

Museum Quarterly

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Museum of Natural Science Director and Curators

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*Assistant Professor of
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Letter from the Director...



The Power of Youth

I'd like to wax poetic about the Museum's newest faculty members, **Sophie Warny** and **Prosanta Chakrabarty**. In museum jargon, our faculty are called "curators," but they are also professors in their cognate departments—in this case, Geology & Geophysics for Sophie and Biological Sciences for Prosanta. The beauty of new curators like these two is that they bring tremendous energy and productivity to the Museum at a very reasonable cost in salary. In general, they are a much better bargain than the old mossbacks, who may be wise but tend to move kind of slow.

Sophie started at the Museum as a volunteer interested, as a new mother and museum aficionado, in using our exhibits to educate children and help grade school teachers teach natural history. In that capacity, she raised money and installed new exhibits in Foster Hall (the first we've had in 50 years). She also wrote instructional guides for K-12 teachers, produced a fantastic education website, reinvigorated our participation in Ocean Commotion, etc., etc. While doing all this, she was also raising funds from the National Science Foundation for her research in palynology and publishing in prestigious journals. Thus, she put herself in position to be hired as a tenure-track professor in Geology & Geophysics. Since gaining that position, she has continued to publish excellent papers (including one recently featured on the cover of *Geology*), and she was just awarded a highly prestigious Career Grant from the NSF. In short, in academic terms, she is on fire and bringing tremendous kudos to LSU and the Museum.

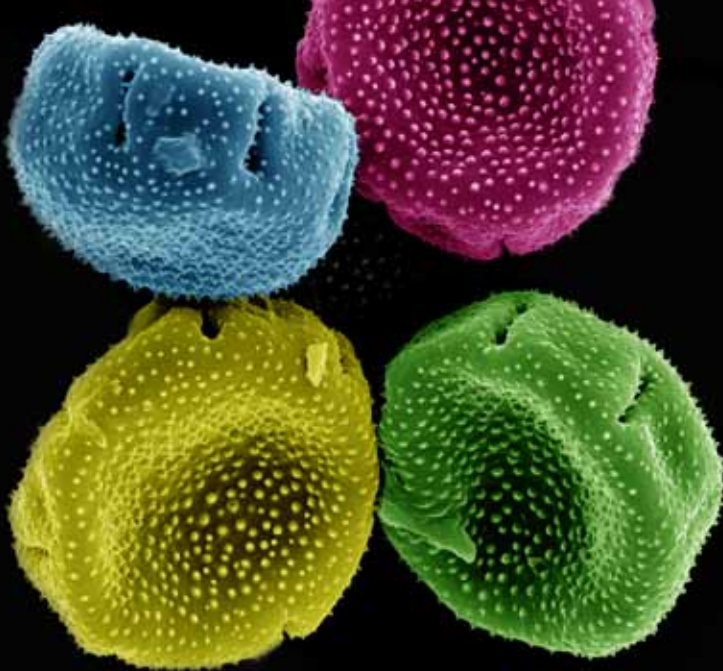
Prosanta has similarly ignited the place. He got a large NSF grant on his first effort in 2009 (which is very unusual) and applied for six more grants in 2010. He has also been publishing like mad (6 peer-reviewed and 4 non-peer-reviewed papers in 2010). Currently he has two postdocs (recent PhD's in search of jobs) and a highly productive grad student. He is adding specimens from around the world to our fish collection, risking life and limb exploring remote caves in Madagascar and Australia, describing new species, promoting the Museum in the press and on Facebook—in short, he's doing just what we want to see in a young curator.

Most recently, Prosanta and Sophie obtained a \$117,000 grant from the Louisiana Board of Regents to build a new exhibit that showcases our fish collection and research program. This is exactly the kind of exhibit we need, one that shows folks what's happening behind the scenes in the Museum. Naturally, it was spearheaded by our newest and most energetic leaders.

Fred Sheldon



Sophie Warny and Prosanta Chakrabarty (right) with their spouses, Annemarie Noel and Philip Bart.



Curator receives prestigious NSF CAREER award

by Ashley Berthelot

LSU's **Sophie Warny**, assistant professor of palynology in the Department of Geology and Geophysics and curator of education at LSU's Museum of Natural Science, has received one of the most prestigious awards handed out by the National Science Foundation, or NSF – its CAREER Award, meant to support junior faculty who exemplify the role of teacher, mentor and scholar through outstanding research, scholarship and educational outreach.

"It is such an honor to be selected to receive such a prestigious award from the National Science Foundation," said Warny. "The day I was hired by LSU as a tenure-track faculty, I made it my priority to build a lab and research group that could compete for this award. I always dreamed of having a CAREER award because this program is the perfect combination of top-of-the-line research and outreach to the community, two things very important to me as a researcher, as a professor and as a mother."

Warny's research focuses on climate change in the historical past of Antarctica. Already, Warny and her research team have discovered a previously unknown Antarctic warm period approximately 15.7 million years ago through the analysis of frozen fossils of pollen and spores, called palynomorphs.

"The \$582,000 that comes with this award shows how important our geological research is, and through that grant, I am glad to be able to help support LSU's outstanding efforts as the state's flagship research university," said Warny. "The grant has already allowed me to attract two outstanding Ph.D. students, **Kate Griener and Marie Thomas.**"

With the CAREER award, she will have research support for a minimum of five years to conduct high-resolution paleo-environmental studies based on current and new samples. Pollen and spores will provide data on past vegetation, while algae samples will give Warny more details about sea-surface conditions in Antarctica's past.

"This data will help us to understand why the continent underwent such drastic climatic changes more than 15 million years ago," said Warny. "This kind of information is especially relevant today, when we see warming patterns occurring all over the world. It's imperative we know how Antarctica reacted to the warming period so that we can perhaps draw some modern-day conclusions from our results."

As part of the educational outreach component of the CAREER grant, Warny will advise a diverse group of students and educators. The palynological data collected as part of this research will be utilized, in part, to develop new lectures on Antarctic palynology. These lectures will be made available through collaboration with the LSU Howard Hughes Medical Institute, or HHMI, program, in collaboration with Randy Duran and **Adrienne Lopez.**

Warny will also direct three Louisiana middle- or high-school teachers in their pursuit of a Masters of Natural Science for science educators. These teachers will assist in building a professional development program for science teachers based on the map they will construct of Antarctic paleovegetation. They will work with Warny and Susan Carbotte of Columbia University, using Columbia's GeoMapApp mapping

software. Community-based activities will also be organized to increase awareness of science and to alert students and the public of opportunities in scientific fields. The first outstanding teacher has been selected; **Steven Babcock**, a science teacher at the University Laboratory School, is joining the research group this summer.

Together with colleagues from the Museum of Natural Science, or MNS, Warny was responsible for developing two of the more recent exhibits in the main hall. Her role as the curator of education for the museum is to build outreach programs that are tailored to promote ongoing research at LSU. She collaborated with several curators over the years, and these exhibits are the result of those partnerships. The Antarctic exhibit, opened in 2005, provides an in-depth look at the polar environment through the eyes of McMurdo base, where all scientific expeditions to the continent begin. As education curator, she is currently partnering with the LSU Athletic Department and the LSU School of Veterinary Medicine to create a new permanent exhibit on tigers and endangered species to celebrate LSU's mascot. The exhibit will be on display beginning summer 2011 at the Alex Box Stadium and at the Museum of Natural Science.

Warny was also instrumental in assembling a traveling exhibit highlighting Louisiana's unique and rich Native American heritage. In conjunction with the Louisiana Department of Culture, Recreation and Tourism's archaeology division, the exhibit showcases the cutting-edge archaeological and anthropological research being conducted at the university and around Louisiana. It includes information about Native American cooking, hunting, fishing and housing technology. The display also includes a comprehensive discussion of how Louisiana's prehistoric period can be interpreted in the ancient mounds scattered across Louisiana, including the 5,000-year-old LSU campus mounds and artifacts found throughout the state.

"Although combining the education program and the workload of a faculty member (teaching, research, graduate student mentoring and fund-raising) can be challenging at times, this dual appointment was definitely instrumental in building the skills I needed to obtain a CAREER Award," said Warny. "I am thankful to LSU for giving me this unique opportunity to compete nationally."



Captions:

Top of page 2. Pictured is a scanning electron micrograph of beech pollen grains (*Nothofagus fusca*) sampled from plants that grow today in the Kaweka mountains in New Zealand. This type of beech closely resembles the last stunted tree that survived the cooling and Miocene glaciers' extension in Antarctica, before the continent became essentially fully glaciated. Image courtesy of Kate Griener (PhD candidate) and Sophie Warny, based on specimens collected by a New Zealand colleague at GNS, Ian Raine.

Bottom page 3. Warny and current graduate students (Kevin Jensen, Carlos Santos, Sandra Garzon, Warny, Shannon Ferguson, and Kate Griener).



Travels in Mexico: the search for a new species of pocket gopher

By: Verithy Mathis

Mountains and terrain on the road to St. Teresa, Nayarit.

This past January, my advisor Dr. **Mark Hafner**, his brother, Dr. David Hafner (recently retired Curator of Mammals at the New Mexico Museum of Natural History) and I went on a trip to Mexico to obtain specimens from new localities of what we think is a new species of pocket gopher in the genus *Thomomys*. This would be my last collecting trip for my dissertation, which involves studying the speciation and population genetics of pocket gophers and their ectoparasitic chewing lice (*Geomydoecus* and *Thomomydoecus*). While examining genetic information from pocket gophers we collected on earlier trips, I discovered three individuals from one locality near the remote town of Santa Teresa in the state of Nayarit that appeared to be very different, at least genetically, from the other gophers I had analyzed. We also were hoping to sample some other known gopher localities to obtain samples of chewing louse species for which we had no specimens.

We flew into Mexico City and enjoyed the overnight hospitality of our collaborator, Dr. Fernando Cervantes, Curator of Mammals at the Universidad Nacional Autónoma de México. The next morning, accompanied by a Mexican undergraduate student, Elizabeth Estrada, we set out for Boca del Monte in Puebla. This was a locality for a chewing louse species that would help complete sampling for that genus. Unfortunately, we were not able to find pocket gophers at this locality, which Mark and his brother John (Dr. John Hafner, retired Director

of the Moore Laboratory of Zoology at Occidental College) had sampled successfully more than 30 years ago. We were not helped by the weather, which brought dense fog and rain. The next day we began the journey to Santa Teresa, which would take us a couple of days. Once again we were stymied, this time by very rough roads that eventually defeated both our rented minivan and us. We went back to the locality that had been sampled by Mark and David in 2009 and collected there again.

Bad roads became something of a theme on this trip, making us unable to go to some localities and slowing down travel considerably, even causing one flat tire and a last minute trip to a mechanic to fix the brake rotors. But we also got to visit some extremely remote, beautiful places in Mexico, were successful at nearly all our localities, and put over 3,000 km on the minivan's odometer. Highlights of the trip included a foray into the mountains near Valparaíso in Zacatecas, where we saw impressive basalt pinnacles and spent the night in an off-season resort in the small town of Atotonilco because there was nowhere else to stay. Doing fieldwork and then coming back to a house with a fireplace and Jacuzzi is definitely the way to live; especially when we spent most other nights on the trip camping in rather primitive conditions! Our travels took us to other localities in Zacatecas and Durango where we successfully found pocket gophers. We also did some trapping for small mammals to aid Museum graduate Dr. Jessica Light in her research

program at Texas A&M. At the end of the trip we traveled through the city of Guanajuato to the nearby town of Santa Rosa de Lima, once again to search for a particular chewing louse locality. Although we were unable to find pocket gophers in this mountainous region, we were all struck by the beauty of Guanajuato, which is a gorgeous colonial city with impressive architecture.



In the end, none of new localities we sampled on this trip had pocket gophers that belong to the probable new species, but sampling these new localities told us where the new species does not occur and helped us better understand the distribution of the other species in the region. This just illustrates the surprising and rewarding nature of fieldwork, where even “failing” to get what we needed still yielded surprising results and added important data to the information we already had. Our trip also highlighted the invaluable legacy

that museums leave us; much of our fieldwork was planned based on known localities and field notes from previous efforts of some of the first biodiversity surveys in the country dating back to the 1890s. Without that information, our searches for the patchy pocket gopher populations could have been akin to finding a needle in a haystack. In the end, it was an excellent trip to close out that chapter of my graduate career. I will definitely miss my expeditions to the diverse, beautiful country that is Mexico. Many thanks go out to the Museum of Natural Science for making our journey financially possible.

Above: Elizabeth Estrada, an undergraduate student from Mexico, and Dr. Mark Hafner setting traps for small mammals in Valparaíso, Zacatecas.



Drs. Mark and David Hafner preparing dinner at a campsite in near Mesquital, Durango.



NEW TIGER EXHIBIT COMING TO THE MNS THIS SPRING!

Inspired by the specimen cases of early scientific collection, our concept features two freestanding interpretive walls that juxtapose organic and geometric sensibilities that become an expression of science and nature. Envisioned to be part of a “contemporary cabinet of curiosities,” one interpretive wall will present a history of Mike, the LSU mascot. The exhibit will be dramatically punctuated by a vitrine containing the tiger specimen while the other wall will present hands-on elements and graphic panels on tigers as an endangered species. This second wall will also provide content on other endangered plant and animal species as well as broader conservation issues related to the Gulf Coast.



Conceptual renderings of the new exhibits designed for the MNS (top) and for the outdoor venue at the Alex Box stadium.

Constructed from marine coated cabinet-grade plywood, brushed aluminum laminate, and plate steel, the exhibit's materiality will give it a look and feel that unifies with the interior architecture of the natural science museum as well as the outdoor venue where a duplicate set will be on display at the Alex Box stadium.

This project is a collaboration between three LSU entities: the School of Veterinary Medicine (Drs. Baker and Senior), the Museum of Natural Science (Drs. Sheldon and Warny), and the Athletic Department (Eddie Nunez).



Another digital rendering of the newest edition to the LSU Museum of Natural Science.

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Enclosed is My Gift of:

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Please help us improve our collections and exhibits



Collecting Enigmatic Birds in Bolivia

By: Ryan Terrill

Many students come to the LSU museum of Natural Sciences to study birds in some of the most diverse, beautiful, remote, and poorly-known parts of the world, and this winter break was my first chance to realize this dream. LSUMNS has a strong ornithological history in Bolivia: my advising professor and the Curator of birds authored the first complete checklist of the birds of the country, and associates and students of the museum worked out vast contributions to the distribution and natural history of the birds of Bolivia from the 70's to the 90's. The names **Van Remsen** and **Ted Parker** are omnipresent in literature about Bolivia's birds; and after an 11-year hiatus, we have a renewed five-year research agreement in Bolivia with the Museo de Historia Natural Noel Kempff Mercado (MHNNKM) in Santa Cruz. With the objective of continuing this research tradition, museum students **Glenn Seeholzer**, **Mike Harvey** and I traveled to Bolivia over the 2010/2011 winter break.

There are so many reasons for ornithologists to go to this still poorly-studied country. Our goals this winter were to obtain specific tissues that were not previously represented in any collection in the world, and to produce an inventory for a region of forest that had previously been almost completely unvisited by ornithologists. We arrived in the eastern lowlands in the large city of Santa Cruz de la Sierra, where many birds typical of the southern zone new for Glenn and Mike (such as Cattle Tyrant and Sayaca Tanager) were on display on the runway. We were greeted by Dr. Sebastian Herzog, the scientific director of Armonia, (the Bolivian partner of birdlife international) and a good friend of the museum. He was kind and generous enough to accommodate us during our stay in Santa Cruz. He was excited to help us get our expedition together, and to trade ideas about where and what to study in Bolivia. We went to the MHNNKM to coordinate the trip, where we picked up Miguel "Mickey" Angel Aponte Justiniano, our field companion and Bolivian colleague. We rented a pickup truck and drove to Cochabamba, a city in a large, flat valley in the high Andes near the center of the country.

We took a newly-constructed highway which provided fantastic scenery as we ascended the various levels of incredibly diverse habitats typical of the east slope of the Andes. After spending a day collecting the first tissue sampled in the world of the Bolivian endemic Rufous-faced Antpitta, we searched for a Polylepis forest where we could collect the endemic and poorly-known Maquis Canastero and conduct a general census of the region's Polylepis forest. Maquis Canastero was a big target for us, since it was a hole in the phylogeny of the Furnariidae, a large project that has been taking place in the museum recently. We were given permission by the local government and community to work on the side of Cerro Tutti, a large mountain just south of Cochabamba with a significant Polylepis forest on its south-facing slope. We set up camp below the forest on a scree slope, and spent the next three days collecting nearby. We found Maquis Canastero to be fairly common, and had good luck collecting many other high-elevation birds. We were very surprised to see that Olive-crowned Crescent-chest was common at this location, and Mike even found a nest of this bird, which has only been described once before from the lowlands of northern Argentina. We were very pleased with the birds of the area, and enjoyed a sweeping view of the valley below us and the high Andes stretching in all directions. I was constantly reminded of why this is one of my favorite places in the world.

While discussing Bolivian birds with Sebastian, we decided to attempt a general survey of the Varzea forest along the Rio Mamore. This is a stretch of riverine forest that cuts through the middle of the otherwise arid grasslands of the Beni province known as the Llanos de Moxos. Although this river runs close to the small city of Trinidad, its associated forest has only been visited by ornithologists a few times, and even then only briefly. After driving back from Cochabamba to Santa Cruz, we planned to take a bus to Trinidad.

These plans were cut short when Bolivia's president decided to abruptly end gasoline subsidies, resulting in an overnight doubling in gasoline prices and a com-

plete halt of public transportation. We quickly arranged for an overnight ride in a pickup truck to Trinidad. We made it there despite the political hiccup, and we picked up another colleague, Rosa Stearns; also from MHNK. Again, the good folks at Armonia were kind enough to put us up at their Trinidad office (the headquarters of the Blue-bearded Macaw project) while we arranged transportation downriver. It took us a couple days to arrange for a boat, driver, and field assistants; but we were soon ready to depart towards some untouched, wide areas of forest about 45 km downriver. We had found a good-looking site to survey on google maps, and we had the waypoint plugged into our GPS, but beyond that we were trekking out into a green void. We didn't know how long it would take us to get to the location, or what awaited us there. All we knew was that we were leaving any visible traces of human presence behind as soon as we left Trinidad. After motoring downriver all day and through the night, we finally arrived at the spot around two in the morning, and were surprised to see a few small boats tied to the river bank. This immediately clicked with us: we had chosen the location because there was a small clearing, and now we knew why: there were people living there. Everyone was exhausted, so we decided to land and hope that the people were friendlier than most would be at being woken up by strangers in the middle of the night. They turned out to be not only friendly but accommodating, offering to let us set up our camp right next to theirs. Though we did not intend to have a camp near people, we benefitted greatly from it, mainly because the family living there was unimaginably generous and helpful. Typically, one of the most time-intensive tasks in setting up a field camp is establishing a trail system, and they already had one in place. The first night we were there, we were all hungry and our food was packed away, they fed us as much fried Pihanha as we could eat, refusing our request to pay them for it. When Mike was too sick to stay in camp (and I'll get back to that later), they took him the all-day boat ride back to town, and only asked in return whatever we felt was appropriate.

We spent the next ten days collecting in the nearby forest. We were happily stunned to find the near-mythical Unicolored Thrush to be fairly common in the area, as well as other poorly known birds such as

Velvet-fronted Grackle and Plain Sofftail. We obtained a good collection of specimens, most accompanied by recording of the voice. Associating specimens with recording of the voice was one of the secondary goals of our trip, in continuation of the philosophy of garnering the maximum amount of data possible from a specimen. We had a high success rate at this, with an associated vocal recording for almost every species we collected. The people there called the place Santa Lucia, so we used that name for it. It was a small clearing in between the main river and an oxbow lake, with tall varzea forest on all sides. Santa Lucia had one of the highest concentrations of macaws any of us had ever seen, and the constant sight of Red-and-Green or Blue-and-Gold Macaws overhead was an aesthetic highlight to each day. The mosquitos were thick, and discomfort level in the forest ranged from annoying to debilitating, but we had a very productive first few days. Unfortunately, Mike came down with some dengue-like illness, and we transported him back to town to see the doctor. He returned a few days later, only to very quickly fall sick with similar symptoms, which were complicated with a viral bronchitis that made his breathing laborious and shallow. Concerned for his welfare, we all decided that he should fly back to Santa Cruz from Trinidad to rest and recover. Though we were worried without any way to communicate with Mike after we sent him off on the boat, he made it to Trinidad and then Santa Cruz and made a full recovery. It may have been the high instance of dengue in the area, all the mosquitoes, or something in the water; but before we left everyone but Mickey fell quite sick for at least some time. In the end, we left a couple days earlier than planned, because over half of the camp was significantly impaired by this illness.

During this trip, we were able to collect a few much-needed tissues and specimens, as well as contribute to the knowledge of some rare and enigmatic species. We also sampled two vastly different locations, and made the second-ever inventory for a Varzea forest in Boliva, which was the first-ever of varzea forest in the vast Beni. Additionally, it was a chance for me to learn how to conduct a collecting expedition in South America. All in all, it was quite a productive Christmas break!



Left: Mike, Ryan and Mickey (left to right) prepping in our prep tent affectionately dubbed "the kingdom." Right: The expedition team (sans Michael Harvey) and our boat along the bank of the Rio Mamoré.



Talented Visual Art Students from Mandeville Junior High visit MNS

By: Mary-Elaine Bernard



in the MNS' Bird Hall and those in the environmental dioramas.

After returning to Mandeville Junior High, each student selected the bird(s) s/he would include in the grade level project. Eighth grade students created *drypoint etchings* of individual birds. Each had a 4" x 6" aluminum plate to use as the picture plane. Using the space well, s/he drew the bird on the plate and, then, scratched the surface with a heavy needle to show the texture of the image. Water-soluble black intaglio ink was applied to the plate. Excess ink was removed with cheesecloth. Authentic etching paper was available to the students. It was donated by the family of a recently deceased artist-etcher who had left behind him packages of the paper. Fortunately, the department has a small etching press. Students each made up to 12 etchings, varying the application of the ink on the birds image/background. Some students will choose an etching or two to watercolor

Seventh grade students created *scratchboard compositions* using two or three different birds positioned around a focal point which they added. Once the composition was completed on paper, the images were transferred to the scratchboard material. The scratchboard was covered in Black India Ink over a white surface. Referencing the drawings from MNS, each student scratched away the ink to reveal the white surface below in order to show various textured values of light and dark.



Samples of some of these projects are attached. The etchings and scratchboard images will be displayed at Mandeville Junior High's annual school wide display on April 5. The event is entitled "Patriot's on Parade". The Patriot is the school mascot. The etchings will also be among other types of prints that will be

I am a teacher at Mandeville Junior High and Curator Sophie Waryny asked me to share with the readers our art adventure at the **MNS**. The students were introduced to this *Science and Art* lesson in several ways. First, two bird feeders were set up outside the classroom windows in August 2010. It wasn't until the cool weather arrived that birds found the feeders. The students *observed* cardinals and, then, warblers at the feeders. Sparrows and wrens fed on the ground below.

From LPB, I purchased the film "A Summer of Birds" based on a book I had read with the same title by Danny Heitman. I had watched the film on LPB during the summer. The students viewed the film, *took notes* and discussed the experiences of John James Audubon in LA in the early 19th century. They learned about Audubon's quest to paint and publish "The Birds of America." He found a large variety of birds in St. Francisville at Oakley House. He *observed, took notes and then drew and painted the birds*. The students were using these work methods as well.

In preparation for the field trip to the Museum of Natural Science, each student created a small pamphlet-style covered sketch book for drawing the birds they would select at LSU. Each student labeled and decorated the sketchbook cover.

On Wednesday, February 2, about thirty 7th and 8th grade Talented Visual Art students, accompanied by me and about six chaperones, traveled from Mandeville to LSU in Baton Rouge. Having already *observed and taken notes* they were ready to *draw* the birds. Audubon had to shoot the birds and position them on a gridded board before drawing them.

The students worked from the stuffed and mounted birds

displayed during the month of April at Mandeville City Hall for the "Artist of the Month" program.

Even though the Regular Education Art Elective students were unable to attend the field trip to MNS, they too observed and took notes on the film and drew images of from Audubon's prints of birds. Each student selected a window frame style and placed two or three different birds in a composition with a focal point. Applying different intensities of color pencil each to the birds, the immediate background and the atmospheric background; they created unique works of art that celebrate the birds' beauty.

These students were about to take a culminating quiz on Audubon on Thursday morning, March 3. As I faced them and the outdoors, I could see beyond them through the classroom windows. A Cooper's hawk had just settled on a branch of a nearby tree. I had them rise quietly, turn and enjoy what they could observe at such close range. They readily identified it. The lesson had come full circle.

Hopefully, these students will find themselves

observing birds for years to come. Throughout these lessons, all have learned about rare, presumed extinct and actual extinct birds. Conservation of habitat and environment was discussed. Techniques used by LA's Wildlife and Fishery Department were covered in the film. Maybe some of the students will take an interest in this field as a career. At least, they can appreciate the work of those who have made this choice.



Artwork Credits, Page 10: Upper left, Ruby-Throated Hummingbird by Gavin Laiche, lower right, Cooper's Hawk by Tyler Suhm. Page 11 (Clockwise) : Snowy-egret by Anne Kate Thompson, Ivory-billed Woodpecker by Danielle Dillon, and willets by Ryan Clesi and Ada Marion.





Ichthyological Adventures in Central America Part 1: Collecting Fishes in Costa Rica

By: Prosanta Chakrabarty

I know what you are thinking – didn't we just have a newsletter filled with Costa Rica trip articles - yes we did; however, this here is the fish lab perspective. From February 15 to the 24th the freshwater people in my lab (**Caleb McMahan, Wilfredo Matamoros**) and I went on a trip to collect fishes in Costa Rica. Marine postdoctoral fellow, **Matt Davis**, was left back in Baton Rouge to hold down the fort. (Don't worry he is going to Panama with the rest of the lab in March and April, while I stay behind with my very pregnant wife.) Caleb, Will and I were after cichlids, poeciliids (livebearers) and other freshwater species that are related to my NSF funded project in Central America.

This was my first freshwater collecting trip to Central America in six years and I learned quickly that my team was much better at this than I was and even better than I thought I was. Caleb has been collecting heavily from freshwaters in Mexico, the U.S. and Jamaica for his masters and undergraduate projects and Wilfredo (without exaggeration) is one of the most well respected collectors of Central American fishes alive today. Wilfredo has many years of experience collecting in remote parts of Central America, which is why I brought him aboard as a postdoctoral fellow this past fall. Also with us were two superior Costa Rican collectors, Arturo Anguilo Sibaja and Carlos Garita Alvarado. These two masters students from the Universidad de Costa Rica were tremendous collectors and they knew many remote sites where we could collect. They were also very intelligent young gentleman who we made fun of constantly (they did the same to us with less success). In the eight days that we were sampling fishes we put nearly 1000 miles on our rented vehicle in a country that has a coastline of 1100 miles. We collected in every major drainage, in 26 localities, and in six out of the seven provinces as we circumnavigated the entire country.

We collected about 90% of our targeted species. Our final tally was nearly 4000 specimens from over 150 species. It was one of the most successful collecting trips I've ever been on, which was a surprise given how we started.

After a couple of days of getting settled in San Jose getting our rental car and gear together, we started our drive to the southern Pacific slope in the province of Puntarenas. We arrived just as the sun was setting and found ourselves a nice little beach hotel (one of many Hotel Iguanas that we encountered) with Golfo Dulce and the Pacific just to our west and with Panama to the east. We decided we would sample that night right in the back of the hotel, which was conveniently located on the beach. Although we were primarily after freshwater fishes, marine fish were also on our mind particularly mullets (Mugilidae) a taxon Caleb has an unusual, and perverse, fondness for. After about an hour at the beach we had collected a marine catfish, a spadefish (Ephippidae) a rare threadfin (Polynemidae) and several other species. It was already 9pm and I was toast, but the site of fish made the blood lust come out of Caleb and Will and they decided that we needed to hit a freshwater site, the Rio Coto, that night. The entire time the strange hotel manager was following us around and he even helped (sort of) pull seines on the beach. As we headed off to the Rio Coto he grabbed a couple of beers and hopped into the back of our SUV.

As I started recording GPS coordinates and writing field notes the UCR students started pulling a seine in the shallows near shore, almost immediately Arturo cried out in pain. He climbed out of the water with a nasty gash across his foot, he said he was pinched by a crab but it looked much worse than anything a crab could impart. He went to lie down and to elevate his foot while we stoically carried on with the fishing, we ended up get-

ting an additional 10 species at that site after about half-an-hour. We called it quits around 10pm with the intention of returning the next morning. Back at the hotel the arduous work of sorting, photographing, IDing, tissue-ing, and labeling began. One of the unfortunate things about collecting is the necessity of processing these materials while fresh. The hotel manager, now completely drunk, did not make things go faster with his bad jokes and shenanigans but any hotel owner who didn't mind us laying out 100 or so muddy fish across his bathroom floor surrounded by razor blades and alcohol vials is an okay guy in my book. Not to mention the olfactory nightmare that the mix of formalin, ETOH, fish, sweat, beer, and Arturo's bleeding foot produced. I'm not sure when we got done that night, but as it was with the rest of the trip, we were off early the next morning before we could get too relaxed.

We didn't actually catch a cichlid until our eighth field site on the third day of collecting, a fact that had me very worried since we were there primarily to collect members of this family. Cichlids are very species rich in Central America, with over 100 species, and this family has been there for a long time (more than 50 million years in some parts if you believe my publications). Because they are obligate freshwater fish, cichlids can tell us about the history of the geological blocks that make up Central America. Central America is a landbridge that connects North and South America that has only been in its present arrangement of four interconnected geological blocks for the past three million years. The geological blocks are older but their arrangement and the movement of those blocks over the course of the last 60 million years is hotly debated among geologists. The history and phylogenetic relationships of cichlids and other freshwater fishes on these landmasses can tell us a great deal about which geological hypotheses



make the most sense. The biological data provide an independent line of evidence for supporting or rejecting the geological theories. Our plan was to collect as many cichlids and other freshwater species as possible. Although we didn't collect any cichlids at first they started coming in bunches after day three. We ended up with 20 of the 22 species of cichlids we were targeting. It was amazing to see how each river drainage had its own assemblage of endemics. Cichlids are gorgeous fish, almost all have brightly colored bodies and fins and many have blue or lightly colored eyes. (This coloration is why they are among the most popular aquarium fish.) Even though we were not traveling tremendous distances between sites we could see huge differences between upland and lowland sites and between Pacific and Caribbean coasts. Costa Rica is one of the most developed countries in Central America so it was great to see that the diversity of forms were still there. In fact, we know of at least two new species that we are planning on describing. In July Arturo and Carlos will be coming to LSU to help us describe those species and to determine if we have even more new taxa. Besides the upcoming Panama trip my lab will also be traveling to Nicaragua, Guatemala, El Salvador, Mexico and Honduras over the next few months. Stay tuned....



Top of page 12 and 13: Central American Fishes. Page 13, (L) Team Peces in Costa Rica. Page 13 (R) Team Peces fishing in Costa Rican waters.

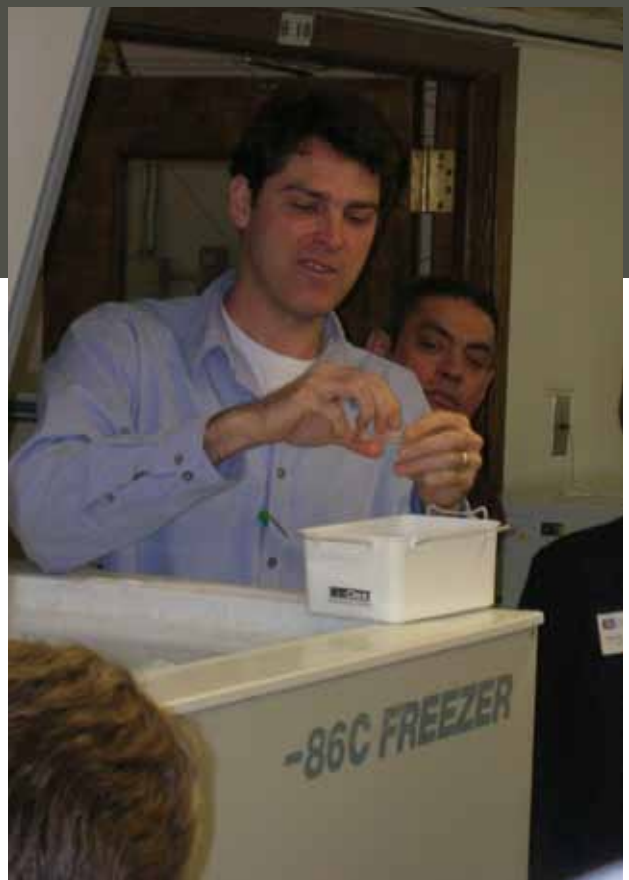
LSU provides two new liquid nitrogen vapor freezers for the Collection of Genetic Resources

By Robb Brumfield

At last count the Collection of Genetic Resources is approaching 85,000 specimens, with approximately 57,000 bird, 19,000 herp, 6,500 mammal, and 2,000 fish tissue samples. As one of the world's largest collections of frozen vertebrate tissues, we have an extremely active loan program. Over the last five years we have provided over 7,000 tissue samples to researchers all over the world, supporting the publication of over 200 scientific publications and helping raise several million in federal research dollars. We are very proud that we can provide the research community with this valuable resource, the payoff from lugging nitrogen tanks to remote tropical localities over the last 30 years.

If you've visited the Collection you will know that the bird, mammal, and fish tissue collections are housed in 15 electrically powered ultra-cold freezers. A few years ago the National Science Foundation granted funds to move the herp collection from the electrically powered freezers into liquid nitrogen vapor freezers. These are large stainless steel tanks that keep the tissues at ultra-ultra-cold temperatures (~-186 degrees Celsius, the average temperature on Saturn!). One beauty of these freezers is that they do not depend on electricity to keep the tissues frozen --- anyone living in Louisiana will see the obvious value in that. Another great feature is that at -186 degrees Celsius, essentially all processes (e.g. oxidation) that would degrade the tissues are halted ---- tissues preserved in liquid nitrogen should be in pristine condition thousands of years from now.

We recently received the very welcome news that LSU is purchasing two new liquid nitrogen vapor freezers for the Collection. We thank LSU and the College of Science for their continued investment in this priceless collection. Over the next year, we will be using all of our human resources to move as many of the bird and mammal tissues as can fit into these new freezers. We will also take this opportunity to re-organize and perform other needed maintenance of the collection. Our ultimate goal is to have a collection in which all tissues are preserved in liquid nitrogen, and which is organized so that we can provide tissues to the research community efficiently.



Dr. Robb Brumfield demonstrating the preservation of tissue samples in some of the museum's standard ultra-cold freezers and nitrogen vapor freezers.

Recent Special Saturday Events

By: Assistant Curator of Education, Sandra Garzon

Antarctica

January 29th, 2011

Special Guest: LSU Geology PhD student Kathryn Griener

Our Special guest **Kathryn Griener**, who is currently working on her PhD on Antarctic palynology and climate, taught the children about the amazing climatic changes that the icy continent has undergone over the past hundreds of millions of years. The children used cupcakes and straws to simulate the coring process which geologists use to collect ice and sediment samples that will later provide data about the ancient Antarctic climates. As a craft, we made walrus hand puppets.



Kathryn Griener using cupcakes to teach sediment coring techniques.



Dylan and Beckett Harms showing sea-through mugs decorated with tropical fish designs.

So Many fish, so little time!

February 26th, 2011

Special Guest: LSU MNS Postdoctoral Fellow **Matthew P. Davis**

The LSU Museum of Natural Science Postdoc Matthew Davis introduced us to the study of ichthyology. The kids learned about basic fish anatomy and ecology, found out interesting facts about all types of amazing fish and they even had the chance to look at very cool specimens from the Museum's ichthyology collection. As a craft, we decorated sea-through coffee mugs with different tropical fish designs.

Earthquakes

March 26th, 2011

Special Guest: LSU Geology PhD student Matthew Clark

Our special guest Matthew Clark, a PhD student in the LSU Department of Geology and Geophysics, used a slinky to easily explain the physics behind movement in the crust. The kids learned about the principles of plate tectonics and the causes of earthquakes, tsunamis and aftershocks. Matthew also explained how the Richter scale works for determining the magnitude of an earthquake. As a craft, we made refrigerator magnets in the shape of the Earth's tectonic plates.



Plate tectonics refrigerator magnets craft

Former LSU graduate at Virginia Museum of Natural History finds whale skeleton near Va. quarry

By: Eric Niiler, Washington Post

Hidden behind an old rock quarry south of Fredericksburg is a nondescript sandpit that opens a window on the world of 14 million years ago, a spot where dolphins frolicked and sharks hunted. Today, teams of student and volunteer diggers are pulling out a jackpot of fossils sandwiched between layers of bluish-gray rock.

"We don't know how they got here," said Alton Dooley, a paleontologist at the Virginia Museum of Natural History, as he chipped away at the clay surrounding a newly uncovered bone. Dooley and other scientists say this is one of the biggest fossil sites east of the Mississippi — staggering in both number and diversity of species. "The most striking thing is the sheer number of bones and teeth that are packed in such a small area. In 20 years, we've only excavated about 4,000 square feet, and we've pulled out tens of thousands of specimens."

The technology for examining fossils may have advanced, but the process of digging them out remains slow and painstaking. Bundled in stocking caps and fleece jackets against a pre-storm chill, the students knelt on foam pads, working away at the foot of a 15-foot wall of sediment. They were doing paleontology the old-fashioned way — some more enthusiastically than others.

Nearby, Laura Kellam was excavating with a chisel, a garden spade, a dental pick and a paintbrush. "To look at the different layers of the sediment," said Kellam, an environmental science major at Roanoke College, "and to think that 14 million years ago this was underwater here in Virginia is a pretty crazy concept."

Prolific days are not unusual at Carmel Church. Dooley enumerated the marine creatures he has identified since 1990: 17 species of whales and dolphins; 15 to 20 kinds of sharks; seals; sea turtles; 20 to 30 fish, including sunfish, tuna, drum and sturgeon; and crocodile. Some of the fossils are pressed together, overlapping, as if they had settled to the bottom on top of one another. Some have bite marks, evidence that the carcasses had been eaten by sharks or other scavengers.

The teams have also found land animals that Dooley believes were washed out to sea, including a camel, a tapir, a piglike mammal called a peccary and some extinct animals, including the dromomerycid, a deerlike creature with three horns, and a dog-size horse ancestor called *Calippus*.

The biggest find at Carmel Church was the nearly complete 30-foot whale skeleton that Dooley discovered in 1990. It took years of digging and preparation before he described — and named — *Eobalaenoptera harrisoni*, a previously unknown extinct baleen whale, in a scientific paper in 2004.

An impressive cast of the whale skeleton hangs in the atrium of the Caroline County Visitor Center in Ruther Glen, a few miles from the site.

Bone beds along Maryland's Calvert Cliffs extending from Chesapeake Beach to Drum Point have been providing fossil hunters with marine animals since the 1700s. But the concentration of prehistoric remnants isn't as great as at Carmel Church.

The site is privately owned, but Martin Marrietta Materials allows Dooley and his team to work there.

"It's an extraordinary site," said Brian Beatty, a paleontologist at the New York College of Osteopathic Medicine, who has worked with Dooley in identifying some of the fossils. "Carmel Church has some really very good preservation of terrestrial animals as well as the whales. On the East Coast, Carmel Church is one of those rare places to find them."

Beatty is a bone specialist. In 2009, he and Dooley determined that jawbones on a whale from Carmel Church were broken, indicating it may have been injured while feeding along the bottom. The injury was so great that infection set in and the animal probably died a painful death, according to their paper.

The two are now kicking around some ideas as to the geological puzzle of the site and why so many bones have landed here.

"We have some partial explanations," Dooley said with a smile. "But I've gotten used to being wrong."



Dr. Alton "Butch" Dooley excavating a whale at a quarry in Va.

Dr. Robb Brumfield awarded “Tiger Athletic Foundation Graduate Teaching Award” at the Choppin Honors Convention

The College of Science hosted the 36th annual Arthur R. Choppin Honors Convocation on Wednesday, April 13, 2011. Awards were presented to top faculty and students representing the excellence of their academic achievements. Congratulations to all of the recipients.

We are all very proud of Robb who has graduated five PhD students since being hired in 2002 - all of them hold tenure-track positions.



“Vertebrate Paleontology and Paleoecology of the Central Gulf Coast” Session

Dr. Judith Schiebout chaired a session entitled “Vertebrate Paleontology and Paleoecology of the Central Gulf Coast” at the 45th Annual meeting of the South Central section of the Geological Society of America in March. Meetings were held in New Orleans. Dr. Schiebout spoke on large mammals of the Fort Polk Miocene, and former student Julie Hill spoke on taphonomy and sedimentology of the TVOR fossil site cluster of the Miocene of Fort Polk. Former student Michael Williams presented via poster on Miocene amphibians and reptiles of Fort Polk, and Travis Atwood presented on environment and climate of the Fort Polk Miocene, derived from his study of geochemistry of fossil vertebrates. Undergraduate Ian Cannon presented a poster on his work on xenarthrans from the Pleistocene of the Tunica Hills.



Adjunct curator of microfossils awarded Moore Medal for Excellence in Paleontology

By: Lorene Smith

At the annual meeting of the Society for Sedimentary Geology (SEPM) in Houston (April 10-13, 2011), Barun K. Sen Gupta was awarded the Raymond C. Moore Medal for Excellence in Paleontology. The citation reads:

To Barun K. Sen Gupta, in recognition of his fundamental contributions to science in the study of modern and Cenozoic benthic foraminifera and a distinguished career as a respected educator and scientific mentor.

Congratulations!



MNS Adjunct Curator Wins Educational Award at the Tucson Gem and Mineral Show

By: Barb Dutrow



Each year over 20,000 people enjoy the largest mineral show in the world - the Tucson Gem and Mineral Show (TGMS) held in Tucson, AZ. Created to provide a venue to promote, inform and educate about the kingdom of minerals, the TGMS is now in its 65th year. For four days, an international community descends to view world-class mineral specimens (some for sale), 125 guest and special displays, minerals from 243 retail dealers, and 17 exhibits from government and non-profit agencies.

Organizers of the TGMS invite representatives from a variety of organizations to develop exhibits that educate and entertain the public.

Drs. Barb Dutrow and **Darrell Henry**, curators

of the mineral and rock collections of the Department of Geology & Geophysics and the Museum of Natural Science, have prepared exhibits for the past three years for participation in the Show. Exhibits typically follow the show theme: for the 2009 theme "Mineral Oddies", the LSU exhibit was "Fibrous Tourmaline: Mats, Hats, and Cracks"; for the 2010 theme of "Gems", they prepared "Geologic Gems: Minerals as Guides to the Earth's 4.6 Billion Year History", and for the recently held 2011 show with a theme of "Minerals of California" they prepared "What's in a Name?

The Tourmaline Super-group Minerals." Tourmaline is abundant in the state of California and the curators were authors of the recently accepted classification of the tourmaline mineral group.

The LSU exhibit won the prestigious "Friends of Mineralogy Best Educational Exhibit by an Institution" award of the over 100 exhibits.

Above: Mineral Collection display at the Tucson Gem and Mineral show.

Right: The display won the Education award of over 100 displays.





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The LSU Museum of Natural Science
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