

The Natural Inquirer



FORT HAYS STATE UNIVERSITY DEPARTMENT OF BIOLOGICAL SCIENCES

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Spring Semester, 2017

Prescribed burn a success

Dr. Mitch Greer organized and directed a prescribed burn on April 18th at the Howard Reynolds Nature Area, west of Sternberg Museum. The fire crew, consisting of seven graduate students, five undergrads, two professors, and two volunteers from the community, met at 11 am and began the controlled burn at 1:15 pm. By 4:30 pm the burn was completed and the mop up process began. There was a lot of green vegetation in the burn area so the fire moved slowly and took more fuel to get started. The slow moving flames allowed for great teaching opportunities and almost everyone on the crew got a chance to put down a wet-line and use the drip torch. The entire burn was captured on video and in photos by members of the university relations office. You can see the photo/video montage they created here:



https://www.facebook.com/forhaysstate/videos/10155218979056563/?hc_ref=PAGES_TIMELINE

The cooperation of several individuals made the burn a success. These include the Ellis County Fire Crew for sending a brush truck for backup and the crew on the truck that volunteered their time. In addition, the City of Hays Fire crew set up a hydrant to make sure there was access to enough water.



Congratulations to **Dr. Bill Stark** for receiving the 2017 spring semester Scholarly Activity Award for faculty. Presenting the award was (l-r): Commerce Bank President Deron O'Connor, Interim Provost Dr. Jeff Briggs, and FHSU President Dr. Andy Tompkins.



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Meetings and Presentations

Kansas Academy of Science meeting, April 7-8, Hays KS

Host range of an endogenous strain of *Dahlia mosaic virus* in members of *Asteraceae*. K. Caudle and E. Gillock (*1st place graduate student oral presentation*).

Critical habitat assessment of the state threatened broad-headed skink. A. Hullinger, Z. Cordes, D. Riedle, and W. Stark.

Tracking western massasauga in a large interior wetland. J. Mead and W. Stark (*3rd place graduate student oral presentation*).

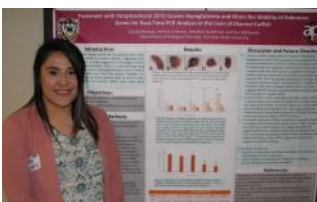
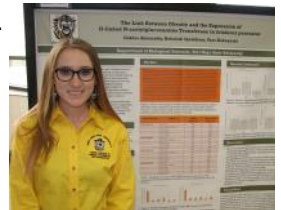
Variation in the flight morphology of the cliff swallow. D. Steffen and J. Carter (*2nd place undergraduate oral presentation*).

Genetic and environmental influences on stomates of big bluestem (*Andropogon gerardii*) ecotypes. N. Varvel, C. Hilt, S. Baer, L. Johnson, and B. Maricle.

Small scale restoration of the Sternberg Natural Area: Potential influences on the small mammal community. K. Boroughs, M. Noland, C. Schmidt, and M. Greer.

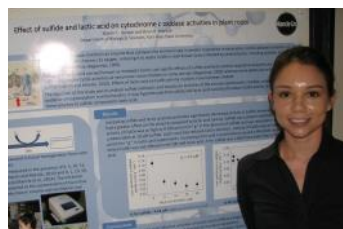
The correlation between age and sequential order of *Giraffa reticulata*. B. Schuck (*3rd place undergraduate oral presentation*).

Link between obesity and the expression of o-linked n-acetylglucosamine transferase in *Ictalurus punctatus*. **O. Abernathy**, R. Spainhour, and Y. Kobayashi (*1st place graduate student poster*).



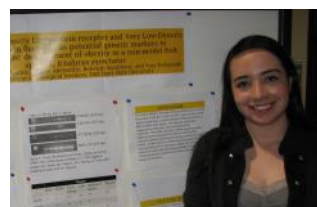
Treatment with Streptozotocin (STZ) causes hypoglycemia and alters the stability of reference genes for real-time PCR analysis in the liver of channel catfish. **E. Nevarez**, N. Ordonez, R. Spainhour, and Y. Kobayashi.

Use of MTOR as a potential molecular marker to investigate the development of obesity in non-model fish species. **R. Spainhour** and J. Ball.



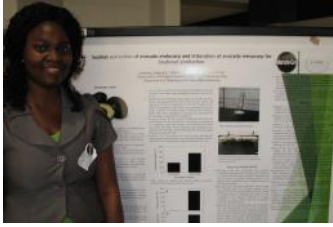
Effects of sulfide and lactic acid on cytochrome C oxidase activities in plant roots. **N. Quispe** and B. Maricle.

Effects of lactic acid and sulfide on enzymes of respiration in catfish tissue. **A. Urban**, Y. Kobayashi, and B. Maricle.



Use of low-density lipoprotein receptor and very low-density lipoprotein receptor as potential genetic markers to investigate the development of obesity in a non-model fish species, *Ictalurus punctatus*. **N. Ordonez**, R. Spainhour, and Y. Kobayashi.

Meetings and Presentations, continued:



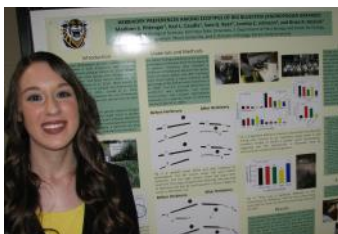
Soxhlet extraction of avocado endocarp and trituration of avocado mesocarp for biodiesel production. **I. Oraemesi**, B. Maricle, and A. Cruz (*3rd place graduate student poster*).

Photosynthetic action spectra of etiolated beans during greening. **T. Kriss** and B. Maricle.



Discovery of novel bacteria showing antimicrobial characteristics against E.S.K.A.P.E. pathogen relatives. **S. Montgomery**, **W. Zimmerman**, and **T. Carvalho**.

Investigating floral diversity of western Kansas grasslands to assess pollinator productivity. **R. Engel** and K. Caudle.



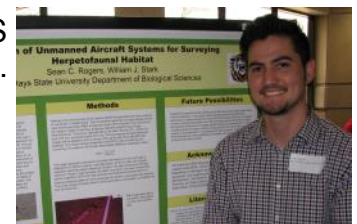
Herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*). **M. Pittenger**, K. Caudle, S. Baer, L. Johnson, and B. Maricle (*3rd place undergraduate poster*).



Identifying habitat structure of herpetofaunal communities with UAS technology. **S. Rogers**.



Preliminary analysis of a survey of chytrid in Kansas. **A. Snyder**, W. Stark, and D. Riedle.



Determining the effects of compostable packing peanuts on biomass production of a common crop species. **E. Parkinson**.



The bird's biggest fan: Wind turbine effects on breeding bird habitat selection. K. Schumacher and M. Greer.



Prevalence of *Anaplasma bovis* in yearling heifers in western Kansas. **J. Ridder**, L. O'Neal, M. Bland, R. Keener and Y. Kobayashi.

Kansas Academy of Science FHSU group:



L-R above: Dr. Yaz Kobayashi, Ryan Engel, Tayler Kriss, Madison Pittenger, Adam Urban, Norelia Ordonez, Rebekah Spainhour, Keri Caudle, Naomi Quispe, Ifeoma Oraemesi, Elaine Parkinson, Samantha Montgomery, Taissa Carvalho, Ericka Nevarez, Wendy Zimmerman, Oaklee Abernathy, Dr. Brian Maricle, Claudia Carvalho, Ariel Snyder, Sean Rogers, Jared Ridder.

Prize winners: Madison Pittenger (2nd from left), Keri Caudle (4th from left), Josh Mead (4th from right), Ifeoma Oraemesi (2nd from right).



Southwestern Association of Naturalists meeting, April 13-16, Lawton, OK

Presentations:

Species distribution modeling of the northern long-eared bat (*Myotis septentrionalis*) for long-term conservation planning. M. Meyer and R. Channell

Effects of lowhead dams on the growth rates of *Quadrula pustulosa* in the Neosho River, Kansas. A. T. Karlin and W. J. Stark

Posters:

The geography of genetics: a critical assessment of the central-marginal hypothesis. M. Ambrosier, A. McBride, and R. Channell.

Analysis of herpetofaunal community structure in southeast Kansas with emphasis on the broad-headed skink. A. Hullinger, Z. Cordes, D. Riedle, and W. Stark.

Factors affecting the persistence of prairie dog colonies in northwest Kansas. J. Oriez and R. Channell.

Habitat use of birds on the Quivira National Wildlife Refuge. L. Tanner, R. Channell, and R. Laubhan.

12th Annual John Heinrichs Scholarly and Creative Activities Day (SACAD)

April 28, in the Memorial Union Ballroom

Biology department posters included the following:

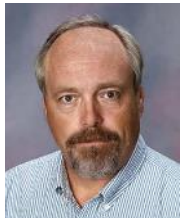
Remote survey of herpetofaunal habitat in western Kansas. S. Rogers and W. Stark (*3rd place, graduate student, non-empirical*)

Fungus and frogs: Preliminary analysis of a survey of Chytrid in Kansas. A. Snyder, W. Stark, and D. Riedle (*1st place, graduate student, empirical*).

Critical habitat assessment of the state threatened broad-headed skink. A. Hullinger, Z. Cordes, D. Riedle, and W. Stark (*3rd place, graduate student, empirical*).

Herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*). M. Pittenger, K. Caudle, S. Baer, L. Johnson, and B. Maricle (*people's choice award*).

Dr. John Thyfault from KU Medical Center presented, "Not Just Chopped Liver: Why Liver Fitness is Critical for Metabolic Health" as the 2017 SACAD seminar. Dr. Thyfault, a previous FHSU young alumni award winner, received his bachelors and masters degrees from the Department of Health and Human performance.



Dr. Chris Bennett presented, "**Giants, dwarfs, and Pterosaurs: Skull evolution in "Pteranodon"**", on April 6 in the Stouffer Lounge of the Memorial Union. The presentation accompanied Dr. Bennett's 2016-17 President's Distinguished Scholar Award, which he received at the 2016 fall convocation. Dr. Bennett was also featured in an installment of the Hays Post's "Community Connections" series. To watch this video, click the link below:

<https://www.hayspost.com/2017/04/24/community-connection-dr-chris-bennett/>



The **2016-17 FHSU Botanical Research Group** (L-R): Keri Caudle, Naomi Quispe, Brian Maricle, Ifeoma Oraemesi, Madison Pittenger, Tayler Kriss, Chelsea Hanson, Taffra Picking, Nick Varvel, and Adam Urban. (Not pictured: Gentry Holaday and Nathan Smith).

Congratulations to these students for completing their master's degrees this semester!

Kaden Buer: "Surveys for rare and endangered mussel species in Kansas: Traditional methods and environmental DNA analysis".

Keri Caudle: "Phylogenetic distribution of an endogenous strain of Dahlia Mosaic Virus in members of Asteraceae".

Andrew Karlin: "Post-drought survey of freshwater mussels in the Saline and Smoky Hill Rivers with emphasis on the status of the Cylindrical Papershell and effects of lowhead dams on growth of the Pimpleback in the Neosho River, Kansas.

Mitch Meyer: "Using maximum entropy species distribution modeling for long-term conservation planning of three federally listed bats in North America".

Ifeoma Oramesi: "Soxhlet extraction of avocado endocarp and trituration of avocado mesocarp for biodiesel production".

Anuja Paudyal: "Polymorphism in the PrP^C prion protein gene in pigs".

And to these students for completing their oral exams!

Sean Rogers
Liz Schuman

Awards

Naomi Quispe received a K-INBRE Star Trainee award for the 2017-2018 academic year. Naomi's project will involve studying the mechanisms of how sulfide and lactic acid affect enzymes of respiration in plant and catfish tissue.

Nick Varvel, junior in biology, received a 2017 Outstanding Undergraduate Scholar award. The award, sponsored by the FHSU Undergraduate Research Experience Steering group, recognizes undergraduate students who exemplify academic qualities such as original thought, creative ideas, communicating with professional colleagues, critical reasoning, analysis of research and the translation of evidence into practice. Nick currently works with Dr. Brian Maricle's botanical research group.

Allyssa Funk, freshman in biology, was accepted to the Summer Health Professions Education Program (SHPEP) for a six-week internship in Omaha, NE. SHPEP is a summer program for freshman and sophomore students. The program provides academic enrichment in science and math for students majoring in medical, dental, nursing, pharmacy, and public health fields. The program also offers clinical experiences, career development activities, learning and study skill seminars, and a financial planning workshop.

Ericka Nevarez was accepted to the NIH/NIDDK Diversity Summer Research Training Program (DSRTP) for Undergraduate Students. She will spend 10 weeks this summer at the NIH main campus in Bethesda, MD conducting research with NIH scientists.

Megan Dougherty is a recipient of the American Physiological Society Integrative Organismal Systems Physiology undergraduate research fellowship. She will conduct research at FHSU for 10 weeks this summer.

Noyce scholars:

Five students majoring in Biology and Secondary Education were awarded prestigious National Science Foundation's Robert Noyce Scholarships of \$12,000 apiece for the 2017-2018 school year. **Katie Ellegood** is receiving her second year of support, which is the maximum allowed. Receiving their first year of support are **Breanna Meier**, **Emalee Ratliff**, **Ashley Stratham**, and **Raquel Tomsic**. They join 6 biology students who previously received the scholarship, which was first awarded for 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 Katie, Breanna, Emalee, Ashley, and Raquel!

Alumni news:

Will Moore (M.S. 2012) earned a PhD in the Department of Human Nutrition, Foods, and Exercise (molecular and cellular sciences concentration) at Virginia Tech University. His dissertation focused on the discovery and implementation of naturally occurring compounds to treat and prevent type-2 diabetes. Will recently accepted a position as Assistant Professor of Biology at Averett University (Danville, VA), beginning fall 2017.

Kaden Buer (M.S. 2017) was hired as a Fisheries Technician with the Idaho Fish and Game Department in Pocatello, ID.

Paige Evans Buer (B.S. 2016) was accepted to the Physician Assistant program at Idaho State University, also in Pocatello.

Quentin Aker (KAMS class of 2013) will attend the University of Kansas School of Law!!

Dr. Brian Maricle was featured in the Hays Post "Community Connection" video series. Dr. Maricle discussed plants growing in stressful environments with the Community Connection host, Mike Cooper. To see the full video, click the link below:



<https://www.hayspost.com/2017/03/22/community-connection-brian-maricle-plant-growing-under-stressful-environments/>



The biology events this year at Science Olympiad dealt with human A&P, microbes, ecology, and invasive species.

Biology secondary-education students helped run nine events at the Science Olympiad on February 7 (for middle school students) and 9 (for high school students): Katie



Ellegood, Breanna Meier, Haleigh Pippert, Madison Pittenger, Samantha Rohleder, Katie Showalter, Ashley Strathman, and Raquel Tomsic, along with Thomas Broxterman, a student from the Math department.



Tests were prepared by graduate teaching assistants Oaklee Abernathy, Ally Hullinger, Kolin Klozenbucher, Jamie Oriez, Sean Rogers, and Drew Zimmerman.



FORT HAYS STATE UNIVERSITY'S
**KANSAS WETLANDS
EDUCATION CENTER**

During Spring Break, the KWEC hosted free programs and activities each day for visitors of all ages.

On March 18th and 22nd, graduate student **Kaden Buer** led a KWEC pond tour to capture and learn about aquatic invertebrates. On March 21st, graduate student **Justin Roemer** guided visitors through the steps of a controlled burn, including the tools that make it possible, and the protective equipment that keeps everyone safe. On March 23rd, graduate student **Gentry Holaday** guided a tour of some of the fascinating

plant species growing at Cheyenne Bottoms, including botanical natives found in the wetlands, and the importance of managing aggressive invaders like *Phragmites* grasses. On March 24th, graduate student **Andrew Karlin** introduced visitors to many different native species of mussels, and provided information about invasive species creeping into local waterways.



600 Park Street
Hays, KS 67601
Phone: 785-628-4214

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We're on Facebook!

**Biological Sciences
Department at Fort Hays State
University**