LSU Museum of Natural Science

NEWSLETTER

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Three Philippine shrews, with worm, snail, and vegetation in the shape of the Philippines Archipelago.
Illistration by LSUMNS Postdoctoral Researcher Subir Shakya PhD

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Curator of Anthropology

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Curator of Palynology & Director of Education

Letter from the Director...

Dear Museum Friends and Family,

As 2021 draws to a close I want to spend a bit of space here writing about a few good things that came with a difficult pandemic year. The collections-based focus of the MNS really sets us apart from other natural history museums; our local expeditions as well as those to the antipodes, are something that we do really well. The value of what we do, however, is often hard to measure. I was happily surprised to read a report commissioned by the Australian government about the return-on-investment of taxonomy- the description and classification of life on earth (https://www.science.org.au/news-and-events/news-and-media-releases/mission-map-australias-biodiversity). The report found that for every $1 invested in biodiversity discovery of the estimated 500,000 undiscovered species of Australian plants, animals, fungi and other organisms will provide an economic return of $35 to the national economy. Wow, who knew taxonomy and museum science was such an important economic driver! Now these are Australian dollars, not US green backs, but currently the exchange rate is 1 AUD = 0.74 USD, I'll let you do the math, but this is an astonishing return-on-investment. The US and Australia have many similarities and differences, but I'm hypothesizing that a similar economic yield would be true here in the US as well, but probably even more so in developing countries.

Training the next generation of museum scientists is something we curators and staff are immensely proud of being a part. One recent example of this is former Museum PhD student Gustavo Bravo who is the new curator of birds at The Humboldt Institute in Colombia, one of the great ornithology museums of South America. For a long past example of student success, please read curator Prosanta Chakrabarty's article (page 24) about Albert John Doucette Jr. who received his PhD in 1985 working on fishes and went on to become the Associate Dean at Southeastern Louisiana University. And for current student successes, see MNS News starting on page 26.

Another thing we take great pride in is educational outreach. This has been especially challenging during the covid pandemic but we have added a suite of online and zoom content that have been very well received. For example, normally we run various in-person programs such as our *Night at the Museum*, *Special Saturday*, and *Girls Night at the Museum* series that are immensely popular. Recently we have replaced these with on-line programs and added programs such as *Girls Road Trip* which involved 50 primary school girls and 20 scientist-mentors over zoom discussing a recent PBS broadcast and research and career opportunities in STEM fields. Additionally, Museum postdoctoral researcher Janet Buckner was heavily involved in this year's *Black in Natural History Week* (YouTube and Twitter under #BlackinNHMs, #blackinbiodiversity #BINHMBehindTheScenes). She was instrumental is getting wonderful YouTube videos of our tireless business manager Tammie Jackson and former fantastic public education outreach coordinator Valerie Derouen Stampley.

Finally, Fred Sheldon, former director, and our curator of genetic resources is retiring in May 2022. Fred has been an outstanding colleague and friend of mine and we all wish him the best in retirement. We are currently advertising for a new assistant curator of genetic resources, and although Fred is irreplaceable, we hope to fill his position with an outstanding beginning scientist to manage our world-class collection of tissues which becomes increasingly valuable in the genomics era and the new age of biodiversity discovery.

Davis Mountains Hummingbird Celebration 2021

by Donna Dittmann

Following cancellation in 2020 due to the Covid-19 pandemic, the Davis Mountains Hummingbird Celebration (DMHC) was a go for 2021, and LSUMNS was again a sponsor. Collection Managers Donna Dittmann and Steve Cardiff again assisted and traveled to far West Texas for the event. The Fort Davis area was green and lush from recent and generous monsoon rains that had provided relief from the prolonged drought conditions the previous few years. This year, Donna and Steve provided a virtual talk on hummingbird identification, led an all-day field trip on Saturday, and were on the agenda to host four garden tours (two on Friday, one Saturday PM, and one Sunday AM) to their Davis Mountains yard and its array of hummingbird feeders. Donna also volunteered by liaising with DMHC participants prior to the event to enhance their celebration experience. The Friday PM yard tour was impacted by heavy midday rains that resulted in impressive flash-flooding of seasonal creeks (Figure 1); three of the four properties on the tour route (including the Dittmann-Cardiff yard) became inaccessible and both field trip groups had to divert to the lone

Below Fig. 1: Flash flood of a seasonal creek after heavy rains makes entrance road impassable.

Below Fig. 2: Miller Ranch entrance road.

Above Fig. 3: Historic site, Fort Holland.

accessible yard. Saturday's "all-day" field trip to the Miller Ranch was also an adventure- heavy rains in the Valentine area the preceding few days (Figure 2) resulted in portions of the ranch entrance road being muddy and covered with water. A Friday trip there had to abort to an alternate location, and we were prepared to go to Plan B, but after talking to the ranch owners about how to navigate the mud holes we went ahead with Plan A. After a quick reconnaissance and a pep talk to the group, they all made it successfully through the formidable-looking flooded sections without incident (other than some very dirty vehicles). Later in the day the group also had to navigate a steep, rocky four-wheel-drive road up the ranch's ZH Canyon to historic Fort Holland (Fig. 3). So, between the birds and the heart-pounding road thrills, there was no shortage of excitement!

In addition to DMHC activities, Donna and Steve led a Louisiana Ornithological Society field trip on Thursday the 19th to show a small group of Louisiana birders some of the area's sites and birds. We began the day at Balmorhea Lake, then headed back towards Fort Davis. A side trip on Ranch Road 1832 ("Boy Scout Road") was short-lived as an impressive thunderstorm (Figure 4) moved in and we opted to escape before being cut off by flash-flooding. After taking a short break at Fort Davis, we regrouped at the Fort Davis County Park and then traveled to Donna and Steve's yard for some hummingbird viewing to finish the day.

Below Fig. 4: Ominous thunderstorm ahead changes afternoon plans.

My Strange Sabbatical

by Prosanta Chakrabarty

As Hurricane Ida passes over my home, lab, and collections, I feel inclined to write about my past year, mostly spent in Ottawa, Canada. Like Baton Rouge, Ottawa is another capital city; Canada's fourth largest city (but with only 800,000 people). It is perhaps more similar to Washington, D.C. than to any other city I can think of, and probably for obvious reasons – they both have lots of government buildings and a ton of green space. My family and I spent part of 2016-2017 in D.C. when I was on leave from LSU working for the National Science Foundation. That was such a fun and illuminating year that I jumped at the chance to take my first *real* sabbatical when I was awarded a Fulbright in 2020 to go to Canada. It didn't hurt that my wife has family near-by; she and I were both born in Montreal (about a two-hour drive from Ottawa). Despite my Canadian roots, Ottawa is a city I was largely unfamiliar with until last year.

The Fulbright award was a Distinguished Chair position at Carleton University. Carleton is right on the Rideau Canal (a UNESCO World Heritage Site). Unfortunately, I never ended up working on that beautiful campus; Carleton was one of the first schools in North America to declare that they would go remote due to COVID-19. I only met my host, Steven J. Cooke (#16 on a recent ranking of the Top Living Biologists by the way) one time in person; his lab is bigger than that of the entire LSU Museum of Natural Science's work force put together but he somehow manages to be an amazing father as well as being a friend and mentor to many (including me). I spent most of my year in a make shift home office in our rented apartment near campus. By "office" I mean a 10' X 10' basement space that had hanging sheets for two of the "walls". It wasn't ideal,

Below Fig. 1: Prosanta (standing) with a walleye fresh out of the ice-fishing hole drilled by local fisher, Michel La Haye (seated).

but it wasn't all that horrible either. From that little space I did most of my Zoom meetings and writing. I did a lot of writing both for scientific papers and for pleasure including a couple of books I hope to tell you more about soon.

I spent way more time with my family this past year than I did at anytime in my academic past, and I honestly enjoyed that time way more than I expected (I love my family obviously, but I always hated working from home). My kids went to a

French public school near-by (Quebec was only a few miles away but unlike in that province, the vast majority of folks spoke English in Ontario) and I would walk with them for pick-up and drop-off. Those walks propelled me to enter a walking/running competition with the Cooke lab where I would walk about 50km each week. Even in the snowiest months (winter is half the year up there, just like summer is half the year down here in Louisiana) Ottawa has a lot of walkable and bike-able paths that remain clear. The COVID-19 pandemic did mean that we had to quarantine at home upon arriving in Ottawa and by the time our two-week sentence was over it was already getting chilly (this past September was one of the coldest on record for the area), and by the time it started getting warm this past spring the province went into another lock down to try to tamper down the spread of the disease that has plagued us (pun intended) for over a year. Unfortunately, we didn't get to enjoy the 'real' Ottawa or travel as much as we had planned within Canada (although we did get to Toronto, Montreal and the Maritimes region before leaving). With the border being closed for the last year I also wasn't able to make any return trips to Louisiana or to see my family a relatively short distance away in New York City.

Above Fig. 2: Prosanta with a small sturgeon on the Ottawa River

Below Fig. 3: Prosanta taking tissue samples and notes from a day's catch. Note the 'American Society of Ichthyologists and Herpetologists' shirt (Prosanta recently won an election to be President Elect of that scientific society).

Instead of doing the traveling I love to do, I gave a lot of virtual seminars; including at my alma mater, McGill University (I also hosted a virtual reunion for my graduating year, the Class of 2000) and the University of Winnipeg, among other spots that I would have loved to have gone to in person. I also frequently checked in on my lab at LSU, but they are all so self-sufficient that they didn't need much of my help. Pam Hart (now Dr. Pam Hart) successfully graduated this past Spring and I made it back to Baton Rouge in time to hood her at graduation this Summer; Diego Elias (currently doing fieldwork in Guatemala) is used to me being away (I was at NSF his first year) and Sheila Rodriguez Machado, my newest student, like me and many others, had to get used to virtual lab meetings – but she is a trooper, and a brilliant one at that. I also was involved in the hiring of our new collections manager, David Boyd who joined LSU from the University of Florida at the start of 2021. It was great knowing the lab was doing well in my absence, despite all the pandemic gloom. As for my learning experience, I got to watch the Cooke Lab work like a giant well-oiled machine cranking out publications at a nearly weekly pace. I was able to work with his lab and several collaborators on a large review of the conservation statuses

of Canada's freshwater organisms (Desforges et al. 2021 currently in press at the *Canadian Journal of Fisheries and Aquatic Sciences*). I'm still in awe of how quickly the students put together a publishable document reviewing thousands of species in a few months. My only regret is that I wasn't able to collaborate and connect with more folks in that lab, and it was only the pandemic that prevented more interactions from happening – not any lack of effort from their side or mine.

That paper was an important part of my goal for my Fulbright – which was to learn how to study evolutionary biology "in action" as it is happening today and in terms of challenges created by humans e.g., climate change, damning, overfishing. Also as part of my Fulbright goals was making new fish collections in Canada to compare species and populations from that area with those in Louisiana and other parts of the U.S. With the pandemic I wasn't sure how I would do any collecting, but I lucked out by having the Canadian Museum of Nature (which is like the Canadian Smithsonian) allow me to join their ranks as a Research Associate and by having friends who are experienced commercial fishers in the area. With their help I was able to get scientific permits to collect Lake Sturgeon (one of the few spots where you are allowed to do so in the world, as most sturgeon populations are critically endangered), and other freshwater fishes in Ontario and Quebec. I went ice fishing and seining and also collected fish with giant hoop nets. My fisher friends, Fabienne Côté, Roch Quesnel and Michel La Haye taught me more about fishing and the fishes from the region than I could have learned from any course. These were wonderful trips and although I didn't get to do my usual tropical fish collecting trips, I can at least say that I did a bit of international fieldwork this past year. These fishes (representing about 40 species from the Ottawa and St. Lawrence rivers) will be shipped to LSU soon to be part of our collections at the LSU MNS. Some material was also left behind for the CMN and I hope to have many future exchanges between our museums.

Below FIg. 4: Prosanta holding a coelacanth 'pup' in the Canadian Musuem of Nature (that's the technical term for a baby coelacanth which give birth to post-hatch individuals slightly larger than the one I'm holding).

Like Hurricane Ida, my sabbatical wasn't exactly what I expected. I wanted to meet and chat with lots of new folks and travel and talk around Canada, and although I did have some great interactions, the virtual space isn't the same as seeing people in real life. In the end I think of my sabbatical as having been "frustratingly relaxing" – working on-line in a new country without being able to really interact with people was frustrating but spending a lot of time with my wife and kids while working from home was also quite nice. I know a lot of people had a much tougher year than I did, and I'm grateful that I was even able to have a sabbatical. I'm also grateful for the time that people in Ottawa gave to me: a stranger from a strange land. Cheers to them, and here's to a brighter pandemic- and hurricane-free future for all of us.

Many thanks to LSU, the Fulbright Program and my new friends and colleagues in Canada, especially in the Cooke lab and Canadian Museum of Nature, for making my sabbatical a memorable one. I'm truly glad to be back at LSU.

The Age of Loneliness: Works by Brandon Ballengée

Acadiana Center for the Arts, Lafayette, LA

October 9, 2021- January 8, 2022
by Brandon Ballengée

"The Age of Loneliness" is a large-scale exhibition that features selections of my artworks that responds to loss of biodiversity and other environmental challenges. The *Frameworks of Absence* are my reaction to the loss of animal species over recent centuries. *Collapse* and *Ghosts of the Gulf* responded to the 2010 Deepwater Horizon oil spill and the resulting impacts to Gulf of Mexico species. While my *Crude Oil Paintings* used actual crude oil from the Deepwater Horizon and Taylor spills to portray unreported Gulf fish species. My recent series, *VII*, explored urban biodiversity through the lens of environmental vice and virtue. Finally, my outdoor Ultraviolet light sculpture Love Motel for Insect: Monarch Variation (2021), attracts insects creating an educational opportunity for viewers to learn about arthropods.

We are in the middle of a mass extinction event, referred to as the Anthropocene or Sixth great extinction. Here, many familiar species, like frogs, turtles, butterflies, bumblebees are disappearing… and rapidly. We have lost over forty percent of amphibians and more than half the planet's overall wildlife since I have been alive. The renowned scientist and environmental philosopher Edward O. Wilson has even described this era as the *Eremozoic* (eremo coming from the Greek for lonely or bereft) or the 'Age of Loneliness'. The goal of the exhibition is through artworks to reach viewers emotionally, spread awareness and educate about environmental challenges, as well as to inspire conservation.

Right Fig. 1: Brandon Ballengée, Ph.D. artist and Biologist

[1] Wilson, E.O., 2013. Beware the age of loneliness. *The Economist, London.*

Below Fig. 2: Collapse. 2010/12. Created in scientific collaboration with Todd Gardner, Jack Rudloe and Peter Warny. Mixed-media installation including 26,162 preserved specimens representing 370 species, glass, and preservative solutions. 12 x 15 x 15 feet.

Collapse is a sculptural response to the global crisis for the world's fisheries and changes to the Gulf of Mexico's food-chain following the 2010 oil spill. The pyramid of 26,162 preserved specimens represents 370 species of fish and other aquatic organisms collected from the Gulf Coast, a region of diverse fish species and of socio-economic importance. This pyramidal installation references the fragile interrelationships between aquatic species in the Gulf food chain. Empty jars represent species in decline, missing or ones we have yet to discover. Collapse is a sculptural sketch that represents the Gulf of Mexico food chain starting with smaller life forms working its way up to the top with large predators.

Ghosts of the Gulf is a photographic series created by chemically clearing and staining species collected in the Gulf after the 2010 oil spill. The clearing and staining process involves preserving specimens by placing them in an acid bath with blue stain that adheres to cartilage. They are then masticated in a digestive enzyme called trypsin, which clears away other tissues. Following, specimens are placed in an alkaline solution bath with red dye that bonds with bone and then into a series of washes ranging from potassium hydroxide to glycerin in which their tissues become transparent. The resulting photographic image shows bones and cartilage that are vividly revealed in red and blue.

My most recent series *Crude Oil Paintings* (2020-ongoing) conceptually began in 2016 in collaboration with MNS Curator of Fishes Prosanta Chakrabarty. For this project we researched reports of endemic Gulf fishes following the 2010 spill. We found that 14 endemic fishes had not been reported in natural history collections post spill[2]. Even prior to the spill, several Gulf fishes remained elusive and had not reported in decades (1950 through 2005). Little is known about many of these species and the only records we have of their existence is a

Below Fig. 3: *MIA Black Driftfish***.** 2020. 21.25 by 34.25 inches**.** Mixed media with Deepwater Horizon source crude oil, Taylor/ MC20 source crude, contaminated marshland sediment with oil, anaerobic bacteria and iron oxide, and COREXIT 9500A (dispersant) on Arches hot press watercolor paper. Depicting United States National Museum of Natural History (NMNH) at the Smithsonian specimen USNM 221588 Black Driftfish, *Hyperoglyphe bythites*, species last reported in 2008.

handful of preserved specimens scattered among natural history collections[3]. In response, I created portraits of these fish out of Deepwater Horizon oil and other petrochemical related materials.

Also on exhibition are a selection of *Frameworks of Absence* that are juxtaposed with specimens from the LSU Museum of Natural Science. The *Frameworks* are my response to species extinctions. To make them I physically cut images of missing animals from historic prints and publications printed at the time in history when the depicted species became extinct. For example, in *RIP Pied or Labrador Duck: After John James Audubon* (1856/2007), the image of the birds was removed from an original 1856 Royal Octavo print created at the same point in history as the actual species disappeared. The resulting image minus the subject is what I refer to as a *Framework of Absence*. For the exhibition, MNS specimens of threatened and endangered species are placed facing the *Frameworks* so they appear to be looking at the absence of their extinct cousins.

[2]All of the 14 endemic missing fish species were recorded in the Gulf of Mexico between January 2005 and January 2010, but not reported in natural history collections post DWH. Please see: Chakrabarty P, O'Neill G, Hardy B, Ballengee B (2016) Five Years Later: An Update on the Status of Collections of Endemic Gulf of Mexico Fishes Put at Risk by the 2010 Oil Spill. *Biodiversity Data Journal* 4: e8728

[3] Up to 44 of the 77 known Gulf endemic fishes are rare, have not been reported, or recent data is insufficient to understand their population status (Chakrabarty et al. 2016).

Above Fig. 4: *Frameworks of Absence*, artist cut and burnt historic artifacts, ashes, etched funerary urns with LSU MNS specimens North Island brown kiwi (*Apteryx mantelli)* and Hawksbill sea turtle (*Eretmochelys imbricate*) pictured.

As Aldo Leopold stated “We stand guard over works of art, but species representing the work of aeons are stolen from under our noses”. My hope is that this exhibition inspires us to stand guard over our local ecosystems and the many species we share this planet with.

Brandon Ballengée, Ph.D.
14 October 2021

Examining Snakes on a Snake-less Island: Visiting the Bishop Museum of Hawai'i

by Jackson Roberts

There was a small window this past summer when travel and most other activities appeared as if they were returning to normal. COVID-19 vaccinations opened travel to many locations that for over a year had been under lockdown. One of these locations included Hawai'i. I do not know about our readers, but my social media was flooded by people going to Hawaiian beaches this summer prior to the Delta variant secondary lockdowns. And luckily, with help from the Thomas and Susan Shirley Superior Graduate Student Scholarship and advisor, Chris Austin, I was also able to visit Honolulu, Hawai'i, at the end of June. However, my visit to the islands looked very different than the vacations of most people. This visit revolved around snakes in jars, microscopes, and considerably less sun exposure. My travel to Honolulu was to visit the Bernice Pauahi Bishop Museum (Bishop Museum) to examine snake specimens of the New Guinea Keelbacks, genus *Tropidonophis*.

Above Fig. 1: The exterior of the beautiful Bernice Pauahi Bishop Museum (photo from gohawaii.com).

Above Fig. 2: Workstation and daily setup for snake specimen examination.
Below Fig. 3: The head of a new species of New Guinea Keelback (*Tropidonophis*).

The Bishop was founded in 1889 by Charles Reed Bishop in memory of his late wife, Princess Bernice Pauahi Bishop, the last descendant of the Hawai'i royal Kamehameha family. The museum's overarching mission is to explore, celebrate, and perpetuate the extraordinary natural and cultural history of Hawai'i and the Pacific. For this reason, the Bishop harbors one of the largest collections of modern, i.e., after 1950, herpetological specimens with ethanol preserved tissues from Papua New Guinea. These specimens are currently curated by herpetologist and Senior Zoologist Allen Allison and the Vertebrate Collection Manager Molly Hagemann. I spent each day photographing, measuring, and comparing as many specimens of New Guinea Keelbacks that I could manage. However, as all museum-lovers will do, my breaks were spent sneaking off to the other divisions and exhibits within the Bishop. The public exhibits seamlessly display the diverse natural and cultural history of this region, and how these two histories have influenced each other. In addition, I was able to tour the other vertebrate research collections, seeing native Hawaiian taxa that are extinct, or close to it.

As result of this trip, I was able to gather morphological data and compare all Bishop specimens currently represented in our molecular DNA datasets. The integration of traditional external morphological characters that currently differentiate species of this genus with our new microCT scan (skull osteology) and DNA data (thousands of genetic markers) will facilitate the descriptions of these new species. But outside of my dissertation progress, the trip to Hawai'i and the Bishop allowed the in-person meeting of a Collection's staff that has made a huge impact on my beginning career. Even prior to this trip, Molly and Allen have helped with numerous loans these past few years that have enabled my research

Below Fig. 4: Jackson Roberts with the Bishop Collections' Manager, Molly Hagemann.

Above (left) Fig. 5: Research specimen of the Pueo, or Hawaiian Short-eared Owl *(Asio flammeus sandwichensis).*
Above (right) Fig. 6: Public exhibits within the exhibit showing the whole skeleton and cast of a Sperm Whale *(Physeter macrocephalus).*

here at LSU, even during the pandemic. I thank Molly and Allen, and the entirety of the Bishop research staff for their help during my visit. Thank you, Dr. Thomas and Susan Shirley, who made the trip possible through their Scholarship. Thank you, Tammie Jackson, here at the LSUMNS for helping with travel logistics. Lastly, thank you, Chris Austin, for supplementing additional costs via your NSF grant.

Below Fig. 7: Replica Niuhi, or Tiger Shark *(Galeocerdo cuvier*), within the public exhibit hall.

Developing Records of Hydroclimate Variability in the Southeastern United States from the Middle Holocene to Present-Day

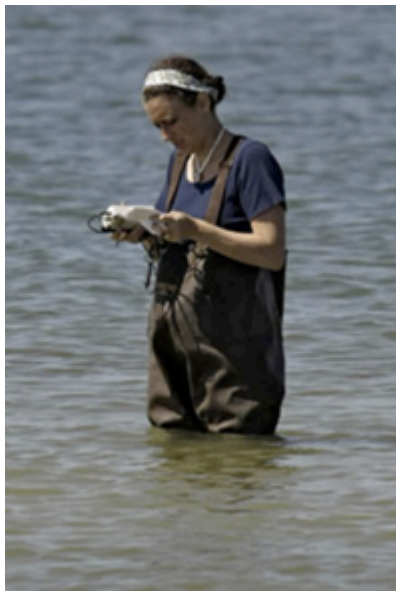
by Sophie Warny

Dr. Aubrey L. Hillman, an Assistant Professor in the Department of Atmospheric and Environmental Sciences at the University at Albany, State University of New York, and Dr. Sophie Warny, a curator in the Museum of Natural sciences and Professor in the Department of Geology and Geophysics at LSU joined forces to evaluate what synoptic-scale climate patterns drive centennial-scale hydroclimate variability in the Southeastern United States from the middle Holocene to present-day.

Their new $215,151 three-year grant will allow Hillman, Warny, a post-doc and one graduate student to acquire new cores from four sites in Alabama and Mississippi. Hillman's group will focus on gathering lake sediment geochemistry and other paleoclimatological data while Warny's group will conduct palynological analyses.

This grant is very timely as there is a pressing need to develop paleo-records of hydroclimate across the understudied SE U.S. to investigate its spatiotemporal variability. Rising global temperatures are expected to result in a 3 to 4°C increase in annual temperatures in the Southeastern United States (SE U.S.) but estimates of future changes in precipitation are highly variable (Mulholland et al., 1997). This hampers our ability to make predictions, which has economic consequences: drought in 2008 resulted in $7 billion in economic losses and flooding in 2010 resulted in $2.7 billion in losses (NOAA/NCEI, 2019). Recent flooding and drought events in the Gulf Coast have caused additional billions of dollars in economic losses. There is a decided lack of understanding regarding the drivers of hydroclimate variability in the SE U.S., compounded by the fact that there are very few paleoclimate records from this region. Hillman and Warny will examine a suite of proxies in lake sediment cores in order to identify the timing, magnitude, and spatial variability of hydroclimate change and to explore potential drivers of that change. They will address an overarching research

Above Fig. 1: Dr. Hillman in the field in India.
Below Fig. 2: Dr. Warny collecting data in the Gulf of Mexico.

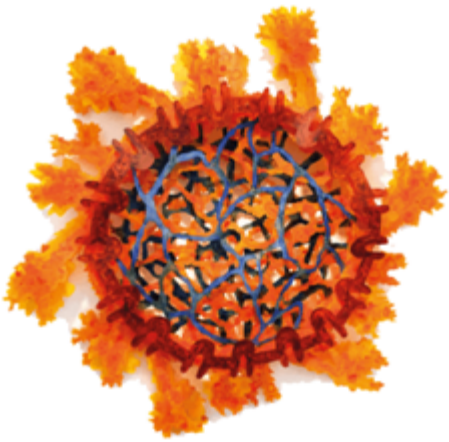


question, “What synoptic-scale climate patterns drive centennial-scale hydroclimate variability in the SE U.S. from the middle Holocene to present-day?”. They hypothesized that from ~4000 years BP onwards, hydroclimate in the SE U.S. has been predominantly controlled by the Pacific North American (PNA) pattern which manifests as a precipitation dipole across the SE U.S. They will test their hypothesis at four sites (two in northern Georgia and Alabama, two in the south of these two states). At each site, they will collect several series of transect cores spanning shallow to deep water conditions; they will identify changes in grain size; they will conduct radiocarbon dating on all observed prominent transitions; they will use carbon and nitrogen ratios and isotopic composition to distinguish between swamp-like or wetland environments and lacustrine environments in deep water cores; and they will be using palynology to reconstruct precipitation and integrate with previously produced pollen records. Together, these measurements will provide a proxy of changes in precipitation which can then be compared across the chosen study sites at three key time periods (4000, 2000, and 550 years BP) to identify if the PNA, El Niño Southern Oscillation (ENSO), North Atlantic Oscillation (NAO), or some combination of these important drivers of hydroclimate. The expected outcomes of this project will be to provide centennial-scale estimates of hydroclimate change that will characterize the response of the SE U.S. to the PNA, ENSO, and NAO, thus producing data that can be fed back into models.

To wrap up this project, Hillman and Warny will collaborate with artist Rebecca Kamen to create an art exhibit “Pollen and Climate” that will be on display at Louisiana State University. At the opening of the exhibit, the artist, the PIs and their students will give informal public presentations and dialogue in the galleries to share the results of the climate change research.

Above Fig. 3: One of the studied lakes, Bucks Pond.
Below Fig. 4: Artist Rebecca Kamen in her studio. Currently Kamen is serving as artist in residence in The Computational Neuroscience Initiative and the Department of Physics and Astronomy at the University of Pennsylvania.

Below Fig. 5: Example of a recent sculpture created by Artist Rebecca Kamen, entitled “Silent Spread: COVID-19 in Art.” Rebecca Kamen’s coronavirus-inspired sculptures trace the migratory pattern of COVID-19 and the exhibit on display at American University, Washington, DC.



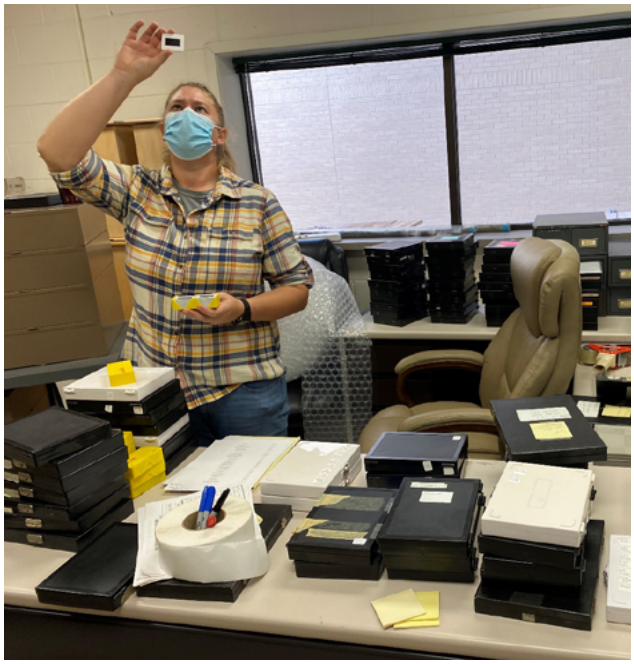
CENEX Selected as the New Home of the Amoco Palynology Collection

by Gunner Boler, Merrell A. Miller & Sophie Warny

It's not every day that a palynology collection of over 10000 slides that took generations to assemble from around the world is transferred safely across states in the back of an LSU Ford Voyager van. However this is just a small detail of what happened October 10th-12th, 2021. The collection donated to LSU consisting of primarily Mesozoic-Cenozoic palynology slides was originally part of the collections of the former Amoco Production Company, having been assembled beginning in the late 1950s by their team of biostratigraphers (G.W. Barker, D.N. Beju, D.G. Benson, W.W. Brideaux, A.T. Cross, C.A. Dawson, L.E. Eames, J.F. Grayson, R. Guillory, R.W. Hedlund, E.J. Kidson, R.A. Laseski, F.X. Miller, M.A. Miller, D.R.M. Mischell, K. Newman, G. Norris, R.L. Ravn, K. Segroves, J.A. Stein, H.J. Sullivan, C.F. Upshaw, G.L. Wannders, D. Wall, G.L. Williams, G.D. Wood, and J.H. Wrenn), and curated by Amoco staff before the company merged with British Petroleum in December 1998. Following the merger, the collections were donated, curated, and stored at the Gulf Coast Repository of the International Ocean Discovery Program (IODP) in College Station, TX. This year, it was decided that the collections would be more effectively used if they were housed at a university with a paleopalynology program; thus discussion about the transfer of the collection started between IODP, Dr. David Pocknall (former BP palynologist) and Dr. Sophie Warny (CENEX director), and the transfer was initiated.

The first step in transferring such a large palynology collection was to become familiar with the history and cataloging of the slides. This could not have been possible without the assistance of Mr. Merrell A. Miller, Dr. James "Jim" Bergen, and Dr. Michelle L. Penkrot. Merrell, a palynologist, and Jim, a nannofossil biostratigrapher, are former Amoco Tulsa Research Center personnel. Both knew details behind many sample localities. Michelle, the Gulf Coast Repository Curator at IODP, went through years of data involving the collection and compiled everything possible at IODP to assist in the curation and transfer process.

Left Fig 1: The Amoco palynology collection at IODP before being reorganized and packed.



Above (left) Fig. 2: Dr. Merrell Miller and Dr. Jim Bergen studying samples to determine if they are useful for future research.
Above (right) Fig. 3: Dr. Michelle L. Penkrot observing an old dinoflagellate projector image. These teaching slides are also part of the donation.

On October 11th, Merrell and Jim explained how the collection was originally assembled and curated. They explained how the slides were originally accompanied by hardcopy taxon and locality folders. Initially, a locality folder was created for each collecting site; these have the locality name, geographic location, stratigraphic sampling information and were assigned a unique locality number. The stratigraphic position of samples was recorded relative to a fixed datum (marker bed, formation contact, core depth, etc.). Some folders contain detailed stratigraphic sections augmented by photographs and interpretive summaries. Upon sample analysis, identified species were documented in hard-copy taxon folders, assigned to a genus, given a sequential species number, and a unique number. Each taxon folder contained a species description, reference to an Amoco type specimen, synonyms, comments on age and paleoenvironments, where possible. This information provided consistent identifications for palynologists in the operating regions. Finally, the locality and species occurrence data were entered in Amoco's paleontological database for range chart generation and graphic correlation.

The amount of information associated with the collection is truly extensive. Still, unfortunately, immediate access to all the associated data is not currently possible. Some are in hardcopy form within the 13 linear feet of locality folders accompanying the nannofossil collection, and others may reside at universities in Kansas, Iowa, Oklahoma, and Utah. This made organizing the slide boxes in a way that could be useful for future research daunting, to say the least, but at that point, there was only one thing to do: open a box and dive in.

After reviewing slides in a few boxes, it was decided first to separate boxes of samples that contained a labeled P number, which is a number unique to every palynology sample, and a labeled locality number that could be potentially referenced back to its locality folder. Most slides that met these criteria came from the Tulsa Research Center. Without locality information, the samples are not useful for research. It wasn't long until samples with no discernably useful information were found. Merrell and Jim eagerly examined the orphaned collections and reminisced about projects during the good old days.

One by one, slide boxes were removed, opened, examined, and reorganized on different shelves where sticky notes were used to denote the region or project from which the samples came. It was truly a team effort, and at the end of the day, there were sticky notes everywhere denoting samples from all over the world: Alaska, Canada, Kenya, Romania, France, Tunisia, Yugoslavia, and Pakistan; just to cite a few! CENEX was

also lucky to receive samples, reports, and photos from the collection of the late Dr. Gordon D. Wood, who primarily studied Paleozoic acritarchs, chitinozoans, and miospores. CENEX is grateful to have some of his work in our possession. We miss his yearly guest-lectures on floral evolution in the Paleozoic for Warny's GEOL 4012 Micropaleontology course.

Once the slide boxes were all separated and organized, it was time to pack them into cardboard boxes for the trip back to Baton Rouge. The Texas A&M IODP student workers were an immense help during this step of the transfer process. Each slide box was lined with bubble wrap or a paper towel to prevent shaking of the glass slides and then taped shut. Each cardboard box was internally lined with bubble wrap to ensure a safe trip. There was a total of 67 cardboard boxes packed with sample boxes, with each cardboard box being able to fit approximately 14-16 slide boxes. The slide boxes were originally stored on six bookshelves, which were loaded into the van to be transferred to CENEX.

Everything loaded into the van included six bookshelves, 47 cardboard boxes, and two boxes of supplemental reports/ information. The remaining 20 cardboard boxes were shipped directly to CENEX. The drive back to Baton Rouge was understandably slow, as this was Gunner's first time traveling with a palynology collection valued at over two million dollars at the time of its original donation to IODP. The collection was then unloaded with ease at CENEX with the help of CENEX's post-doc, Dr. Vann Smith, CENEX graduate student, Tiffany Nordstrom, and Andrew Webb, the building coordinator for the Department of Geology and Geophysics.

Now that the collections are at CENEX, the main goal is to re-organize and curate the collection in a way that will allow it to be efficiently used for future research. This task will include physically reorganizing the collection in the lab, creating an effective catalog system, and digitizing useful hardcopy information. It will be a busy year for Gunner as curatorial assistant! It will not be a fast or easy project, it will likely take a couple of years, but we are excited to be the lab to do it. We are extremely grateful for the help so many people gave to make this happen, and we look forward to utilizing the Amoco palynology collection for many years to come for LSU classes, students' research projects, or to host any palynologists who wish to review the material.

Above (top) Fig. 4: I spent hours preparing cardboard boxes to be filled with sample boxes following approvall by Merrell. **Above (middle) Fig. 5**:Lining the sample boxes with paper towels and taping them shut before packing into cardboard boxes. **Above (bottom) Fig. 6**: Packed boxes on the rolling carts waiting to be packed into the van for the finall transfer to LSU.

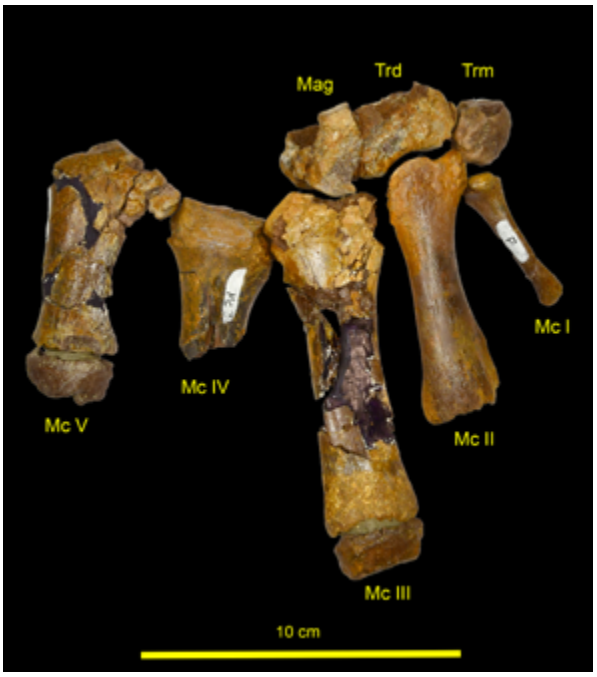
Paleontology News

by Lorene Smith and Suyin Ting

In May of this year, Dr. D. Ray Wilhite, Auburn University, visited the LSUMNS vertebrate paleontology collection to photograph its whale fossils. Ray, a former student of the late Curator of Vertebrate Paleontology Judith Schiebout, is preparing the whale chapter for the book *Vertebrate Fossils of Louisiana*. Dr. Schiebout had organized the book project which is being edited by VP Collections Manager Dr. Suyin Ting and Invertebrate Paleontology Collections Manager Lorene Smith. The main focus of Ray's chapter is the museum's *Basilosaurus cetoides*, an Eocene whale excavated in 1980 on the east bank of the Red River at Montgomery Landing, Grant Parish. The fossilized skeleton is considered to be one of the best specimens of this species known to science

Ian Cannon, also a former Schiebout student, visited in spring to gather data for his chapter on xenarthrans, a group that includes armadillos and sloths. Ian, who teaches at the Kenner Discovery Health Sciences Academy, is working on verifying the occurrence of megatheriid ground sloths in Louisiana.

Above Fig. 1: Dr. Ray Wilhite visited the Vertebrate Paleontology Collection housed in the Howe-Russell-Kniffen Geoscience Complex. Ray received his PhD. from LSU in 2003. He now teaches anatomy at the Auburn University College of Veterinary Medicine and conducts research in vertebrate paleontology and anatomy. Photo by Lorene Smith.



Above Fig. 2: LSUMG V1, right manus, dorsal view. Mag = magnum, Trd = trapezoid, Trm = trapezium, metacarpals I-V (Mc I-Mc V). Photo by Ray Wilhite.

Below Fig 3: *Basilosaurus cetoides*, lateral view of thoracic vertebra T-9. Photo by Lorene Smith.

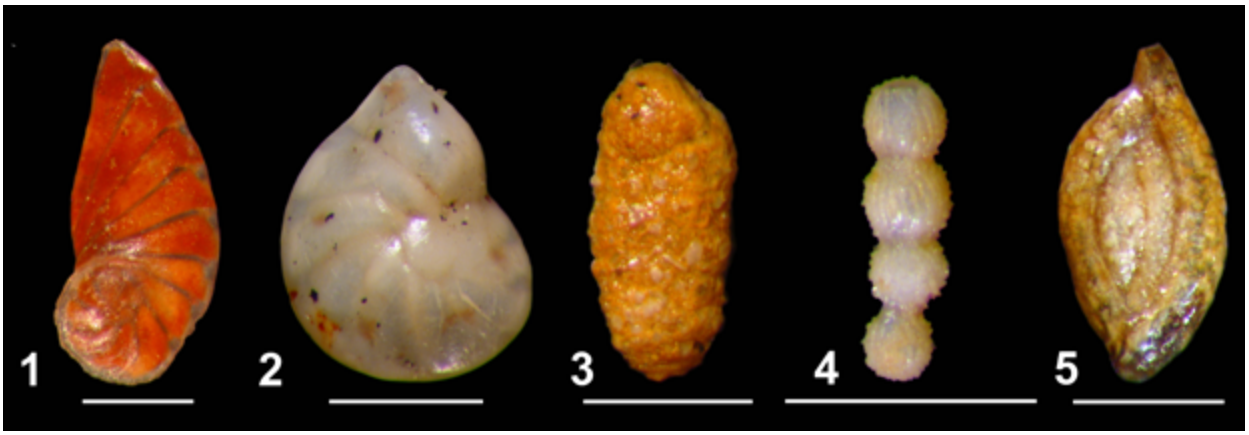
Left Fig. 4: IP Collections Manager Lorene Smith shows Dr. Arthur Porto one of several drawers of bryozoan slides donated by Henry Howe. Photo by Suyin Ting.
Right Fig. 5: VP Collections Manager Suyin Ting opened the case housing the Eocene whale skull and jaw for Dr. Porto's tour with Lorene. Photo by Suyin Ting.

In June, the invertebrate paleontology collection was visited by Assistant Professor Arthur Porto of the LSU Department of Biological Sciences. Part of Dr. Porto's research is on machine-learning phenomics and automated image analyses of bryozoan colonies. Lorene showed him material available for study in the collection which includes type bryozoan specimens and faunal assemblage slides.

Collections manager Lorene Smith and retired curator Professor Emeritus Barun K. Sen Gupta recount the history of the H.V. Howe Type Collection of Microfossils and provide details on the holotypes and syntypes of 361 species and 15 "varieties" of foraminifera in their paper now available on the museum's journal website: https://sites01.lsu.edu/wp/mnspapers/files/2021/04/Occasional-Paper-91.pdf

Smith, L.E. & Sen Gupta, B.K. 2021. Henry V. Howe and his collection of foraminifera at Louisiana State University. Occasional Papers of the Museum of Natural Science, Louisiana State University 91: 1–80.

Below Fig. 6: A few of the many foraminiferal holotypes in the Howe Type Collection of Microfossils: 1, *Planularia ouachitaensis*; 2, *Darbyella danvillensis*; 3, *Textularia mauricensis*; 4, *Dentalina granulostriata*; 5, *Massilina columbiana*. Scale bars = 0.5 mm. Photomicrographs by Lorene Smith.



Sophie Warny Receives AASP's Medal for Excellence in Education

by Jessica Manafi Brits

LSU Department of Geology & Geophysics Professor Sophie Warny was recently awarded the American Association of Stratigraphic Palynologists-The Palynological Society's Medal for Excellence in Education.

Warny is only the sixth person—and the first female—to receive this award since the inaugural medal was awarded in 1999. Previous recipients include Professor Aureal T. Cross from Michigan State University (1999) Professor Alfred Traverse from Pennsylvania State University (2001); Professor Bill Evitt from Stanford University (2006); Professor Vaughn M. Bryant from Texas A&M University (2013); and Professor Geoffrey Clayton from Trinity College, Ireland (2016).

"This medal recognizes leaders in palynological education. Nominees are expected to have considerable experience and accomplishment in aspects of academic education involving palynology," AASP said in a released statement.

Warny has more than a decade's experience teaching micropalaeontology, and her research interests go beyond palynology and micropalaeontology and include historical geology, climate change and stratigraphy. During her career, Warny has contributed to at least seven educational books and articles focusing on palynology, in addition to dozens of publications in journals such as Science, Nature, Nature Geoscience, PNAS, Geology and Gondwana Research.

In addition to her role in the Department of Geology & Geophysics, Warny holds a number of other positions. Warny is a curator and the director of education at the LSU Museum of Natural Science, as well as the AASP chair. She is the director of the AASP-The Palynological Society Center for Excellence in Palynology (CENEX) and served in 2016 as vice president of the Gulf Coast Section of Society for Sedimentary Geology (GCSSEPM) society.

Other awards include a LSU Rising Faculty Research Award in 2014 and a National Science Foundation CAREER award in 2011. Warny also received the AASP Graduate Student Award in 1996.

But it was the response from her former students that revealed the kind of impact Warny has had during her years of teaching and advising.

"Sophie is highly supportive of her students advancement, and she shares her passion for research to impart her broad knowledge in palynology. Her teaching features a unique field-based and laboratory technique approach to make the subject challenging and exciting for students at all levels," one nomination letter reads.

"Dr. Warny demonstrates a sincere interest in her students achieving personal goals and growing as human beings…One other passion I recognize in Dr. Warny is teaching and promoting science to students and young generations through her classes, seminars, and her work on the LSU Museum of Natural Science," reads another.

"Several of Dr. Warny's Introduction to Micropaleontology students have decided to pursue research in palynology after taking her course… [she] has an exceptional ability to inspire

scientific passion in her students." — former student Vann Smith.

"Dr. Warny is wonderfully generous with her time and expertise... she encourages all her students to put forth their best work and always has an open door." — former student Shannon Ferguson.

"To her students, she is an up-close example of a dynamic working mother... I mention this example Sophie sets for her students to highlight the imperative that young women, especially young women in STEM, have role models in education that they can look up to and see some of themselves in... Sophie is such a role model." — former student Kate Griener.

"Dr. Warny's efforts were not only focusing on us achieving the best we could in terms of Science. She had a genuine concern for us finding our own path including obtaining the best employment opportunities either in academia or in industry. Dr. Warny helped us develop our network with palynologists and/or geologists working on the academia and/or the O&G industry." — former student Carlos Santos.

"Getting such an amazing recognition from former graduate students is the most meaningful award a faculty member can receive. I am incredibly honored, and I thank the society and all my students from the bottom of my heart," Warny said.

Warny received her Ph.D. in 1999 from Catholic University of Louvain in Belgium and initially came to LSU in 2000 as a postdoctoral research associate. Her work revolves around understanding past climate change patterns by examining fossilized pollen and spores.

Below Fig. 1: Sophie Warny in lab. Photo credit Eddy M. Perez.

Remembering Albert John Doucette Jr.

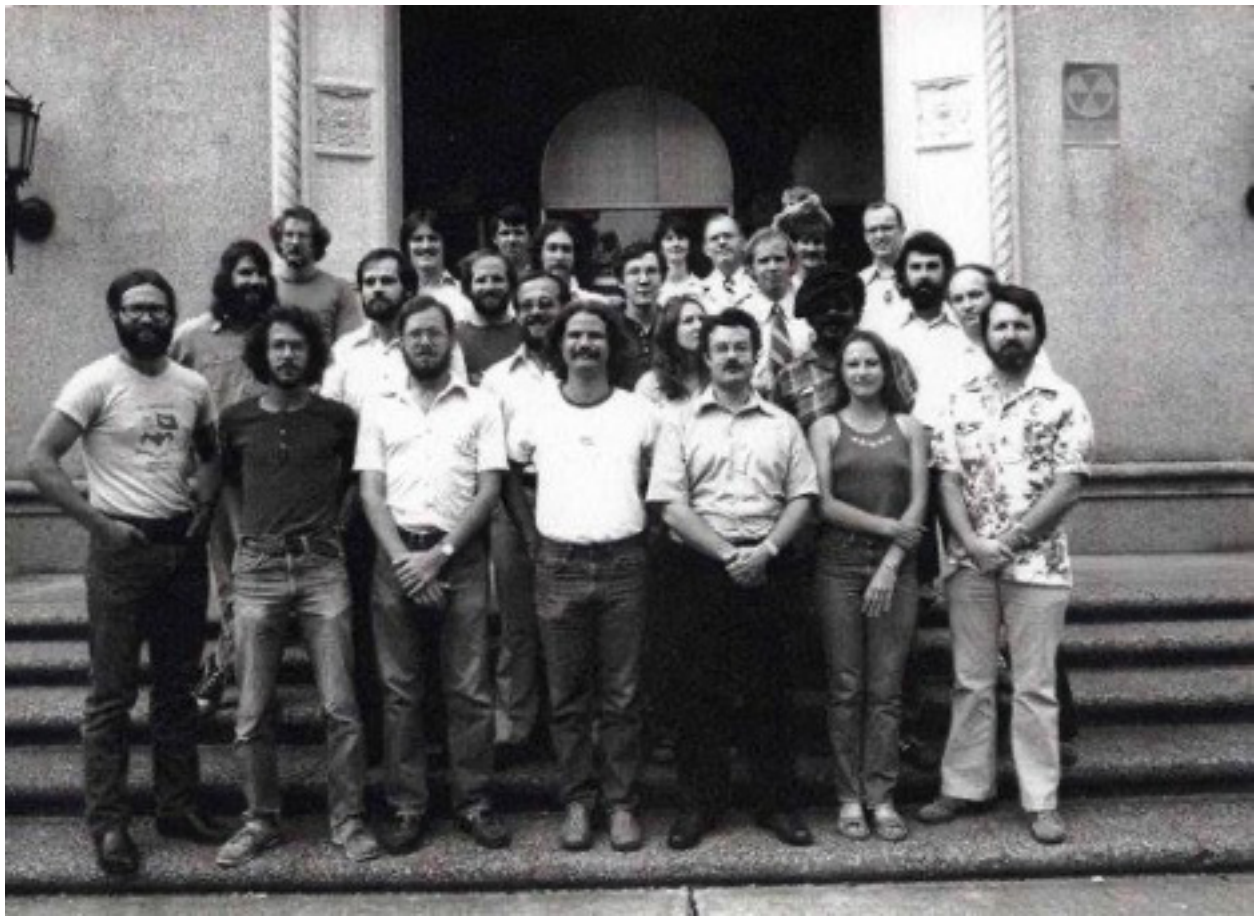
By Prosanta Chakrabarty

Albert John Doucette Jr. was born in March 23, 1948 in Slidell, Louisiana and received his bachelor of science degree from Southern University. He would later become faculty (1985) and Associate Dean at Southeastern Louisiana University – he held that position until his death on September 4, 2004 at the age of 56. He also worked with Tennessee Tech University and the U.S. Fish and Wildlife Service. In 1973 he was the first black graduate student at LSU's School of Renewable Natural Resources getting a Masters in Fisheries. He then worked on a PhD at the Museum of Natural Science with Dr. J. Michael Fitzsimmons who was Curator of Fishes; Doucette defended his PhD on April 30, 1985 with a dissertation titled 'Karyology of Lower Teleost Fishes.' There are 67,119 specimens that he collected deposited at the LSU MNS Fish Collections.

Have more information about Dr. Doucette? Please reach out to Prosanta Chakrabarty prosanta@lsu.edu – we would love to learn more.

Above Fig. 1: Albert John Doucette Jr.

Image from https://www2.southeastern.edu/NewsEvents/PublicInfoOffice/Doucette.html



Above Fig. 2: Dr. Doucette on the front steps of the LSU Museum of Natural Science, 2nd row from front (with hat).
Below (left) FIg. 3: The chromosomes of tarpon and ladyfish from Dr. Doucette's dissertation.
Below (right) Fig. 4: Some specimens collected by Albert Doucette in the LSU Museum of Natural Science Fish Collections.

Fig. 2. Karyotypes of Megalops atlanticus (A), and Elops saurus (B). Abbreviations: metacentric (m), submetacentric (sm), subtelocentric (st), telocentric (t). Scale = 5 µm

MNS NEWS

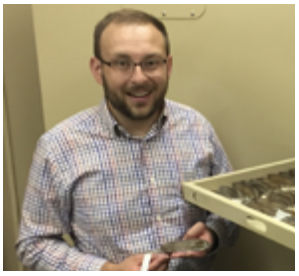
New ASIH President

Prosanta Chakrabarty, PhD

LSU Museum of Natural Science's Curator of Fishes Prosanta Chakrabarty has recently been named President of the American Society of Ichthyologists and Herpetologists (ASIH). He will serve as President-Elect in 2022 and then as President in 2023.

"I am really proud to be part of ASIH leadership again, especially at this critical time when taxon-focused scientific societies are losing members. I want to keep the Society fun and scientifically engaging while also being safe, welcoming, and affordable for everyone interested in herps (amphibians and reptiles) and fishes. I'm really honored that the membership entrusted me with this role and can't wait to get started."- Chakrabarty

Postdoctoral



Mark Swanson, PhD

Former graduate student Mark Swanson defended his dissertation during the summer and is now a post-doctoral researcher in the lab of Dr. Ran Blekhman at the University of Minnesota. Mark is investigating eco-evolutionary interactions between mammalian hosts and their symbiotic gut bacteria.

Giovani Hernández-Canchola, PhD

Current post-doctoral scholar, Giovani Hernández-Canchola, will be joining the Laboratorio de Genética y Ecología led by Dr. Ella Vázquez-Domínguez, at the Instituto de Ecología, Universidad Nacional Autónoma de México (UNAM). In March 2022, Giovani will start a UNAM Postdoctoral Fellowship, and he will be investigating the diversity and richness of bat species, their genomic diversity, and the genomic diversity of their holobiomes for the purpose of understanding the effects of anthropogenic activity on ecosystems and potential transmission of emergent zoonoses.

Alumni Highlight

Phred Benham, PhD

Benham completed his undergraduate in Biology at LSU in 2006 and received his Ph.D. from the University of Montana in 2018. Benham currently has a NSF Postdoctoral fellowship with the Rauri C.K. Bowi Lab at the Museum of Vertebrate Zoology, University of California at Berkeley. His research aims to use historical specimens of tidal marsh songbirds to understand demographic and adaptive responses to human development of tidal marshes along the California coast.

MNS NEWS

Grants and Awards

Anna Hiller

This spring (2021) Hiller received the Alexander Wetmore Memorial Research Award from the American Ornithological Society for funds to conduct genome resequencing, as well as a COVID-19 supplemental award from the American Philosophical Society for funds to support her hybrid zone research.

Diego Elías

Elías was awarded a Mary Lou Applewhite Distinguished Graduate Student Fellowship as well best student oral presentation for his presentation during the Systematics and Evolution Session in the BioGrads Symposium from the Department of Biological Sciences LSU.

Heru Handlika

PhD student Heru Handika received a Graduate Student Research Award from the Society of Systematic Biologists for $3,000 and a Grant-in-Aid of Research from the American Society of Mammalogists for $1,500.

Jackson Roberts

Roberts was awarded the Thomas and Susan Shirley Superior Graduate Scholarship for $1,000 from the Biological Sciences Department here at LSU in April 2021.

Outreach Update

Virtual Special Saturdays

For everyone who has been missing our amazing children's program, you are in luck! We will be hosting virtual "Special Saturdays" with all the same STEM fun starting this semester. To find out more about Special Saturdays click on this link Virtual Special Saturdays!

New Set-Up

We will be hosting the same style program with presentations from one of our LSU Scientists followed by a fun craft, but this time on zoom. By going virtual, children outside the Baton Rouge area can participate for the first time! We have also partnered with local Baton Rouge Libraries to allow students to participate from the libraries. This has expanded our reach to children who may not have otherwise found us due to not being close to campus.

New Activity Kits!

We don't want anyone to miss out on anything, so we have designed new Activity Kits to accompany our Special Saturdays. These STEM-based activity kits include activity sheets, fun facts, information about the museum, and a craft. They are delivered to partnering local libraries monthly for kids to pick up and learn from even if they cannot make the live event. These kits allow children who cannot attend our regular live programs to still access STEM-based learning resources. As of this month, we will have distributed over 180 kits.

Participating Libraries

Delmont Gardens Branch Library
Bluebonnet Regional Branch Library
Greenwell Springs Branch Library
Jones Creek Regional Branch Library

Special Saturday ScheduleFall 2021

Special Saturdays are FREE STEM programs for children ages 5-12.
Programs run from 10:00 a.m.-12:00 p.m on posted Saturdays.

Wild World of Deep-Sea Fishes

September 4, 2021

Special Guest: Sheila Rodriguez- Machado, Ichthyologist

Learn about some of the weird and wonderful fishes that live below the light! How do they adapt to live and eat in pitch darkness? What happens when you throw a volcano in the mix? Find out with Ichthyologist and fish fanatic Sheila Rodriguez-Machado!

Putting the 'fun' in Fungi!

October 9, 2021

Special Guest: Spenser Babb- Biernacki, Mammalogist

Fungi are more than just the mushrooms we buy in the grocery store. They are super important to our environment! They help break down decaying material and keep the circle of life turning. Come learn about these spectacular spores with Spenser Babb- Biernacki, a mammalogist who puts the "fun" in fungi!

The importance and beauty of insects

November 6, 2021

Special Guest: Luis Santiago- Rosario, Biologist

Did you know an Entomologist is a scientist that studies insects and that Anthropods are a group of animals that include insects and spiders? So come be a junior Entomologist and learn about the beauty of insects with avid Arthropod enthusiast Luis Santiago-Rosario!

Where do all the Herps go?

December 18, 2021

Special Guest: Jackson Roberts, Herpetologist

Ever wondered what happens to our cold-blooded herps in the winter? Find out where all the reptiles and amphibians go when it gets cold, with herpetologist and snake lover Jackson Roberts!

Scan QR code to sign up for our educational email list!

For more information visit us at lsu.edu/mns

Contact: Emma Reynolds | ereynolds1@lsu.edu | (225) 578-2855

2021 Fall Seminar Schedule

Seminars begin at 3:30 pm
Main Gallery of Foster Hall and on Zoom

November 12th: Dr. Anna Tigano
PhD from Queen's University; current postdoc at the University of British Columbia Okanagan
Zoom only

December 3rd: Dr. Angelo Soto-Centeno (Faculty; Rutgers)
Assistant professor in the Department of Earth and Environmental Sciences at Rutgers University

Email lsumns@lsu.edu for Seminar Series Zoom link

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If you would like to include items in the next issue of *Museum Newsletter,* please send information, articles and photographs to the Museum Education Office. Articles about research, study or any other items of interest are encouraged. Information may be submitted as completed articles with jpeg pictures in attachments, or in list form to be put into article.

Email your material to ereynolds1@lsu.edu

In This Issue...

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