

KAS BULLETIN

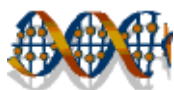
NEWSLETTER OF THE KANSAS ACADEMY OF SCIENCE



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EVOLUTION EXHIBIT AT KU MUSEUM THROUGH MARCH 15

There is a wonderful, new exhibit which uses state-of-the-art graphics and interactive museum techniques to convey a wealth of detailed information on the patterns and processes of evolution. The “Explore Evolution” exhibit is the result of a cooperative effort of six major natural history and science museums at the universities of Kansas, Nebraska, Minnesota, Michigan, Oklahoma and Texas.

This project was coordinated by Judy Diamond of the University of Nebraska State Museum and funded by a 2.8 million dollar grant from the National Science Foundation. To further its educational impact, 4-H organizations have developed study programs in conjunction with the “Explore Evolution” exhibit. Until March 15, 2006, visitors may view this exhibit on the 5th floor of Dyche Hall at the University of Kansas.

Because evolution is so pervasive a process, the creators of this exhibit wisely chose seven prime examples of evolution and explained them superbly. The visitor first encounters a large model of the double helix of DNA, the information coding system of cellular organisms. A model of a cell infected with the HIV virus illustrates our need to understand its rapidly evolving nature in order to combat the world-wide AIDS epidemic.

An historical perspective is evident in the presentation of Darwin’s famous voyage and aspects of his unifying theory of evolution through natural selection. A film clip of research scientists studying leaf-cutter ants and the unique fungus gardens that they maintain illustrates a prime example of coevolution. The isolated Hawaiian Islands is the home of over 400 species

of fruit flies. A film clip shows the unique courtship behavior of one species, and illustrates how sexual selection is the driving mechanism for the resulting species diversity of this group. Nearby is a large wall chart comparing the genetic similarity of our own makeup with that of our nearest relative, the chimpanzee. Ninety-nine percent of our DNA is identical to the DNA of chimps.

It is often claimed that very long periods of time are necessary to be able to see the effects of the evolutionary process. The exhibit of the work of Peter and Rosemary Grant on the ground finches of the Galapagos Islands refutes this assertion. They have made detailed measurements of the beak depth of three closely related species of ground finches on one of the deserted islands of the Galapagos and kept genealogical records for over 25 years.

During this time, they have documented differential survivorship of finch species related to weather conditions and the resulting abundance or scarcity of their main food supply, seeds of several local plants. The exhibit has actual seeds of these food plants and an interactive model of a finch beak and measuring calipers. It is interesting to note that if researchers had visited the island less frequently and taken measurements, they would have seen almost no change in beak depth.

The small changes that the Grants have observed would have cancelled each other out through the intervening time periods and given the impression of stability, and hence, no evidence of natural selection.

The final two examples of the “Explore Evolution” exhibit are relatively complete fossil records of the evolution of a new species of diatom and the evolution of whales from limbed ancestors. The large, pearlescent model of a diatom grabs visitors’ attention and presents a good visual balance with the actual diatom which may be viewed under a microscope nearby.

“OCEANS OF KANSAS A NATURAL HISTORY OF THE WESTERN INTERIOR SEA”

An amazing natural history book of life in the interior sea which covered Kansas during the Cretaceous was written last year by Mike Everhart, former KAS president and current editor of the Transactions. The 322 pages of this detailed, comprehensive and delightful volume are filled with fascinating accounts of the interactions of members of the fantastic fauna which prowled the ancient seas above Kansas, including mosasaurs, giant sharks, squid, turtles, and plesiosaurs, all gleaned from the fossil record.

The book opens with a story of a day in the life of a mosasaur: “The bright midday sun glinted off the calm waters of the Inland Sea and silhouetted the long, sinuous form of a huge mosasaur lying motionless amid the floating tangle of yellow-green seaweed. Twenty years old and more than thirty feet in length, the adult mosasaur was almost full-grown and was much larger than any of the fish or sharks that lived in the shallow seaway. A swift and powerful swimmer over short distances, the mosasaur used surprise and the thrust of his muscular tail to outrun his prey with a short burst of speed.” After setting the scene in each chapter, the author reconstructs a major event in the life of one of the protagonists in much the same way CSI investigators reconstruct a crime scene based upon the material evidence. Then he presents the fossil evidence for his fictitious but plausible scenario and provides the reader with a comprehensive survey of the known Kansas fossils pertinent to the discussion. The writing is engaging and the formula works very well.

Interesting historical accounts of fossil hunting in Kansas are presented as well as the author’s personal field experiences. Mike relates a journey he and his wife took to the airport in Kansas City. He expected to catch an early flight to Washington DC to examine some fossils at the Smithsonian. There was only hitch. It happened to be September 11, 2001.

This is truly a natural history book of Kansas animals and gives us a glimpse of life beneath the surface of time. The animals and plants we see around us today are only a small tip of the iceberg of the immense diversity of life of past ages. “Oceans of Kansas” is a welcomed edition to any library. This hardback book (ISBN#:0253345472) was published by Indiana University Press in June, 2005 and is

currently available at the reduced price of \$31.95 plus shipping and handling. Go to Mike’s award-winning paleontology website oceansofkansas.com for more information and a schedule of lectures and book signings around the state.

LEE RICHARDSON ZOO GARDEN CITY

The southwestern part of Kansas is the home of the Lee Richardson Zoo in Garden City. Often called “an oasis on the plains,” this 56-acre zoological park is truly worth seeing. The mission of the zoo is to instill appreciation and encourage stewardship of the earth’s natural treasures through the exhibition, conservation and interpretation of wildlife. This is accomplished by the exhibits which are extensive in area and diversity and the outstanding staff at the educational facility. More than 145 species from around the world are represented, including rare and endangered species which are part of captive breeding programs.

The naturally landscaped Wild Asia exhibit includes some of the rarest animals on earth, such as the red panda, Malayan sun bears, snow leopards, goral antelope and Pere David’s deer. About one hundred years ago, Pere David’s deer was rescued from the brink of extinction by the 11th Duke of Bedford who established a small herd at his Woburn Abbey estate. This species was originally discovered during the latter part of the 19th century by Father David, a French missionary priest in China. Father David, an amateur naturalist, noticed these unusual deer in the imperial gardens of the Chinese emperor. Under penalty of death, he managed to have several skins and a skull smuggled out of China and sent to the natural history museum in Paris where they were immediately recognized as a new species. Although this deer had ranged throughout other parts of China, it had become extinct about one thousand years ago and survived only in the emperor’s walled gardens. After its discovery, several animals were eventually sent to a handful of European zoos and later became the nucleus of the small herd established by the 11th Duke of Bedford. The remaining deer in the imperial gardens were killed and eaten by the peasants during the Boxer Rebellion in 1901. The several thousand Pere David’s deer in zoos throughout the world today are descendents of the small herd that was rescued by the 11th Duke of Bedford, who, incidentally, also rescued another critically endangered animal, Prezwalski’s horse.

The zoo also has the beautiful Marie Osterbuhr Aviary with four indoor displays of birds from around the world and a large, outdoor enclosure through which visitors can walk. There are benches in the shade along the meandering path next to the waterfall and stream which flows through the flight cage. Among the numerous species is the kookaburra, known for its insane, laughing call that was part of almost every jungle movie during the 1950s. Another notable inhabitant is Rothchild's (Bali) mynah bird. This beautiful white bird with a blue ring around its black eye is native to the small Indonesian island of Bali. Its numbers have been secured by extensive breeding programs in zoos throughout the world.

The open grasslands of the South American pampas are represented by large, open grassy paddocks where visitors can see llamas, alpacas and large flightless rheas. Baird's tapir, a tropical jungle inhabitant is also on exhibit. The African Savannah is represented by two open yards with Grant's zebra, African pygmy goats, and the rare desert-adapted Addax antelope. The zoo also has a little bit of Australia with kangaroos and the large, flightless emu. The North American Plains exhibit includes "Kansas Waters" which features closeup views of river otters as they swim and play.

Although the large, flightless birds that have survived to the present are impressive animals, we can only image the richness and diversity of life of the many species of flightless birds that are known only from fossil and subfossil remains. One of these species, the Great Elephant Bird of Madagascar, which stood ten feet high and probably weighed about 1,000 pounds, laid eggs over one foot long - larger than any known dinosaur egg. This species survived into historic times and is thought to be the basis of Arabian legends of the "roc," a large bird which supposedly carried off elephants. At the other end of the size spectrum is the Stephen Island wren, a small, flightless bird that was discovered by "Tibbles," the lighthouse keeper's pet cat in 1894. Stephen Island is a small (1 sq. mile), rocky island between the North and South Islands of New Zealand, and was the home of this unique bird. Over a period of a few weeks, "Tibbles" brought back over a dozen of these birds. None have ever been seen again. The entire population was exterminated by a single pet cat!

These and many other examples of animals and plants that have become extinct by the direct and indirect actions of people have ignited a desire to protect the remaining species in peril. Zoological

gardens, such as the Lee Richardson Zoo, play an important part in these species continued survival not only by maintaining these animals in captivity, but by participating in cooperative breeding programs, such as the species survival plan program and population management plans, to ensure healthy captive populations that are genetically diverse. In addition to furthering research and public education, some of these animals are used in reintroduction programs which are designed to maintain stable wild populations of critically endangered species. A list of animals at the zoo that are part of these programs can be found on the Lee Richardson Zoo's website, <http://www.garden-city.org/zoo/animalinfo/SSP.htm>.

The zoo has a series of educational programs which include guided tours of the zoo exhibits, educational center programs with live animals tailored to all age groups, distance learning programs, summer zoo camp and summer storytime. Most of these programs are provided free of charge. For more detailed information, refer to the education section of the zoo's website.

I highly recommend a special trip to this zoo. The zoo is partially funded by City of Garden City and the Friends of the Lee Richardson Zoo which raises money for capitol improvements and to help out in other areas when needed. Oh, yes, by the way, **admission is free!**

KAS BULLETIN GETS NEW EDITOR

For the past dozen years, Larry Skelton has consistently put together the Bulletin for the Kansas Academy of Science. He is retiring from the Kansas Geological Survey this year, and has also decided to relinquish his position as editor of the Bulletin. The Bulletin is an essential vehicle for providing the membership with important society news, including information about upcoming meetings, student research grants, as well as interesting events and activities. I have decided to take on this task and hope to continue to provide readers with needed information. However, I need your help. This is our society, and I ask everyone to make a contribution. I would like to feature different activities, events, and resources from all parts of Kansas and report on interesting new research in the sciences. On behalf of the membership, I give a hearty thank you to Larry Skelton for his service to the society.

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138th Annual Meeting of the Kansas Academy of Science April 7 and 8, 2006

Just a quick reminder: the KAS annual meeting will be held on Friday and Saturday, April 7th and 8th in the Rhatigan Student Center at Wichita State University, 1845 Fairmount in Wichita.

Visit the KAS website at www.washburn.edu/kas/meeting2006html for information and on-line registration.

A free tour of the National Institute for Aviation Research (meet in lobby of NIAR on the WSU campus) is available from 2:00-3:00 pm on Friday. Reservations are required, so check the box on your registration form. After the banquet dinner (5:30-7:00pm), Dr. Patricia Meinhardt will present "Protecting Americans from Waterborne Disease and Water Contamination" at 7:00pm in the student center ballroom. The 7th Annual Paleontology Symposium and other symposia will begin at 8:00 on Saturday. Lunch is available at noon and includes a vegetarian selection. Check the registration form for cost of meals.