Kansas State University Department of Entomology 123 Waters Hall Manhattan, Kansas 66506-4004

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Alumni Newsletter

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Want to Contribute to our Success? Departmental Donor Needs:

Insect Zoo Support for personnel, exhibits or planned butterfly house. Any amount is welcome!

Department of Entomology Excellence Fund supports cash awards for technical and administrative staff, Perry L. Adkisson three-minute thesis competition and other outstanding efforts. Any amount is welcome!

Support for undergraduate researchers in laboratories, \$5-6,000 is sufficient to support one student for the entire academic year (fall and spring semesters), or full-time for one summer.

Graduate Student Tuition scholarships help to offset student tuition, which is very valuable in recruiting and retention, as we still have no graduate student waiver. The current annual tuition cost is about \$7,000 per student.

Update of plate reader computing system, which is used by numerous faculty, post docs, visiting scientists and students. \$6,000 is needed.

If interested in making a financial contribution to aid in our department's success, please contact John Ruberson at ruberson@ksu.edu or 785-532-6154.

KANSAS STATE

Department of Entomology



Floyd Holmes Celebrates 100th Birthday

On January 13, 2016, alumnus Floyd Holmes (front center) celebrated his 100th birthday. He was honored by the Department of Entomology on April 30, 2016, during



the College of Agriculture Scholarship Brunch. Holmes was presented with a unique laser-etched stainless-steel, lifesize replica of the giant fossil dragonfly wing he discovered in 1939. The replica wing was created by Dustin Headly (left), College of Architecture, Planning and Design. Holmes discovered the wing while studying as an entomology student at Kansas State University. Salehe Abbar (right)was the recipient of the 2016 Floyd Holmes Scholarship. Holmes completed his B.S. degree in 1940 and M.S. in 1941, both at Kansas State University in Entomology.

Insect Zoo Provides Unique Destination

The Insect Zoo continues to be a popular destination for local and traveling family groups. We have held steady at around 8000 visitors per year. A small price change went into effect on January 1, 2016, that raised our base admission price to \$3.00 per person, but feedback so far from visitors show that our insect zoo is still a great experience for the money. Summer is a busy time for us with an average of 1000 visitors per month and our exhibits are full of animals and ready!

As new construction continues throughout Kansas State University and in the K-State Gardens around us, we too are always looking ahead towards potential opportunities for expansion of the exhibit. With continued support from alumni and other donors, we are looking at the possibility of adding a live

butterfly exhibit and utilizing additional space in the upper level of the barn for group visits.



Department of Entomology Fall 2015

For any questions regarding department personnel identification or information, check out our website, entomology.ksu.edu under the tab "People in Entomology" or contact our office at 785-532-6154.





A Note From the Department Head

As you can see from the newsletter's content, much has happened since our last newsletter in 2013. Our people continue to be recognized for their excellent work in research, teaching, and extension. We added two new faculty - Sarah Zukoff in 2013 and Greg Ragland in 2014, and they have added enthusiasm and energy to the department. Sarah is doing great in Garden City. Sadly for us, Greg is leaving to join the University of Colorado at Denver where he can be close to family. He's been a great colleague and we'll miss him. Marcelo Ortigão left the medical entomology position in 2015 to be closer to his family. We've also some lost some great friends and colleagues, as you will see in the retirements and necrologies. Lots of change. Budget reductions have claimed John Reese's position, and Bob Bauernfeind's position was previously arranged to return to extension so he won't be replaced. But we are preparing to advertise for the medical position shortly, and hope to advertise later this fall for an insect-plant-microbes position that would merge John Reese's and Greg Ragland's areas.

Our graduate student program received a nice boost when the college instituted \$20-per-credit course fee. This generates about \$18,000 annually for the department to enhance our students' educational experience. The Popenoe Club chose to use these funds to support student travel for meetings/workshops, to visit other laboratories, or otherwise enhance their skills and opportunities. Allocation is based on a clever point system - students earn by participating in outreach and club/department service. This new resource addresses one of our Vision 2025 goals - providing more professional development and networking opportunities for our students.

Lots of change and challenges. These are inevitable and sometimes difficult, and both can make us better.

Zhu & Lab Kill Insects Without Pesticides

Kansas City area company TechAccel is pursuing commercial opportunities with Kansas State University to make insect control much safer for humans and other animals.

TechAccel specializes in accelerating new technologies by forming partnerships with companies capable of developing consumer products. The company has a specific interest in advancing discoveries related to food production and quality, and animal health.

The technology, developed by Kansas State University entomology professor, Kun Yan Zhu and his colleagues, utilizes double-stranded RNA, or dsRNA, which is a synthesized molecule that can trigger a biological process known as RNA interference, of RNAi, to destroy the genetic material of an insect in a sequence-specific manner.

Zhu's discovery allows for nanoparticles comprised of a nontoxic, biodegradable matrix and insect derived dsRNA. His laboratory has studied the use of this technology extensively on mosquitoes.

Once ingested, the nanoparticles release the loosely bound dsRNA into the insect's gut, eventually killing the insect without the use of pesticides.

The Kansas State University Research Foundation was awarded a patent for the discovery in 2014.

Zhu said the technology greatly increases the safety for insect control because of its high specificity in targeting genes. For example, a cockroach bait can be designed to kill cockroaches without risk to a family pet or child because the dsRNA used for the bait

is designed to kill the cockroaches without risk to a family pet or child because the dsRNA used for the bait is designed for a specific gene sequence of the cockroach.

Nanoparticles utilizing dsRNA can be developed to trigger a deadly chain reaction in many undesired insects, such as those that affect agricultural crops as well as many household pests.

Building More Opportunities

Looking ahead, our Dean John Floros has done a great job of promoting our space needs to the university president and other upper administrators, and received donor funds to commission a study for a new building to house offices, labs, and teaching spaces. The study concluded that providing the needed space – new and renovated – to move the college into current facilities would cost in excess of \$550 million. A three-phase approach was proposed that would cost about \$160 million in Phase 1 for a new building and some renovations. Entomology is a high priority move, so we would likely move from Waters Hall as part of Phase 1. The second phase would cost about \$180 million and would follow about 10-12 years later. Phase 3 would follow another 10-12 years later. Should funding become available to move Phase 1 forward, we could be moving into new space in 8-10 years. Right now this is all something of a pipe dream, but this is another of our Vision 2025 goals – to get new space for the department. We'll keep dreaming, preparing, and working to raise funds so this becomes a reality.



Taking to the Skies with Unmanned Aircraft Systems

KSU Entomologist, Brian McCornack is taking to the skies with a partnership between K-State's Manhattan and Salina campuses and Australia's Queensland University of Technology, the Victorian Department of Environment and Primary Industries, and the Queensland Department of Agriculture, Fisheries and Forestry for this three-year, \$1.74 million project.

The Kansas team's job is to fly unmanned aircraft systems (UAS) over commercial wheat fields during the growing season to determine how accurately invasive species, such as the Russian wheat aphid and wheat stripe rust, can be detected. McCornack's project also involves determining if the UAS information gathering process is more efficient than their current spot checks on foot.

Markers in fields correlated with images captured by a camera mounted on each UAS. Each pixel in the images have a unique GPS coordinate. This technology allows a closer look to be taken at field crops.

McCornack is able to get within one centimeter of a wheat plant.

"Trying to get a still image of a plant that's moving is a

challenge," McCornack said. "Something that's that small (like an aphid) on a wheat plant - in that case, we're looking at the damage that it's doing. We're not looking at the technology to pick out the aphid itself, but how it's changing the plant structure."

Under current Federal Aviation Administration regulations, public agencies and commercial groups must get special authorization or exemption to use UAS. K-State Polytechnic, located in Salina, Kansas, was the first entity in the nation to receive a statewide certificate of authorization for UAS flights.

That's where a certified UAS pilot from K-State Salina comes into the picture, as piloting UAS technology is not

something just anyone can do.

One of the challenges McCornack sees is getting the data collected to farmers and finding a way to make it easily accessible.



Ted Hopkins Distinguished Colloquium Speakers

2014 - Claire Kremen, "Restoring pollinator communities and services in intensively managed agricultural landscapes"
2015 - Jay Rosenheim, "Ecoinformatics for agricultural entomology: using data from farms to solve problems on farms"
2016 - Bryony Bonning, "Pea aphids and plant viruses: Molecular interactions and innovation"

2014-2016 Club Highlights

The past two years have been eventful for the Popenoe Entomology Club (PEC). In addition to our regular club activities such as hosting the annual Entomology Department Fall Picnic, participating in K-State Open House, selling insect collections to FFA instructors, sponsoring student-selected seminar speakers,



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and hosting professional development events, we have also recently developed a traveling outreach program in collaboration with the K-State Insect Zoo, assumed responsibility for the Entomology Section of the annual FFA Career Development Event, and implemented a PEC Travel Award system, under which students can earn travel money



for meetings through service to the department. In addition, last year we provided volunteers when the department hosted the 2015 North Central Branch Meeting of the Entomological Society of America. We also recently adopted a new club logo, and we are currently working on a new Popenoe Entomology Club website to advertise our services to the public. We are excited to be able to give back to the department and community, as well as provide so many opportunities for our club members. It will be exciting to see what the PEC accomplishes in the year to come.

Anastasia Cooper, 2015-2016 PEC President

Retirements



ROBERT "BOB" BAUERNFEIND PH.D.

Bob Bauernfeind officially retired from the department on January 29, 2016, after 37 years of service to Kansas State University and to innumerable youth and adults in Kansas. He is now enjoying spending

more time with his wife Karen, and their children and grandchildren, dividing time between Chicago and Kansas City.

JOHN C. REESE PH.D.

John Reese will retire fully on June 30, 2016, after 34 years of service to Kansas State University. John has been on half-time retirement since July 1, 2015, of last year as he cleans up and wraps up many years of active research and teaching.

Reese looks forward to taking care of his land and historic barn in Westmoreland, Kansas, and his volunteer activities with Habitat for Humanity and Friends of the Konza Prairie among other things.

Necrologies

DONALD EUGENE MOCK PH.D.

Donald Eugene Mock Ph.D., former Kansas State University Professor in entomology and extension specialist, passed away on April 15, 2013, at the age of 74. Born in Montrose, Colorado, Mock graduated high school and left home at the age of sixteen to pursue higher education. He received his bachelors degree from Western State Colorado University in Gunnison, Colorado. Mock later entered a graduate program at Cornell University in Ithaca, New York, where he earned his Ph.D. in Economic Entomology. Mock joined the staff at Kansas State University in 1973 and retired 28 years after in 2001. Following his retirement, he was involved with medical and veterinary entomology. Patsy Noland, Mock's wife, passed away on Sept. 27, 2013. Mock is survived by his daughter, Linda Mock, Kansas City, Missouri; two sons Jeff Mock and his wife of St. Louis, Missouri; and Bill Mock and his wife of Dublin, California; five grandchildren and a number of great grandchildren.

HOWARD "LEROY" BROOKS PH.D.

Howard "Leroy" Brooks Ph.D., former Kansas State University Professor and Extension Entomologist, passed away on January 7, 2016. Born in Berryville, Arkansas, Brooks earned his bachelors and master's degrees from the University of Arkansas. He completed his Ph.D. at Kansas State University and stayed on staff until his retirement in 2004. In his retirement Brooks enjoyed traveling with his wife Nova, participating in the Manhattan Community Gardens, participating in the Bluestem Bistro Boys Coffee Group and being an active member with the Manhattan Kiwanis Club. Brooks is survived by his wife, Nova of the home in Manhattan; three children: Lee Brooks and his wife of Bentonville, Arkansas; Kimberly Brooks-West and her husband of Mansfield, Texas; and Elizabeth Brooks of Denver, Colorado; one brother, Larry G. Brooks of Berryville, Arkansas; and three grandchildren.

HENRY DERRICK BLOCKER PH.D.

Henry Derrick Blocker Ph.D., former Kansas State University Professor in entomology, passed away on April 2, 2016 in Edisto Island, South Carolina. Born in Walterboro, South Carolina, Blocker graduated from Clemson College with his bachelor's degree in Entomology and served in the U.S. Army Medical Service Corps for two years. He completed his master's degree at Clemson following his Army service. After earning his Ph.D. in Entomology from North Carolina State University, Blocker joined the faculty at Kansas State University as a taxonomist for 30 years. He retired in 1995 to Edisto Island, where he enjoyed gardening, bird watching, fishing and shrimping and tending to the needs of his rescue animals. Blocker is survived by his wife, Martha of the home in Edisto Island; two children: James Blocker and his wife of Osawatomie, Kansas and Julia Egan of Waltham, Massachusetts; and two grandchildren. Daughter-in-law Shannon Blocker is an ANR Extension Agent in Frontier District – Garnett Office.

Department Notables & Awards

The Department of Entomology is Buzzing!

Faculty Awards

Student Awards

2015 **Alice Harris** 1st Place, P-IE PhD Oral Paper Competition, North Central Branch, **ESA**

2015 **Ryan Schmid** 3rd Place, P-IE/SysEB PhD Oral Paper Competition, North Central Branch, ESA

2015 **Brian McCornack** Award for Excellence in Integrated Pest Management, North Central Branch Entomological Society of America

2015 **Shelly Wiggam** Making Our CASE Science Policy rep for KSU, American Association for the Advancement of Science

2015 **Ashley Hough** 2nd Place, MUVE/P-IE MS Poster Competition, North Central Branch, **ESA**

2016 Kun Yan Zhu Excellence in **Graduate Teaching** Award, Kansas State **University College** of Agriculture

2015 Greg Zolnerowich Arthur F. Beyer Distinguished Alumnus, **Midwestern State** University (Wichita Falls, TX)

2014 Kun Yan Zhu Fellow of ESA, Entomological Society of America

2016 **Bettina Jancke** 2nd Place Oral Presentation, Kansas State Research Forum, Art & Discovery Forum, Biological Sciences

2015 **Ryan Schmid Capital Graduate Research Summit** Scholarship, Capital **Graduate Research** Summit

2015 **Rvan Schmid** 1st Place Oral Presentation, Kansas State Research Forum, Agricultural **Sciences Section** 2

2016 **C. Michael Smith** Lifetime Achievement Award, **International Plant Resistance to** Insects Working Group

2014 **C. Michael Smith** Fellow of AAAS, American Association for the Advancement of Science

2016 **Jessica Thomson** Top 10 Finalist, **Three-Minute Thesis** Competition, Kansas **State University** Graduate School

2015 **Shelly Wiggam** 1st Place Oral Presentation, Kansas State Research Forum, Agricultural Sciences Section 1

2015 **Darren Snyder** 3rd Place, MUVE PhD Poster Competition, North Central Branch, ESA

2015 **Thomas Phillips** Professor Donald A. Wilbur Endowed Professor in Stored-Product Protection, Kansas **State University**

2014 Kun Yan Zhu **Commerce Bank Distinguished Graduate** Faculty Award, Kansas State University **Graduate School**

2016 **Ryan Schmid** 1st Place Three-**Minute Thesis Competition**, Kansas State University Graduate School

2015 **Shelly Wiggam Best PhD Poster** Presentation, Society for **Range Management**

2015 **Donghun Kim** 2nd Place, MUVE PhD Poster Competition, North Central Branch, ESA

2015 **JR Ewing** 1st Place, MUVE PhD Poster Competition, North Central Branch, ESA

2016 **Ryan Schmid** 1st Place Oral Presentation, Kansas State Research Forum, Art & Discovery Forum, Agricultural Sciences

2015 **Shelly Wiggam** 1st Place, P-IE/SysEB PhD Oral Paper Competition, North Central Branch, **ESA**

2015 Matthew Heerman 2nd Place, P-IE/SysEB PhD Oral Paper Competition, North Central Branch, ESA



Why Mudge Week?

Since we initiated Mudge Week for students in 2013, it has become a departmental fixture. Each spring we celebrate Mudge Week with a special speaker, the Perry Adkisson 3-Minute Thesis Competition, and fun activities, concluding with an awards luncheon for the department. Benjamin Franklin Mudge is the namesake because he taught the very first economic entomology course in the nation ("Insects Injurious to Vegetation") back in 1866 and was much loved by students.