

# QUARTERLY NEWSLETTER

**LSU**

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Black-headed Night Monkey (*Aotus nigriceps*) | Rondonia, Brazil  
Photo by LSUMNS graduate student Marco Rego



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*Letter from the Director...*



**On Rensen's retirement**

As an undergrad at LSU in the 1980s, I stumbled into the Museum's heralded ornithology program when Gene Beckham recommended I take Van Rensen's Ornithology course (BIOL 4142). Rensen's encyclopedic knowledge of birds flowed through his lectures. To inspire my independent research project, Rensen opened a tray of drably plumaged wren specimens from the Andes and suggested that what was currently considered one species (*Cinnycerthia peruana*) could actually be three. I was hooked, and under Rensen's patient guidance the results of that ornithology project eventually became my first peer-reviewed publication.

Rensen's stellar academic career in ornithology is chronicled in the scientific papers and book chapters he published, the exponential growth in the quantity and quality of the bird collection he curated (now the third largest university-based collection and one of the most rapidly growing as it approaches 200,000 specimens), the culture of discovery, critical thinking, and scholarship he cultivated at the Museum, and the legions of graduate students and undergraduates he mentored at LSU, many of whom now hold curatorships and professorships at other great institutions. Rensen's scholarly achievements were formally recognized by the 2013 Brewster's Medal, the highest award given by the American Ornithologists' Union.



Van Rensen in 1978 when he started at the LSUMNS. Photo by Bill Eley.

There is a distinctive aspect of Remsen's career that falls outside the bean-counting metrics of publications and grants by which we academics are mostly measured – his direct investment in Louisiana and its citizens. Throughout his career at LSU, Remsen has always considered himself and the Museum to be a resource for the citizens of Louisiana. Remsen invented the popular LABIRD birding listserv, and serves as the state reviewer for eBird. Beyond the care he took delivering quality education to the Museum's graduate and undergraduate students, Remsen invested the time to foster deep and lasting connections between ornithology at the Museum and Louisiana's talented birding and natural history community. These connections have led to a deeper understanding of Louisiana's bird populations, one outcome of which is the Louisiana Bird Atlas, a brainchild of Remsen that harnessed the birding talents of both citizen scientists and scientists to document where Louisiana's bird species occur (all of them) during the breeding and winter months (soon to be published by LSU Press). This landmark study addresses historical changes in Louisiana's remarkable bird diversity, and will serve as the benchmark against which future changes can be addressed.

The priceless research collections of the Museum form its bedrock, and Remsen's dedication and advocacy for collections-based research have contributed greatly to the Museum's prosperity. If you've ever had the opportunity to receive a tour of the bird collection from Remsen, then you know it's an unforgettable experience. Over the years he has given hundreds of bird collection tours to all sorts of audiences, including Louisiana K-12 teachers, Louisiana legislators, Louisiana birders, LSU administrators, and to Museum alumni and friends. Intertwined with mesmerizing stories of sword-billed hummingbirds and army ant-following antbirds are facts about the collection's value in making new discoveries, in training the next generation of biodiversity scientists, and in making LSU one of the world's leaders in ornithology. These are simple facts of which Louisianans and LSU can be proud.

Remsen's retirement leaves some very big shoes to fill, but he and the rest of the Museum look forward to the next chapter as we begin the search this Fall for a new Curator of Birds.



Chestnut-bellied Cotinga (*Doliornis remseni*) at Páramo Quilinsayaco, Putumayo, Colombia. Photo by Jorge Muñoz García.





# Joint Mammalogy and Ornithology Expedition to Sumatra

by Jonathan Nations

Sumatra is a large, elongate island that stretches from 6° North to 6° South in Indonesia, with its eastern coast facing the Malay Peninsula and its west coast opening to the vast Indian Ocean. A ridge of mountains runs some 1500 km north to south along its western coast, where 34 volcanos—many quite active—rise to over 3000 meters. On these peaks, the warm, humid lowland air cools to create the eternal rains that give rise to biologically diverse cloud forests. These are the forests that make Sumatra famous amongst naturalists: tigers, tapirs, cloud leopards, sun bears, and orangutans still make their homes there.

In March of 2018, I joined five other LSU graduate students on a historic collecting trip to Mount Talamau in West Sumatra. Our team included ornithologists **Subir Shakya**, **Oscar Johnson**, and **Matt Brady**, mammalogists **Heru Handika** and myself, three researchers from the Indonesian National Museum, and three students from Andalas University.

This trip was special for several reasons: first,

museum collecting in Sumatra has been sparse. Several surveys in the 1910's described amazing diversity in both birds and mammals, including many species similar to, but not the same as, ones known from Borneo and Java. Since then, little has been done. To put this paucity of sampling into context, until this trip there were no tissue samples of montane Sumatran birds housed in *any* natural history museum. Second, Mount Talamau is an isolated volcano (3000 m) within the larger central Sumatran range. Above 1200 meters, it has largely avoided agricultural development, and it receives relatively few visitors. Finally, this trip represented the first joint ornithology and mammalogy collecting trip for LSUMNS in the Eastern Hemisphere.

Large trips involve complex logistics. We spent a week in Padang, a large coastal city in West Sumatra, gathering supplies and organizing vehicles and guides. Fortunately, Padang is the hometown of new LSUMNS student Heru Handika, and also the home of Heru's alma mater, Andalas University. Andalas has a strong field-biology program, and its experienced



**From top to bottom:** Chestnut-capped Laughingthrush, *Garrulax mitratus*, Mount Talamau; Snowy-browed Flycatcher, *Ficedula hyperythra* (Photos by Oscar Johnson); A woolly rat in the genus *Sundamys* found at the summit of Mount Talamau (Photo by Heru Handika); An unusual, unidentifiable snake in the genus *Xenophidion*, Mount Talamau (Photo by Matt Brady).

students provided essential help with both logistics and field work. They also knew the best spots to sample Padang's famous cuisine, providing a delicious conclusion to long days of planning. At the end of the week, we gathered 11 people and nearly a ton of gear onto a bus and headed towards Mt Talamau.

At the base of the mountain we were welcomed by the lovely village of Lubuk Landua, where a local environmental director helped us organize transportation and porters. We hiked up through corn fields and palm oil plantations, and then into the upper lowland forest where we pitched our first camp at 1100 meters. There, we set our mistnets and traplines. In the lower elevations of Sumatra many species have large ranges and are found in Java, Borneo, Sumatra, and Peninsular Malaysia, also known as the Sunda Shelf. We have collected many of these widespread mammal species in the past, from either Java or Borneo, but we did not yet have Sumatran representatives of species such as the rats *Maxomys surifer* and *Leopoldamys sabanus*; several shrew species; and the curious little gymnure *Hylomys parvus*. Similarly, we collected several species of birds, such as Short-tailed Babbler *Pellorneum malaccense*, Gray-throated Babbler *Stachyris nigriceps*, Eye-browed Wren-Babbler *Napothera epilepida*, and the Chestnut-winged Babbler *Cyanoderma erythropterum*, that have congeners in the other Indonesian islands and hence could be used for comparative studies. We also collected the first tissue samples of several species of birds like Rufous-browed Flycatcher *Anthipes solitarius*, Cream-striped Bulbul

*Pycnonotus leucogrammicus*, Spot-necked Babbler *Stachyris striatalata*, etc. Perhaps the biggest surprise came about when Andri Saputra, an Andalas University undergraduate, along with Oscar Johnson and Matt Brady encountered a snake species that may be an undescribed taxon. We were only able to gauge the significance of the snake when we posted it on iNaturalist (an open access biodiversity picture inventory) where it was identified, by pictures, as a potential new taxon.

After eight days, we moved up the mountain to our second camp, at 1600 meters. Just a few hundred meters below the true cloud forests, this camp was beautiful, but came with challenges. Rain was frequent, and the terrain was steep. These challenges worked synergistically, and resulted in frequent re-leveling of tent sites, wet pens, and soggy clothes, heavy with mud. But the elevation was good, and allowed us to extend traplines and nets from 1400 to 2000 meters. Here there were more montane endemics, such as *Maxomys hylomyoides*, the shrew-like *Mus crociduroides*, and several small chipmunk-sized squirrels. Larger mammals were present as well, with Siamangs, *Symphalangus syndactylus*, swinging and calling all around the forest, and a surprising number of Sumatran Mountain Muntjac, *Muntiacus montanus*, barking and wandering around camp. A couple of noteworthy



Montane camp at 1600 meters, shrouded in fog, Mount Talamau. Photo by Heru Handika.





**Above:** The summit of Mount Talamau at sunset, looking North West over the Indian Ocean. **Title Photo:** The summit of Mount Talamau, with the tarp over the mammalogists camp visible in the lower left. Photos by Heru Handika.

birds that could be included in comparative studies with Bornean taxa included Sumatran Drongo *Dicrurus sumatranus*, Shiny Whistling-Thrush *Myophonus melanurus*, and White-throated Fantail *Rhipidura albicollis*. Even though we were at 1600 meters, the trees were still tall enough that many of the common birds were beyond the reach of our mistnets.

After a few days, we parted ways with the ornithologists and climbed the remaining 1200 meters to the crater lakes, just below the summit, where we set our final camp. We spent five days collecting in an amazing habitat that felt surprisingly similar to the marshy tundras of Alaska, where I worked as an undergraduate. There, we collected four species of mammals, including one, *Rattus korinchi*, that has not been collected since 1914. It turns out that this poorly known Sumatran endemic was fairly easy to capture; they invaded our camp every night in search of food! We also collected a soft-furred rat we believe to be in the genus *Sundamys*. However, the only *Sundamys* known from Sumatra is reportedly a lowland species. The animal we encountered was certainly not lowland. In fact, Heru trapped one at the pinnacle of the mountain, at 2911 meters!

All in all, the expedition was a great success, with 76 species of birds collected, and 450 individual mammals representing 31 species. Despite the challenges—of 51 days in the field it rained on 47—we were able to put together a fruitful trip on a wild and understudied mountain. This was largely due to the exceptional support and assistance we received from the Andalas University students and the residents of Lubuk Landua who dedicated countless hours to the success of the trip.

The previous survey of Mt. Talamau was in 1916, when Indonesia was still under Dutch colonialism. Much has changed in the past 100 years, and now this important and successful re-survey was largely run by local students and organizers. All of us feel very fortunate to have been a part of it.





# Ichthyological Adventures in the Boiling River of Peru

by Dr. Prosanta Chakrabarty

August 2018 was my tenth anniversary at LSU, and in that time I've been on nearly twenty expeditions in Asia, Africa and the Neotropics – but never Peru. Frequent readers of the LSUMNS Newsletter know that the Museum always has someone in Peru; it often seems that there are more folks from the Museum in Peru than in Baton Rouge. It was finally my time to see what the fuss was all about.

I was invited to go to Peru, and specifically to the Boiling River, by Andrés Ruzo a PhD Candidate at Southern Methodist University in Dallas, he is also a Peruvian and a National Geographic Explorer. Andrés has written a book and given a TED talk on his discoveries from this important and unique river: I highly recommend them both. Andrés has an infectious energy and that is a large part of why I wanted to go on this trip. He and I talked at the TED conference this last April and he showed me pictures of some fishes that he had photographed from the Boiling River. He showed me a picture of what he called a “suckerfish,” I told him that the spikey-faced catfish in his picture was from the genus *Ancistrus*. We realized then that that I might actually be helpful if I brought some biological expertise to his geological mystery.

The region Andrés was targeting had not been previously sampled by any ichthyologist, in fact, before Andrés recognized the scientific importance of this area a few years ago, no scientists had collected in this area - period. Given its unique ecology and geology I thought the Boiling River would be an excellent opportunity to discover new species; partic-

ularly as it is part of the super diverse Amazon basin (home to more than 3000 fish species).

The Boiling River runs through a small Peruvian shamanic village called Mayantuyacu and has the traditional name Shanay-Timpishka (or ‘Boiled by the heat of the Sun’ River). It took a plane ride from Lima to Pucallpa and then another few hours of off road driving in Toyota Hiluxes to get to the remote village. As we approached the village you started feeling a strange heat and could see steam rising above the tree tops well before you laid eyes on the river.

As you would guess this river gets very hot, so much so that there are no fishes in the areas that get the hottest. (Notably, Andrés has found some interesting non-vertebrate extremophiles living in the hottest sections.) So why would an ichthyologist go where there are no fishes? Well, the hottest sections are very hot, but it wasn't continuously hot throughout the river; so, I was curious how fishes got into the areas that are cooler, between geothermal pockets. Also, I wondered if there were fishes trapped in cooler pools of water adjacent to the main river.

According to Andrés the Boiling River is the world's largest known thermal river, flowing hot for 6.24 km (of the 9km system) and reaching max widths and depths of 25 meters and 4.5 meters. It is also uniquely the only thermal river that is non-volcanic (the nearest volcano is over 700 kilometers away). Besides the geological work Andrés was also there to raise awareness about the destruction happening





A bristlenose catfish from the Boiling River.

to the surrounding region, which was losing rainforest at a rate of about half a soccer field a minute. Andrés's field team included his father, other folks from National Geographic, schoolteachers, students, a social media guru and a chaperone. If you think that sounds like a pretty novice crew let me tell you they were not. The two high school students in particular, both 17 were absolutely brilliant – one was an excellent drone flyer, GIS guru and mapper (McClain) and the other (Kyle) earned more than his keep with his card tricks and water quality testers (that he engineered himself - including the welding and programming). I was flabbergasted that Andrés's team was able to 3D model the region based on the drone and water data, all while we were still in the field. I was also amazed at how everyone got along so easily. Even after long days of hiking and bruising climbs everyone stayed cheerful despite sometimes less than agreeable conditions (bugs, heat, lost drones, no electricity, etc.).

Our accommodations were in a little village famous for its use of medicinal plants. We had no electricity most of the day and the food was purposefully bland as many people were avoiding salt, caffeine and other foods that might interfere with the medicines. The water we drank came straight from the river, and I would wake up each morning and bring a cup and tea bag straight to the river each morning. It was unbelievable how hot the water was – especially given how fast it flowed. The amount of energy needed to heat that much water that quickly must be absolutely massive. The steam coming off the river produced a lovely ghostly cover around us, at times it was indescribable dense, a thick warm fog that could

obscure the fingers in front of your face. My first field site was a bit downstream from the hottest part of the river itself – I knew there were no fish there, but recording the absence of fish in my fieldnotes could be a valuable data point in the future. Perhaps if the oil companies in the adjacent region, or even the Peruvian government have their way, this area may be flooded by damming or other anthropogenic influences. Perhaps then the Boiling River will have fish in it, and I wanted to be able to say I sampled it before any of that happened – hoping it never does. Throwing a castnet into the waters I had to be very careful not to have it snag; going into the water to untangle a net in near-boiling temperatures was not going to happen. As I pulled it back out of the water, predictably empty, some water splashed on my leg and it stung for the rest of the day. Walking along the river, sometimes over wet rocks at night, we had to be weary of the river's power - falling in could mean severe burns, or worse.

We sampled each day in different parts of the river, moving upstream as far as we could go, which also meant a great deal of hiking. Much of my catch was in dipnets (small handheld nets) and castnets, as much of the collecting had to be done adjacent to the river in little pools of water, rather than the Boiling River itself. I also collected along the Pachitea, the major drainage near by. Which besides the Boiling River also led to the mouth of the 'Salt River' (which had high salt content despite being far from the ocean) and the 'Hot River' (which was warm, but far cooler than the Boiling River).

I was upset when I woke up early one morning to hear rain - a tremendous amount of rain. I had hoped to have had a full day of collecting, but I knew the four inches of rain we would ultimately get that day would prevent that from happening. One notable thing I discovered was that the rain had made the Boiling River much more hospitable – so much so that you could swim in it, and we did. The river, instead of being the clear steamy steady stream it usually was had become a Willy Wonka-esque muddy hot chocolate stream with an incredibly fast flow; far too fast to throw a net into. On that rainy morning I felt like we were given a one-day pass to experience the river without its power – I also feared that this chocolate version of the river might be the future if damming and river diversions upstream every happened. I also thought: 'so this was obviously how fishes and other





A *Bujurquina* cichlid.

animals could get upstream to cooler areas of the river.' Mystery solved – sort of. Despite the fast flow, the fishes I saw in the previous days could likely move upstream in those conditions. What remains unclear is how they would get above some of the more physically complex areas that are only accessible by going up waterfalls and up vertical cliffs.

One notable catch was a small fish in the genus *Rivulus* that I caught serendipitously. I found it only after one of the members of the team slipped and fell into a little puddle of water between some rocks high above the river. I stuck my dipnet in the puddle and found this little fish. I was unable to ID it to species, so it may represent something new. After the rains, I went back to the same locality and found that the water trickled down from rocks above which I climbed. There was a steady flow of water from an area that seemed independent of the Boiling River (now named the Sheripiari's – N – Creek by Andrés), and because of the additional rain the pools up the rocks were now connected by a small cascade of water. I collected two more specimens of the *Rivulus*. Even further upstream as far as we could go is a large pool of water where we collected more catfishes but also beautiful cichlids in the genus *Bujurquina* – I was very surprised to see these cichlids so high up the path. These cichlids attach their eggs to loose leaves that are then guarded by both parents; once the eggs develop a bit more they are taken into the parents' mouths for further development. These fish most likely got here during the rainy season, when more of this area is flooded, and the water cooler.

I left the Boiling River with more questions than answers. We also left on foot, because even the mighty Hiluxes could not go up the now muddied post-rain paths. The path back to the main Pachitea River was one that I dreaded as we had walked it several times. In full sunlight with all your field gear (including a bucket of dead fish in formalin) it was not the easiest exit, in fact it had been one of the hardest walks I've ever done (particularly the time when returning from a full day of collecting we had all run out of water and were utterly dehydrated). Nevertheless I knew if the village wasn't so remote the fishes probably wouldn't be that interesting. Being remote protected this land, but it grows less and less remote each day. From when Andrés first started coming here to today the surrounding forests are being decimated for logging and for other commercial interests. We saw and heard illegal logging, and with 'economic progress' the river will become less and less protected. I know that unlike our team, who had asked the Shaman permission to collect and study the river, others might not be so willing to seek approval from the local indigenous people. I hope to see the Boiling River again one day, to feel its strange heat, and to study its mysterious fishes once more. I hope on my return others will have learned from Andrés and others just how special this area is, and how worthy it is of preservation and protection.



Standing in the Boiling River, after it was cooled by rains.



# LOS Field Trip Series

by Steve Cardiff & Donna Dittmann

## CAJUN PRAIRIE FALL SHOREBIRD ID 21 July 2018

As part of the new Louisiana Ornithological Society “field trip series,” Collection Managers **Steve Cardiff** (also LOS President) and **Donna Dittmann** (also LOS News Editor) led ten LOS members on this summer trip in search of early southbound migrant shorebirds on 21 July 2018. Most of the morning was spent at an excellent set of drawn-down crawfish impoundments in Vermilion Parish that hosted almost 2000 individual shorebirds of 17 species. The group methodically worked through identifying and comparing the shorebird species and plumages. Highlights included three Willets, a Wilson’s Phalarope, and bonus Wood Storks and very early Franklin’s Gull. After a quick stop in Kaplan we headed west to Jefferson Davis Parish in search of other suitable shorebird fields. Suitable shallowly flooded/muddy fields can be difficult to find at this time of the year, but were lucky enough to find another set of crawfish ponds with large concentrations of shorebirds.

There we added shorebird species #18, a rare-for-the-season (adult breeding plumage, likely summering) Dunlin. Moving even farther west near Lacassine Bayou, additional good fields yielded numbers of Black-bellied and Fulvous whistling-ducks, more Wood Storks, and a smattering of various shorebirds. By now it was getting late but the participants wanted to push onward. So, we gambled on adding a few more shorebird species and dashed north to the Turf Grass Road area. Unfortunately, the grassy plain was covered with Laughing Gulls instead of “grasspipers,” and we had to be content with 18 species (and about 4000 individuals) of shorebirds.

### EBird checklists from this trip:

Vincent Mini-Refuge: <https://ebird.org/view/checklist/S47370922>

Thornwell area: <https://ebird.org/view/checklist/S47403694>;

Turf Grass Road and vicinity: <https://ebird.org/view/checklist/S47404210>

## WEST TEXAS 21-26 August 2018

Also part of the new Louisiana Ornithological Society field trip series offerings, Collection Managers Steve Cardiff and Donna Dittmann guided an LOS group to far West Texas to participate in the Davis Mountains Hummingbird Celebration (DMHC) festival. Steve and Donna also volunteered as leaders for various festival field trips and presented two hummingbird identification programs for the DMHC.

The LOS trip began in Texas early on the 21st at the Medina County Regional Park in Castroville (near San Antonio) where the group successfully searched for Green Kingfishers along the Montezuma bald cypress-lined Medina River. Castroville’s lo-



LOS group sets up their telescopes to study shorebirds at a set of crawfish ponds in Vermilion Parish. Photo by Donna L. Dittmann.





**Left:** Part of the LOS group starting their outing on Boy Scout Road, Jeff Davis Co., Texas. Photo by Donna L. Dittmann.

**Right:** Group photo at Camp Holland during the Miller Ranch field trip. Photo by Steven W. Cardiff.



cation is very interesting ornithologically, with a mix of eastern and western bird species (eBird: <https://ebird.org/view/checklist/S48325514>). By mid-morning we resumed the long trek west towards Fort Davis on old Highway 90. In the mid-afternoon leaders and participants took a breather and birded the Marathon area, visiting Gage Gardens (eBird: <https://ebird.org/view/checklist/S48325512>) and Fort Peña Colorado Park (“Post Park”: <https://ebird.org/view/checklist/S48325506>). Everyone got settled in to their accommodations in the Fort Davis area on Tuesday night, and then on Wednesday the group birded areas of Jeff Davis County including Ranch Road 1832 (“Boy Scout Road”) (eBird: <https://ebird.org/view/checklist/S48315841>) and the Davis Mountains Resort (eBird: <https://ebird.org/view/checklist/S48133029>).

The DMHC officially kicked off on Thursday with registration and seminars, including a Cardiff/Dittmann presentation on West Texas Hummingbird ID. Friday through Sunday, Steve and Donna assisted with ½ day field trips, each day to a different location (eBird: <https://ebird.org/view/checklist/S48132512>, <https://ebird.org/view/checklist/S48132517>, <https://ebird.org/view/checklist/S48132520>, <https://ebird.org/view/checklist/S48399927>), and a bonus afternoon trip on Sunday. We also presented our talk for a second time on Friday afternoon. The festival wrapped up with eight species of hummingbirds including Rivoli’s and Lucifer. The festival is a fun event: visit their Facebook page: <https://www.facebook.com/DavisMountainsHummingbirdCelebration/>.

Donna again entered the DMHC Jeff Davis County Library Art Show, where she won first place in

the Fine Art category for her entry of a mixed media composition of a Lucifer Hummingbird. She also won first place in this category in 2017.

This trip also supported the LSUMNS bird and mammal collections through retrieval of salvaged specimens from the local LSUMNS subpermittee network.



Photo by Donna showing her blue ribbon and winning entry of a Lucifer Hummingbird.





# Very Curious

*Originally published by the LSU Foundation in Cornerstone Summer and Fall 2018*

**For more than 30 years, Dr. James “Jim” Bishop (Science, ’74) has consistently supported the LSU College of Science, LSU Museum of Natural Science and LSU Libraries, even as his career as a research scientist took him across the world. His gifts to the museum’s Alfred L. Gardner and Mark S. Hafner Mammalogy Fund will help the curator of mammalogy and his students reach their full potential out in the field.**

“What makes the MNS collection so valuable is that the specimens are data-rich, with representative tissues, stomach contents and often, for birds, voice recordings. This information is essential to our understanding of pristine environments and how they change from human-induced impacts,” Bishop said. “In spite of all the advances in technology, there is no substitute for field work. The world remains a very curious place, and documenting its biodiversity in a responsible manner is important for society.”

Bishop’s primary research interest is assessing and managing renewable coastal marine resources, particularly shrimp and fish. As a marine science PhD candidate at LSU, Bishop met **Dr. George Lowery**, the founder of the MNS, during regular visits to the museum.

“Dr. Lowery always made the time to show me around the bird range where the specimens are housed. On one occasion, I was able to witness the arrival and unpacking of a new shipment of material from Peru,” remembered Bishop. “His excitement during the unpacking of the specimens was infec-

tious. He passed on stories attached to particular bird specimens, and that brought the specimen to life. Those visits sealed my long-standing relationship with the museum that continues today.”

Originally from Hammond, La., Bishop has worked at the Kuwait Institute for Scientific Research since 1983, serving as the leader or primary principal investigator for 20 projects totaling nearly \$8 million. One of his most recent and memorable projects involved surveying Kuwait’s intertidal macrofauna. With the assistance of international taxonomists, he and his team identified more than 750 species, many of which were new records for Kuwait and the Persian Gulf, and quite a few new to science.

Bishop and wife Virginia Bunker have visited more than 39 countries during their time in Kuwait, where they are centrally positioned for travel across Asia, Africa and Europe. Their adventures together include visiting Rwanda’s mountain gorillas, rafting down the longest river in Asia, swimming with whale sharks in Tanzania and hiking to elevations of 15,500 feet in the Himalaya Mountains.

This year, Bishop and Bunker will move back to the U.S. to enjoy their retirement. Bishop plans “to organize our collection of traditional textiles and other artifacts acquired over the years, continue to travel, hunt all six subspecies of wild turkeys, eat oysters on the half-shell and softshell crabs as often as possible, and spend time at our little cottage in Wales, U.K.”





# Paleontology News

by Lorene Smith



Phyllis Weiland and Robert Garcia of New Mexico visited the LSUMNS Invertebrate Paleontology and Vertebrate Paleontology Collections earlier this year. Prior to her visit, Ms. Weiland, an LSU alumna, had made arrangements with collections manager **Lorene Smith** to donate the shell collection of her late mother, Ms. Alistine Simmons. The collection includes small mollusks from Gulf coastal states, as well as beaches of the Pacific and Atlantic. Many of the specimens will be catalogued with the Recent Mollusk Collection in the section of Fossil Protists and Invertebrates.



**Left:** Visitors Phyllis Weiland and Robert Garcia enjoyed seeing the fossilized whale skull, courtesy of VP collections manager **Dr. Suyin Ting**. The basilosaur, a whale from the Late Eocene (approximately 35 million years ago) was collected in 1980 at Montgomery Landing, Louisiana, by a team led by **Dr. Judith Schiebout**.

**Right:** Several species of limpet from various localities (Simmons Shell Collection). Scale bar = 1 cm.

**Title Photo:** *Vermicularia* sp., a wormsnail from Florida (Simmons Shell Collection). Scale bar = 1 cm.

Photos by Lorene Smith



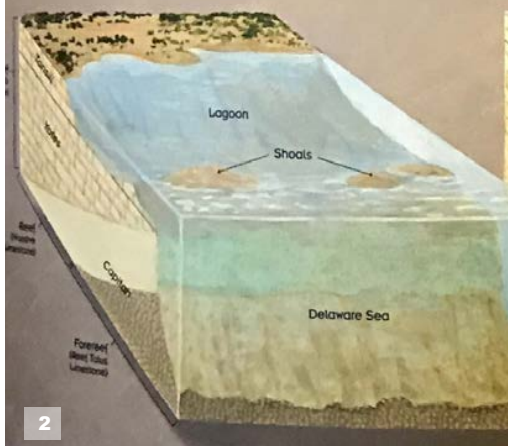
# The Permian Basin Field Trip

Sophie Warny<sup>1</sup> and Philip Bart<sup>2</sup>,  
Associate Professors<sup>1,2</sup>, Department of Geology and Geophysics, and Curator<sup>1</sup>, Museum of Natural Science, LSU

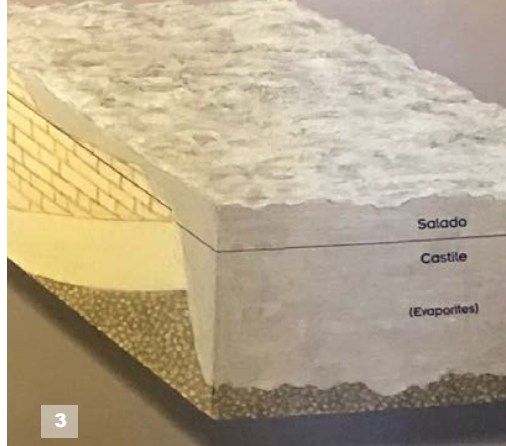
1

Thanks to industry donations to the LSU Department of Geology and Geophysics Applied Depositional Geosystems and funds from the American Association of Stratigraphic Palynologists Chair, 15 graduate students had the opportunity to go on a five-day field trip to the Permian Basin of West Texas and Southern New Mexico. The field trip was a joint project of GEOL 7900 Permian Basin (Warny) and GEOL 7061 Sequence Stratigraphy (Bart) classes and combined the paleontological and sequence stratigraphic expertise of both faculty. The trip was designed to look at various Permian outcrops in the Guadalupe Mountain National Park (GMNP), the Carlsbad Caverns National Park (CCNP), and the surrounding areas. We are grateful for both parks for granting educational fee waivers. Outcrops visited include Permian deep basin deposits, Capitan shelf margin carbonates, reef deposits, back reef environment and the evaporate deposits that filled the basin by the latest Permian. The cave at CCNP that formed after the basin was uplifted gave the group a chance to walk “inside” the reef deposits. The following pages are a summary of some of the outcrops visited, from the deep basin to the back reef environment, in geological order.

## The Permian deposits: sediments and fossils



## The end of Permian: evaporite deposits (Castille fm)



## Today: the caverns - a story of uplift, dissolution, speleothems



**Captions:** 1. Sunset view over what was formerly a coastline of the Delaware Basin during the Permian Period (viewed from Carlsbad Caverns visitor center). 2-4. Block diagrams from the exhibits at the CCNP showing the map and cross section views of the northern end of the Delaware Basin as it evolved through time. In the late Permian, shallow lagoons were fronted by shoals on the outer margin adjacent to the Capitan reef at the platform margin that transitioned to a steep fore-reef slope (2). At the end of the Permian, the evaporites filled the shoaling Delaware Basin as a result of restricted connection to the global ocean during an interval of relatively low sea level (3), and today (4) after the Permian basin was uplifted, the exposures partly eroded and the caverns formed. The field trip was designed to look at the deposits from these three stages. All photos are from Warny unless photo credits (PC) are otherwise indicated.



The following information is taken from the Guide to the Permian Reef Geology Trail by Bebout, Kerans and Harris (available online at [www.nps.gov](http://www.nps.gov)).

The Permian Reef Geology Trail in the McKittrick Canyon, Guadalupe Mountains National Park, traverses 610 vertical meters (2,000 ft, or 1,520 to 2,130 m [5,000 to 7,000 ft] topographic elevation) of Permian (upper Guadalupian) sediment facies through one of the world's finest exposed examples of a rimmed carbonate platform margin. The present-day topography approximates that originally formed by the Capitan reef along the edge of the Delaware Basin. Encouraged by geologists from geological societies, universities, the petroleum industry, and the U.S. Geological Survey, the U.S. National Park Service constructed the Permian Reef Geology Trail in the early 1980's to provide better access to the depositional facies and diagenetic features of this shelf margin.

The Capitan reef and its associated upper Guadalupian carbonate platform define the margin of the Delaware Basin of West Texas and New Mexico. Most of the reef that rims the Delaware Basin is buried; however, Basin and Range-related tilted fault blocks in the Guadalupe, Apache, and Glass Mountains provide Capitan reef outcrops along parts of the western and southern sides of the basin. The Guadalupe Mountains exposures are the most accessible.

The west flank of the southern Guadalupe Mountains is a fault scarp that exposes the reef and its basin equivalents in cross section view more than 300 m (>1,000 ft) in the vertical dimension and several miles in the dip dimension.

The east side represents an erosionally modified depositional profile of the shelf-to-basin system that was exhumed during late Cenozoic uplift of the Mountains. Canyons, such as McKittrick Canyon, that cut into the platform give access to cross-sectional views. South of McKittrick Canyon, topset beds are largely eroded; north of McKittrick Canyon, most canyons do not incise deeply enough to expose bottomset beds. However, McKittrick Canyon exposes nearly the complete platform and basin cross section.



**Captions: 5. View of the southern-most peak of the Permian reef, named El Capitan. This is the best view driving from Van Horn, TX towards the GMNP (PC Oscar Molina). 6. Outcrop showing the contact between deposits of toe-of-slope in the deep basin. The section contains debris flows and other mass flows intercalated with carbonate deep deposits (PC Joseph Honings). 7. Group looking at the first slope deposits in the GMNP McKittrick Canyon Permian Trail.**





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Captions: 8. View of the slope and reef deposits in the Permian Reef Trail (PRT) in the McKittrick Canyon (PC Oscar Molina). 9. Hiking towards stop 4 of the PRT. This outcrop shows several limestones, including wackestones and packstones representing the toe-of-slope sedimentation. These units are rich in fossils originated from the reef formation, and some brought there by mass flow processes. 10-12. A variety of fossils encountered during the hike. 10. Bryozoan. 11. Horn coral (PC Oscar Molina). 12. Sponge.



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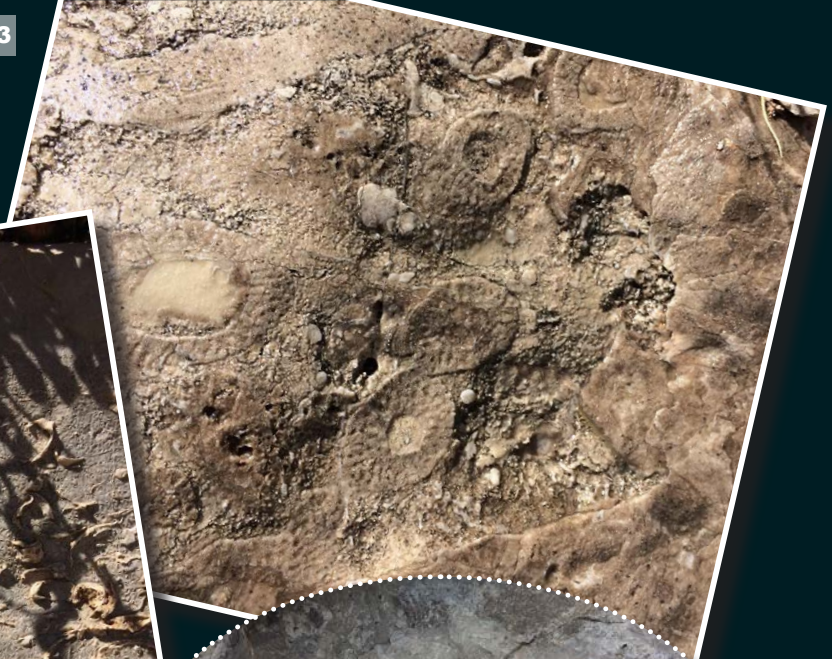
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Captions: 13-17. A variety of fossils photographed from the slope and reef deposits. 13. Sponges. 14. A slope-derived debris flow full of broken fossils, mostly brachiopods that are visible in outcrop. 15. Most likely a trilobite. These arthropods seem rare in the reef, which might not be surprising as they were not the most abundant life form in the Permian and became extinct at the Permo-Triassic (P/T) boundary. 16. Beautiful ammonoid in cross section. 17. Hundreds of fusulinid foraminifers. These single-celled organisms are excellent biostratigraphic markers for the Permian. They too became extinct at the P/T boundary.





18



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Captions: 18. Group picture (PC Chang Liu). 19. Outcrop showing a thick section of densely burrowed wackestone. 20. Close up view of the weathered bedding plane showing filled cavity of worm-burrowed features called *Planolites*.



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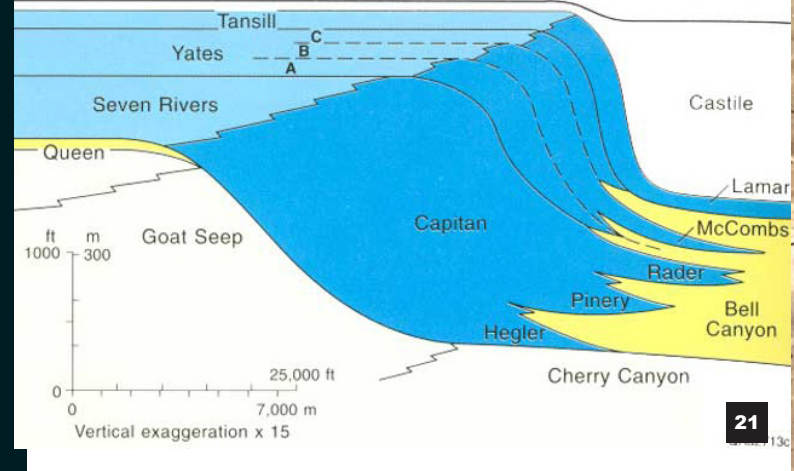


Captions: 21. Illustration from the "Guide to the Permian Reef Geology Trail" by Bebout and Kerans, 1993 (available on the UT BEG website).

This diagram features a cross section showing shelf-to-basin correlations of the Capitan Formation and equivalents.

Blue areas are dominantly carbonates and evaporites, and yellow areas are mostly siltstone and sandstone (modified from Garber and others, 1989).

22-23. These outcrop views are taken in the Tansill/Yates Formations in the back reef environment. The deposits are particularly visible in the CCNP. Clues to a shallower environment of deposition include teepee structures (22) and oolitic limestone full of ooids coarsening up-section. These grains are known to form in shallow environment, under wave action, in warm waters.







24

This information is taken from a guidebook by Scholle and others for an AAPG Field Seminar from El Paso to Carlsbad. The guide states that “Excellent exposures of the Castile Formation can be found in deep roadcuts” (such as the one we indeed examined near Whites City). The guide adds that “This unit is the oldest true Ochoan sediment in the region and conformably overlies the Guadalupian Bell Canyon Formation. The Castile is entirely confined to the Delaware basin and does not extend onto the adjacent shelf areas. It overlies a thin, limestone and siltstone/shale zone which may be a lateral facies equivalent of the very youngest part of the Capitan and Tansill Formations. The bulk of the Castile Formation itself consists of a thick section of laminated anhydrite with intervals of laminated halite. The Castile Formation has been reported to reach a maximum preserved thickness of 470 to 600 m (1,550 to 2,000 ft) in subsurface sections in the north-eastern part of the Delaware basin (King, 1948, p. 89). The Castile Formation, then, represents an evaporite filling of the approximately 550 m (1,800 ft) deep basin existing at the end of Guadalupian time. Although there may have been some drop in basal water levels, most of the Castile evaporites clearly were deposited in deep water (at least well below wave base) as indicated by the absence of shallow-water sedimentary structures in most intervals and the presence of fine-scale lamination. The laminae consist of regular (although variable thickness) alternations of white anhydrite laminae and darker laminae containing a mixture of organic matter (circa 1.5 percent average) and calcite.”



25

**Captions: 24-25.** At the end of the Permian, massive amount of evaporates were deposited and filled the Delaware and Midland Basins. These two photographs show a general view of a road-cut outcrop between the two parks (GMNP and CCNP) where some of the preserved Castile evaporites have been exposed(24), and a close up view of the fine-scale laminations within the Castile Formation at the same outcrop (25).



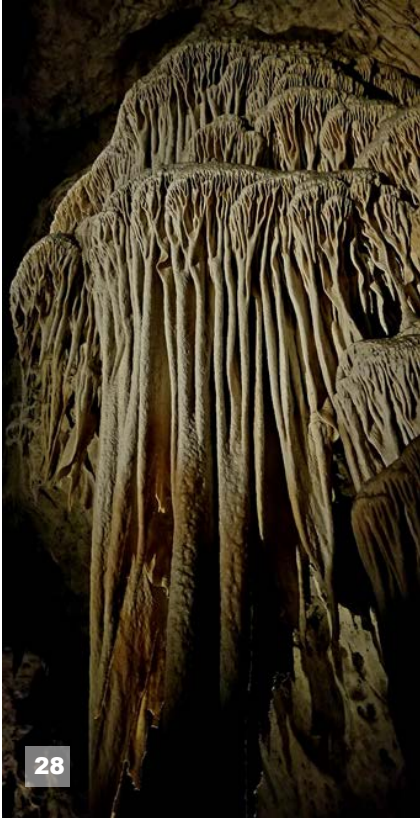
The following information was provided to us by the park: Carlsbad Caverns National Park was designated a World Heritage Site by the United Nations in 1995, confirming the worldwide significance of its spectacular natural resources. Caves of the Guadalupe Mountains are extraordinary in that a very aggressive “sulfuric acid bath” played a major role in cave development by dissolving limestone from the top downward through the water table. The Permian Basin of western Texas and southeastern New Mexico contains some of the country’s most prolific oil fields. During the late Tertiary period (perhaps as late as 12 million years ago), hydrogen sulfide began migrating upward from these petroleum reservoirs deep under the Capitan Limestone. When the upwelling hydrogen sulfide rich water met with groundwater, it combined with oxygen in the water table to form sulfuric acid. Highly aggressive dissolution of limestone thus occurred at the water table. This unusual sulfuric acid mechanism is responsible for time-transgressive erosion of these very large connected chambers that were progressively eroded as the region was uplifted. One of the clues which led geologists to the development of the sulfuric acid theory is the presence in most caves here of the mineral gypsum. Gypsum is produced as a chemical by-product of the reaction between the sulfuric acid and limestone during dissolution. This soft white mineral coats the walls in many parts of the cave.

A more recent episode of uplift placed the flooded cavity well above the water table, and speleothems start precipitating. The widespread and ongoing growth of cave decorations, or speleothems, found in Carlsbad Caverns did not begin to form until the cave chambers were well drained of the “acid bath.” The natural entrance to the cave formed within the last million years by erosion and collapse of the hillside. The entrance allowed air from the surface to circulate through the cave. As rainwater and snowmelt percolates downward, it picks up carbon dioxide from the air and soil to form a mild carbonic acid. The mild acidity of the surface water allows it to dissolve some of the limestone it encounters on its way down. When the mineral-laden water reaches the open void of a cave, it forms a drop on the ceiling. The carbon dioxide in the water is released, making the water saturated with respect to the dissolved calcite. In order to reach equilibrium with the cave air, the water must unload the mineral. When the water evaporates or drops off the ceiling, a small mineral deposit is left behind. Drip by drip, these deposits will form a stalactite on the ceiling. The water that falls to the floor may also carry minerals which are precipitated on the floor, eventually creating stalagmites.



Captions: 26. View of the natural entrance of the Carlsbad Caverns (PC Oscar Molina). This entrance is also famous for the “bat flight” that occurs every evening during the summer and fall as the bat fly out of the cave by the thousands. 27. Close up view of some of the speleothems deposited in the cavern (PC Connor Matherne). A variety of columns, stalagmites, stalactites, soda straws, and popcorn structures are visible.





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Captions: 28. Photograph of the draperies, a sheet-like speleothem structure (PC Connor Matherne). 29. One of the rare areas in the cavern where water still forms ponds (PC Connor Matherne). 30. Students working together to photograph some of the Capitan Reef fossils visible in some areas of the cavern not covered by the many speleothems (PC Oscar Molina). 31. A rare trilobite visible in the cavern. 32. A cephalopod in the wall of the cavern, near the natural entrance (PC Vann Smith).



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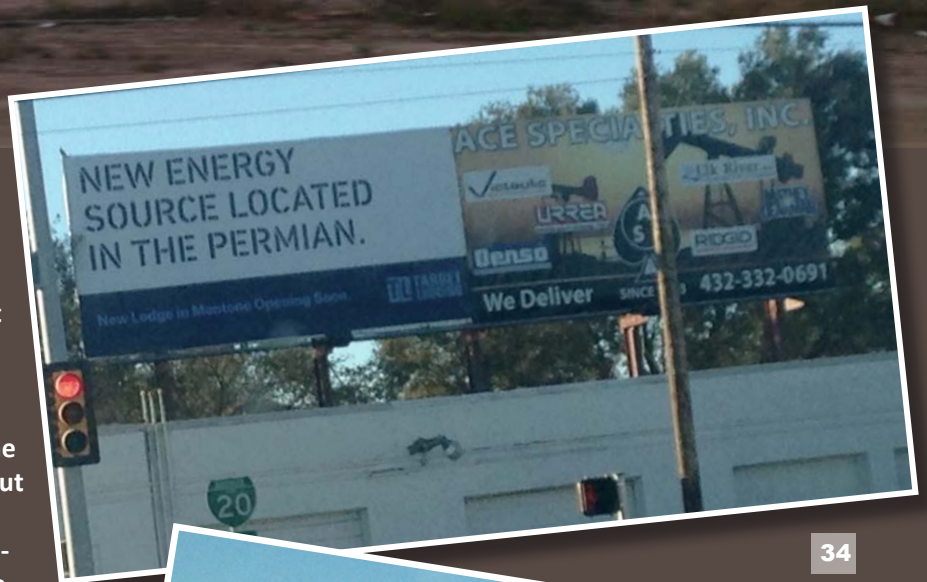




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Captions: 33-36. Various views of oil and gas operations along the drive from Whites City, NM to Pecos, TX. These photographs were taken along RM652. The images depict the more applied side of the geology of the region. In a June 2018 report, CNBC journalist Tom DiChristopher wrote: "Today, the Permian Basin in Texas and New Mexico is the nation's biggest shale oil producing region. But in just a few years, drillers could be pumping enough Permian crude to outmatch every nation in the world except Russia and Saudi Arabia. Output from the region is forecast to more than double between 2017 and 2023, jumping to 5.4 million barrels a day, according to a new estimate from IHS Markit."

On their website, Chevron, one of the companies committed to the Permian for a longtime, indicates that their Permian production amounted to 119,000 net (Chevron share) barrels of crude oil, 383 million cubic feet of natural gas and 45,000 barrels of natural gas liquids daily in 2017.



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# OUTREACH ROUNDUP

## MASTER NATURALIST WORKSHOP



On May 5th, we hosted the natural history workshop for the Louisiana Master Naturalists of Greater Baton Rouge. They learned about the history and function of the LSUMNS, went in depth behind the

scenes tours of the mammal, bird, fish, and amphibian & reptile collections, and viewed a specimen prep demonstration. We also included a short presentation on the history of the LSUMNS exhibits. Thanks to **Mark Swanson, Oscar Johnson, Jackson Roberts, Pam Hart, Glau-cia Del-Rio,** and **Janie Braud** for helping out.

## CORE ELEMENT HANDS-ON-STEM DAY



On May 15, we attended the Core Element Hands on STEM Interactive Education Day at the New Orleans Baby Cakes Stadium in Metairie, LA. Thousands of kids got to view a baseball

game and participate in tons of science activities. We brought specimens themed around fossorial, arboreal, and aquatic lifestyles. Thanks to **Zach Rodriguez** and **Janie Braud** for helping out.

## UNDERGRAD RESEARCH FAIR



On August 15, we participated in LSU Discover's Undergraduate Research Fair in the Student Union. The event took place during Bengal Bound, LSU's official welcome week for new

students. We were there to recruit new undergraduate students to work in our research labs or help with our outreach events. We were also able to let new students know who we are and what we do. Thanks to **Matt Brady** for helping out with this event.

## LOUISIANA STEM EXPO



On May 7th, we attended the Louisiana STEM Expo hosted by Kenilworth Middle. Hundreds of kids viewed science projects and science themed tables around the LSU Engineering

building. We brought specimens from our bird, mammal, and amphibian & reptile collection. Thanks to **Zach Rodriguez** and **Ryan Burner** for helping out.

## AUDUBON DAY



On May 19 we participated in Audubon Day at the Hill Memorial Library. LSU Libraries hosted a viewing of the folio edition of John James Audubon's "Birds of America." In addition to the

viewing, the LSUMNS brought bird specimen mounts including species from Audubon Louisiana's Priority Bird List. The LSU Vet School was also there with live raptors. Thanks to **Vivien Chua** and **Oscar Johnson** for helping with this event.

## COLLEGE OF SCIENCE BLOCK PARTY



On September 6, we attended the LSU CoS's annual block party on Tower Drive. Hundreds of students, faculty, and staff showed up to learn about organizations and departments with-

in the college, and enjoy the free food, music, and swag items. We set up a table with some specimens from our various collections to help spread awareness of our museum to members of the college. We had a great time despite the not so ideal weather. Thanks to **Zach Rodriguez, Eamon Corbett, Alex Haynes,** and **Jaimie Gallagher** for helping out.



## GIRL SCOUTS B.I.G. EVENT



On September 29, we attended the Girl Scouts of Louisiana East (GSLE) Believe in Girls (B.I.G.) Event at the University of New Orleans in New Orleans, LA. Over 1,000 girls scouts

attended the event! We hosted a table of Louisiana amphibian, reptile, and mammal specimens from the museum's collections. Thanks to **Jaimie Gallagher** for helping out.

## GIRLS' DAY AT THE MUSEUM



On June 30, we hosted an encore of the Girls' Night at the Museum program with the LSU College of Science (CoS) and the LSU CoS Office of Diversity and Inclusion. The selected girls (grades

4th-6th) experienced a behind the scenes tour of our collections, STEM chats with LSU scientists, and science activity stations led by various CoS departments including Physics & Astronomy, Chemistry, Biological Sciences, and the LSUMNS. In addition, there were tables from LSU Vet Med, Pennington, Scope-on-a-Rope, and LSU Entomology. Thanks to everyone who helped make this event a success including LSUMNS students **Jessie Salter, Mark Swanson, Zach Rodriguez, Anna Hiller, and Vivien Chua.**

# SPECIAL SATURDAYS

## Earthquakes & The San Andreas Fault



**Dr. Patricia Persaud** from the LSU Department of Geology & Geophysics, led our first Special Saturdays of the semester on September 15 and spoke about earthquakes. She talked about what earthquakes are, p-waves vs s-waves, the San Andreas fault, and what to do if you are in an earthquake. Dr. Persaud also brought along a seismometer, rocks, a computer that simulated a seismometer, and a slinky to learn about waves. The participants then built structures (at least 7" tall) out of craft sticks, marshmallows, toothpicks, tape, and cardboard that could withstand our earthquake simulator. Thanks to **Diego Elias** and **Alex Haynes** for helping out.

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



# NIGHT AT THE MUSEUM



## Birds

On September 20th, we hosted our first Night at the Museum of the school year with 62 guests in attendance. LSUMNS Curator of Genetic Resources, **Dr. Fred Sheldon**, spoke to guests about adventures he's had collecting birds in Borneo. We had tables displaying Bornean birds, the diversity of bird beaks, colorful birds, and a specimen prep demonstration manned by graduate students **Ryan Burner**, **Eamon Corbett**, **Rafael Marcondes**, and **Glaucia Del-Rio** respectively. Later, graduate student **Oscar Johnson** gave behind the scenes tours of the bird collection. Thanks to everyone who came out and special thanks to **Marco Rego** for taking photos.

Reserve your tour spot here: <https://www.lsu.edu/mns/education/night-at-the-museum.php>

## UPCOMING OUTREACH EVENTS

**November 8 - Night at the Museum - Mammals**  
6pm-7:30pm; LSU Museum of Natural Science

**December 1 - Master Naturalist Workshop**  
LSU Museum of Natural Science

**December 6 - Westdale Middle STEM Night**  
Westdale Middle, Baton Rouge, LA

**December 15 - Special Saturdays - Bugs in the Atchafalaya**  
10am-12pm; LSU Museum of Natural Science

**January 26 - Special Saturdays - The Wonderful World of Plants**  
10am-12pm; LSU Museum of Natural Science

**February 2 - Special Saturdays - Floating Marshes**  
10am-12pm; LSU Museum of Natural Science

For more information on outreach events and museum tours, contact **Valerie Derouen** [vderou1@lsu.edu](mailto:vderou1@lsu.edu).

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



# MNS NEWS & UPDATES

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## Hiller Awarded WOS Grant

Congratulations to LSUMNS ornithology graduate student **Anna Hiller** who received a Student Research Grant from the Wilson Ornithological Society for her proposal entitled “Testing the influence of gene flow in montane avian speciation.”



## Del-Rio Receives SES Explorer Award

Congratulations to LSUMNS ornithology graduate student, **Glaucia Del-Rio** on being awarded the Sir Charles Blois Explorer Award from the Scientific Exploration Society. The award includes £5000 and was created to “support a ‘Pioneer with Purpose’ undertaking an adventurous expedition with strong physical requirements in a challenging environment which aims to produce new science, physical or anthropological insight into little known peoples.”



## Shakya Awarded Two Grants

Congratulations to LSUMNS ornithology graduate student **Subir Shakya** who was awarded two grants for his research on the genetics of coloration in the Black-headed Bulbuls (*Pycnonotus atriceps*) of Southeast Asia:

American Ornithological Society Research Award - \$2000  
American Museum of Natural History Chapman Grant - \$2000



## Judy Receives AOS Award for Outstanding Presentation

Congratulations to LSUMNS ornithology graduate student **Caroline Judy** who received the American Ornithological Society (AOS) Council Award for Outstanding Oral Presentation at the 2018 AOS meeting in Tucson, Arizona. Her talk was entitled “Genomic approaches to understanding speciation in Jamaican-endemic streamertail hummingbirds.” The award includes \$500.



## Hart Receives ASIH Stoye Award

Congratulations to LSUMNS ichthyology graduate student, **Pamela Hart Burress**, who received the Stoye Award for Best Student Oral Presentation in Genetics, Development, and Morphology at the 2017 American Society of Ichthyologists and Herpetologists meeting in Austin, TX.





## Ludt Receives PhD

Congratulations to LSUMNS ichthyology recent graduate, **Dr. Bill Ludt**, who recently defended his dissertation and received his doctorate degree. Bill is doing a post-doctoral fellowship at the Smithsonian Natural History Museum in Washington, DC. He was advised by LSUMNS Curator of Fishes, **Dr. Prosanta Chakrabarty**.



# NEW STUDENTS



**Spenser Babb-Biernacki**

New PhD student coming from Arizona State University in Phoenix, AZ joining the Esselstyn lab in mammalogy.



**Eamon Corbett**

New PhD student coming from Harvard University in Cambridge, MA joining the Brumfield/Faircloth labs in ornithology.



**Meghan Duffy**

New Master's student coming from Colgate University in Hamilton, NY joining the Warny lab in Palynology.



**Heru Handika**

New PhD student coming from Museums Victoria at the University of Melbourne in Australia. He is joining the Esselstyn lab in mammalogy.



**Peter Moutevelis**

New Master's student coming from St. Lawrence University in Canton, NY joining the Warny lab in Palynology.



# 2018 FALL SEMINAR SCHEDULE

**November 2: No Seminar - Rails & Rice Festival**

**November 9: No Seminar - Museum Retreat**

**November 16: Dr. Jessica Oswald**

Title: "Using morphology and DNA from subfossils to understand historical diversity, distributions, and phylogenetic relationships of Caribbean fauna"

**November 23: No Seminar - Thanksgiving Break**

**November 30: Dr. Alex Gunderson, Tulane University**

Title: "Thermal adaptation in lizard communities: physiology, behavior, and color evolution in cold blood"

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Email your material to [vderou1@lsu.edu](mailto:vderou1@lsu.edu)

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