Coastal Clips

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



Fifty-two graduate students from seven universities participated in the Louisiana SciComm Summit hosted by Louisiana Sea Grant (LSG) and the LSU Center for Collaborative Knowledge this spring at Louisiana State University's (LSU) Baton Rouge campus.

The free, two-day science communication event – organized by graduate students, for graduate students – was designed to enhance research communication skills. It consisted of a series of panels, engaging speakers, concurrent breakout sessions and working groups. "The catalyst for the workshop was a need expressed by many graduate students," said Dani Dilullo, LSG education and engagement director. "While graduate students learn to communicate to other scientists, they often don't receive training on how to communicate with the public. Many have expressed a desire to get better at this, and we wanted to help them in this pursuit."

The Louisiana SciComm Summit is the culmination of a years-long groundswell movement. What began with a handful of Louisiana graduate students grew into a state-wide conference. While science communication is often a subject mentioned at academic conferences, it is seldom the focal point. Given the multitude of digital platforms and a greater interest in outreach from funding agencies, students are eager to learn more about how to engage the public in their research.

"SciComm helps develop and practice strategies for communicating their research in a clear, concise manner. The topics and speakers were all identified by the graduate student planning committee and included sessions on data visualization, storytelling, science art and social media. The planning committee was really the engine behind this effort, we just helped them get going," Dilullo added.

The first summit was in 2020 and was intended to be an in-person event. "But then COVID-19 hit, and we had to pivot and retool it into a virtual event," said Dilullo. "I'm so proud we were able to hold SciComm in-person this year. And I am so appreciative of all the graduate students, Louisiana Sea Grant staff and communications specialists who made it happen."

Students attending this year's SciComm Summit came from LSU, McNeese State, Nicholls State, Southern University, Tulane University, University of Louisiana at Lafayette and the University of New Orleans. For more information on SciComm, visit www.laseagrant.org/outreach/ladia/lascicomm

Rushing Promoted to Business Manager

Louisiana Sea Grant (LSG) congratulates Lindsay Rushing on her promotion to the position of business manager.

Rushing started in 2016 as a graduate assistant in the LSG Accounting Office. After graduating from Louisiana State University with her Master of Accounting degree in 2017, she returned to LSG in 2018 to accept the position of accounting coordinator.

Last November, she was promoted to business manager. As such, she supervises

the program's Accounting Office, overseeing two graduate assistants and one full time employee. She now works with projections and budgeting for LSG's state operating budget,



and works with more grant funding agencies, as her prior position mostly dealt with grants from the National Oceanic and Atmospheric Administration. Additionally, Rushing now monitors all salary budgets to ensure that all payroll is allocating correctly regarding funding sources. Lastly, she works more closely with the Office of Research and Economic Development about budget reporting and audit requests.

Franze Receives Mentor Award

Louisiana Sea Grant and LSU AgCenter extension agent Carol Franze is one of four

recipients of the 2022 Greater New Orleans Science and Engineering Fair (GNOSEF) Mentor Award.

The award is presented to teachers and other mentors who have gone the extra mile to



support many students' successful competition in the science fair, according to GNOSEF. Students were surveyed and asked for their recommendations for award recipients, GNOSEF added.

"I also work with Carol in connection with the Louisiana Master Naturalist of Greater New Orleans chapter," said Janell Simpson, with the GNOSEF Scientific Review Committee. "She is one of the workshop educators teaching adults about the significance of the marsh environment to coastal Louisiana. She always handles questions well and is ready to correct misconceptions," Simpson added.

Franze is a marine extension agent in St. Tammany and Tangipahoa parishes.

The Greater New Orleans Science and Engineering Fair is one of the oldest such fairs in the nation, with the first "New Orleans Regional Science Fair" held in 1956. The mission of the GNOSEF is to encourage independent student research in science and engineering, to encourage youth to pursue science, math or engineering careers, and to promote collaboration and interaction between area students and scientists and engineers.



Louisiana Sea Grant has several employment opportunities. For a listing, as well as listing of other Sea Grant programs, visit

www.laseagrant.org/opportunities/employment/.

Oglesby Takes on Alternative Oyster Culture Role

Wood Oglesby has been named Louisiana Sea Grant's (LSG) Alternative Oyster Culture Program outreach coordinator. He began his new position in January.

Oglesby began working for LSG in 2019 as a research associate at the Michael C. Voisin Oyster Hatchery on Grand Isle. In 2020, he became hatchery farm manager.

"My team and I were responsible for supporting all facets of hatchery operation and maintaining proper husbandry practices of oyster larvae and seed," said Oglesby. In his new position, Oglesby will be an extension-type liaison working with new and existing farmers to help them develop alternative culture oyster businesses.

Alternative oyster culture (AOC) is when oysters grow in floating cages or bottom-placed

cages attached to pylons. This method allows the cages to be raised and lowered to protect oysters from predators, fouling and the burial effects of disasters like hurricanes.



"I am looking forward to working with our farmers,

building relationships and assisting with the development of the best AOC practices for the oyster industry in Louisiana," said Oglesby.

"Over the last few years, the oyster industry has experienced significant setbacks due to weather related events. Hurricane Ida was just another blow to an already struggling industry. Since Ida, there are a number of programs underway to give our oystermen hope for the future of the oyster industry. The AOC program is another way our farmers can diversify their crop moving forward," Oglesby added.

Oglesby received his bachelor's degree in marine biology from the University of North Carolina at Wilmington and completed coursework in the aquaculture program at Carteret Community College in Morehead City, NC.

2022 UROP Projects Announced

This year the Louisiana Sea Grant College Program (LSG) is funding eight Undergraduate Research Opportunities Program (UROP) projects. Established in 1992 to provide talented undergraduate students with handson research experience, LSG has funded more than 200 UROP projects.

Each UROP student will gain first-hand knowledge regarding the whole research process from design, implementation, analysis to conclusion. The hope is for students to present at relevant conferences and publish in peer-reviewed scientific journals.

Projects receive funding up to \$3,000. UROP applications are accepted each fall for projects starting the following March. Full-time undergraduate students at all Louisiana colleges and universities are eligible.



James Anderson

James Anderson, Louisiana State University (LSU) Advisor: John White

Determining the Sediment Nutrient Role in Driving Harmful Algal Blooms in the Lake Pontchartrain Estuary

Mississippi River diversions from the Bonnet Carré Spillway are intended to protect downstream communities from river flooding. But doing so delivers both soluble and particulate phosphorus into the Lake Pontchartrain estuary, which in-turn can result in harmful algal blooms. Recent

operations of the spillway have left behind a significant pool of phosphorus in the sediments (sediment pools), which can later be released back into the water column. This research will determine how much phosphorus is coming from the sediments versus how much phosphorus is coming in from the watershed. This research will give resources managers a phosphorus budget for the estuary so that the most effective strategies can be implemented to reduce phosphorus-induced harmful algal blooms and restore water quality, protecting fisheries and human health.



Julie Armand

Julie Armand and Elizabeth Reich, LSU

Advisor: Todd Monroe

A 3-D Printed Microfluidic Chip Supporting Preservation of Eastern Oyster Genetic Resources

The Eastern oyster (*Crassostrea virginica*) is a popular aquaculture species in Louisiana, supporting about 4,000 jobs and bringing in millions of dollars annually to the state's economy. However, recent concerns about dangerously low Gulf of Mexico oyster populations have

been reported in the media. The goal of this project is to develop a low-cost, 3D-printed microdevice to evaluate Eastern oyster sperm for genetic preservation programs, such as cryopreservation. The device would allow for the efficient identification of high-quality sperm through the sperm's ability to pass through obstacles in a sort of sperm Olympics. Ultimately, the device could help enhance Louisiana oyster stocks used by aquaculturists, hatchery managers, state agencies and researchers.



Jillian Bowman

Jillian Bowman, LSU

Advisor: Stephanie Archer, Louisiana Universities Marine Consortium

Identifying Acoustic Indices of Oyster Reef Health
Healthy oyster reefs are an essential component of the
ecology, economy and culture of Southeast Louisiana –
stabilizing shorelines, improving water quality and acting
as nursery grounds for other ecologically and economically
important species. Current methods to monitor reef health

and the effectiveness of reef restoration efforts are time and labor intensive. One novel, possibly easier, approach for monitoring ecosystem health is passive acoustics. This project will identify acoustic indices – essentially soundscapes – that correlate with reef health and reef-associated biodiversity.

Patrick Colclough, LSU

Advisor: John Nyman

Comparing Soils and Invertebrate Communities between Created and Natural Marshes

Soils and invertebrates provide the foundation of an ecosystem's health. In coastal Louisiana, this means worms and insects provide food for sandpipers, rails, egrets, etc. This research will compare soils and invertebrate communities from created and natural marshes to determine if man-made

sites function similarly to natural marshes regarding soil organic content and density, as well as invertebrate population densities. It is critical that created marshes function similarly to natural marshes if they are to be effective, and this project could help inform the design of future man-made marshes.



Jerica Ledet-Medellin

Jerica A. Ledet-Medellin, LSU

Advisor: Evelyn Gutierrez-Watts

The Antimicrobial Effectiveness of Gelatin Film Containing Grapefruit Essential Oil for Preservation of Blue Catfish (Ictalurus furcatus)

The geographic market for fresh seafood is limited due to the product's high perishability. But innovative methods to increase shelf life could allow processors to reach regional and national markets. This project will determine

whether edible gelatin film combined with grapefruit essential oils extends the shelf life of fresh catfish.



Jonathan Sanders

Jonathan Sanders, LSU

Advisor: Fernando Galvez

Creation of Three-dimensional Printed Models of Gulf Killifish for the Educational Outreach Describing the Longterm Impacts of Oil Pollution

Marine oil spills are common in the northern Gulf of Mexico (GOM) and continually stress Louisiana fisheries. In previous research, the Galvez lab assessed the generational effects of non-lethal crude oil exposure on

GOM killifish, an important estuarine species native to coastal Louisiana. Findings indicated that offspring from oiled fathers and grandfathers had significant anatomical abnormalities. Sanders will use computed tomography (CT) data from that previous research to produce three-dimensional (3D) printed models of whole fish, crania and the spinal cords of oiled GOM killifish offspring. The models will be used as part of the lab's outreach efforts targeting middle schoolers, high schoolers, science fairs and possibly students at the Louisiana School for the Visually Impaired.



Bridget Seghers

Bridget Seghers, LSU

Advisor: Michael Polito

Co-Advisor: Stephanie Archer

Developing an Invasive Carp-Based Aquaculture Feed to Benefit Louisiana Ecosystems and Economies

Increased commercial harvest of invasive carp – such as silver carp, bighead carp, black carp and grass carp – is the most effective way to limit their impacts on native fisheries. However, low demand and low dockside prices

for invasive carp have limited the scope and size of commercial harvests. This project will determine if the quality of invasive carp harvested in Louisiana is a good source for aquaculture feed and serve as a first step for feeding trails with channel catfish.

Student to be determined, Southeastern University

Advisor: Kyle Piller

Assessing Fish Diversity Associated with Living Shoreline Reefs in Calcasieu Lake

Living shoreline projects use natural materials and hard structures to stabilize coastal habitats, reducing erosion and the risk of coastal flooding. Three such living shorelines have been constructed, or are planned to be constructed, in Calcasieu Lake. But relatively little species diversity information has been gathered from any of these projects. As part of this research, environmental DNA – derived from scales, mucous, feces and urine – will be collected to determine what fish species populate the living shorelines. Researchers anticipate more fish species to be present at the living shoreline, compared to natural reefs that will be used as control sites, due to the availability of structured habitat.

Coastal Science Assistantship Projects Announced for 2022

The Louisiana Coastal Protection and Restoration Authority (CPRA) continues its commitment to the Coastal Science Assistantship Program (CSAP). This program supports Master of Science students in science or engineering research relevant to Louisiana coastal protection efforts. This collaboration offers the dual benefit of engaging students in CPRA activities while potentially recruiting qualified personnel for the agency.

The Louisiana Sea Grant College Program (LSG) administers these assistantships available to all Louisiana university faculty to recruit outstanding students to coastal restoration-related research. Annually, four new students are chosen, based on the review of proposals, and awarded \$25,000 each for up to three years. The latest recipients and projects are:



Bonnie Slaton

Bonnie J. Slaton, University of Louisiana at Lafayette (ULL)

Major Professor: Paul Leberg

Assessing Resiliency of Coastal Seabird Communities
Following Coastal Restoration and Hurricane Disturbance
Coastal islands in the Terrebonne and Barataria basins are
critical habitats for several threatened species facing rangewide impacts due to climate change. Slaton will study the
effects of storms and restoration on successional processes

that control avian populations. She will compare extensive pre-storm and current island conditions, assessing restored and unrestored islands and the wildlife that inhabit them, such as brown pelicans (*Pelicanus occidentalis*). Ultimately, this project will help inform future restoration practices. After obtaining her master's, Slaton plans to work as a non-game avian biologist on the Louisiana coast, protecting bird species and their habitats.

Student to be determined, Louisiana State University (LSU)

Major professor: Sabarethinam Kameshwar

Hurricane Vulnerability of Aboveground Storage Tanks in Coastal Louisiana

Coastal Louisiana houses several ports, petrochemical industry installations and oil and gas facilities. Aboveground storage tanks (ASTs) are widely used in these industries to store a variety of substances, such as crude oil, petrochemicals and other hazardous substances. ASTs are susceptible to failure during hurricanes, disrupting the oil and gas supply chain and causing hazardous

spills that damage surrounding eco-systems and communities. One noted incident – the Murphy Oil spill – occurred after Hurricane Katrina in Meraux. More than 25,000 barrels of mixed crude oil were released into the surrounding environment. This research project focuses on filling the knowledge gaps related to understanding and quantifying the vulnerability of ASTs during hurricanes and estimating the effectiveness of regional hurricane risk mitigation measures in preventing AST failures.

Student to be determined, Louisiana Tech

Major Professor: Jay Wang

Development of Design Criteria for the use of Articulating Concrete Mats and Geosynthetic Separator Fabric as Protective Features for Earthen Containment Dikes Exposed to Localized Wave Forces

Coastal wetland loss in Louisiana is a complex issue. Solutions include constructing containment dikes to restore and protect coastal habitats. Earthen dikes along the shoreline are typically built on soft clay, silts or fine sands and are different from levees because the dikes are subjected to continued damaging high current, wave and pore water pressure conditions. This project involves developing construction criteria for earthen dikes – using geosynthetic separator fabric and concrete mats as protective features – for coastal marsh creation. Ultimately, the project aims to deliver detailed step-by-step procedures for earthen dike construction.

Student to be determined, University of New Orleans (UNO)

Major professor: Madeline Foster-Martinez

How do Physical Properties of Vegetation Modify the In-situ Flow and Sediment Regime?

Reestablishing marsh vegetation is integral to Louisiana's coastal restoration efforts. Many perceive vegetation's role in land building as adding friction and slowing currents to cause sediment deposits. However, that is not always the case. Dense vegetation can divert water around areas of emerging marsh and prevent sediment-laden water from contributing to land building. This project will study how physical properties (i.e., shape, height, stem width, branching, flexibility, etc.) of vegetation modify water flow and the sediment regime in Bay Denesse. With vegetation plantings costing thousands of dollars per acre, understanding the impact of vegetation's physical properties on sedimentation can result in more efficient use of coastal restoration funding.

Artificial Reef Projects Selected

The Louisiana Department of Wildlife and Fisheries (LDWF) announces the first research projects under the Artificial Reef Research Assistantship Program (ARRAP).

The program provides graduate assistantship stipends of \$25,000 annually, for up to three years, to Master of Science/Arts students enrolled full-time at Louisiana colleges and universities who are involved in research relevant to the Louisiana Artificial Reef Program (LARP). Students receiving assistantships also are required to intern with LARP at least 100 hours each year with a mentor assigned by the program. Louisiana Sea Grant administers the assistantships with funding provided by LDWF.

Projects and students selected for 2022 are:



Jade Carver

Jade Carver, Louisiana State University (LSU) Principal investigators: Mike Dance (LSU),

Steve Midway (LSU)

Assemblage Structure and Habitat Use of Reef Fishes at Offshore Artificial Reef Sites in Louisiana
Artificial reefs are deployed in nearshore and offshore waters to provide habitat for fishes and invertebrates in areas often devoid of structure on the water bottom. Yet, our understanding of how artificial reef communities

develop and function as habitat is limited. Before and after visual surveys (from underwater cameras) and telemetry data (from underwater receivers and fish tagged with acoustic transmitters) will be used to characterize community structure, fish movements and habitat use at a newly deployed artificial reef constructed in October 2021. The research team will examine the migration

of adult fish to the new reef and contrast fish communities at the new site with those over adjacent sand and mud. Critical data on reef fish accumulation at artificial reefs, as well as high-resolution spatial and temporal data on reef use throughout the water column by the fish, also will be collected. Additional funding for the project is provided by Coastal Conservation Association of Louisiana.

Student to be determined, University of New Orleans

Principal investigators: Stephanie Archer, Louisiana Universities Marine Consortium (LUMCON)

Assessing Which, When and Why Fishes Use Artificial Reefs through Passive Acoustics and Capture Based Methods

LARP was established with the goals of facilitating access by Louisiana fishers, both recreational and commercial, and enhancing and conserving fisheries resources. To fulfill these goals, fished species must both utilize the reefs and reefs must result in new biomass production rather than simply attracting and concentrating existing fishes. The first step in determining if artificial reefs are contributing to increased fisheries production is to gain a better understanding of which fishes are utilizing the reefs, when and for what purpose. This project will take advantage of the fact that many of Louisiana's fishes are sound producing, meaning they communicate using species-specific calls, much like birds. As a result, by listening to the fish calls on these reefs, researchers can gain a better understanding of which fish are utilizing the reef, get a fine-scale understanding of when the fish are on the reefs and start to understand if the fish are using the reefs as habitat, feeding grounds, spawning grounds or all of the above.

Alternative Oyster Culture Grant Recipients Announced

The first round of Alternative Oyster Culture (AOC) grants, totaling \$330,000, have been announced. Grants were awarded to:

- Marcos Guerrero, dba Grand Isle Sea Farms, for a nursery farm and grow-out farm
- Scott Maurer, dba Louisiana Oyster Co. Farm, for a nursery farm and grow-out farm
- Jules Melancon, dba Caminada Bay Oyster Farm, for a nursery farm and grow-out farm
- Brandi Shelley, dba Shelley Farms Premium Louisiana Oysters, for a nursery farm and grow-out farm
- Nathan Herring, dba Bright Side Oyster Farm, for a grow-out farm
- Kim Galjour, dba Dos Gris Oyster Farm, for a grow-out farm

The first round of competitive funding was open to all Louisiana licensed oyster fishers. A second-round application announcement is scheduled for this spring. Individuals who were not funded in the first round are automatically enrolled in the second round.

First-round grant priority was given to cage-culture farmers who were already in the business and impacted by Hurricanes Zeta and Ida. Individuals had to apply for each type of grant, and each was independently assessed in the award process with no guarantee that success in one category meant success in another. Award amounts were \$15,000 per nursery farm and \$45,000 per grow-out farm.

Funding for the grant program, which is administered by Louisiana Sea Grant (LSG) and awarded by the Iberia Development Foundation (IDF), comes from the Louisiana Department of Wildlife and Fisheries (LDWF) and the Coastal Protection and Restoration Authority (CPRA).

The goal of the program is to expand AOC operations across the state. That includes establishing AOC seed nurseries and grow-out facilities, hatcheries and areas legally designated as AOC Management Units (parks) that contain multiple farms in one location.

Grant recipients were chosen by a selection committee made up of impartial industry experts, who evaluated each on a competitive scale based on five key elements. The committee reviewed the applicants' personal qualifications and experience, the AOC site location as it influences the biological and physiological needs of the oyster and the ability to work and harvest without influences of public health concerns. Additionally, the committee was able to evaluate an applicant's personal thoughts on what AOC means to them and how prepared they are to start a business, and any outside financial efforts they may be pursuing to bolster their business through grants.

Visit www.laseafoodfuture.com/aoc to stay informed about grant application opening and deadline information.

Over the life of the three-year program, \$1.8 million in grants will be available to AOC operators to acquire equipment and supplies to enhance existing businesses or establish new AOC businesses. Grant recipients are reimbursed – after submitting receipts, invoices and other documentation – for their purchases, up to the total amount of his or her grant.

AOC is when oysters are grown in floating cages or in bottom-placed cages attached to pylons. This method allows the cages to be raised and lowered to protect oysters from predators, fouling and the burial effects of disasters like hurricanes.



AOC grant recipients are (from left) Scott Maurer, Nathan Herring, Boris Guerrero, Marcos Guerrero, Jules Melancon, Kim Galjour, Brandi Shelley and Terry Shelley.

Hurricane Damages from Four Storms Total Nearly \$580 Million

Hurricanes Laura, Delta, Zeta and Ida had nearly an \$580 million impact on the state's seafood industry, according to an analysis by Louisiana Sea Grant (LSG) and the Louisiana Department of Wildlife and Fisheries (LDWF).

Total damages to seafood industry infrastructure were \$304.9 million, with 2021's Hurricane Ida accounting for 70 percent of that number. Revenue losses for commercial vessels, seafood dealers, seafood processors, charter boat operators and marinas across 22 coastal parishes totaled \$155.3 million from the four storms. And biological resource losses – harvestable seafood – totaled \$118.5 million.

Wind was the primary cause of damages across all four storms, the report also notes.

On Aug. 27, 2020, Hurricane Laura made landfall in Cameron Parish. Two weeks later, Hurricane Delta made landfall in nearly the same location as Laura. On Oct. 28, 2020, Hurricane Zeta came ashore in southeastern Louisiana. And, finally, on Aug. 29, 2021, Hurricane Ida made landfall near Port Fourchon. Twenty-two impacted parishes were part of the study: Acadia, Ascension, Assumption, Calcasieu, Cameron, Iberia, Jefferson, Jefferson Davis, Lafayette, Lafourche, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, St. John, St. Martin, St. Mary, St. Tammany, Tangipahoa, Terrebonne and Vermilion.

A full copy of the report can be found at: www.laseagrant.org/wp-content/uploads/Losses-La-Fisheries-Hurricanes-2020-2021.pdf.



Louisiana Sea Grant College Program
Sea Grant Building • Baton Rouge, LA 70803-7507

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> Julie Anderson Lively, Executive Director

Editors: Roy Kron, Brookes Washington. Art: Robert Ray

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Asian-Cajun Fusion: Shrimp from the Bay to the Bayou is the newest title in the America's Third Coast book series, sponsored by Louisiana Sea Grant. Shrimp is easily America's favorite seafood, but its very popularity is the wellspring of problems that threaten the shrimp industry's existence. Asian-Cajun Fusion: Shrimp from the Bay to the Bayou provides insightful analysis of this paradox and a detailed, thorough history of the industry in Louisiana. The cost of this hardcover book is \$30. For information, visit www.upress.state.ms.us/Books/A/Asian-Cajun-Fusion.

