

The Natural Inquirer



FORT HAYS STATE UNIVERSITY DEPARTMENT OF BIOLOGICAL SCIENCES

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Bees!



(L-R): Elissa Jensen, Ryan Engel, and Tyler Keller put on protective beekeeping gear



Ten thousand honeybees were released in late April to enter new hives near the FHSU campus garden, marking the beginning of the FHSU Bee Club. There are approximately 20 members in the club. Mike and Amy Jensen, of Jensen Farms, received the bees from California, and their daughter Elissa, a Hays freshman, is president of the club. Hays junior Ryan Engel helped form the club with Elissa. This is Engel's second year keeping bees.

Several club members suited up in bee suits or jackets and veils to help release the bees. The long-term plan is to not spray fields in the area and to plant clover, "so we're really making an effort not just to install the bees, but to really help them along," said Andree Brisson, FHSU sustainability coordinator and club sponsor. Greg Swob, a local beekeeper, said, "Clover is known to be a nectar producing plant. Quite a bit of honey could be produced from it. This is the only bee club in Kansas at a university that I know of."

Greg Farley, interim dean of the STeM college, says, "the addition of bees to the campus will also allow the different departments to interact in unusual ways. In this case, we've got biology, agriculture and chemistry all working together on a common project, which is great." Club members will check the bees every so often, "but they just do their own thing," Elissa Jensen said.

Check out the Herpetology class field trip photos on pages 8-9!!



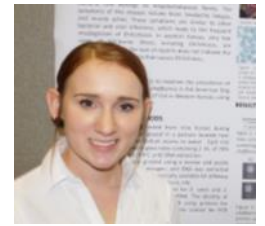
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Meetings and Presentations

Kansas IDeA Network of Biomedical Research Excellence (K-INBRE) Annual Symposium, Overland Park, KS, January 15-17, 2016:

Abernathy, O., M. Sasse, J. Ball, and Y. Kobayashi. Prevalence of *Ehrlichia* bacteria in American dog ticks in western Kansas.



Ball, J., M. Vides and Y. Kobayashi. Identification of protein kinase R and tissue distribution in channel catfish.

Evans, P., M. Vides, B. Teel, and Y. Kobayashi. Nutritional status affects expression of AMPK mRNA in a tissue and subunit-specific manner in channel catfish.

Glynn, J. M., M. J. Greer, J. J. Carter, and K. R. Hickman. Making the best of a bad situation: invasive grass exudates may have anti-bacterial and/or anti-fungal properties.



Kobayashi, Y., A. Leiker, P. Evans, and C. Nash. Physiological and hepatic transcriptional changes in response to Streptozotocin treatment in channel catfish.

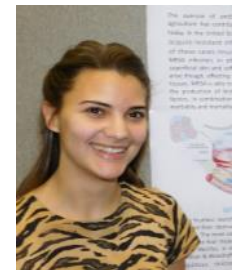
Leiker, A., B. Watkins, P. Evans, and Y. Kobayashi. Nutritional status affects expression of insulin receptor mRNA in a tissue specific manner in channel catfish.



Martin, N. M., Y. Kobayashi, and B. R. Maricle. Effect of sulfide toxicity on cytochrome *c* oxidase in liver and muscle tissue of fish species.



Nash, C., R. Welti, B. Peterson, and Y. Kobayashi. Characterization of plasma polar lipid profiles of channel catfish with obese-like phenotype.



Moore, K., and E. Gillock. Isolation of soil *Bacillus* spp with inhibitory effects on methicillin-resistant *Staphylococcus aureus* (MRSA).

Sasse, M., O. Abernathy, J. Ball, and Y. Kobayashi. Detection of bacteria *Rickettsia rickettsia*, causative agent of Rocky Mountain spotted fever, in American dog ticks using polymerase chain reaction.



Urban, A. D., Y. Kobayashi, and B. R. Maricle. Effect of lactic acid on enzymes of respiration in catfish tissue. (Adam Urban was also the recipient of a \$7000 K-INBRE Star Trainee Program research grant for his work on the effect of lactic acid on enzymes of respiration in catfish).

Meetings and Presentations, continued:



K-INBRE 2016 group picture. Front row (L-R): Oakley Abernathy, Tej Man Tamang, Anuja Paudyal, Jenna Ball, Nicole Martin, Kaitlin Moore. Middle row (L-R): Dr. Greg Farley, Dr. Yaz Kobayashi, Claudia Carvalho, Dr. Eric Gillock, Alexyss Leiker, Paige Evans, Claire Nash. Back row (L-R): Michaela Sasse, Jordan Glynn, Adam Urban, Dr. Mitch Greer, Dr. Mike Madden, Dr. Brian Maricle.

Capitol Graduate Research Summit, Topeka, KS, February 2, 2016:

McCampbell, B. C. and B. R. Maricle. (poster) Organismal composition and photosynthetic traits of biological soil crusts in prairie ecosystems of the Great Plains.

Moore, K., and E. T. Gillock. (poster) Isolation of soil *Bacillus* (spp) with inhibitory effects on methicillin-resistant *Staphylococcus aureus* (MRSA).

Kansas Natural Resources Conference, Wichita, KS, February 4-5, 2016:

Bainbridge, E., and E. J. Finck. Space-use and movement pattern requirements of southern flying squirrel in a fragmented forest in northeastern Iowa (oral presentation).

Nieves, A. C., and M. J. Greer. Removal of old world bluestem through soil solarization: Effects on the soil microbial community (poster).

Rasmussen, T., and E. J. Finck. Status of the Franklin's ground squirrel in north-central Kansas (poster).

Sprague, A. V., C. J. Schmidt, and E. J. Finck. Identification and characterization of northern long-eared bat (*Myotis septentrionalis*) hibernacula in Kansas (poster).

Wilson, H., C. J. Schmidt, and E. J. Finck. Relationship between diet and temporal partitioning of six bat species in Kansas (poster).

Meetings and Presentations, continued:

Undergraduate Research Day at the Capitol, Topeka, KS, Feb 18, 2016:

Boese, L. I. (KAMS) and B. R. Maricle. Effect of triclosan concentration on growth rate of *Lemna minor*. (poster).

World Aquaculture Society meeting, Las Vegas, NV, February 22-26, 2016:

Martin, N. M., Y. Kobayashi, and B. R. Maricle. Effect of sulfide toxicity on cytochrome c oxidase in liver and muscle tissue of fish species (poster).

Kansas Academy of Science (KAS) Annual Meeting, McPherson, KS, April 1-2, 2016:

Caudle, K. L., and E. T. Gillock. Phylogenetic distribution of an endogenous strain of Dahlia Mosaic Virus in members of Asteraceae (poster).

Caudle, K. L., C. J. Hilt, C. M. Smart, A. D. Urban, D. L. Kramer, N. M. Martin, S. G. Baer, L. C. Johnson, and B. R. Maricle. Does environment or genetics influence leaf level physiology? Measuring photosynthetic rates of native big bluestem (*Andropogon gerardii*) grown in common gardens across a precipitation gradient. **[3rd place oral presentation by a graduate student]**

Glynn, J. M., Carter, J. J., Hickman, K. R., and Greer, M. J. Making the best of a bad situation: invasive grass exudates may have anti-bacterial and/or antifungal properties (poster).



Kramer, D. L., K. L. Caudle, C. J. Hilt, N. M. Martin, A. D. Urban, S. G. Baer, L. C. Johnson, and B. R. Maricle. Morphological differences in ecotypes of big bluestem (*Andropogon gerardii*) grown in common gardens across a precipitation gradient (poster).



Lutgen, J. D., L. I. Boese, and B. R. Maricle. Effect of triclosan concentration on physiology of *Lemna minor* (poster).

Martin, N.M., Y. Kobayashi, and B.R. Maricle. Species-specific enzymatic tolerance of sulfide toxicity in plant roots and comparative susceptibility between plant and catfish tissue (oral presentation).



McCampbell, B. C., and B. R. Maricle. Organismal composition and photosynthetic traits of biological soil crusts in prairie ecosystems of the Great Plains (oral presentation).

Moore, K., and E. T. Gillock. Isolation of soil *Bacillus* spp with inhibitory activity against methicillin-resistant *Staphylococcus aureus* (MRSA) (oral presentation).

Nieves, A. C., and M. J. Greer. Removal of Old World Bluestem through soil solarization: Effects on the soil microbial community (poster).



Pittenger, M. S., K. L. Caudle, S. G. Baer, L. C. Johnson, and B. R. Maricle. Herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*) (poster).

Tamang, T. M., J. Alsdurf, L. C. Johnson, S. G. Baer, and Maricle, B. R. Determination of evolutionary history of big bluestem ecotypes through chloroplast DNA analysis. **[2nd place poster by a graduate student]**



KAS meeting, continued:



Tauber, G. O., M. L. Campbell, and M. J. Greer. A story of chemical warfare in nature, chapter 2: Do closely related invasive grass species with similar evolutionary histories possess analogous allelopathic properties? (poster).

Urban, A. D., Y. Kobayashi, and B. R. Maricle. Effect of lactic acid on enzymes of respiration in catfish tissue (poster).

Varvel, N. A., C. J. Hilt, S. G. Baer, L. C. Johnson, and B. R. Maricle. Genetic and environmental influences on stomates of big bluestem (*Andropogon gerardii*) ecotypes. [2nd place poster by an undergraduate student].



Zimmerman, D. M., and C. M. Carvalho. Prevalence of livestock-associated MRSA among the university population in Midwestern Kansas (poster).

Experimental Biology conference, San Diego, CA, April 2-6, 2016:

Ball, J., M. Vides, and Y. Kobayashi. Identification of protein kinase R and tissue distribution in channel catfish.



Evans, P., M. Vides, B. Teel, and Y. Kobayashi. Nutritional status affects expression of AMP protein kinase mRNA in a tissue and subunit-specific manner in channel catfish.

Leiker, A., B. Watkins, P. Evans, and Y. Kobayashi. Nutritional status affects expression of insulin receptor (IR) mRNA in a tissue specific manner in juvenile channel catfish.



Dr. Kobayashi attends a San Diego Padres baseball game.



Fort Hays State University's John Heinrichs Scholarship and Creative Activities Day, Hays, KS, April 27, 2016:

Boese, L. I., J. D. Lutgen, and B. R. Maricle. Effect of triclosan concentration on growth of *Lemna minor*.

Campbell, M. L, G. O. Tauber, and M. J. Greer. A story of chemical warfare in nature, chapter 2: Do closely related invasive grass species with similar evolutionary histories possess analogous allelopathic properties?

Caudle, K. L., and E. T. Gillock. Phylogenetic distribution of an endogenous strain of Dahlia Mosaic Virus in members of Asteraceae. [1st place poster by a graduate student]

SACAD posters, continued:

Glynn, J. M., J. J. Carter, K. R. Hickman, and M. J. Greer. Making the best of a bad situation: Invasive grass exudates may have anti-bacterial and/or antifungal properties.

Martin, N. M., Y. Kobayashi, and B. R. Maricle. Effect of sulfide toxicity on cytochrome *c* oxidase in liver and muscle tissue of fish species. **[2nd place poster by an undergraduate student]**

McC Campbell, B. C. and B. R. Maricle. Organismal composition and photosynthetic traits of biological soil crusts in prairie ecosystems of the Great Plains. **[2nd place poster by a graduate student]**

McC Campbell, B., L. McC Campbell, S. Bailey, and S. Keller. Food and hunger initiatives at Fort Hays State University. **[3rd place poster by a graduate student, non-empirical research].**

Moore, K., and E. T. Gillock. Isolation of soil *Bacillus* spp. with inhibitory activity against methicillin-resistant *Staphylococcus aureus* (MRSA). **[3rd place poster by a graduate student].**

Nieves, A. C., and M. J. Greer. Removal of old world bluestem through soil solarization: Effects on the soil microbial community.

Pittenger, M. S., K. L. Caudle, S. G. Baer, L. C. Johnson, and B. R. Maricle. Herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*).

Tamang, T. M., J. Alsdurf, L. C. Johnson, S. G. Baer, and B. R. Maricle. Determination of evolutionary history of big bluestem ecotypes through chloroplast DNA analysis.

Alumni activities:

Kurtis Meier was recently hired as the district Wildlife Biologist for the Kansas Department of Wildlife, Parks, & Tourism in Garden City. He assists private landowners with habitat work and technical guidance. He's also responsible for disease monitoring, wildlife complaints and mitigation, population and harvest surveys, winter pronghorn aerial surveys, and public access on private land through the Walk-In Hunting Area program.

Cassie Schmidtberger (B.S. 2012) graduated from KSU College of Veterinary Medicine in May 2016.

Congratulations!!

The following Biology students were recently accepted into professional school:

Kevin Klug and **Jesse Trent** were accepted into the University of Kansas Medical School

Nicole Martin and **Garrett Holle** were accepted into the University of Kansas Physical Therapy school

Brooke Ostmeyer was accepted into the University of Kansas Occupational Therapy school

Ryan Wooldridge accepted into University of Kansas pharmacy school

Holly Hattan was accepted into Cleveland Chiropractic School.

FHSU awarded USDA grant



Dr. Craig Smith and Dr. Bill Stark with two of the Unmanned Aerial Systems (UAS)

FHSU has been awarded a USDA grant of more than \$700,000 to develop curricula focused on using small unmanned aerial systems (UAS) in precision agriculture. On May 5th, U.S. Senator Jerry Moran (R-Kan.) met with Dr. Bill Stark and Dr. Craig Smith (Dept. of Agriculture) to learn more about FHSU's Unmanned Aerial Systems (UAS) program. As Chairman of the Senate Agriculture Appropriations Committee, Sen. Moran secured funding for the USDA program which is furnishing the grant.

"Kansas is poised to see a tremendous economic impact resulting from the growth of the UAS industry, specifically its role in precision agriculture," Sen. Moran said in a news release. "This promising program will give Kansas

students the opportunity to gain hands-on experience in operating UAS and incorporating the technology into agriculture. FHSU is leading the way making certain graduates are equipped with the knowledge and skill set to help keep our farmers and ranchers on the forefront of technological advancements."

The new curricula will teach both the gathering of data by UAS and the incorporation of the data into agriculture. The primary focus will be on providing students with experiential-learning opportunities involving the hands-on use of UAS and analytical tools along with "real world" experiences applying data in management decision making.

Demand is high and the job outlook is very strong for individuals skilled in the understanding and use of precision agricultural technologies. In Kansas alone, the economic impact of UAS technologies is estimated at \$2.9 billion over the next decade. This grant will help make certain that a skilled workforce is available to meet this potential.



Dr. Bill Stark and Dr. Craig Smith talk with Sen. Moran (center).

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

Elizabeth Bainbridge

Thesis title: "Gender differences in space-use patterns and microhabitat characteristics of southern flying squirrel (*Glaucomys volans*) in northeastern Iowa". Betsy has accepted a paid summer internship with the National Park Service at Rocky Mountain National Park. She will be working in the Landscape Ecology Department studying the effects of elk browsing on beaver habitat.

Samantha Pounds

Thesis title: "A comparison of small mammals among three habitats in western North Dakota". Samantha will be working as an Ecological Technician (stream crew) for KDWPT this summer.

Taylor Rasmussen

Thesis title: "Survey of small mammal populations in north-central Kansas". Taylor will be working as a non-game mammalogist with the Indiana Department of Natural Resources.

And to these graduate students for completing their oral exams this semester:

Kaden Buer, Andrew Karlin, Mitch Meyer, Ariel Snyder, and Angelica Sprague.

Herpetology class field trip to eastern Oklahoma, April 22-24, 2016.



Herpetology class field trip, continued



Front row (seated) L-R: Tyler Keller, Brianna Schuck, Ernesto Flores, Vanessa Salazar, Dakota Derstein, Sarah Malott, Dr. Bill Stark, Carly McCracken. Back row (standing) L-R: Ariel Snyder, Andrew Karlin, Sean Rogers, Kaden Buer, Justin Roemer, Brent Schulze, Jared Englebert, Kali Borouhgs, Nick Bulthaup, Kasandra Brown, Brian Fisher, Allison Hullinger, Kyle Burgoon, Jeff Seim, Ethan Oltean, Liz Tharman, Nate Busen, Bryce Boxberger, Riggs Walter. Photo by (and thus not pictured): Josh Mead.



Reynolds estate gift supports Sternberg Museum

Dr. Howard Reynolds, a former professor of botany, left an estate gift of more than \$800,000 to support the management and preservation of botanical collections at Fort Hays State University's Sternberg Museum of Natural History. The gift also supports the Dr. Howard Reynolds Arboretum, which is located on three acres of property immediately west of the museum.

Dr. Reynolds was a professor of botany and curator of the Elam Bartholomew Herbarium at Fort Hays State from 1957 through 1984. He was especially proud of his role in directing many students in plant studies, especially in the taxonomy of plants. In retirement, he continued collecting specimens and educating the community on the diversity of flora found on the High Plains. He died April 10, 2014, from complications of pneumonia at the age of 99.

Dr. Reese Barrick, director of the Sternberg Museum, recalled, "Dr. Reynolds taught at FHSU and served as curator for 25 years. The number of students that he infected with a love of learning and of plants during this time is astounding, as are his contributions to both the herbarium collections and to the paleobotany collections. Half of the gift that he has given the museum will serve to create a new 3-acre arboretum on the grounds of the museum's nature trails that bear his name... The other half of Howard's gift ensures the resources to protect and grow the herbarium and paleobotany collections at the museum and spur on botanical research. There are 50,000 specimens of vascular plants in the herbarium and there are more than 10,000 unmounted specimens that are in need of curation. His gift will also provide a seed to endow a curator or collections manager position."



L-R: Dr. Joe Thomasson, FHSU President Dr. Mirta Martin, Dr. Reese Barrick, and Foundation president Tim Chapman



A member of the Veterans of Foreign Wars, Dr. Reynolds served in the South Pacific, where he was a participant in the amphibious invasion at the Gulf of Leyte in the Philippines on October 20, 1944. He spoke several languages, including Russian, French, German, Spanish, and as he liked to say, "some English." He was also an accomplished pianist and dancer and was a volunteer and longtime member of several civic groups, including the Optimist Club and Red Cross.

-FHSU News Service

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