

**Activity:** Apalachicola Bay Oyster Restoration (Implementation)

**Unique Identifier:** FL\_RESTORE\_002\_006\_Cat1

**Location:** Franklin County, Florida

**Type of Activity:** Implementation

**FPL Category:** 1 – Funding Approved

**Cost Estimate:** \$4,680,000

**Responsible Council Member:** State of Florida

**Partnering Council Member(s):** N/A

**Originally submitted by:** The State of Florida as a component within the proposal “Apalachicola Bay Watershed Restoration”

**Executive Summary:** Oyster reefs are important to Apalachicola Bay’s future; it has been estimated that 85% of oyster reefs have been lost globally, with Apalachicola Bay being one area with significant remaining reefs (Beck *et. al.* 2011). Therefore, placing substrate or "cultch" in bays where natural reproduction occurs is among the most effective techniques used to: 1) create reef infrastructure; 2) stimulate spat setting; 3) sustain oyster fisheries; 4) enhance community functions; 5) increase natural productivity; and 6) accelerate the recovery process. This project, which is an expansion of a *Deepwater Horizon* Natural Resource Damage Assessment (NRDA) Phase III Early Restoration project, would restore approximately 251 acres of natural oyster reefs through the addition of approximately 50,258 cubic yards of cultch material to support successful oyster spat settlement and ultimately, adult oysters. The \$4,680,000 approved for this project includes \$702,000 that was previously approved for planning.

#### **PROJECT DESCRIPTION:**

**Specific Actions/Activities:** Specific activities associated with this project include the placement of approximately 50,258 cubic yards of suitable oyster reef substrate through the use of barges and high-pressure water. Areas to be cultched will be marked with buoys or clearly marked stakes. Following the completion of the planting, oyster density (spat, sub-legal and legal-sized) sampling will be conducted and analyzed at six months, one year, and two years after cultching at each restoration site.

**Deliverables:** Deliverables associated with this activity include the restoration of approximately 251 acres of natural oyster reefs in the Apalachicola Bay and monitoring data. The monitoring data will be used to inform oyster fisheries managers of commercially productive reefs in the Apalachicola Bay.

**Ecological Benefits/Outcomes and Metrics:** This project, which is an expansion of a *Deepwater Horizon* NRDA Phase III Early Restoration project, will restore approximately 251 acres of natural oyster reefs through the addition of approximately 50,258 cubic yards of cultch material to support successful oyster spat settlement and ultimately, adult oysters. Ecological benefits associated with the Apalachicola Bay Oyster Restoration project are realized through an array of ecological services in the form of increased fishery and wildlife habitat; increased biodiversity and trophic dynamics; increased filtering capacity to improve water quality and recycle nutrients;

increased structural stability to reduce coastal erosion and to protect near shore resources; protection of water quality; and the protection of healthy, diverse and sustainable living coastal marine resources. Beyond the fact that oysters and oyster reef communities represent important food sources for many species of commercially important fish and invertebrates, functioning oyster reefs are also recognized as critical structural and community components which stabilize and sustain a broad array of ecological relationships (Peterson *et. al.* 2003). Additional outcomes include economic benefits through harvesting, processing and marketing fishery products locally and regionally by all who enjoy high-quality, wholesome Florida seafood.

The project's metrics of success include densities of spat (<25mm), sub-legal-sized (25mm-75mm) and legal-sized (75mm) oysters. Oyster density (spat, sub-legal and legal-sized) sampling will be conducted six months, one year, and two years after cultching at each restoration site. Five locations will be sampled at each sample site. Ten replicate ¼ m<sup>2</sup> quadrats will be conducted randomly at each location. All oysters and cultch within each quadrat will be collected for analysis. The analysis will include the determination of the total number of live and dead oysters with articulated shells. The shell height measurements for a maximum of 50 live oysters and cultch volume will be measured. A sub-sample of cultch and live oyster shells will be used to determine spat densities.

**Leveraging and Co-Funding:**

- **Adjoining:** This project leverages over \$12.1 million in oyster related projects in Apalachicola Bay. Funds include over \$4 million from the National Fish and Wildlife Foundation, \$2.1 million from the NRDA Phase III Early Restoration project and over \$6 million from Federal Disaster Assistance.

**Duration of Activity:** Approximately three years from the time funding is received.

**Life of Activity:** Once the project is constructed it is anticipated the project's ecological benefits would be sustainable over the long-term without any additional maintenance. Individual oysters have a life expectancy of up to 20 years; however, prior to harvesting, it was not uncommon for oyster reefs to exist for centuries. Additionally, research conducted on undisturbed restored reefs suggests they may persist for several decades (Grabowski *et. al.* 2012).

**RESPONSE TO SCIENCE REVIEWS:**

**Comment:** Three science reviews of this proposal were conducted as part of the Gulf Coast Ecosystem Council submission evaluation; the results were disparate. Some specific comments on the proposal related to the number of literature reviews, the level of risk mitigation assessment, and monitoring strategies.

**Response:** Ten literature reviews and citations were provided as part of the project proposal. The array of topics covered by the cited literature include oyster reef restoration risk and management; biological and ecological assessment; economic valuation of ecosystem services; and oyster recovery. One citation was inadvertently not included on the reference list:

Havens, K., Allen, M., Camp, E., Irani, T., Lindsey, A., Morris, J., Kane, A., Kimbro, D., Otwell, S., Pine, B., Walters, C., 2013. Apalachicola Bay Oyster Situation Report. University of Florida Institute of Food and Agricultural Science.

The Florida Department of Agriculture and Consumer Services (FDACS) has been involved in rehabilitating oyster reefs for more than 60 years and provides a multi-dimensional approach built on decades of experience. FDACS has a history of completing restoration projects following devastating natural disasters such as hurricanes, floods and droughts (Berrigan 1988). Based on the type of project and the experience of the implementing entity, the referenced literature is sufficient for the purposes of this project.

The proposal included a brief discussion on the risks and uncertainties of conducting oyster reef restoration. Review comments related to the lack of detail and brevity of the risk assessment would be understandable if it were not for FDACS's extensive experience conducting similar oyster cultch restoration in the Florida Panhandle. As stated above, the Department has conducted oyster restoration projects for decades and is well equipped to predict and address risks and uncertainties. The proposal did discuss the two largest risks: hurricanes and continued low freshwater flows. These have both been the cause of historic oyster population declines in the Apalachicola Bay.

The post-construction monitoring and success criteria identified for this project are built on years of experience collecting, monitoring, and analyzing natural and restored reefs in the Apalachicola Bay area. The activities, expected outputs and desired outcomes have all been identified. The post-construction survey methodology is fully developed, as stated in the Ecological Benefits/Outcomes and Metrics section above.

#### **ENVIRONMENTAL COMPLIANCE:**

To address requirements of the National Environmental Policy Act (NEPA) (42 U.S.C. §§ 4321 et seq.) triggered by the approval of federal funding for the Apalachicola Bay Oyster Restoration project, the Council is adopting the U.S. Army Corps of Engineers' (USACE's) Environmental Assessment (EA) for the Programmatic General Permit (PGP) SAJ-99, SAJ-2007-03138 dated October 16, 2015. The Council has reviewed the subject EA and determined that it addresses the environmental effects of the activity to be funded. In making this determination, the Council coordinated with the USACE (author of the adopted EA), the Florida Department of Environmental Protection (acting on behalf of the state of Florida as the activity's Council sponsor), and the FDACS (the entity that will deposit cultch material in Apalachicola Bay under the PGP). The Council has determined this project has independent utility from all other Gulf restoration activities; is substantially the same as the action covered by the USACE's EA; and there are no new circumstances, cumulative effects, new information or changes in the activity or its impacts not previously analyzed that may result in significantly different environmental effects from those assessed in the EA. The adopted EA addresses the Endangered Species Act (ESA), Clean Water Act Section 404, Magnuson-Stevens Fishery Conservation and Management Act, National Historic Preservation Act, and other relevant laws and regulations. The National

Marine Fisheries Service updated the ESA consultation on August 13, 2015 for activities authorized by PGP SAJ-99 covered under this EA.

Based on this information, the Council has issued a Finding of No Significant Impact (FONSI) for this activity. This FONSI and the associated EA can be found [here](#).