

Museum Quarterly

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Letter from the Director...



TISSUE TUSSLES and TRIUMPHS

As most everyone knows, LSU has a remarkable collection of vertebrate tissues, which has been growing since the 1960s. Because of care and active collecting, this collection is now the most important source of tissues for molecular research in birds, reptiles, and amphibians in the world. On a daily basis, biologists at other institutions send requests to use the Museum's tissues. Maintaining the collection and meeting the needs of the research community puts a huge burden on the Museum. In principle, we are happy to meet the challenges and responsibilities of managing this huge collection, but quite frankly we have not done as good a job as we should have—until now.

Having a tissue collection is a great idea. Museum folks collect specimens, and it is good policy to save every part of each specimen for scientific research. Freezing tissue for molecular analysis is a logical step in the process. However, freezing tissues and keeping them safe and accessible is not as easy as it sounds. It requires that we carry liquid nitrogen in the field (try lugging a liquid nitrogen tank up to 11,000 feet on a mountain in Peru). The tissues have to be transported frozen back to the USA (try convincing an airline official that the liquid nitrogen tank is not a bomb, or the USDA that you are not introducing deadly viruses into the country). The tissues need to be stored in expensive ultracold freezers, which overheat and breakdown regularly, or they need to be stored in giant liquid nitrogen dewars, which are expensive to buy and keep filled. Then come the problems of cataloging, sorting, storing, finding, subsampling, and packaging tens of thousands of samples of tissues stored in small tubes—all of which must be kept frozen during handling.

When we started this enterprise, we did not really understand the implications of having a huge tissue collection, and it developed willy-nilly, without an efficient plan of organization. We also did not have the manpower or funds to meet the needs of the research community, especially given the collection's suboptimal organization. Now, we have come to grips with these problems. During the last six months, **Robb Brumfield** (curator of the collection), **Donna Dittmann** (the collection manager), and a team of graduate student helpers have implemented a radically different organizational scheme. Also, Dean of Science **Kevin Carman** has helped us with funds for equipment and labor for the project. The amount of work has been huge—the 15 giant freezers needed to be emptied and reorganized—but the payoff will be great, for us and the research community.

Fred Sheldon



Field Herpetology in New Guinea and Discovery of the World's Smallest Vertebrate

by Eric Rittmeyer

In June 2008, I arrived at the Kamiali Biological Station in Morobe Province, Papua New Guinea, along with Michael Gründler and Derrick Thompson for our first field season in the country. The three of us were undergraduate students at Cornell University at the time, where we were inspired by Ed Scholes's field work in Papua New Guinea. After some time, we managed to cobble together enough grant money to fund the trip. Several days after arriving at Cliffside Camp in Kamiali, and beginning amphibian surveys with Allen Allison (Bishop Museum), Michael was sifting through the leaf litter in search of the source of a tink-like call, entirely expecting to find a small cricket. When the creature called again, he turned his head and was shocked by the source of the call – a minute frog, approximately 8.5 mm in length, vocal sac inflated and working hard to impress any nearby females. Fortunately, Michael was able to collect the frog, bring it back to camp and stun the rest of us. Despite being one of the most biodiverse regions of the world, relatively little is known about

the herpetofauna of New Guinea, and discovering undescribed species is relatively common, but none of us had even imagined the possibility of one as minuscule as this. Over the course of the next few weeks, we discovered that the species, which we recently described as *Paedophryne swiftorum*, was quite abundant. Calling males are spaced as densely as every 50 cm or so in the leaf litter, and we were able to record the calls and collect several more individuals.

About one year later in July 2009, having started my graduate studies in the LSU Museum of Natural Science, I was back in Papua New Guinea with LSU Herpetology curator **Chris Austin** and Papua New Guinea National Museum research associate Bulisa Iova. After having spent a few days dealing with logistics in the capital city of Port Moresby, we hiked our way up the Amau River to set up a bush camp and continue collecting in pristine forest a few hours hike from Amau village. Embarking on our first night of collecting from camp, I soon heard a familiar tink-like call coming from the leaf

Above: The World's smallest vertebrate!

Tiny frog called *Paedophryne amauensis* averages around 7 millimeters in size; fits in center of U.S. dime

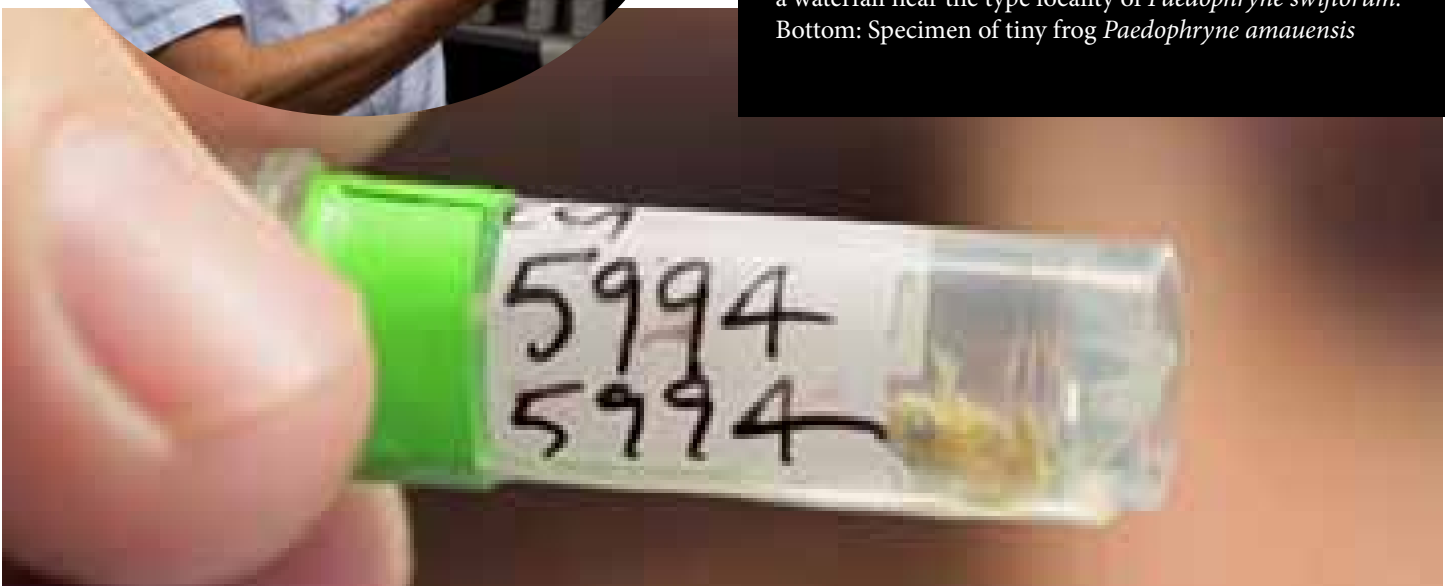


hiding. I began sifting through the leaf litter, removing a single leaf at a time, and soon uncovered the miniaturized culprit – the first specimen of *Paedophryne amauensis*. The extremely minute size of these frogs combined with their habit of calling from among the leaf litter made collecting them extraordinarily difficult; however, we were still able to record the calls and collect several more individuals over the next several days. While we knew the frogs were small in the field, it wasn't until we returned to Baton Rouge in September 2009 that we realized quite how small *Paedophryne amauensis* truly was. Mature males of the new species average a mere 7.7 mm in length, making it the smallest known vertebrate species in the world. One can only imagine what other wonders lie hidden in the dense forests of Papua New Guinea.

litter near the edge of the stream we were hiking. After several minutes of patiently triangulating the source of the call, I was sure I had found another *Paedophryne*, and knew approximately where in the leaf litter the frog was



Top: *Paedophryne swiftorum*
 Left: Dr. Austin
 Right: Michael Gründler and Derrick Thompson gazing over a waterfall near the type locality of *Paedophryne swiftorum*.
 Bottom: Specimen of tiny frog *Paedophryne amauensis*





Herpetology News

by Dr. Chris Austin



Active Students

The Herpetology graduate and undergraduate students have been very active in 2011. Importantly we have a new addition to the graduate program: **Cathy Newman** joined the Herpetology Division as a PhD student in Fall 2011. She did her bachelors and masters degrees at the University of Alabama, then spent a year on the west coast as a laboratory technician in Brad Shaffer's lab at the University of California Davis before moving back to the south to LSU.

Former PhD student **Nathan Jackson** is currently in a postdoctoral position at Carleton University in Canada, and he and his wife **Heather Jackson** (also a PhD graduate from LSU) are expecting their first child in mid 2012- its a girl!

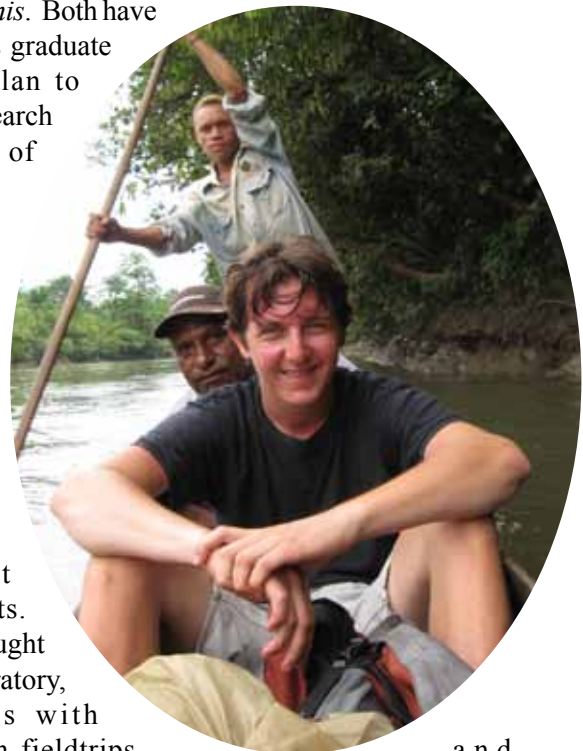
Eric Rittmeyer received a travel grant from Harvard University to visit Harvard's Museum of Comparative Zoology to continue his work on the systematics and biogeography of the unusual scincid genus *Tribolonotus*. Eric also submitted a National Science Foundation Doctoral Dissertation Improvement proposal in November 2011. Decisions on these awards will not be made until March but receiving one of these highly competitive grants is the hallmark of a great graduate student and hopefully his proposal will be funded. Eric also published one paper in 2011 and is making great progress on his dissertation.

Lauren Oliver and **John Andermann** are two hard working undergraduate researchers. They have been active in the division since they were both freshman and both will be graduating in May 2012. Their hard work paid off in 2011 with a fantastic collaborative publication published in the journal *Biological Invasions*. This was an exciting paper that used DNA data to identify geographic origin, pace, pattern and historical process

of an invasive scincid lizard (genus *Carlia*) that has been inadvertently introduced to the Pacific islands of Guam, the Northern Marianas, and Palau. This lizard is of major importance as its introduction is thought to have assisted in the establishment of the invasive brown treesnake (*Boiga irregularis*) on Guam by providing a food resource for young snakes to grow large enough to eat birds. The exciting research findings demonstrate multiple waves of introductions that appear to be concordant with movements of Allied and Imperial Japanese forces in the Pacific during World War II. For their senior year both Lauren and John have both been working on data collection and analysis for their honors projects to be completed this semester. Lauren is working on the systematics and biogeography of the New Guinea frog genus *Mantophryne* while John is working on the systematics of the New Guinea snake genus *Tropidonophis*. Both have applied to various graduate programs and plan to continue their research effort in pursuit of advanced degrees.

Teaching

The Spring 2011 Herpetology class included some outstanding students. The course is always in high demand always attracts a great group of students. Herpetology is taught as a lecture, laboratory, and field class with several afternoon fieldtrips



and

two weekend fieldtrips. The weekend field trips are always a highlight and one of the things the students remember fondly about after they leave LSU.

LSU Herpetology in the Popular Press

Eric Rittmeyer was the lead author on a paper published in January 2012 describing two new species of frogs from Papua New Guinea, one of which is the world's smallest vertebrate (see Eric's write-up of this in this issue). The discovery was covered by a wide variety of national and global news outlets. A comical highlight of the popular attention devoted to this research was that Jay Leno used the discovery of this tiny frog to poke bipartisan fun at politicians during his 12 January monologue. The Jay Leno video can be viewed at the Herpetology lab page (<http://www.museum.lsu.edu/Austin/lab.html>).

Grants and Research Funding

Funding for herpetological research at LSU is strong with one large National Science Foundation grant recently funded as well as grants from the National Geographic Society and the Species Conservation Fund- all funded in early 2012. In addition, Eric Rittmeyer was recently funded by Harvard University to travel to visit Harvard's Museum of Comparative Zoology collection for work on a new species description.

- **National Science Foundation DEB:** Collaborative Research: The Unique Skinks of New Guinea: Diversity, Systematics, and Malaria Parasites. Austin (PI), Division of Environmental Biology, Phylogenetic Systematics, 2012-2016. (\$350,000)
- **National Geographic Society** Exploration Grant (\$20,000).
- **Species Conservation Fund** (\$12,000).
- **Harvard Museum of Comparative Zoology Travel Grant**, to Eric Rittmeyer (\$1,000).

Publications

Last year was a productive one for the Herpetology Division with 5 papers published and one already out in 2012. All of these publications can be downloaded free of charge from the Herpetology lab page (<http://www.museum.lsu.edu/Austin/lab.html>):



- E.N. Rittmeyer, A. Allison, M.C. Gründler D.K. Thompson, C.C. Austin (2012). Ecological guild evolution and the discovery of the world's smallest vertebrate. *PLoS ONE*, 7(1): e29797. doi:10.1371/journal.pone.0029797
- Goldberg, S.R., C.R. Bursey, A.M. Bauer, A. de Silva and C.C. Austin. (2011). Helminths from Nine Species of Geckos (Squamata: Gekkonidae) from Sri Lanka. *Comparative Parasitology*, 78(2), 2011, pp. 359–366.
- Austin, C.C., Rittmeyer[†], E., Oliver, L., Anderman[‡], J., Zug, G.R., Rodda, G.H. and N.D. Jackson[†] (2011). The bioinvasion of Guam: inferring geographic origin, pace, pattern and process of an invasive lizard (*Carlia*) in the Pacific using multi-locus genomic data. *Biological Invasions*, 13:1951–1967.
- S.R. Goldberg, C.R. Bursey, A.M. Hamilton, and C.C. Austin (2011). Gastrointestinal Helminth Communities of two Gekkonid Lizard Species, *Nactus multicaarinatus* and *Nactus pelagicus* (Squamata: Gekkonidae) from the Republic of Vanuatu, Oceania. *Journal of Natural History*, 45(31-32): 1983-1993.
- G.R. Zug, A.M. Hamilton and C.C. Austin (2011). A new *Emoia samoensis* group lizard (Squamata: Scincidae) from the Cook Islands, south-central Pacific. *Zootaxa*, 2675:47-57.
- N.D. Jackson, T.C. Glenn, C. Hagen, and C.C. Austin (2011). Microsatellites isolated from the North American ground skink (*Scincella lateralis*). *Conservation Genetics Resources*, 31(3):95-97.



Page 4:
Top-Herpetology class of 2011 sitting around a blazing camp fire during a weekend fieldtrip to Mississippi. Left-New PhD student Cathy Newman enjoying the great outdoors. Bottom-Eric Rittmeyer heading upriver in a dugout canoe in Papua New Guinea.

Page 5:
Top-Senior Lauren Oliver shows her excitement about frogs. Bottom-Herpetology class of 2011 after an active day in the field.



The Gold Standard: Undergraduate Research at LSU

by Ashley Berthelot

LSU is home to a variety of outstanding research programs and opportunities. Some, like the Office of Research & Economic Development's Chancellor's Future Leaders in Research, or CFLR, program, offer scholarships to undergraduate students with outstanding academic potential. The CFLR program provides a unique opportunity to conduct research early in a college career. Students work side-by-side with mentor professors in a research setting, such as a laboratory or in the field, and learn what a career in their chosen field is like. Other opportunities, such as working with faculty in the acclaimed LSU Museum of Natural Science, allow students access to world-class DNA and ornithological collections to

support their studies. LSU students also successfully compete for excellent internship opportunities at foundations, museums and universities across the globe.

Students participating in undergraduate research programs at LSU have won some of the world's most prestigious awards, including the Udall Award, the Truman Scholarship, the Goldwater Scholarship, Ford Fellowships and more.

Below are just samples of the many outstanding undergraduate researchers at LSU. This list is in no way meant to be inclusive. For more information about research opportunities for undergraduates at LSU, visit <http://research.lsu.edu/UndergraduateResearch/item21716.html>.

Justin Kutz and **Parker House**, both undergraduate researchers at LSU's Museum of Natural Science, work with **Prosanta Chakrabarty**, curator of ichthyology.

Lauren Oliver is an undergraduate researcher at LSU's Museum of Science, where she works with

Chris Austin, curator of herpetology. Currently working on population genetics of invasive species, specifically *Carlia* from various Pacific islands, Lauren has a manuscript in press at *Biological Invasions* and is working on a project on the genetics, phylogeny and systematics of a group of frogs from New Guinea that will be soon be submitted for publication. She spent the summer of 2011 in New York at the American Museum of Natural History on a prestigious AMNH Summer Fellowship. “Lauren is outstanding,” said Austin. “She will be pursuing a Ph.D. in the near future at a top school and I am convinced she will be a great scientist.”

Justin Kutz started working with **Prosanta Chakrabarty** at the Museum of Natural Science as a high school student. Now a freshman, he has created www.cacichlids.com, an extremely useful resource for people studying Central American cichlids. It has all the original descriptions of the nearly 150 species of cichlid from Central America. He also conducted a project for the LSU Research Experience for Undergraduates, or REU, during the summer of 2011 with graduate student **Caleb McMahan**, and presented a poster at the Louisiana Biomedical Research Network Summer Undergraduate Research Forum. His poster focused on one particular species

of Central American cichlid that was once recognized as two. His project looked at how the color-pattern character used to separate those two species was in fact due to environment and allometric (growth/size) effects and not due to a separate ancestry (since the character may not be heritable), doing an outstanding job of quantifying what was previously only described qualitatively. “Justin did all the scanning and literature searches to get papers into *cacichlids.com*, which was hundreds of hours of work. The website also includes info on the work my lab is doing on my NSF taxonomy grant,” said Chakrabarty. “Justin is a freshman and is interested in becoming a human geneticist.

Parker House, another student of Chakrabarty’s at the museum, is doing a lit bit of everything. He has put in a tremendous amount of effort to improve the collections where the majority of the 300,000 fish in the museum’s collection are stored, and has also been making X-rays for various projects, including one for Jim Cronin, associate professor of biological sciences, focusing on the ecology of parasitoids. “Parker is outstanding. We recently submitted a paper dealing with the Gulf of Mexico oil spill and which fish species may be the most vulnerable,” said Chakrabarty. “He will be



traveling to Honduras for part of a collecting trip that my grad student Caleb and postdoc **Wilfredo Matamoros** will be leading.”

Leigh A. Griffin, biological sciences junior at LSU, is a Chancellor’s Future Leaders in Research scholar. She is in her second year of conducting scientific field research on conservation ecology of longleaf pine at Camp Whispering Pines in Tangipahoa Parish. She is investigating the effects of restoration of fire regimes to pine savannas on recruitment and patch dynamics of longleaf pine by building on her faculty mentor, Professor of Biological Sciences William Platt’s, previous research. Griffin submitted her research for publication in the fall of 2011.

Anna A. Meyer, biological sciences and renewable natural resources senior, is also mentored by Platt, and has spent more than a year studying the effects of larger mammalian herbivores (deer, rabbits, cotton rats) on the dominant grasses in pine savannas being restored. She has extended her work to explore the importance of herbivores on the plant community during restoration of natural fire regimes.

Devon Wade received the prestigious Truman Scholarship prior to graduation and also received a Ford Fellowship to support his graduate studies. While at LSU, he studied with Matthew Lee, sociology professor and associate vice chancellor for research & economic development. “Devon was an outstanding student who completed a very good research project on the effects of parental incarceration on their children’s educational aspirations and achievements. This research experience helped lay the groundwork for his acceptance to several top tier sociology graduate programs, and he will



be an excellent ambassador for LSU at Columbia University.” Wade is currently pursuing a Ph.D. in sociology at Columbia University, focusing on social phenomenon that plague urban or inner city children and families.

LSU Research is published by the Office of Research & Economic Development, or ORED. For more information or a copy of the 2011 issue, contact ORED at 225-578-5833. To see the current issue online, visit http://issuu.com/lsuored/docs/ored_research_magazine_fall_2011_online?mode=window&backgroundColor=%23222222.

Above: **Lauren Oliver**, an undergraduate researcher at LSU’s Museum of Natural Science, pictured with her mentor, **Dr. Chris Austin**, curator of herpetology.



News from the Collection of Genetic Resources: Frozen Tissue

by Dr. Robb T. Brumfield

Did you know that the frozen tissue collection at the LSU MNS is one of the world's largest repositories of genetic material? Researchers at LSU and around the globe use these tissue samples to study the DNA, RNA, and proteins of animals. Known formally as the Collection of Genetic Resources, the collection contains more than 91,000 individual tissue specimens, with approximately 60,000 bird tissues, 20,000 herp tissues, 7,000 mammal tissues, and 4,000 fish tissues.

Each of the 91,000 tissues is housed in a small plastic tube called a cryovial, which is about the size of a thimble. Just like a library, tissue collections require an organization system that allows both the easy installation of new tissue samples and the easy retrieval of old tissue samples to fulfill loan requests.

The original organization scheme for the collection was based on taxonomy. For example all of the tanager tissues were in one set of freezer boxes and all of the microhylid frog tissues (see page X) were in another set of boxes. As the collection grew it became more challenging to maintain this style of organization,

because it required a lot of work sorting new samples into their respective boxes.

In August 2011, we began an initiative to convert the entire collection to a locator-based system. In this new system each tissue tube gets its own special slot in a 81-tube box, much like a library book gets a call number. With this locator information in a database, all of the tissues are easily retrievable. And because the tissues no longer have to be organized taxonomically, there is little work on the front end. Newly collected tissues can simply be placed in the next available slots.

Doing this conversion was a long time coming. We finally decided to go for it when Dean Carman of the LSU College of Science provided funds to purchase two new liquid nitrogen vapor freezers for the collection. These large vats keep tissues at -186 degrees Celsius (-302 degrees Fahrenheit). At this temperature, no degradation of the tissues occurs. A redfish filet put in the freezer now would taste just as good whether you thawed and cooked it in a week or 1,000 years from now!

A tissue collection conversion "party", featuring (clockwise from bottom right) graduate students **Clare Brown**, **Vivian Chua**, **Mike Harvey**, and **James Maley**, Curator of Genetic Resources **Robb Brumfield**, NSF Postdoctoral Fellow **Brian Tilston Smith**, and graduate student **Caroline Duffie**.



Making Connections

By Ashley Berthelot

The LSU Office of Research & Economic Development and the Gordon A. Cain Center for Scientific, Technological Engineering and Mathematical Literacy, in partnership with the National Science Foundation, or NSF, sponsored the first ever Early Career Development, or CAREER, Award Regional Forum in November. The forum brought together the state's current and past NSF CAREER award recipients, as well as participants from 17 of Louisiana's institutes of higher education, including four Historically Black Colleges and Universities, or HBCUs. The forum was held on Nov. 8-9, at the Lod Cook Alumni Center in Baton Rouge.

NSF's CAREER Program offers their most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations. Such activities should build a firm foundation for a lifetime of leadership in integrating education and research. LSU has been historically successful in the number of assistant professors

who obtain this support, but the state of Louisiana is tremendously underfunded in this area overall.

"This forum really addresses what's at the core of the CAREER program, and that's people," said Randy Duran, director of LSU's new office of undergraduate research and Gordon A. Cain Chair in Scientific, Technological, Engineering and Mathematical Literacy. "It's about connecting researchers with K-12 educators, bringing together industry support and federal grant agencies, to develop a network right here in Louisiana."

More than 100 assistant professors attended, along with representatives from more than three dozen higher education institutions and 13 school districts; the Rapides Foundation; Exxon; Dow Chemical; NSF Experimental Program to Stimulate Competitive Research, or EPSCoR, representatives from the University of the U.S. Virgin Islands, New Mexico, Idaho, Mississippi, Alabama, Puerto Rico, South Carolina and Arkansas; Oak Ridge Associated Universities; NSF; and the National Institutes of Health.

"The CAREER grant really offers collaborative educational opportunities that have the potential to

Top: **Dr. Sophie Warny** and **Adrienne Lopez** discussing with other CAREER forum attendees.
Page 9: LSU Chancellor **Michael Martin** opened the forum by welcoming attendees.

have a significant ripple effect,” said Duran. “Take for instance LSU MNS curator and current CAREER award holder **Sophie Warny**. Her grant allowed her to collaborate with colleagues at Columbia University and to support University High [Baton Rouge] science educator **Steve Babcock’s** pursuit of master’s degree.”

Warny, a recipient of the CAREER Award, shares her extensive research experience and knowledge with teachers like Babcock, LSU Laboratory School ninth grade science instructor, and Zachary Elementary School science teacher **Breigh Rainey**. Warny co-mentors Babcock and Rainey with Suzanne Carbotte, senior scientist at Columbia University’s Lamont-Doherty Earth Observatory, or LDEO, and Frank Nitsche, associate research scientist at LDEO. Babcock trained with Nitsche during the 2011 CAREER Award Regional Forum.

“The NSF Career Award offers me an opportunity to guide instructors through the natural science graduate program and provide them with the support, research opportunities and mentoring they need to grow in this discipline,” said Warny, who added that “in return, working with outstanding instructors like Steve Babcock and Breigh Rainey provides me with the opportunity to transfer the research of my group to the K-12 curriculum in a meaningful way.”

One of the outreach components of Warny’s NSF CAREER Award provides funding to mentor one other middle- or high-school teacher in addition to Babcock and Rainey. The teachers will have three summers to complete coursework and conduct research. They will also assist in building a professional development program for science teachers based on maps that they will construct of Antarctic paleovegetation and paleohydrology. The teachers will work with Warny, Carbotte, and Nitsche using Columbia University’s

GeoMapApp mapping software. They will also present their research findings at national conferences and serve as peer mentors in their schools.

Also, because Warny, whose research recently landed the cover of the prestigious Proceedings of the National Academy of Sciences (see <http://www.lsu.edu/ur/ocur/lsunews/MediaCenter/News/2011/06/item31234.html>), might conduct fieldwork in Antarctica, there’s the potential that Babcock could travel to the frozen continent for research purposes. The impact of such a trip on his high school students could be tremendous.

LSU Chancellor Michael Martin gave opening remarks at the forum, followed later in the day by Elizabeth VanderPutten, a member of the leadership of



NSF’s Directorate for Education & Human Resources and Undergraduate Education, who gave a plenary talk on

Integrating Research and Education. Deputy Director of NSF Civil, Mechanical and Manufacturing Innovation, or CMMI, unit George Hazelrigg presented his views how to

write winning CAREER award proposals. Hazelrigg’s presentation was made available to universities in Arkansas, Idaho and Puerto Rico, as well as Louisiana Tech, Grambling, Xavier, Dillard, UNO, Tulane and Loyola through Access Grid technology provided by LSU.

“This was a rare gathering of a variety of groups, all with a vested interest in promoting good research outreach, which is a key element of the CAREER award,” said Duran. “We believe that if, for instance, a teacher in a Louisiana school district is able to connect with a university researcher, there will be a huge impact over the next five years. The sky is the limit in this situation as far as student motivation goes. It’s a huge opportunity for the state.”

WE CHAMPION RESEARCH!



WE CHAMPION SUCCESS



Congratulations to Dr. Chakrabarty for proudly representing LSU's outstanding accomplishments in research and education during the LSU-Arkansas football game!

WE CHAMPION EDUCATION!

A Year of Ichthyology Expeditions in Central America

by Caleb D. McMahan



2011 was quite a busy year for fieldwork in the Fish Section here at the LSU Museum of Natural Science. One of last year's newsletters summarized a collecting trip to Costa Rica in February (Fish Curator **Prosanta Chakrabarty's** "Ichthyological Adventures in Central America"). Since then, LSUMNS ichthyologists have done extensive fieldwork in Panama, El Salvador, Nicaragua, and Honduras. All were highly successful and productive expeditions. While primarily interested in certain target species (e.g. cichlids), we made collections of numerous other groups of fishes that will play a huge role in helping to untangle the biogeographic history of the region.

Post-doctoral researchers **Wilfredo Matamoros**, **Matthew Davis**, and I spent March 30th to April 14th collecting fishes throughout Panama. We first flew into the capital, Panama City, rented a vehicle and drove east to the Darien Province. As you travel towards

the Darien in Panama reaching the Río Bayano and Río Tuira drainages, you begin to see a fairly drastic transition in the diversity of fishes, with higher diversity of primarily South American groups (e.g. armored catfishes, tetras). We then traveled to western Panama, as well as Bocas del Toro.

From May 29th – June 13th, Wilfredo and I traveled to El Salvador. The primary purpose of this trip was to fill in some taxonomic gaps for cichlids that are part of ongoing morphological and molecular systematic studies in the Chakrabarty lab. The trip was a huge success and we were able to collect specimens of nearly every species of freshwater fish in the country. In addition to fieldwork, Wilfredo led a small class on statistics for students at the University of El Salvador. I was asked to lead a workshop with ichthyology students at the university on proper museum techniques for preservation and storage of specimens of fishes.

Parker House (an undergraduate researcher in our lab finishing up his senior year) joined Wilfredo and me from the 31st of July to August 17th for fieldwork in Nicaragua. After flying into the capital of Managua, we boarded very small planes and flew to the jungles of La Moskitia. In Puerto Cabezas we hired a couple of guides and left the coast by boat. We went down the coast until reaching the mouth of the Río Prinzapolka. We spent many days traveling throughout the lower reaches of this river, as well as adjacent drainage, the Río Wawa. Many of the specimens we collected comprise the vast majority of available material for fishes from

Electrofishing in El Salvador (top left); Nicaraguan Lakes in Nicaragua (top center)

this region. One of the target species for myself was *Paraneetroplus maculicauda*, a widespread species of cichlid I am currently studying. The trip was very productive and I was able to collect enough material for my anatomical and genetic studies. After leaving La Moskitia we collected around Managua and throughout the Nicaraguan Lakes, home to some endemic species of cichlids.

Parker had to return to LSU for the start of classes; however, Wilfredo and I flew from Nicaragua to Honduras and spent August 17th to September 29th collecting throughout the country. After first arriving to Honduras, Wilfredo and I were invited to attend a meeting and workshop of environmental officials for Honduras. Wilfredo was asked to discuss some of his ecological work and to lead a statistical workshop using R. I was asked to give a seminar on my research on the Mountain Mullet (*Agnostomus monticola*) – a freshwater species common throughout Honduras. After the meeting our first trip was to Copán and the Río Motagua drainage. This area is geologically very important for understanding historical biogeography of biota in this region. We were primarily after *Theraps microphthalmus*, a riverine cichlid species part of a



Wilfredo Matamoros cast netting in Nicaragua (top right); boat ride through Río Prinzapolka in Nicaragua (bottom)

group I have been working on. From Copán we traveled back to Tegucigalpa to collect different species of fishes. After collecting in several localities throughout the Pacific drainages of Honduras, we traveled to La Ceiba on the Caribbean coast. We spent quite a bit of time in the Río Cangrejal collecting specimens of *Theraps wesseli*, a species Wilfredo is actively studying. We also visited the town of Trujilo. While Wilfredo went off looking for freshwater species (cichlids, guppies), I spent two days working with local fishermen in Laguna Guaimoreto. We collected numerous species (e.g. snook, catfishes, anchovies, silversides, cichlids, guppies, stingrays).

This was just a very brief summary of a busy – but highly successful – year of fieldwork for LSUMNS ichthyologists! In total, we added roughly 100,000 new specimens to the LSUMNS Fish Collection, and over 2,000 tissue samples to the Fish Tissue Collection. 2012 is off to a great start with Wilfredo taking another LSU undergraduate, Justin Kutz, to Honduras for additional fieldwork for most of January. There is little doubt the Fish Collection at the LSUMNS now has one of the better holdings of specimens and associated tissues of neotropical fishes.



“How do you know what species it is?” (top right); Parker House and Caleb McMahan taking tissue samples of fishes



Above: *Amphilophus macracanthus* (El Salvador)



Above: *Poecilia* sp. (Panama)



Above:
Rhamdia laticauda (Honduras)



Above: *Amphilophus longimanus* (Nicaragua)



Right:
Paraneetroplus maculicauda
(Nicaragua)



Left:
Anableps dowei (Honduras)

Large and small Fort Polk Miocene mammal specimens

by Judith A. Schiebout



Top: Left fused radius and ulna (fore arm) of a giant Miocene camel similar to *Aepycamelus*, shown partially uncovered in the collecting process. Sediment is Castor Creek Member of the Fleming Formation.

Left: Chewing surface of an upper premolar of a small beaver of the genus *Eucastor*, shown in a scanning electron micrograph. A nickel is 21.21 mm in diameter, for size comparison. Specimen was recovered through screening.

Last Fall, Judith Schiebout provided information and recommendations on paleontological resources of Fort Polk for development of a Paleontological Resource Management Planning Report. The Miocene of Fort Polk has already yielded vertebrate fossil finds ranging from remains of tiny beavers to rhinos, giant camels, and gomphotheres (elephant relatives). There is considerable potential in the future for new finds, both at known sites and in older Miocene rocks of the region. This will yield information on ancient life and climate during an increased span of sea level fluctuations.

John O'Neill and the Mystery of Hauxwell's Thrush

by Dr. Daniel Lane



Most readers should be thoroughly familiar with the name John O'Neill—he is, in many ways, directly responsible for the South American ornithological program here at LSUMNS. More importantly, he has been at the forefront of the group of modern ornithologists who have been discovering and describing new bird species to science. The story of John's work, his coming to LSU, and the program he initiated here has been covered in detail in the book *A Parrot Without a Name* by Donald Stap (Alfred A. Knopf publishing, 1990), so I won't retell it in great detail here. What I want to do is to showcase John's most recent discovery—which, perhaps unwittingly, was also his “first”!

Let us go back to the year 1961. A young John O'Neill, an undergrad at the University of Oklahoma, had recently arrived in Peru, a wild country filled with exotic and poorly known birds. No books were available for him to use as field guides or “where to

find” bird guides. He simply traveled where his friends, the Whitakers (who had invited John to join them while they enjoyed a sabbatical) were, escaping when he could to observe and collect (and so, later identify) some birds. By July 29th, John was in the jungle town of Pucallpa, on the banks of one of the largest Amazonian rivers in Peru: the Río Ucayali. This was a muddy frontier town at that time (and still is!), but still had some stands of varzea (seasonally flooded) forest nearby. John took the opportunity to search for birds in these stands, and his eleventh bird specimen collected on that trip was a drab brown thrush that was later identified and cataloged as Hauxwell's Thrush (*Turdus hauxwelli*), related to our American Robin (*T. migratorius*). In all, John collected 88 specimens while on this inaugural visit to Peru, and he knew that he had to return to explore this wild and fascinating country further. His specimens from the 1961 trip were brought to LSU on the advice of his mentor at the University of Oklahoma, George M. Sutton, a widely respected bird artist and ornithologist. George Lowery, director the LSUMNS, happily received these specimens, and encouraged John to enroll as a graduate student once he graduated from Oklahoma. Thus it was that John came to LSU and continued to build the South American bird collection at our museum. Over the years, the museum gained more Hauxwell's Thrush specimens. These were all “modern” specimens, meaning they were collected with more label data than specimens that were housed in older collections such as the American Museum of Natural History in New York, the British Museum in Tring, etc. Thanks to these label data, sometime in the 1980s, John realized that the LSU Hauxwell's Thrush series comprised two different-looking birds: most were black-billed and lacked a colored eyering (these were data that were mentioned on the labels) and had warm rufous-brown tails. A few, however, sported gray-brown tails, olive colored bills, and orange eyerings. John had no further information to go on, however, and had to leave this discovery at that; he considered the two types of Hauxwell's Thrush as “color morphs” but knew something more was afoot.

John's painting from the description of the Varzea Thrush (bottom bird), showing how similar it is to Hauxwell's Thrush (top bird).

Opening the Hauxwell's Thrush drawer, he pointed out the situation of the two "color morphs." Certainly, knowing that John has a knack for noticing interesting things, I took note of what he showed me. It was, however perhaps another several years before we got more information to help solve the case. In 2003, while on an expedition in the northern foothills of Peru with me, LSU Museum student **Brian O'Shea** noticed a whiny, cat-like thrush call and mentioned it saying that, had he been in the Guianas of northeastern South America (and area with which he was more familiar), he'd have called it a Spectacled Thrush (*T. nudigenis*). In western Amazonia, however, neither that species, nor any of its relatives, was not known. This didn't mean much to me until a few weeks later when I saw John's "gray-tailed morph" of Hauxwell's Thrush nearby. The penny dropped, and I wondered if this "gray-tailed morph" could, in fact, be something other than Hauxwell's Thrush... perhaps instead, it could be a cryptic species more closely related to Spectacled Thrush? There wasn't yet enough evidence to make a sound case for this hypothesis, however.

In 2005, when listening to published recordings of Ecuadorian birds, I happened across some cuts attributed to Hauxwell's Thrush, but were of a mewing cat-like call. Aha! This may be the "gray-tailed morph!" I contacted the recordist, John Moore, who told me he recorded the sounds near Iquitos, Peru, while birding with LSU Museum Associate **Bret Whitney**. Contacting Bret, it turned out he was returning to the site in a few months. I asked him to try to find the whining birds and describe their bill, eyering, and tail colors. When he got back to me, my suspicions were confirmed... the mewing bird was the "gray-tailed morph" Hauxwell's Thrush! As if that wasn't enough, I further discovered recordings made by the late **Ted Parker III**, who had recorded mewing birds near Iquitos in the early 1980s, and described the birds as having an olive bill and orange eyering. As I told John of my findings, it was clear that we had just unraveled an impressive case of an overlooked, undescribed species of thrush!

Museum student **Luciano Naka** offered to put the nail in the coffin regarding the relationships of our new bird by producing a molecular phylogeny of this new bird with respect to Hauxwell's Thrush, Spectacled Thrush, and related forms. The genetic analysis showed what we had suspected: the gray-tailed thrush was in-

deed closely related to Spectacled Thrush, and not to Hauxwell's!

More research uncovered the fact that Hauxwell's Thrush had been a topic of interest for several Museum ornithologists of the mid- and late-twentieth century. Respected ornithologists such as Karl Hellmayr, Nils Gyldenstolpe, and David Snow had all looked at specimens of the species and noticed that there was variation in bill color and tail color among the specimens (the eyering color fades after death, and is virtually impossible to discern on a dried specimen—hence the importance of color information on modern specimen labels). These scientists simply hadn't realized that the bill and tail colors varied in tandem, and signified that a second species lurked among the specimens before them. In fleshing out our research on this problem, I visited the American Museum in New York and was able to view the same specimens Hellmayr, Gyldenstolpe, and Snow had seen, and could say with certainty that many were the new gray-tailed thrush. These specimens documented the species over a wide area of western Amazonia, and suggested that they were mostly concentrated in the varzea habitat along rivers. As John, Luciano, and I described this new thrush, John made it clear he'd like to name it for our long-time field camp associates Manuel and Marta Sanchez. Thus, we named the bird the Varzea Thrush (*T. sanchezorum*), and it was published in the November 2011 issue of the journal *The Condor*.

And so it is that John O'Neill, who has now described fourteen new species of birds to science during an amazing field career of nearly fifty years—from the gaudy Orange-throated Tanager (*Wetmorethraupis sterropteron*; 1964) to the humble Elusive Antpitta (*Gallaria eludens*; 1969), from the poetically named Royal Sunangel (*Helianthus regalis*, 1979) to the unique Long-whiskered Owllet (*Xenoglaux loweryi*, 1979) and the local Scarlet-banded Barbet (*Capito wallacei*, 2000)—actually encountered his most recent discovery before any of the others! The pieces of the puzzle took a sharp eye, modern museum specimens, knowledge of bird sounds, and modern molecular analysis to put into place... but such detective work is what I think makes this story so fascinating. How many more such cryptic species are sitting, unrecognized, in museum trays or are being seen regularly by birders and field ornithologists without their realizing it? There are more, I wager... and we here at LSUMNS are on the case.



Yellow Rails and Rice Festival

by Donna Dittmann

The LSUMNS Bird Center is a sponsor of the Yellow Rails and Rice Festival (YRARF). The festival is the brainchild of LSUMNS collections managers **Donna L. Dittmann** and **Steven W. Cardiff** and their friends, Kevin and Shirley Berken. Birders Dittmann and Cardiff joined forces with the rice-farming Berkens to create a unique “agritourism” experience as a means to emphasize the importance of Louisiana’s rice-growing region and its “working wetlands” to birds – and to showcase Louisiana’s spectacular abundance and diversity of birds found on agricultural properties in SW Louisiana. The festival is named for the very elusive Yellow Rail, a species highly sought after by many birdwatchers. Yellow Rails are fairly common in SW Louisiana, but it

is only during Louisiana’s unique late fall second rice harvest that they can be easily seen when combines cut the rice and rails flush to get out of the way of the huge machines. The festival focuses on Yellow Rails, but also offered are various fieldtrips to other habitats such as the Gulf coast, pineywoods, and local national wildlife refuges. During the course of the festival, every effort is made to show participants as many bird species as possible- in 2011, over 200 species were tallied and dozens of Yellow Rails were seen. In addition to birds, festival participants are also treated to wonderful Cajun cuisine, great scenery, and the friendly residents of SW Louisiana. LSUMNS graduate and undergraduate students have also volunteered at YRARF as field trip



(Bottom left): Yellow Rail is a small secretive bird that winters in Louisiana. It prefers marsh and grassy areas but almost never ventures into the open.

(Top Center): Bird banding was a new feature at the 2011 YRARF. Here, the combine moves rails and other birds towards the waiting mist nets. Several birds were successfully caught, data collected, banded, and released by YRARF partners Louisiana Department of Wildlife and Fisheries and National Audubon Society. It was a great opportunity to demonstrate bird banding and show festival participants birds up close in the hand



A group waits for the combine to drive rails closer. As a combine approaches rails are often flushed in its advance; **Steve Cardiff** (on left) alerts birders as rails are flushed. Rails can also be observed by riding on the combine, but the best views of Yellow Rails are sometimes from the sidelines.

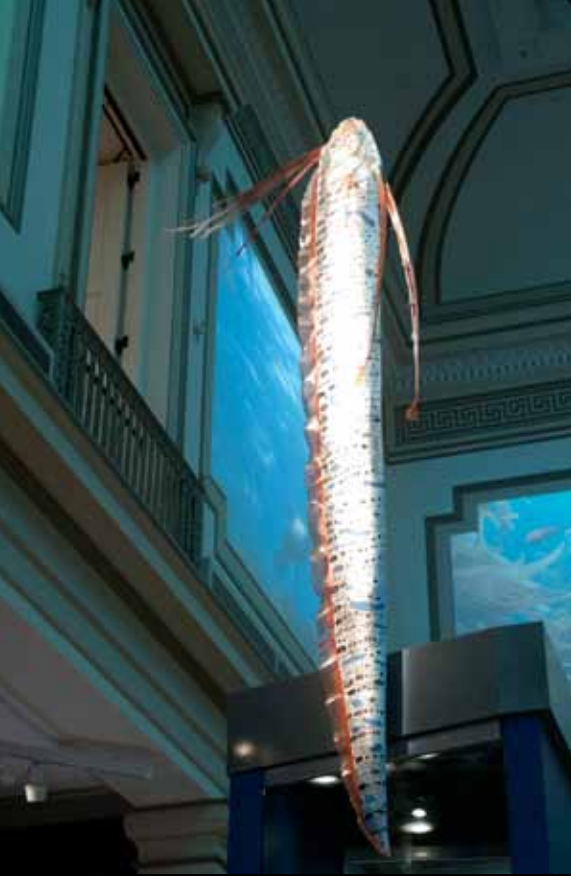


John Mittermeier (LSUMNS ornithology graduate student, green vest) on the combine landing helps festival participants spot rails as they flush in advance of the combine. Birders are able to catch a ride with a farmer as he cuts his rice.

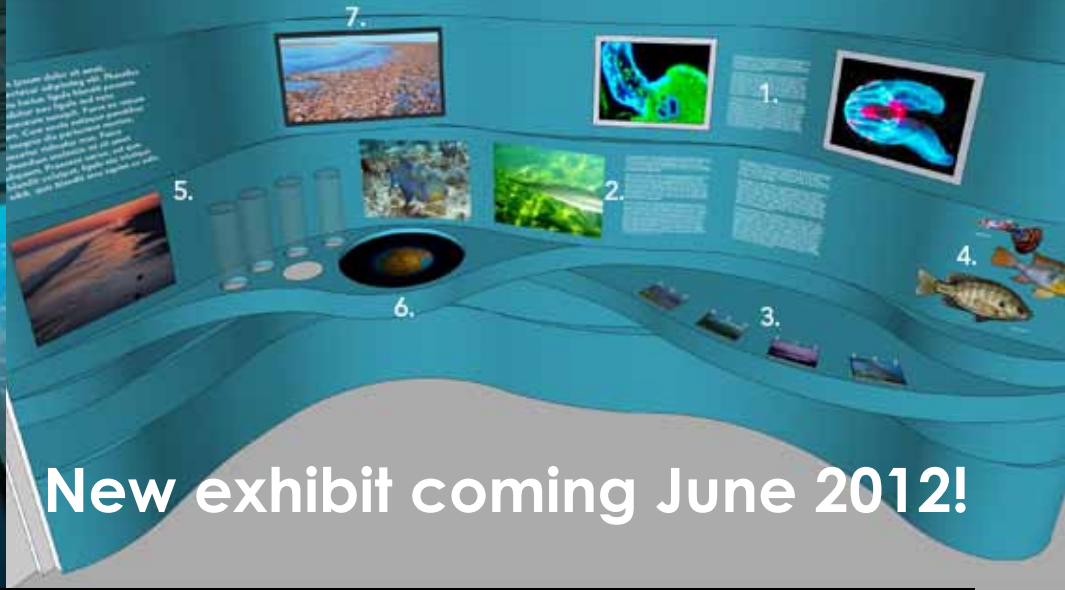
leaders or facilitators and are able to share with festival participants their knowledge and enthusiasm for birds. The inaugural festival was held in 2009 on consecutive weekends at the end of October and beginning of November. In 2010, YRARF activities were concentrated around the first weekend of November, and in 2011 the festival was shifted slightly earlier to the last weekend in October. There is no other birding festival quite like it, and each year's festival has built upon previous year's experiences and successes. The four-day festival is based out of the town of Jennings in Jefferson Davis Parish and so far has brought to Louisiana visitors from 35 states, the District of Columbia, and even from more distant lands such as Norway, Canada, and Great Britain.

For more information about the festival and dates for the 2012 event, please visit:

http://www.snowyegretenterprises.com/Snowy_Egret_Enterprises/YRARF_2011.html



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