

# Museum Quarterly

LSU Museum of Natural Science

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## Museum of Natural Science Director and Curators

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Professor and Curator of  
Genetic Resources*

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## Letter from the Director...



### “Looking Forward”

They say the only constant in life is change, and that has been true for the Museum over the last few months. A bevy of graduate students moved on to prestigious postdoctoral fellowships across the country. Dr. Rob Mann, the Southeast Regional Archaeologist, took a job at St. Cloud State University in Minnesota. I sure wish LSU could have hung onto him. Dr. Mark Hafner, legendary Curator of Mammalogy and former Director, moved into a new position as Curator Emeritus. Our new Curator of Mammalogy, Dr. Jake Esselstyn, is here and off to a great start. And last but not least, Dr. Fred Sheldon, our Director for the last 12 years, decided to hand the reins over to me. Despite cuts to our operating budget and substantive ongoing challenges with our physical infrastructure, the Museum prospered mightily during his tenure as Director. Anyone who knows Fred knows he is too humble to claim any of the Museum’s accomplishments, but I can tell you that his tenacious advocacy for the Museum is a tough act to follow. Thank you Fred!

To name just a few things

- The amount of extramural federal funding raised by Museum Curators increased dramatically.
- The Collection of Genetic Resources almost doubled in size, and is rapidly approaching 100,000 tissue samples. Fred secured new liquid nitrogen vapor freezers from the College of Science that preserve these invaluable tissues in perpetuity.
- The Louisiana Bird Resource Office was created.
- Growth in the Collection of Palynology and the Collection of Ichthyology skyrocketed under the care of new Curators Dr. Warny and Dr. Chakrabarty
- He recruited an unparalleled front office staff.
- He maintained a stellar research program, with two active big NSF research grants and a cadre of talented graduate students.

Looking forward, my job is to insure that we fulfill our mission, to ensure that the Museum continues to prosper, and to develop and enact a vision for healthy future growth. We love what we do and we want to share the importance of our research with others. The downside is that it takes money to accomplish this. There are many levels of need here, and I am spending my first few months as Director assessing where we stand and where we want to be. Stay tuned.

The Museum of Natural Science is one of LSU’s gems, and it provides a vital resource for researchers worldwide. I want to thank all of you for building it into what it is today. Those of you who have spent time here know that the LSU Museum of Natural Science is like a big family. So please enjoy catching up on recent Museum events and please come visit us!

**Robb Brumfield**

# Ichthyology trip to Japan: Conference Piggybacking

By Prosanta Chakrabarty



At the end of June, my PhD student **Bill Ludt** and I went to Okinawa for the 9<sup>th</sup> Indo-Pacific Fish Conference (IPFC), and then traveled to Tokyo to do a market survey and collection at the famous Tsukiji Market. The IPFC is held every 4 years and it is a mix of ichthyology and evolution conferences that is important for everyone working on fishes in the region. This year's conference was particularly important for me because it included a Percomorph Symposium that dealt with higher-level fish systematics and included a series of well-known speakers, and it was one of the most important single days in systematic ichthyology signaling a paradigm shift in our discipline.

The meeting is typically held in an interesting and beautiful location that is usually a great spot for collecting fishes too. The last IPFC in 2009 was in Perth, Australia; at that meeting I was able to get away to collect cavefish from Exmouth in the northern part of the country. This year's conference was relatively small, with only 500 people, but it was a great conference for networking with other like-minded scientists. Both Bill and I left with several new collaborations that we are truly excited about.

Okinawa is at the southern reaches of Japan, closer to Taipei, Taiwan than to Tokyo and with a rich history of its own. (It may be fighting for its independence as a sovereign nation in the near future.) The conference center was a few steps from a beach and a crystal clear blue ocean, but there was little time to enjoy it. The talks were fantastic and groundbreaking with lots of new systematic efforts highlighting new molecular techniques. The next generation of sequencing is here and I was very excited to talk about ultraconserved elements and our project on using massively parallel sequencing to resolve the basal relationships of *Ostariophysi* (a group of 10,000 species that includes catfishes, electric knifefishes, tetras, piranhas, goldfish, and over 70% of freshwater fishes; this lineage alone

Photos: Top Left - William Ludt;  
Bottom Left - Japanese fisherman inspecting inventory



represents 1 in every 6 species of vertebrate). After a few years of giving talks about projects I had just recently published, I loved talking about something so fresh that I didn't have results to talk about until a week before we were set to leave. Bill on the other hand was much better prepared and he gave an excellent talk on *Prionurus*, a group of surgeonfishes (so named because of razor sharp barbs near their tail). This genus of seven species are distributed in cold waters in disjunct areas that are essentially anti-tropical. Bill presented a phylogeny that helped explain their evolutionary history and unusual distribution. Directly following his talk several very well known scientists approached him and I was proud of him as he began making a name for himself in the fish world.

After the conference Bill and I flew up to Tokyo, which was another world all together. As a New York City kid that thinks he is well traveled (Japan was my 24<sup>th</sup> country visited) I was surprised by how mesmerized I was by this ultramodern city that still had plenty of old world charm. The largest city in the world humbled me in its size, diversity and culture. Along with exploring a new city, our main goal was to collect as many species as we could at the world's largest fish market, Tsukiji. This is home of the world famous bluefin tuna auction where last year a single individual sold for 1.7 million dollars. The bluefin is highly endangered and could go extinct by the next decade or so. Sought after for its crimson meat that is a result of a countercurrent circulation that endows

this great species with the ability to travel at amazing speeds, also has made it one of the most sought after national resources in the world. Bluefin are flown in from around the world and I've actually seen individuals collected in Sri Lanka that would quickly make their way to Tokyo via private jet. Bill and I couldn't resist heading to the market at 3am to observe the proceedings. The auction doesn't take place until 5am but in order to get in to see the trading of bluefin you need to be ahead of the pack. The auction itself is rather quaint despite the high stakes: gentlemen (I saw no female participants) with flashlights and dower faces looked closely at the exposed red meat of the tunas like a mechanic evaluating the engine of a Lamborghini. The huge fish sold quickly and we were ushered away just as fast. Tsukiji itself was a bit of a disappointment to me. As the world's largest fish market I was expecting to find a large assortment of species that boatmen were delivering directly to the wholesalers. In large markets in Thailand and Taiwan I saw enormous ships bring in thousands (if not millions) of fish to the banks and saw sellers buying up what they could: what they didn't want was discarded in large piles. These large piles hide an exceptionally diverse assortment of rare species and often include deep-sea creatures that would be very difficult to get otherwise. Deep-sea research vessels can charge upwards of \$30K a day, but at the bycatch trash piles the fish are free and the hard work is done for you. Unfortunately, Tsukiji is a different monster

Photo: William Ludt & Prosanta Chakrabarty

all together. The market is only open to the public from 9-10am. The rest of the time, the wholesalers are packing up specimens that are being brought in from all over the world and setting them up to be shipped out to other locations around the world. It is more of a post office sorting center than the all-purpose warehouse I expected. So that meant I found no bycatch pile. Many of the vendors' booths, and there were over 100 of them, would not sell to us because they only sold 10kg at a time or some other fixed weight. We had a bit more luck when we explained we were scientists, but because we came when the annoying tourists were also there we got many strange looks and curt replies when we inquired about purchasing the different species. In the end we only ended up with about 30 species and perhaps 50 individuals. However, since most of them are new to our collection it was certainly worth it. It just wasn't what we expected from what we had heard about the market in the past.

Overall it was a memorable and productive trip both in terms of collaborations made and fishes collected. I most certainly want to return to Japan to do some proper collecting in the future.



PHOTOS:  
Top: Fisherman inspecting fish at market

Left: Prosanta Chakrabarty taking  
measurements and labelling fish



## LSU Plays Role in Discovery of New Species of Bird in Cambodia

A team of scientists with the Wildlife Conservation Society, BirdLife International, LSU, the University of Kansas and the Sam Veasna Centre have discovered a new species of bird with distinct plumage and a loud call living not in some remote jungle, but in a capital city of 1.5 million people. LSU and the University of Kansas did the DNA analysis necessary to declare the species new to science.

Called the Cambodian tailorbird (*Orthotomus chaktomuk*), the previously undescribed species was found in Cambodia's urbanized capital Phnom Penh and several other locations just outside of the city including a construction site. It is one of only two bird species found solely in Cambodia. The other, the Cambodian laughingthrush, is restricted to the remote Cardamom Mountains.

Scientists describe the new bird in a special online early-view issue of the Oriental Bird Club's journal Forktail. Authors include: Simon Mahood, Ashish John, Hong Chamnan, and Colin Poole of the Wildlife Conservation Society; Jonathan Eames of BirdLife International; Carl Oliveros and Robert Moyle of University of Kansas; **Fred Sheldon** of LSU Museum of Natural Science; and Howie Nielsen of the Sam Veasna Centre.

The wren-sized gray bird with a rufous cap and black throat lives in dense, humid lowland scrub in Phnom Penh and other sites in the floodplain. Its scientific name 'chaktomuk' is an old Khmer word meaning four-faces, perfectly describing where the bird is found: the area centered in Phnom Penh where the Tonle Sap, Mekong

and Bassac Rivers come together.

Only tiny fragments of floodplain scrub remain in Phnom Penh, but larger areas persist just outside the city limits where the Cambodian Tailorbird is abundant. The authors say that the bird's habitat is declining and recommend that the species is classified as Near Threatened under the IUCN's Red List. Agricultural and urban expansion could further affect the bird and its habitat. However, the bird occurs in Baray Bengal Florican Conservation Area, where WCS is working with local communities and the Forestry Administration to protect the Bengal florican and other threatened birds.

This same dense habitat is what kept the bird hidden for so long. Lead author Simon Mahood of WCS began investigating the new species when co-author Ashish John, also of WCS, took photographs of what was first thought to be a similar, coastal species of tailorbird at a construction site on the edge of Phnom Penh. The bird in the photographs initially defied identification. Further investigation revealed that it was an entirely unknown species.

The last two decades have seen a sharp increase in the number of new bird species emerging from Indochina, mostly due to exploration of remote areas. Newly described birds include various babbler species from isolated mountains in Vietnam, the bizarre bare-faced bulbul from Lao PDR and the Mekong wagtail, first described in 2001 by WCS and other partners.

Photo: Cambodian tailorbird (*Orthotomus chaktomuk*)



## LSU Research Responsible for Naming 15 New Species of Amazonian Birds

*This cements the LSUMNS status as one of the world's leading ornithological institutions.*

An international team of researchers coordinated by ornithologist **Bret Whitney** of the LSU Museum of Natural Science, or LSUMNS, recently published 15 species of birds previously unknown to science. The formal description of these birds has been printed in a special volume of the “Handbook of the Birds of the World” series. Not since 1871 have so many new species of birds been introduced under a single cover, and all 15 discoveries involve a current or former LSU researcher or student.

“Birds are, far and away, the best-known group of vertebrates, so describing a large number of uncataloged species of birds in this day and age is unexpected, to say the least,” said Whitney. “But what’s so exciting about this presentation of 15 new species from the Amazon all at once is, first, highlighting how little we

really know about species diversity in Amazonia, and second, showing how technological advances have given us new toolsets for discovering and comparing naturally occurring, cohesive (‘monophyletic’) populations with other, closely related populations.”

Amazonia is home to far more species of birds – approximately 1,300 – and more species per unit area, than any other biome. Technological advances such as satellite imagery, digital recordings of vocalizations, DNA analysis and high-powered computation power have taken the age of discovery to the next level, and were key ingredients in the discovery of these new species. However, such discoveries still depend on exploration of remote areas of the Amazon rainforest,



Photos:  
Top of the page: *Zimmerius chicomendesi* (photo by Fabio Schunck)  
Above: *Myrmotherula oreni* (photo by Lars Petersen)

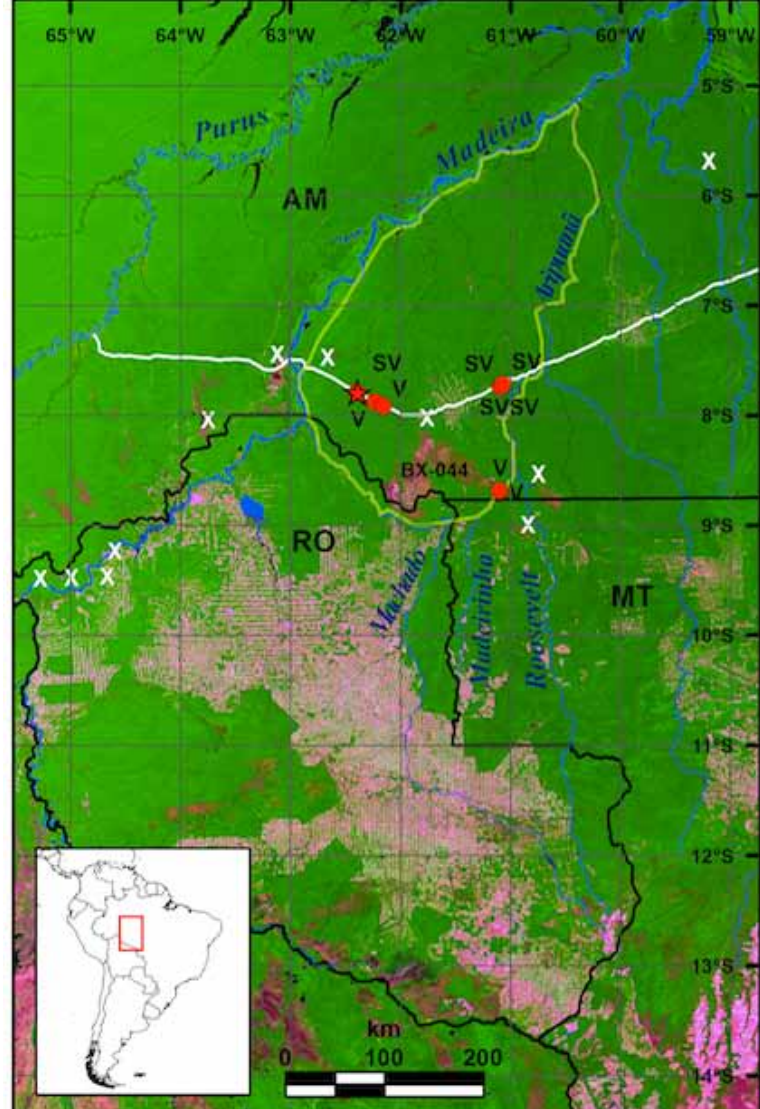
just as they did a century ago, and this sort of field-work has been carried out by the LSUMNS every year since the early 1960s.

“We’re on the threshold of a new age of discovery and documentation that carries on the LSU tradition of leading the way in avian research in the Neotropics,” he said. “To the point, in recent years we have forged a highly productive program of collaboration with ornithologists at the University of São Paulo and LSUMNS, and today LSUMNS and Brazilian graduate students are privileged to be working together, learning from each other as they study some of the most complex speciation dynamics on Earth.”

Other ornithologists involved in the project include **Mario Cohn-Haft** of the Instituto Nacional de Pesquisas da Amazônia in Manaus and **Alexandre Aleixo** of the Museu Paraense Emílio Goeldi in



Photo above: *Herpsilochmus stotzi* (photo by Fabio Schunck)



Above: *Zimmerius chicomendesi* distribution map

Belém, both received their Ph.D.s at LSU from the Department of Biological Sciences. Also an author on many of the papers is Luís Fabio Silveira of the Museu de Zoologia da Universidade de São Paulo, which has a formal agreement for collaborative field and laboratory research with the LSUMNS. More than 30 authors participated in the 15 species descriptions, each peer-reviewed as an independent scientific paper. Authors also include ornithologists from Colombia, Argentina and the United Kingdom. Most of the new species were discovered by Whitney and Cohn-Haft by detecting differences in their songs and calls in the field.



## A Tanager Without a Name

By Ryan Terrill

In December 2001 I was fifteen years old and in my sophomore year of high school. I had never been to the tropics before, but was just getting intensely interested in birding near my parents' house in California. Each year, LSUMNS alumnus and family friend **Gary Rosenberg** would come by our house and put on a slideshow of birds he had seen during the past year. Gary is a bird tour guide, and every year I looked forward to seeing his pictures of birds from all over the Americas. I would sit up close to the screen in amazement at the birds I had never heard of, waiting to try to catch a bird I had noticed in a book or seen in a previous slideshow. In 2001, Gary had something special for us. He told us that he had been on Manu road in Peru with LSUMNS research assistant **Dan Lane** when they saw a bird that they were sure was a new species. He told us it was so unique that both he and Dan knew immediately it was something completely new to science.

Recently, LSU Ornithology has been in the news for describing 15 new species of birds. Most of these birds were discovered by vocal dif-

ferences noticed by extremely skilled observers, which prompted genetic studies to investigate the divergence between named and potentially unnamed populations. Widely considered the world's foremost expert on Neotropical bird vocalizations, LSUMNS research associate **Bret Whitney** is nothing short of a specialist (perhaps the only one in the world) on finding new birds by ear, and his field work was involved in most of these discoveries. Dan and Gary's tanager is not counted among these 15 species because we have not officially described it yet.

These three methods of describing new species (elevating subspecies, finding differences in collections, noticing vocal differences in the field) account for the vast majority of newly described species since the turn of the 20<sup>th</sup> century. Even in South America, where huge areas remain unexplored or poorly known, a true *Eureka!* moment is very rare. And these happen almost exclusively far from areas previously explored, on multi-week expeditions deep into pristine forest.



The thing is, this new species of tanager is an anomaly. Not only is it completely unique and new, but it was found along one of the most popular birding roads in South America. Manu road has been the site of multiple long-term Ornithological research projects, and is very popular for birding tours. Over subsequent trips, they observed the bird again, and Dan was able to collect a specimen. Over the next few years, tour guides were able to locate the bird a handful more times. As more reports came, it became apparent that it was only present from September to April. Most birds in this part of South America are not migratory, especially not tanagers.

That is where the story stayed for twelve years. Single sightings of this bird trickled in. It was always in the same spot, and only during one half of the year. Everyone was perplexed. How many were there? What was the range? Where does it go for half of the year? During that time, I graduated high school and college, spent a year studying and birding in South America, and made repeated trips back to the Neotropics as my interest in the birds there grew. In 2010, I was elated to hear that I had been accepted to graduate school at LSUMNS. This had been a goal of mine since those early slide shows and hearing tales from my parents and family friends about the LSU expeditions to the most remote parts of South America.

When I arrived at LSU, I knew that I wanted to work in Bolivia. Researchers at the LSUMNS had worked extensively there in the past, but there are still very large parts of the country that are poorly known. With the help of my advisor, Van Remsen, who worked prolifically in Bolivia and wrote the first checklist of the birds of the country, I contacted the Museo de Historia Natural Noell Kempf Mercado in Santa Cruz, worked out a research agreement with them, and we begun collecting birds in the country for the first time in over a decade.

This is how the kid who had been sitting on the floor in his parents living room gawking at slides of birds he did not know anything about, not even old enough to drive when the bird was first discovered, found himself organizing an expedition to Bolivia to try to collect and officially describe a new species of bird to science.

We arrived in Santa Cruz, which is a cattle town in southern-central Bolivia, right where the extreme southern extent of the Amazonian forest gives away to grasslands and dry forests further south, and a big bend in the nearby Andes marks a major transition in habitat types. Because of this change in vegetation types, Santa Cruz is a great city to go birding, because it is close to many types of



Page 8: The tanagers were in a unique dry-forest transition habitat, which was some of the most pristine deciduous forest any of us had ever seen. An interesting aspect of these birds is that their territories always seemed to include or even be centered around a single large cactus.

Above: The tanager without a genus or species name

Page 11: Expedition participants Daniel Lane, Ryan Terrill, Frank Rheindt, and Jonathan Schmitt

habitats, and a daytime landing in Viru-viru airport is often brightened by Greater Rheas, Red-legged Seriemas, or Red-winged Tinamous on the runway. Time off in Santa Cruz is packed with birding, but we didn't have much this trip. The spot we needed to get to was at least three days away by land. We hired German, a van driver and guide that Dan knows, who turned out to be an amazingly resourceful guy. After organizing all our gear and permits, buying food and equipment, and planning our route, we set out, and immediately climbing up the east slope of the Andes. The forests along the east slope of the Andes contain more species of birds than anywhere else on earth; and while this peak in diversity occurs well north of where we were, it still always kills me to drive straight through without getting out to look around. So I basically had to hold my breath, close my eyes, and pretend I was somewhere else if we wanted to make any progress at all.

We spent the night in Cochabamba, a city high in the Andes, just over the crest of the Eastern Cordillera, and set out across the *Altiplano*, an extremely high, flat plain at the top of the mountains. We passed spectacular views all day as we wheezed and huffed every time we even got out of the car; with massive peaks looming over us; we were able to plan our lunch break to coincide with a good spot Dan knew about, and to get good looks at the rare Maquis Canastero. Coincidentally, I had collected the first specimen of this bird since the modern era of saving tissues for genetic research on my first trip to Bolivia, which allowed LSUMNS researchers to include this species in the first molecular study of evolutionary relationships of its family. While German simmered rice and pork chops on the side of the highway, we picked Frank up in La Paz, and on our third day on the road descended the Andes again to the small town of Apolo, located in a dry valley on the eastern slope. Most of the eastern slope of the Andes is extremely humid, and this unique spot is caused by a rain shadow from a ridge to the north. The scenery was beautiful the entire drive, but after three days straight in a van, we were all very ready to be there. I had already listened to all my podcasts and the first half of the book on tape I downloaded. We came in to Apolo just before midnight and went

to the only place in town where you can pay to sleep in a bed: the convent.

If you've ever tried to sleep when a good bird is nearby, it's sort of like Christmas Eve. Needless to say, it put sleep out of my reach most of the night; and we were all out on the trails before civil twilight.

As I walked, it started to drizzle, and no birds were singing. Our camp was in a canyon, and there was a trail climbing through the wash up the middle. I just kept going, figuring I would scope out the habitats nearby, and see how far I could get before the rain let up. The rain did not let up. After a few hours and many kilometers of walking, hard rain hit, and I sat huddled under my poncho, trying to keep my recording equipment dry. When I left in the morning I didn't think I would be going far, so I didn't bring any food or water, and at this point I was pretty hungry and thirsty. I stared off in the distance for while, thinking about what to do, when I spotted a big ripe papaya, hanging from a nearby tree. I opened it up with my pocketknife and had one of the best meals I've ever had. A saying I've often heard in Bolivia is that hunger is the best sauce.

A few hours later, after the pouring rain returned to drizzle, I wandered back into camp, having barely heard a bird all day. Dan had a big grin on. He had found the Tanager.

Over the next few days, we discovered the tanager to be common right around camp. We found lots of them. They were loud, and sang well into the mid-morning, after many other birds had quieted down. We were stunned that this bird, which looks nothing like any other, could be so common and inescapably obvious. We were able to record the songs of many individual birds, often from close range, and observe their behavior and collect a type series over the next few days. The forest was pristine deciduous forest, and we were also treated to other good birds, such as a potentially new taxon of sparrow, and a Rufous-vented Ground-cuckoo feeding its fledgling at an army ant swarm.

After a week of working at the site, we were happy with the type series we had collected, and packed up, plunged through the river again, and headed out. We had more time to bird our way back to Apolo, and decided to make a few stops in the transition from the tall deciduous forest into the open grasslands. We were stunned to find the tanager along the road, well outside the habitat we thought they needed. We continued finding tanagers until there were almost no trees left, and this was where we found our only female bird. This just made the bird more enigmatic. We thought that it had gone unnoticed because of strict requirements for pristine habitat, but here we were seeing birds

on the side of a road with houses nearby, in small patches of trees.

Currently we are working on publishing the official description of the new tanager, as well as its vocalizations, habitat preferences, and evolutionary relationships. I came to LSU knowing I would be exploring the bird life of South America, but the chance to be involved in this discovery was beyond what I could have imagined. Tomorrow the sun will rise over where we made camp and a tanager without a name will pop up to the top of a tree and begin singing. What else is out there?



# Check Out These New Publications

S

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- McCormack, J. E., S. M. Hird<sup>f</sup>, A. J. Zellmer, B. C. Carstens, and **R. T. Brumfield**. 2013 Applications of next-generation sequencing to phylogeography and phylogenetics. *Molecular Phylogenetics and Evolution* 66:526-538. <http://www.sciencedirect.com/science/article/pii/S1055790311005203>

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#### **Dr. James V. Remsen – Ornithology**

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**Dr. Sophie Warny – Palynology Curator**

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# The Latest Scoop



## Distinguished Faculty Awards

Each year, the University recognizes outstanding faculty for their accomplishments, superb teaching, research, and service at LSU. Award winners from the College of Science include **Christopher Austin**, curator of Herpetology and associate professor of Biological Sciences. He was awarded the LSU Alumni Association Faculty Award.

**D**an Lane is a co-PI on a major NSF grant recently funded for linking specimens to archived sound recordings: “(TCN) Developing a Centralized Digital Archive of Vouchered Animal Communication Signals.”

PI (Principal Investigator): Michael S. Webster, Cornell University

Collaborating Award PIs: Rafe Brown, University of Kansas; David Kavanaugh, California Academy of Sciences; Travis LaDuc, University of Texas at Austin; Daniel Lane, Louisiana State University & Agricultural and Mechanical College.

[http://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=128369&org=NSF&from=news](http://www.nsf.gov/news/news_summ.jsp?cntn_id=128369&org=NSF&from=news)





## William Brewster Award Recipient

Congratulations, **Dr. Van Remsen**, for receiving the American Ornithologist Union William Brewster Award! This award is given annually to the author or co-authors (not previously so honored) of an exceptional body of work on birds of the Western Hemisphere. The award consists of a medal and an honorarium provided through the endowed William Brewster Memorial Fund of the American Ornithologists' Union. The award is in honor of William Brewster, one of the founding members of the AOU.

## 2013 Yellow Rails & Rice Festival

The Yellow Rails & Rice Festival was held October 23rd - 27th. More details to com in the February 2014 MNS newsletter.

<http://www.countryroadsmagazine.com/get-aways/outdoor-adventures/the-yellow-rail>





# Congratulations to our latest graduates!



**Verity Mathis, PhD**  
**Mammalogy**



**Andres Cuervo, PhD**  
**Ornithology**



**Sarah Hird, PhD**  
**Ornithology**

**Prosanta Chakrabarty, PhD,**  
Assistant Professor of Biology and Ichthyology  
Curator and **Sophie Warny, PhD,**  
Assistant Professor of Palynology and  
Education Curator are going through the ten-  
ure process within their respective depart-  
ments. Good luck!

We thank them both for their hard work and  
dedication to the LSUMNS!





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