

Mississippi Department of Environmental Quality

FY 2017 Annual Report for the Centers of Excellence Research Grants Program (COE)

Grant Number 4 RCEGR470004-01-0002

Executive Summary

Brief Description of the selected COE

In February 2015, the Mississippi Department of Environmental Quality (MDEQ) made available for public comment for 45 days a draft Request for Proposals describing the competitive selection process, rules, and policies. MDEQ prepared the draft Request for Proposals in accordance with state law and in compliance with 31 C.F.R. §34.700-708. Notice of the public comment and review period for the draft Request for Proposals was published in the Sun Herald and Clarion Ledger newspapers as well as online at www.restore.ms. After consideration of meaningful input from the public, a final Request for Proposals was published in April 2015. Notice of availability of the final Request for Proposals was published in the Sun Herald and Clarion Ledger newspapers on April 6, 2015 and April 13, 2015, as well as online at www.restore.ms. The deadline to submit proposals was May 7, 2015. As a result of the Final RFP, MDEQ received two proposals. After reviewing the proposals according to the qualifications and criteria described above, the Mississippi Based Restore Act Center of Excellence (MBRACE) was selected. MBRACE is a consortium of four Mississippi universities - Jackson State University, Mississippi State University, University of Mississippi and University of Southern Mississippi. The University of Southern Mississippi serves as the lead university for the consortium.

Overview of focus of the COE

The focus of MBRACE, a consortium of Mississippi's research universities, is a sound, comprehensive science- and technology-based understanding of the chronic and acute stressors, both anthropogenic and natural, on the dynamic and productive waters and ecosystems of the northern Gulf. The goals of MBRACE are: (1) serve as a focal point for new, long-term research and socioeconomic initiatives along the northern Gulf with relevance to Mississippi's resources; (2) serve the people of Mississippi and the northern Gulf region with a scientifically based understanding of ecosystem status and trends (past to present, predictive) with special emphasis on improved forecasting abilities to ensure sustainable coastal and ocean ecosystems of the Gulf; and (3) work within a consortium of stakeholders including Mississippi's research universities under the Mississippi Research Consortium, state and federal agencies, local communities, private industry, and non-governmental organizations.

Summary of the annual performance of the COE

MBRACE established a five-person Executive Steering Committee (ESC) comprised of leadership from the four MBRACE universities. The ESC developed core research questions and a science plan relative to the COE eligible disciplines. The science plan guides the Core Research Program conducted by MBRACE. A Call for Proposals to fund research under the Core Research Program was developed to solicit proposals from MBRACE universities. Proposals submitted by the University of Southern Mississippi, the University of Mississippi, and Mississippi State University have been approved, and the sub-award agreements have been executed. The proposal submitted by Jackson State University has been approved, and a sub-award agreement is pending execution.

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Programmatic Elements

Award Recipient

Treasury – MDEQ: Treasury issued the federal award to MDEQ in August 2015, with an effective date of September 1, 2016. MDEQ selected MBRACE to implement the Centers of Excellence Research Grants Program. MBRACE is a consortium of four Mississippi universities - Jackson State University, Mississippi State University, University of Mississippi and University of Southern Mississippi. The University of Southern Mississippi serves as the lead university for the consortium. During the reporting period, MDEQ performed a risk assessment of the sub-recipient and executed the sub-award for implementation of the Centers of Excellence Research Grants Program. MDEQ conducted routine monitoring and reporting, and participated in routine meetings with the Center of Excellence.

Award Sub-recipient/Consortium Lead

MDEQ – University of Southern Mississippi: The sub-award agreement was executed on May 21, 2017, between MDEQ and the University of Southern Mississippi (Principal – Marcia Landen, DUNS - 62-333-5775) for \$3,442,337.00. The funds will be used to implement the MBRACE program. This program will conduct research and development on the Gulf Coast Region that focuses on science, technology, and monitoring.

MBRACE was selected as the Mississippi's Center of Excellence under Bucket 5 of the RESTORE Act. MBRACE is a consortium of four Mississippi universities - Jackson State University, Mississippi State University, University of Mississippi and University of Southern Mississippi. The University of Southern Mississippi serves as the lead university for the consortium. The sub-award agreement was executed on May 21, 2017, between the Mississippi Department of Environmental Quality (MDEQ) and the University of Southern Mississippi (DUNS - 62-333-5775) for \$3,442,337.00. The funds will be used to implement the MBRACE program. This program will conduct research and development on the Gulf Coast Region that focuses on science, technology, and monitoring. The mission of MBRACE is to seek sound comprehensive science- and technology-based understanding of the chronic and acute stressors on the dynamic and productive waters and ecosystems of the northern Gulf of Mexico, and to facilitate sustainable use of the Gulf's important resources.

During the reporting period, MDEQ and MBRACE conducted routine monitoring and reporting activities, including monthly reporting submittal and monthly status calls, and participated in routine meetings. The University of Southern Mississippi submitted a budget modification request. This request is still under review with MDEQ. A Scientific Collection Permit was issued and submitted to the U.S. Department of the Treasury in accordance with Special Award Condition #3 of the Notice of Award.

During the reporting period, the MBRACE ESC finalized the Science Plan and submitted it to the U.S. Department of the Treasury to satisfy Special Award Condition #2 of the Notice of Award. MBRACE's long-term Science Plan focuses on Mississippi's directive toward sustainable coastal management through three major thrust areas: 1) monitoring and ocean observations, 2) modeling, and 3) process

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studies. The MBACE ESC also began developing a list of potential candidates to serve on the External Advisory Group (EAG); as of the end of this reporting period, the EAG had not been finalized.

Representatives from MBACE and MDEQ have also begun discussions on data hosting.

During the reporting period, MBACE personnel finalized the monitoring strategy for the Core Research Program sub-recipients, which includes requiring sub-recipients to submit monthly technical progress report forms. MBACE finalized the required Data Management Plan and Policy, and it was submitted to MDEQ on September 7, 2017.

During the reporting period, the Call for Proposals for funding under the Core Research Program was finalized and distributed. MBACE coordinated with the Mississippi-Alabama Sea Grant Consortium (MASGC) on the external review process of proposals submitted for funding under the Core Research Program. MASGC established the Technical Review Panel (TRP). The TRP reviewed the proposals and developed recommendations for funding, which were provided to the ESC for review prior to approving proposal. Proposals submitted by Mississippi State University, University of Mississippi, and University of Southern Mississippi were approved in August 2017. The proposal submitted by Jackson State University was approved in September 2017.

Proposals approved under the Core Research Program focus on understanding oyster reefs and their sustainability. MBACE approved four projects that examine how ecological conditions relevant to oysters vary over time and between newly reported oyster reefs and adjacent unrestored oyster reefs in the Mississippi Sound:

1. Water Quality and Benthic Habitat Observations for Enhanced Understanding and Sustainable Management of Oyster Reefs in the Mississippi Sound

Mississippi State University

Principal Investigators: R. Moorhead, P. Dash, A. Skarke

2. Abiotic and Biotic Influences on Current and Historic Distributions of Oyster Reefs

University of Mississippi

Principal Investigators: M. Slattery, G. Easson, D. Gochfeld, S. Showalter, K. Willett

3. Sustainability and Restoration of Oyster Reef Habitat in Mississippi Sound: A Larval Transport and Recruitment Approach

The University of Southern Mississippi

Principal Investigators: J.D. Wiggert, K. Barbor, M.K. Cambazoglu, A. Diercks, S. Howden, S. Milroy, C. Rakocinski

4. Biosensors for the Measurement of Bivalve Valve Movement

Jackson State University

Principal Investigators: K. Ali, F. Tului, H. Shih, R. Kafouri

USM's proposal for funding under the Core Research Program was approved for \$625,000; activities will be performed under the existing subaward between MDEQ and USM. These funds will be used for

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research on the sustainability and restoration of oyster reef habitat in the Mississippi Sound. The University of Southern Mississippi began work on their project titled “Sustainability and Restoration of Oyster Reef Habitat in Mississippi Sound: A Larval Transport and Recruitment Approach.” During the reporting period, researchers began collecting ocean current data using stations in Waveland and Pass Christian, Mississippi, and researchers conducted plankton sampling on September 21, 2017.

Lower-Tier Sub-Recipient(s)

MBRACE is a consortium of four Mississippi universities - Jackson State University, Mississippi State University, University of Mississippi and University of Southern Mississippi. The University of Southern Mississippi serves as the lead university for the consortium. USM issued the following sub-award agreements during the reporting period:

University of Southern Mississippi – University of Mississippi: The sub-award agreement was executed on August 31, 2017, between University of Southern Mississippi and the University of Mississippi (Principal - Marc Slattery, DUNS — 06-771-3560) for \$625,000. The funds will be used to identify differences in abiotic and biotic stressors at current and historic oyster reef sites, to better understand oyster reef health and to inform management regarding the best places and practices to improve oyster reef restoration strategies. The University of Mississippi began work on their project titled “Abiotic and Biotic Influences on Current and Historical Distributions of Oyster Reefs.” During the reporting period, researchers coordinated with University of Southern Mississippi to submit a joint “MDMR Scientific Research Permit” application form. Permit # SRP-035-17 was approved and issued on September 8, 2017. Additional activities included transferring oyster broodstock from University of Southern Mississippi Gulf Coast Research Lab to University of Mississippi and collecting water and sediment samples.

University of Southern Mississippi – Mississippi State University: The sub-award agreement was executed on September 15, 2017, between the University of Southern Mississippi and Mississippi State University (Principal - Robert Moorhead, DUNS - 07-546-1814) for \$624,953.25. The funds will be used for research on the influence of water quality and benthic habitat conditions on the health of oyster reefs in the Mississippi Sound. Mississippi State University began work on their project titled “Water Quality and Benthic Habitat Observations for Enhanced Understanding and Sustainable Management of Oyster Reefs in the Mississippi Sound.” During the reporting period, laboratory supplies were purchased and the procurement process for necessary field equipment was initiated.

Note: The sub-award agreement between the University of Southern Mississippi and Jackson State University will be executed during the next reporting period.

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Financial Elements

Award Recipient

Recipient: Mississippi Department of Environmental Quality
Award Amount: \$4,036,236.00
Expenditures to Date: \$79,647.01
Funds Leveraged: \$0.00

Award Sub-recipient/Consortium Lead

Sub-recipient: The University of Southern Mississippi
Sub-award Amount: \$3,442,337.00
Expenditures to Date: \$0.00
Funds Leveraged: \$0.00

Lower Tier Sub-recipient(s)

Sub-recipient: University of Mississippi
Sub-award Amount: \$625,000.00
Expenditures to Date: \$0.00
Funds Leveraged: \$0.00

Sub-recipient: Mississippi State University
Sub-award Amount: \$624,953.25
Expenditures to Date: \$0.00
Funds Leveraged: \$0.00

Sub-recipient: Jackson State University
Sub-award Amount: TBD. Sub-award agreement will be executed during the next reporting period.
Expenditures to Date: Not Applicable
Funds Leveraged: TBD. Sub-award agreement will be executed during the next reporting period.

Gulf Coast Ecosystem Restoration Council Elements

Relevant Synergies/Collaboration with other RESTORE funding streams

In 2016, MDEQ included a \$3.5 million project titled "Pascagoula Oyster Reef Complex Relay and Enhancement" on its initial Mississippi State Expenditure Plan (RESTORE Act Oil Spill Impact Component). This project supports the restoration and protection of natural resources by relaying oysters from the Pascagoula Oyster Reef Complex (ORC) to harvestable reefs and enhancing the ORC. This project may include benthic habitat mapping, reef monitoring, and relay of oyster resources to increase productivity on harvestable reefs. The data collected from the MBACE-funded projects would help inform the outcomes of this project. MDEQ will coordinate the storing and analysis of the data to come out of various DWH-funded projects. This coordination will be key in leveraging results coming out of multiple projects and multiple funding mechanisms.

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Relevant Synergies/Collaboration with other DWH funding mechanisms

In 2015, the National Fish and Wildlife Foundation Gulf Environmental Benefit Fund (NFWF GEBF) funded an \$11.7 million project to replenish and protect oyster populations in Mississippi through increasing oyster reef habitat acreage and productivity. Project components include experimental cultch deployment, contaminated cultch assessment, water quality analysis, oyster gardening, and data synthesis. The results from the various MBACE-funded projects will leverage the NFWF GEBF-funded findings to bolster new and relevant data regarding oyster populations in the Mississippi Sound. MDEQ is working very closely with the Mississippi Department of Marine Resources (MDMR), University of Southern Mississippi, and Mississippi State University on this project. Not only will the results from the multi-faceted NFWF GEBF-project inform future oyster research funded out of MBACE and vice versa, but the close partnerships with MDMR allow for this research to directly impact the management of Mississippi's marine shellfish resources.

Opportunities

MDEQ is constantly seeking opportunities for research and data acquisition to further the sustainable implementation of oyster restoration projects. Currently, MDEQ does not see any need for modifications to existing laws or program rules to improve the COE grant program.