



Tracks

Spring 2008 Newsletter, Volume 20, Number 1

PALEO-PREVIEW

Annual Fundraiser Muse-a-Palooza
Previews New Permanent Gallery

EXPLOROLOGY 101

A look at our new educational summer program
funded by the Whitten-Newman Foundation

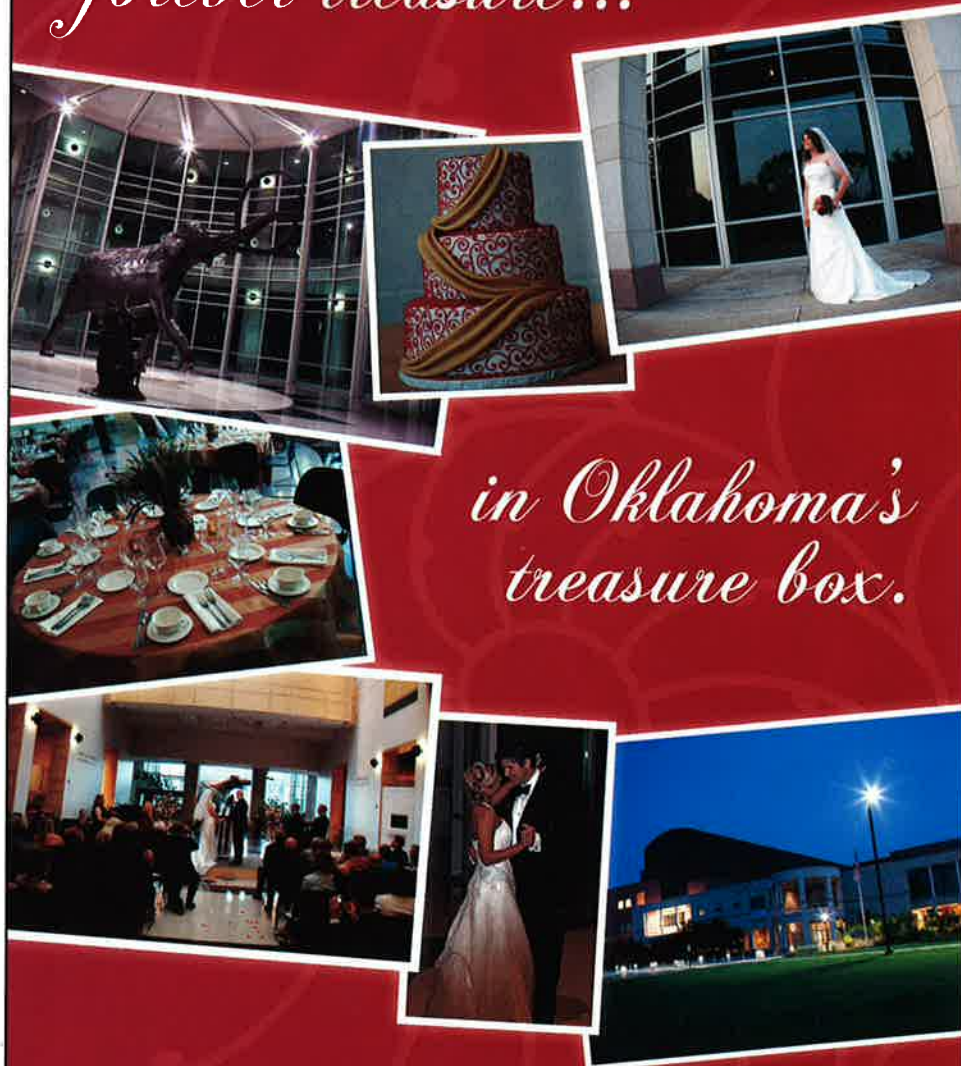
TENONTOSAURS

Museum specimen helps determine
gender, pregnancy in dinosaurs



INFORMATION

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Sam Noble Oklahoma Museum of Natural History

2401 Chautauqua Ave., Norman 73072

www.snomnh.ou.edu/events (405) 325-7975

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MUSEUM INFORMATION

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E-mail: snomnh@ou.edu
Web site: www.snomnh.ou.edu

OUR MISSION

The Sam Noble Oklahoma Museum of Natural History inspires minds to understand the natural and cultural world through collection-based discovery, interpretation and education.

We do this by:

- Collecting and maintaining specimens, cultural objects and associated data, including linguistic and ethnographic, for current and future research
- Conducting and disseminating research to increase knowledge
- Teaching university students to develop critical-thinking skills
- Educating the public through programs and exhibitions to increase scientific literacy
- Conducting K-12 school programs to enrich classroom experiences.

OUR VISION

As one of the finest museums in the country, we are at the heart of our community, collectively working to inspire understanding, appreciation and stewardship of the earth and its peoples.

Tracks

Editor in Chief: Ellen J. Censky
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Masterworks of NATIVE AMERICAN ART

Selections from the Fred and Enid Brown Collection
On display through May 11





FROM THE DIRECTOR

NEW EXHIBITS, PROGRAMS IN THE WORKS



The Sam Noble Oklahoma Museum of Natural History will be stepping into the state's second century in style. During the course of 2008, we will be unveiling many new exhibits and programs. With so many new projects close to completion, it is an exciting time.

One of the most exciting will be the opening of the Paleozoic gallery in the Hall of Ancient Life. This immersion exhibit, which has been in design and production since 2004, will take you back in time to an Oklahoma that was very different from the present day – complete with ancient sea creatures swimming overhead. The new gallery will open to the public on May 31.

On the same day, we will open our summer special exhibition, "The Science of SuperCroc featuring *Nigersaurus*," created by Project Exploration. There are two showcase pieces in this exhibit – a 40-foot-long ancient crocodile with a skull measuring 6 feet, and a strange-looking dinosaur with a body the size of an elephant and a 6-foot-long neck. It will be the first time *Nigersaurus* will be seen outside of the National Geographic Society in Washington, D.C. This exhibit was made possible by the generous support of the Whitten-Newman Foundation and we are deeply appreciative.

The Whitten-Newman Foundation also is sponsoring a major new educational program at the museum, ExplorOlogy: Adventures in Science. Thanks to their generous gift of \$950,000, the museum will be debuting the program this summer. ExplorOlogy provides opportunities for kids 4 to 8 years old to explore the natural world as a Summer Explorer, plus opportunities for kids of middle-school age to join scientists in the field for a week, doing science and learning about the different fields of science. In addition, elementary school teachers will come to the museum to learn from scientists and education specialists about the scientific process and how to integrate it into their curriculum. Later in the year, museum educators will travel to schools to provide assistance to those teachers involved in the workshops. Next year we will roll out a program for high school students.

Another exciting project that will materialize this year is our quest to become the first LEED-EB (Leadership in Energy and Environmental Design-Existing Building) certified building in Oklahoma. We have been working on documenting how the building functions and implementing programs, procedures and policies that will help the museum become more environmentally sustainable and achieve certification. We hope to be certified by early summer.

These are just a few of the exciting projects that will reveal themselves in the upcoming year. We plan to make history during the next 100 years.

Ellen Censky

MUSEUM



THE MUSEUM GOES GREEN

January is the traditional month for making earnest resolutions for self-improvement, and this January the museum kicked off a drive to enhance environmental awareness in its visitors and set an example of responsible ecological practices for other institutions across the state.

The museum currently is undergoing an assessment to determine what adjustments will be required for the facility to become certified as a "green building" through the U.S. Green Building Council's Leadership in Energy and Environmental Design program (LEED). The LEED Green Building Rating System is the benchmark for the design, construction and operation of high-performance green buildings.

For existing buildings, the LEED certification process focuses on best practices in operations and maintenance to be sure a building is meeting its full potential. The certification process looks at areas such as cleaning and maintenance issues,

chemical use, indoor air quality, energy and water efficiency, recycling programs and facilities, and systems upgrades to meet green building standards. If certified, the museum will be the first existing building in Oklahoma to achieve LEED certification.

"As an institution whose mission is to inspire understanding and stewardship of the natural world, these steps are critical," said Ellen Censky, the museum's director. "We want to set an example by becoming the first existing building in Oklahoma to receive LEED certification. This is a project that the staff has embraced."

A committee of museum staff members has been active in seeking out other ways in which the museum can have a lower environmental impact. Recent changes include an active recycling policy and use of recycled products in printing whenever possible. The museum's Redbud Café has made a recent switch to paper from styrofoam cups and other con-



The museum stands tall against the Oklahoma prairie grass in this photo taken in summer 2007. The 20 acres of native prairie just south of the museum has earned official designation as an Oklahoma Natural Area with the Oklahoma Natural Heritage Inventory. Photo: Krysten Marshall

tainers, and has begun serving shade-grown, free-trade coffee.

The 20 acres of native prairie landscape just south of the museum have recently earned official designation as an Oklahoma Natural Area with the Oklahoma Natural Heritage Inventory. Now named the "Centennial Prairie" in honor

of the state's centennial year, this area will be maintained as a natural preserve and outdoor education resource. Using drought-tolerant native plants in backyard landscaping is another way for Oklahomans to lower their environmental impact.

EIGHT EASY WAYS TO GO GREEN AT HOME

PACK lunches in reusable containers instead of plastic bags, aluminum foil or paper. Use a thermos in place of single-use juice boxes.

RECYCLE school papers as well as junk mail, newspapers and magazines.

REPLACE paper napkins with simple cloth napkins that can be tossed in the wash and reused.

DRINK tap water. A lot of energy goes into the manufacture and transportation of bottled water, and many of those plastic bottles end up in landfills.

CUT DOWN on junk mail by opting out of pre-approved credit offers and marketing mail online at optout.com and dmachoice.org.

SWITCH to green, non-toxic household cleaners.

WASH clothes in cold water. Most of the energy used in washing clothes comes from heating the water, and today's detergents work just as well in cold.

KEEP reusable cloth bags in your car for trips to the grocery store. Use them in place of plastic. It takes months, years, even decades for one plastic bag to decompose.



EXHIBITS

PALEOZOIC GALLERY CONSTRUCTION

There is an intriguing racket of activity going on these days behind the temporary walls surrounding the north end of the museum's Hall of Ancient Life. Fabricators from Chase Studio will be on site throughout the spring, working to build and install exhibits for the new Paleozoic gallery, set to open May 31.

The new gallery is a large, multi-faceted and complex project, totaling some 4,600 square feet, with more than a dozen exhibit areas that will guide visitors through roughly 4 billion years of Earth's history, from the formation of the planet through the mass extinction at the end of the Permian Period, 251 million years ago. There are many scientific concepts to be encompassed

as well – big ideas like evolution, classification and radiometric dating of rocks and fossils hundreds of millions of years old. Museum scientists and developers have

"The overall goal of the new gallery is to illustrate evolution ... literally as change through time."

worked carefully with designers to break these concepts down into pieces that will be easy for museum visitors to grasp.

"We couldn't tell everything that happened over four billion years," said Steve Westrop, curator of invertebrate paleontology, who heads the museum team involved in the development of the gallery. "We had to decide what was important and what we could fit into the available space. As it is, the gallery is large and covers a number of important episodes in the history of life. Many of the exhibits are based on fossils from Oklahoma."

"The overall goal of the new gallery is to illustrate evolution ... literally as change through time," Westrop explained. "Walking through these exhibits, you will see that ancient ecosystems generally are similar to those of today, but the plants and animals that filled the ecological roles are quite different."

Visitors entering the gallery will view a large, illuminated model of the earth, with

cutaways to reveal the planet's core and explanations of how it was formed. Additional panels nearby will explain plate tectonics – the movement of the land masses across the surface of the planet over the millennia – and the formation of the earth's atmosphere. This area of the gallery also will explain how scientists use both radiometric dating and relative dating of rocks and fossils to work out the ages of the layers of rock that are the pages of the earth's history.

Some of the earliest life forms on Earth were a type of bacteria that built up finely-layered, often dome-shaped rocks called stromatolites. Several models of stromatolites will be grouped in the early part of

the gallery for visitors to touch and even sit on, along with a chunk of fossilized stromatolite from Oklahoma. The gallery also will include the oldest fossils in Oklahoma – trilobites that lived in a shallow sea that covered the state about half a billion years ago.

"Every place we can emphasize Oklahoma history in the exhibit, we have done so," explains Deborah Kay, the exhibit's developer and an education officer at the museum. "In some places we have no specimens from Oklahoma because we just don't have rocks of that age here, but in other places, we have lots of Oklahoma specimens and we have been able to tell the Oklahoma story really well. The early part of the exhibit tells the story of the planet overall, with an emphasis on Oklahoma wherever we can."

Oklahoma's story in the fossil record begins toward the end of the Cambrian period, about 500 million years ago. Hundreds of Oklahoma fossils will be on display in a series of exhibits and dioramas that illustrate Earth's early marine environments, including trilobites, ammonites and crinoids. Oversized models of some of these creatures



Artists from Chase Studio put the finishing touches on several specimens that will be featured in the new Paleozoic gallery. Above Top: *Eryops*; Above Middle: *Dunkleosteus*; Above Bottom: *Arthropleura*; Page Opposite: A rendering of a trilobite that will be featured. Photos Courtesy Chase Studio

also will be included, to give visitors an idea of what they may have looked like in life.

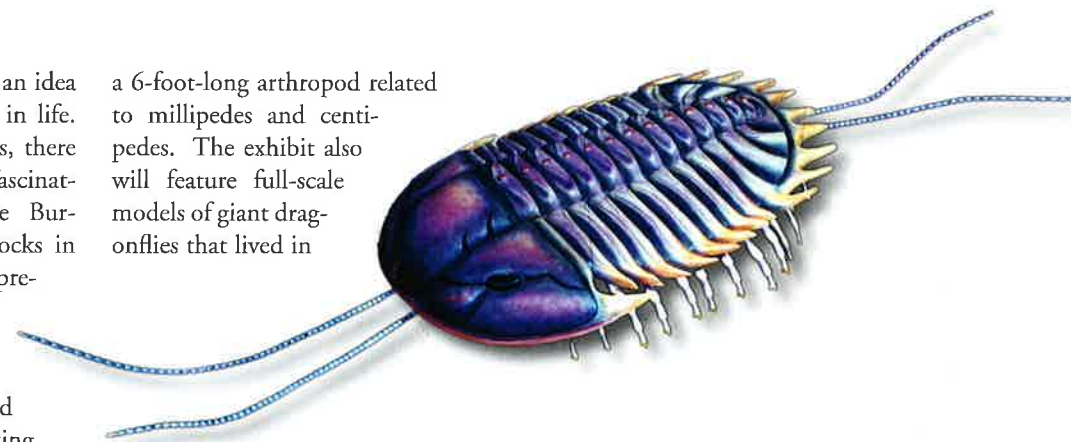
In addition to Oklahoma fossils, there will be dioramas that show the fascinating, unearthly creatures from the Burgess Shale, layers of fine, muddy rocks in Canada that revealed imprints of previously unknown soft-bodied creatures from the Cambrian period, and from Chengjiang, a similar deposit in China. Oversized models of many of these strange-looking animals will hang overhead, including the fearsome *Anomalocaris*, the Cambrian's master predator. Visitors will enjoy an interactive exhibit through which they can discover how some of these strange creatures fed and an animated display that will show how some of them may have moved.

A diorama of the Devonian period will illustrate the evolution of fish, and will include a full-scale, fleshed-out model of *Dunkleosteus*, the enormous bony-plated marine predator that visitors to the museum previously had seen only in the form of a disembodied skull at the entrance to the Hall of Ancient Life.

"I like using the fleshed-out reconstructions because they create images of these fossils as living animals, and not just a collection of bones or shells," said Westrop. "When you can show them as 'real' animals, with an attempt at reconstructing the habitat that they lived in, it lets visitors see that the whole ecosystem was different in the past. The climate was often different from today; even sea level was different."

One of the showstoppers of the new gallery will be the walk-through Carboniferous swamp diorama. Based on fossils found at Oklahoma sites, this full-scale diorama recreates the unearthly beauty of an ancient coal swamp, complete with the strange, patterned trunks of ancient trees and full-scale models of bizarre beasts that prowled Oklahoma more than 300 million years ago. One of the most arresting of these is *Arthropleura*,

a 6-foot-long arthropod related to millipedes and centipedes. The exhibit also will feature full-scale models of giant dragonflies that lived in



Oklahoma during the late Carboniferous and sported wingspans of more than 2-and-a-half feet.

A special section of the new gallery will focus on a unique Oklahoma fossil site near Fort Sill that is recognized as the richest source of Permian vertebrate fossils in the world. Several fleshed-out models and fossil skeletons will illustrate some of the remarkable discoveries of early reptiles that this site has afforded during the years.

In addition to the entirely new specimens and models to be added to the gallery, some old favorites will be returned with new dioramas in the Permian area. Visitors will be able to welcome back *Dimetrodon*, *Edaphosaurus* and *Eryops* as well as a diorama featuring *Cotylorhynchus*, the large-bodied Permian animal that was common to central Oklahoma 280 million years ago. A touchable model of this creature's remarkably tiny skull will let visitors get a closer look than ever before and will allow them to see for the first time the teeth this strange-looking, ungainly animal had in the roof of its mouth.

"There are many more interactives in the new gallery than there are in any of the current exhibits," said Kay. "There are a lot more things to touch and do."

"There is going to be so much more to see now," said Westrop. "We are going to be covering a lot, and you may not be able to take in the entire gallery in one visit."

Don't Miss a Sneak Peek of the Paleozoic Gallery



EXPERIENCE THE CHANGE

SATURDAY, APRIL 5, 2008 7 P.M.

Grab your hardhats for this year's fundraiser event. Guests at Muse-a-Palooza 2008 will enjoy exclusive, behind-the-scenes tours of the new Paleozoic gallery under construction. Exhibit fabricators from Chase Studio will be working on the exhibit during the event and will be available to talk with guests and answer questions.

In addition, guests will be treated to an evening of live music by the popular band Horseshoe Road, plus delicious food provided by Legend's catering, and an opportunity to bid on a variety of items in our one-of-a-kind silent auction.

The Paleozoic gallery is not scheduled to open to the public until May 31. Don't miss this opportunity to get inside the construction zone and experience the museum's biggest change since its opening. For tickets (\$75) and information, call (405) 325-5020.



EXHIBITS



BONES REVEAL TEEN PREGNANCY IN DINOSAURS

Determining the gender of dinosaur fossils is a problem that has troubled scientists for many years. With only skeletal remains to go by, and those almost always incomplete, it has been impossible for researchers to know for certain if the minor differences they observe in bone size or shape are true gender differences or simply idiosyncrasies of the individual animals.

Recently, however, some scientists have discovered a way to make that determination with certainty in a few specimens by comparing certain types of dinosaur bone tissue with that of modern birds. So far, only three dinosaur specimens in the world can be said for sure to have been female based on this bone tissue. One of them is a *Tenontosaurus* in the museum's collections. A paper published in January in the *Proceedings of the National Academy of Science* and co-authored by a University of Oklahoma alumna describes research indicating that not only was the museum's tenontosaur

specimen female, it was a teenage mother.

In 2005, Sarah Werning, now a Ph.D. student at the University of California, Berkeley, was working on her master's degree in zoology at OU. She was studying the histology, or tissue structure, of the bones of 13 *Tenontosaurus* specimens from the museum's collection. She cut thin slices of the fossilized bone and examined them under a microscope, studying the bone tissue structure and growth rings. In one of these specimens, Werning noticed an unusual spongy tissue inside the marrow cavity of the bone. When she examined other bones from the same specimen, Werning discovered that the unusual tissue was found in bones throughout the animal's body, and so was not a result of disease or damage to a particular bone. She noted the oddity in her thesis.

About the same time, Mary Schweitzer, a researcher at North Carolina State University, published a paper on the same type

of tissue in the bones of a *Tyrannosaurus rex*. Schweitzer had studied the bones of large modern birds such as the ostrich and rhea, and found the same type of tissue, called "medullary tissue," in "gravid" or pregnant females. The medullary tissue is made up primarily of calcium and forms inside the mother bird's bones just before her eggs are formed. The mother's body then reabsorbs the calcium in the medullary tissue to form the hard shells of eggs. Schweitzer concluded that the same process must be at work in the *T. rex* bones she studied, and therefore the specimen must be female. A *Tyrannosaurus* "reine," as it were.

After completing her master's degree and commencing her doctoral work at Berkeley, Werning met another colleague, Andrew Lee, who was doing studies on growth rings in *Allosaurus* bones. He, too, had discovered medullary tissue in one of his specimens, and they began to work together to compare their findings, hoping to learn something about the life cycle of dinosaurs.

Bones, even fossilized bones, show their rate of growth in rings, much like tree rings. As bones grow, they lay on new tissue over the outside of the bone during the course of a year or a season, then take a brief resting period of no growth before starting again. Scientists can study the rings to learn how quickly the animal was growing and how long it took it to reach its full adult size. After that, the bones would still show rings, but much closer together.

What Werning and her colleague found was that the dinosaurs in question were reproducing much earlier than previously thought. The *T. rex* in which Schweitzer had initially discovered the tissue was a youthful 18 years old. The *Allosaurus* specimen in the study was age 10,

and the tenontosaur in whose bones Werning found medullary tissue was a mere 8 years old. All of the specimens were laying eggs during their period of most rapid growth: essentially, as teenagers.

Modern birds, the dinosaurs' closest relatives, do not reproduce until after they have fully matured. Modern reptiles, such as turtles, crocodiles and lizards, reproduce before they are fully grown, but they grow more slowly. Dinosaurs, however, have a growth pattern similar to humans and other large mammals: a period of rapid growth in the first several years, followed by a period of much slower growth. And, like humans, they appear to have reached sexual maturity in their teens, before the period of rapid growth was complete.

Why? Werning said that it could be because dinosaurs did not live very long - a short 25 to 30 years, tops. Being able to reproduce before reaching full size gave them a few extra breeding years, fulfilling the instinctual need to pass on their genes to future generations.

The study gives scientists another insight into the life cycle of dinosaurs. And it has earned the museum the right to boast of another rare and significant scientific specimen.

CUTTING UP BONES

The work done by Sarah Werning is an excellent example of how the museum's collections can be used by successive generations of scientists to continue to unlock the secrets of the distant past. The specimen in which Werning found the tell-tale medullary tissue was collected in 1996 in Montana, and this is its second time to enjoy the scientific spotlight.

One of the thigh bones later used by Werning in her study was found with the tooth of a *Deinonychus* embedded in it. At the time it was found, there was still some scientific debate as to whether the small, light-boned *Deinonychus*, fierce as it was, would have been capable of successfully preying upon an animal the size of a tenontosaur, which would have weighed around 2 tons as a full-grown adult. This 8-year-old young mother probably weighed in at about 850 pounds. The embedded tooth, plus scattered bones of a *Deinonychus* killed in the attack and bite marks on other bones, helped prove the case for the ferocity of the small theropod and its predator/prey relationship with the tenontosaurs.

When Werning conducted her study, she had to cut pieces out of the original bone in order to do so, a process known as "destructive sampling." She made casts of the bones prior to cutting her samples, and cast

pieces have now replaced the bone segments she removed, so the bones in the collection retain their original shape and size.

Though this kind of research does damage the fossil, Rich Cifelli, the museum's curator of vertebrate paleontology, argues that the results are worth it.

"I like to promote getting new information out of specimens," Cifelli explains. "Especially if it can be done in a way that doesn't compromise the integrity of the specimen for future research. In this case the missing piece of bone was cast and replaced, so the specimen is identical to the original, and for any kind of traditional anatomical

study it is just as good as it ever was. In addition, we now have the slide specimens Sarah prepared, which means now anyone else can go back and get additional information from them. I think anyone would say it was eminently worthwhile."

As new advances are made in scientific study of fossils, these and other bones in the museum's collections may have many more chances to uncover the mysteries of Oklahoma's ancient past.

Below: Inset:
A *Deinonychus* tooth is imbedded in this tenontosaur bone housed in the SNOMNH vertebrate paleontology collection. Photo: Krysten Marshall

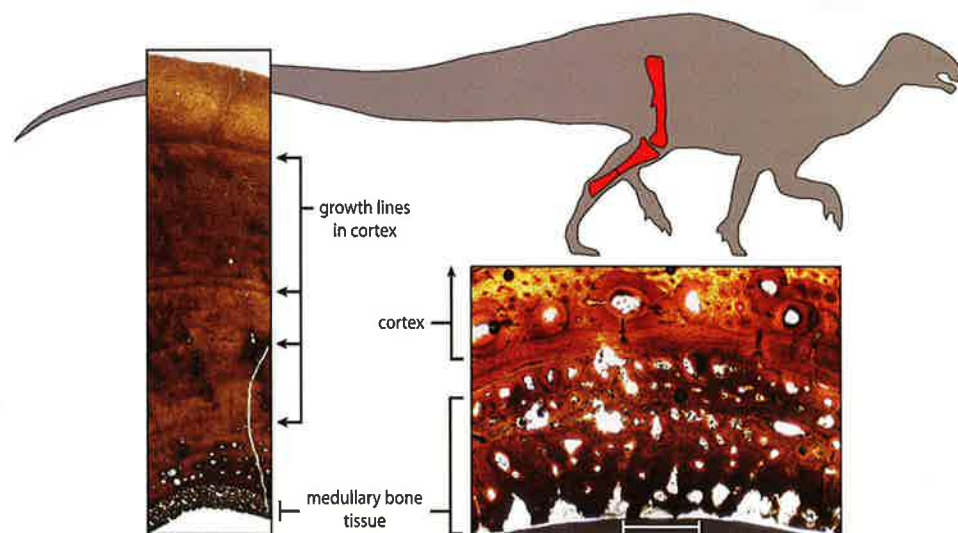


Image Courtesy of Sarah Werning, UC Berkeley





EXPLOROROLOGY 101

The museum education department is pleased to welcome Holli Langlieb as the coordinator for ExplorOlogy, the new education project funded this year by the Whitten-Newman Foundation. Holli will be responsible for planning, organizing and implementing the Summer Explorers and middle school camp components of the project. Another full-time staff member will be hired to serve as an additional educator, devoted to new ExplorOlogy programs.

During the winter, the museum education staff has been working to get logistics in place for the launch of the summer programs. A page has been added to the museum's Web site giving basic information: www.snomnh.ou.edu/publicprograms/explorology. The page will be updated as additional information about ExplorOlogy becomes available, and will serve as an interactive portal for the programs once they are in session.

Two new vans have been purchased that will be used in the summer programs, as well as the fall outreach programs to schools. The museum's designer, Cathryn Rowe, also has been at work devising a new logo for ExplorOlogy.

In addition to the Summer Explorers program, consisting of 22 on-site classes for children ages 4 to 14, this summer will see the launch of the first field camp program for students currently attending sixth, seventh or eighth grades. The program will consist of a week-long field experience July 6 – 12. Students will spend the week exploring a variety of "ologies" in Oklahoma forests, streams, ponds, fields and quarries with scientists. The week will culminate with an overnight stay at the museum where students

VISIT THE MUSEUM'S WEB SITE WWW.SNOMNH.OU.EDU. THIS SPRING AND SUMMER FOR ADDITIONAL INFORMATION AND UPDATES ABOUT THIS EXCITING NEW PROJECT.



National Geographic Explorer-in-Residence Paul Sereno shows fossils to school children at the ExplorOlogy media presentation last fall. Twelve students will be selected to participate in the week-long ExplorOlogy field program this July. Photo: Krysten Marshall

will work in the museum research labs to further study the fossils, specimens and artifacts that they encountered in the field.

Twelve students will be selected statewide to participate. Applications will be available March 1 on the ExplorOlogy Web page and are due at the museum by April 28. Students will be selected based on their application and a recommendation from their science teacher.

"The program will be an exciting opportunity for students to learn about and participate in scientific research," said Wendy Gram, head of museum education. "It will also be a lot of fun. The students will spend most of their time outdoors, working with scientists on field research projects. But after excavating fossils and catching pond animals, students also will take night hikes, go canoeing and build lasting friendships. We want students to ask questions about the natural world around them, and the best way to do that is for them to immerse themselves in that world. Throughout the program, the students will document their experiences through written and digital journals, giving them an opportunity to use a variety of technologies to share their experiences and research projects."

Teachers: GET IN ON THE ACTION!

June 23 through 28, ExplorOlogy will bring 24 elementary school teachers to the University of Oklahoma campus for Science Institute, a six-day science experience modeled on those begun by the museum in 2004. The program pairs teams of teachers from various schools with working scientists at OU to participate in ongoing scientific research projects. In addition, the teachers will work with science pedagogy expert Jon Pedersen, associate dean for graduate studies and research in the OU College of Education. Pedersen will help teachers translate their science experiences into meaningful and engaging approaches to teaching elementary school science in their classrooms.

During the 2008-09 school year, museum educators will bring ExplorOlogy to the students of these teachers, traveling to their respective schools and working with them to implement small-scale, grade-appropriate scientific research projects right in the classroom.

"Most elementary school teachers have never had the opportunity to 'do science,'" said Gram. "We want to provide teachers with a real science experience to help them better understand the nature of science, and we want to help them develop ways to engage their students in 'doing science' in their classrooms."

Application materials for Science Institute will be available March 1 on the ExplorOlogy Web site: www.snomnh.ou.edu/publicprograms/explorology.

GRIZZLY: THE MUSEUM'S FIRST "DINOS"

Visitors to the mammal collection at the museum will remember the enormous mounted grizzly bears and caribou that now stand just inside the collection doors. Those who visited the exhibits of the "Stovall Museum" on Asp Avenue may also remember the bears and the caribou from their place in the dusty dioramas in glass cases. Though no longer on public display, the bears still have a place in the history of the museum. Michael Mares, the museum's curator of mammals and former director, has been working on a history of the museum collections. Here, he tells the story of the museum's grizzlies.

In the early 1920s – long before J. Willis Stovall, the museum's first director, arrived in 1930 and began campaigning for a new permanent building for the museum – there was an acknowledged need for a building to house the growing collections. A collection of mammals and birds was purchased from the president of Oklahoma Baptist University, along with bird eggs and marine species such as starfish and corals, but the museum needed something more spectacular than a bird or a starfish to inspire public support for a new museum. There were as yet no dinosaurs in the collections – animals that would help lead the charge for a new museum 60 years after being discovered by Stovall. No, the collections at that time held nothing spectacular.

Many of Oklahoma's large mammals, including the bison, grizzly bear and wolf, had disappeared. Was there any area within reach where spectacular animals could be found? Yes, a land "up north" had just become a territory – Alaska.

In 1921, Ardmore oilman C. E. Sykes, who was a big-game hunter, had to go to Alaska. OU President Stratton Brooks, who had been calling for a new museum, saw an opportunity to obtain extraordinary animals for display. Edward Crabb, a young man from Yukon who had learned bird taxidermy and been hired by the museum, was to accompany Sykes on an Alaskan expedition.

A few days later, a room was reserved on the steamship S.S. Northwestern for a \$25 deposit on the \$65 one-way fare, departing on April 23. Sykes wrote to taxidermists to learn how best to field dress animals that would later be live mounted. On April 9, the Department of Agriculture in Washington, D.C., issued collecting permit No. 545 for Mr. Ed. Crabb to collect for scientific purposes three brown bears, two moose, two mountain sheep, two caribou, and two mountain goats. The expedition was under way.

President Brooks expected to fund the expedition when the state appropriation arrived, but the legislature adjourned without allocating the money. Brooks would not even receive his salary, yet Crabb was on his way to hunt the animals Brooks planned on exhibiting in Oklahoma's new capitol building. Brooks sent Crabb his personal funds to allow the expedition to go forward.

The expedition was successful. On Nov. 17 Brooks wrote to Jonas Brothers taxidermists in Denver to say that animals had been shipped in his name, including five Kodiak bears, three grizzly bears, two moose, four caribou and six mountain sheep. Later documents showed that five moose



Kodiak bears from C.E. Sykes' and Edward Crabb's 1921 Alaskan expedition stand guard at the entrance to the mammalogy collection. Photo: Krysten Marshall

and four caribou, along with other animals, were being prepared.

In a May 4, 1922, letter to Sykes, Crabb noted, "I was forced to give myself credit for having killed the two bears in order that the records of our shipments be kept clear, i.e., two bears killed on my license and three on your special permit. No, Sykes, please do not give me credit for even [having] fired a shot at a bear, for another credit would be unjust." Crabb had only taken a 20-gauge shotgun to collect birds and smaller mammals, hardly a weapon for Kodiak bears! The hunter was clearly Sykes.

On Dec. 18, 1922, a telegram from Sykes reported the bear group would be shipped on Dec. 28, noting, "I understand [Brooks] to say that he intended to have these put in the Capitol at Oklahoma City for the time being. I believe that would be beneficial in that it might help in getting the proper appropriation."

The spectacular live mounts were never shown at the state capitol. President Brooks had not supported the election of Gov.

John Walton, who took office in 1923. Walton vetoed the bill that provided funds for the new museum because he disliked Brooks. Walton had Brooks dismissed from OU (becoming president of the University of Missouri until 1931). Shortly after Brooks left, Walton was impeached. The charismatic animals upon which Brooks had hoped to build a museum were shown in the Norman Library and later transferred to Stovall's museum, where they were displayed for more than 50 years.

The animals that were intended to fill the role later filled by the great dinosaurs were never able to accomplish their mission. Politics and petty revenge had intervened. Today the great bears and caribou, faded from their years on exhibit, stand guard in the museum's mammal collection, bearing silent witness to what could have been but never was. They are still magnificent animals. They remain the first "dinosaurs" of the mammal collection.

By Michael A. Mares,
Research Curator of Mammals



THE SCIENCE OF SUPERCROC FEATURING NIGERSAURUS

As if the Grand Opening of the museum's new Paleozoic gallery on Saturday, May 31, wasn't enough, on that day the museum also will open "The Science of SuperCroc featuring *Nigersaurus*," a special exhibition created by Project Exploration featuring a full-scale replica one of the largest crocodiles ever to walk the earth.

Additionally, Project Exploration also has added to this exhibition a full-scale replica of *Nigersaurus*, a dinosaur that may have served as SuperCroc's supper and has never before been exhibited outside of the headquarters of the National Geographic Society in Washington, D.C.

Mark your calendars for this prehistoric triple-header!

About SuperCroc

Paleontologists first named *Sarcosuchus imperator* – or "flesh crocodile emperor" – in the 1960s. In 2000, National Geographic Explorer-in-Residence

Paul Sereno and his team found *Sarcosuchus* remains in the Sahara so enormous they dubbed the creature SuperCroc. SuperCroc weighed as much as 10 tons and measured as long as 40 feet, with a 6-foot-long skull.

About Nigersaurus

Nigersaurus taqueti, a strange-looking sauropod with an elephant-sized body and a low-riding, 6-foot-long neck, was previously known only from a few scattered bones discovered in Africa in the 1950s. In November, 2007, Sereno unveiled a nearly complete skeleton of this unusual sauropod, pieced together from bones of many specimens found by his expeditions to Africa in the late 1990s.

Local exhibition of "The Science of SuperCroc featuring *Nigersaurus*" is made possible by the Whitten-Newman Foundation.



The bones of *Sarcosuchus imperator*, one of the world's largest crocodiles, on display. Photo Courtesy of Project Exploration.

Also, Don't Miss:

Spring Break Escape March 17 - 21

Get ready for another Spring Break full of drop-in fun and excitement at the museum. Monday through Friday, March 17 - 21, the museum will be open from 10 a.m. to 5 p.m. with a full schedule of activities for children and adults.

Daily activities include art workshops, nature hikes, story telling, a scavenger hunt and more! All programs are free with museum admission, but space will be limited for some activities.

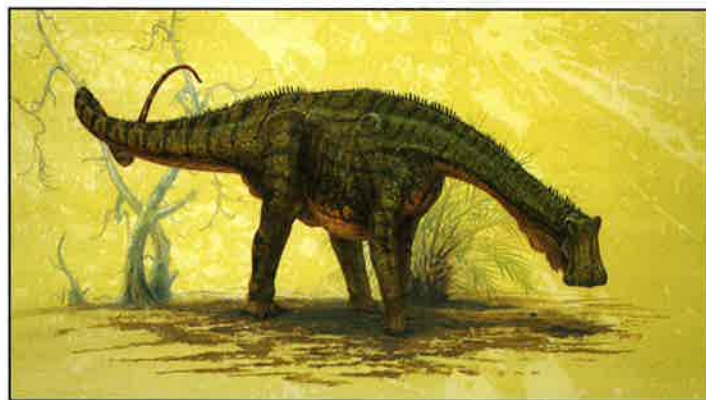
Check the museum Web site, www.snomnh.ou.edu, for a full schedule of activities.

Polar Palooza: A Multi-Media Presentation April 22, 7 p.m.

Polar Palooza: Stories From a Changing Planet is a traveling science program funded by the National Science Foundation and NASA.

The program will visit the museum Tuesday, April 22, with a public performance by leading polar researchers and Arctic residents. This multi-media event will feature video created on location at the Poles, plus authentic artifacts from polar expeditions.

Polar Palooza scientists also will make presentations for school groups and conduct workshops for teachers at the museum during their visit.



An artist's rendering of what *Nigersaurus taqueti* may have looked like. *Nigersaurus* would have spent most of the time browsing plants close to the ground. Illustration © Todd Marshall, Courtesy of Project Exploration



NATIVE AMERICAN GAMES

Traditional pastimes for Native American children included athletic contests, imaginative games that mimicked adult life.

The games here are adapted from a few of the pastimes recorded between 1800 and about 1940. For more Native American children's games, visit www.snomnh.ou.edu/kids.

MAKE IT YOURSELF

Ring and Pin Game

Pin and target games were played in almost all American Indian cultures. In this game, a small target is tied to the end of a sharpened stick with a length of cord. The target is then flipped into the air and the player tries to catch the target with the tip of the stick.

Targets were made from materials such as vertebrae, toe bones, dried squash or bundles of twigs. The pins were made out of bones or wood.

What You'll Need:

- Pencils or a twig about 6" long
- String or leather strip 12" long
- Ten or more large plastic beads

1. Make a blunt point on the stick.
2. Cut a piece of string twice as long as the stick.
3. Tie one end of the string to the non-sharpened end of the stick.
4. Tape over the string to help hold it in place.
5. Place at least 10 beads on the other end of string, then tie to form a loop.
6. Decorate the stick!

Playing the Game

Sit far enough apart that you will not poke the other players with your stick. Toss the loop up in the air and try to catch it with the stick. The first player to catch the loop four times is the winner!

CRAB RACE

Native American children that live in the Northwest Coast area enjoy playing on the beaches and are familiar with the animals living on the shore. In this game children copy the comical scuttle of the crab.

Players

Two to 10

Setup

Draw a start/finish line and a "turn" line on the ground. The lines should be 10 to 20 feet apart.

Playing the Game

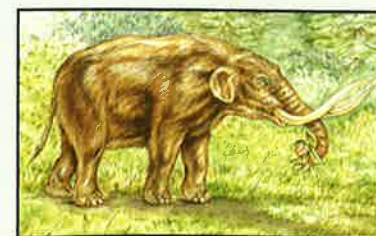
Line up at the start line on all fours. Your left side should face the turn line. Race sideways (like a crab) to the turn line, stop, then go back to the start line. First one back to the start line wins.



Am I a Mammoth or a Mastodon?

It is not a rumor...we both lived in Oklahoma long before there were Boomers or Sooners. Would you believe that more than 10,000 years ago there were mammoths and mastodons walking in your backyard? It's quite possible. Mammoth and mastodon bones have been found across Oklahoma.

At first glance, we appear to be quite the same. A mastodon's head is as flat as a mat, while the mammoth's head has a big bump on top. We both have enormous elephant-like bodies, with flapping ears and long, ivory teeth called tusks.



Mastodon Tooth



Mammoth Tooth



mammoth and mastodon illustrations: © Laurie O'Keefe



We both have extremely large trunks – they serve as our arm... nose... and drinking hose.

The best way to tell us apart is to look into our mouths. In a mammoth's mouth, you'll see large chewing teeth that are flat for grazing on grass, while the mastodon's big teeth look like several cones set side-by-side to crush leaves.

At the museum: In the Hall of Ancient Life, see and touch mammoth and mastodon teeth located next to the fossil mammoth. In the Discovery Room, look for the nine-foot-long mammoth tusk to touch.



And the Winners Are...

Shortly after the closing of "Collecting Oklahoma," Kyle Davies, the museum's fossil preparator, oversaw the opening of the "mystery jacket" that was on display throughout the exhibit. More than 2,000 entries were received in the museum's contest to guess the contents of this unlabeled field jacket, which was excavated by J. Willis Stovall near Alex, OK in 1947. The site was located in an area where rocks of Pleistocene age (10,000 – 12,000

years old) and Permian age (300 plus million years old) are found in close proximity, so the fossils that could be found there range from reptiles that pre-dated the dinosaurs to Ice Age mammals.

Once the plaster and burlap jacket was sawed open, volunteers in the museum's vertebrate paleontology lab set to work right away to remove the soft red soil matrix surrounding the bones. It wasn't long before their labors revealed

... the jawbone of an elephant – either a mammoth or mastodon.

During the Pleistocene epoch, around 10,000 years ago, mammoths were plentiful on the grassy plains of Oklahoma. More than 350 entrants guessed the jacket's contents correctly. Of these, one was selected by random drawing to receive a \$50 gift certificate from Excavations, the museum store.



Kyle Davies examines the "mystery jacket" with volunteer Carolyn Folmsbee shortly after the jacket was sawed open. Photo: Krysten Marshall



The upgraded Cooper skull display features digital projection of video onto a large bison skull cut-out. Photo: Krysten Marshall

Upgrades Made to Cooper Skull Exhibit

The audio-visual presentation showcasing the Cooper Skull in the Hall of the People of Oklahoma has undergone recent upgrades. The old slide-driven projection was removed and replaced by a digital display with video elements compiled by museum technician Michael McCarty. The scrims were removed and replaced by a cut-

out of a bison skull that serves as a screen for the projected images. The audio portion of the presentation, voiced by the late Kiowa elder Jacob Ahtone, remains the same.

"The new video is much more engaging than the old slides," said museum director Ellen Censky. "We find that visitors are paying closer attention to the exhibit since we made the change."

Vitt Publishes Book on Amazonian Lizards

Along with Brazilian colleagues, herpetology curator Laurie Vitt has published a new book on lizards of the *Reserva Ducke* near Manaus, in the center of the Brazilian Amazon. The book includes information on each species based on field research spanning 20 years. It will serve professional scientists, ecotourists and educational institutions at all levels. Written in both English and Portuguese, the book is funded by three Brazilian governmental agencies and free copies will be given to all schools in the Manaus region.

Museum Accepting Applications for Teen Volunteer Program

Applications are now being accepted for the museum's summer Teen Volunteer Program. The six-week program is open to teens ages 13 to 15 who have completed sixth grade. The teen volunteer training program will provide general information in areas of paleontology, ecology and Oklahoma's Native American heritage. It will prepare teens to work in the Discovery Room and operate the museum "Gallery Carts" that feature hands-on activities for museum visitors. The training will take place from 10 a.m. to noon each day from June 2 through 6.

After training is complete, the teen volunteers will be expected to serve a minimum of five hours per week, Tuesday through Friday, from June 10 through July 11. Teen volunteers who wish to continue volunteering in the museum after the program ends can apply for approval to do so. Teens interested in applying for the program can contact the volunteer office by phone at 325-1652 or e-mail at volunteer@snomnh.ou.edu to request an application form. Applications are due in the volunteer office by May 5.

History Channel Program Features Museum Dinos

Early in February, a film crew from the History Channel made a visit to the museum for two days of video shooting in the Hall of Ancient Life and the museum's vertebrate and invertebrate paleontology collections. The footage will be featured in a 12-week-series titled "Jurassic Fight Club," set to begin September of this year.

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VOLUNTEERS OF YEAR: JEAN COCHRANE AND BETTY FLORA

Each of this year's two recipients of the Tom Siegenthaler Volunteer of the Year Award is rarely seen around the museum without the other one. Friends and neighbors since 1994, Jean Cochrane and Betty Flora also have been volunteers at the museum together since 2000. Between them, they have put in more than 4,000 hours of service.

In 1994, Jean, a retired teacher, purchased a house across the street from Betty just a month after Betty herself, a retired librarian, had moved into the neighborhood. The pair had never met until one morning when Jean was out walking her dog.

"I was going around the block muttering to myself because my sister-in-law and brother-in-law were trying to get me to go to Turkey," Jean explained. "I'm not much of a traveler, though, and they wanted me to travel all by myself to Istanbul, where they were going to meet me. Betty caught up with me, and I just unloaded on her ... told her everything I was thinking about. And she said, 'I'll go to Turkey with you.'"

"I liked to travel," Betty said, "and I'd never been to Turkey. I'd been all over Europe, but I'd never been to Turkey."

The pair spent three weeks in Turkey together and have been friends ever since.

Over coffee one morning in late 1999, they saw an announcement in the paper that the museum was holding volunteer training and they decided to go check it out.

"We had no idea we were going to become volunteers," Jean explained. "But it didn't take long to convince us. There was a long line for the dinosaur gallery training, though, so we went to the shorter line (for the Hall of the People of Oklahoma). And we have never regretted it."

That choice has since blossomed into an avocation for both of them. Archaeology



Jean Cochrane (left) and Betty Flora work in the archaeology archives filing records on Oklahoma dig sites. Jean and Betty have been volunteering at the museum since 2000. Photo: Krysten Marshall

curator Don Wyckoff introduced them to the Oklahoma Anthropological Society and they started attending meetings. Before they knew it, they were going on digs, working with other OAS members to help excavate sites all over Oklahoma.

Lately their work is excavation of a different kind. For the past three years, the pair have been working in the archives of the museum's archaeology department, helping to organize and file decades-worth of records on every dig site in Oklahoma. Their labors now fill some 30 file cabinets ... and there's no end in sight. There are files dating back to the WPA projects in the 1930s, some with notes written on paper bags and scraps, plus maps and photographs.

The seeming tediousness of their filing job does not faze either of these women in the least.

"It's an interesting thing to be involved in," Betty said. "You become more interested when you get involved with the preservation of the records."

"You get an insight into the lives of the people who were writing them," explained Jean. "It's not tedious. It's interesting. When I can no longer volunteer, this will be the last place I give up."

Jean and Betty also have been working to establish a Norman-based chapter of the OAS. The fledgling chapter held its first meeting at the museum on March 3.

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