FLORIDA RESTORE ACT CENTERS OF EXCELLENCE PROGRAM

2021 Annual RESTORE Council Report

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Executive Summary

In 2021, the Florida RESTORE Act Centers of Excellence Program (FLRACEP) was challenge with COVID-19 pandemic and personnel changes. Dr. William (Monty) Graham joined January 4, 2021, as the Director of the Florida Institute of Oceanography and the Principle Investigator for the FLRACEP program.

Dr. Graham spent the year learning and examining the FIO and reviewing the FLRACEP while staff was busy working with Treasury to ensure administrative tasks met their needs. The FLRACEP staff continues to monitor first year award of RFPIII- and RFIII.5, we have successfully gained approval and closed out FIO's initial award RCEGR0020002A. This award, previously funded ten (10) research projects from eight (8) Florida Centers of Excellence to address the Coastal Fish and Wildlife Research and Monitoring eligible activity under RFP-I. In addition, we continue to work with the RFP II Center of Excellence recipient on a long-term fisheries monitoring and technology development project.

During this year, the Program Management Team (PMT) determined that no additional Requests for Proposals (RFPs) would be issued until a permanent position to support the FLRACEP was in place and asked the current FIO personnel remain in place to monitor the Program and current CEs progress. The PMT was diligent in reviewing the personnel needed to facilitate, bridge and coordinate the scientific aspects of the program. After much review, the PMT announced on October 1, 2021 the new Chief Scientist, Dr. Nicole Raineault who was recruited from Ocean Exploration Trust (OET), where she previously served as Chief Scientist and Vice President of Exploration and Science Operations to lead the FLRACEP program.

To-date, the Office of Gulf Coast Restoration has obligated over $8.8M to the FLRACEP program funding four RFPs since the inception of the program. With a fully staffed program, the PMT will be working hard to allocate and establish new Centers of Excellence in the coming years.

Background

On August 20, 2015, the Department of the Treasury issued the Florida Institute of Oceanography its first award for the project titled "Florida RESTORE Act Centers of Excellence Program (FLRACEP)" to solicit and issue sub-awards for Florida Centers of Excellence research grants for the eligible disciplines:

1. Coastal fisheries and wildlife ecosystem research and monitoring in the Gulf Coast Region;
2. Comprehensive observation, monitoring, and mapping of the Gulf of Mexico; and
3. Coastal 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 Region.

Priority objectives within these eligible disciplines are defined by the FLRACEP PMT in the specific request for proposal language.

In 2015, FLRACEP selected ten research grant projects at eight Florida Centers of Excellence under RFP-1 via the peer-reviewed, competitive process detailed in the program Rules and Policies. Following the initial RFP release, FLRACEP approved a two-year pilot award to the University of South Florida, for long-term fisheries monitoring Center of Excellence in 2016. The Center with a project titled 'Spawning Habitat and Early-life Linkages to Fisheries' (SHELF) could potentially be extended for long-term after going through a thorough program review. The first of these reviews was conducted in 2018 and the SHELF project was extended through 2022 when an additional review will determine future funding.

Programmatic Elements

Award Recipient

The Florida Institute of Oceanography (FIO) is an Academic Infrastructure Support Organization (AISO) of the State of Florida established by the Florida Board of Governors (BOG). Under a Memorandum of Understanding ratified by the member organizations and approved by the BOG, the University of South Florida (USF) assumes the role of host university, and fiscal accounting functions are administered by USF and overseen by the USF Board of Trustees. FIO was name the Gulf Coast State Entity to administer Florida's RESTORE Act Centers of Excellence Program. The FLRACEP includes the following organizational elements:

PROGRAM OFFICE:
FIO serves as the FLRACEP Program Office. The FIO Director is the Principle Investigator (PI) for the FLRACEP Program. As the PI, the FIO director is responsible for program funds and performance. The FLRACEP's organization includes a Chief Scientist (formerly Program Director), who reports to the FIO Director and is responsible for programmatic tasks that the Gulf coast state entities must perform. These programmatic responsibilities include coordination of competitive selection process for Florida Center of Excellence grants; developing award terms and conditions and monitoring performance based on required deliverables and metrics; coordination with other Gulf

restoration programs as mandated by the guidelines and RESTORE Act; and monitor the success of the Centers of Excellence. The Chief Scientist also represents the Florida Centers of Excellence on regional coordination efforts (e.g., NOAA RESTORE Science Program advisory working group, etc.). The FLRACEP Program Office works directly with the FIO Budget Director to ensure funds appropriately allocated for use.

PROGRAM MANAGEMENT TEAM (PMT): This is an independent body that provides the FLRACEP guidance and engages in the development of program strategic plan, funding strategies, solicitation reviews and funding approval. The PMT includes the FIO Director and other senior-level advisors elected by the PMT members. The PMT, were selected based on their knowledge of Florida and Gulf of Mexico regional science, technology, and the FLRACEP program needs. Program Management Team members are not eligible to submit or participate on FLRACEP grants or contracts. The duties of the PMT include developing and approving science concepts to solicit FLRACEP Requests for Proposals, reviewing and ranking Letters of Intent, selecting proposals to receive funding, participating in annual all-hands meetings, and other ad hoc tasks as determined by the PMT Chair and board members.

SCIENCE REVIEW PANEL (SRP): The SRP is an ad hoc team responsible for technical review of grant proposals. The SRP is nominated by the FIO Director and approved by the PMT members; the Panel will consist of science and technology experts not involved in any proposals, from in and outside Florida. In the event of a conflict regarding the FIO Director, then the PMT shall select the SRP members.

CENTERS OF EXCELLENCE: FLRACEP establishes Centers of Excellence through a competitive award process to produce outputs and outcomes that address the eligible disciplines. The Requests for Proposals (RFP) and in subsequent award terms and conditions define the Principal Investigator and Grantee institution roles and responsibilities. Each Center of Excellence project must produce at least one peer-reviewed journal article at the conclusion of the project.

PARTNERS: Program partners to be engaged both informally and under formal agreements include, but are not limited to: other Gulf coast state entities and their CERGPs; other RESTORE Act components (sections 1603 and 1604); National Fish and Wildlife Foundation Gulf Environmental Benefit Fund; National Academies of Science Gulf Research Program; Natural Resources Damage Assessment and Restoration Program; Gulf of Mexico Research Initiative; North American Wetlands Conservation Act, Gulf Program Fund; Florida Department of Environmental Protection; Florida Fish and Wildlife Conservation Commission; Florida Gulf Coast Counties; and other programs that may be funded by future litigation or settlements.

Award Subrecipient(s)

Current Award Recipient:

The current project was awarded under Grant number RCEGR020005 in July of 2016 and the award was extended in February 1, 2019- January 31, 2024 to include Comprehensive Observation, Monitoring, and Mapping eligible discipline. In addition to the continuance of the SHELF II Center of Excellence; FLRACEP awarded seven additional research projects under the RFPIII and RFPIII.5 solicitation. A brief description of all the current Sub-recipients are listed below (status reports are available upon request):

RFP II -Center of Excellence (Continuance)

- **PI Name:** Dr. Ernst Peebles, University of South Florida
  Award Amount: $749,999 over three (3) years (research project may be renewed upon scientific review and approval by the Program Management Team) ***Award Amount-**reduced by $49,500 due to elimination of ship time and was reflected in the 10/2020 approved Scope of Work.
  Title: Spawning Habitat and Early-Life Linkages to Fisheries (SHELF, phase II)
  Abstract: The overall strategy of the SHELF project is to use DNA barcoding to survey fish eggs on the West Florida Shelf (WFS) on an annual basis to develop a long-term fisheries monitoring database, and to conduct targeted studies of anomalies found during the egg surveys. SHELF II will collect samples from 68 stations extending from the Florida Keys to the Alabama border, seasonally targeting collection of eggs of particular species (e.g. groupers or snappers). DNA metabarcoding will be conducted on aggregates of fish eggs in order to produce a list of species encountered at each of the stations. Targeted studies will examine regions of interest (ROI) identified during annual egg surveys, and will include active acoustic surveys, video transects, and a small-scale, local egg survey from the ROI.

RFP III -Centers of Excellence

- **PI Name:** Dr. Randy Wells, Mote Marine Laboratory
  Award Amount: $364,432 over three (3) years
  Title: Health and movements of Florida's Gulf dolphins
  Abstract: Research proposal is expected to address important research gaps regarding movement patterns, habitat use, and health for the two dolphin species that regularly inhabit the coastal and/or shelf waters off Florida's west coast, bottlenose (*Tursiops truncatus*) and Atlantic spotted (*Stenella frontalis*). We will conduct capture-release health assessments to establish baselines and serve as the basis for comparison to inshore dolphins to assess health status. Capture will provide opportunities for collection of samples for genetic, environmental contaminant, and diet analyses, as well as for attaching satellite-linked time-depth-recording tags. These tags will provide information on ranging and habitat use patterns, along with dive patterns relative to health. Relationships between dive patterns and health will be investigated as potential behavioral proxies for assessing health of dolphins tagged without capture. Continuation of a long-term collaborative photo-identification matching system and repository, GoMDIS, will facilitate identification of sources of stranded dolphins, and range shifts in response to environmental changes. Findings will be provided to NMFS Southeast Fisheries Science Center, Southeast Regional Office, and Marine Mammal Health and Stranding Response Program, for consideration for management action, and for incorporation into their congressionally mandated Marine Mammal Stock Assessment Report

- **PI Name:** Ms. Kelly Sloan, Sanibel Captiva Conservation Foundation
  Award Amount: $233,334.34 over three (3) years
  Title: After the Tide: Characterizing the Sublethal Effects of a Catastrophic Red Tide in Nesting Sea Turtles
  Abstract: Blooms of toxic algae occur almost annually in the Gulf of Mexico and pose a significant and persistent threat to sea turtles and other marine life. These blooms start naturally in the Gulf but are fed and perpetuated by harmfully high nutrients in the water washing into the Gulf from anthropogenic sources on land. Eutrophication of our waterways is a serious concern and stabilizing the oceanic habitat is critically important in the conservation of many vulnerable species. The bloom that started in October 2017 and ended in early 2019 was so severe that it resulted in the largest number of sea turtle deaths ever attributed to a single red tide event. The mass mortality of sea turtles associated with this event clearly demonstrates the acute impacts of brevetoxicosis. The proposed study is to empirically investigate the effects of this bloom on the health and reproductive success of nesting sea turtles. In addition to learning more about the insidious effects of red tide blooms on sea turtles, the data will be

used to raise awareness and inform policies that promote heightened water quality standards and healthier oceans.

- **PI Name:** Dr. Hannah Vander Zanden, University Florida
  Award Amount: $364,432 over three (3) years
  Title: Health and movements of Florida's Gulf dolphins
  Abstract: Loggerhead sea turtles were negatively impacted by the Deepwater Horizon Oil Spill in addition to suffering effects from numerous other anthropogenic stressors, such as fisheries bycatch, climate change, and red tide events in U.S. waters of the Gulf of Mexico (GoM). Population models designed to quantify the effects of these stressors, as well as to evaluate the resultant impacts to coastal ecosystems of declining sea turtle recruitment or population size, require accurate estimates of age, growth, longevity, and mortality. Furthermore, there are vast gaps in our knowledge of marine habitats and environments utilized by different loggerhead life stages and the timing of transition between habitats. The proposal will use novel radio and stable isotope techniques to validate loggerhead sea turtle age and longevity estimates, as well expand the types of long-term trophic records that can be obtained from various loggerhead tissues (e.g., eye lenses, bone, and scutes). Objectives of the study include 1) evaluating eye lenses as a new method to age sea turtles and track lifetime isotopic histories, 2) characterizing scute growth rates, and 3) developing region-specific population models for the GoM using updated parameters estimated with results of this study. Approaches developed and data generated during this study will have direct conservation benefits to loggerhead sea turtles in the GoM. These approaches will be applicable to the conservation of loggerheads in other global regions, as well as for the study of other sea turtle species around the globe.

- **PI Name:** Dr. Matthew Deitch, University Florida
  Award Amount: $499,997 over three (3) years
  Title: Predicting benefits in Panhandle Estuary Systems: A partnership to quantify impacts, stressors, and outcomes using Adaptive Management Frameworks.
  Abstract: Over the course of the grant, County staff, local conservation groups, and other stakeholder collaborators in the St. Andrew, St. Joseph, Choctawhatchee, Pensacola, and Perdido Bays will work to develop Estuary Programs following the USEPA National Estuary Program model. The goal of each Program is to develop a strategy to protect and restore estuaries through management or restoration actions that reduce anthropogenic impacts on these systems. This project will enhance and build on existing partnerships between local academic researchers with expertise in watershed science and estuary science and local Estuary Program developers. These partnerships will provide meaningful scientific input and rigor in identifying and implementing methods to assess impacts and stressors in each system. Project outputs include conceptual models and adaptive management frameworks intended for use in Comprehensive Conservation and Management Plans (CCMPs); and collaborative efforts (e.g., outreach materials, grant proposals) to support long-term Estuary Program goals.

- **PI Name:** Dr. Katherine Mansfield, University of Central Florida
  Award Amount: $339,867 over three (3) years
  Title: Understanding genomic, behavioral, and microbial drivers of ontogenetic shifts in early sea turtle foraging ecology and habitat use.
  Abstract: The research will use novel technology and approaches to understand early sea turtle habitat use, ecology, and underlying drivers by which young turtles recruit from offshore into West Florida coastal waters in the Gulf of Mexico. This group's prior work shows oceanic turtles from the Shelf exhibit plasticity in habitat selection and global gene expression profiles, which likely accompany plasticity in foraging and gut microbiota. Researchers will look to determine what the underlying drivers of these shifts through finer-scale genetic characterizations and by establishing a framework for

understanding gene-by-environment interactions to better quantify management needs for these protected species.

- **PI Name:** Dr. Cameron Ainsworth, University of South Florida
  Award Amount: $308,279 over two (2) years
  Title: Using ecosystem modeling to understand the impacts of seagrass restoration and red tides on sea turtles, marine mammals and seabirds of the West Florida Shelf.
  Abstract: The project will utilize an end-to-end ecosystem model, Atlantis-GOM, to evaluate the ecosystem effects of seagrass coverage under different possible futures of toxic and non-toxic algal bloom frequency and severity in the West Florida Shelf region and the Gulf of Mexico Large Marine Ecosystem. Assessing both the direct and indirect impacts of seagrass coverage as may manifest through changes in the available amount or quality of prey or through changes in predation risks. The Atlantis-GOM ecosystem model permits a spatial analysis of the ecosystem effects of seagrass coverage and algal blooms within the following broad spatial domains: the Big Bend, the Tampa/Charlotte Harbor area, Southeastern Florida, and the Florida Keys. The spatial distributions of the focal marine mammal, seabird and sea turtle species and species groups, as well as those of their prey and competitors, will be critical to represent. The majority of these spatial distributions will be provided by a previous Florida RESTORE Act Centers of Excellence Program (FLRACEP) project, which used statistical models to predict distributions based on environmental variables. The outputs of the proposed project will benefit State and Federal end users who manage protected species and habitats. Outputs can help determine the scale of seagrass restoration required to offset negative impacts of increasing algal blooms on mammals, seabirds, and sea turtle populations.

RFP III.5 -Center of Excellence

- **PI Name:** Dr. Vincent Lecours, University Florida
  Award Amount: $349,722.89 over three (3) years
  Title: Developing a Standardized Framework for Data Integration and Distribution on the West Florida Shelf.
  Abstract: Despite past and ongoing efforts from regional, state, and federal governments to study Florida's marine ecosystems and resources and repeated calls for a standardized approach to map them, there is currently no general framework for guiding research, management, and conservation of benthic resources in Florida. There is a critical need to have a descriptive, spatially-explicit cyberinfrastructure representing Florida's seafloor environments at multiple scales that can serve management, conservation, and research efforts, and that aligns with existing national and international efforts. To build such cyberinfrastructure, we need to reach community agreement on a framework to support effective and dynamic aggregation of current and future seafloor mapping data. This Center of Excellence will be expected to manage efforts to (1) review existing and successful frameworks for marine data integration and distribution around the world, (2) review existing standards, protocols, and guidelines for data collection, integration, and distribution, (3) get community agreement on the structure of a framework for data integration and distribution on the West Florida Shelf, and (4) build a cyberinfrastructure to support the chosen framework, i.e., to upload, standardize, visualize, and access benthic data of the West Florida Shelf. Three workshops will be organized to get community input. The cyberinfrastructure will be open-source, compatible with existing national and international frameworks, and adhere to FAIR (Findable, Accessible, Interoperable, Reusable) principles.

One publication was reported from the RFP III Centers of Excellence:

Deitch, M.J., H.N. Gancel, A.C. Croteau, J.M. Caffrey, W. Scheffel, B. Underwood, J.W. Muller, D. Boudreau, C.G. Cantrell, M.J. Posner, J. Bibza, A. McDowell, B. Albrecht, 2021. Adaptive management as a foundational

framework for developing collaborative estuary management programs, Journal of Environmental Management, 295, DOI: https://doi.org/10.1016/j.jenvman.2021.113107.

Prior Award Recipients: The PMT previously selected ten (10) research projects from eight (8) Florida Centers of Excellence to address the Coastal Fish and Wildlife Research and Monitoring eligible activity under RFP-1 for 2-year research grant award, and one (1) project from an existing Center of Excellence (USF) to address long-term fisheries monitoring as a part of the comprehensive observation, monitoring, and mapping of the Gulf of Mexico eligible activity. Final research reports are available upon request.

Financial Elements

Award Recipient

Budget narrative: Treasury initial award in February of 2019 totaling $1,951,773 for the 2019-2023 performance period to also include the FLRACEP obligated $750,000 to fund the second phase of the University of South Florida (USF) SHELF Center of Excellence. FLRACEP requested two additional amendments with funds to support the six research projects under RFPIII and one project under RFPIII.5. The total amount of funds FLRACEP requested from Treasury was $4,458.072.88 ($2,156,577 + $349,722.88 to fund RFPIII & III.5). For the calendar year, approximately $872k has been expended.

FLRACEP Program Expenditures

Budget Summary January-December 2021

	Amended Award RCEGR020005-01-02	Additional Funds Requested	Amended Award RCEGR020005-01-03	Total Amount Expended
Categories				
Salaries and Wagees	$487,769.00	$0.00	$487,769.00	$68,136.23
Fringe Benefits	$160,961.00	$0.00	$160,961.00	$21,843.44
Total Personnel Costs	$648,730.00	$0.00	$648,730.00	$89,979.67
Equipment	$0.00	$0.00	$0.00	$0.00
Supplies	$5,500.00	$0.00	$5,500.00	
Travel	$32,900.00	$0.00	$32,900.00	
Construction	$0.00	$0.00	$0.00	
Other	$337,210.00	$0.00	$337,210.00	$16,000.00
Contractual (subawards)	$2,891,576.00	$321,851.64	$3,213,427.64	$696,487.89
Total Direct Costs	**$3,915,916.00**	**$321,851.64**	**$4,237,767.64**	**$802,467.56**
Indirect Costs	**$192,434.00**	**$27,871.24**	**$220,305.24**	**$69,648.75**
Total Approved Budget	**$4,108,350.00**	**$349,722.88**	**$4,458,072.88**	$872,116.31

Award Subrecipient(s)

Due to the COVID-19 pandemic, many of the Centers of Excellence did not have the opportunity to start the research project upon receiving the award, and progress is slowed with continuing personnel and supply chain challenges. The FLRACEP program expects the funds to be expended as these Centers have identified alternative solutions to ensure safe practices during the COVID-19 pandemic.

Gulf Coast Ecosystem Restoration Council Element

Leveraging Multipliers

No FLRACEP projects or elements have leveraged RESTORE Act funding streams to the best of our knowledge, due in part to the differences in priority areas, timing of projects, and areas of focus. FLRACEP staff continue to work with other restoration science funding entities to explore opportunities for collaboration and leveraging. FLRACEP began conversations with the RESTORE Direct Component around Florida in hope to share and establish collaborations and possible leverage opportunities to reduce redundant research projects that affects Florida.

This report will be made available on www.fio.usf.ed/FLRACEP