

MUSEUM QUARTERLY

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Museum of Natural Science



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Chestnut-bellied Seed Finch (*Sporophila angolensis*) | Brazil 2017
Photo by LSUMNS graduate student Marco Rego

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Letter from the Director...



I am pleased to announce that legendary LSU ornithologist **Theodore "Ted" A. Parker, III** (1953-1993) will be inducted into the LSU College of Science Hall of Distinction at a ceremony on April 20th, 2018. Although I only knew Ted for a brief time, his charisma, enthusiasm, and encyclopedic knowledge of birds were inspiring. Here I've posted an abridged version of the nomination letter that Gregg Gorton, **Van Remsen**, and I submitted.

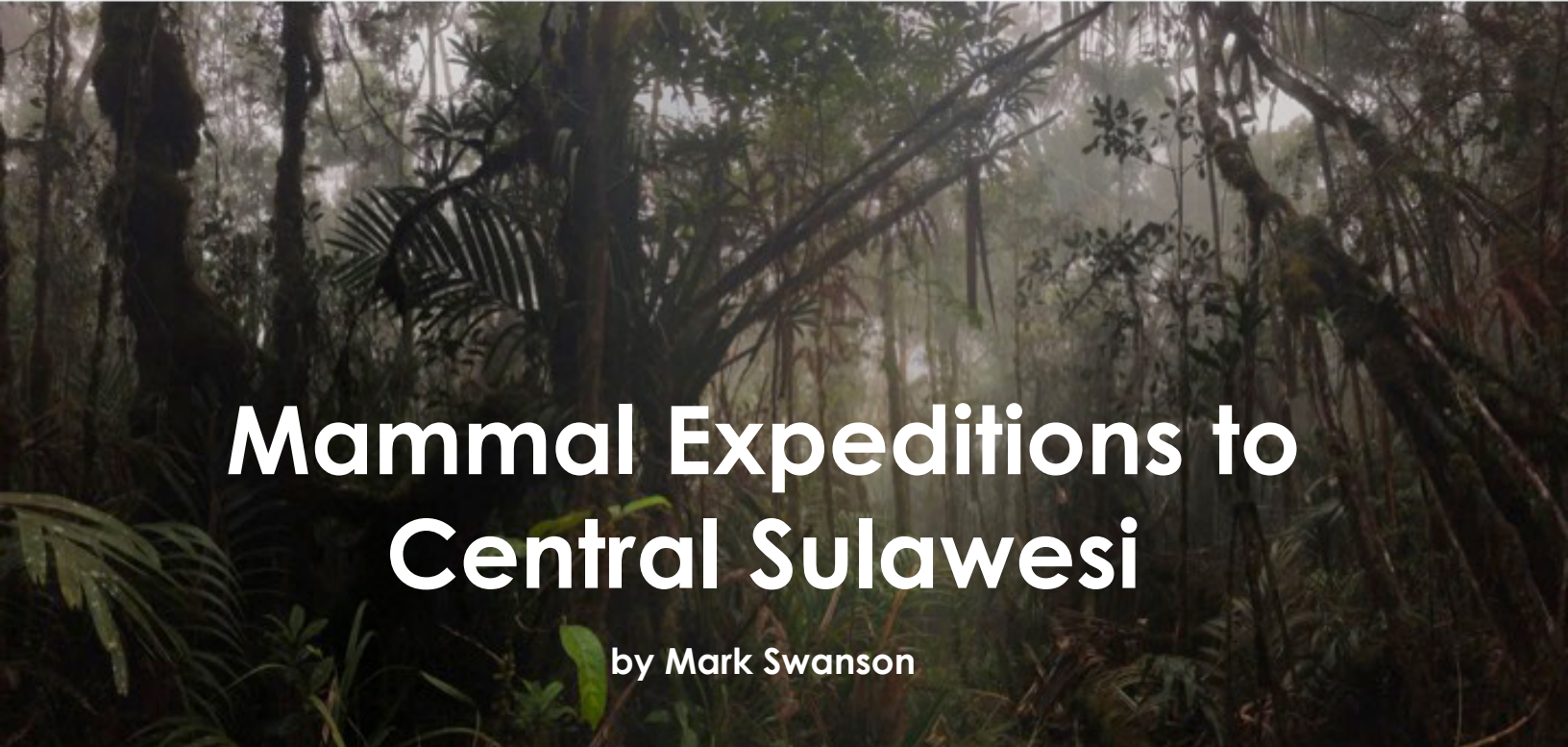
Ted was already a legendary figure in ornithology and conservation before his untimely death 25 years ago at age 40 on a cloud-enshrouded mountain in Ecuador while surveying habitats for establishing parks. The arc of his life and career encompassed in breathtakingly rapid fashion a range of notable accomplishments.

As a youngster, Ted was a birding prodigy with a nearly audiographic memory whom some referred to as "the Mozart of ornithology," and who broke the record for birds seen in one year in the United States while he was only 18 years old. He then displayed field-ornithological genius by mastering the most challenging avifauna in the world--the 3500 bird species of South America--within a few years of going there. Parker joined the LSU family when he was a junior at the University of Arizona and received a phone call from **LSU Museum of Natural Science Director George Lowery** inviting him to accompany an LSU expedition to Peru organized by **Dr. John P. O'Neill**. One year later, after Parker had spent nearly that entire year in Peru, Lowery wrote to him: "You made ornithological history." He was referring to the new birds for Peru that Parker had discovered, his exploration of areas of the country not previously surveyed by any ornithologist, his tape-recording for the very first time hundreds of bird species' voices, as well as his adding hundreds of bird specimens to the LSU Museum of Natural Science collection, many for the first time.

Once he got a taste for field research in South America, Parker spent nearly half the rest of his life there on dozens of expeditions and collecting/recording forays, either with the LSU Museum, or as a funded researcher for the World Wildlife Fund and Conservation International, or as a professional tour guide—which allowed him to do his field work while also teaching and mentoring in-country residents and birders in the many countries in which he travelled.

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Mammal Expeditions to Central Sulawesi

by Mark Swanson

The rainforests of Sulawesi, a large island in central Indonesia, shroud many biological mysteries. For most mountains, simple questions such as “Which species are there?” and “How does species diversity change with increasing elevation?” remain elusive. Beyond that little is known about the ecology and natural history of each of those individual species. What are they eating? What are their reproductive strategies? Which other organisms live on and inside them? While the answers to these questions have serious implications for conservation and human health, we seek them out for the thrill of pure discovery. What is hiding in these forests?

The National Science Foundation is supporting a collaborative effort between multiple U.S. natural history museums and the Indonesian Institute of Sciences to fill these knowledge gaps and transform our understanding of Sulawesi rainforests through a series of expeditions to 10 mountains. Scientists on each of these expeditions work to document the birds, reptiles, amphibians, mammals, fishes, and arthropods through preserving the animals for research collections. Not only will these specimens tell us what is living in Sulawesi rainforests, but they will also help us understand the diets, parasites, physiology, and evolution of each species. This past year I represented LSU as a member of the mammal team for expeditions to Mt. Katopasa in August and Mt. Torompupu in November. These mountains are on opposite sides of the Central Sulawesi

province and neither had ever been surveyed for mammals.

Comprehensive sampling of specimens was a theme of this trip, and the number of anticipated projects is overwhelming. We prepared mammal specimens as traditional skin, skeleton, and fluid specimens so that we can examine their external and internal morphology. These preparations will help **LSUMNS** graduate student **Jon Nations** study the evolution of climbing ability in rats and will also help our collaborators understand how the shapes of the nasal bones and gastrointestinal tracts have evolved over time. We prepared microscope slides with blood for each animal so that they can be screened for blood parasites such as malaria and trypanosomes, as well as dried blood on filter paper so that the genomes of those blood parasites can be sequenced. We collected kidneys and lungs in order to look for the presence of *Leptospira* bacteria and *Pneumocystis* fungi, respectively. Both of these microbes are common in those tissues and potentially co-speciate with their hosts and members of our research group are trying to understand if these microbes are co-evolving with their rat hosts, or affecting each other’s evolution. We saved rat testicles in formalin so that sperm morphology can be compared across species. However, to me, the most exciting prep types are the ethanol preserved stomachs and subsamples of the gastrointestinal tract. As funding allows, we will use these samples and DNA metabarcoding to find out the diversity of fruits, arthropods, and fungi each species is

eating as well as which microbes inhabit their guts. These data could tell us how microbial species are interacting with their host rats and shrews, possibly helping them derive nutritional value from their food. All of these projects are just a portion of what we are planning to do with the mammal specimens! Just as many preparation types and projects were carried out for the birds, herps, and arthropods. Additionally, the uses of this collection are only going to grow in the future as new questions and technologies emerge.

Highlights from Mt. Katopasa include a probable new species of *Taeromys*. Members of this genus have soft grey fur and are thought to be frugivores, or fruit eaters. These are always my favorite animals to catch because of their large size and their unique diet. Interestingly, many of the specimens of this species we collected had moss in their teeth. Could these rats be eating moss despite its high fiber content and seemingly meager nutritional value? How are they sharing food resources with other known fruit eaters like *Taeromys celebensis* and *Rattus facetus*? Our investigations using stomach contents, stable isotopes, and gut microbe DNA sequences will help unravel these mysteries. Speaking of *Taeromys*, on our Mt. Torompupu expedition we also caught the first specimens of *Taeromys hamatus* in over 40 years.

Of the 4 species of *Maxomys* (spiny rats) known from Sulawesi, the only one that has not been caught in recent decades is *Maxomys wattsi* (Watt's spiny rat). This has made inferring the relationship of this species to other members of the genus difficult because there are no fresh tissues available and the skins of the previously collected specimens were preserved with formaldehyde. Despite our general success at sequencing thousands of loci from old specimens, we have been unable to extract DNA from samples of this particular species! Fortunately we were able to collect several specimens of *Maxomys wattsi* from 1300 to 2000 meters on Mount Katopasa, doubling the number of specimens held in the world's museums.

At our 1400-meter camp on Mount Katopasa, we noticed the tails of some shrews are much longer than those we have collected at any other site on Sulawesi. We also noticed these shrews hop and move across the ground with lightening fast speed. Could this be a new species? Which predator could they be avoiding which requires them to move so fast? One possibility are the



Top: *Taeromys hamatus* from Mount Torompupu
Middle: *Maxomys wattsi* from Mount Katopasa
Bottom: *Haeromys minahassae* from Mount Torompupu
Title Photo: The forest of Mount Katopasa

giant centipedes which are over a foot long, venomous, and resemble nightmares incarnate. We occasionally found them feeding on dead rats in our traps. The functional morphology of these long-tailed shrews



A long tailed, jumping shrew (*Crocodyra* sp.) from Mount Katopasa.

as well as the possible predator-prey dynamics of shrews and centipedes are fun topics for future study.

Additional highlights from our Mount Torompupu expedition include a *Crunomys celebensis* specimen caught in a pitfall trap. This species

is related to the dietary generalist species of *Maxomys*, but has evolved to specialize on worms and insects. Our pitfall traps also yielded specimens of *Haeromys minahassae*, which are rarely caught because of their small size and arboreal lifestyle. *Haeromys* mice have very long tails, a beautiful golden color, and are thought

to eat fruit in trees, but sleep on the ground.

Despite three weeks of fieldwork on each of these mountains and hundreds of mammal specimens representing dozens of species, our understanding of what lives on these mountains is still incomplete. Our sampling was limited to a narrow swath up each mountain and we had only a few days to sample the forests over 2000 meters. Despite this, team member Heru Handika caught an exciting new species of rat on Mount Katopasa as well as shrew-rats on Mount Torompupu. What else could be hiding on these mountaintops? There is much more to explore in the rainforests of Sulawesi and we look forward to continuing our work there in 2018 and beyond.

Mount Katopasa expedition research team



In the South Pacific for some Ichthyology

by Prosanta Chakrabarty

In late September my PhD student **Bill Ludt** and I traveled to the beautiful island of Tahiti to attend the 10th Indo Pacific Fish Conference. This meeting takes place every four years and I have been anticipating this trip since Bill and I went to the last meeting in Okinawa in 2013. I also knew that I couldn't go all this way not to collect fishes. As with other conferences in remote locales, and most field trips, it took a while to get permits; we were lucky to get them a day before our planned travel began (even though Bill had been working on them for more than a year).

Also joining us for part of the trip was LSU Biology professor and Museum Faculty Associate **Brant Faircloth**. Brant and I submitted a proposal to run a symposium on fish systematics focusing on ultraconserved elements. Our session ultimately became part of a half day symposium called 'Genes to Genomes: Forging ahead in the study of marine evolution' which we were happy to help organize. (Special thanks to Dr. Michelle Gaither who was the lead organizer and did all the heavy lifting.)

Soon after arriving we knew we were in paradise - an expensive French paradise. My French is passable, but most of the locals we met also spoke English as well as their local Polynesian dialects. I always wanted to come to Tahiti, not so much for its fishes or the beautiful teal-colored water, but because I loved the history of Captains Cook and Bligh in this region; and because of films like Marlon Brando's *Mutiny on the Bounty*.

We went to the central fish market in Papeete around 5am the first few mornings to see what we could get. We made nice collections of local wrasses, goatfish, and unicornfish among other colorful, if odd-looking, species. At the local grocery store we did come across a large specimen of an Opah, or "Moonfish" which gained

some notoriety recently as being "warm blooded" - although some ichthyologists remain unconvinced. Sadly the specimen was too big to collect, and already had its gills removed.

We also traveled to the island of Moorea, which is about a 45min ferry ride from Tahiti. This island is home to, among other things, the Gump Research Station run by UC Berkeley. The Gump helped us get our permits but we were unfortunately unable to collect on Moorea. We had to settle for a lovely day snorkeling in crystal clear water surrounded by lush green mountains.

The conference started a few days after our arrival, and it had about 500 attendees from around the world. Bill, Brant and I all spoke in the first session of the first day after the plenaries. The Indo Pacific Fish Conference is one of my favorites because I get to see many of the European, Asian and African colleagues I



Above: Bill Ludt presenting his talk

Title Photo: A panorama view of Moorea

often don't see at conferences in North or South America. Bill and I started several important collaborations that hopefully will make for some fruitful publications over the next few months and years.

Although we didn't hit the markets again during the meeting, I did get to collect some introduced guppies. The extent of my freshwater fieldwork was putting a bag down into a sewer off the main road in Tahiti and letting it fill with water then pulling the bag out of the water to find that 50 individual guppies had swam into the bag. Many of these specimens were mailed off to a colleague studying the introduction of guppies around the world. He was very happy to get individuals from this distant and isolated population.

I'll spare you more details about the fish conference and swimming with humpbacks (as I did) and tiger sharks (as Bill did) and such, but rest assured this was no vacation (although it obviously wasn't all work either). The conference was a great opportunity to talk about our work, including one collaboration that recently yielded the cover of *Systematic Biology*



Above: A Unicornfish

Bottom: (L-R) Prosanta Chakrabarty, Bill Ludt, and Brant Faircloth on Cook's Bay

(Chakrabarty & Faircloth et al. 2017). That publication created some great opportunities to work with other scientists interested in using genomic fragments like ultraconserved elements in their phylogenetic studies of fishes.





Three Months at Harvard University

by Rafael Marcondes

Last Fall, I had the absolute privilege of spending three months as a visiting student at the Harvard University Museum of Comparative Zoology (MCZ) in Cambridge, Massachusetts. It was an unforgettable experience from a professional as well as a personal perspective.

The purpose of this visit was to work on my dissertation research on the aptly-named Variable Antshrike (*Thamnophilus caerulescens*). This bird species from South America includes populations whose breast and belly vary in color from pitch-black to pure white, with several shades of grey and brown in between. I am interested in locating the genes that control that color variation, and in investigating what ecological factors might be correlated with it. The opportunity to go to Harvard to work on this project arose when I learned that **Gustavo Bravo**, a post-doc in Dr. Scott Edwards' lab at MCZ and a **LSUMNS** graduate, was planning

to work on that same species. We decided to team up and Gustavo invited me to come to Harvard to do the genomic labwork, taking advantage of Harvard's superior research infrastructure and support system. In addition to Gustavo and Scott's generosity, this research project and visit have been made possible by funding from Harvard University and from Brazil's National Council for Scientific Development (CNPq).

Gustavo has been a big influence in my career since we met in Brazil some five years ago. I was finishing up my Masters and he was starting a postdoc in the same lab. I was uncertain about what I wanted to do after getting my Masters, and conversations with Gustavo, who had just graduated with his PhD from LSU, had a big influence in my decision to come to LSU for my PhD too. I was thrilled to work with him again, and he was indeed a wonderful teacher and mentor, going out of his way to make me feel welcome, guide

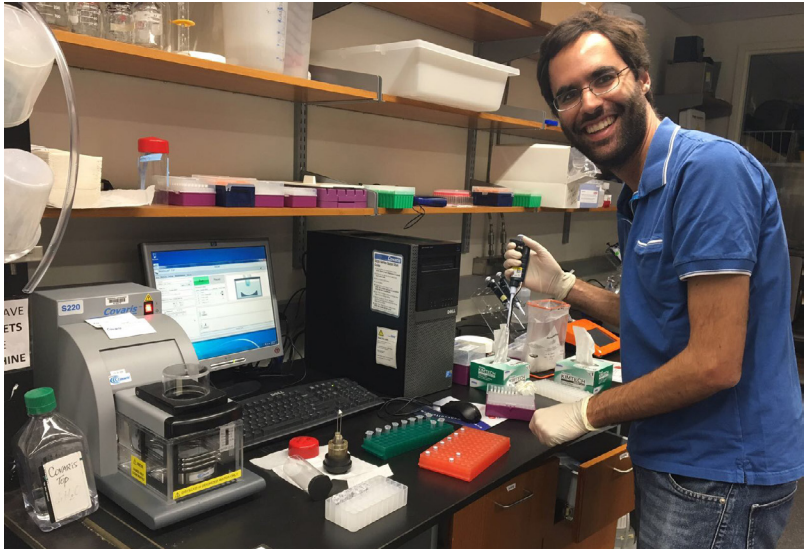


Above: Plumage variation in the Variable Antshrike. My research investigates the genetic and ecological correlates of that variation. Digital drawings by **Subir Shakya**.
Title Photo: The MCZ on my last week there, in December. On the week I arrived, in September, the temperature was in the nineties.

are several next-generation DNA sequencers. These are expensive and sensitive machines that only few universities or companies are able to acquire and run, so it was interesting for me to work in a lab that operates its own sequencers. I was allowed, after some training, to operate the equipment I needed in the Bauer core, but the sequencers are the only machines that cannot be operated by the researchers themselves, and have dedicated staff to run them. Curious as I am, I couldn't

me in the lab, and help fix some of my rookie mistakes. Our partnership felt all the stronger because my PhD advisor, museum director **Dr. Robb Brumfield**, was also Gustavo's PhD advisor; and because Robb himself was once also a postdoc under Scott Edwards. In fact, most of the samples I used were collected by Robb when he was a member of the Edwards lab. I love the feeling of being part of this interlocking network of research and mentoring relationships. It's all one big scientific family, and it's one of the greatest things about being a scientist. I look forward to expanding this family with my own mentees sometime in the future!

As expected, Harvard's facilities were extraordinary. Much of my work was conducted in the Bauer Core Facility, a state-of-the-art molecular lab housed in an enormous room that extends as far as the eye can see (or at least it seemed so to me at first!), two floors underground in an ultra-modern building on the Harvard campus. Among the many impressive pieces of equipment available at the Bauer Core, the big stars



Me working at Harvard's Bauer lab. Can you tell how happy I was to be there?!



A sample of DNA from an antshrike specimen. Isn't it a marvelous thing that this tiny droplet of clear liquid contains answers to the secrets of evolution?

help nosing around the sequencers a little, but didn't dare touch a finger on them, lest I broke something and had to buy a new sequencer out of my modest graduate student stipend!

I'm a part of the first generation of graduate students to have essentially started our careers after the onset of the genomic era. Researchers from just one generation ago, such as Gustavo, had plenty of experience with the less powerful but also less frightening Sanger technology for DNA sequencing before they started doing genomic work. Myself, I had never done any type of molecular work before starting this project, so I was initially very nervous and insecure about my skills, and did make a few mistakes. Just to think about the sheer power of the technology was at times almost overwhelming. Molecular samples look, to our naked eyes, like just increasingly tiny (and precious!) droplets of water. I often marveled at what an astonishing feat it is that we are now able to relatively easily transform that "water" into billions of little digital A's, C's, G's and T's that encode the mystery of life. I often thought of a quote by science fiction author Arthur C. Clarke: "Any sufficiently advanced technology is undistinguishable from magic".

Thankfully, though, and with the help of Gustavo and Harvard's dedicated support staff, I improved my lab skills a lot over those three months, worked the

magic of technology, and everything was eventually successful. Soon, I'll have whole-genome data for 98 individuals of the Variable Antshrike. It'll be one of the largest DNA sequence datasets ever amassed for a single species of bird. I can't wait to put it to good use!

In the few intervals from lab work, I was also able to work in the MCZ's collection of bird skins, which has recently been moved to a brand-new space four floors below ground in the same modern building as the Bauer molecular facility. That collection was once curated by Ernst Mayr, one of the most important ornithologists of all time and a father of the Modern Evolutionary Synthesis. And in addition to Mayr, the MCZ has also been home to other luminaries of evolutionary biology such as George G. Simpson, Stephen J. Gould, and E. O. Wilson. I felt greatly honored to work where they once worked, and their legacy was constantly in my thoughts throughout my time there.

E. O. Wilson is the only one of those great scientists who is still alive. I have read several of his books, so I was very happy when I had the chance to watch him speak for a few minutes one evening. He seemed remarkably agile, both mentally and physically, from the top of his 89 years. Only his voice seemed a bit frail, although it did get noticeably firmer and louder to say, about saving the world's biodiversity, that "WE CAN DO IT!"

I loved my time at Harvard. I worked a lot, learned a lot, and had fun a lot. The MCZ was a great place to be. But I also missed the LSUMNS a lot, and initially I didn't understand where that feeling was coming from. So I took to reflecting about the differences between working at a storied Ivy League institution versus at a small museum at a public school in the Deep South. I eventually realized that what I missed the most was the small-town feeling we have at LSUMNS. Here, I know every single room of the building, and I know by first name every single person that works in it. And I love that feeling. It's like living in a small town. It makes for a very relaxing and supportive place to be a student. Although that sensation might have been possible if I had stayed at MCZ longer, it certainly comes much more easily and more naturally in a small institution. At the end of the semester, I couldn't wait to feel that again, so I was as happy to return to small, deep south LSUMNS as I had been initially to go to Ivy League Harvard!



West Texas Expedition 2017

by Anna Hiller & Jessie Salter

The Museum of Natural Science has a long-term research interest in the Trans-Pecos region of Texas. George Lowery conducted a collection to the Guadalupe Mountains in the 1940s and **John P. O'Neill** has been collecting in the region since the 1960s. As a continuation of this, we (LSUMNS graduate students **Jessie Salter** and **Anna Hiller**) co-led a two-week expedition to West Texas, visiting two Wildlife Management areas within the Trans-Pecos region: Black Gap WMA and Elephant Mountain WMA. Joined by our lab mates **Oscar Johnson** and **Andre Moncrieff**, we surveyed Chihuahuan desert bird communities and added specimens to the collection from a region of particular biogeographic interest.

Bordering Big Bend National Park to the west and the Rio Grande to the east, Black Gap WMA is home to 103,000 spectacular acres of Chihuahuan desert scrub. After meeting the WMA managers and getting situated in the bunkhouse, we were eager to scout locations for our mist net lines (which led to a close encounter with a family of Collared Peccaries, the first of many mammals we would see on our trip). For the next few days, we explored the washes around the headquarters area, collecting desert scrub birds like Scott's Orioles (*Icterus parisorum*), Ash-throated Flycatchers (*Myiarchus cinerascens*), Pyrrhuloxia (*Cardinalis sinuatus*), and Cactus Wrens (*Campylorhynchus brunneicapillus*).

Scattered throughout the scrubland of Black Gap WMA are dozens of water tanks surrounded by

lush swathes of grasses and reeds. These tanks attract many birds from the surrounding desert, like flocks of Varied Buntings (*Passerina versicolor*), a common Mexican species whose range barely extends into the U.S., brightly colored Painted Buntings (*Passerina ciris*), and swarms of Lesser Nighthawks (*Chordeiles acutipennis*), who flew over the water at dusk feeding on insects. Though seemingly a contradiction in terms, we also collected a few desert waterbirds (late migrants stopping over on the tank), including a Blue-winged Teal (*Anas discors*), a Ruddy Duck (*Oxyura jamaicensis*), and a White-rumped Sandpiper (*Calidris fuscicollis*).

After a successful first week in the field, we said goodbye to Black Gap WMA and headed north to Elephant Mountain WMA, stopping in Alpine along the way for supplies and top-notch chile verde burritos. We arrived at our second location of the trip just after lunch: Elephant Mountain WMA. Rising from the center of the WMA is a large tabletop mountain, which from a certain angle resembles a sleeping elephant, complete with trunk. The mountain top is home to Desert Bighorn Sheep, so it was off limits to us, but we were free to explore the surrounding valleys, cottonwood riparian areas, and the Del Norte Mountains, which form the eastern boundary of the WMA. Elephant Mountain WMA is about 2000 feet higher in elevation than Black Gap WMA, and the cooler temperatures were a refreshing change. Although the low-lying desert scrub habitats contained many of the same species as Black Gap WMA, a short hike up the Del Norte



(1) Male Painted Bunting (*Passerina ciris*); (2) Collared Peccary (*Pecari tajacu*); (3) Eastern Black-tailed Rattlesnake (*Crotalus ornatus*); (4) Elf Owl (*Micrathene whitneyi*) peeking out of his telephone home at the Black Gap WMA headquarters; (5) Female Pyrrhuloxia (*Cardinalis sinuatus*), colloquially known as a desert cardinal;; (6) Female Varied Bunting (*Passerina versicolor*) - she doesn't have the blues, reds, and purples of the male, but she's still a beauty!

Title Photo: The road to the Rio Grande at Black Gap WMA. Those hills on the right hand side of the photo are in Mexico!

Mountains brought us into Pinyon-Juniper woodland, a habitat unique to high-elevation deserts of the Western U.S. Here we collected two new species for the trip - Woodhouse's Scrub Jay (*Aphelocoma woodhouseii*), a Pinyon-oak specialist, and Gray Vireo (*Vireo vicinor*), a range-restricted desert woodland species. Highlights from the surrounding scrub and cottonwood areas included Vermilion Flycatchers (*Pyrocephalus rubinus*), Lillian's Meadowlark (*Sturnella magna lilianae*), the pale southwestern subspecies of the Eastern Meadowlark, and a Zone-tailed Hawk sighting (*Buteo albonotatus*). We also spotted Pronghorn (*Antilocapra americana*), Elk (*Cervus canadensis*), and an Eastern Black-tailed Rattlesnake (*Crotalus ornatus*). Oh, and Oscar chased a North American Porcupine (*Erethizon dorsatum*) into a bush to get photos.

Conclusion

Overall it was a fantastic trip. During 12 days of fieldwork, we collected 206 individuals of 60 species, filling important gaps in both temporal and geographic distribution in the LSUMNS collections. Many ongoing bird projects studying southwestern avifauna will directly benefit from the specimens we collected during

our expedition.

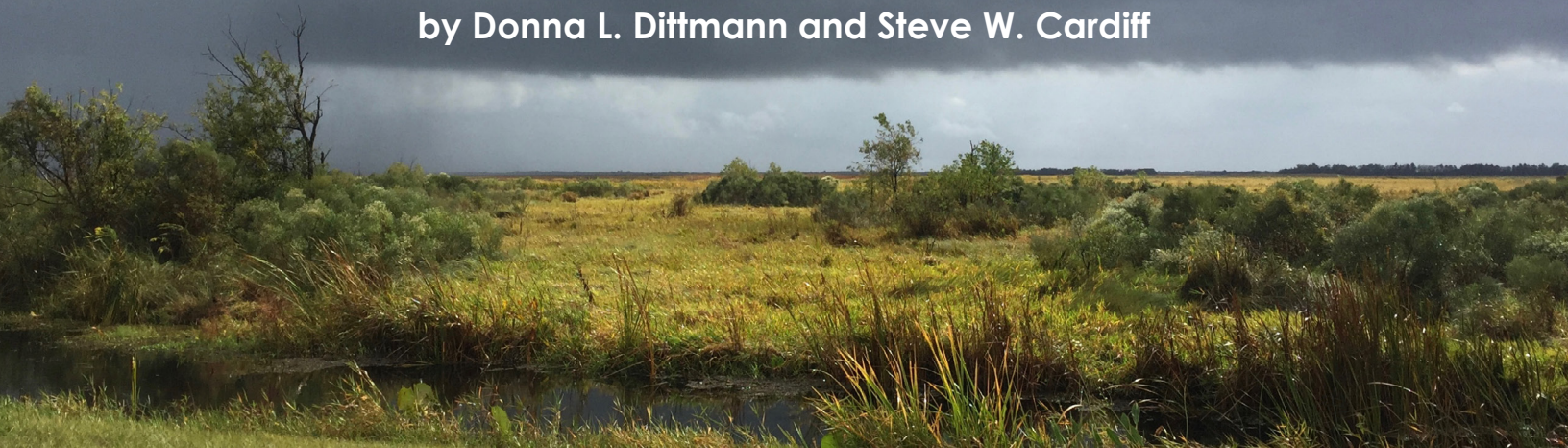
Last, we wanted to thank Travis Smith at Black Gap WMA, Dewey Stockbridge at Elephant Mountain WMA, and Mark Garrett with the Texas Parks and Wildlife Department Trans-Pecos Ecological Region for their help making this trip happen and for allowing us to work on the WMAs!



Jessie Salter and Oscar Johnson watch the sunset in Elephant Mountain WMA after a long day in the field.

Ninth Annual Yellow Rails and Rice Festival

by Donna L. Dittmann and Steve W. Cardiff



The Ninth Annual festival was held 1-5 November 2017 and again was based in Jennings, LA, in the heart of our SW rice-growing region. The festival is a unique combination of “agritourism” and “ecotourism” experiences and was again sold-out. Participants in search of Yellow Rails traveled to Louisiana from 25 US states, Mexico, Canada, Scotland, and Germany to visit harvest sites at The Yellow Rail Capital of the World - Thornwell, Louisiana.

LSUMNS is a festival co-sponsor and each year LSUMNS staff and graduate students assist the event in many ways from ranging from event coordinators to being volunteer field trip leaders and/or rail field “facilitators,” manning an information booth, or by providing logistical support. LSUMNS 2017 YRARF volunteers included (in alphabetical order): **Matt Brady, Steve Cardiff, Valerie Derouen, Donna Dittmann, Anna Hiller, Tammie Jackson, Oscar Johnson, Dan Lane, and Andre Moncrieff.** LSUMNS undergrads **Anna Cole** and **Marky Mutchler**, as well as museum volunteer **Brian Magnier** also assisted this year. LSUMNS personnel were able to share with festival participants their enthusiasm and knowledge of Louisiana’s birds, as well as information about their

research activities farther afield.

The festival’s prime objective is to show visitors the festival’s namesake, the Yellow Rail (*Coturnicops noveboracensis*) while at the same time showcasing the area’s general abundance and diversity of birds in its “working wetlands” (rice and crawfish). This year’s weather started off wet, so the festival was forced to activate its elaborate Weather Contingency Plan into action. Unfortunately, rain washed-out Wednesday’s



Above: Steve Cardiff welcomes the YRARF 017 participants at the opening reception in Jennings.



Left: Searching for rails from on board the combine. Photo by Anna Cole.

Middle & Right: Erik I. Johnson, Banding Workshop Leader, Audubon Louisiana with a Yellow Rail after banding and prior to release. Participants gather around the Banding Workshop tent for the opportunity to see a Yellow Rail and other species in the hand.

Title Photo: Stormy weather moved through the area Wednesday during Beat the Crowds, cancelling harvest that afternoon and saturating fields and delaying harvest on Thursday.

“Beat the Crowds” rice harvesting session and delayed and abbreviated Thursday afternoon’s harvest activities. But, during the combine’s last circuit on Thursday, one Yellow Rail flushed and then landed where all could admire it. It was also captured and banded. The Banding Workshop, coordinated by Dr. Erik I. Johnson (Audubon Louisiana, Louisiana Bird Observatory), also had to readjust its schedule due to weather. Friday’s Coastal Night Rail Trip (new this year, with hopes of banding a Black Rail) was shifted to Thursday evening, so that field trip group was not able to linger at the Jambalaya Social at Myer’s Landing. However, the evening coast trip was a great success and included the capture and banding of the first Black Rail (plus one Yellow banded) during a Yellow Rails and Rice Festival!

In addition to missing a day + of harvest time, Yellow Rail numbers seemed lower than in 2016: only

the one bird was flushed on Thursday, with 15 on Friday (4 yellows banded), and four (2 banded) on Saturday.

Harvest site eBird checklists:

Thursday, 2 November 2017: <http://ebird.org/ebird/view/checklist/S40275479>

Friday, 3 November 2017: <http://ebird.org/ebird/view/checklist/S40468876>

Saturday, 4 November 2017: <http://ebird.org/ebird/view/checklist/S32449135>

As in previous years, participants were able to observe Louisiana’s spectacular abundance and diversity of birds during field trips through rice country, to the coast of Cameron Parish, and to the longleaf pineywoods of the Kisatchie National Forest in Vernon Parish. Field trips also discovered a couple of rarities: Long-tailed Duck at the Crowley Wastewater Treatment

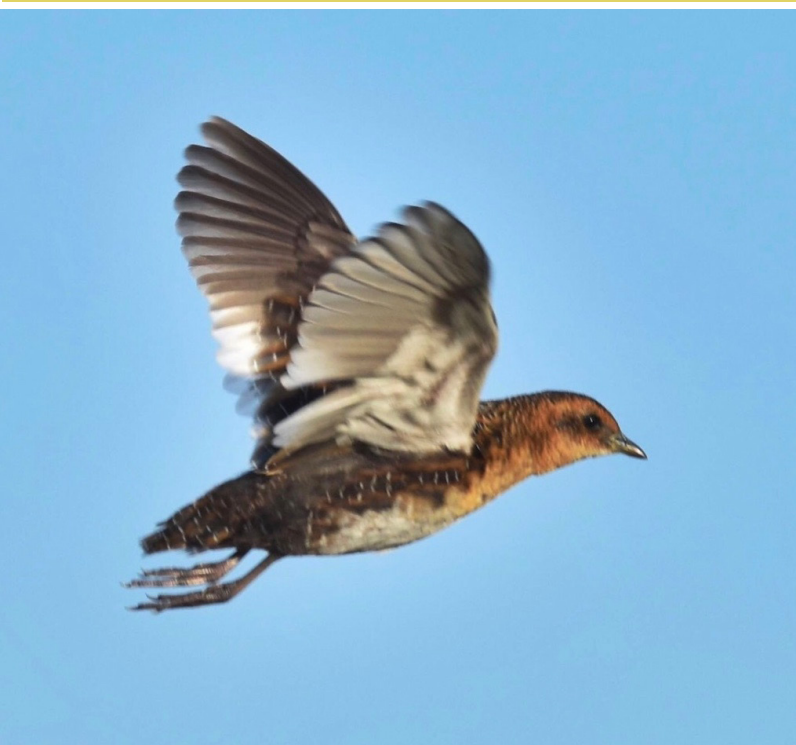


After a quick bite to eat, the Coastal Rail Trip caravan left Myer’s Landing for their evening adventure to Cameron (L). The moment of success was relayed by a texted photo to Donna and Steve by Erik I. Johnson - the first YRARF Black Rail! (R)



Above: YRARF field trip visiting Jetty Park in Cameron. Photo by Anna Cole.

Below: The star of the show – a Yellow Rail flushes in advance of a combine. Photo by Marky Mutchler.



Plant; a Ruff at a harvest site while participants hung out during a weather delay. By covering a diversity of habitats, participants had a chance to see over 200 bird species as well as to enjoy the area's culture, cuisine, and hospitality.

In 2018 YRARF celebrates its 10th year; the event is scheduled for 31 October-4 November 2018 – if you would like to be on the festival email list, then contact: yellowrailsandrice@gmail.com. Keep an eye on the website for information updates about this year's event: http://www.snowyegretenterprises.com/Snowy_Egret_Enterprises/Yellow_Rails_%26_Rice_Festival.html

Registration will open on 1 August 2018 and spaces do fill quickly!



Frozen in time

Fossilized pollen from ocean sediments reveals the history of Antarctica's largest ice sheet

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Frozen:

The Story and Science Behind the December Nature Cover

by Paige Jarreau

Tiny triangular, textured fossils of ancient pollen grains swim on a beautiful blue icy background on the cover of Nature's December issue, released [December 14]. Frozen in time, these fossilized pollen extracted from ocean sediments tell a story about how Antarctica's largest ice sheet has changed throughout history.

Sophie Warny, Associate Professor in the LSU Department of Geology & Geophysics and Associate Professor and Curator of the Center for Excellence in Palynology (CENEX) in the **LSU Museum of Natural Science**, meticulously captured these portraits of rare Antarctic pollen grains for a Nature research paper she co-authored. Sophie and collaborators at the University of Texas at Austin and the University of South Florida found that the East Antarctic Ice Sheet may not be as stable as it seems. This ice sheet has been very dynamic, with a long history of expanding and shrinking. The glaciers in this region may be particularly susceptible to climate change because they flow from the Aurora Basin, a region of East Antarctica that mostly lies below sea level. This means that, today, the East Antarctic Ice

Sheet may contribute substantially to global sea level rise as Earth's climate warms.

But let's get back to the role those tiny fossilized pollen grains played in helping researchers decipher the history of the East Antarctic Ice Sheet – and in earning this paper a spot on the illustrious cover of Nature magazine. Read on to learn about the story and science behind the Nature cover this month from LSU's own ancient pollen expert Sophie Warny.

Q: Congratulations on having your research featured on the cover of Nature Magazine this month! Can you give us some background on the cover and the science it represents?

Sophie Warny: The cover features microfossil pollen grains, which are one of the types of geological data our research team used to study the evolution of the East Antarctic Ice Sheet. Questions we are attempting to address are, has this ice sheet been stable over time, or does it have a history of expanding and retreating?

And what factors drive sudden temperature shifts in Antarctica? Some of the most direct ways to answer these questions are for instance to use seismic evidences (what the lead author Sean Gulick did) and to quantify past environmental conditions both on land and in the ocean by studying the pollen, spores and dinoflagellate fossils contained in well-dated Antarctic sediments (my role). We can compare the types of microfossils we find to known drivers of temperature shifts such as atmospheric carbon dioxide concentration and oxygen isotope data.

The Center for Excellence in Palynology (CENEX) at LSU is one of the main centers in the United States that trains palynologists. Palynology is a branch of paleontology that focuses on microfossils that have organic walls and range in size from about 10 to 100 microns (the size of the width of human hair, or smaller). These microfossils, called “palynomorphs,” include pollen, spores and algae such as acritarchs or dinoflagellate cysts. These microscopic palynomorphs are extremely resistant and can be preserved throughout the geological record for millions of years. By extracting these microfossils from sediments and analysing them, we can learn which species of plant and algae were present at a particular location over a wide range of geological time.

My portion of our study published in Nature this month was to evaluate what plants, if any, lived in the past at the location of the East Antarctic Ice Sheet, based on sediment recovered by the Antarctic expedition NBP14-02. We took core samples of mud below the seafloor on the East Antarctica Sabrina Coast and extracted and analysed ancient pollen in the mud to determine the age of the samples. As an ice sheet advances, vegetation retreats and eventually disappears. The overall goal of the project, led by Sean Gulick at UT Austin and Amelia Shevenell at the University of South Florida, was to analyse the past evolution of the East Antarctic Ice Sheet. The palynological analysis my lab conducted was integrated into the objectives of my CAREER grant (U.S. National Science Foundation ANT-1048343), to decipher Antarctic climate variability during the Cenozoic era.

The microfossil samples recovered from expedition cores were simply amazing, and I was truly

lucky to be given the chance to conduct analyses of these rare samples. Graduate student Catherine (Katy) Smith worked with me to evaluate the cores for this project as part of her Master’s thesis.

Q: When did you learn you might be eligible for the cover art based on your Nature paper? What do you think made your piece especially attractive to the editors?

Sophie Warny: We were notified in the fall of 2017 that our paper was accepted. Once a paper is accepted in a journal, you have the option to submit a cover image. I discussed the possibility of submitting some pollen pictures with the lead authors, and they accepted. By then, I had to move quickly as the cover submission has to be done before the paper goes to press.

I immediately contacted Dr. Clayton Loehn at the Shared Instrumentation Facility at LSU and asked him if he could free up a day, even during the weekend or at night, on the facility’s scanning electron microscope (SEM) for this submission. He did, and I prepared the sediment samples that I thought would have the best chance of a good microfossil recovery for imaging. I spent a day scanning the samples I had prepared in hopes of finding the perfectly positioned pollen grain from key plant species.

After taking a few good SEM shots, I cleaned the images in Adobe Photoshop. We submitted them shortly after that. I didn’t know if they would be selected, but it’s not every day that you have the chance to compete for a Nature cover, so I didn’t want to have any regrets of not submitting something! About a month later, we were notified that our submission was selected. Best Christmas present ever.

Q: Can you tell us more about how the cover art was made? How do you get these close-up images of pollen? How much of this is science, how much is art?

Sophie Warny: The process to isolate these pollen grains from mud samples and take their pictures is quite long and difficult. First, you have to locate and retrieve sediments via seismic and other analyses. Getting the funding to go drill in Antarctica isn’t easy. The cores for

this project were acquired by the two lead authors of our Nature paper. Then, the cores drilled in Antarctica have to be brought back to the Antarctic Research Facility in Tallahassee, Florida, which is currently the central point in the U.S. where Antarctic cores are stored.

Next, the cores have to be sampled. We collected about 20 grams of sediment from various levels in the cores. The next step is to extract the palynomorphs (like fossilized pollen) from the muddy sediment. For that, the samples have to be processed using chemical palynological techniques where the dried sediment is successively treated with hydrochloric acid and hydrofluoric acid to remove carbonates and silicates. After that step, we are left with a variety of organic components. To isolate the pollen and spores from this organic residue, we have to sieve the samples between a 10 and 250 μm fraction, and the remaining palynological fraction is mounted on microscope slides using glycerin jelly as a mounting medium. Here at CENEX, we analyze these slides using an Olympus BX41 transmitted-light microscope with a 60x oil immersion objective to evaluate species abundance and diversity. With the knowledge of what species are present in which samples, we can then image particular pollen grains on an FEI Quanta 3D thermal field-emission sourced dual-beam scanning electron microscope (FIB-SEM) to get high-resolution images such as those seen on this month's Nature cover!

Q: Where did these pollen grains come from? What made you decide to image these pollen grains in such close-up detail?

Sophie Warny: The images on the Nature cover represent a group of rare Antarctic pollen grains. These particular specimens were extracted from sediments acquired in 2014 aboard the Research Vessel N.B. Palmer, from piston core JPC-55, off the Sabrina Coast of Antarctica. These specimens are part of a newly discovered palynoflora [the pollen and spores of a region or site, considered as a whole] that include the plant species *Gambierina edwardsii* and *Phyllocladites mawsonii*, which were used to determine the age of sedimentary samples, as well as new species that we are currently in the process of describing and hope to submit for publication soon. The microscope slides are housed in the CENEX Pollen and Spore Collection at

Louisiana State University (LSU) Museum of Natural Science.

I submitted nine images to Nature, and the Nature design group selected the six specimens that are on the cover. The use of various microscopes such as SEM is essential because pollen grains are tiny, measuring just a few microns across, so the only way to identify them is to go in close-up mode.

Q: What do the different pollen shapes represent? How did you choose which shapes to include on the Nature cover?

Sophie Warny: Researchers at the Royal Botanic Gardens in Kew in the UK have estimated that there are about 391,000 species of vascular plants on Earth. This is just today. As geologists and paleontologists, we study what lived on our planet in the geological past. Many of the plants that existed in the Palaeozoic for instance, are now extinct. Because ancient sediments can contain pollen or spores from any of millions of different species, the job of a palynologist is extremely difficult and requires a very extensive specialized library. CENEX, thanks to partnerships with industry and various donations, has one of the largest palynological libraries in the world. The shape of a pollen grain or a spore is unique to a particular plant species, so the detailed study of the morphology of these specimens is key to taxonomic evaluation.

As far as choosing the shape, I really didn't. These species are some of the most abundant present in Antarctic sediment sampled, so this was a natural selection process.

Q: Why are the pollen grains on the cover different colors? Did you decide on the colors?

Sophie Warny: We were asked to provide a variety of colored images (the original images taken with the SEM are in grayscale), and the staff at Nature selected to include various colors. The colors do not have any scientific meaning.

Q: What was it like working with the photo and graphics editors at Nature to create the cover? How did they tweak it? Did you learn anything useful in this process for future reference when submitting

potential cover art?

Sophie Warny: That was actually super fast – it took them just a few hours to put the cover together from our images. I like that they choose an “icy” background to evoke the feeling that the sediments were recovered from Antarctica. The tough part was to agree on the few words that would be associated with the image on the cover. That took a lot of back and forth emails.

Q: What are your top tips for other researchers interested in having their research graphics featured on the cover of Nature?

Sophie Warny: These covers take time, so you need to decide whether or not this is something that matters to you. I choose to dedicate a couple of days of my time playing with my raw SEM pictures, cropping them and coloring them. Not everyone enjoys spending time with Photoshop – it is probably the creative side in me that enjoys this. Also, you need to have the right item to illustrate. In our case, it was easy because pollen grains are just gorgeous, and some of these species are likely new to science, so they are very unique.

Q: How is this cover art meaningful to you? Do you think it will have an impact for you personally or professionally? What kind of feedback have you gotten about the cover art so far?

Sophie Warny: My family and some of my colleagues have been very excited for me. The cover might not mean much for some scientific colleagues, but for me, having my SEM images on the cover of Nature is the best day of my career so far. It definitely made my day to receive the acceptance email.

I hope the cover will make our field of palynology better known. It is still used too rarely in the U.S. Very few universities teach our specialty, and many students graduate with an undergraduate degree in geology without knowing what palynology is or what microfossils are and what they can do. Yet, the field of palynology is extremely powerful and can provide a diversity of information for basic or applied research. For instance, our knowledge of plant evolution through time means that the pollen extracted from cuttings at exploration wells can be used to date oil-bearing sequences. Several

of my former doctoral and master’s students are now leading biostratigraphers [Biostratigraphy is the branch of stratigraphy which focuses on correlating and assigning relative ages of rock strata by using the fossil assemblages contained within them] with major oil and gas companies.

In addition to dating, pollen and spores can be used to reconstruct past climates (as we did in this Nature paper) because the type and range of palynomorphs present in a sample may be unique to different locations, climates and environments. I hope that the cover will bring awareness to the fact that we know more and more about how our planet’s climate evolved and how it is going to respond to current climatic changes. We now know that the largest ice sheet in the world (the East Antarctic Ice Sheet), which if fully melted would contribute a total of over 50 meters of sea-level rise to the world oceans, is not as stable as we first thought.

Palynomorphs can also be used to predict future crop abundances, trace illegal imports of drugs or stolen goods, or to solve crime. I am very proud that my last doctoral student, Shannon Ferguson, is now a full-time forensic palynologist with the Department of Homeland Security.

Title Photo: Cover of the December 14 edition of the journal *Nature* featuring a selection of fossilized pollen from sediment cores collected from East Antarctica’s continental shelf.



The Crude Life Portable Museum

by Paige Jarreau

The Crude Life Portable Museum, A Citizen Art and Science Investigation of Gulf of Mexico Biodiversity after the Deepwater Horizon Oil Spill, popped into the LSU Museum of Natural Science in January, 2018, making a splash for curious visitors wanting to escape unusually icy weather in Louisiana.

Crude Life is hard to define. It's objects and artifacts, it's scientific research, it's a place, it's science, it's art, it's climate change embodied.

Crude Life is a mobile museum showcasing endemic specimens and species affected by climate change and the 2010 Gulf of Mexico oil spill, from tiny fishes, to insects, to aquatic mammals, in galleries that combine science and art. The project is a multi-institution collaboration between artists, scientists, musicians, and professionals who occupy the spaces between these disciplines. The museum, full of marine species preserved in glasses, jars and boxes, artistic scientific drawings, microscope slides full of tiny marine plants and animals, insects and minerals in pretty glass vials, and even odd-shaped nut shells representing the tiny sculptures squirrels and other animals create as they co-inhabit our environment, travels around the

country, from California to the Gulf of Mexico region to Boston, packed in wooden "treasure chests." The trunks themselves are antique sea chests retrofitted with from wood salvaged from buildings and trees damaged by hurricanes. Climate change has created this museum.

Crude Life is the brainchild of LSU postdoctoral researcher **Brandon Ballengée**, a scientist and internationally renowned artist who teamed up with **Prosanta Chakrabarty**, Associate Professor and Curator of Fishes at the LSU Museum of Natural Science, to explore biodiversity changes in the Gulf of Mexico on the heels the 2010 oil spill and climate change. The project is both an artistic exploration as well as a science and citizen science investigation of Gulf of Mexico biodiversity over time, funded through the National Academies Keck Futures Initiative.

The 2010 Deepwater Horizon oil spill had far-reaching impacts that are still not fully understood. The spill affected marine life, Gulf Coast communities and even individuals internationally, including Brandon, who traveled to Louisiana from Quebec, Canada on several occasions in the aftermath of the spill to work with Gulf communities, volunteer and create art inspired



carrying cases that can be transported via airplane or car as a “museum on the road,” when Brandon contacted him about Crude Life.

“This type of museum makes you question whether it’s a place, or an object, which for an artist is a really interesting question” Sean said. “Can you give an object the authority of a place?”

Brandon and Sean explored and settled upon the idea of an interactive ‘pop-up’ museum for the project. “The minute that Brandon said he was interested in making an open-air museum, or a museum of the imagination, I got really excited,” Sean said. “Each Crude Life trunk acts as its own gallery, or wing of a museum. We can take the trunks and set them up on a pier along the coast, for example, and really put the collections and objects in people’s hands in a playful way. It’s really interesting, because ‘Cabinets of Wonder’ that combined art and science existed long before modern museums of science and natural history. But we’ve lost something in the transition to modern museums. With Crude Life, we are working to build a bridge back to the ‘Cabinets of Wonder’ that combine both art and science.”

Anything and everything in the museum is meant to be explored, picked up and interacted with – not exactly like your typical science museum. The museum’s very presence is often a surprise for viewers. “It’s fun to show us somewhere with these trunks and open them up as people wonder, ‘What’s going on??’ Every museum is trying to inspire curiosity in its viewers and get them engaged, and I think the element of surprise with the mobile museum helps make that happen,” Sean said.

“We’ve been chipping away at creating the Crude Life museum for two years now,” Brandon said. “We want to add a few more pieces, but it’s almost complete. Now we are focused on getting the museum out into the community, taking the trunks to schools, Mardi Gras parades and other community events to teach people about the Gulf of Mexico biodiversity, oil spill and climate impacts. Hopefully it helps people feel inspired and more connected to the Gulf.. My focus is to reach rural communities that don’t have easy access to contemporary art spaces or museums. Sometimes when

Link Morgan (top right) and Prosanta Chakrabarty (bottom) talk to guests about the exhibit. Photos by Paige Jarreau.

by this crisis to promote awareness and engagement.

“All the loss, the loss of life, really struck me, and I wanted to do something about it,” Brandon said.

Brandon quickly got to work collecting Gulf of Mexico specimens as well as citizen stories of environmental changes with colleagues in the Chakrabarty lab. He also reached out to Sean Miller, an associate professor in University of Florida’s College of the Arts, with a revolutionary idea – create a portable Gulf of Mexico biodiversity museum that would travel to the people who stand to lose the most from the oil spill’s impacts, biodiversity loss and climate change.

Sean informed the overall design of the Crude Life exhibits, and also created many of the paintings viewers can see in the mobile museum. Sean was working on a John Erickson Museum of Art project, a location variable museum composed of aluminum



Close ups of some of the trunks. Photos by Paige Jarreau.

we take the museum out into the community, kids are using a microscope to visualize our specimens for the first time, and learning a new way of seeing the world. I think this is very important, especially in Louisiana, where we have substandard public science education statistics.”

Brandon hopes that Crude Life visitors walk away inspired, wanting to learn more. “We live in this incredibly biological diverse place, yet we know so little about it,” Brandon said. “I hope we can hook people, inspire them and make them care.”

Another mission of the Crude Life project is to empower citizens to take part in scientific research. For example, Brandon is collaborating with Louisiana fisherman and shrimpers to look for elusive marine species that haven’t been seen since the 2010 oil spill. Out of the original “Wanted” list of missing species,

two have been found with the help of citizen efforts, but Brandon hopes that others will get involved to look for the rest. Brandon plans to take the Crude Life mobile museum chests to Gulf of Mexico fishing rodeos and fishing competitions in the near future, to get more folks involved in looking for the missing species.

Individuals and organizations who want to get involved with the Crude Life can contact Brandon through his website, brandonballengee.com or at bballengee@lsu.edu. Citizens and kids who attend Crude Life events along the Gulf can help Chakrabarty and Ballengée’s team collect specimens, learn about the process of clearing and staining specimens for morphological analysis, and create art surrounding their experiences. Shrimpers and other fishing organizations can also get involved by contacting Ballengée about saving bycatch for identification of endemic species. Ballengée has a handout of 15 marine species that haven’t been seen since the spill, that fisherman and citizens can be on the lookout for.



Investigators:

Dr. Brandon Ballengée (PI, Louisiana State University)
Dr. Prosanta Chakrabarty (Co-PI, Louisiana State University)
 Sean Owen Miller (Co-PI, University of Florida)
 Rachel Mayeri (Co-PI, Harvey Mudd College)

Collaborators:

Dr. Suzanne Fredericq (University of Louisiana at Lafayette)
 Aurore Ballengée (Atelier de la Nature)
 Monique Michelle Verdin (My Louisiana Love)
 Dr. Benjamin Dubansky (University of Texas Denton)

Participants:

Senator Norbert ‘Norby’ Noltz Chabert (Louisiana State Senate)
 Cherri Foytlin (Bold Louisiana)
 Josh Baumgardener (Haliburton)
 Dr. Edward Chesney (Louisiana Universities Marine Consortium/ LUMCON)
 Dr. Alexander Kolker (Louisiana Universities Marine Consortium/ LUMCON)
 Dr. Linda Hooper Bui (Louisiana State University)
 Blaise Daniel Pezold (Louisiana Department of Agriculture and Forestry’s Coastal Re-Vegetation Project)
 Randon Dufrene (Tee Jug’s Shrimp Company)
 Bob Chateaulin (Private horticulturalist)
 Keith Broussard (Fish and Wildlife Manager of Cypremort State Park)
 Jonathan Foret (Executive Director South Louisiana Wetlands Discover Center)
Link Morgan (Louisiana State University)
 Members of the Pointe-Aux-Chenes Tribe
 + Students and residents of the Louisiana coast regions

Support Received:

Interdisciplinary Projects Grant Award, National Academies Keck Futures Initiative (NAKFI), a project of the National Academies of Sciences, Engineering and Medicine, Washington D.C.; Artspark Grant, Acadiana Center for the Arts (ACA) and Lafayette Economic Development Authority (LEDA), Lafayette, LA.; and University of Florida, Gainesville, FL.

OUTREACH ROUNDUP

DEAN'S CIRCLE DINNER



On October 13, we were invited to the Dean's Circle Dinner held at the Baton Rouge Hilton. We had specimens from our collections on display and were able to speak to College of Science donors about the amazing research happening at the LSUMNS. Thanks to **Dajia Collins** for helping out.

USFWS WILD THINGS



On October 14, we attended the 9th annual Wild Things event hosted by USFWS and LDWF in Lacombe, LA. We brought along some mammals, fish, amphibians, and reptiles to teach kids about biodiversity. Thanks to **Anna**

Cole for helping out.

GIRL SCOUTS B.I.G. EVENT



On October 21st, we participated in the Girl Scouts of Louisiana East B.I.G. (Believe in Girls) event in New Orleans, Louisiana. We had a specimen table filled with mammals, fish, amphibians, and reptiles, as well as information on

museum programs and field trips. Thanks to **Vivien Chua** for helping out!

WESTDALE MIDDLE STEM NIGHT



On December 7th, we attended Westdale Middle's STEM Night. We were able to show middle schoolers some cool animals and talk about biodiversity and conservation.

HALLOWEEN ART & NATURE FESTIVAL



On October 28th, we attended the Halloween Art & Nature Festival at Atelier de la Nature in Arnaudville, LA. We brought along some spooky specimens like an owl, bat, snakes, and creepy fish. The crude life trunks were also on display. Thanks to **Link**

Morgan & Prosanta Chakrabarty for helping with this event, and thanks to **Brandon Ballengée** for hosting.

OCEAN COMMOTION



On October 24, we once again participated in Ocean Commotion at the LSU PMAC. Our table entitled "Modern and Fossil Sea Monsters" featured bizarre fish, sea birds, a basilosaurus jaw cast and vertebra, and

the crude life trunks. Thanks to **Bill Ludt, AJ Turner, Brandon Ballengée, Matt Brady, Brian Magnier, Prosanta Chakrabarty, and Larry Bird** for helping out!

MASTER NATURALIST WORKSHOP



On December 2, we once again put on a workshop for the Louisiana Master Naturalists of Greater Baton Rouge about the importance and function of natural history museums. After an overview of the museum, participants went

on behind the scenes tours of the bird, mammal, fish, genetic resources, and amphibian & reptile collections to learn about how each collection operates and current research at the museum. Later, participants learned how we prep bird specimens. Thanks to **Steve Cardiff, Donna Dittmann, Jake Esselstyn, Prosanta Chakrabarty, and Zach Rodriguez** for helping out.

SPECIAL SATURDAYS



Into the Dark

LSUMNS graduate student **Pam Hart**, led a Special Saturdays all about adaptations to life in a cave. She spoke about how animals in caves usually rely on other senses to survive since eyesight is not as useful in the dark. We had many cave dwelling specimens on display including salamanders, fish, and bats. After the talk, participants participated in a sensory deprivation activity where they had to use their other senses to figure out objects, smells, sounds, and complete tasks. Thanks to **Anna Hiller, Fernando Alda, Larry Bird, Anna Cole, and Diego Elias** for helping out.

Is it Venomous?

LSUMNS graduate student **Zach Rodriguez** taught participants how to tell the difference between Louisiana's venomous and non-venomous snakes. The participants also got to view snake specimens up close as well as some other common amphibians and reptiles in Louisiana. Afterwards, the participants made their own venomous snake guides and accordion snakes. Thanks to **Ryan Burner, Glaucia Del-Rio, Jackson Roberts, Meg Roberts, Genevieve Mount, and Larry Bird** for helping out.

Traveling Near and Far

LSUMNS graduate student **Clare Brown** taught participants all about bird body forms and how they are adapted to their unique lifestyles. She covered things like covered wings, beaks, and feet and used specimens as real life examples. Afterwards, participants created their own birds where they had to decide on morphological characters to fit their bird's lifestyle. Thanks to **Jessie Salter** for helping out.

Insect Adaptations

For this event, we were joined by the LSU Department of Entomology. Madeleine Chura spoke to participants about some amazing adaptations of insects that live in extreme environments. The entomology club also brought along live insects for the kids to view and touch. Later, participants did an insect life cycle craft. Thanks to **Alexandra Haynes, Diego Elias, and Janie Braud** for helping out.

To register for a **Special Saturday** visit: <http://www.lsu.edu/mns/education/special-saturdays.php>

NIGHT AT THE MUSEUM



Mammals

On November 30, we hosted our 3rd Night at the Museum of the semester. LSUMNS Curator of Mammals, **Dr. Jake Esselstyn**, spoke to guests about convergent evolution in mammals. Graduate students **Varshith Chakrapani** and **Vivien Chua** presented tables that showed convergence between gliding mammals and also myrmecophagous (ant-eating mammals). Graduate student **Jon Nations** did a specimen prep demonstration on a squirrel. Later, Dr. Esselstyn gave behind the scenes tours of the mammal collection. All of the specimens on display are part of the LSUMNS research collections, which are used by scientists worldwide to learn about biodiversity, evolution, and conservation. Thanks to all who came out and special thanks to **Jackson Roberts** for filling in last minute!

UPCOMING OUTREACH EVENTS

March 3 - Special Saturdays - Amazing Reptiles
10am-12pm; Museum of Natural Science (Foster Hall)

March 9 - Girls Night at the Museum
Museum of Natural Science
For girls 4th-6th grade. (Applications closed)

March 10 - Rockin' at the Swamp
Bluebonnet Swamp; Baton Rouge, LA

April 5 - Night at the Museum - Amphibians & Reptiles
6pm-8pm; Museum of Natural Science (Foster Hall)

April 13 - Special Saturdays - Nemos & Dorys
10am-12pm; Museum of Natural Science (Foster Hall)

April 21 - BREC BioBlitz Biodiversity Fair
2pm-4pm; Greenwood Community Park; Baton Rouge, LA

April 22 - Earth Day
TBA

May 5 - Master Naturalists of Greater Baton Rouge Workshop
8am-2pm, Museum of Natural Science (Foster Hall)

For more information on outreach events and museum tours, contact **Valerie Derouen** vderou1@lsu.edu.

More photos from all of our outreach events can be found on our Facebook page.

MNS NEWS & UPDATES

O'Neill receives highest Linnean Society Honor

Huge congratulations to former LSUMNS director, **Dr. John O'Neill** who will receive the Eisenmann Medal from the Linnean Society in New York City. The Eisenmann Medal is the Linnean Society's highest award, given for "excellence in ornithology and encouragement of the amateur." He will be presented with the award at the society's annual meeting and dinner on March 13 and the talk will be given by LSUMNS Research Associate, **Daniel Lane**.



Johnson, Salter receive Mouw Awards

Congratulations to LSUMNS graduate students **Oscar Johnson** and **Jessie Salter** who received the 2016 and 2017 Mouw Awards respectively. The Mouw award recognizes the "enthusiasm, hard work, and promise of that student to be an outstanding scholar in avian biology." The award is worth \$200.



Outstanding Graduate Student - Glenn Seeholzer

Congratulations to recent LSUMNS ornithology graduate **Glenn Seeholzer** who received the 2017 Outstanding Graduate Student Award. Glenn is now a post-doctoral fellow with the American Museum of Natural History in New York City.



Chakrabarty named Senior TED Fellow

Congratulations to LSUMNS Curator of Ichthyology **Dr. Prosanta Chakrabarty** who was named one of the 10 2018 Senior TED Fellows.



Derouen receives Staff Outstanding Service Award

Congratulations to LSUMNS Outreach Coordinator **Valerie Derouen** who received the Staff Outstanding Service Award from the LSU Foundation.



New Student - Irene Martí

New PhD student from Spain joining the Saunders Lab in Anthropology.





March 2: Dr. Jason Bond, Auburn University

Title: "Using phylogenomics to deconstruct the spider tree of life"

March 9: Dr. Ingo Schlupp, University of Oklahoma

Title: "Ecology and Evolution in Livebearing Fishes: A drama in several acts"

March 16: Dr. Scott Taylor, University of Colorado Boulder

Title: "Insights from avian hybrid zones into the origin and maintenance of biodiversity"

March 23: Dr. Jordan Karubian, Tulane University

Title: "Proximate and ultimate perspectives of phenotypic integration in *Malurus* fairywrens"

March 30: No Seminar - Spring Break

April 6: Dr. Jeff Lozier, University of Alabama

Title: "Buzzing Through a Complex World: Population genomics of bumble bees across heterogeneous landscapes"

April 13: Therese Lamperty, Rice University

Title: "Impacts of defaunation on invertebrate communities and ecosystem processes"

April 20: Dr. Gregg Gorton, Temple University

Title: "Ted Parker: A snapshot of his life and work"

April 27: Dr. Kevin McCracken, University of Miami

Title: "Genetic adaptation and phenotypic plasticity in Andean ducks, with insights into how long it takes to evolve a predictable high-altitude phenotype (or not)."

2017 LSUMNS Publications

- Alda, F.**, Adams, A.J.f, McMillan, W.O., **Chakrabarty, P.** 2017. Complete mitochondrial genomes of three Neotropical sleeper gobies: *Eleotris amblyopsis*, *Eleotris picta* and *Hemieleotris latifasciata* (Gobiiformes: Eleotridae). *Mitochondrial DNA Part B: Resources* 2: 747-750.
- Barley, A.J., **J.M. Brown**, and R.C. Thomson. 2017. Impact of model violations on the inference of species boundaries under the multispecies coalescent. *Systematic Biology*. In Press. <https://doi.org/10.1093/sysbio/syx073>
- Branstetter, MG, A Ješovnik, J Sosa-Calvo, M Lloyd, **BC Faircloth**, S Brady, T Schultz. Dry habitats were crucibles of domestication in the evolution of agriculture in ants. *Proc Roy Soc B* 284:20170095. pmid: 28404776 doi: 10.1098/rspb.2017.0095.
- Branstetter, MG, BN Danforth, JP Pitts, **BC Faircloth**, PS Ward, ML Buffington, MW Gates, RR Kula, SG Brady. Phylogenomic Insights into the evolution of stinging wasps and the origins of ants and bees. *Curr Biol* 27:1019-1025. pmid: 28376325 doi: 10.1016/j.cub.2017.03.027.
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- Brown, J.M.** and R.C. Thomson. 2017. Bayes factors unmask highly variable information content, bias, and extreme influence in phylogenomic analyses. *Systematic Biology*. 66: 517-530.
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Letter from the Director continued...

Ironically, despite what Dr. O'Neill called his "frightening" amount of knowledge and his productive research and publishing, as well as his freely spinning off research ideas that led to more than two dozen of his graduate student friends' advanced degrees, it was not until after his death that he finally achieved doctoral level distinction (Honorary Doctorate from LSU in 1993). His sense of urgency to save "what's left of the Neotropics" left him uninterested in spending precious time doing classwork, which he said "got in the way of his field education." In 1984, the LSU Museum of Natural Science promoted Ted to Staff Research Associate, a position he maintained for the rest of his life.

A paramount product of Parker's passion for Neotropical birds was the monumental volume *Birds of Peru* (Princeton, 2007), published thirty-three years after Dr. O'Neill and he first conceived the idea. The Preface to the book says "Ted was an extraordinary field biologist, gifted with remarkable talents of observation, memory, and synthesis. He quickly established himself as one of the premier ornithologists working in South America.... Directly or indirectly, he influenced several generations of ornithologists working in Peru, including all of the coauthors of this guide."

Bird taxa named for Ted Parker, some described before his death, and some included in a 937-page festschrift tome entitled *Studies in Neotropical Ornithology Honoring Ted Parker*, released in 1997 (American

Ornithologists Union Monograph No. 48), include nine bird species: *Glaucidium parkeri* (Subtropical Pygmy-owl), *Herpsilochmus parkeri* (Ash-throated Antwren), *Scytalopus parkeri* (Chusquea Tapaculo), *Phylloscartes parkeri* (Cinnamon-faced Tyrannulet), *Cranioleuca vulpecula* (Parker's Spinetail), *Cercomacra parkeri* (Parker's Antbird), *Parkerthraustes humeralis* (Yellow-shouldered Grosbeak), *Phainoptila melanoxantha parkeri* (Black-and-Yellow Silky Flycatcher), *Metallura theresiae parkeri* (Coppery Metaltail), as well as *Erwiniana parkeri* and *Erwiniana nonparkeri* (related species of Ted's Arboreal Carabid Beetle), and *Furnariphilus parkeri* (a species of chewing bird louse).

When his Doctor of Science degree was conferred posthumously by the President and Chancellor of LSU on December 17, 1993, the award statement read "In recognition of his acknowledged authority in the field of Neotropical birds, his uncanny ability to discover and rediscover species of birds, his unparalleled contributions to the field of ornithology, and the honor and distinction he has brought to his profession and this University."

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