

Research Matters



RESEARCH



RNR senior Jazmyn Bernard works with Sheldon, a Barred Owl tagged in the University Hills neighborhood.

Getting to Know Barred Owls

“Who cooks for you?” is a familiar sound of the night in Louisiana, but how much do we know about Barred Owls? How much space do they need? What habitats do they use? How successful are they in urban settings compared to forest? Do they need to stay out of the way of the larger Great Horned Owl? RNR researchers are trying to find out in a study involving undergraduates, graduate students and faculty.

The project began when a change in research plans left Dr. Bret Collier with several GPS tags, which he generously made available to Dr. Phil Stouffer with the idea of developing a local project that would provide new opportunities for RNR students. A. Wilbert Sons offered to support a project with owls in forests they manage just west of Baton Rouge. All the researchers had to do was catch the owls, a process that has been fine-tuned through the determination of intrepid graduate student Vitek Jirinec; Drs. Sabrina Taylor, Melanie Colón and Ashley Long; and graduate students Tyler Williams, Alessandra Bresnan, Patty Rodrigues, Anna Perez Umphrey and Cameron Rutt. Students who have helped with this process have been universally thrilled when they have been able to see an owl in the hand. Half an hour later, the owl is able to go back to its business wearing a combination radio transmitter and GPS tag. Researchers keep a small blood sample to be used by Taylor to determine the sex of the bird and which may be used later for population genetics research.

To date the group has tagged 10 owls, including one captured right in front of the RNR building. The tags record three locations a day, just like a GPS. Once a week the tags also emit a conventional VHF radio signal, which allows researchers to find the owls. This part of the work has allowed students to learn telemetry techniques and sometimes see one of the owls. Once the owl is in radio contact, researchers can tell the tag to transmit the GPS points it has stored. Most of the owls have used small home ranges, moving no more than a few hundred meters, but the bird that was captured at RNR turned out to be a vagabond that moved between the LSU campus and forest near the Aquaculture Center, about 4 kilometers away. Not surprisingly, the birds seem to like forest, but suitable habitat can include neighborhoods with mature trees.

To examine the difference between the Baton Rouge and rural forest owls and the interaction with Great Horned Owls, undergraduate Jazmyn Bernard has been surveying points throughout Baton Rouge and on Wilbert forest land. The density in swamp forests can be impressive, with multiple pairs sometimes detected from the same point. With more data the team should be able to determine how likely owls are to be detected, given that they are present, which is the first step in figuring out their density.

Owls have a unique charisma, which has added to the excitement of this project. RNR researchers hope to develop additional questions that can provide field and lab opportunities for our students and help us understand the night birds that share both our neighborhoods and the deepest Louisiana swamps. ■



Location data was collected from Sammy, a Barred Owl living in the neighborhood behind Sammy's Grill on Highland Road.



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RNR

School of Renewable Natural Resources



Allen Rutherford

Welcome, alumni and friends of the School of Renewable Natural Resources!

Today's employment trends tell us that millennial graduates will change jobs four times in their first decade out of college, which is twice that of Gen Xers. Because of

this we continue to believe that our graduates need broad natural resource training to prepare them for changing job market demands. It is a challenge to provide narrow technical expertise and a diversity of experiences. Our goal continues to provide hands-on, field-oriented experiences to all RNR graduates.

As an enhancement to these challenges, LSU currently provides students opportunities to take courses that provide service-learning and Communication across the Curriculum experiences. Service-learning courses are classes that incorporate typical content that is integrated with a local community partner. For example, Ecology and Management of Southeastern Wildlife (RNR 3018) is a survey course that exposes students to vertebrate biology and ecology and also coordinates activities with the Bluebonnet Nature Center run by BREC, the East Baton Rouge Parish parks and recreation agency, and other BREC parks in the parish. Communication across the Curriculum courses (CxC) are designed to advance students' written, spoken, visual and technological communication skills and incorporate communication-intensive components. With enough CxC courses, students can graduate as certified Distinguished Communicators. RNR currently offers three CxC courses: Wildlife Management Techniques (RNR 4011), taught by Bret Collier; Integrating Natural Resources Management and Policy (RNR 4101), two sections taught by Andy Nyman/Regan Errera and Michael Kaller/Richard Keim; and Human Dimensions in Natural Resources (RNR 4107), taught by Michael Kaller. We believe that these are soft skills that are valued by employers of RNR graduates and enhance student learning.

We continue to address natural resource-related research issues and provide a robust extension and outreach program while also training students to deal with 21st-century issues. We are positive about the future of all RNR programs, and we appreciate your continued financial support of our ongoing efforts. We would also ask as you interact with potential students that you make them aware of the numerous natural resource career opportunities. Each of you is uniquely qualified to help us in this way. If you have any questions, comments or would like to come by to visit, please feel free to contact me at drutherford@agcenter.lsu.edu or 225-954-0995. Let us know where you are and what you're up to!!

Until next time.

D. Allen Rutherford

Dr. Brett Wolfe Joins Faculty

In July 2019, the LSU School of Renewable Natural Resources will welcome Dr. Brett Wolfe to our faculty as an assistant professor. Dr. Wolfe completed his undergraduate education at the University of Illinois at Urbana-Champaign, where he received his B.S. in natural resources and environmental sciences. He then earned his M.S. in soils from the University of Puerto Rico at Mayagüez and his Ph.D. in biology from the University of Utah. Prior to joining RNR, Dr. Wolfe was a postdoctoral research fellow at the Smithsonian Tropical Research Institute in Panama, where he studied water movement in trees in collaboration with the U.S. Department of Energy's Next Generation Ecosystems Experiment, which aims to improve predictions of how tropical forests will influence future climate scenarios. From March through June 2019, Dr. Wolfe will serve as a Fulbright fellow at the University of Panama and is teaching a seminar on plant hydraulics and studying how tree roots respond to drought. In his new position at LSU, Dr. Wolfe is developing research projects to study plant-water relations in bottomland and coastal forests in Louisiana. He will also continue his research on tropical trees. He will be teaching forest biology. ■



Brett Wolfe

RNR Extension News

The School of Renewable Natural Resources has an active group of extension specialists who serve Louisiana clients in the areas of forestry, urban forestry, forest products, fisheries and wildlife. Collectively, their work enables Louisianians from various sectors to maintain and gain professional credentials while also bringing information on issues relevant to producers in their respective fields and helping producers serve the people of Louisiana in a safe and professional manner.

Over the last year, Dr. Ashley Long, a wildlife specialist, has provided the public with critical information about chronic wasting disease (CWD) in cervids (the deer family), a highly transmissible prion disease that now occurs in all states adjacent to Louisiana. Through various public presentations and the publication of a CWD fact sheet, she has reached hundreds of landowners and managers. She also collaborated with St. Tammany Parish extension agent William Afton to publish a list of nature guides for mobile devices. Dr. Long has also offered presentations on wildlife damage management to various groups around the state. Articles and fact sheets are available online at www.lsuagcenter.com. An informational article on CWD is forthcoming in Louisiana Logger, the magazine from the Louisiana Forestry Association.

Dr. Niels de Hoop continues to provide multiple continuing education workshops on logging and worker safety to audiences around the state. He is also tracking logging accident reports to synthesize the reports for industry leaders and the Louisiana Logging Council to inform future programming. Other extension activities include planning, hosting and teaching prescribed burner certification courses for managers. Typically, he offers two Prescribed Burner Certification — Forest Land short courses (a three-day course) and two one-day courses for Forest Land Burners and Prescribed Burner Certification — Marshland. For more information, contact Dr. de Hoop at CdeHoop@lsu.edu.

In the world of coastal fisheries, Dr. Julie Anderson Lively has focused largely on the Louisiana Fisheries Forward Program. This program promotes and supports professional development and improved communications among various fisheries groups. She offers fisheries-related workshops and small conferences across coastal communities in south Louisiana. She and her group are also currently examining changes in the crab shedding industry here.

The Louisiana Arborist Continuing Education Program, led by Dr. Hallie Dozier, is in its 16th year at the LSU AgCenter. Recent educational events have focused mainly on tree health care and the care and management of veteran trees. Dr. Dozier also recruited and coordinated private tree companies to participate in the 2018 Saluting Branches volunteer day, a national effort to honor American service members through volunteer tree and landscape work on properties, such as national cemeteries, dedicated to our veterans. Louisiana arborists were on board to donate their talents and services, and they joined hundreds of other tree care professionals to care for trees at 53 veteran cemeteries (two in Louisiana) in 37 states and one in Mexico.

Crosby Land & Resources Professor of Forest Sector Business Development and director of the Louisiana Forest Products Development Center Dr. Rich Vlosky has been speaking in Louisiana, nationally and internationally on two current areas of research. First is the use of wood as a feedstock for wood energy, including pellets, biofuels and electricity. The second area is mass timber used in building construction in the U.S South as a substitute for steel and concrete. The two main products that are on a growth trajectory for construction are cross-laminated timber (CLT) and mass plywood panels (MPP). ■

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Director: Allen Rutherford

Editors:

Thomas Dean
Cornelis de Hoop
Hallie Dozier
William Kelso
Sammy King
Lucien Laborde
Sabrina Taylor
Richard Vlosky

School of Renewable Natural Resources
Louisiana State University
Baton Rouge, LA 70803-6200
Tel 225-578-4131 Fax 225-578-4227
www.rnr.lsu.edu www.LSUAgCenter.com

William B. Richardson, LSU Vice President for Agriculture
Louisiana State University Agricultural Center
Louisiana Agricultural Experiment Station
Louisiana Cooperative Extension Service
LSU College of Agriculture

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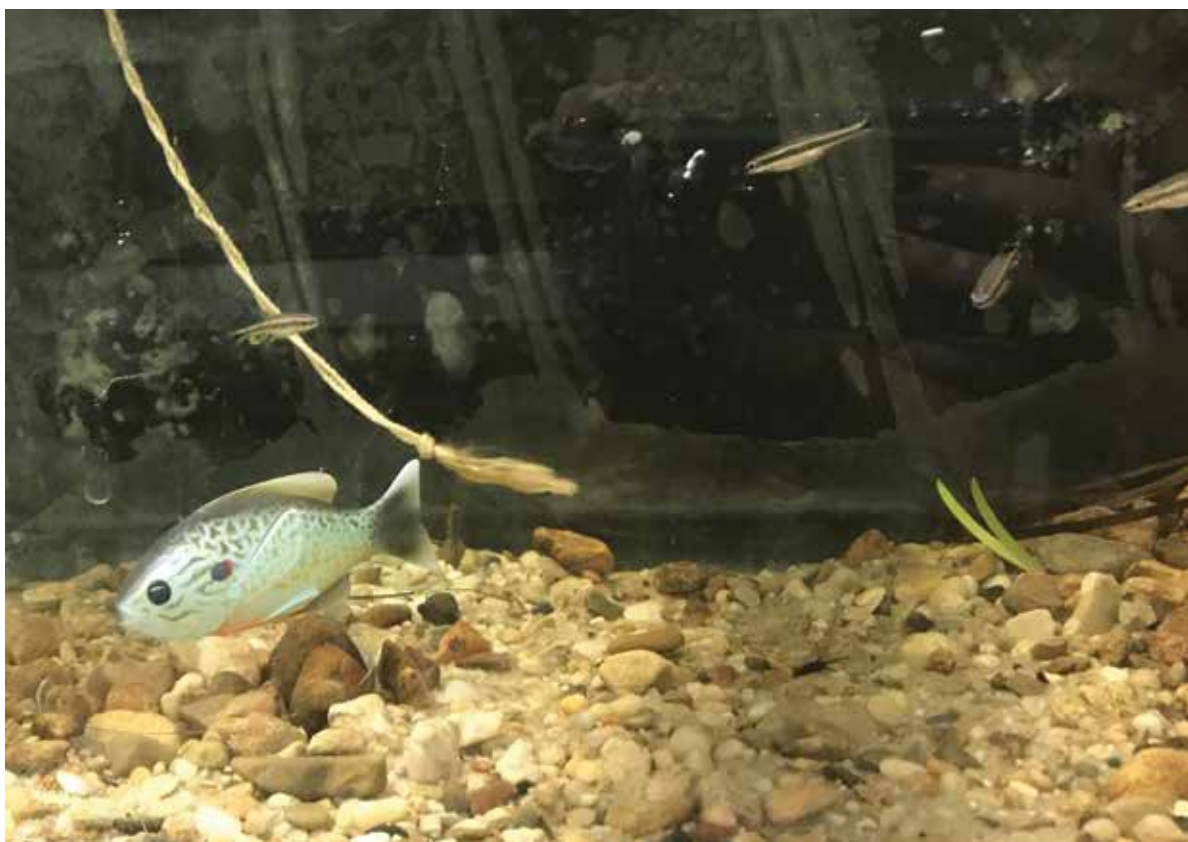


RNR Researchers Help a Small Fish With Big Problems

Of the 1,187 species of fishes within North America, approximately 45 percent are considered imperiled. Ecoregions within the southeastern U.S. have both the highest fish species diversity as well as the greatest numbers of imperiled fishes in the U.S. The bluenose shiner (*Pteronotropis welaka*) is a unique fish that lives in a small band of streams from eastern Louisiana to the panhandle of Florida and is listed as threatened or imperiled within the handful of states in which it is currently found. This species is particularly distinctive because males display elongated black dorsal and anal fins and bright blue snouts. Jacob Fetterman (M.S.) and Dr. Chris Green are working on methods to get this elusive fish to reproduce in captivity with a goal of defining captive rearing methods that could assist in potential propagation and reintroduction of this and related species.

Previous observations with this species indicated that it spawns in late spring in or near nests built by sunfishes, such as the longear, or dollar, sunfish, which is regarded as a strategy to help protect the shiner eggs and newly hatched larvae. In the lab, water and lighting conditions were recreated to mimic late spring, with plants and substrate from source streams collected and placed in tanks to match the original environment. Fetterman and Green built sunfish nests and introduced 3-D models of sunfish over the nests in an effort to get the bluenose to spawn. Although females appeared to develop mature eggs and become gravid, the shiners did not spawn in these tanks.

Phase two of this study involved collection of longear sunfish that were stocked in outdoor pools with bluenose shiners. The sunfish began to build nests shortly after stocking, and sunfish larvae (but not shiners) were soon identified in the pools. However, four months later, a young shiner was collected in a pool, indicating that the bluenose had successfully spawned earlier in the year. The researchers are looking forward to applying some new ideas to their pool system for the upcoming spawning season with greater production and survival anticipated for 2019. ■



The artificial sunfish and sunfish nest used during initial trials to encourage bluenose shiners to spawn in the lab.

Kaller Receives Professorship

Dr. Michael D. Kaller was selected as the George William Barineau Jr. Professor of Wildlife and Fisheries. He has been an active faculty member of RNR for 12 years, teaching a wide range of undergraduate courses, including Human Dimensions in Natural Resources; Capstone: Natural Resources Management, Policy, and Human Dimensions; Techniques in Limnology and Fisheries; Introduction to Aquatic Entomology; Aquatic Entomology (graduate level); and Special Topics in Renewable Natural Resources Biometrics and Management (graduate level). He also holds adjunct and graduate faculty status with the departments of Experimental Statistics and Entomology. Dr. Kaller also serves as the undergraduate program coordinator and associate rector of the Agricultural Residence College. He has served as chair or member of five undergraduate honors theses and three competitive undergraduate internships. He has also directed five LSU distinguished communicators. He has also served as the academic adviser for 13 M.S. or Ph.D. graduate students and has served on 60 M.S. or Ph.D. committees. Dr. Kaller's research is primarily focused toward freshwater fisheries and fish and invertebrate ecology, although his water-related research collaborations are extensive within LSU and with other universities. Funding for the Barineau Professorship was provided by Bill and Stephanie Barineau. Bill's father, George Barineau Jr., was a land manager with oil and land development companies with large holdings in southwestern Louisiana. George was an avid outdoorsman, and Bill recalls many fine father-son fishing trips, but his dad's favorite outdoor pastime was waterfowling. Bill graduated from LSU with a degree in petroleum engineering in 1957. He and Stephanie took advantage of Exxon's generous matching program to create this professorship to honor George Barineau's dedication to and support of fisheries and wildlife management. ■



These prototype wood fiber-filled, recyclable and biodegradable coins were made in Wu's lab.

Biodegradable Wood Fiber-Filled Plastic Formulations for Green Mardi Gras in Louisiana

The holiday of Mardi Gras is celebrated in Louisiana, and the Carnival season is the single largest event-based economic driver for the city of New Orleans. It draws tourists not only during the season, but also influences their trips even in summer. Many tourists walk through the French Quarter wearing beads and buying T-shirts in purple, green and gold. According to a study by Tulane University, the festival weeks have a total direct economic impact of \$164 million and a combined direct and indirect impact of \$465 million when the year-round value of the Mardi Gras brand is included.

Strings of beads, doubloons (large coins) and toys have been thrown from floats to parade-goers since at least the late 19th century during Mardi Gras. Until the 1960s, the most common form was multi-colored strings of glass beads made in Czechoslovakia. Recently, less expensive and more durable plastic beads have been made in China. Lower-cost plastic beads and toys allow float-riders to purchase greater quantities (about 25 million pounds per year for New Orleans), and throws have become more numerous and common. However, after a throw hits the ground, it immediately turns from prize to garbage. After each day's parades, street sweeper trucks and crews do their best to pick up the parade detritus — beads and other throws. The New Orleans city officials have even used the garbage tonnage they collected as a sort of carnival-success barometer. Mardi Gras is terrible for the flood-prone New Orleans' storm drains. At one time, cleaning crews pulled 93,000 pounds of old beads out of catch basins on the main parade route in New Orleans. Current Mardi Gras beads and coins are made of petroleum-based acrylic acid polymer, which is not easily recycled and is not biodegradable.

Dr. Qinglin Wu, a wood products professor, is working on a project supported by the Leveraging Innovation For Technology Transfer (LIFT) program to develop wood fiber-filled, biodegradable plastic formulations, which can be used to make recyclable and biodegradable beads and doubloons. Prototype coins show great promise for the new material. Currently, an effort is being made to make the formulations more cost-competitive and to understand their long-term biodegradability. ■

Characterizing Louisiana's Commercial Freshwater Fishery

Louisiana's commercial freshwater fisheries have been receiving more attention from resource managers in recent years. Compared to the marine sector, little is known about these diverse fisheries, which include finfishes like catfish, gar and bowfin as well as turtles, frogs, alligators and crawfish. Anecdotally, these fisheries appear to be on the brink of collapse as fewer young people are becoming fishers, fish buyers and processors are closing and market prices remain stagnant. Because of this, these fisheries may lack the resources needed to perpetuate their past productivity and remain sustainable for future generations.

Lauren Bonatakis (M.S.) and Dr. Julie Lively, with support from Louisiana Fisheries Forward, are conducting a two-part study to characterize Louisiana's freshwater fisheries. First, in-person surveys have been conducted with current commercial fishermen and fish houses to collect data about fishing practices as well as their attitudes and opinions about freshwater commercial fisheries. In addition, researchers visualized historic landing trends from the Louisiana Department of Wildlife and Fisheries' Trip Ticket Program database via mapping and spatial analysis. These results provide an overall assessment of Louisiana's commercial freshwater fisheries that validates most of the anecdotal concerns. For example, the number of active freshwater commercial fishermen has dropped over 40 percent from 2000 to 2017.

Commercial fishing in Louisiana's lakes, rivers, bayous and coastal marshes continues to be a valuable contributor to Louisiana's economy, with a dockside value over \$17 million in 2017. This research will help identify problems and hardships within the commercial freshwater fishing sector to inform future management efforts to maintain the productivity of the fishery and improve the livelihood of the freshwater commercial fishers. ■



M.S. student Lauren Bonatakis (second from right) learns about catfish harvesting at St. Mary Seafood in Franklin as part of the Louisiana Sea Grant GRS program.

Savannah Morales (M.S.; Keim) is using stable isotope tracers and blue food dye to study water availability and movement in heavy clay shrink-swell soils from the Lower Mississippi River Valley. More technically, she is examining the relationship between macropore connectivity and matrix water recharge over time. Here, she is excavating individual soil peds from a vertical section of the soil that was submerged for 30 days in dyed and isotopically spiked water. Blue-stained soil gives a visual flow path of the water, whereas analysis of isotopic composition of soil water provides a quantitative estimate on how much of the water infiltrated the ped. ■



No Vacancies: "Madtom Motels" for Sampling Rare Stream Fishes

During summer 2018, faculty, research associates and students from RNR and the College of the Coast and Environment teamed up to evaluate a new type of sampler to study the frecklebelly madtom (*Noturus munitus*). The frecklebelly is one of Louisiana's smallest catfishes and is currently only found in Washington Parish; therefore, it is one of the state's species of greatest conservation needs. Dr. Steve Midway of the College of the Coast and Environment partnered with Drs. Michael Kaller and William Kelso in RNR to deploy a low-cost sampler previously used to collect madtoms in North Carolina and compare its success with more conventional electrofishing and seining methods.

Small fishes like the frecklebelly madtom are important players in the transfer of terrestrial and aquatic plant and invertebrate production to higher trophic levels in the streams and, ultimately, to rivers and estuaries. Therefore, a robust and diverse assemblage of small fishes is important to aquatic ecosystems throughout the state. Unfortunately, the habitat needs of this fish are not well understood, and evidence is mounting that the frecklebellies are declining in numbers and shrinking in range in the region. Although 13 frecklebelly madtoms were found during this study, none was collected in two streams that supported individuals in 2007 and 2008. On the positive side, two new locations supporting the madtoms were discovered as part of this effort, and a second sampler design was developed for use in higher flow environments.

Research continues on this project with diets and growth of related madtoms being described as part of an undergraduate research project (Melanie Holton, B.S., Natural Resource Ecology and Management) and planned redeployment of samplers in the spring of 2019. Interestingly, madtom eggs were discovered in the samplers (believed to be freckled madtoms, *N. nocturnus*), and the samplers attracted numerous unusual crayfish species, including the pearl blackwater crayfish (*Procambarus penni*) and the Pontchartrain painted crayfish (*Faxonius hobbsi*), which will be the subjects of additional studies. ■



A madtom motel open for business in Crains Creek. Photo by M. Roberts.



Plastic sheeting was installed within the trenches around the research plots to block the flow of water through the soil. In the months ahead shelters will be constructed over the soil in the drought treatments to block rainfall for this experiment.

Brazier Explores Loblolly Pine Responses to Drought

Drought is a recurrent challenge to forests in portions of the western Gulf region. Two primary management practices that can improve forest resiliency under drought are planting seedlings that are genetically drought-hardy and partially harvesting (thinning) the forest. To better understand the physiological mechanisms and interactions between forest genetics and thinning, Dr. Michael Brazier is leading a new research project based at the Hill Farm Research Station. The Thinning Integrated with Genotype Exclusion of Rainfall Study (TIGERS) is a USDA-funded project in which severe drought will be imposed on loblolly pine families from different portions of the species' natural range in thinned and un-thinned treatments. Physiological processes associated with water uptake, water use and tree growth responses will be closely monitored throughout the project, which is being conducted in collaboration with Louisiana Tech University, USDA Forest Service and Indiana University of Pennsylvania. ■



Unlocking the Secrets of the Threatened Louisiana Pearlshell Mussel

The Louisiana pearlshell (*Margaritifera hembeli*) is a threatened mussel of the family Margaritiferidae that inhabits 22 headwater streams in central Louisiana. This limited geographic distribution is a cause for concern regarding the viability of *M. hembeli* populations, and relatively little is known about the stream characteristics that provide optimal habitat for this species. Beds of varying mussel density are patchily distributed along streams in which the mussel occurs, with no obvious differences in depths, flow velocities, and substrates between occupied and unoccupied stream reaches. The likelihood of success of potential restoration activities focused on translocating these mussels to unoccupied stream reaches would be enhanced if the characteristics that contribute to superior habitat conditions were known.

Erin Thayer (Ph.D.; Kaller) and several other faculty and research associates in RNR have been investigating the role that groundwater inputs may play in the distribution of the Louisiana pearlshell. Groundwater inputs into a stream reach are identified by collecting water samples from deep in the substrate throughout a stream reach and measuring their isotopic composition, temperature and pH, and comparing these values to those collected from the stream. The results allow the researchers to identify where groundwater is entering a stream, which may be a critical habitat selection factor that has not been considered in previous studies on the ecology of these mussels. With a clearer understanding of the characteristics that enhance habitat quality for *M. hembeli*, conservationists will have a better chance of maintaining and expanding healthy populations of this rare species.

In addition to the groundwater input studies, we will also be collecting fishes and water samples for analysis of eDNA (free DNA fragments in the water released from living organisms) near mussel beds this spring. When *M. hembeli* spawns, females release larval mussels (known as glochidia) that attach to the fins or gills of specific fish species in order to metamorphose into a juvenile mussel, which falls to the substrate later on. Accurate samples of glochidia and small juveniles are difficult to obtain with conventional sampling methods, and RNR scientists are investigating whether eDNA methods can more effectively detect *M. hembeli* at these locations. ■



A dense bed of *Margaritifera hembeli* in a central Louisiana stream.

New Course Offered on Medicinal Plants

Dr. Zhijun Liu offered a new undergraduate course, Introduction to Medicinal Plants, in fall 2018. The sophomore-level course is part of the new Medicinal Plant Sciences curriculum that was approved at the School of Plants, Environmental, and Soil Sciences (SPESS) in the College of Agriculture at LSU. Twenty-nine students from RNR, horticulture, food science, plant pathology, entomology, pre-med, pre-vet and pre-dental programs participated in the inaugural offering. Students gain a holistic view of the medicinal plants industry, including plants, chemistry, biology and interfaces among them. In addition to classroom learning, the course makes a major effort to bridge internship opportunities in the rapidly developing hemp, nutraceutical and supplement industry. Moreover, it serves to gain better understanding on the roles of medicinal plants in maintaining a healthy lifestyle. ■

Dr. Taylor Awarded Weaver Brothers Distinguished Professorship

Congratulations to Dr. Sabrina Taylor, who was awarded the Weaver Brothers Distinguished Professorship in recognition of her contributions to research, teaching and service. Dr. Taylor's work with her graduate students focuses on three main areas of inquiry that span both wildlife and fish species. One major line of inquiry addresses the effect of immune gene variation on fitness, mate choice and pathogen load and disease susceptibility in species such as reticulated flatwoods salamanders, gopher tortoises and red wolves. The second focuses on hybridization in recreationally important fish and wildlife species (ducks and fish), and the third compares historic and contemporary DNA to examine genetic structure and variation over time in species such as Bachman's Sparrow, smalltooth sawfish and Peary caribou.

In recent years, she has also been working with Dr. Stouffer on the effects of, and recovery from, the Deepwater Horizon oil spill on Seaside Sparrows and marsh rice rats. Dr. Taylor has generated about \$2.75M in funding, primarily from competitive granting agencies, and she was awarded the LSU Alumni Association Rising Faculty Research Award in 2015. She teaches conservation genetics and conservation biology (with Dr. Kelso) at the undergraduate level and has been awarded two undergraduate teaching awards. At the graduate level, she teaches classes on writing, conservation biology and behavioral ecology (with Dr. Ringelman).

She contributes extensively to service through her involvement in the school's seminar series, newsletters and sustainability efforts; at the university level by serving on the IACUC Committee, the Faculty Senate and the Benefits Committee. She also contributes to her field as associate editor of *The Auk* and *Animal Conservation*, as a book review editor for the *Journal of Field Ornithology* and as a science panel member to the National Science Foundation and the U.S. Fish and Wildlife Service. Dr. Taylor attributes her success to her wonderful, brilliant students and colleagues who make it a pleasure to come to work every day. ■

Estimating Oyster Fecundity and Reproductive Output of Restored Oyster Reefs

The eastern oyster, *Crassostrea virginica*, provides vital ecosystem services, such as habitat for fish and invertebrates, shoreline protection and improved water quality via filtration. In addition, oysters are economically important as a commercially harvested species. Louisiana harvests generated over \$68 million in 2016. Recent stock assessments by the Louisiana Department of Wildlife and Fisheries indicate limited recruitment of the eastern oyster in traditional oyster growing areas, as evidenced by the few small oysters that have been recently surveyed on reefs. Furthermore, a recent study of long-term data across Gulf Coast estuaries found a significant decline in the size of large oysters, concomitant with a significant reduction in the number of female oysters. As with many fishery species, larger and older oysters are generally thought to contribute more to reproduction, suggesting that a decrease in large oysters may result in decreased reproductive capacity, ultimately affecting recruitment.

Many factors influence the growth and reproductive effort of oysters, including salinity, temperature and food availability. In coastal Louisiana, significant land loss and subsequent large-scale restoration projects have had numerous impacts on estuarine water quality, including salinity and temperature over oyster-growing areas, all of which may affect the oyster populations through impacts on fecundity and reproductive capacity. In collaboration with researchers in Animal Sciences and the Department of Oceanography and Coastal Sciences (DOCS), Danielle Aguilar has been working with undergraduate students Sam Moore (RNR) and Ali Perez (DOCS) under the direction of Dr. Megan La Peyre on a pilot study



Sampling a restored oyster reef to quantify oyster size, sex and fecundity.

to quantify the individual reproductive capacity of oysters in relation to oyster size and local water quality. These data will be used to estimate the potential reproductive output (fecundity per unit area) of restored and enhanced reefs located across Louisiana estuaries and help prioritize potential areas for restoration and stock enhancement to support oyster production. These data contribute to making informed decisions on oyster restoration and cultch placement within the overall goal of enhancing oyster reproductive capacity. ■



Models Improve Decisions Related to Jean Lafitte National Historical Park and Preserve, Louisiana Coastal Master Plan

Hidden beneath our turbid waters, submerged aquatic vegetation (SAV) communities thrive across Louisiana's shallow-water areas. Composed of numerous species, including the widespread and desirable widgeon grass (*Ruppia maritima*) and the invasive hydrilla (*Hydrilla verticillata*), these communities provide many valuable services. SAV communities provide multiple physical, chemical and ecological benefits to the ecosystem, including reducing erosion, slowing wave energies and aiding in nutrient cycling. Most importantly for the hunters and anglers among us, SAV communities provide valuable food and habitat resources for many fish and waterfowl species of recreational and commercial interest, with managers of private coastal areas often manipulating hydrology to encourage SAV growth. Ensuring that ongoing and planned restoration and management activities maximize SAV communities requires the ability to predict how changes to hydrology, including water levels, salinity and turbidity will affect their growth and survival.

An estimated 2.2 million acres of shallow open-water areas exist across Louisiana, covering approximately 35 percent of the combined coastal areas in the state. With continued loss of coastal marshes, shallow-water areas may be expanding, and communities thriving in these open areas may be increasingly important. Existing healthy SAV communities may continue providing benefits to both wildlife and the remaining coastal wetlands, and, as land becomes submerged, newly flooded areas may become suitable for SAV establishment.

Recent field and greenhouse work by Dr. Megan La Peyre and recent RNR graduate students Drs. Kristin DeMarco and Eva Hillmann identified key drivers of SAV presence across coastal salinity zones. With these data, Dr. DeMarco created a predictive model of SAV occurrence, identifying winter salinity, turbidity and wave energy as critical factors influencing when and where healthy SAV communities exist. Most recently, this new information is being used to help inform restoration project designs at Jean Lafitte National Historic Park and Preserve and to predict potential diversion impacts (e.g., the proposed mid-Barataria Bay diversion).

As an indirect result of the Deepwater Horizon oil spill, an estimated 49 acres of SAV habitat located within the Lake Cataouatche Unit of the Jean Lafitte National Historic Park and Preserve were lost or injured. Through the Natural Resource Damage Assessment process, plans are underway to improve conditions that will promote re-establishment and growth of SAV in this area. Working with National Park managers, federal researchers and contractors, the existing SAV predictive model is being applied to predict SAV presence within Lake Cataouatche in response to several proposed restoration alternatives. This work will help to better predict project outcomes and ensure establishment and growth of native SAV habitat within this area.

Similarly, potential restoration projects proposed as part of the Louisiana Master Plan include sediment diversions. The Mid-Barataria Sediment Diversion, one of the largest diversions proposed, is to be built on the west bank of the Mississippi River north of Ironton and will be designed to capture river sediments, water and nutrients during high-water events with the goal of enhancing adjacent wetlands and coastal waters. As part of the design and planning process, multiple approaches are considered and their impacts modeled. Working with multiple state and federal partners, the SAV occurrence model is being used to predict how SAV habitat may be impacted over the short- and long-term operation of such a diversion. As SAV habitat serves to enhance coastal areas, projects that promote and support SAV communities increase coastal resilience. ■



Dr. Kristin DeMarco samples SAV in coastal Louisiana.



Catrina Terry holds a blue-winged teal.

Brood Use of Wetlands in Agricultural Landscapes Within the Prairie Pothole Region

The Prairie Pothole Region (PPR) produces the majority of North America's dabbling ducks and is a priority landscape for wetland conservation. However, more than 60 percent of wetlands in the PPR are now surrounded by row crop agriculture, which has the potential to degrade water quality and reduce the abundance of invertebrates on which hens and ducklings forage. Understanding the value of wetlands embedded in altered landscapes is critical for effective allocation of conservation funding to wetland restoration and protection.

Catrina Terry (M.S.) is working with Dr. Ringelman to study brood abundance and invertebrate communities in wetlands embedded in agricultural landscapes. During the 2018 pilot season, Catrina estimated brood abundance with traditional ground surveys and an unmanned aerial vehicle (UAV) equipped with thermal and visual cameras. With the UAV, Catrina detected twice as many broods on the landscape as the ground observers with a fraction of the effort, demonstrating that UAV data provide better estimates.

In future seasons, Catrina will estimate invertebrate abundance, and the project will expand to include collaboration with Ducks Unlimited, the Delta Waterfowl Foundation, USGS and Iowa State University. With this larger team, the goal is to replicate brood and invertebrate surveys across agricultural landscapes in Minnesota, Iowa, and North and South Dakota. ■



SAV exists within the turbid shallow-water ponds across the coastal zone.



Workshop for Coastal Wetland Wildlife Managers

One hundred years ago, wildlife biologists began determining which plant species provided food and cover for ducks and geese and then figured out how to manage coastal wetlands to promote those plants. Within decades, that knowledge was the basis for managing water levels, water salinity, fire and land acquisition on the Atlantic, Gulf and Pacific coasts. By the end of the last century, that knowledge also was being used to improve habitat for wading birds, shore birds and other associated species and also being used in efforts to slow the conversion of vegetated wetlands into shallow open water.

The coastal marshes being managed today exist because for almost a century they created enough elevation to offset local subsidence and global sea-level rise. Without such vertical accretion, flooding increases and, at first, negatively affects nesting birds. Eventually, flooding drowns vegetation and creates new open water. The challenge posed by global sea-level rise is virtually the same on all coasts. That challenge lies decades in the future, and predictions are regularly updated. Local subsidence, on the other hand, varies tremendously over small areas, perhaps even varying within managed impoundments, and is far more likely than global sea-level rise to have contributed to recent increases in flooding or even marsh loss and is far more likely to cause flooding and marsh loss within the next few decades. Today, wildlife biologists are facing new challenges as they begin to determine which plant species are best at increasing marsh elevation and how to manage coastal wetlands to improve elevation while also improving wildlife habitat.

A workshop to facilitate those efforts was developed by Dr. Andy Nyman and was held at Rockefeller Wildlife Refuge in southwest Louisiana in May 2018. The workshop was limited to employees of organizations who manage coastal wetlands for wildlife on the Atlantic, Gulf or Pacific coasts. Each day consisted of classroom discussions and field investigations. The McGraw Center for Conservation Leadership covered the costs of air travel and meals during the workshop for all participants, and the Louisiana Department of Wildlife and Fisheries provided lodging at the Rockefeller Wildlife Refuge. Topics discussed included saltwater intrusion, tidal restriction, shoreline erosion, prescribed fire and marsh vertical accretion. ■



Attendees of the Coastal Wetland Wildlife Managers Workshop pose at a field site at Rockefeller Refuge.

Regional Wetlands Trip Returns to Pacific Northwest

In summer 2018, a plethora of faculty (King, Keim, Kaller, Nyman, Reid) led a group of RNR graduate students on a nine-day wetlands field trip to western Idaho, Oregon and Washington. The trip covered a wide range of wetland systems and ecological issues. We visited the Coeur d'Alene River basin in Idaho, where wildlife officials struggle with understanding and mitigating impacts related to heavy metal contamination from mining runoff. Although a picturesque basin, the area is a Superfund site, and wetland management is often focused on minimizing impacts to human and wildlife health. The class also visited Malheur National Wildlife Refuge and numerous refuges along coastal Oregon and Washington. The high tidal amplitudes and rocky shorelines were quite a contrast to coastal wetlands in Louisiana! The trip finished with Mount St. Helens, where the class was blown away (pun intended) by the scale of impact and encouraged by the recovery of the forests. The class thanks Dr. Rutherford for supporting the trip and the many biologists that visited with the class. Special thanks for going above and beyond in assistance go to David Leptich, David van de Riet and Jim Teare of Idaho Fish and Game and Dawn Harris, Joseph Barnett and Matt Loyd of the U.S. Fish and Wildlife Service. ■



"A beautiful mess" is the best way to describe the Coeur d'Alene Basin. Heavy metal contamination creates unique wetland management challenges.



Savannah Morales (MS; Keim) searches a stream in Cape Perpetua, Oregon, for signs of aquatic life.



Lizzie Bonczek (MS; Ringleman) and Dr. Mike Kaller pose by an old growth western red cedar in coastal Washington.



RESEARCH

Birds Striking Buildings on LSU campus

Birds die from collisions with buildings and other structures. Although the magnitude pales in comparison to pernicious mortality caused by feral and outdoor pet cats, building collisions can be significant problems in settings with human infrastructure, leading to the death of some 600 million birds per year in the U.S. A new citizen-science project at RNR is working to understand the magnitude of the problem on the LSU campus with the ultimate goal of mitigating the most dangerous facades.

Using the citizen-science website iNaturalist, ornithologists at the LSU Museum of Natural Science began recording campus bird mortalities several years ago. Anyone can contribute data to the project, which now includes 121 dead birds from 35 species. These are not just urban birds. Victims include the American Woodcock, Wood Thrush and multiple species of warblers passing through Baton Rouge on migration. It turns out that Middleton Library is the site of scores of bird fatalities, presumably from birds fooled by the unbroken expanse of windows, especially under overhangs that reduce glare. Although the danger of this particular building seems clear, without more systematic surveys we won't know what's happening at other buildings.

RNR first-year student Jordan Mouton is working with Dr. Phil Stouffer to expand the iNaturalist project. She has designed a new website and database that tracks not just the mortalities, but also survey effort around campus. She hopes to engage other students to use a very simple form as they systematically walk around buildings, enabling her to build a database that includes not just where dead birds are found, but also the negative evidence of which buildings are safe. The project builds on work on other campuses, some of which has led to alterations in building façades or landscaping to reduce collisions. Mortality data are archived on iNaturalist, and dead birds become part of the research collection at the LSUMNS, both of which provide stable data for the future.

Mouton and Stouffer hope the project will provide an opportunity for students to become engaged with campus wildlife. With little training and minimal time commitment, students can put their campus perambulations to work to document an important problem.

<https://www.inaturalist.org/projects/lsu-bird-window-collision-monitoring-project>



Jordan Mouton surveys the perimeter of the College of Business for evidence of birds striking the glass façade.

New Survey to Examine Professional Perceptions of Recent Graduates

Since Aldo Leopold's time, wildlife professionals have expressed concern about the preparedness of college graduates. What exactly should be emphasized in the undergraduate curriculum? So-called "soft skills" like critical thinking and good communication are believed to be highly valued by employers, yet actual hiring decisions seem to be made on scholastic achievement and assorted practical skills acquired outside of a university setting. Moreover, there seems to be growing discontent among wildlife employers with the preparedness of recent graduates.

Undergraduate researcher Emily Price, along with Drs. Kevin Ringelman and Mike Kaller, designed and implemented a survey to assess professional perceptions of recent graduates. The goal is identify which skills are valued by employers, who should be responsible for teaching those skills, and how perception of graduate preparedness has changed over time. The survey was distributed to more than 600 natural resource professionals and achieved a response rate approaching 20 percent.

Early results clearly show that employers value three skills more than any others — critical thinking, problem-solving and teamwork. All types of communication, whether orally communicating with stakeholders or writing a report for experts, were also valued highly compared to other skills. Wildlife professionals believe recent graduates have improved knowledge of academic topics. However, for every other skill—including critical thinking, communication and competence in the field — employers perceive that current graduates are worse off than previous hires. As analysis continues, this survey promises an enlightening look at the potential disconnect between undergraduate training programs and perceptions of competency in recent graduates. ■



CLASSROOM NEWS

Tree Planting to Benefit Carbon Sequestration

This year RNR students and faculty teamed up with Dr. Jeff Kuehny, director of the LSU AgCenter Botanic Gardens at Burden, to help plant trees during Arbor Day. The goal was to plant enough trees to sequester the carbon RNR uses to run the school's vehicles. According to the school's vehicle logs, we drove about 213,000 miles and used about 14,200 gallons of gas last year. This means that we emitted about 142 tons of carbon. A tree can sequester roughly 88 pounds of carbon per year, so if it grows for 20 years, it can sequester 1,760 pounds of carbon. This meant we had to plant at least 161 trees.

The designated date, January 26, 2019, dawned into a beautiful, crisp and sunny day, and the RNR team showed up in force at the Botanic Gardens to plant trees, help members of the public to plant trees, and assist with a variety of other activities, including tree climbing. While tree-planters were busy with



Tree planting is in full swing at the LSU AgCenter Botanic Gardens at Burden.

their spades and trees, the RNR Student Chapter of the Society of American Foresters demonstrated activities such as axe throwing. Together with the public and Botanic Gardens staff members, the RNR team planted 280 trees from about 20 species, including the magnificent cherrybark oak, common persimmon, bald cypress, black locust and the iconic southern magnolia. RNR thanks Dr. Kuehny for including us in this event and everyone who volunteered to help. We hope these trees will flourish and, as they sequester carbon, develop into a forest that will provide new habitat for many species. Stay tuned for next year—we plan to do this again! ■



GRADUATE STUDENTS



Lauren Bonatakis (M.S. student) is working with Dr. Lively to assess the freshwater commercial fishery in Louisiana to maintain its future viability.



Alessandra Bresnan (Ph.D. student) is working with Dr. Taylor in the field of conservation genetics.



Jordan Logarbo (M.S. student) is working with Drs. La Peyre and Roberts (LUMCON) to examine whether gulf ribbed mussels can reduce shoreline erosion and enhance restoration practices.



Nancy Raginski (M.S. student) is working with Dr. Long to study the influence of pine management on grassland-nesting songbirds wintering in central Louisiana.



Scott Graham (M.S. student) is studying coastal wetland ecology at the Rockefeller Wildlife Refuge with Drs. King and Nyman.



Antonio Cantu (M.S. student) is working with Dr. King to evaluate the effects of moist soil management and abiotic processes on the establishment of three rare plant species in Bitter Lake National Wildlife Refuge, New Mexico.



Charles Wahl (Ph.D. student) is working with Drs. Diaz (Department of Entomology) and Kaller to examine the impacts of giant salvinia control on fishes and macroinvertebrates.



Stephanie Moothart (M.S. student) is working with Dr. Keim on the long-term consequences of varying seawater influence on the forest-marsh transition in the Manchac Swamp.



Taylor Turner (M.S. student) is working with Dr. Dean to examine the regeneration potential of hardwood trees competing with Chinese privet at Burden Museum & Gardens.



Mason LeBlanc (M.S. student) is examining resident perceptions of the wood pellet industry with Dr. Vlosky.



Patricia Rodrigues (Ph.D. student) is working with Dr. Stouffer on the effects of forest fragmentation on ant-following birds in Equatorial Guinea.



Colleen Walsh (M.S. student) is working with Drs. Kelso and Kaller on largemouth bass genetics in Louisiana lakes.



Courtney Murr enjoys the annual Grand Isle fishing trip.

Aquaculture and Fisheries Club

The Aquaculture and Fisheries Club (AFC) continued its focus on member and public education regarding fisheries-related topics and careers. This club participated in several volunteer opportunities, such as the annual Ocean Commotion, where school-aged kids learned about our planet's oceans, organisms and pollution. AFC members also volunteered with College of Agriculture events, such as Burger Bash and Bash on the Bayou. In the fall semester, AFC hosted guest speakers Mel Landry from NOAA, Nikki Pace from Sea Grant Legal and RNR's very own Dr. Kelso. Members experienced a behind-the-scenes tour at the Audubon Aquarium in New Orleans and helped Dr. Green with an alligator gar spawning project



Members of the Aquaculture and Fisheries Club pose before their behind-the-scenes tour of the Audubon Aquarium.

at the Aquaculture Research Station. The highlight of the semester, however, was the annual Louisiana Aquaculture and Fisheries Society meeting held on campus in May. Club members raised money for the club through donations and a silent auction. Looking forward, the Aquaculture and Fisheries Club has numerous plans, including a fishing trip to Grand Isle, volunteering with the annual derelict crab trap rodeo, hosting more guest speakers and experiencing an electrofishing demo. As always, the club looks forward to providing educational opportunities to members and increasing student involvement and interest in the Aquaculture and Fisheries field. ■

Xi Sigma Pi Honor Society Member Wins Regional Award

Xi Sigma Pi is a national forestry honor society. All RNR students with an interest in forestry and a minimum 3.0 GPA are eligible for membership. Recently initiated into Xi Sigma Pi were Cheyenne Fouts, Kathryn Kahil, Matthew Shockey and Cameron Toerner, all undergraduate students.

The current officers of Chapter Nu of Xi Sigma Pi are Stephanie Moothart (Forester), Gilbert Ototo (Ranger) and Fan Zhang (Fiscal Agent). Dr. Quang Cao is the faculty adviser.

Congratulations are extended to Cameron Toerner, who won the 2018 Xi Sigma Pi

Outstanding Sophomore award, and to Mason LeBlanc, who won the 2018 Xi Sigma Pi Scholarship for the West Central Region. LSU has been able to maintain an impressive record, winning half of the awards in recent years in a region that comprises eight universities:

- 2002: Benjamin Hogue
- 2004: Angela Secott
- 2006: Matthew Reed
- 2009: Ian Stone
- 2010: Lauren Smith
- 2014: Kasie Dugas
- 2015: James Donovan (2nd place)
- 2016: Parker White (2nd place)
- 2018: Mason Leblanc



Mason LeBlanc received the 2018 Xi Sigma Pi Scholarship, competing against forestry schools throughout the West Central Region of the United States.



Inducted into Xi Sigma Pi honorary forestry fraternity in Spring 2019 were, left to right, Cameron Toerner, Cheyenne Fouts, Matthew Shockey and Kathryn Kahil.



Dr. Quang Cao, right, faculty advisor to the Xi Sigma Pi forestry honorary society, presents the Xi Sigma Pi 2018 Outstanding Sophomore Award to Cameron Toerner.



LSU placed fifth overall at the 61st Annual Southern Forestry Conclave hosted by Abraham Baldwin Agricultural College. Showing off their trophies are, left to right, Benjamin Walters, Beau Navarre, Cheyenne Fouts, Skylar Bueche, Mason LeBlanc, Nathan Apetrei, Micah Rodrigue and Eric Ferrell. LSU hosted Conclave this year.

Society of American Foresters Has Busy Year

The Society of American Foresters (SAF) student chapter at LSU has been busy! In March 2018, eight LSU students competed in the 61st annual Southern Forestry Conclave hosted by Abraham Baldwin Agricultural University in Georgia. The school started a four-year forestry program about five years ago. LSU placed fifth of 13 schools. This is the best placement since at least 1998. SAF placed fourth in the technical events overall, with Beau Navarre earning first in compass and pacing. Navarre also got second in archery and third in log chop, and Navarre and Eric Ferrell got third in log rolling. Nathan Apetrei claimed third in log birling (in water). Mason LeBlanc topped the pole climb for first place.

Students attended numerous other gatherings, including a fair and multiple professional meetings. Nine LSU students drove to the Ouachita County Fair in Arkansas to compete against four other schools in sawing and chopping as a demonstration for local fairgoers. Six students attended

the SAF national convention in Portland, Oregon, and while there they visited the fish hatchery and took in some giant Douglas fir trees in the Columbia River Valley. The chapter hosted its annual combined meeting with the Southeast Louisiana Chapter with the Southern University student chapter attending as well. Alumni Marcus Rutherford and Ben Guarisco discussed some emerging trends in the local forest industry. Finally, the chapter closed out the calendar year with a successful Christmas tree sale.

There are many planned activities in the near future. The chapter hosted Conclave this year (March 22-23) at the Burden Museum & Gardens on Essen Lane, with some of the activities taking place in the Parker Coliseum. Many companies and individuals in the forestry community are pitching in to help sponsor Conclave. Some of you donors will be reading this, and we thank you.

In April, the students will attend the Louisiana Forest Festival in Winnfield to conduct demonstration competitions with other schools. The chapter also looks forward to planning some activities with the local Southern University chapter. ■



Ducks Unlimited

In 2018, the Tiger Chapter of Ducks Unlimited raised more than \$150,000 for wetlands and waterfowl conservation. As a result, they acquired the title of No. 1 university chapter in the U.S., and they qualified for an All-American Chapter in 2018. More than 40 students volunteered to organize the fall banquet at John M. Parker Coliseum, including co-chairs Colette Pansini, front row center, and Gunther Spore, front row right. Chapter advisers are Dr. Luke Laborde and Dr. Kevin Ringelman.



TWS members sell RNR pullovers as a fundraiser for the upcoming Southeastern Region Wildlife Conclave.

The Wildlife Society

The Student Chapter of The Wildlife Society at Louisiana State University (LSU) includes more than 40 students from the School of Renewable Natural Resources (RNR) and other departments around campus. Our club's mission is to inspire, empower, and enable wildlife professionals to sustain wildlife populations and habitats through science-based management and conservation. We hold monthly meetings, host a variety of guest speakers and participate in wildlife-related volunteer opportunities, such as the Feliciana Wildlife Expo, deer check stations in the Louisiana Department of Wildlife and Fisheries' managed hunts, Boo at the Zoo and many more.

During one of our most recent events, student volunteers from the Wildlife Hospital of Louisiana gave a presentation to our club on their raptor rehabilitation program, and graduate students shared tips for veterinary school applications. Members from our club now volunteer with their program by feeding and training resident raptors. In addition, representatives from the Texas Department of Wildlife and Fisheries recently met with our club to discuss internship opportunities with the state agency, and their staff provided helpful suggestions for improving our resumes prior to graduation.

In spring 2018, LSU's Student Chapter of The Wildlife Society hosted 305 students from 20 schools for the Southeastern Region Wildlife Conclave. The Wildlife Conclave provides college students with valuable hands-on training in wildlife management and conservation and networking opportunities with wildlife professionals. Of course, we put a touch of Louisiana on all of our activities! Our physical competitions included a three-legged wader race and a pirogue race in the ponds at the LSU Aquaculture Research Station. Other individual competitions included archery, shotgun, Cajun species identification, radio telemetry and game calling. We had team competitions around the University Lakes on campus, and we organized various workshops that included a behind-the-scenes look at Mike the Tiger's habitat, a Cajun cooking class, trapping, electrofishing and much more! We closed out 2018's Wildlife Conclave with a crawfish boil, new friends and a whole lotta lifelong memories!

In Spring 2019, we are participating in the Southeastern Region Wildlife Conclave at the Abraham Baldwin Agricultural College in Tifton, Georgia. We have had several fundraisers to help our club members defray travel costs, including an RNR pullover sale and bake sales in the RNR lobby. The fundraisers have been a great success, and we thank all of you for your support! For more information about our club, visit <http://lsutws.wixsite.com/lsutws> or follow us on Facebook at The Wildlife Society LSU Student Chapter. ■



Conclave attendees get a flavor of wetland life in Louisiana as they participate in a wader race.

Vitek Jirinec Awarded Fellowships, Grants for Amazonian Bird Studies

Vitek Jirinec, a Ph.D. student working under Dr. Phil Stouffer, received a short-term fellowship from the Smithsonian Tropical Research Institute (\$6,000) that will begin in May. The fellowship is to support his ongoing research on the microclimate requirements of sensitive Amazonian birds, which is the main focus of his dissertation. For this effort, he has also secured the Mewaldt-King Award (\$2,500) from the American Ornithological Society and the Paul A. Stewart Research Grant (\$1,000) from the Wilson Ornithological Society. ■

Kelcee L. Smith Wins Prestigious Fellowship, Scholarship

Ph.D. student Kelcee L. Smith was the recipient of the Eleanor Earle Memorial American Association of University Women — Baton Rouge Chapter Scholarship (\$500). The award is given to a female Ph.D. student enrolled at LSU or Southern University who has shown exceptional academic achievement and community involvement. She was also the recipient of a Curtis and Edith Munson Foundation Grant (\$12,500). This foundation supports research projects focused on marine resource conservation and management in South Florida Ecosystems with priority given to fisheries. Lastly, Smith was selected as a Science Policy Fellow for the National Academies of Science — Gulf Research Program (\$45,000 stipend). This program is designed to develop the connection between scientists and policymakers for the benefit of Gulf Coast communities and ecosystems. Scientists are paired with a host office along the Gulf Coast to gain firsthand experience with policymaking, restoration planning and stakeholder outreach with the guidance of a mentor. Her advisors are Drs. Sabrina Taylor, Bill Kelso and Mike Kaller. ■



Scott Graham, far back right, and other 2018 Louisiana Sea Grant Graduate Research Scholars visited a variety of coastal wetlands and engaged with diverse stakeholders about the complexities of Louisiana's coastal wetlands and their restoration.

Scott Graham Participates in Louisiana Sea Grant Research Scholars Program

Scott Graham was selected to attend the 2018 Louisiana Sea Grant Graduate Research Scholars Program in December. This weeklong trip was an immersion program aimed at helping graduate students gain science communication skills by participating in community engagement. Students engaged with coastal wetland stakeholders and practiced their science communication skills while also learning about coastal wetland issues. Students visited the Mississippi River Model in Baton Rouge, the LDWF office at Grand Isle, the Atchafalaya Basin and the Rockefeller Wildlife Refuge. ■



RNR Students Recognized With Several Awards

Naya Black (undergraduate) was selected by the Dean's Internship Scholarship Committee as the recipient of a \$1,000 award in support of her participation on a project sponsored by the United States Department of Agriculture Forest Service. From mid-May to late June 2018, Black worked with Dr. Ashley M. Long and two seasonal field assistants to document local avian species' composition and distribution as part of a long-term bird-monitoring program at the Kisatchie National Forest in central Louisiana. During this project, Black gained valuable experience with bird identification, field protocols, data management and other skills necessary to work in the field of wildlife biology.

Lizzi Bonczek (Ph.D.; Ringleman) received the Charles Bosch Memorial Scholarship. Bonczek is studying the breeding ecology of western Gulf Coast Mottled Ducks. She equips adult female Mottled Ducks with tracking devices so that she can locate the nests of these secretive birds and gain insight into critical determinants of Mottled Duck population dynamics, such as adult survival, breeding propensity and nest survival. By understanding the mechanisms that limit mottled duck populations, we can improve our conservation plans for the species.

Jacob Bushaw (M.S.; Ringleman) received the John Barton Sr. Scholarship. Bushaw is studying the breeding ecology of Diving Ducks in Canada. He is using a drone equipped with a thermal imaging camera to study nest survival and duckling ecology with unprecedented resolution.

Dr. Melanie R. Colón (Post-doc; Long) was one of 20 graduate students, post-docs and faculty selected to participate in a tutorial on the applications of spatial data in ecological niche modeling funded by the National Institute for Mathematical and Biological Synthesis at the University of Tennessee, Knoxville, in December 2018. Participants were familiarized with commonly used and newly available spatial datasets and completed hands-on modeling activities. The training complements work Dr. Colón is conducting with Dr. Ashley M. Long examining the spatial distributions of species of conservation concern and their habitats.

Melanie Holton received an LSU College of Agriculture Undergraduate Research Grant to investigate diets and growth of madtom species in the Florida Parishes of Louisiana. Madtoms are the smallest of the North American catfishes, and many aspects of their ecology are not well understood. Holton's project complements research funded by the Louisiana Department of Wildlife and Fisheries on the conservation of madtoms and other small fishes.

Kathryn Kahil (undergraduate) received an A. Wilbert Son's Research Internship in Agriculture and Natural Resource Management grant to investigate crayfish living under different forest management conditions. She is interested in whether invasive aquatic and riparian species impact crayfish. Her hypothesis is that forest best management practices should limit the impact of invasive plants upon crayfish.

Whitney Kroshel (Ph.D.; King) was awarded the Best Student Oral Presentation at the Society of Wetland Scientists' South Central Chapter meeting this past fall and received a \$800 travel award to attend the 2019 SWS annual meeting. Whitney is studying how flooding affects regeneration processes in bottomland hardwood forests.

Dakota Mengel and Naya Black (undergraduate), two undergraduates working with Dr. Ashley M. Long, were awarded funding through the A. Wilbert's Sons LLC Research Internships to conduct field research on birds and bats near Baton Rouge. In winter 2018-19, Mengel will identify characteristics of trees used by woodpeckers in bottomland hardwood forests, and Black will examine bat use of bottomland hardwood forests along an urban-to-rural gradient. Improved understanding of wildlife-habitat relationships in this forest type could assist with conservation efforts in Louisiana and elsewhere in the southeast.

Nancy Raginski (M.S.; Long) was awarded a \$1,000 grant by the Louisiana Ornithological Society in support of her M.S. research. Raginski is investigating the influence of prescribed fire on habitat use of grassland-nesting songbirds wintering in longleaf and loblolly pine stands in central Louisiana. Her research will increase knowledge regarding the influence of pine forest management on several species of conservation concern and could help inform more comprehensive management strategies for grassland-nesting songbirds wintering in pine forests of the southeast.

Patricia Shorter is pursuing a Master of Science in entomology while conducting her research in RNR. She is investigating how floodplain disconnection from levees impacts aquatic and semi-aquatic Hemiptera, which are large, primarily predaceous insects. She presented her research at the annual meeting of the Southern Division of the American Fisheries Society in Galveston, Texas, where she won Best Student Paper. ■



Skylar Bueche was honored by the Louisiana Society of American Foresters by receiving the 2018 Outstanding LSU Student Award. Presenting the award are, left to right, Dr. Allen Rutherford, director of RNR; Skylar Bueche; faculty adviser Dr. Niels de Hoop; and Dr. Shaun Tanger, chair of the Louisiana Society of American Foresters. Skylar is also president of the student chapter at LSU.

RNR Students and Faculty Receive Awards at Annual Foresters Meeting

The Louisiana Society of American Foresters (LASAF), a professional organization whose mission is to advance the science, education, technology and practice of foresters, hosted their 40th annual meeting from February 5-7, 2019 in Pineville, Louisiana. During the meeting, RNR undergraduate Skylar Bueche was recognized as Louisiana State University's Outstanding Forestry Student of the Year. This year's meeting of LASAF included a student poster competition with 15 entries from universities across the state. Fan Zhang (Ph.D.; Chang) won third place in the graduate division for his poster, titled "Quarterly Dynamics in Louisiana Softwood Sawtimber Stumpage Market," and RNR junior Naya Black (advised by Dr. Ashley M. Long) won second place in the undergraduate division for her poster titled "Bat Use of Bottomland Hardwood Forests Along an Urban-to-Rural Gradient in Southeastern Louisiana." RNR Assistant Professor of Wildlife Ecology Dr. Ashley M. Long received LASAF's 2018 Young Forester Leadership Award, which was established by the society to recognize extra efforts by an individual that have benefited the forestry community. ■

Inaugural Marty Toms Scholarship Awarded to Mason LeBlanc

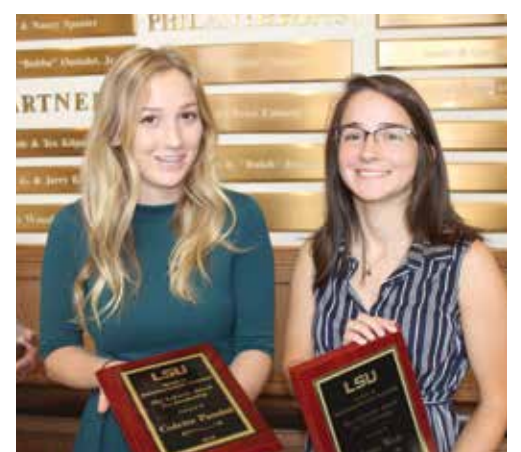
The unexpected passing of the Louisiana Forestry Association's standing president, Martin "Marty" Wade Toms, struck the Louisiana forestry community in the early days of 2018. Toms grew up in north Louisiana, where his father operated a logging business. Influenced by his father's passion, he went on to receive a masters' degree in forestry and worked for Weyerhaeuser as a manager of fiber procurement in north Louisiana. Toms was the 40th president of the LFA. He believed in service above self and exemplified the profession of forestry. To commemorate Toms, the Louisiana Forestry Foundation established the Martin "Marty" Toms Memorial Scholarship to be received by a Louisiana student pursuing a forestry-related degree. Mason LeBlanc (M.S.; Vlosky), who is studying forest products, was the first student to receive this honor. Mason received recognition for the award at the 71st Louisiana Forestry Association annual meeting at the Sam's Town Hotel and Casino in Shreveport. ■



Mason LeBlanc

Laborde Endowed Scholarship

Colette Pansini (left) and Anna West (right), seniors in wildlife ecology, were the inaugural recipients of The Laborde Endowed Scholarship for Leadership in Renewable Natural Resources. This \$2,000 scholarship is competitively awarded to a senior with an overall GPA of 3.25 or higher who has demonstrated leadership in student organizations and activities affiliated with the LSU School of Renewable Natural Resources.



2018-19 RNR Scholarships

Undergraduate Student Scholarships

F. O. Bateman Memorial Scholarship	Christian Mann
Pauline Bateman Stanley Scholarship	Alexandra Mitchell
Paul Y. Burns Scholarship	Kaiser Frank
Hunter Barrilleaux Memorial Scholarship	Madelyn Smith
Eric Fabre Memorial Scholarship	Madison Sharp
Harold Werner Oleson Scholarship	McKaila Darden
William A. Knight Forestry Scholarship	Matthew Atkinson
William A. Knight Forestry Scholarship	Scottye Campbell
William A. Knight Forestry Scholarship	Kira Cates
William A. Knight Forestry Scholarship	Emma Clement
William A. Knight Forestry Scholarship	Emily Crowder
William A. Knight Forestry Scholarship	Shelby Fife
William A. Knight Forestry Scholarship	Sarah Hardy
William A. Knight Forestry Scholarship	Shea Johnson
William A. Knight Forestry Scholarship	Bria Jurumbo
William A. Knight Forestry Scholarship	Natalie LaFont
William A. Knight Forestry Scholarship	Julianne Lamy
William A. Knight Forestry Scholarship	Christian Mallett
William A. Knight Forestry Scholarship	Jordan Mouton
William A. Knight Forestry Scholarship	Ty Price
William A. Knight Forestry Scholarship	Mimi Rivette
William A. Knight Forestry Scholarship	Alessandra Rodriguez
William A. Knight Forestry Scholarship	Ryan Tucker
William A. Knight Forestry Scholarship	Nicole Torres
William A. Knight Forestry Scholarship	Zoria Wells
William A. Knight Forestry Scholarship	Declan Wilson
Thomas Plein Scholarship	Anna West
Billy W. Weaver Scholarship	Cameron Toerner
Lehmann – FWF Alumni Association	Kathryn Davis
Forestry, Wildlife, and Fisheries Alumni Association	Brianna Dannehl
Forestry, Wildlife, and Fisheries Alumni Association	Elizabeth Sicard
Forestry, Wildlife, and Fisheries Alumni Association	Alexia Lagrone
Laborde Leadership Scholarship	Anna West
Laborde Leadership Scholarship	Colette Pansini

Louisiana Forestry Foundation Scholarships

Dr. Norwin Linnartz Scholarship	Rachel Porter
Dr. Tom Hansbrough Scholarship	Jessica Francisco
Juliet E. Hardtner Scholarship	Sarah C. LeBlanc
Weaver Brothers Scholarship	Andrew Corrado
Robert H. Crosby Jr. Scholarship	Nathan Apetrei
Roy O. Martin Jr. Scholarship	Micha Rodrigue
Jim and Doris Curtis Scholarship	Cameron Toerner
Joe D. Burns Scholarship	Skylar Bueche
Jeff Hughes Memorial Scholarship	Jeanne-Marie Guillot

Graduate Student Scholarships

Barbara M. Edison Scholarship	Savannah Morales
Ben and Pauline Stanley Excellence Award for Outstanding M.S. Student	Holly Kelchner
Ben and Pauline Stanley Excellence Award for Outstanding Ph.D. Student	Anna Perez-Umphrey
Clark M. Hoffpauer Scholarship for RNR Graduate Students	Cameron Rutt
Charles W. Bosch Jr. Louisiana Wildlife Federation Waterfowl Scholarship	Elizabeth Bonczek
John Barton Sr. Scholarship	Jacob Bushaw

Les Voyageurs

Les Voyageurs are a carefully selected group of 16 students from the College of Agriculture who represent the college and LSU in recruitment and alumni and development activities. Katie Costanza
 Elijah Hanzy III
 Ty Price



INTERNATIONAL NEWS



Rich Vlosky (center) and his Ph.D. student, Gilbert Ototo (to Dr. Vlosky's right), spoke at the Kenya Forest Research Program Institute in Nairobi.

Vlosky Serves as Keynote Speaker in Africa and Europe

Rich Vlosky keynoted four international conferences in the past six months. Dr. Richard P. Vlosky, director of the Louisiana Forest Products Development Center and endowed professor for Crosby Land & Resources Forest Sector Business Development, was the invited keynote speaker discussing North American wood-based bioenergy and cross-laminate timber at conferences in Berlin, Germany; Belgrade, Serbia; Nairobi, Kenya; and Edinburgh, Scotland.

Keim Invited Lecturer in Luxembourg

Richard Keim was in residence with the Catchment and Eco-hydrology Research Group at the Luxembourg Institute of Science and Technology (LIST) in April 2018. While there, he gave a lecture in the LIST Water Lectures Series on how forests affect the pathways that water takes from precipitation to groundwater, and he led a colloquium on the role of science in applied, non-academic careers for graduate students at the University of Luxembourg, which is affiliated with LIST. ■



On Saturday, February 2, the LSU SRNR/FWF Alumni Association toured The River Model at the LSU Water Campus. Following the tour, the group of 39 alumni and friends visited Louisiana Cane Land Distilling Company to learn about and sample Louisiana cane sugar rums. SRNR/FWF Alumni President Will deGravelles, is back row, center.

Membership Registration Form

LSU SCHOOL OF RENEWABLE NATURAL RESOURCES/FORESTRY, WILDLIFE & FISHERIES
ALUMNI ASSOCIATION

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Attn: Dr. Luke Laborde

227 RNR Building

Baton Rouge, LA 70803

We Want To Hear From You!

The alumni news is compiled and written by Luke Laborde. We are continuously working to update and manage our alumni files and database. We welcome information on promotions, career changes, passings and other important life events from all alumni. If you have any news items or address changes that you would like to share, please e-mail Luke at llabor2@lsu.edu

In Memoriam

William Joseph "Billy" Andrepont (B.S.F. '05)

Billy Andrepont, a resident of Baton Rouge, passed away on Monday, January 7, 2019. In addition to his B.S.F., he attended graduate school at RNR.

John Lawrence Bardwell Jr. (B.S.F. '61, M.S. F.W.M. '62)

John Lawrence Bardwell Jr. passed peacefully in Aldie, Virginia, on May 2, 2018, in the presence of family. John was the son of John Sr. and Addie Bardwell of Marksville. John received the National Defense Service Medal and the Good Conduct Medal during his four years of military service in the United States Air Force during the Korean War. John was happily married to wife Julie for 56 years until her passing in 2014. After leaving the service, John attended Louisiana State University, receiving both Bachelor and Master of Science degrees in fish and wildlife management. John was employed by the State of North Carolina Game Control after graduation, followed by a 42-year career as a fish and wildlife biologist with the Department of Interior and U. S. Army Wildlife Conservation Center.

Joe Dae Burns (B.S.F. '46, M.F. '47)

Joe Dae Burns was born on November 29, 1923, in Shongaloo, Louisiana. He died in his home on May 18, 2018. From a Depression-era family of 12 in northern Webster Parish, Joe made his way to LSU in the early 1940s. There he earned both his Bachelor and Master of Science degrees in forestry. Joe proudly served as an infantry soldier with the U.S. Army during World War II, serving in three campaigns in the European Theater of Operations. He was awarded the Bronze Star for heroism and the Combat Infantryman's Badge.

Joe founded Burns Forest Products in the early 1960s and moved from Winnfield to Jonesboro. He served as a president of the Louisiana Forestry Association and the Louisiana Forestry Foundation for nearly 20 years, providing scholarships for students studying to be foresters. He was always replanting the forest for the next generation. He served on the Louisiana Forestry Commission and was awarded the Outstanding Alumnus Award from the LSU School of Forestry. He served on the original board of the Louisiana Workers Compensation Corporation and served as director emeritus until his death.

David John Hamburger (B.S.F. '73)

David John Hamburger, age 67, a longtime resident of Chalmette, Louisiana, passed away on Monday, August 13, 2018. He was born March 6, 1951, in New Orleans to Wilbur and Maud Hamburger. He graduated from Chalmette High School in 1969 and went on to graduate from LSU in 1973. After initially working for the Forest Service in Arkansas, he returned to Chalmette, where he lived and raised his family.

David worked in the sheet metal industry for years at Nadustco in New Orleans and was also an instructor with Delgado Community College. He later joined SGS North America and ultimately retired in 2016 as an Operations Coordinator. He also earned his real estate license in the 1980s, and he continued to serve the community as a licensed realtor until he passed. He is survived by his wife, Deborah.

Paul Bruce Hursey (B.S.F. '64, M.F. '66)

Paul Bruce Hursey died on January 26, 2018, after a sudden and brief illness. Bruce, as he was known, was born in Lufkin, Texas, on October 25, 1941. He studied architectural construction at Texas A&M University and earned Bachelor and Master of Science degrees in forestry and wood technology from LSU. While finishing his M.S. degree at LSU, Bruce met his late wife, Linda, of nearly 50 years. Bruce began his career in wood products as a manager of plywood and hardwood lumber plants for Weyerhaeuser in Philadelphia, Mississippi. He served as Vice President of Operations for Arkansas Oak Flooring Co/W.S. Fox & Sons in Sheridan, Arkansas, before joining International Paper, where he managed a plant near Gurdon, Arkansas. He then became manager of manufacturing services for International Paper in Dallas. After serving as plant manager for Riverwood International, Bruce founded Management Recruiters of Monroe in 1990, an executive search firm specializing in the manufacturing and wood products industry.

David Neal Pashley (Ph.D. W.F.S. '88)

Dr. David Neal Pashley died Oct. 31, 2018, after a long illness. Dr. Pashley was born on April 6, 1950, in Victoria, British Columbia, Canada. He moved to California and graduated from Santa Monica High School in 1968. In 1974 he graduated from Humboldt State University with a Bachelor of Science degree in wildlife management. David began his Ph.D. work in the School of Forestry, Wildlife, and Fisheries at LSU in August 1982 and received his degree in 1988.

He began his career with the Nature Conservancy of Louisiana, examining the effects of land use practices on neotropical migratory birds in bottomland hardwood forests. In 1995, Dr. Pashley joined the newly formed American Bird Conservancy and was a mainstay of that organization for 23 years, leaving only after illness precluded him from working. During that time, he was a leading figure in North American bird conservation, authoring or co-authoring such seminal documents as "Setting Conservation Priorities for Landbirds in the United States: the Partners in Flight Approach" (published in the Auk in 2000), the "Partners in Flight Handbook on Species Assessment," the "Partners in Flight Landbird Conservation Plan," and several of the "State of the Birds" annual reports. In 2016, he was awarded the Partners in Flight Lifetime Achievement

Award. He was also instrumental in the implementation of the North American Bird Conservation Initiative, serving as a member of the international committee from its inception. In 2002, Dr. Pashley was awarded the Chandler Robbins Award 2003 by the American Birding Association, an award given to an individual who has made significant contributions either to the education of birders or to bird conservation and the "management or preservation of habitats on which birds and birding depends." Dr. Pashley most recently served as the vice president for conservation programs at the American Bird Conservancy.

Manuel Segovia (Ph.D. W.F.S. '00)

Manuel Segovia died April 4, 2018, of cancer. Manuel earned his Ph.D. at LSU under Dr. Robert Reigh. He joined the faculty of CICESE (Center for Scientific Research and Higher Education at Ensenada) in Ensenada, Mexico, after leaving LSU in 2002.

Joseph L. Spinks (BSF '66)

Joseph L. "Joe" Spinks, 78, passed away June 19, 2018. He was a native of Colfax, Louisiana, and a graduate of Colfax High School. He attended Northwestern State College and LSU, where he earned a Bachelor of Science degree in forestry in 1966. He began work as a forester with International Paper Company in DeKalb, and over the course of his career was employed with Molpus Lumber Company and Louisiana Pacific in Philadelphia, Mississippi. He retired from Georgia Pacific in Louisville, Kentucky, in 2003. He joined the Society of American Foresters in 1966, where he was elected a fellow and remained a member at the time of his death. He was a past president of the Neshoba County Jaycees, The Neshoba County Forestry Association and the Mississippi Forestry Association. He is survived by his wife of 54 years, Shirley Bullington Spinks of Philadelphia.

Arnold B. Smith (B.S.F. '60)

Arnold B. Smith of Poplarville, Mississippi, passed away on Monday, January 22, 2018, at the age of 80. He grew up in Stone County, Mississippi, attended the Magnolia School, and graduated from Stone County High School and Perkinson Jr. College. He graduated from LSU in 1960 with a Bachelor of Science degree from the School of Forestry. After LSU, he was called up by the National Guard and served during the Berlin Crisis. Arnold owned and operated his own business, Arnold B. Smith Timber Company in Poplarville, Mississippi, until his retirement. During his career as a forester, he served as a member and as chairperson of the Mississippi Forestry Commission. He was a loving and devoted husband to his wife, Louise (Stamey), for more than 50 years.

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School of Renewable Natural Resources
Louisiana State University Agricultural Center
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Baton Rouge, LA 70803

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