

TRIUMPH GULF COAST, INC. PRE-APPLICATION FORM

Triumph Gulf Coast, Inc. (“Triumph Gulf Coast”) has created a pre-application process to provide initial consideration of potential ideas for projects or programs that may seek an award of funding. Applicants are required to participate in the pre-application process. Notwithstanding the response from Triumph Gulf Coast on the pre-application form, an Applicant may still elect to submit an Application.

APPLICANT INFORMATION:

Name of Individual/Entity/Organization: **Florida State University Coastal & Marine Laboratory**

Brief Description of Background of Individual/Entity/Organization: **Research/Academic unit of Florida State University; FSU is a 4-year institution of higher education, Research I University and one of the two State of Florida Preeminent Universities**

Contact Information:

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Names of co-applicants, partners or other entities, organizations that will have a role in the proposed project or program:

REQUIRED EXECUTIVE SUMMARY:

In a maximum of three (3) pages, please describe the proposed project or program, including (i) the amount of funds being sought from Triumph Gulf Coast; (ii) the amount and identity of other sources of funds for the proposed project or program; (iii) the location of the project or program; (iv) summary description of the proposed program, including how the program will be transformational and promote economic recovery, diversification, and enhancement of the disproportionately affected counties, and (v) a summary timeline for the proposed project or program.

IMPORTANT NOTICE

This pre-application process will **not** result in an award of funding by Triumph Gulf Coast. Rather, this process is designed to facilitate submission of ideas for potential projects or programs before the Applicant expends time and/or resources to complete a full Application. All Applicants for funding are required to complete an Application, which will be scored, and then considered for award in the discretion of Triumph Gulf Coast Board.

Introduction

The Apalachicola River System (including Apalachicola Bay) is among the least developed and polluted river systems in the United States. It is important ecologically because of its rich diversity, economically for the fisheries and recreational activities it supports, and culturally for its long history as a seaport and popularity among watermen of every variety. It is imbedded in an area considered one of the most biologically diverse regions of North America.

The current threats impinging on this system are significant, and include long-term drought throughout the southeastern United States, water withdrawals from the upper reaches of the watershed, and overfishing. These pressures led to a crash in 2012 of local oyster populations and other species from which the Apalachicola Bay has not recovered, despite several summers of increased water flow. Oyster reefs help maintain water clarity, buffer shorelines from wave action, provide habitat for other species, and increase overall aquatic productivity. Their decline has had a profound destabilizing effect on the Apalachicola Bay ecosystem and has resulted in significant deleterious economic impact in the region.

We propose to develop the Apalachicola Bay System Initiative (ABSI), a research program that addresses key questions relevant to the status and recovery of Franklin County oyster populations using the following approaches: (1) evaluating the role of oyster populations in the Apalachicola Bay using Earth system-life history models; (2) using an experimental approach to investigate the population-level attributes of oyster populations, including their distribution and abundance (current and past), genetic differences among populations, settlement patterns within the bay, and growth and survival of Apalachicola oysters relative to non-local oysters commonly used in aquaculture. The aim of this effort is to develop and implement long-term strategies for restoring oyster populations in the Apalachicola Bay which will contribute to the overall health and stability of the system and increase job opportunities in Franklin County. On November 7, 2017, the Franklin County Board of Commissioners unanimously voted (4-0) to transmit this pre-application to the Triumph Gulf Coast Board.

(i) Funds being sought from Triumph Gulf Coast over a 5-year period: \$8,359,068.

The Apalachicola Bay System Initiative (ABSI) is requesting Triumph Gulf Coast, Inc. funding in the amount of \$8,359,068 distributed over the period of five (5) years of a ten (10) year effort; year 1 (\$433,150), year 2 (\$2,567,145), year 3 (\$3,267,159), year 4 (\$1,071,739) and year 5 (\$1,019,875). These funds will be used to hire scientific technical and administrative staff, to construct a pilot oyster hatchery and related demonstration laboratory space, to conduct extensive field and laboratory research operations, and to support targeted education and outreach to the community.

(ii) Other sources of funding for the 10-year duration of the proposed effort: \$4,650,000.

Florida State University (FSU) will contribute \$4,650,000 in cash cost-share to the ABSI effort: \$750,000 in year 1; \$500,000 in year 2; and \$3,400,000 over years 6-10 including FSU assuming salaries and fringe benefits of all scientific staff (6 positions). In addition, it is anticipated that the research faculty, as well as current faculty at the FSU Coastal & Marine Laboratory (FSUCML), will leverage the ABSI effort to secure external contract and grant funding for related research from federal, state and private agencies. We conservatively estimate that this effort will generate on the order of \$4,250,000 in funding during the 10-year period. This is a reasonable projection based on the track record of FSU in recent years. FSU generated \$210M in research grants and contracts in FY-2017 and over \$1 billion dollars over the last five

years. Research grant funds are well-recognized as having substantial economic multiplier impact as they are spent locally. The FSU cost-share and the projected 10-year contract and grant funding for this project (\$8,900,000) will exceed the investment by Triumph Gulf Coast.

(iii) The location of the project or program.

The focus of the ABSI effort will be in Apalachicola Bay. The hub of the ABSI effort will be at the FSU Coastal Marine Laboratory (FSUCML) located near Turkey Point in Franklin County. The effort will also utilize state of the art facilities on the main campus of Florida State University, including genome sequencing, geochemical analysis and high performance computing.

(iv) Summary description of the proposed program, including how the program will be transformational and promote economic recovery, diversification, and enhancement of the disproportionately affected counties.

Oyster reefs have declined by an alarming 85% worldwide due to habitat loss, declines in water quality, destructive fishing practices, overharvesting, and increased incidences of disease. At the root of this decline are/were management efforts solely focused on oysters as a food source rather than on maintaining other ecosystem functions that they provide, such as improving water clarity, providing buffers to wave action, and creating habitat for other economically important species. For many years the Apalachicola Bay and river system supported a productive oyster fishery that generated jobs and economic development for the local citizens. In recent years this lucrative resource has declined, resulting in loss of employment in an area that relies heavily on fishing. The people of Franklin County share a vision for solving these problems, to create a healthy system that sustains biological diversity and supports local economies and nature. The FSUCML is poised to provide the research necessary to support these endeavors, and interface with State and Federal agencies to ensure that the science is used in policy decisions.

We propose a comprehensive approach to understanding oyster ecology in the area which will lead to significant new research, effective restoration of wild oyster populations, support for local aquaculture efforts, and enhanced management approaches for this keystone species. The primary objectives are as follows:

- (1) To compare historical (baseline) and current oyster reef distributions: New data will be collected on oyster reef locations (from aerial and satellite surveys) and environmental conditions to inform integrated ecosystem models that can be used to predict oyster recruitment and productivity, identify sites for monitoring and restoration, and generate management options through a policy interface.
- (2) Field research: A suite of ecological parameters (e.g., recruitment, growth, survival, size distribution, predators, parasites, disease incidence and environmental conditions) will be collected from a number of study sites. These data will provide insight into environmental drivers of oyster reef health. Ultimately, this research approach will create the framework for a long term monitoring program to be conducted by an appropriate State management agency.
- (3) Oyster population structure: Genetic techniques will be used to determine oyster population structure and connectivity across the region. These data will be used to identify source and sink populations, resistant strains, ground truth the ecosystem models, and assist management decisions. These efforts will lead to identification of a sub-population of oysters with unique genetic characteristics for survival in the bay system that could be used as the source of animals for a pilot hatchery (see #4 below)

- (4) Oyster hatchery: A pilot-scale, experimental oyster hatchery will provide a reliable source of larvae and juveniles for research, which will include assessing resilience of wild oysters, and selecting disease resistant and environmentally tolerant strains of both diploid and triploid seed for restoration and aquaculture. This hatchery would serve as a demonstration facility and would be designed to be easily scaled-up for high output production to meet the needs of restoration efforts and developing aquaculture efforts.
- (5) Assist local aquaculture efforts: Expansion of oyster aquaculture in the Gulf of Mexico has created a shortage of seed. The proposed hatchery will be a source of local (triploid and diploid) seed and experiments will be conducted in collaboration with aquaculture operations to assess survivorship and growth of different strains of seed.
- (6) Restoration experiments: Novel approaches to oyster restoration will be tested, including the use of biodegradable materials and deployment of oyster seed in predator-safe enclosures.
- (7) Restoration strategy development and implementation: Ultimately the results of the basic and applied research in this effort will lead to development of a broader plan for restoration of oyster habitat and population health in the bay. These plans will be developed with stakeholder entities to be identified as the overall effort proceeds. Implementation will require resources far beyond what is available as is evidenced by the scale and cost of the restoration efforts in the Chesapeake Bay. The ABSI will provide the compelling case and pathway for such support.
- (8) Targeted outreach to the community: FSUCML is currently used extensively for outreach to schools, institutions of higher learning and the public. The new facilities created at the laboratory will be leveraged to create outreach opportunities for residents of the region. These outreach opportunities will be linked to the thematic area of oyster restoration viewed in the context of the bay system as a whole.

The economic importance of oyster ecosystems in Apalachicola Bay is self-evident. Despite restoration efforts and reductions in harvest, oyster populations remain low. The initial phase of the effort includes research using existing facilities and involves construction of infrastructure at FSUCML, which will generate economic activity. The ABSI will grow the cadre of scientific staff, thereby increasing the contracts and grants activity that has positive local effects on the economy, and will create administrative and technical support positions that may be filled locally. In addition to restoring a thriving fishery, the ABSI will provide opportunities for aquaculture expansion through expertise development and supply of seed oysters. It is estimated that this effort will preserve in the long run between 1,500 and 2,000 jobs and provide a platform for job growth as the oyster hatchery transitions from pilot operation to plant scale. ABSI will involve partnerships with State and Federal agencies, conservation entities, and local communities, with the goal of creating a sustainable ecosystem that will persist into the future.

(v) Summary timeline for the proposed project or program.

We envision a 10-year timeline for the proposed ABSI. The first five years will require Triumph Gulf Coast support with significant FSU cost-share. The effort will be funded by FSU and research grants and contracts for years 6-10 and in perpetuity. Research will be conducted from day 1 through the 10-year period and beyond with emphasis on field studies, gathering of historical data and modeling (Objectives 1 and 2 above) taking place during the first few years while facilities are being constructed and staff hired. It is anticipated that the pilot-scale, experimental oyster hatchery facility will be on-line by the 2nd quarter of year 3 with major research and demonstration lab facilities shortly thereafter. Objectives 3-6, 8 and restoration plan development in Objective 7 will follow thereafter.