

## **Louisiana's RESTORE Center of Excellence Research Grants Program FY2023 Annual Report to the RESTORE Council**

### ***Executive Summary***

The second Request for Proposals cycle (RFP2 cycle) of the RESTORE Act Center of Excellence for Louisiana (LA-COE) involves managing four Graduate Studentship awards and four Research Awards. During FY2023, LA-COE hosted a semi-annual webinar for research recipients, co-hosted a co-production workshop, hosted a LA-COE session at the State of the Coast Conference (SOC), and held an All-hands meeting and Executive Committee meeting. Research subrecipients also submitted their third and fourth performance progress reports (PPRs) in February and August, respectively. The details of those awards, results, reports, and any available data, as well as how this research can inform the Louisiana Coastal Protection and Restoration Authority Coastal Master Plan is routinely updated on the LA-COE RFP2 cycle webpage: <https://thewaterinstitute.org/la-coe/funded-research-rfp2>.

### ***Programmatic Elements***

#### Award Recipient

Given the provisions of the RESTORE Act requiring that Centers of Excellence must focus efforts on a selected set of disciplines, the LA-COE focuses on the following:

- Coastal and deltaic sustainability, restoration and protection, including solutions and technology that enable citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast region
- Coastal fisheries and wildlife ecosystem research and monitoring in the Gulf Coast region
- Sustainable and resilient growth, economic, and commercial development in the Gulf Coast region
- Comprehensive observation, monitoring, and mapping of the Gulf of Mexico

The status of performance and annual accomplishments during reporting period include: (1) managing eight research subawards, (2) reviewing subrecipients' performance progress reports (PPRs), (3) working with CPRA to prepare the budget and finalize the Statement of Work for RFP 3, (4) hosting a semi-annual webinar to provide training on data management requirements and best practices on project closeout for subawardees, (5) co-hosting a co-production of science workshop with NOAA RESTORE and Louisiana SeaGrant, (6) hosting a session at the Louisiana State of the Coast Conference (SOC) 2023, (7) hosting a webinar for the External Review Board to provide feedback on how the LA-COE has progressed through RFP2, (8) hosting a LA-COE All-hands Meeting 2023 and an Executive Committee meeting in person, (9) two budget revisions to accommodate Year 3 activities and expenses, (10) Updating the LA-COE Standard Operating Procedures for review by the Executive Committee, (11) Treasury RESTORE Act Centers of Excellence program webinar highlighting LA-COE funded research, (12) assessing and reporting on progress using defined metrics that address federal reporting requirements, including reports to the U.S. Department of Treasury was also conducted, and (13) operating the

LA-COE according to the Standard Operating Procedures (SOP), including website management, data management, coordination with other Centers of Excellence, and dissemination of information.

During the RFP2 cycle, LA-COE requested semi-annual PPRs from subawardees. Following the submission of each PPR, LA-COE also requires the Technical Points of Contact (TPOCs) to do check-in meetings with Principal Investigators (PIs) and CPRA Liaisons for individual projects within 30 days after PPR submission. LA-COE has been managing eight research subawards by reviewing the semi-annual PPRs for technical content (via the Technical Point of Contact) and to ensure research results will help implement the Louisiana Coastal Master Plan (via CPRA Liaisons). LA-COE reviewed and approved semi-annual PPR#3 (August 1, 2022 – January 31, 2023) and PPR#4 (February 1, 2023– July 31, 2023).

During the performance period LA-COE worked closely with CPRA to prepare the budget and finalize the Statement of Work (SOW) for RFP3. The SOW was revised with updated milestones, deliverables, and budget numbers from the recent Treasury grant amendment narrative and is being used to issue a new Cooperative Endeavor Agreement (CEA) for Phase 3 of the LA-COE. The Treasury grant amendment for RFP3 Notice of Award was received on July 5, 2023.

LA-COE hosted the second RFP2 annual webinar on April 19, 2023. The meeting provided information on data management and project closeout requirements for principal investigators. The webinar also provided details on upcoming LA-COE events, and introduced Eva Windhoffer and Brittany Jensen as the LA-COE Coordinator and Data Manager, respectively.

On May 3-4, 2023, a workshop was organized by LA-COE, the NOAA RESTORE Science Program, and Louisiana Sea Grant with a focus on the co-production of actionable science. The workshop, titled *Using Co-Production to Engage Stakeholders and Create Effective Science-to-Management Solutions*, brought together natural resource managers and academic researchers to learn about science co-production, and discussed best practices to improve science for natural resource management in Louisiana. LA-COE worked closely with NOAA RESTORE and Louisiana Sea Grant to prepare for this workshop, including agenda development and invitations sent to researchers and postdocs funded under LA-COE. The two-day workshop was attended by 26 participants with 11 co-hosts and included funding agency representatives, academic researchers, NGOs, local, state, and federal natural resource managers. The LA-COE is now coordinating with NOAA RESTORE and Louisiana Sea Grant on the development of potential journal article.

The Louisiana State of the Coast conference took place in New Orleans, LA on May 31 – June 2, 2023. LA-COE hosted a session proposal for this conference titled RESTORE Act Center of Excellence for Louisiana: Highlights of funded research, and their support for the LA Coastal Master Plan. During the session coastal scientists from Louisiana-based institutions highlighted current research findings under RFP2, including one graduate student presentation, two PI presentations, and a presentation from CPRA on how the research funded under LA-COE has been used to support the implementation of Louisiana's Coastal Master Plan.

The RFP2 feedback webinar with the External Review Board (ERB) took place on July 11, 2023. The purpose of this webinar was to discuss the progress the LA-COE has made during the RFP2 process, and for the ERB to provide written feedback on aspects of the LA-COE which may require modification. The ERB provided useful feedback about the review process and gave generally high ratings to the RFP2 review process and LA-COE administration.

The LA-COE 2023 All-Hands Meeting took place on August 1, 2023 at the Center for Coastal and Deltaic Solutions in Baton Rouge, LA. This meeting is held annually with mandatory participation by at least one PI from each award as well as a co-PI and a graduate student under each RFP2 project. The goal of this meeting is to promote collaboration and inform on research progress from RFP2 funded research projects. The meeting included the LA-COE Executive Committee, partners from the Coastal Protection and Restoration Authority (CPRA), The Water Institute, and RFP2 PIs, co-PIs and graduate students. During the meeting research progress and results from RFP2-funded projects were presented and discussed and there was also a graduate student poster session. Overall evaluation results for this meeting from participants was greater than in the previous three years.

The Executive Committee Meeting occurred after the All-hands Meeting on August 1, 2023. Meeting participants included senior research officials from Louisiana universities and research organizations, Brian Roberts (Louisiana Universities Marine Consortium), John Sabo (Tulane University), Robert Moreau (Southeastern Louisiana University) John Doucet, (Nicholls State University), Ramesh Kolluru (University of Louisiana at Lafayette), Darrell Kruger (University of New Orleans), Calvin Walker, and Stephen Beck (Louisiana State University). Shelby Servais with the U.S. Department of Treasury also attended the LA-COE Executive Committee Meeting. The Executive Committee Meeting involved open discussion with the research officials, LA-COE, CPRA, and U.S. Department of Treasury. The meeting's goal was to gain feedback about the 2023 All-hands Meeting, review progress toward success metrics targets of the RFP1 and RFP2 cycles, review the grant process for the RFP2 cycle, and continue planning for the RFP3 cycle.

In this reporting period two budget revision requests were submitted to CPRA and were approved. The first was made in February 2023. This revision moved the remaining Year 2 labor funds of \$6,816 (with no IDC) to Year 3 to help cover some of the labor for Center of Excellence operations (and match the funds allocated to Operate Center in Year 2). This revision also moved \$3,808 of Year 2 expenses to labor to cover the additional co-production workshop and follow-up, and increased the expense budget by \$750 for the annual LA-COE All-Hands Meeting to account for the use of a larger conference room and catering expenses. In August 2023 an additional expense revision request was submitted and approved. This request moved a portion of the unspent Year 3 Supplies expenses to cover the higher than anticipated All-Hands Meeting expenses and higher Year 3 Travel expenses.

During this reporting period, revisions were made to the SOP (V4) that are currently pending review and approval by the LA-COE Executive Committee. These revisions included minor updates to language, processes, and success metrics. The decision to update the SOP was made following discussions and feedback provided at the 2023 Executive Committee meeting.

Finally, the Treasury RESTORE Act Centers of Excellence program hosted a webinar on September 14, 2023 highlighting LA-COE research on flood risk in Louisiana. The Water Institute presented slides to introduce the LA-COE, Summer Langlois presented on how CPRA uses LA-COE funded research to inform the Coastal Master Plan, and PIs Dr. Robert Habans (RFP2) and co-PI Mike Bilskie (RFP1) presented on their work during the webinar.

LA-COE quantifies the impacts of its research. Since 2015, LA-COE has supported 66 undergraduate students, graduate students, and post-docs, generated 17 theses and dissertations, 19 journal article publications, and 25 publicly available datasets. LA-COE has been working with RFP2 PIs during June and July 2023 advance project data management ahead of the end the of project period of performance on October 31, 2023. Additionally, LA-COE hosts a Google Scholar webpage noting all publications resulting from LA-COE funded research, and sends out Quarterly Newsletters by e-mail. The most recent issue was sent out in July 2023. Each issue provides updates on LA-COE activities and funded research projects.

In addition to preparing for the close of the RFP2 cycle, LA-COE has also begun preparing for the release of its next RFP, RFP3 in 2024. LA-COE is also planning to host a session at the Gulf of Mexico Conference in February 2024.

LA-COE will continue to operate the Center according to the SOP, including regular meetings with CPRA (monthly and/or bi-monthly depending on schedules) and phone calls as needed, website maintenance, data management, coordination with other Centers of Excellence, and addressing federal reporting requirements, including reports to the U.S. Department of the Treasury and other dissemination of information.

Award Subrecipient(s) Selected for Funding:

Graduate Studentship

**1. Tulane University, Dr. Torbjörn Törnqvist**

- Researcher role: Help implement Louisiana's Coastal Master Plan.
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast.
- Research project undertaken: Projecting 50 years of relative sea-level rise in coastal Louisiana.
- Subaward executed in October 2021.
- Summary: This research will build on recent advances in the understanding of the drivers and rates of subsidence in coastal Louisiana by quantifying rates and their spatial variability as well as conducting an assessment of geocentric sea-level rise. The goal is to reduce uncertainties in estimates of present-day and future projections of relative sea-level rise.

**2. Louisiana State University, Dr. John White**

- Researcher role: Help implement Louisiana's Coastal Master Plan.

- Eligible discipline: Comprehensive observation, monitoring, and mapping of the Gulf of Mexico.
- Research project undertaken: Dynamics of nitrogen and phosphorous cycling across Barataria Basin.
- Subaward executed in October 2021.
- Summary: This project will assess the nitrogen and phosphorus cycling in Barataria Basin especially as it relates to various benthic substrates that have varying organic matter content, extractable nutrients and microbial activity that can affect surface water quality. Data from this research can improve ecosystem models that are being used for freshwater diversions and for proposed sediment diversions, specifically with water quality and nutrient loading predictions.

### **3. Louisiana State University, Dr. Celalettin Ozdemir**

- Researcher role: Help implement Louisiana's Coastal Master Plan.
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast.
- Research project undertaken: Improving the design and construction practice of marsh creation projects.
- Subaward executed in October 2021.
- Summary: Marsh creation projects are prioritized in the 2017 and 2023 Coastal Master Plans for Louisiana. The proposed study aims at addressing knowledge gaps in the design and construction practice of marsh creation projects by using integrated field data collection, laboratory experimentation, and numerical modeling to better understand consolidation and transport properties of the dredge material.

### **4. University of Louisiana at Lafayette, Dr. Jorge Villa**

- Researcher role: Help implement Louisiana's Coastal Master Plan.
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast.
- Research project undertaken: Patch-scale effects of acute saltwater intrusion on carbon fluxes in a simulated coastal freshwater marsh environment.
- Subaward executed in October 2021.
- Summary: This project aims to evaluate the effects of acute saltwater intrusion events on carbon fluxes and elevation in wetland areas dominated by two common upper estuary freshwater plants. Results of this work could help inform the morphology model used in Integrated Compartment Model, and suggest how these wetland species are influencing carbon cycling, which can be used in evaluating strategies in the Coastal Master Plan.

## Research Awards

### **5. Nicholls State University, Dr. Jonathan Willis**

- Researcher role: Help implement Louisiana’s Coastal Master Plan.
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast; & Coastal fisheries and wildlife ecosystem research and monitoring in the Gulf Coast region
- Research project undertaken: Ecological and social ridge dynamics in the Barataria-Terrebonne basins
- Subaward executed in October 2021.
- Summary: This project will develop data-driven models for ecological roles, processes, and trajectories of restored ridges, natural ridges, and spoil banks as well as examine relevant socio-ecological dynamics of ridge landforms in coastal zone of the Barataria-Terrebonne estuary of southeastern Louisiana. The human dimensions portion of the work will include examining the impact of event-driven environmental changes such as storms on communities’ stability and sustainability. The goal is to determine physical/habitat characteristics and dynamics of natural and restored ridges and assess the human activity dynamics of ridge communities.

#### **6. Louisiana State University, Dr. Giulio Mariotti**

- Researcher role: Help implement Louisiana’s Coastal Master Plan.
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast.
- Research project undertaken: Quantifying marsh edge erodibility as a function of salinity and water chemistry, and assessing possible effects of the Gulf Intracoastal Waterway in Barataria Bay.
- Subaward executed in October 2021.
- Summary: The research will use a combination of hydrodynamic and biochemistry modeling, intensive field studies, and landscape modeling to evaluate the role of salinity and river inputs in influencing marsh edge erosion. Results will include a marsh edge erosion model to predict marsh loss 50 to 100 years in the future under different salinity and water chemistry scenarios, with emphasis on nutrient loading from the Gulf Intracoastal Waterway.

#### **7. Louisiana State University, Dr. Carol Wilson**

- Researcher role: Help implement Louisiana’s Coastal Master Plan
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast.
- Research project undertaken: Subsurface stratigraphic controls on subsidence and carbon sequestration in Mississippi Delta diversion receiving basins
- Subaward executed in October 2021.
- Summary: This work will investigate and improve understanding of the heterogeneous geological framework that drives differential consolidation rates, and thus subsidence and organic matter sequestration in the delta. These geological conditions will be added to future modeling and mitigation work using

a suite of observational field and laboratory analyses. Research will include analyses within marsh, bay, and paleochannel sub-environments in Barataria Basin of southeast.

**8. The Data Center of Southeast Louisiana, Dr. Robert Habans**

- Researcher role: Help implement Louisiana’s Coastal Master Plan.
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast; Sustainable and resilient growth, economic, and commercial development in the Gulf Coast region & Comprehensive observation, monitoring, and mapping of the Gulf of Mexico.
- Research project undertaken: Past and future migration in coastal Louisiana: Modeling the impact of flood exposure and economic change with microdata on households and businesses.
- Subaward executed in October 2021.
- Summary: This study will explore the relationship between discrete flood events and cumulative risk, changing locations of jobs and businesses, and household migration in coastal Louisiana. The team will develop a modeling approach to assess storm and flood-related migration that leverages new sources of business and residential microdata to support population and asset growth scenarios associated with the Coastal Louisiana Risk.

***Financial Elements***

Award Recipient

The RESTORE Act Center of Excellence Research Grant Program award to CPRA was issued on May 01, 2020 with a total amount of \$3,109,063. A Cooperative Endeavor Agreement dated June 01, 2020 was executed between CPRA and The Water Institute (The Water Institute) to administer the award with a current contract value of \$3,109,063. Invoices from The Water Institute total \$2,151,013.08 through the period ending June 30, 2023, including subaward expenditures. August and September 2023 invoices from The Water Institute are currently under review by CPRA.

Award Subrecipient(s)

As a result of a competitive and peer-reviewed request for proposal process, subrecipients of research awards were selected. The subrecipients and associated subaward amounts are provided below:

<b>Number</b>	<b>Subrecipient</b>	<b>Subaward Amount</b>
1	Tulane University	\$99,909.68
2	Louisiana State University	\$91,798.00
3	Louisiana State University	\$95,760.00
4	University of Louisiana at Lafayette	\$86,318.79
5	Nicholls State University, The Coastal Center	\$495,368.00

6	Louisiana State University	\$497,849.00
7	Louisiana State University	\$499,675.00
8	The Data Center of Southeast Louisiana	\$426,544.00

***Gulf Coast Ecosystem Restoration Council Elements***

Leveraging Multipliers

LA-COE participates in bimonthly conference calls with the Gulf of Mexico Restoration and Science Programs Coordination Forum that allows for funding organizations in the Gulf region to discuss their programs, share ideas, and promote collaborations. In addition, coordination meetings with the RESTORE Council, NOAA RESTORE and others were scheduled at GOMA All-Hands in June 2023 to facilitate discussions to leverage resources.