Museum Quarterly

LSU Museum of Natural Science

November 2010 Volume 28, Issue 3

Letter from the Director...

The Bad, Good, and Ugly

We face a strange tension at the Museum these days, which reflects in microcosm the larger experience of LSU as a whole. On one hand, our operating budget is steadily eroding—it's about half what it was when I started as director nine years ago, and a pittance compared to the 1980s—and we are preparing for major cuts to the overall budget in the next fiscal year that would devastate the Museum as we know it. On the other hand, vitality and productivity at the Museum have never been better. Tenured curators are producing publications like mad. **Robb Brumfield**, our Curator of Genetic Resources, had 8 peer-reviewed papers last year and anticipates 10 this year. Our newest curators are also tearing up the turf; **Prosanta Chakrabarty** (Ichthyology) and **Sophie Warny** (Education) both have a steady stream of high profile papers (Prosanta expects 7 to appear in 2010) and have already received major NSF support. Our new crop of graduate students promises to be the best we've ever had, and that's saying a lot. Two have already received NSF graduate fellowships: **Glenn Seeholzer** (Ornithology) and **Julie Doucet** (Archaeology). **Caleb McMahan** (Ichthyology), who arrived last month, has four publications coming out in 2010. Glenn and fellow Cornelian, **Mike Harvey** (Ornithology), are describing a new species of barbet. If all this is not enough, the Museum plans to install two new educational exhibits, one on fish, being developed by Prosanta and Sophie, and another on **Mike the Tiger** and tiger conservation, with the LSU Athletic Department.

But there is no link between a lower budget and greater productivity. Instead, several independent forces are at work. First, because research and teaching are our main focus, we have protected them from budget cuts, choosing rather to remove land telephone lines (everyone has cell phones), cut printing and computer support (everyone has laptops and pdf's), reduce services to the public (something has to go), etc. Second, we have delved heavily into our reserves to keep work apace. The Museum has a couple of research funds and a small endowment for research that have accrued from the generosity of our supporters and through careful stewardship. Normally, we hoard these funds for special opportunities, and we conscientiously reinvest income back into the endowment. Unfortunately, those days are over. Now we depend heavily on these cherished funds to make ends meet. (Every time one of the freezers that hold the Museum's unique genetic tissue collection breaks down, it seems to cost another $5,000.) Third, the national recession has forced more students from the work force to graduate school. That has been a goldmine for us (and LSU). We have an amazing selection of kids from which to pick a few especially fat plums.

The financial model under which we are currently operating will be difficult to sustain. For now, we are very grateful for the support of our many friends who are helping us navigate these challenging waters.

Fred Sheldon

Pancake batfishes (*Halieutichthys* spp.)

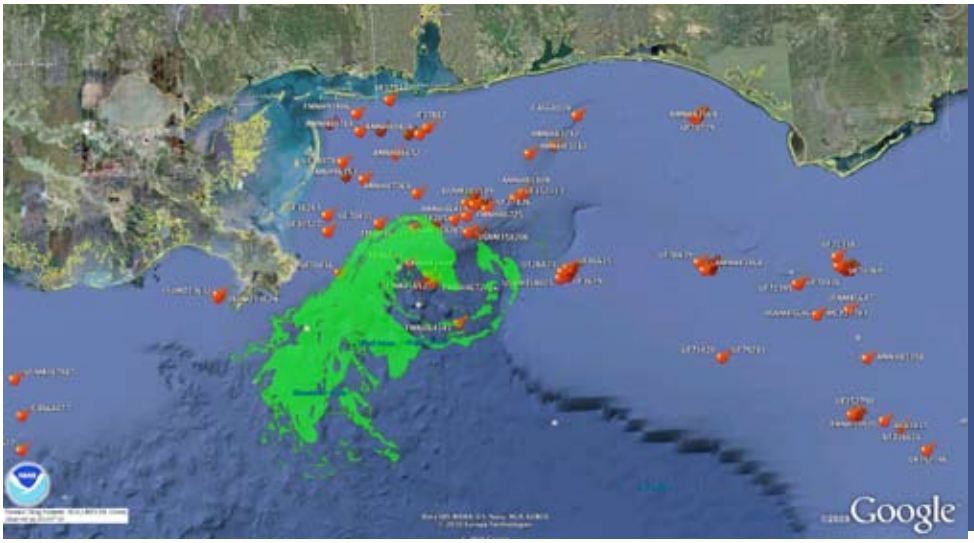
Measuring the Environmental Impact of the Gulf Oil Spill

Prosanta Chakrabarty

The oil spill in the Gulf of Mexico was the largest accidental release of oil in history with over 4.9 million barrels (=206 million gallons) released; however, accessing the actual environmental impacts will be very difficult. The largest environmental impact is likely to take place in the part of the world that is most unfamiliar to us and the least studied - the deep sea.

The oil well associated with the Deepwater Horizon rig was nearly a mile (1.6 km) below the surface; everything below 1 km from the ocean's surface is considered the deep sea. This environment is the largest most stable habitat on Earth; it is perpetually in darkness (no sunlight penetrates this region) and is always cold (only 1 to 2°C above freezing). The animals that live there are subject to enormous atmospheric pressure (hundreds of pounds per inch) and also have to deal with vast amounts of empty space (prey items and mates are difficult to find). These difficult conditions have led to the evolution of some strange-looking organisms. Adaptations for this environment include flashing lures, fleshy black bodies, giant teeth and eyes, and generally odd body shapes and behaviors (see photos on page 4). The majority of animals that live here use bioluminescence (light generated from bacterial symbionts or by the animal itself) to communicate and to attract prey. The common perception that the deep sea is depauperate in terms of species richness and diversity is wrong. The most abundant vertebrate species in the world live in this habitat (lanternfishes, *Neoscopelus* spp.; bristlemouths, *Cyclothone* spp.) as do some of the rarest and most bizarre forms known. There are more than 2,000 fish species known from the deep sea (more than all the birds, amphibians and reptiles of North America). One hypothesis of the origin of deep-sea fishes is that the deep ocean is a refuge for the living remnants of primitive lineages that were outcompeted by more advanced forms in ecologically rich habitats like coral reefs. Giving credence to this idea is the fact that advanced spiny-rayed fishes (Acanthomorphs), which make up the majority of extant fishes, are generally absent from the deep sea despite their complete dominance of every other aquatic habitat. Therefore, despite the perception of the deep sea being an ecological desert, it is in fact very rich.

When the decision was made to allow the release of chemical dispersants below the surface at the source of the oil spill a trade off was being made between two environmental disasters. Allowing all of the oil to come directly to the surface (by not using dispersants) would have meant potentially having the Louisiana shoreline and its fragile marsh and estuarine habitats threatened. Allowing dispersants to be sprayed a mile below the surface meant endangering the deep-sea habitat where the damage would go largely unseen. In the end, we have oil in both habitats. Dispersants had never before been used below the surface and little data exists about how these chemicals breakdown and how they interact with the deep-sea environment. The dispersants that were

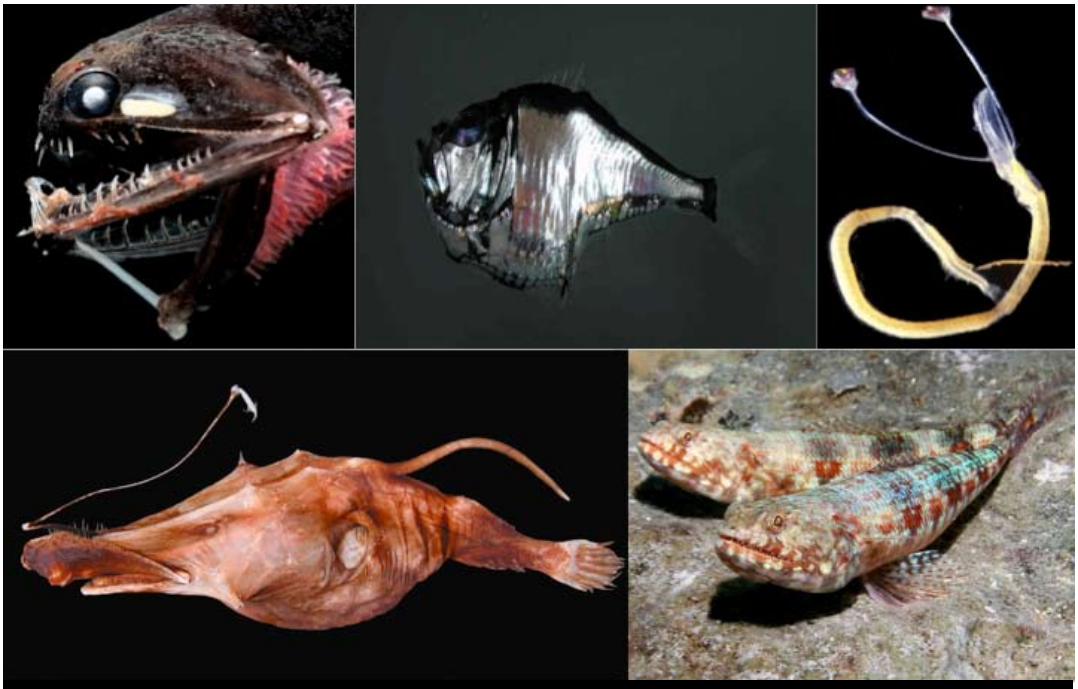


DEPTHMAP display from July 17 for Halieutichthys intermedius (Ho et al., in 2010) a batfish discov ered in 2010 in the region directly affected by the Deepwater Horizon oil spill.

used, Corexit 9500 and 9527, degrade quickly in warm waters when exposed to sunlight: it is not known how these chemicals break down in the dark and cold deep ocean. There is also no way of dealing with subsurface oil: oil at the surface can be skimmed and burned, treated and broken down. Even if we could treat subsurface oil, it would be difficult to find. We have inadequate tools for discovering oil floating in the water column as either tiny suspended microdroplets or as dense deep-sea plumes. We frankly do not know how long oil combined with dispersants will remain in the environment. We do know that the combination of high atmospheric pressure and darkness certainly allows the oil to be maintained in the deep sea much longer than it can in warm surface waters.

To study the impact of the oil spill on the Gulf environment, my lab and collaborators at Ohio State University (PI - Daniel Janies) have created a program called DepthMap. This program maps the known pre-spill distributions of fishes in the northern Gulf of Mexico (where there are about 600 species known) based on historical records from museum collections (including LSU's) and the collections of state and federal agencies. These georeferenced data can be incorporated into a NOAA map of the oil spill, and it can be used to compare post-spill and pre-spill distributions (see map above). DepthMap provides the user a way to visualize where fishes were collected before the spill and compare collections post-spill to see if any species have been extirpated from certain locations or if they are less abundant than in the past. We can incorporate data about life history to see if spawning grounds have been affected or if migratory routes have changed. DepthMap is freely available on-line (http://www.depthmap.osu.edu/) and our labs have submitted a joint grant proposal to BP's allocation of funds to LSU. These funds would help finance the continued uploading of pre-spill data and would allow additional comparisons with recent collections. Currently, only a dozen species have been mapped and without future funding we will be unable to reach our goal of mapping all northern Gulf fishes (see map above). For many species of northern Gulf fish we know little else besides their distributions. This program will help determine if the oil spill permanently changed this environment or if it will quickly rebound.

My post-doctoral fellow, **Matthew Davis**, and I have also submitted an NSF proposal to study the deep-sea environment and how it was established. We are targeting three taxonomic groups: batfishes (Ogcocephalidae), cods (Gadiformes), and lizardfishes (Aulopiformes). These groups are notable because they are some of the few lineages that have representatives in the deep sea and in shallow waters. Because of that diversity we can study how the deep sea was invaded and what adaptations need to take place in order to accommodate that transition. The batfishes are a family of anglerfishes that have an unusual flattened body shape that make them look more like moldy crackers with eyes than they do fish (see photo on page 2). This is a group I've been interested in ever since moving to Louisiana. Two colleagues, Hsuan-ching "Hans" Ho (Academica Sinica, Taiwan) and John Sparks (American Museum of



Examples of the strange morphologies of deep-sea fishes. Clockwise from left: The loose jaw dragonfish (*Photostomias*), a hatchetfish (*Argyropelecus*) a stalk-eyed dragonfish larvae, lizardfish (*Synodus*) and the wolftrap angler (*Lasiognathus*). Images from various unpublished sources.

Natural History) and I recently described two new species of pancake batfish from the Gulf of Mexico. These are the two newest species described from the region and one of them is only found off the coast of Louisiana and northern Texas. Amazingly, of the more than 1500 or so fish species found in the Gulf only 73 are endemics (found no where else). This new endemic species, that we call the Louisiana Pancake Batfish (*Halieutichthys intermedius*; see photograph on page 2), has received a lot of press coverage because of its incredible beauty and because it was discovered in the region of the oil spill.

The deep sea is home to an amazing diversity of rare and odd forms with many yet to be discovered and many other secrets to be revealed. As we learn more about the effects of the largest environmental disaster in U.S. history we should keep in mind how difficult measuring that impact will really be. The only thing we know with certainty is the fact that we still know very little.

Gulf Oil Spill: NSF Awards Grant to Study Effects of Oil and Dispersants on Louisiana Salt Marsh Ecosystem

Article modified from NSF Website

As oil and dispersants wash ashore in coastal Louisiana salt marshes, what will their effects be on these sensitive ecosystems? The National Science Foundation (NSF) has awarded a rapid response grant to scientist Eugene Turner of Louisiana State University and colleagues to measure the impacts on Gulf Coast salt marshes.

As part of this grant, Museum of Natural Science personnel—**Laurie Anderson** (Adjunct Curator), **Barun Sen Gupta** (Adjunct Curator, Emeritus), **Sophie Warny** (Curator), and **Lorene Smith** (Collections Manager) and colleagues from other departments —are working on a study of the Deepwater Horizon oil-spill impact on Louisiana marshes.
The project is also supported by grants from BP (R. E. Turner, P.I.) and two sea grants (one to L. Anderson and one to S. Warny). Samples were collected from marshes in May before oil contamination and again in September. The areas will also be sampled in May 2011.

Museum researchers are part of a team of investigators from the Departments of Oceanography & Coastal Sciences, Geology & Geophysics (i.e., Annette Engel), Entomology, and Environmental Sciences who will be gathering information on soil chemistry, macrophyte biomass, mollusks, insects, microbes, foraminifera, and dinoflagellates to examine the marsh ecosystem's response to oil and the toxins associated with the spill.

Salt marsh and beaches are shown being collected along the Gulf Coast before the oil arrived. Credit: Annette Engel (top), and G.M. Andrews (left). Specimens collected include dinoflagellate cysts and mollusks such as *Littoria*.

The researchers will track short-term (at the current time, and again at three months) and longer-term (at 11 months) exposure to oil and dispersants.The coast of Louisiana is lined with extensive salt marshes whose foundation is two species of *Spartina* grass. In brack ish marshes, *Spartina patens* is the dominant form. It's locally known as wiregrass, marsh hay and *paille a chat tigre* (hair of the tiger).

In more saline marshes closer to the Gulf of Mexico, *Spartina al terniflora*, also called smooth cordgrass and oyster grass, takes over. A tall form of this wavy grass grows on the streamside edge of the marsh; a shorter form grows behind it.

In their NSF study, the biologists will document changes in these critically-important *Spartina* grasses, as well as in the growth of other salt marsh plants, and in marsh animals and microbes. Field investi gators will collect samples three times at 35 to 50 sites and analyze the oil and dispersants after each expedition.

The first field effort is now underway. "Data are being collected that may be used as indicators of the long-term health of the salt marsh com munity," says Turner. "From these data, we will obtain in formation that precedes po tentially far-reaching chang es.

Researchers collect samples of bacteria for investigations of ecosystem health. Credit: Annette Summers Engel.

"This exceptionally large oil spill and subsequent remediation efforts are landmark opportunities to learn about short- and long-term stressors on salt marsh ecosystems." Salt marsh stressors, such as those from oil spills, can have dramatic, visible, and immediate direct impacts, Turner says, on marshes and surrounding uplands.

"They also have indirect effects because, as oil and dispersants begin to degrade, they enter food webs via primary consumers such as suspension-feeding oysters, deposit-feeding bivalves, and grazing gastropods," says David Garrison of NSF's Division of Ocean Sciences, which funded the research. These "primary con sumers," in turn, serve as food sources for those at higher trophic levels--including humans.

As contaminants make their way up the food chain, they may become con centrated, as in the well-known example of mercury in fish. "The effects of en vironmental stressors can cascade through ecosystems as metabolic pathways are altered," says Todd Crowl of NSF's Division of Environmental Biology, which co-funded the research. "The result may be an ecosystem that's radically altered well into the future." The research, says Turner, is a benchmark study in salt marsh eco system change, and will answer key questions about salt marsh stability.

This NSF grant is one of many Gulf oil spill-related rapid response awards made by the federal agency. NSF's response involves active research in social sci ences, geosciences, computer simulation, engineering, biology, and other fields. So far, the Foundation has made more than 60 awards totaling nearly $7 million.

Ants on a stem of marsh grass are but one species dependent on the salt marsh environment. Credit: Xuan Chan, LSU.

A showcase of LSU's many and varied artifacts, artworks, and cultivated natural wonders—both hidden and in plain sight.

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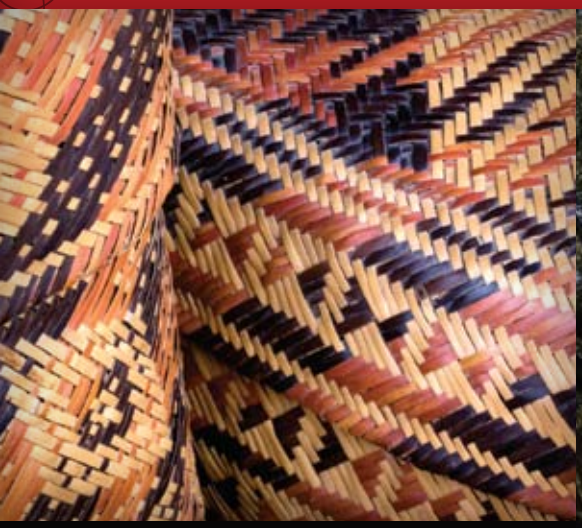

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Anyone who has attended or even visited the LSU campus can attest to the fact that it holds numer ous treasures in various areas including architecture, the arts, research, natural beauty, long-standing tradi tion and historical artifacts.

"Treasures of LSU" is a new, high-quality, 232-page book published by LSU Press that features more than 100 of these iconic items, as well as essays and information on their respective backgrounds and rel evance to LSU.

Edited by Laura Lindsay, interim dean of the LSU College of Education and professor emerita in the Manship School of Mass Communication, "Treasures of LSU" is a lush, comprehensive book that showcases many of the university's treasures and brings them to life through a series of interpretive essays written by numerous faculty members and graduate and research assistants, and through 168 vibrant photographs either provided by the LSU community or taken by university photographers Jim Zietz, Kevin Duffy, Jason R. Peak and Eddy Perez.

The book is being published specifically for the university's Sesquicentennial Celebration in 2010, but is also a highlight of LSU Press' 75th anniversary.

"The entire 'Treasures' endeavor has been a fascinating learning experience, taking the editorial team into many different areas of the campus," Lind say said. "The big 'aha' has been recognizing that we could only include a small part of the truly extraordinary artistic, cultural and scientific works that are central to the educational enterprise of the university."

While the treasures included in the book are only a sampling of the intriguing and engaging lore of LSU, the book captures the wealth and diversity of LSU's resources and affirms the university's numerous cultural contributions to the world community.

Some of these treasures act as artistic back drops to everyday campus life at LSU. "In Unity As cending," the striking Frank Hayden sculpture, greets all who enter the LSU Student Union, while vibrant Depression-era murals decorate the corridors of Allen Hall.

Other treasures reside in out-of-the-way plac es. For example, the Department of Geology and Geo physics houses the Henry V. Howe Type Collection of shelled microorganisms—tiny, beautifully varied fossils that frequently aid geologists in determining the ages of rocks and features of ancient environments. Also, the LSU Museum of Natural Science, in Foster Hall, holds one of the largest and most prestigious research collections of bird specimens in the world.

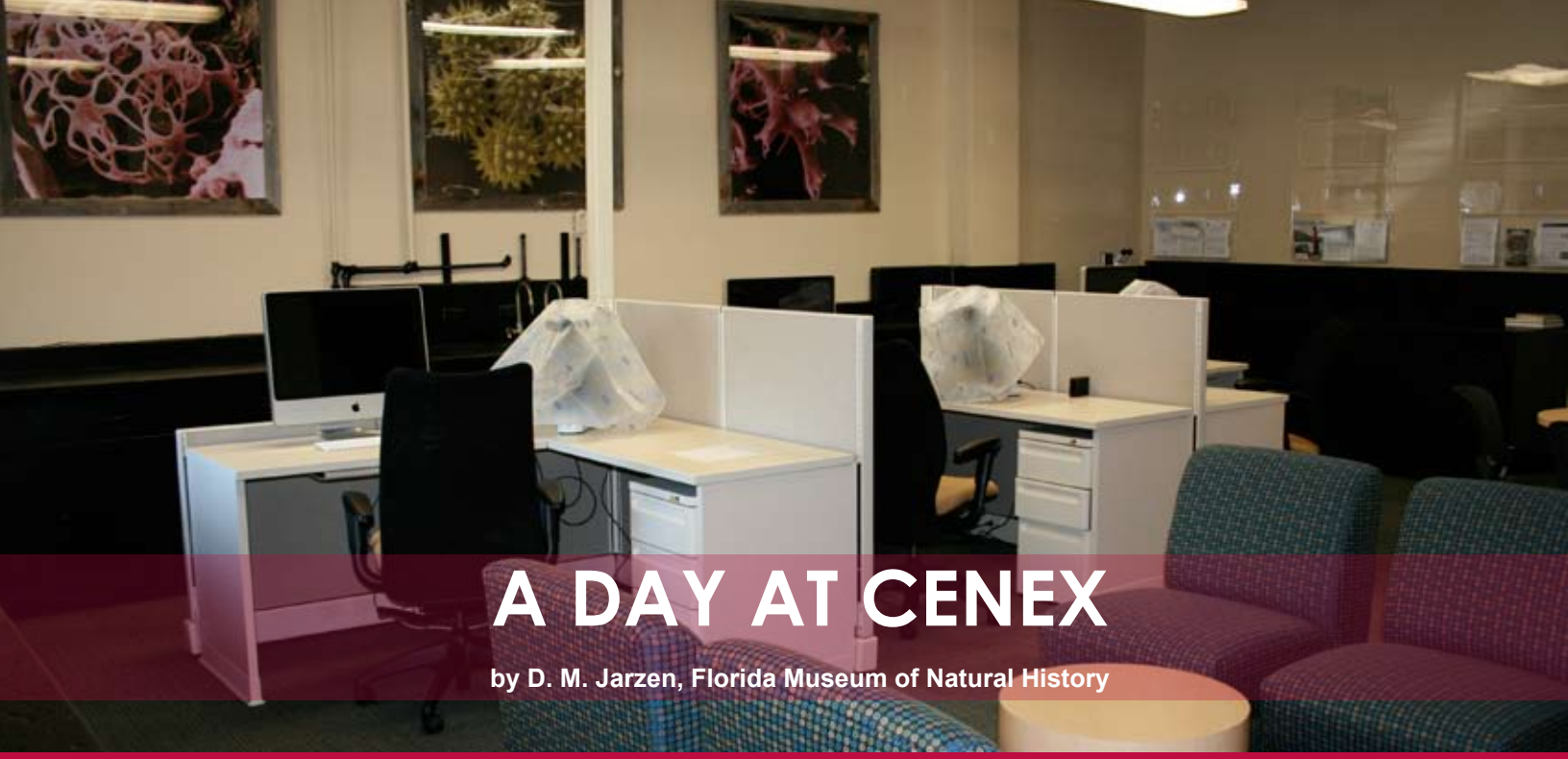
Other featured treasures include a historic dog trot house at the LSU Rural Life Museum, John James Audubon's double elephant folio, "Birds of America," from the E. A. McIlhenny Natural History Collection at Hill Memorial Library, and cherished campus land marks like the Indian Mounds, the French House and Mike the Tiger's habitat.

As LSU Chancellor Emeritus Paul W. Murrill de clared of the treasures in his foreword for the book, "All reflect expressions of superb quality. All encourage, in one way or another, the human spirit to soar."

Hard-cover editions of "Treasures of LSU" will retail for $59.99 each, while soft-cover editions will be available for $29.99 each. Sixty percent of the total purchase price will go back to the university.

"Treasures of LSU" can be preordered online through companies such as Amazon.com and Barnes & Noble Booksellers, or by visiting the LSU Press website at www.lsu.edu/lsupress. From there, click on "Search" and enter "Treasures of LSU." The book is now available for purchase in area bookstores, as well as at the LSU Press offices, located on West Lake shore Drive.

The Museum of Natural Science faculty (**Sheldon, Remsen, Brumfield, Warny, Schiebout**) and staff (**Smith**) appreciate the chance to share the collections they curate with the public thanks to this beautiful book.



A DAY AT CENEX

by D. M. Jarzen, Florida Museum of Natural History

Most AASP-The Palynological Society members and readers of the Newsletter are no doubt aware of the Center for Excellence in Palynology (CENEX) that is part of the LSU Museum of Natural History and the Department of Geology and Geophysics. Ken Piel recently wrote an excellent article updating the current status and new developments surrounding CENEX. (see: AASP Newsletter 42(4), December, 2009). More recently I had the pleasure of visiting CENEX and sharing a full, very interesting day, with **Sophie Warny** and some of her students learning a bit more about Gulf Coastal palynology and the workings of CENEX.

Susan and I arrived on Thursday, May 6, late in the day and based on a recommendation from Dave Pocknall, found a room at the Hilton Baton Rouge Capital Center. This hotel is "top-of-the-line" and the view from the rooms, whether from the city side or the Mississippi River side, is truly spectacular. Early on Friday we made our way to the Louisiana State University (LSU) and to the Old Howe-Russell Building (Geoscience Complex) where we eventually found Sophie's office and work area. It is within this building that CENEX is housed.

Sophie has done wonders with the facilities and the space provided to her for CENEX development. We had visited CENEX years earlier when only a few rooms and a laboratory were available for palynological research. Today, the original rooms still house office and preparation rooms, with several rooms across the hallway renovated to house graduate student space, and areas for reading and using the extensive modern and fossil pollen reference collections. We were impressed with the spaciousness, the clean atmosphere, and the well-dressed work stations for her students. State-of-the-art microscopes and computers are the obvious assets, but on the shelves just behind the student work spaces are boxes and boxes of reference slides from around the world, no doubt constituting one of the largest pollen and spore reference collections in North America. Plans are underway to eventually have this collection, with data and photographs, online.

Sophie has been a busy person, with stacks of papers and journals and manuscripts neatly arranged on a table near her desk. These she told me were the several projects with which she is currently involved. She does well at multi-tasking.

We met three of her seven graduate students and learned of their specific projects. **Lee Foersterling** is working on Middle Miocene palynomorphs from Antarctica, a part of the larger project which Sophie is now working on with Rosemary Askin. **Russell Crouch** is already hard at work on the palynology of Holocene Mississippi Delta deposits, a project which will eventually earn him a Masters degree. This project is conducted as a cooperative project with Dr. Harry Roberts. **Sandra Garzon**, a graduate student from Colombia, who is also part of the Carlos Jaramilo team at the Smithsonian Tropical Institute in Panama, is working towards her Masters, studying the palynomorphs from the upper Cretaceous sequences of central Colombia.

For the Fall school session, Sophie has accepted three new Masters students and one Ph.D.

candidate.

These students are coming to LSU and CENEX to be a part of the growing interest in the vast library and reference resources in palynology. Students are being directed toward CENEX by Reed Wicander, Carlos Jaramilo, Fred Rich and several other palynological centers. Interest in CENEX as a dynamic research center is growing.

While we only spent one full day with Sophie, we did manage to get some work done on the microscope. One of the projects with which Sophie is working with several other investigators involves the analysis of core material in the Gulf of Mexico near Galveston, Texas. She and her coauthors are looking at the palynoflora from sites suspected as having human occupation. The pollen assemblage may show signs of human habitation, thereby making this one of the oldest occupied sites in the region. The results of this work will be published soon. I learned something new!

The next day, Saturday, Susan and I drove the 10 or so hours back to Gainesville refreshed with new ideas, and sparked with the contagious enthusiasm offered to us by Sophie, her students, and her family. While we were somewhere in the panhandle of Florida, Sophie and her gang were somewhere in the waters near Dauphin Island off the coast of Alabama, sampling for phytoplankton levels. This work is in response to the recent oil spill in the Gulf, a spill which will change the biota of the Gulf waters for some time to come. Warny and her students plan to continue to obtain and analyze water samples from the Gulf over an extended time period in order to better understand the effects of this current oil spill disaster. CENEX is on the spot, on location with data!

Our day at CENEX was filled with learning and sharing and understanding the sorts of research that are now underway at our Center for Excellence in Palynology.

CENEX current graduate students, from top to bottom, left to right: **Carlos Santos, Lee Foersterling, Russ Crouch, Kate Griener, Sandra Garzon, Shannon Ferguson, and Kevin Jensen.**

Bottom: Sophie and Sue Jarzen look at the CENEX reference collections.

LSU Museum of Natural Science: Expedition to the Central Lowlands of Peru

by Mike Harvey

The research team poses in the main square of San Juan de Dios, the foothills of the Gran Pajonal plateau rising in the background. Photo by Mariela Combe.

After the last-minute cancelation of a planned expedition to Brazil, LSUMNS graduate students **Michael Harvey** and **Gustavo Bravo** quickly regrouped and cobbled together an expedition to some poorly known areas of central Peru. Busy in June with field work in Costa Rica (Harvey) and the 2010 Evolution Conference (Bravo), we had only three days to purchase supplies and pack in Baton Rouge before departing for Lima on 8 July. Once in Lima, we met up with Peruvian students Luis Alza and Flor Hernandez of the Centro de Ornitología y Biodiversidad (CORBIDI) and departed promptly for the field.

Work by myself and others in recent years in central Peru has focused on birds of the upper elevations of outlying ridges. Brief forays into the field in the lowlands, however, have revealed some rare species, interesting distributional patterns, and a relative vacuum of ornithological knowledge. The goal of this 2010 trip would be, therefore, to further investigate the avifauna of the lowlands in the region. We were also focused on obtaining data for ongoing museum research projects on diversification across the Andes Mountains, antbird phylogenetics, and phylogeography of western Amazonian birds.

To get to our first site, we rode by bus for a day across the Andes to Satipo. A short truck ride brought us to Puerto Prado at the confluence of the Rios Ene and Tambo. As we shoved off in a rented river boat, we gazed longingly at the largely defoliated dry forest passing on either bank – a local and understudied habitat that we will have to revisit someday. Seven hours later, we arrived at the isolated river town of Atalaya at the confluence of the Rios Tambo, Urubamba, and Ucayali.

We set up camp at a hydroelectric station a few miles south of town, with the support of the Ashaninka community Canuja and the Electro Ucayali power company. The concrete aqueduct of the hydroelectric plant stretched several miles up into terra firme forest, and we promptly positioned our mist nets and began making audio recordings and collecting. An ongoing severe

Myrmoborus myotherinus **(Black-faced Antbird) is a widespread Amazonian species that is a focal species for several Museum of Natural Science research projects. Photo by Mariela Combe.**

Foothill forest on the lower slopes of the Gran Pajonal above San Juan de Dios.

friaje (a cold front from the south) forced us to don jackets and hats, but it didn't hamper our research efforts. Perhaps the biggest avian surprise came on 20 July. While crossing a bridge over a rushing stream, I spotted a flash of red to my left. Raising my binoculars, I was stunned to see a Fiery Topaz (*Topaza pyra*) hovering low over the water. This is a range extension of at least 500km for this species, and perhaps the southernmost locality on record anywhere. We found that quite a few individuals visited the stream here, and we were ultimately able to collect two males.

After a week and a half in Atalaya, we spent a day doing a whirlwind survey of some river islands in the Rio Tambo. We succeeded in documenting a number of range extensions for river edge species, most notably the Riverside Tyrant (*Knipolegus orenocensis*) here 600 km upriver from its known range. We returned to Satipo and then La Merced. Luis Alza departed for other research commitments, and we were joined by Mariela Combe, also a student working at CORBIDI. From here, it was a rough, day-long truck ride to Puerto Bermudez. Unlike Atalaya, this site had never been visited by any of our team members, and we quickly set off to find an appropriate site for our research.

After a few days of coordination (and celebrating Peru's Independence Day), we set off for a 6 hour trip upriver to the Asheninka community of San Juan de Dios. We only were able to spend five days at this spectacular locality at the foot of the Gran Pajonal plateau, but some hard work and the hospitality we enjoyed in the community made our stay productive. Some of the differences between this site and Atalaya were striking. Antbirds were particularly thick in the area, and Gustavo (who works primarily on this group of birds) was in heaven. All too soon, however, we were headed back to Lima.

While we were only in Peru a month, and only spent a little over two weeks in the field, we managed to accomplish a lot. We collected some 310 specimens and accompanying tissue samples, made hundreds of recordings (some of which are now accessible on the Macaulay Library website: www.macaulaylibrary.org), and gathered valuable data on bird distribution. Perhaps even more importantly, we established local contacts and collaborations that will serve us well during upcoming field work in the region.

The community of San Juan de Dios generously provided the team with a thatched shelter in which to stay and work.

FORT POLK RESEARCH

Vertebrate paleontological research at Fort Polk began in 1993 when **Drs. Judith Schiebout** and **Suyin Ting** went to the Post to investigate the find of a partial jaw of a three-toed horse, typical of the Miocene, in the middle of the Age of Mammals. 17 years later, over 6,000 vertebrate specimens from Fort Polk are curated, and our acid and screening lab continues to yield a stream of small vertebrates, including rodents, bats, frogs, snakes, and a tiny beaver new to science. A September 11 trip brought students, recent graduates, and volunteers to Fort Polk to check ground surfaces of sites for larger fossils exposed by erosion.

Three of the five LSU students to graduate from LSU with an advanced degree in vertebrate paleontology in the 2009-2010 academic year were working on Fort-Polk-related projects, and two of them, **Travis Atwood** (MS. A Geochemical Paleoecological Analysis of Miocene Mammalian Mega Fauna of Fort Polk, Louisiana) and **Julie Hill** (MS. Taphonomy and Sedimentology of Two Miocene Vertebrate Fossil Sites on Fort Polk, Louisiana) were able to return for this trip.

Top photo: Dr. Suyin Ting shows shows Barry Meyer the rock from TVOR site. When dissolved in acid at LSU, it yields small fossils, especially small vertebrate teeth. Photo by Sergeant Krist.
Bottom photo: From left to right- Judith Schiebout, Ian Cannon, Mark Krist, Bill Lee, Barry Meyer, Ellen Meyer, Chris Tranham, Brad Lafitte, Paul Heinrich, Elizabeth Chamberlain, Suyin Ting, and Julie Hill. Photo by Travis Atwood.

2010 Skutch Medal awarded to John P. O'Neill

The Association of Field Ornithologists presented its 2010 Skutch Medal to **John P. O'Neill**. Dr. O'Neill is renowned as one of America's foremost bird illustrators, and his fieldwork in Peru has led to the discovery of more species of birds (including three new genera) than any other living naturalist. During his more than thirty-five years of expeditions and explorations in South America, John O'Neill has mentored and trained more than a hundred students from U.S. and Peruvian universities, leading to many bi-national collaborations, publications, and discoveries. Among his many accomplishments is the recent publication of *Birds of Peru*, an outstanding field guide to the birds of this remarkable country.

John P. O'Neill- photo from NSF website

Although many people write books, many fewer have books written about them. John O'Neill falls in the latter category, with Don Stap's book *A Parrot without a Name* (Knopf, 1990), chronicling how O'Neill's unique brand of expeditionary science has helped place the Louisiana State University Museum of Natural Science at the forefront of Neotropical Ornithology.

O'Neill earned his master's and doctorate degrees at LSU, and worked as the Curator of Higher Vertebrates at the LSU Museum of Natural Science for several years. He then served as the Director for 5 years. Realizing that he had no time for his painting, he decided to step down to focus on his artwork and organizing expeditions for the Museum.

In addition to scientific publications and pursuits, O'Neill has made his life's work accessible to the public through hundreds of articles and paintings published in magazines, books, non-profit newsletters, newspapers, and exhibits in museums throughout the U.S. and many foreign countries. O'Neill's paintings are in the collections of the Houston Museum of Natural Science, the Beijing Natural History Museum, and the Denver Museum of Natural History, among others.

News from the Brumfield Lab

Caroline Duffie, PhD student, joins the **Brumfield** Lab this Fall. Caroline majored in Ecology at the University of Georgia (1998-2002) and then went on to earn a master's degree at the University of Missouri – St. Louis (2004-2007).

Her thesis work on population genetic structure of the Flightless Cormorant (*Phalacrocorax harrisi*), a Galapagos endemic seabird, was published last year in *Molecular Ecology*. Following completion of her master's degree program, Caroline spent two years working in the Biology Directorate at the National Science Foundation in Arlington, VA, where she assisted with management of research programs and handled public policy issues for the Foundation.

Caroline's interest in ornithology, population genetics and speciation biology is what motivates her to pursue a PhD position here at LSU, and she looks forward to beginning this next phase in her research career.

Caroline Duffie

LSUMNS researchers monitor Louisiana barrier island bird populations in the aftermath of the Deepwater Horizon oil disaster

By Donna Dittmann and Steve Cardiff

Since early May 2010 LSUMNS Collection Managers/Research Associates **Donna L. Dittmann** and **Steven W. Cardiff** have been participating in bird population monitoring surveys of Louisiana's barrier islands. In the aftermath of the Deepwater Horizon disaster on 20 April, an already planned statewide colonial waterbird census by Barataria-Terrebonne National Estuary Program (BTNEP) for May-June was expanded with their assistance to include "emergency assessments" of bird populations. In anticipation of oil impacting these areas, Donna and Steve assisted BTNEP's contractor Coastal Bird Conservation-Conservian (CBC) in surveys of breeding Wilson's Plovers and other "management concern" barrier island breeders such as Brown Pelican, Reddish Egret, American Oystercatcher, various terns, and Black Skimmers. They also kept track of all birds encountered, and those with oil on their plumage. When the breeding survey project was completed, repeat surveys were implemented using similar monitoring methods. Limited resources precluded periodic re-surveys of the entire LA coast and Steve and Donna, being able to spend limited time away from their primary Museum duties, targeted their efforts in the "eastern zone." "East Zone" sites include East Grand Terre Island, East Timbalier Island, and Whiskey Island. Because a "worst-case" scenario had to be anticipated, "West Zone" sites (mainly covered by expert LA observers and friends of the Museum Paul Conover, B. Mac Myers III, and Dave Patton) were also designated along the Cameron Parish coast from Rutherford Beach west to the Texas border. These continued surveys will allow short- and long-term comparisons of "before oil" and "after oil" survey data.

Unlike other bird surveys currently in progress, data are released soon after collection – providing needed information to the public about oil spill impacts. Survey data are being submitted to the electronic database "eBird" (http://ebird.org/content/ebird/) and will be useful on multiple levels, including building seasonal baseline population data by location or by Louisiana Bird Atlas quadrangle, and for monitoring direct (detection of oil and individual oiled birds) and, possibly, indirect (population trends) oil impacts. Survey results are also posted on LaBIRD, an Internet-accessible listserv. These surveys will continue about every month until funds are exhausted or additional grants are found.

As the Deepwater Horizon disaster unfolded, the American Birding Association (ABA) created the ABA Gulf Coast Fund (https://www.aba.org/donate/gulf.php) and began allocating 95% of donations back to organizations involved with coastal bird research and conservation in the affected Gulf Coast states. In consultation

Figure 1. Only a relatively small amount of "gooey oil" (see insert of oily sargassum) had washed up on the beaches of Big Timbalier Island on 14 May 2010, yet 10% of the Sanderlings encountered, such as this one with "moderate oil" staining its underparts, were impacted. Photo: © D. L. Dittmann 2010

Figure 2. Between our visits on 4 Aug and 16 Sep 2010, Whiskey Island received a substantial amount of "new" oil. Here looking at the single cleanup camp on the west end of the island on 16 Sep, the beach in front is littered with weathered oil (inset on right). Oil pancakes were extensive and varied in size from pizzas (left with DLD's shoe print for scale) to pebbles. Photo: © D. L. Dittmann 2010

Figure 3. Louisiana's beaches are still littered with booms, such as this oil-contaminated boom on the beach west of Belle Pass on 14 July 2010. Southbound Endangered Pip ing Plovers (inset) were already arriving by this date. Many spend the winter on Louisiana's barrier beaches. Photo: © D. L. Dittmann 2010

with Steve and Donna, the LSUMNS Bird Resource Center, BTNEP, and the Baton Rouge Audubon Society were among the first recipients of ABA funds and to date have received about $23,000 combined. These funds are being used for logistical support, data analysis, and occasional paid field surveys by skilled Louisiana bird observers.

Through the course of the disaster, Donna and Steve have also consulted with government and non-government agencies, other academic institutions, and local and national media regarding potential impacts of the oil and possible assessment and monitoring plans.

Over the weeks and months since 20 April, Steve and Donna have witnessed first hand the transition from the normal beauty and isolation of our barrier islands to the onslaught of the World's worst oil spill and the massive and intrusive oil disaster response by government personnel and BP contractors. Under such circumstances, short-term preservation of wildlife versus attempted protection of islands and marshes from oil incursions were often incompatible objectives. The choice between massive, mechanized protection and/or cleanup response and more passive alternatives is a difficult one. Perhaps a worst-case scenario was miraculously avoided, but only time will tell us what are long-term consequences of the disaster. Meanwhile, the good news is that detection of oiled birds is decreasing as the presence of fresh "gooey oil" diminishes. Bad news is that lots of weathered and buried oil, oil-contaminated (or otherwise deteriorating) oil containment/absorbent booms, and oil-coated debris litter the Louisiana coastal zone. How that contamination will impact our wildlife will certainly be the focus of many ongoing studies.

Figure 4. Black Skimmers typically nest in small to large colonies on the State's barrier beaches, however this pair had an isolated nest (two eggs, inset) found 19 May 2010 on Trinity Island. Photo: © D. L. Dittmann 2010

Glenn Seeholzer preparing a specimen of *C. antisiensis.*

Summer Expedition to the Peruvian Andes

By Glenn Seeholzer

During the fall of 2008, I spent 5 months in Peru exploring and traveling with the, then newly released, *Birds of Peru*. Of the many interesting biogeographic puzzles highlighted in the book, *Cranioleuca antisiensis* intrigued me the most. Commonly known as the Line-cheeked Spinetail, *C. antisiensis* is distributed in the Andes from southern Ecuador to central Peru, and the species exhibits some of the most profound plumage and morphological variation in the Neotropical avifauna. Moreover, this phenotypic variation is distributed in a cline whereby the small brown populations in southern Ecuador gradually increase in size until they reach their climax in the large gray populations of the central Peruvian Andes. Although previously divided into two species, the authors opted to include all this variation under the name *C. antisiensis.* In the species account they included a somewhat cryptic description; "some populations seem intermediate; in other regions adjacent populations may differ strikingly in size but not in plumage or in plumage but not in size." A systematist's worst nightmare, but for an aspiring evolutionary biologist such as myself, it was inspiration. From where did this biotic variation originate and how is this variation maintained? Exciting stuff intellectually, but for field biologists that is only part of the formula; the natural setting in which a project is conducted being of equal importance. Luckily for me, *C. antisiensis* occurs in some of the most impressive montane landscapes to be found in South America. The formula complete, I departed for Peru on June 2nd, 2010, to collect the first contemporary series of the *C. antisiensis* complex.

Upon arriving in Lima, a few hectic days were spent in the offices of CORBIDI assembling the equipment and team. To join me on this expedition would be Jacob Saucier --- a recent graduate of LSU --- Sheila Figueroa Ramirez and Enrique Hon Yi. The first site we visited was at around 3500 meters on the arid west-slope of the Andes. Unfortunately, despite two days of searching, *C. antisiensis* could not be found. Our next site was over the continental divide, above a town called La Quinua, the common name for the Polylepis tree which spreads up the slopes of the valley where I collected the first 8 specimens of the series. From here, we travelled northeast to Huánuco. In this region, the *Cranioleuca* were of the largest subspecies, yet 40 miles to the west was an old locality where they looked about the same as in Huánuco but were 2/3 lighter! Testament to the species' complexity.

Arriving in Huaraz on July 3rd , we subsequently spent 3 days resting, organizing specimens and gear, working on permits and celebrating the 4th of July. Following Huaraz, we drove to the northern end of the Cordillera Negra. I had noticed the potential of this site, Macate, while scouring high-resolution GoogleEarth images. Limping into the town after our third flat tire of the trip, we learned that we were not the only gringos who had seen these images; another group had been up the road for a few days and they too, were studying birds. Though Peru is big, the community of ornithologists who work there is not. With the possibilities narrowed down by geography and timing, we had a fair idea who had beaten us to the site. Tire fixed, we rolled into the camp and were warmly greeted by a University of New Mexico field crew who were studying the evolutionary consequences of birds living at high altitudes. This group included LSU alum **Phred Benham**, and their adviosr was alum Dr. **Chris Witt**.

After two productive days here we commenced a grueling week-long odyssey through the

A typical campsite and scenery, this in a remote valley near Quichas.

central Maranon Valley. From there, we continued north into the department of Cajamarca where, as expected, the body size and phenotypes of *C. antisiensis* were moving, gradually, towards the small brown phenotype of the northern extreme. Passing through the city of Cajamarca we arrived, for the third time, at the edge of the Rio Maranon valley and were able to sample the humid highlands on both sides of this arid valley. At this point, we had been 2 months on the worst roads in Peru and our tires were worn smooth, which meant that dirt roads were off-limits. Fortunately, paved roads would bring us near enough to the final localities along the west slope of the northern Peruvian Andes. At the most northerly locality, 40 miles from the Ecuador border, the paved road ended. Here I tested our luck and found it wanting. When we ventured onto the dirt road we immediately had a flat, had it fixed, drove ¼ mile past our original flat, and had another. Abandoning any hope of using our truck, we convinced one of the local taxi drivers to rent us, possibly, the worst car in the town and were able to sample this important population.

Back in Lima, I was able to lay the entire series out and examine it as a whole for the first time. The tantalizingly vague description in the *Birds of Peru* was in its own way accurate; before me was a complex gradient and patchwork of phenotypes that defied a simple description. Although generally small and brown in the north, and big and gray in the south, there were many subtler patterns that I am now eager to explore further.

The species account for *Cranioleuca antisiensis* in the *Birds of Peru* is one among many that conveys not only what is known but also emphasizes what is not known about Peru's birds. As more and more bird enthusiasts embark to Peru with this guide in hand, many of these questions will be answered, and these answers will undoubtedly foment more questions. I can only expect that the future editions of the guide will continue to highlight the unknown of Peruvian ornithology and, I can only hope, that this will inspire new generations of Neotropical ornithologists.

Glenn and Jacob Saucier in the mountains above Quichas. Poly epis forest can be seen lining the valley below, perfect habitat for *C. antisiensis.*

Homecoming is an annual tradition at LSU, but this year the University is marking a significant milestone—its 150th anniversary. As part of that commemoration, LSU has planned a week of spirited events that reflects on the University's past, celebrates the present, and commits to a future of excellence. In addition to traditional Homecoming events like pep rallies, tailgates, and the Homecoming parade, LSU will hold its inaugural LSU Day on November 13 from 9 a.m. to 1 p.m. LSU Day will feature free performing arts showcases, tours, and exhibitions highlighting the varied programs and opportunities available at the University. Come out and celebrate with us!

Visit www.homecoming.lsu.edu for more information. AND, come check out:

Fossils and Modern Sea Monsters

Come explore some of the treasures of the LSU Museum of Natural Science. You can see specimens from three of our collections (ichthyology, herpetology, and paleontology).

Speaking of Science

Speaking of Science is a Science & Engineering Speakers' Bureau sponsored by the National Science Foundation and the Board of Regents' Louisiana Experimental Program to Stimulate Competitive Research. **Dr. Judith Schiebout**, our vertebrate paleontology curator, gives lectures on the "Parade of Life in Louisiana: Why Dinosaurs Didn't Live in Louisiana, Although We Have a Single Dinosaur Fossil, but Giant Camels Did". To see available speakers or schedule a talk, Google "Louisiana Speaking of Science" and select the brochure. On September 10, Dr. Schiebout spoke at the Louisiana School for Math, Science and the Arts, a residential high school in Natchitoches for Louisiana's high-achieving and highly-motivated students. Robert Dalling of their Physics Department, her host, commented, "your presentation was attended by the greatest number of students that we have ever had during the last fifty colloquia." Students were interested in the whales that swam above their area of the state in the Eocene, early in the Age of Mammals, and the wide variety of mammals, including giant camels, rhinos, and three-toed horses, present in the Miocene, Middle of the Age of Mammals. Dr. Schiebout hopes that Drs. Dalling and Lambert may be able to bring students to visit our collection, and possibly to volunteer to assist with research in summer. Photo (Left to right): Sarah Kim, Paul Koenig, Kyle Blanchard, Nicole Alred, Dr. Schiebout, Lydia Mensah, Andrea Argeuta, Danielle Mc Dermott, and Sarah Gharab.

Special Saturdays

Adrienne and the children looking for microscopic organisms.

In September, speaker **Adrienne Lopez** introduced children of the area to the microscopic organisms that live in their neighborhood lakes. While Adrienne pulled large quantities of gunk and algae out of her sampling, the kids became fascinated with the idea of looking at these microscopic organisms close up. What the children found were insect larvae (damselflies and midges), Paramecium (a single-celled protozoan), ostracods (a small crustacean), and flatworms. The kids were also given a chance to create their very own paramecium sock puppet.

Adrienne is the K-12 Outreach Coordinator in the Department of Biological Sciences. She travels to schools introducing them to the Scope-On-A-Rope, which she used to aid her in this event at the LSU Museum of Natural Science.

Dylan showing off his paramecium sock puppet.

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