

Museum Quarterly

LSU Museum of Natural Science

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Museum of Natural Science Director and Curators

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Letter from the Director...



Searching for a New Mammal Curator

The Museum has just started to search for a new curator of mammals. Our present curator, Alumni Professor Mark Hafner, is planning to retire at the end of this school year after 32 years of hard labor. We hope to replace him (actually, he is irreplaceable, so we hope to fill his position) with an up-and-coming mammal biologist, who will start work next fall. The search is exciting for us, because it gives the Museum and the Department of Biological Sciences a chance to see new, energetic and ambitious biologists, eager to make their mark on the world. It is also a great opportunity for our graduate students to learn about the academic search process and the kind of competition they will face when they attempt to become curators and professors.

The first step in the search is to advertise and obtain resumés and statements of research and teaching interests from applicants. The mammalogy world is pretty small, so we can be sure that word of the position will reach everyone interested in mammal evolution and ecology and that we will receive lots of applications. The search committee will sort through the applications and ask the most promising scientists to send letters of recommendation. After that, we will invite three candidates to LSU to interview, at which time each will present their research in a “job talk” and, in general, be run through the gauntlet.

The candidate we seek for this position cannot be just a great researcher and teacher, he or she must also be a dedicated museum biologist. This is a serious issue in modern academic searches, because universities usually want to hire scientists based solely on their research potential, because research productivity generally translates into dollars and good public relations. Of course, we want first-class research at LSU as well, but the best candidate for our mammal job must also be a dedicated collector and curator, because our responsibility as a museum is to study the natural world and build collections for research. If we ignore these essential parts of the job, as many museums in an increasingly technology-oriented world are doing, then we fail in our mission, and the quality and vitality of our institution erodes. Fortunately, LSU recognizes the importance of its museums and collection-based research, which bring substantial kudos to the University and serve a key societal function as the natural world shrinks. So, even though economic times are tough, LSU is letting us hire a replacement mammalogist, and for this the Museum is extremely grateful. We are going to find a great person for this job, who conducts cutting edge research and inspires as a teacher, but who also gets in the field, collects animals, and preserves natural history information for future generations.

Fred Sheldon



A “top ten” new fish species *Halieutichthys intermedius* and two new specimens of *Homo sapiens*... it has been a busy summer for fish curator Prosanta Chakrabarty.

Prosanta Chakrabarty, curator of fishes at LSU’s Museum of Natural Science and an assistant professor of biology, officially identified this fish as a new species last summer, during the Gulf of Mexico oil spill, though the identification had been made more than a year earlier.

Prosanta was studying batfish preserved in alcohol. He and colleagues in Taiwan and the American Museum of Natural History found that what had been thought of as one species was actually three species.

The Journal of Fish Biology received their write-up in March 2009 and accepted it in May 2010, almost a month after the Deepwater Horizon oil rig exploded in flames. Prosanta said it's among 70 or so species that live only in the Gulf of Mexico. Another 1400 or so also are found elsewhere. "In a way, this new batfish oil spill," he said. "It reminded me both of how little we knew about the biota and also about how the spill can affect some species more than others."

Louisiana Pancake Batfish

Scientific Name: *Halieutichthys intermedius*

How it made the Top 10:

This species was discovered just before the Gulf of Mexico oil spill in 2010 and its entire known distribution is in the region of the spill. It is also a remarkably hideous -- in a good way -- animal. It is flat like a pancake, spikey, hops on its fins and has huge bulging eyes. Its discovery and precarious existence due to the oil spill was the lead article on CNN's website and a number of other outlets this summer.



The MNS welcomes its newest members, Chaya and Anjali Chakrabarty. Congratulations to Prosanta and Annemarie on the birth of their daughters.

A race to save the Toncrey archaeological site



Dr. Rebecca Saunders has submitted a grant to NOAA for funding to protect the Toncrey archaeological site, a three-mound ceremonial center (ca. A.D. 700) that is eroding along with the rest of the marsh in southern Plaquemines Parish. Dr. Saunders is working with Webster Pierce, an inventor (on the bank), and his son Andrew (in the back of the pirogue), to test Mr. Pierce's Wave Suppressor Sediment Capture system. The system is comprised of high density plastic modules and weirs that are less expensive than traditional breakwaters, very flexible in scale, and highly effective (with sediment capture rates of over 90%). In addition, the system is designed for significant water

(and wildlife) exchange between the main water body and the protected area, greatly enhancing the quality of the resources in the protected area. Under Webster's direction, Andrew and Rebecca are placing PVC markers where the system might be deployed.

Fossilized pollen reveals climate history of northern Antarctica

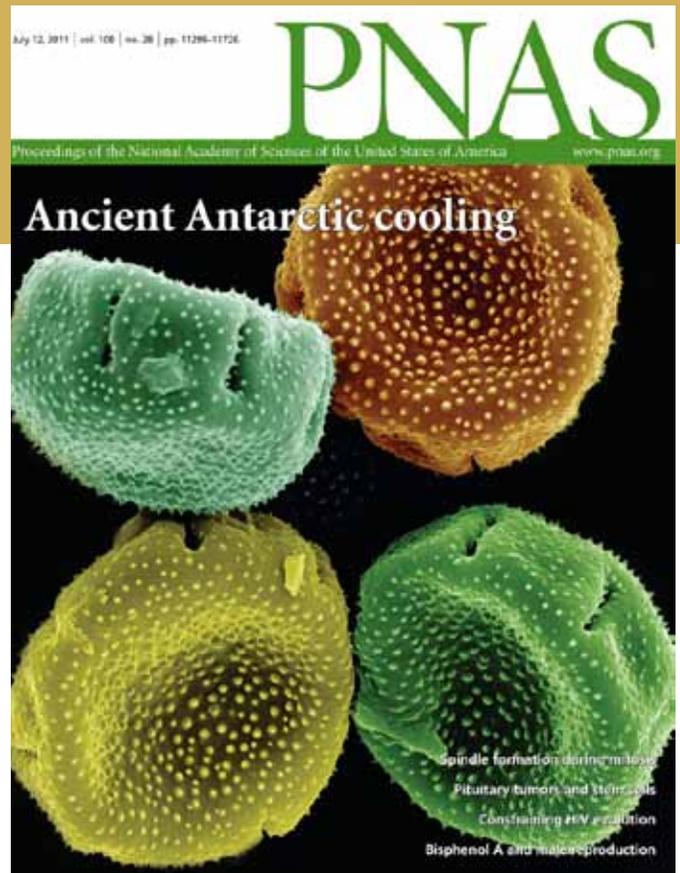
Analysis of direct climate record shows Antarctic tundra persisted until 12 million years ago

A painstaking palynological examination of the first direct and detailed climate record from the continental shelves surrounding Antarctica reveals that the last remnant of Antarctic vegetation existed in a tundra landscape on the continent's northern peninsula about 12 million years ago. The research, which was led by John Anderson, a sedimentologist at Rice University and **Sophie Warny**, MNS curator, appeared online this summer. An SEM photomicrograph of pollen grains of *Nothofagus fusca* (credit: MNS curator Sophie Warny and one of her Ph.D. students, **Kate Griener**) are featured on the cover of the July 12 issue of the *Proceedings of the National Academy of Sciences*.

The new study contains a detailed reconstruction of the climatic history of the Antarctic Peninsula, which has warmed significantly in recent decades. The rapid decline of glaciers along the peninsula has led to widespread speculation about how the rest of the continent's ice sheets will react to rising global temperatures.

"The best way to predict future changes in the behavior of Antarctic ice sheets and their influence on climate is to understand their past," said Rice University marine geologist John Anderson, the study's lead author. The study paints the most detailed picture to date of how the Antarctic Peninsula first succumbed to ice during a prolonged period of global cooling.

In the warmest period in Earth's past 55 million years, Antarctica was ice-free and forested. The continent's vast ice sheets, which today contain more than two-thirds of Earth's freshwater, began forming about 38 million years ago. The Antarctic Peninsula, which juts farther north than the rest of the continent, was the last part of Antarctica to succumb to ice. It's also the part that has experienced the most dramatic warming in recent decades; its mean annual temperatures rose as much as six times faster than mean annual temperatures worldwide.



"There's a longstanding debate about how rapidly glaciation progressed in Antarctica," said Sophie Warny, who specializes in palynology (the study of fossilized pollen and spores) and led the palynological reconstruction. "We found that the fossil record was unambiguous; glacial expansion in the Antarctic Peninsula was a long, gradual process that was influenced by key tectonic, atmospheric, and oceanographic changes."

Warny, her students and colleague Rosemary Askin were able to ascertain the exact species of plants that existed on the peninsula over the past 36 million years after a three-year examination of thousands of individual grains of pollen that were preserved in muddy sediments beneath the sea floor just off the coast.

"The pollen record in the sedimentary layers was beautiful, both in its richness and diversity," Warny said. "It allowed us to construct a detailed picture of the rapid decline of the forests during the late Eocene -- about 35 million years ago -- and the widespread glaciation that took place in the middle Miocene -- about 13 million years ago."

Obtaining the sedimentary samples wasn't easy. The muddy treasure trove was locked away beneath almost 100 feet of dense sedimentary rock. It was also off the coast of the peninsula in shallow waters that are covered by ice most of the year and beset by icebergs the rest. Anderson, a veteran of more than 25 research expeditions to Antarctica, and colleagues spent more than a decade building a case for the funding to outfit an icebreaker with the right kind of drilling equipment to bore through the rock.

In 2002, the National Science Foundation (NSF) funded the project, which was dubbed SHALDRIL. Three years later, the NSF research vessel Nathaniel B. Palmer left on the first of two drilling cruises.

"It was the worst ice year that any of us could remember," Anderson said. "We'd spend most of a day lowering drill string to the ocean floor only to pull it back up to get out of the way of approaching icebergs."

The next year was little better, but the SHALDRIL team managed to obtain enough core samples to cover the past 36 million years, thanks to the logistical planning of marine geologist Julia Wellner and to the skill of the drilling crew. By end of the second season, Anderson said, the crew could drill as much as a meter every five minutes.

Reconstructing a detailed climate record from the sample was another Herculean task. In addition to the three-year palynological analysis at LSU, University of Southampton palaeoceanographer Steven Bohaty led an effort to nail down the precise age of the various sediments in each core sample. Wellner, now at the University of Houston, examined the characteristics of the sediments to determine whether they formed below an ice sheet, in open marine conditions or in a combined glacial-marine setting. Other members of the team had to count, categorize and even examine the surface texture of thousands of sand grains that were preserved in the sediments. Gradually, the team was able to piece together a

history of how much of the peninsula was covered by glaciers throughout the past 36 million years.

"SHALDRIL gave us the first reliable age constraints on the timing of ice sheet advance across the northern peninsula," Anderson said. "The rich mosaic of organic and geologic material that we found in the sedimentary record has given us a much clearer picture of the climatic history of the Antarctic Peninsula. This type of record is invaluable as we struggle to place in context the rapid changes that we see taking place in the peninsula today."

The study was funded by a grant from the NSF's Office of Polar Programs to Anderson (core acquisition and sedimentological analysis) and a grant from the same program to **Warny** (palynology). Study co-authors include Wellner; Askin; Bohaty; Alexandra Kirshner, Tyler Smith and Fred Weaver, all of Rice; Alexander Simms and Daniel Livsey, both of the University of California, Santa Barbara; Werner Ehrmann of the University of Leipzig; Lawrence Lawver of the University of Texas at Austin; David Barbeau of the University of South Carolina; Sherwood Wise and Denise Kulhenek, both of Florida State University; and Wojciech Majewski of the Polish Academy of Sciences.

The PNAS study was posted online during the week of June 27 at:

<http://www.pnas.org/cgi/doi/10.1073/pnas.1014885108>

VIDEO is available at:

<http://youtube/R0Z7Ir8ZN00>

DESCRIPTION: Rice University scientist John Anderson discusses what researchers have learned from studying the first direct and detailed climate record from the continental shelves surrounding Antarctica, and he describes the years of effort that went into obtaining it.

CREDIT: Office of Public Affairs/Rice University.

Some Recent Expeditions to Borneo

By Fred Sheldon



In March, Ph.D. student **Vivien Chua** and I ventured to Borneo and joined my friend and former LSU grad student **Alison Styring** (who is now a professor at The Evergreen State College, see picture above) in Bintulu, Sarawak.

Alison and I were continuing our work on the birds of the modestly named “Grand Perfect” plantation, which is a 500,000 hectare forestry project comprising mainly heavily logged lowland rainforest and groves of recently planted *Acacia mangium*. In Borneo, as in other tropical places where the rainforest has been devastated, revenue no longer comes from forest lands, and local governments and businesses, therefore, are converting these “empty

spaces” to plantations, so they can earn some money. Some of the new plantations are agricultural, and as such are monocultures almost completely devoid of native habitat and the normal diversity of forest animals. The worst of these monocultures is oil palm, which is used to produce cooking oil and biodiesel. Some of the new plantations, however, are relatively hospitable to forest creatures. These consist of fast growing exotic trees intended for paper, pulp, and cheap wood products. These so-called “industrial” plantations tend to develop a well structured secondary forest under the fast-growing crop trees. Also, the plantation managers—under considerable pressure from conservationists--often attempt to promote native wildlife by leaving islands or corridors of regenerating logged forest within the exotic tree plantations. These secondary forests attract a large proportion of native animals. Also, because they are relatively simple in structure (compared to natural forest) and consist of different age groups of trees, they are very useful for studying ecology and succession of Bornean plant and animal communities. Alison and I have taken advantage of plantations for just this purpose, to study

Top: Our camp in the Kelabit Highlands. We rented this small rice farm for \$30/day. In the foreground is David Winker, an ornithologist from Cornell who visited for a few days.
Insert: Alison Styring checking things twice.

community ecology of Bornean birds in a simplified setting (Sheldon et al. 2010, Sheldon and Styring 2011, Styring et al. 2011).

In our work, we have tried a variety of methods to study birds, but in March we undertook our most ambitious approach—tree top surveys. Using a giant slingshot/fishing pole apparatus, we hurled a small line over the top of the tallest forest trees (which by tropical standards were not very tall—only about 40 meters—but still high enough to scare a normal person to death). Then we pulled successively larger lines over the trees until we had a good climbing rope in position. At this point, Alison or one of the youngsters (not I) would climb the tree using rope ascenders. Then, we would conduct simultaneous ground and tree-top bird surveys, communicating by radio. This method worked very well, and we found that, even in relatively low secondary forest, tree-top surveys yielded a lot more birds than searching on the ground.

In July, I returned to Sarawak with graduate student **Clare Brown** to join another of my old pals, former Ph.D. student **Rob Moyle** (now a professor at the University of Kansas). Rob and I study Southeast Asian bird biogeography (e.g., Moyle et al. 2005, Sheldon et al. 2009), and we were headed to one of the most famous parts of Borneo, the Kelabit Highlands, to collect birds for an ongoing study of the evolution of Bornean mountain birds. The Kelabit Highlands lie on a plateau about 1000 m in elevation near the Sarawak-Sabah-Kalimantan (Indonesian) border, and they extend into a

ring of higher, surrounding mountains. At the end World War II, naturalist Tom Harrisson led British commandos from the Kelabit Highlands to harass the Japanese in the coastal lowlands (a story told in his wonderful, but very strange, book *The World Within*). After the war, Harrisson became curator of the Sarawak Museum and collected extensively in the Kelabit Highlands from 1946-1949. However, no one has ever examined his specimens carefully, nor have they collected birds in the Kelabit area since the 1940s. Thus, we had high hopes for discovery on this adventure.

I would not say that we discovered anything particularly exciting, but we managed to collect a wide variety of birds for our ongoing biogeographical studies, and on the whole Rob, Clare, and I found the Kelabit Highlands to be an enchanting place, with wonderfully friendly people and some amazingly beautiful landscapes. The area has become very popular with tourists, who trek from lodge to lodge in the mountains. This growing business helped us logistically, but hurt us as well, because everything from food to transport to labor was excessively expensive by Bornean standards. Also unfortunately, because of a growing populace, much of the forest on the plateau was heavily degraded and understory birds were few and far between. However, once we got into the surrounding mountains, forest quality improved, and we were rewarded with some spectacular birds. By far the best for me was the endemic Hose's Broadbill (*Calyptomena Hosei*), a gorgeous green species (sort of like a Cock-of-the-Rock) with a robin's egg blue belly. I have been searching for this bird for



The less glamorous side of field work: Rob and Clare skinning birds.

35 years, and this was my first. We also enjoyed some interesting cultural experiences on the plateau, including meals of wild boar, civet, palm heart, and fiddleheads. All in all, it was a rewarding trip, and I would recommend the Kelabit Highlands for anyone interested in hiking the hills of a relative tropical paradise.

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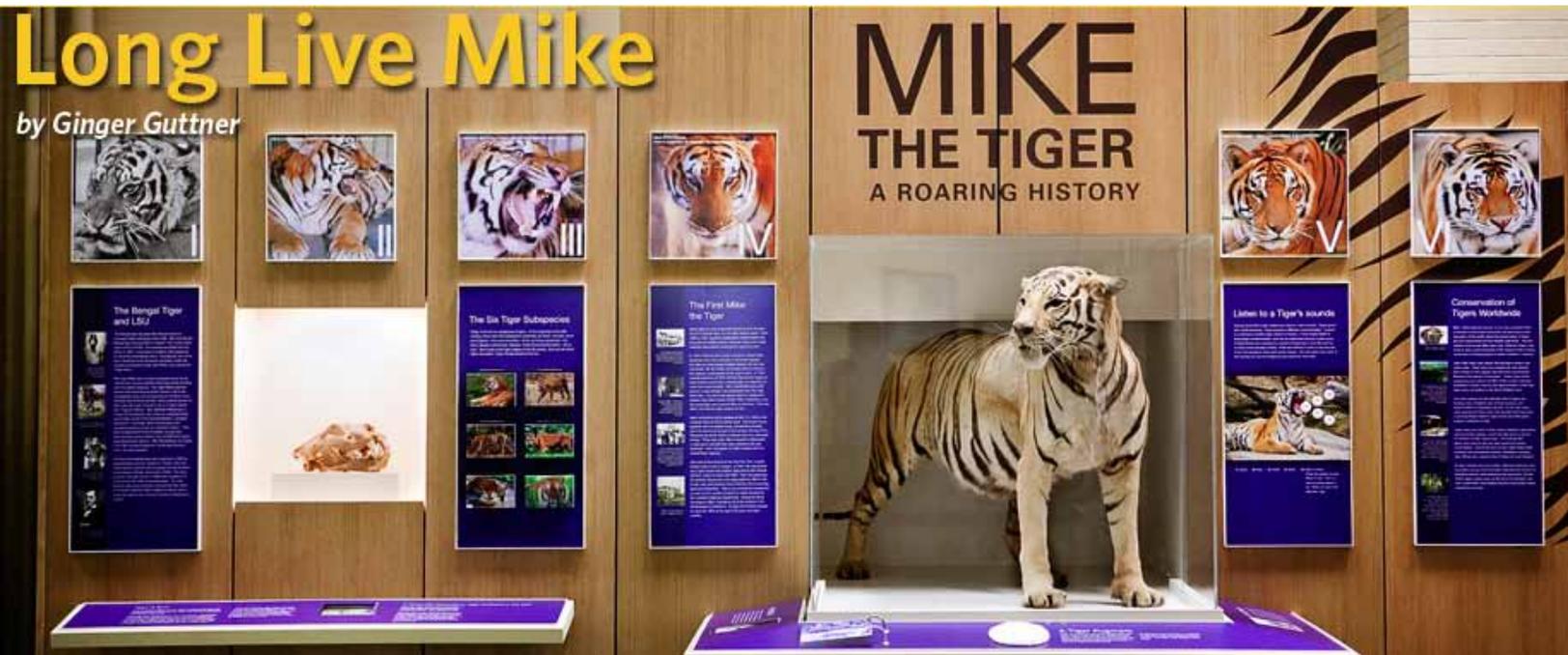


Top: A climber ascending.

Bottom: Admiring a Hose's Broadbill: Sylvester our guide, Clare Brown, Rob Moyle, and Tay and Trevor from the Universiti Malaysia Sarawak.

Long Live Mike

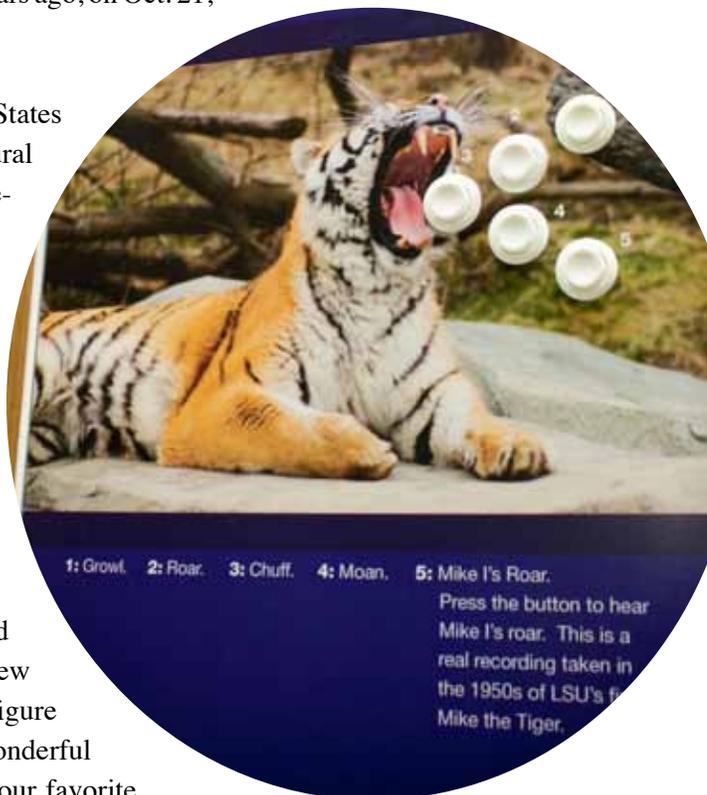
by Ginger Guttner



A new exhibit at the LSU MNS

LSU's beautiful Bengal tiger, known by millions of Tiger fans simply as "Mike," is one of the most beloved college mascots in the country. What other tiger can lay claim to more than 100,000 visitors each year and a devoted fan base responsible for donations totaling approximately \$4 million to develop a top-tier habitat fit for a king? Mike VI, the current mascot, has reigned over the LSU campus since 2007, but the tiger's tale began 75 years ago, on Oct. 21, 1936, when Mike I, LSU's first live tiger mascot, arrived on campus.

In recognition of the fact that LSU is the only university in the United States with a live tiger living on campus, researchers at the Museum of Natural Science partnered with the veterinary school to secure funding and develop a tiger exhibit celebrating not just Mike the Tiger, but the tiger as a symbol of all endangered species. The new exhibit includes components such as a pug mark (paw print), interactive distribution maps of tigers in the wild, and panels with fun and historical facts about the mascot over the years. **Sophie Warny**, Curator of Science Education at the Museum of Natural Science, said that the museum is ecstatic to finally open the exhibit to the public after years of fund raising and planning. She added that the new exhibit will enhance the visitors' experience by teaching them about conservation issues dear to the Museum's research mission. But the exhibit also will allow all visitors to relax while listening to the four main sounds tigers make in the wild or listening to an original recording of Mike I's famous roar via the new audio system installed. The display, centered around the taxidermied figure of Mike I, is open for visitors of all ages to visit and celebrate the wonderful traditions surrounding LSU while appreciating the wild ancestors of our favorite striped feline. Details about museum's hours can be found at www.lsu.edu/MNS-Education.



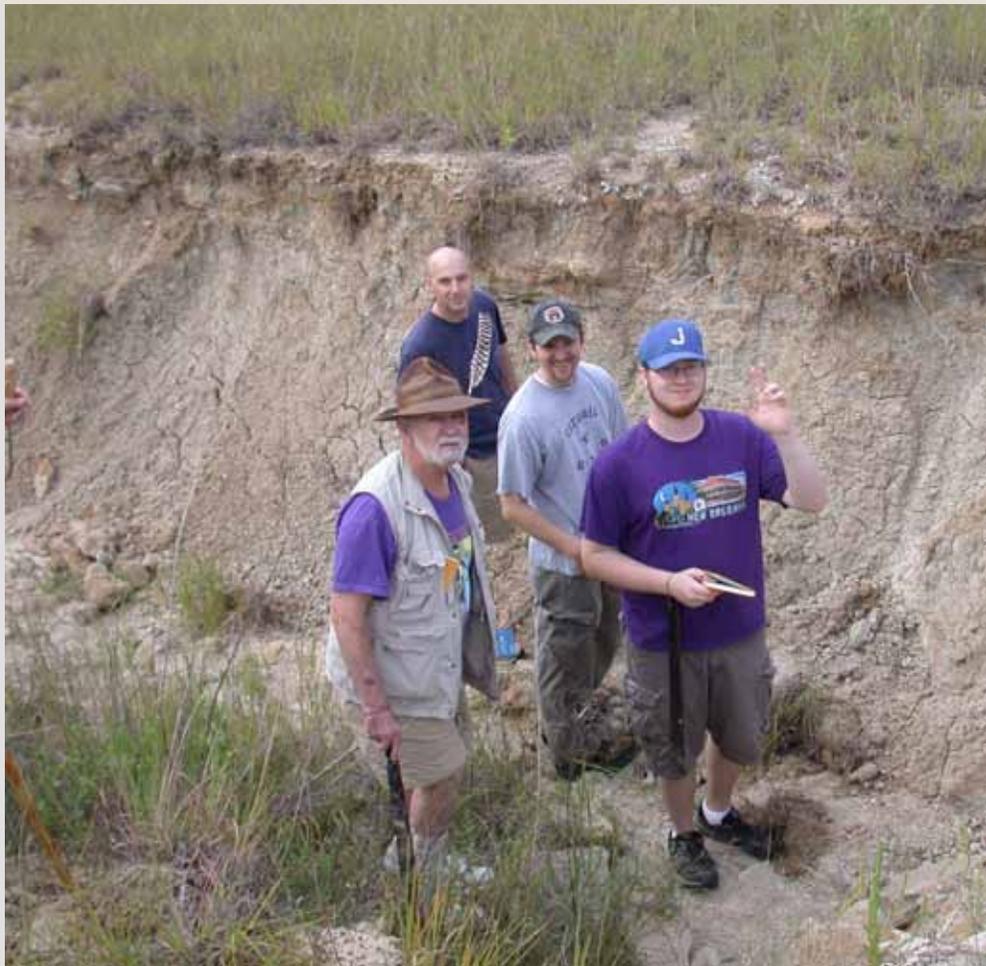


News from the Vertebrate Paleontology section

By: Dr. Judith Schiebout

On September 16-17 a crew from LSU set out to Fort Polk to examine high erosion areas of the DISC (middle Miocene) fossil site cluster on the Post and to check out a possibly Oligocene (older than Miocene) impression of a crocodilian tail in sandstone. Drs. **Judith Schiebout** and **Suyin Ting**, citizen-scientist Bill Lee, and LSU students **Ian Cannon**, **Trevor Fanning**, and **Eric Orphys** joined Fort Polk contact contractor Brad Lafitte, Staff Archaeologist from Environmental Restoration Co., and Sergeant Mark Krist, stationed at Fort Polk.

1. Right to left: Ian Cannon, Brad Lafitte, Mark Krist, and Bill Lee
2. Above, Dr. **Ting** prepares the crocodilian tail impression for application of preservative.

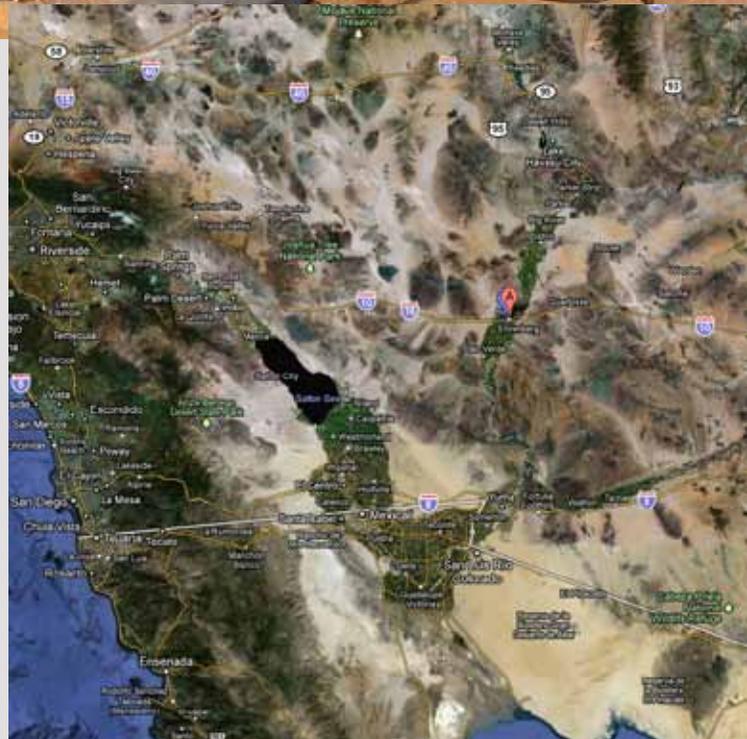


News from the Vertebrate Paleontology section (cont.)

By: Dr. Judith Schiebout



J.D. Stewart, Margie Stewart, and **Mike Williams** at left (LSU Ph.D in 2009, Advisor Schiebout) jacketing a fossil tortoise in a paleosol near Blythe, CA, in the Mojave Desert. Mike is currently a paleontologist with URS Corporation.





The LSU MNS opened its door to EnvironMentors for a private viewing



The LSU MNS was pleased to welcome the LSU EnvironMentors Chapter for a tour of the museum during their campus-wide scavenger hunt. This chapter is housed in the School of the Coast & Environment, in partnership with the LSU College of Education GEAR UP program and Louisiana Sea Grant. Working together, the students and mentors developed rigorous environmental science research projects over the course of the academic year and presented their projects at a local science fair, which was held at Scotlandville Magnet High School in March. The top winners of the chapter fair earned an all expenses-paid trip to the National EnvironMentors fair in Washington, D.C. EnvironMentors is a national college access program, sponsored by the National Council for Science and the Environment, that prepares high school students from under-represented backgrounds for college degree programs in environmental and other science-related fields. The mission of EnvironMentors is to match high school students who are interested in science with faculty and graduate students in mentoring relationships. The program is supported by grant funding and private gifts from Albemarle Foundation and LSU alumni-owned Houston Energy LP, which donated \$10,000 that currently supports a graduate student assistantship to the co-coordinators. The LSU program is supervised by Susan Welsh, Ph.D.

For more information, please visit www.sce.lsu.edu/environmentors.





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