains' climate gradient. *Global Change Biology* 25:850-868.

Inside this issue:

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Meetings and Presentations



Kansas IDeA Network of Biomedical Research Excellence (K-INBRE) Annual Symposium, Overland Park, KS, January 19-20, 2019:



Alsmady, M. T., and E.T. Gillock. Prion gene polymorphisms in feral pigs.

Ambrosier, M., D. Kostner, E. Nevarez, and Y. Kobayashi. Identification and characterization of messenger RNA encoding the prion protein in channel catfish.



Drees, R. G., A. Tucker, and M. J. Greer. Restoring magnesium to the world's food source through soil nutrient additions.



Elliott, J. E., N. C. Quispe, and B. R. Maricle. Effects of sulfide, ethanol, and lactic acid on cytochrome c oxidase and citrate synthase activities in plant roots.

Kostner, D., M. Dougherty, A. Schmidtberger, O. Abernathy, and Y. Kobayashi. Relationship between O-linked N-acetylglucosamine transferase (OGT) mRNA expression and nutritional status in the channel catfish muscle.

Kostner, D., M. Dougherty, A. Schmidtberger, and Y. Kobayashi. The relationship between food exposure frequency and expression of AMP-activated protein kinase (AMPK) mRNA in the brain, liver, and muscle of channel catfish.

Lutgen, J., J. Ridder, and J. R. Balthazor. RNA Interference of X-Box binding protein 1 in *Acyrtosiphon pisum*.

Nansel, S., M. Stricker, J. R. Balthazor, and C. Carvalho. Natural products against E.S.K.A.P.E. pathogens isolated from soil microbes.



Picking, T. J. and B. R. Maricle. Antimicrobial properties of secondary metabolites from plants in Kansas wetlands.



Quispe, N. C., J. E. Elliott, Y. Kobayashi, and B. R. Maricle. Effect of sulfide, lactic acid, and ethanol on respiration enzyme activities in catfish tissues.

Wallis, Z., R. Acharya, and E. T. Gillock. PCR assay to detect porcine endogenous retroviruses (PERV) A, B, and C.

Meetings and Presentations, continued:

2019 FHSU K-INBRE group:



Front row, l-r: Christian Cortes-Alfaro, , Naomi Quispe, Jorja Elliott, Sara Nansel, Morgan Ambrosier, Ginny Ke, .

Middle row, l-r: , , , Paulyna Alcorn, Dr. Yass Kobayashi, Zoey Wallis, Riley Drees, , Skyler Markham, Nathaniel Higdon, Jared Ridder, Johnny Matlock, Taffra Picking, Dr. Bruce Atwater, Dr. Grady Dixon, Dr. Brian Maricle, Danica Kostner.

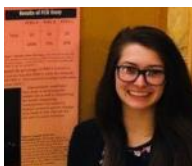
Back row, l-r: Dr. Mike Madden, Mohammed Abdelhameed, Williams Njoh-Paul, Jacob Lutgen, Dr. James Balthazor, Payton Zweifel, Michael Stricker, Dr. Nick Stewart.

Society for Range Management, 72nd Annual Meeting, Minneapolis, MN, February 9-14, 2019:

Roemer, J., M. Bain, and M. Greer. The purple plague: Effects of two years of grazing post fire on purple threeawn (2nd Place, Graduate oral presentation).

Kansas Undergraduate Research Day at the Capitol, Topeka, KS, February 20, 2019:

Lutgen, J. and J. R. Balthazor. RNA Interference of X-Box binding protein 1 in *Acyrtosiphon pisum*.



Wallis, Z. and E. T. Gillock. PCR assay to detect porcine endogenous retroviruses (PERV) A, B, and C.

Capitol Graduate Research Summit, Topeka, KS, February 26, 2019:



de Queiroz, A. R. and B. R. Maricle. Influence of shaded conditions in development of Asteraceae species native to Kansas. (BioKansas Capitol Graduate Research Summit Champion).

Meetings and Presentations, continued:

Kansas Academy of Science Annual Meeting, Overland Park, KS, March 29-30, 2019:

Oral presentations:

de Queiroz, A. R. and B. R. Maricle. Influence of shaded conditions in development of Asteraceae species native to Kansas.

Durr, A. N. and R. J. Packauskas. Ants in western Kansas.

Frank, K. and R. Channell. Shelterbelt characteristics that influence bird species richness.

Grove, A. L. and R. J. Packauskas. Mosquitoes in western Kansas.

Hanson, C. A. and B. R. Maricle. Influences of drought and disturbance regimes on subalpine forest in the Rocky Mountain National Park: Comparisons between 2001 and 2017-2018.



Lawless, B. L., M. A. Noland, C. J. Schmidt, and M. J. Greer. Small scale restoration of the Sternberg Natural Area: Influence on small mammal communities (2nd place undergraduate oral presentation).



Skelton, M. C., Z. Cordes, and D. Riedle. Comparison of reptile and amphibian occurrences between large and small habitat patches in eastern Kansas (1st place undergraduate oral presentation).



Steffen, D. and W. J. Stark. The effect of vegetative structure on next-burrow selection by the western burrowing owl: comparing traditional data collection methods to photogrammetry with imagery obtained by an unmanned aerial system (1st place graduate oral presentation).

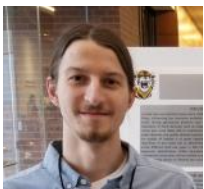
Posters:



Compton, K. D., N. C. Quispe, J. E. Elliott, Y. Kobayashi, and B. R. Maricle. Enzymatic tolerance to common toxins in plant roots and catfish tissues.

Drees, R. G., A. Tucker, and M. J. Greer. Restoring magnesium to the world's food source through soil nutrient additions.

Elliott, J. E., N. C. Quispe, and B. R. Maricle. Effects of sulfide, ethanol, and lactic acid on cytochrome c oxidase and citrate synthase activities in plant roots.



Engel, R. P. and B. R. Maricle. The influence of land use on honey bee (*Apis mellifera*) forage.

Meetings and Presentations, continued:



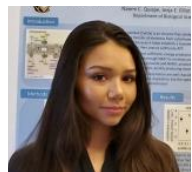
Harrison, S. and M. J. Greer. Analysis of plant-soil microbiomes surrounding native and non-native grasses across a precipitation gradient in Kansas (1st place graduate poster).

Kostner, D., M. Dougherty, A. Schmidtberger, O. Abernathy, and Y. Kobayashi. Relationship between O-linked N-acetylglucosamine transferase (OGT) mRNA expression and nutritional status in the channel catfish muscle.



Picking, T. J. and B. R. Maricle. Antimicrobial properties of secondary metabolites from plants in Kansas wetlands (3rd place graduate student poster).

Pittenger, M. S., and W. J. Stark. Ground beetle diversity in native, invasive, and encroaching plant communities.



Quispe, N. C., J. E. Elliott, Y. Kobayashi, and B. R. Maricle. Effect of sulfide, lactic acid, and ethanol on respiration enzyme activities in catfish tissues (2nd place undergraduate poster).



Sargent, C., H. Perryman, N. Allison, M. Groom, S. Ruelas-Aranda, J. Schumacher, M. Tanis, C. J. Schmidt, M. J. Greer, and A. M. Adams. Bats' use of natural areas in urban landscape.

Skelton, M. C., M. A. Noland, C. J. Schmidt, W. J. Stark, A. M. Adams, and M. J. Greer. Pre-restoration assessment of a waterway within an urban green space at the Sternberg Natural Area, Hays, KS.



Smith, N. E. G., E. G. Tooley, and B. R. Maricle. Effects of nitrogen fertilizer on salt-stressed milo (*Sorghum bicolor*).

Stramel, D. A., and M. J. Greer. A study of the allelopathic effects of two species of old world bluestem.

14th Annual John Heinrichs Scholarly and Creative Activities Day (SACAD), April 24th, 2019:

Empirical category:

Alcorn, P., and Y. Kobayashi. Characterization of microbial population in the nasal cavity of pigs during post-weaning in response to probiotic supplementation.

Alexander, J., C. J. Schmidt, M. A. Noland, and M. J. Greer. Grip it and flip it 2.0: Season two of herpetofaunal composition and monitoring at the Sternberg Natural Area.

Meetings and Presentations, continued:

Ambardar, M. Sexual dichromatism in birds of western Kansas.

de Queiroz, A. R., and B. R. Maricle. Influence of shaded conditions in development of Asteraceae species native to Kansas.

Lawless, B., M. A. Noland, C. J. Schmidt, and M. J. Greer. Small scale restoration of the Sternberg Natural Area: Influences on small mammal communities two years post restoration.

Picking, T., and B. R. Maricle. Antimicrobial properties of secondary metabolites from plants in Kansas wetlands.

Pittenger, M., and W. J. Stark. Ground beetle diversity in native, invasive, and encroaching plant communities.

Ridder, J., and J. R. Balthazor. RNA interference of the unfolded protein response in *Acyrtosiphon pisum* (2nd place, graduate student empirical).

Wallis, Z., R. Acharya, and E. T. Gillock. PCR assay to detect Porcine Endogenous Retroviruses (PERV) A, B, and C.

Wertz, B., and Y. Kobayashi. Expression analysis of various dopamine receptor mRNA in brain, liver, muscle, kidney, and spleen of channel catfish.

Non empirical category:

Adams, A., S. Ruelas-Aranda, N. Allison, C. Sargent, J. Schumacher, M. Tanis, M. A. Noland, C. Schmidt, and M. J. Greer. Monitoring the effectiveness of pond restoration efforts through the macroinvertebrate community.

Adams, A., C. Sargent, N. Allison, S. Ruelas-Aranda, J. Schumacher, M. Tanis, C. Schmidt and M. J. Greer. Bats' use of natural areas in an urban landscape (1st place, faculty non-empirical).

Cortes Alfaro, C., K. Moore, J. Meyer, and C. Carvalho. The clock against superbugs: Building antibiotic stewardship in our student community.

Harrison, S., and M. J. Greer. Plant-soil microbiome feedback impacts on native and non-native grasses throughout Kansas (3rd place, graduate student non-empirical).

Student grants awarded:

Jorja Elliott received a \$4000 K-INBRE Summer Scholars Program award to study the effects of sulfide, ethanol, and lactic acid on cytochrome c oxidase and citrate synthase activities in plant roots.

Ryan Engel received a \$1500 Kansas Academy of Science student research grant to study the impact of land use on honey bee (*Apis mellifera*) forage.

Zoey Wallis, Skyler Markham, and Jacob Lutgen are recipients of the 2019 K-INBRE Star trainee award.

Noyce Scholarships:

Five students majoring in Biology and Secondary Education were awarded prestigious National Science Foundation's Robert Noyce Scholarships of \$13,000 apiece for the 2019–2020 school year. **Chantal Solorzano** and **Kate Westerhaus** are receiving their second year of support, which is the maximum allowed. Receiving their first year of support are **Kole Clarke**, **Ethan Shippy**, and **Cayla Steinert**. In addition to these 5 students, 11 other biology students have received the scholarship in the past, which was first awarded during the 2013–2014 academic year.

The Noyce Scholarship Program was established to increase the number of quality teachers at the secondary education level (grades 6–12) in the subjects of biology, chemistry, earth sciences, math, and physics who teach in high-needs areas, such as rural and inner-city schools. The scholarship is available to juniors and seniors. In addition to financial support, the awardees receive special instruction in topics related to teaching in high-needs schools, such as using distance-learning technology and dealing with financial issues that confront small, rural schools. In return for the scholarship, the awardees must complete their major in science or math education and teach for 2 years in a high-needs school for every year they were awarded the scholarship. Awardees are selected based on their GPAs (overall and in their science or math major), personal statements, and letters of recommendation. Congratulations to Cayla, Chantal, Ethan, Kate, and Kole!

Congratulations to these students for completing their Masters degrees this semester:

Mohammed Abdelhameed

Maram Alsmady ("Prion protein gene polymorphism in feral pigs").

Aline Rodrigues de Queiroz ("Influences of shaded conditions in development of Asteraceae species native to Kansas").

Ernesto Flores ("Size and age structure of introduced populations of blue catfish in two Kansas reservoirs and implications for management").

Diedre Kramer

Justin Roemer ("The purple plague: effect of high intensity grazing post fire on purple threeawn cover and reproductive effort and prairie dog responses").

Dylan Steffen ("The effect of vegetative structure on nest-burrow selection by the Western Burrowing Owl: comparing traditional data collection methods to photogrammetry with imagery obtained by an unmanned aerial system").

Liz Tanner ("Effects of fragmentation on species retention in national parks").

Congratulations to Dr. Mitch Greer, winner of the 2019 Pilot award! The Pilot award is given on the basis of classroom excellence, and ongoing research and service activities. Candidates are nominated by graduating seniors. Dr. Greer also applied for and received early tenure this semester!!

Congratulations!

Student awards, employment, and acceptance to professional schools:



Brianna Albers has been accepted to Northeastern University College of Optometry in Tahlequah, OK. She is a senior from Goddard, Kansas, majoring in Biology with a minor in Chemistry.

Holly Anderson was the recipient of the Outstanding Biology GTA Award for calendar year 2018.

Colby Barton will be employed this summer doing research with Corteva Agriscience.



Connor Champney has been selected for a summer internship with The Nature Conservancy. Connor is a sophomore pursuing a Biology Natural Resources degree with an emphasis in Wildlife Biology. He is from Topeka, KS.



Peyton Chard will be working this summer as a Fisheries aid at Glen Elder State Park. He is a junior pursuing a Biology Natural Resources degree and is planning to graduate spring 2020. Peyton is from Salina, KS.



Kalyn Compton will be travelling to Cameroon this summer to study water quality as part of the National Science Foundation's Cameroon Collaboration Program through FHSU.



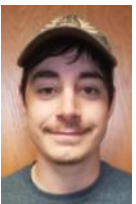
Aline Rodrigues de Queiroz (M.S. 2019) was accepted to Ph.D. programs at the University of Nebraska-Lincoln (Biochemistry department), Texas Tech University (Biology department), and the University of Louisiana at Lafayette (Biology department). She has chosen to attend the University of Nebraska-Lincoln where she will be pursuing a Ph.D. in Biochemistry.



Cullen Fisch has accepted a summer internship with Omaha's Henry Doorly Zoo and Aquarium working with desert reptiles. He is a senior pursuing a Biology Natural Resources degree and is planning to graduate December 2019. Cullen is from Omaha, NE.



Nathaniel Higdon has been chosen as an American Society for Microbiology (ASM) Young Ambassador for 2019. The Young Ambassador Program consists of early-career scientists and advanced degree students representing every state in the U.S. and various countries around the world. The goals of the program are to promote collaboration between ASM and universities, contribute to the academic development of young scientists, and to enhance the field of microbiology. As the ASM Young Ambassador for Kansas, Nathaniel's duties will include promoting ASM membership locally, and assessing and responding to the needs of the local microbiology community.



Tanner Kubick will be working for the Kansas Department of Wildlife and Parks in the Wilson wildlife area this summer. Tanner is a senior in Biology and planning to graduate in Fall 2019. He is from Sylvan Grove, KS.

Sarah Laredo, a senior majoring in General Science with an emphasis in Biology, has been accepted to the Dental Hygiene Program at Wichita State University, Wichita, KS.



Naomi Quispe will be working at ARUP Laboratories this summer. Associated Regional and University Pathologists, Inc. (ARUP) is a national reference laboratory associated with the University of Utah and its Department of Pathology.



Justin Roemer has accepted a job with the Nature Conservancy at Smoky Valley Ranch as a Conservation Practitioner/Land Steward.



Kodi Smith was accepted into the National Student Exchange Program. She will be going to the University of Alaska at Juneau for the 2019-20 academic year. She is a junior majoring in Biology- Natural Resources and minoring in Geography, and is planning to graduate in May 2021. Her hometown is Belleville, Kansas.

Alumni news:

Rashmi Acharya (M.S. 2018) accepted a position as a Research Coordinator at the Lung Cancer Alliance in Washington, D.C.

Brette Wallis (B.S. 2018) was accepted to the Occupational Therapy program at Texas Tech University - Lubbock.

Lizz Waring (M.S. 2010) accepted a position as assistant professor at Northeastern State University in Tahlequah, OK. Dr. Waring earned a Ph.D. at Texas Tech University.



Graduate student Katya Frank spoke with KVEC Director Curtis Wolfe about her presentation on shelterbelt birds in April. For the full video, go to:

<https://www.facebook.com/wetlandscenter/videos/290081525220297/>

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