

KAS BULLETIN



NEWSLETTER OF THE KANSAS ACADEMY OF SCIENCE

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VOL. 36 NO. 2

www.KansasAcademyScience.org

October, 2011

143rd Annual Meeting of the Kansas Academy of Science at Baker University

The 143rd annual KAS meeting was held at Baker University on April 8 and 9, 2011. The activities on Friday began with an afternoon tour of the newly created Baker Wetlands mitigation site at the southern edge of Lawrence, followed by a tour of the Electron Microscopy Laboratory and the Museum of Natural History at the University of Kansas. Friday evening, we enjoyed a wonderful banquet dinner at Maceli's, and were entertained and enlightened by the dynamic Dr. Mark W. Moffett, who shared some of his experiences and excellent photographic images taken while in pursuit of nature's rare and bizarre creatures in exotic natural environments.

From blind tarantulas in the deep recesses of Mexican caves, to tropical frogs which carry their tadpoles on their backs to small pools of water found in bromeliads high in the overhead tropical forest, Mark has tracked down and documented the more unusual aspects of the natural world. He has had memorable encounters with venomous animals, like the time he happened to sit directly upon the head of a fer-de-lance, a large, highly venomous snake. We enjoyed images of the lemon yellow poison dart frog from South America, *Phyllobates terribilis* – the skin of one frog possesses enough poison to kill dozens of people. Mark was also in Southeast Asia assisting Joe Slowinski, a famous herpetologist, as he lay dying from the neurotoxic bite of a krait. His spectacular images of tropical jumping spiders of the genus *Portia* invading spider webs to prey upon their occupants, as well as all his natural history adventures made me want to immediately go to some pristine, tropical location. Dr. Moffett has published numerous scientific and popular articles and is a regular contributor to National Geographic magazine. Visit his website at: www.doctorbugs.com.

On Saturday morning at Baker University, we began with coffee and danish in the auditorium and examined the poster presentations that were being set up. A poster by Fields, Tillinghast and Shaffer of the University of Nebraska-Karney documented the long-held belief that money is dirty. Dollar bills were found to be covered with several strains of the common bacterium, *Staphylococcus aureus*, including a drug-resistant strain that has caused problems in many hospitals. Frequent hand washing was encouraged. Researchers from Emporia State University, Liu and Yang, discovered that several natural plant extracts, including cinnamon leaf oil, killed human melanoma cells and other human malignant cell lines in vitro. Another study from Emporia documented the discovery of possibly as many as a dozen new species of bacteria from gypsum caves in the Red Hills of Kansas.



“Dirty Money” Study

During the rest of the morning and early afternoon, we heard oral presentations that were distributed among five concurrent sessions. One was the Paleontology Symposium organized and chaired by KAS Transactions editor, Mike Everhart. The other sessions were devoted to ecology, zoology, botany, geology, physics, and molecular bioscience. Mike Everhart of Fort Hays State University gave us an overview of recent discoveries of sharks that swam in the cretaceous seas of Kansas about 65 million years ago. J.S. Perkins of Kansas State University presented his PhD research on the effects of dams on the extirpation of several rare cyprinid fish species and the minimum stream length needed to ensure their continued survival in Kansas. These fish need unimpounded streams at least 200 kms long because their eggs float on the surface through the larval stage and, therefore, need adequate time to develop before reaching unsuitable habitat created by a dam. The current distribution of chronic wasting disease in Kansas deer and the means of disease transmission were examined by J.M Conard of Sterling College. It appears that this disease, which is related to mad cow disease, has spread from Colorado into ten northwestern Kansas counties. Randy Miller of Baker University presented preliminary results of the development of an online, world-wide Tardigrade Reference Center. This effort includes many practical, novel approaches that can be used as a guide for the establishment of other “reference centers” for a variety of organisms. His student, T. Clark, reported the discovery of a new genus and species of tardigrade from China.

After the talks, we adjourned to the cafeteria for lunch, where we enjoyed a good meal and a fabulous keynote address entitled, *Exploring the Canopy*, presented by Dr. Mark Moffett. The amazing behavior of tropical ants, some of which have successfully invaded large areas of the world, including the US, was presented with beautiful photographs of these remarkable animals. The habits of leaf-cutter ants, army ants, slave-making ants, and even exploding “terrorist” ants were discussed.

The abstracts of these and other interesting presentations of the 143rd annual KAS meeting can be found in the fall issue of the transactions.



This Year's Award Winners

Your Academy

by Dan Merriam, KAS Historian

The Kansas Academy of Science, the oldest academy west of the Mississippi River and one of the oldest in the U.S., was founded in 1868 as the Kansas Natural History Society.

There were seventeen members present at the organizational meeting at Lincoln (Washburn) College in Topeka. Four of the most active members were two theologians, a lawyer, and a military person, all of whom were interested in science.

The Academy is an active organization that promotes science in the state and does so by publishing the *Newsletter* and the *Transactions*, and by sponsoring an annual meeting and field trip. All branches of science in the state are included in the activities so there is something for everyone.

During the years, the Academy has grown and now has members representing academia from most of the public and private colleges and universities in the state, as well as members from the industry and business community.

Recently, the KAS Council has created a new position, the Academy historian. I have been appointed to this position and look forward to providing the membership with information regarding the Academy's contributions and support of science in Kansas. Look for articles on KAS history in future issues of the *Newsletter* and in the *Transactions*.

KAS Fall Field Trip

Kansas Citizens for Science Members:

The Kansas Academy of Science (KAS) is sponsoring a field trip to the Cross Timbers State Park, Toronto, Kansas, on **October 22, 2011**. This field trip is open to KAS members and the general public and will start at 1 pm at the shelter house on the park grounds. The tour will start with a short talk given by Kim Jones, the Kansas Dept. of Wildlife and Parks agent-in-charge, on the history and significance of the area. This talk will be followed by a tour of interesting sites within the park. Since the tour will involve considerable walking and the air temperature may be cool, it is recommended that the participants wear a comfortable jacket and shoes. The tour will last two hours ending about 3 pm.

Cross Timbers State Park, located in south central Kansas approximately 60 miles east of El Dorado, Kansas, and 17 miles west of Yates Center, Kansas, is the remnant of a mature Oak-Hickory forest that ran southwest from Missouri through Kansas, Oklahoma and Texas and represented the last barrier to the early pioneers before reaching the Great Plains. The area within the park exhibits geological and biological sites different from the surrounding area. The park and shelter house can be reached from US Highway 54. If you are coming from the east or west on US 54, turn south from US 54 onto state highway 105 and go approximately 2 miles to Point Road (entrance to the park). Turn into the park and proceed on Point Road for another 2 miles to the shelter house. Cabins and camping sites are available.

If you are interested in attending this interesting and educational field trip, we would appreciate it if you would contact Richard Schroder, President of KAS, and let him know that you will be attending. Contact information is shown below. While this contact procedure is not mandatory, it would be helpful in knowing the number planning on attending for headcount purposes.



Richard Schroder
8912 Millstone Drive
Lenexa, Kansas 66220

(H) 913-599-4066 (Leave message if no answer)

(C) 913-530-6915 (Leave message if no answer)

E-mail rschroder1@kc.rr.com

www.kdwp.state.ks.us/news/State-Parks/Locations/Cross-Timbers

I look forward to seeing you at the Cross Timbers State Park on Oct. 22nd. I believe that everyone attending will find it very interesting, educational and fun all at the same time.

Richard Schroder
President, Kansas Academy of Science

Scavenging Box Turtle

By Hank Guarisco, Bulletin Editor

The ornate box turtle, *Terrapene ornata*, is found throughout Kansas and is most often seen in and around roadways; although its natural habitat includes prairies, pastures, and open woodlands and fields in eastern Kansas. Most people picture this peaceful, attractive turtle calmly munching on strawberries, lettuce and native greenery, but its dietary interest is not confined to the vegetable kingdom. This turtle feeds on a variety of insects such as caterpillars, grasshoppers, beetles and earthworms as well as the occasional dead vertebrate (Amphibians and Reptiles in Kansas, 2nd edition, by Joseph T. Collins).

However, I was still somewhat startled to discover one feeding on a dead opossum in the middle of a gravel road in the vicinity of Ottawa in Franklin County, Kansas. I routinely drive along this 3-mile stretch of road and on 21 September, I noticed a freshly killed opossum on the road. Later that day, I found an adult-sized ornate box turtle feeding on it. I moved both off the road to prevent the box turtle from becoming the next vehicular victim.



Many box turtles are killed along the highway, mostly by accident but some are actually killed intentionally. This is hard to believe, but an informal study in the late 1970s by a herpetologist who shall remain anonymous proved that some drivers will intentionally go out of their way to run over a box turtle! Dead box turtles that appeared life-like were placed along the highway on the shoulder of the road, well away from traffic. These turtle decoys (which happened to have implants consisting of a spike on a wooden platform) were invariably hit by cars within a day or two.

The ornate box turtle is a consummate survivor. It is small, slow, long-lived and can usually wait out danger from predators by simply withdrawing into its protective shell. It may also occasionally end

up on the menu of a wild food forager, but people should be aware that box turtles have been known to eat mushrooms that are potentially deadly to humans. In captivity, the ornate box turtle will routinely stalk and prey upon mice that have been placed in its enclosure.

Notice from the Transactions Editors

Dear Board and Members of the Kansas Academy of Science, after five years of editing the Transactions of the Kansas Academy of Science, we intend to resign our positions within the next 12 months. This decision is not one we make lightly; the job has been rewarding and enjoyable, but we both find ourselves wishing to spend more time on our own research activities. We signed on initially planning a three year stint and have been on the job now for five years.

We feel that we have played a small part in bringing the Transactions to a new level of excellence, and we know that there are members out there who can take it even further. We encourage any interested members to make themselves known to the KAS board or either of us as soon as possible. An overlap of two issues was very helpful in our making the transition and would allow us to help the new editors make theirs. Having co-editors who split the job has helped immensely; we worked this by having one person do the peer review and the other do manuscript preparation and printing.

If you have any questions, please get in touch; your Academy needs you.

Sincerely,

Mike Everhart, mike@oceansofkansas.com
Roy Beckemeyer, royb@southwind.net

Newsletter editor's note:

On behalf of the society, I would like to formally thank both Mike and Roy for their dedication in making the Transactions the wonderful journal it is today. All the time and scholarly effort they have donated through the years has certainly been productive. The new format and the inclusion of color images are two main improvements.

Board member Randy Miller, of Baker University, has volunteered to become one of the new editors.

A Bacteria-Busting Oil Behind a Popular Spice

by Sindya N. Bhanoo, The New York Times,
August 30, 2011

Coriander (cilantro, when the leaves of the plant are used fresh) is a popular spice widely used in Asian, Latin American and Mediterranean cooking. Now, researchers from the University of Beira Interior in Portugal report that oil extracted from coriander seeds can kill bacteria related to food-borne diseases, like *E. coli*.

Coriander oil has been used for centuries as a folk remedy for a number of ailments. Researchers have also previously found that the oil may ease cramps, aid in digestion, soothe fungal infections and reduce nausea.

Although it was previously suggested that the oil can act as an antibacterial agent, this study is the first to decipher exactly how it does [it]. The researchers found that coriander oil is able to damage the membrane of bacterial cells. This blocks the cell from essential processes, like respiration, and ultimately leads to the bacterium's demise, the researchers report.

They tested the effect of coriander oil on 12 bacterial strains, including *E. coli*, *Salmonella* and MRSA, and antibiotic-resistant type of *Staphylococcus*. Most of the bacteria were killed by solutions containing less than 1.6 percent coriander oil, they reported.

With further testing, the researchers believe that coriander oil might one day be more widely used as a food preservative to prevent bacterial contamination.

The study was published in a recent issue of The Journal of Medical Microbiology.



Chris Gash

A Small Mammal Fossil Tells a Jurassic Tale

by Sindya N. Bhanoo, The New York Times,
August 30, 2011

The split between placental mammals and marsupials may have occurred 35 million years earlier than previously thought, according to a new study. Zhe-Xi Luo, a paleontologist at the Carnegie Museum of Natural History in Pittsburgh, and colleagues have discovered a 160-million-year-old fossil in China that is the earliest known ancestor of today's placental mammals, which include humans. He and his colleagues report their findings of the fossil, *Juramaia sinensis*, in the current issue of the journal Nature.

Until now, the oldest known ancestor to placentals was a small mammal that dates back about 125 million years, to the Cretaceous period. The new fossil has a well-preserved skull with teeth intact. Based on the teeth, the researchers determined that the mammal was more closely related to modern placentals than to modern marsupials.

About 90 percent of modern mammals are placentals. They provide nutrients to the unborn young through a placenta that allows for extensive growth and development. Marsupials, by contrast, generally have a shorter gestation period and give birth to relatively undeveloped young.



The newly identified mammal was small, weighing less than a chipmunk. Based on its claws, it appears to have been an active climber. "This was a skinny little animal, eating insect," said Dr. Luo. "We imagine it was active in the night and capable of going up and down trees."

Its discovery helps reconcile fossil evidence and molecular analysis. Modern molecular studies, which use DNA to estimate dates of evolution, also put the emergence of placentals at about 160 million years ago. "This hard rock evidence coincides and matches with the molecular evidence and gives us independent corroboration between fossils and DNA," Dr. Luo said



KANSAS ACADEMY OF SCIENCE
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*The 144th Annual Meeting of the
Kansas Academy of Science
will be held at
Wichita State University
on
March 30-31, 2012*
