

Coastal Clips

A quarterly publication of the Louisiana Sea Grant College Program at Louisiana State University, Baton Rouge

Silver Lining for Ocean Commotion

Ocean Commotion marks its silver anniversary in 2023.

Ocean Commotion is a one-day, hands-on environmental showcase of Louisiana's unique habitats. Now in its 25th year, it continues to offer students an opportunity to learn about coastal marshes and wetlands, invasive species, local ecosystems, boating safety, geology and wildlife. More than 60 presenters from private business, universities around the state, government agencies, and public, non-profit and private educational organizations participate as exhibitors each year.

The coastal education event began as a project between the Louisiana State University (LSU) Office of University Relations and Louisiana Sea Grant (LSG). LSU wanted an event during the International Year of the Ocean that highlighted coastal and oceanic research and would welcome grade school students to the university.

That first Ocean Commotion in 1998 was held at the LSU Field House. More than 2,400 students and 374 teachers attended. In the early 2000s, it moved to the Pete Maravich Assembly Center (PMAC) and has been there every year since – apart from 2020 and 2021 when COVID-19 restrictions moved Ocean Commotion to a virtual event with 27 online exhibits which can still be viewed today at www.laseagrant.org/education/projects/ocean-commotion/oc2020.

"We came together to create a big science fair focused on the wonders of the sea and coast for those young children. I don't believe anyone envisioned the event to be anything more than that one-time 'commotion'," said Pam Blanchard, associate professor in the LSU College of Human Sciences and Education, former LSG education coordinator and Ocean Commotion

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Plumlee New Fisheries Specialist

Jeffrey Plumlee has joined Louisiana Sea Grant (LSG) as the new fisheries specialist.

Plumlee earned his bachelor's degree in marine fisheries and a master's degree in wildlife and fisheries sciences from Texas A&M University, and Ph.D. in ecology from the University of North Carolina at Chapel Hill.

In Texas, Plumlee worked out of Galveston studying the ecology of coastal marine fishes like red snapper and sharks. For his Ph.D. in North Carolina, he primarily did his dissertation work in Morehead City at UNC's Institute of Marine Sciences, studying the relationships between healthy coastal habitats and productive fisheries. After graduation, he moved back to the Gulf of Mexico for his post-doctoral research at the University of South Alabama and Dauphin Island Sea Lab in Mobile, Alabama. His post-doc focused broadly on fisheries issues for species ranging from oysters to spotted seatrout.

Plumlee is excited to start at LSG and learn more about Louisiana's diverse and productive fisheries. He hopes to start by collaborating with Louisiana fishers, fishery managers and policymakers across coastal communities to begin understanding the challenges Louisiana fisheries face. His goal at LSG is to create educational programs and workshops for stakeholders to learn about sustainable fisheries management and keep Louisiana fishing for generations to come.



Engagement Coordinator Starts

Vanessa van Heerden has joined Louisiana Sea Grant (LSG) as the program's engagement coordinator.

Van Heerden is a Baton Rouge native. She earned two bachelor of science degrees at California State University, Channel Islands. One degree is in environmental science and resource management and the other is in biology, with an emphasis on ecology, evolution and organismal populations. She attended Louisiana State University and recently earned her Ph.D. in oceanography and coastal sciences.

Van Heerden has more than ten years of experience in education, research and outreach. She conducted research worldwide, including sandy beach ecology and microplastics across southern California, big game management in South Africa and coral reef health and fisheries in Aitutaki, Cook Islands. Her dissertation research evaluated how coastal Louisiana residents hold value with nature, and how to use that value to inform more effective environmental policy regarding coastal restoration.

Van Heerden said, "I am excited to continue my passion for educating and engaging students and the public on environmental issues, especially related to marine debris in Louisiana. I hope that through my role at Sea Grant, I can continue to increase the accessibility of science while aiding in the environmental literacy and workforce development for diverse audiences."



New Education Coordinator Begins at Louisiana Sea Grant

Alvera (Ali) McMillan has joined Louisiana Sea Grant (LSG) as the new education coordinator.

McMillan, a Louisiana native, graduated from Louisiana State University (LSU) with a bachelor's degree in secondary education. She earned a master's degree from the University of Oklahoma and plans to graduate with a doctorate in curriculum and instruction from LSU this fall. She is joining LSG from West Feliciana Middle School in St. Francisville, where she served as an instructional coach, intervention coordinator and 504/School Building Level Committee coordinator.

McMillan has lived and traveled throughout parts of Europe, Africa, Asia and the Pacific Islands, teaching middle school on three continents.

McMillan says, "As an educator and lifelong learner, I look forward to working with students, teachers, researchers and community partners to advance environmental literacy and workforce development through engaging and locally relevant program offerings and education resources."



Black Joins LSG Education Team

Louisiana Sea Grant (LSG) has a new employee joining the education team.

Naya Black graduated from Louisiana State University in 2020 where she majored in natural resource ecology and management with a concentration in wildlife ecology. Black recently moved back to the USA from Kagoshima, Japan, where she worked as an English teacher with the Japanese Exchange and Teaching Programme. Black is looking forward to doing educational and event programming while at LSG.

Black says, "I've always wanted to absorb more knowledge about wildlife, plants and the other entities that make forests come alive. I have a background in environment-centered youth education, so it makes my heart flutter when I see kids get excited and concerned about the outdoors. I want to ignite that passion not only in children, but in adults too. I believe everyone has the right to enjoy the beauty of the planet."



Three Louisiana Knauss Fellowship Finalists Announced

Graduate students at Louisiana State University (LSU), the University of New Orleans (UNO) and Tulane University have been named 2024 Knauss Fellowship finalists. All were nominated for the fellowship by the Louisiana Sea Grant College Program.



Robert Caplan Feder

LSU, College of the Coast and Environment

Feder completed his master of science degree in oceanography and coastal sciences in August. He earned his bachelor of science degree in environmental science from the University of Florida in Gainesville.

“Growing up in Miami, I was a stone’s throw from the coast but none the wiser. But on my fifth-grade field trip to Everglades National Park, I listened intently as park rangers

chronicled how the water I drink first traveled through the Everglades, being purified by sawgrass prairies. This piqued my curiosity about the relationship between coastal communities and coastal ecosystems,” said Feder. “My experiences have taught me that the well-being of coastal ecosystems is inextricably linked to our own well-being, a principle that guides my pursuit to restore coastal ecosystem services as a career. I believe the goal of science is to create knowledge that benefit people’s lives and that policy is the mechanism through which this goal is achieved. I envision myself crafting policies that invest in nature-based solutions to improve water quality and build climate resilience for coastal communities. Being a Knauss Fellow will enable me to develop a profound understanding of how coastal science is translated into federal policy,” he added.



Samuel Hudgens

Tulane University Law School

Hudgens graduated with a juris doctorate degree from Tulane Law School in May 2023. He earned a bachelor of science degree in ecosystem science and sustainability from Colorado State University in Fort Collins. Since attending law school, Hudgens has worked as a legal intern for Atchafalaya Basinkeeper, a Louisiana environmental nonprofit, as well as Surfrider Foundation, where he engaged in both environmental

litigation and policy. “Throughout my academic career, I have taken opportunities to expand my knowledge of the environment and join efforts to protect our natural resources. My experience began in the scientific field during my time at Colorado State University and transcended to the legal

field as I began studying environmental law,” Hudgens said. “Following a budding passion for conservation that began with research I was involved in at CSU, I took my studies to Turks & Caicos, where I attended the School for Field Studies’ Center for Marine Resource Studies. Working and living with my research team, going into the field to collect data and becoming closely acquainted with the communities that utilize the marine resources we sought to protect allowed me to feel a sense of purpose. Communicating with a coastal community about the implications of our research opened my eyes to the reality of the policy and legal issues that can limit the hopes of research scientists. Realizing this, and with the aim of being an effective advocate, I decided to attend law school.”



Amanda Kirkland

UNO, Department of Biological Sciences

Kirkland is a doctoral candidate studying integrative biology at UNO. She earned her bachelor of arts degree in biological conservation from the University of Wisconsin-Madison. “Puerto Lopez, Ecuador, proved to be a memorable place to begin a career in marine science,” said Kirkland. “I was mentally prepared to document shark bycatch, but the scene I entered was shocking. Pyramids of juvenile hammerheads laid next to a line of

threshers. These sharks were primarily captured to be ‘finned,’ where the fins are removed, and the rest of the shark is discarded. This unsustainable, wasteful practice left an indelible impression on my life and influenced me to pursue ocean conservation,” she added. “After returning from Ecuador, I worked on several projects that promoted healthy coastal ecosystems. Currently, I explore how warming and ocean acidification affect artificial reef ecosystems. This work contributes to sustainable fisheries as artificial reefs are important areas of food and refuge for fishes ... My ideal career is as head of a research lab for NOAA examining how climate change affects benthic organisms including corals, bivalves, crabs and others. With that science, I want to influence new policies in an ocean-focused manner like the recently published State of Hawaii Ocean Acidification Action Plan.”

Sponsored by the National Sea Grant College Program, the John A. Knauss Fellowship matches graduate students with an interest in ocean and coastal resources and national policy affecting those resources with hosts in federal legislative or executive branch offices for one year. In the coming months, finalists from across the country will travel to Washington, D.C., to determine in which offices they will work. Fellowships will begin Feb. 1, 2024.

A total of 140 graduate students applied for the 2024 Knauss Fellowship; 84 have been selected as finalists.

Sea Grant Funds LaSSO Project

A Louisiana Sea Grant/Louisiana Space Grant (LSG/LaSPACE) collaboration will fund two undergraduate research projects. The joint program, called Louisiana Space and Sea Grant Opportunity (LaSSO), is modeled after similar, long-established undergraduate research programs at both LSG and LaSPACE.



LSG will fund a project titled: *Emerging Computing for Underwater Image Processing* at the University of Louisiana at Lafayette (ULL). The principal investigator is M. Hassan Najafi, assistant professor in the School of Computing and Informatics. **Jonas Schmidt**, a computer science and mathematics major, is the student researcher.

The project will explore the application of emerging computing techniques in under-

water image processing. Within the scope of the project, the research team will develop and implement a lightweight hardware design for underwater image processing by employing hyperdimensional computing (HDC) and stochastic computing (SC). HDC is effective in extracting abstract information from data, while SC can perform complex operations using simple low-cost circuits. This study will address two fundamental computer vision problems – image filtering and image classification – and will propose novel hardware designs to address them.

Each project will receive \$4,000 in funding. LaSSO is directed at science and engineering students who are working on projects in research areas deemed a priority by both the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA). The intent of LaSSO is to supplement and enhance the undergraduate academic curriculum by providing science/engineering students with a hands-on, mentored research experience relevant to space, earth, coastal and/or marine sciences.

First Van Lopik Scholarship Recipients Awarded

Four Louisiana State University (LSU) graduate students are the inaugural recipients of the Dr. Jack and Annagreta Hojhdal Van Lopik Superior Graduate Student Research Scholarship. They are **Ebenezer Etsiwah**, **Wissam Jawad**, **Mischa Schultz** and **Daniel Sinopoli**.

Jack Van Lopik, the first and longest serving executive director of the Louisiana Sea Grant College Program at LSU, and his wife Annagreta Hojhdal Van Lopik, established the scholarship to assist graduate students pursuing advanced degrees in disciplines related to the mission and focus areas of the Louisiana Sea Grant College Program. The intent is to support the Sea Grant mission of furthering the wise and sustainable use of ocean and coastal resources by increasing the number of researchers and the body of knowledge in related fields including but not limited to biology, ecology, geology, fisheries, environmental science, coastal resiliency and design, natural resources economics, environmental education and disaster preparedness and extension.

Applicants must be full-time graduate students at LSU in good academic standing. Scholarship recipients are awarded \$10,000 for one year to cover stipend, conference travel, field travel, field experiences and other expenses.



Etsiwah is pursuing a master of science degree in civil engineering in the Department of Civil and Environmental Engineering. He earned his bachelor of science degree in chemical engineering from Kwame Nkrumah University of Science and Technology in Kumasi, Ghana.

His research project is titled *A Novel Disinfection Technology for Onsite Wastewater Treatment using UV-LEDs*.

Soil conditions of Louisiana, particularly Tangipahoa Parish, make the suitability of onsite wastewater treatment systems – such as septic systems – a challenge. Sewage runoff through ditches and aerated treatment units during intense rainfall has a cumulative impact on nearby water bodies. Recent advances in the use of germicidal ultraviolet light-emitting diodes (LEDs) with wastewater treatment look to be a promising solution. As part of the project, a solar-powered disinfection reactor using LEDs and low doses of chlorine will be developed and tested for its effectiveness with aerated treatment units in the parish.



Jawad is a doctoral student in the Department of Biology. He earned a bachelor of arts degree in zoology from Michigan State University.

His research project is titled *Understanding the Impact of Heat Waves on the Marsh Periwinkle (Littoraria irrorata) in Louisiana and Across the Species Range*. Heat waves can have severe negative impacts on natural communities by causing mass mortalities. In sub-tropical regions such as coastal Louisiana, heat waves can be

particularly threatening because many coastal species are already living at their upper temperature limits. Species like the common marsh periwinkle can avoid high temperatures by seeking cooler microhabitats which can increase their exposure to other threats, like predators. The project will investigate how heat waves can impact marsh periwinkles in the wild by altering their vulnerability to blue crabs. As a key species that influences the structure and diversity of salt marsh ecosystems, understanding how heat waves impacts marsh periwinkles could be vital for predicting the future health of salt marshes.



Schultz is a doctoral student in the Department of Oceanography and Coastal Sciences. She earned her master of science degree in natural resources from the University of Missouri, and a bachelor of science degree in natural resources from the University of Georgia.

Her dissertation is titled *Greater Amberjack Life History in the Gulf of Mexico*. Declines in a number of reef fish species in the Gulf of Mexico have led to regulatory actions such as decreased bag

limits and seasonal closures. Greater amberjack is a reef fish important to both commercial and recreational fisheries, yet, like many other reef fish, greater amberjack has been classified as overfished and undergoing overfishing. Despite the recreational importance of the species, there is a lack of scientific studies on greater amberjack in the Gulf of Mexico. With the aim of better understanding greater amberjack life history, Mischa's research will focus on describing the feeding habits and diet variability of greater amberjack and will characterize the reproductive biology of the species.



Sinopoli is a doctoral student in the Department of Biological Sciences. He earned his master of science degree in fish and wildlife biology management from the State University of New York, College of Environmental Science and Forestry, and his bachelor of science degree in aquatics and fisheries science from the same institution.

His research project is titled *Resurrecting the Ancient: New Analyses Reveal Unrecognized Diversity in a*

Widespread Ancient-lineage Fish. Spotted gar is a widespread species with the core of its range comprising the Mississippi River Basin, the Gulf Coast drainages from northeastern Mexico to the Apalachicola River in Florida and the Rio Grande River as far upstream as the Trans-Pecos region of Texas. There is also a disjunct and rarely observed northern population of spotted gar in southern Michigan and parts of the Great Lakes. In the late 19th century, taxonomists often described similar or identical animals nearly simultaneously, without instantaneous access to the work of their peers, resulting in redundant descriptions. Ultimately, many of these species' names were invalidated or "sunk," synonymized under a single name. Between 1858 and 1870, five gar species were described that would ultimately become the single spotted gar we know today. The downside to lumping species prior to genetic analyses is that it can invalidate a potentially valid species name by listing it as a synonym. This project will use molecular and geometric morphometric techniques to re-examine the five synonyms of spotted gar described across its distribution to determine if any synonyms are valid species and should be split from true spotted gar.

For more information on the scholarship, visit www.laseagrant.org/opportunities/student/van-lopik-scholarship.

Grant Extends Wetland Days Programming

Louisiana Sea Grant (LSG) is the recipient of a two-year, \$92,000 National Academy of Science's Gulf Research Program (GRP) Place-Based Education grant. The project, titled *Wetland Days: Watershed-Based Enrichment Opportunities for Youth*, is a continuation of LSG's existing Wetland Days programming.

COVID-19 restrictions and hurricanes prevented K-12 students from having field trips in 2020 and 2021. It also prevented LSG's

Engagement and Education team from participating in school events. But the team persisted knowing the value of hands-on, place-based learning by applying for grants to fund educational field trips in 2022. From that effort, more than 600 students from Plaquemines, Terrebonne, St. Bernard, Tangipahoa and Vermilion parishes participated in Wetland Days field trips close to their campuses. Lessons included engrossing hikes, aquatic ecology, native vs. non-native species, sediment cores and water quality sampling. Grant funding for that round of Wetland Days also covered student transportation to and from the workshops, as well as meals.

GRP funding will continue and expand Wetland Days to more than 1,000 students in St. Tammany, Tangipahoa, Plaquemines, St. Bernard,

Lafourche and Terrebonne parishes. Six workshops will be held annually. Principal investigator on the project is Dani DiIullo, LSG education and engagement director.

"We want students to explore their local, outdoor classrooms through hands-on investigations that mirror lessons they receive in the classroom," said DiIullo. "And we want school systems to see that this time supports in-class instruction, not taking away from it. The connections the students

can make between their classroom instruction and place-based learning are powerful and can really enhance their understanding of a subject — whether it's science, math, social studies or English language arts."

The National Academies' Gulf Research Program is an independent, science-based program founded in 2013 as part of legal settlements with the companies involved in the 2010 Deepwater Horizon disaster. In supporting a safer, more resilient and sustainable future for the Gulf and all those who call the region home, the GRP uses science, engineering and medical knowledge to empower the region's citizens and enhance offshore energy safety, environmental

protection and stewardship, as well health and resilience. Additionally, the GRP believes that to use information to effect change, evidence-based policies will be supported through education and engagement, data, data products and knowledge.



AOC Economics Study Finds Scale and Marketing Challenges

In 2022, the State of Louisiana initiated an industry grants program to subsidize the development of Alternative Oyster Culture (AOC) businesses. The AOC method is relatively new to Louisiana and differs substantially from traditional, reef-based oyster production. AOC involves the use of hatchery-spawned oysters grown in containers. This method has been promoted as a way to help the state's oyster industry adapt to coastal change — especially the impacts of large-scale river diversions.

In January 2023, Louisiana Sea Grant commissioned Daniel Petrolia to conduct an economic analysis of the AOC sector, and to assess its

feasibility in terms of existing and future economic capacity. The results of Petrolia's study, available at <https://tinyurl.com/AOCecon>, indicate a number of challenges — especially in the areas of production scale (farm size) and market potential.

"I suspected going in that the costs of AOC would be considerably higher than that of reef oysters — but I was surprised to see just how much higher," said Petrolia. Total cost, including loan payments, labor, fuel and oyster seed, is estimated to range from \$50,000 a year to operate a small, half-acre farm to \$250,000 a year to operate a large, four-acre farm.

Petrolia estimates that a small farm would need to sell oysters at more than \$2 each to break even, a two-acre farm would need 71 cents apiece to break even and a four-acre farm would need a little over 50 cents apiece. "Based on what I was seeing in other states, it appeared that farms need to go big to be profitable over the long-haul. My findings confirm that," he said.

The report estimates that average annual profit would be negative for farms of two acres or smaller. Petrolia reiterates that his findings are indicative of the average case, and that some farms may indeed be able to make it work at a smaller scale.

Beyond the farm level, however, Petrolia's analysis points to larger concerns when it comes to marketing. The economist believes that's where the bigger challenge lies ahead: "An AOC oyster must be marketed differently than a reef oyster, and currently there's only so much local and regional demand for the branded half-shell market," he said. Petrolia

estimates that there are 10-15 establishments in south Louisiana and the Mississippi coast that feature branded, AOC-type half-shell oysters on their menus. Although some growers are getting \$1 apiece, the average price in other states is between 40 to 59 cents. And in other states, some of these oysters are being sold in traditional markets at even lower prices. And, as mentioned earlier, to survive at these prices, farms will likely need to get bigger.

Asked about future prospects for AOC sector growth, Petrolia remains cautious: "Even under the most optimistic assumptions of where AOC production can be in the future, AOC is unlikely to account for more than a very small fraction of total oyster production in the state."

He added: "As an oyster mitigation strategy, there might be a need to consider other options."

In the coming year, the current AOC sector, which includes 18 farms, will receive individualized access to the analysis. Using a spreadsheet-based tool developed by Petrolia, Louisiana Sea Grant's Marine Extension Program (MEP) specialists and agents will be able to work one-on-one with AOC growers to analyze their own operations.

A presentation of the report can be viewed at <https://youtu.be/GN-Yale9X-8>.



Oysters being grown in cages.



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co-founder. "Kudos also go to the myriad of LSU researchers who provide exhibits year after year, and the non-profits and governmental agencies who patiently explain how cool and important our coast and sea are to Louisiana citizens. It's a big commotion for all the right reasons."

Many exhibits are run by students, providing an opportunity for near-peer learning. "It's a great experience for the students," said Dianne Lindstedt, another LSG former education coordinator. "Students have the opportunity to learn from professionals, but from each other, too."

Ocean Commotion provides many students the opportunity to experience habitats of Louisiana that they may have never been to - which includes the coast, a swamp or marsh. This may also be their first-time seeing fish and other animals up close. The event also benefits exhibitors by highlighting how important it is to effectively communicate their work to all audiences.

Exhibitors that have been involved since the beginning are still coming 25 years later, demonstrating a fantastic commitment to Louisiana students.

Current Sea Grant Education Director Dani Dilullo is excited for this year's event. "We are honored to carry on the long tradition of bringing coastal exhibits to the students. And this year's theme — Coming Full Circle — reflects this lasting commitment. Over the 25 years, we have seen students mature into volunteers, teachers and exhibitors. What started in the Field House has grown to an annual event that has a long-lasting impact for thousands of students."

The lingering effects of Ocean Commotion prove that it is truly an event worth continuing.

Anyone interest in learning more about Ocean Commotion can visit www.laseagrant.org/education/projects/ocean-commotion/.