Florida Gulf of Mexico Restoration
Project Submittal Form

Project Name:
Analytic Tools for Planning

Contact Information

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Project Location (include map, if possible, and the city, county, long/lat, and watershed)

The entire Gulf of Mexico and its coast.

Project Description (describe all aspects of the project)
The *Analytic Tools for Planning* directly supports the State's Priority Area 2 (Community resilience/living shorelines) and a State of Florida's priority specified in the *Gulf of Mexico Regional Ecosystem Restoration Strategy*.

Improve knowledge of the economic value of environmental services provided by the Gulf of Mexico (GOM) resources in terms of long-term community sustainability, growth and resilience. This project will identify the range and quantity of ecosystem services provided by existing conservation areas, including marine, estuarine and freshwater wetlands and associated native uplands, and determine how the relative abundance of wetlands and native uplands, their distribution and position in the landscape, and their ecological condition affects the provisioning of ecosystem services.

The project will expand upon the assessment methods utilized in the study *Measuring and Forecasting Total Ecosystem Services Values (TEV) from Habitat Condition Analyses of Habitats in Southwest Florida : The ECOSERVE Method*, linking the derived ecosystem function measurements with a geo-spatially positioned ecosystem services database. This will generate an ecosystem services topography (ECOSERVE layer) that can be combined with other ecosystem

services layers for functional analyses by geographic boundary (watershed, municipality, county, etc.) and will generate projected alternate futures of ecosystem services resulting from land use changes, anticipated climate changes, natural and man-made disasters, the implementation of alternative wetland protection and land conservation programs, and null hypothesis futures of build-out landscapes in the current planning and regulatory environment.

Products of the study will include updated valuations of the ecosystem services provided by existing conservation lands in the Gulf of Mexico; an updated conservation lands mapping of the project study area; a documentation and quantification of the ecosystem services provided by each habitat type; multiple GIS ECOSERVE layers/GIS maps for the many ecosystem services provided by the various wetland and upland types; and analyses and quantification of current and alternate future ECOSERVE landscapes, and a basis for estimating existing and post-disaster ecosystem services for damages evaluation in the Gulf of Mexico.

Deliverables will include:

- Extensive GIS mapping of the current conservation area wetland and upland extents and types, in the project study area,
- Analyses of ecosystem services provided by those wetlands with identification of techniques and procedures that utilize wetland ecological condition indicators and related data to quantify wetland ecosystem services delivery,
- Development of an Arc View-friendly protocol for statistical and geographic analysis and interpretation can be used with the types of data generated by surveys of wetland ecological condition indicators to quantify ecosystem services generated in a specific geographic area (e.g., watershed, municipality, county),
- An accurate and up to date wetland spatial information necessary to quantitatively measure ecosystem services provided by wetlands,
- A quantification of observed wetland condition data linked to ecosystem services and their contribution to human well-being,
- A quantification of the pollution-prevention or mitigation services (e.g., chemical pollutant removal, sediment removal)provided by wetland ecosystems vs. the cost of providing them through built infrastructure,
- A quantification of the amount of food or fiber produced per unit area in areas well-protected by wetlands vs. that of poorly protected or unprotected areas,
- The economic value of recreational opportunities provided by a specific wetland provision or protection of fishable/swimmable water),
- Construction costs avoided by the presence of wetlands that slow and absorb floodwaters (flow mitigation or flood control) (output of grant tabulation),
- Approaches to statistical and geographic analysis and interpretation that can be used to quantify the relative importance of perturbation stressors (e.g., agriculture, hydrologic alteration, development, climate change) that impact wetlands and the ecological services they provide,

- Useful and practicable indicators for assessing wetland ecosystem services delivery and that present creative and innovative applications of statistical and geographic analysis and interpretation to provide new information on wetland ecosystem services, wetland condition surveys, and
- A tool that can be used to develop regionally relevant ecosystem services measurement and assessment programs and that can be used to assist in implementing efficient and effective decisions-making by local and regional regulatory, mitigation, enforcement programs.

Estimated Project Costs (describe the estimated costs of the project, including any assumptions for contingency and ongoing operations/maintenance. Identify other secured funding sources such as matching funds, in-kind contributions or state/federal dollars. In addition, if possible, complete and submit the Cost Appendix Sheet associated with this form):

$500,000, within the first three years of the program.

Other funding (indicate if the project is submitted for any potential funding or if it may be used to leverage additional funding, of so please describe the funding source (e.g. State/Federal Grants):

None identified at this time.

Technical feasibility (describe the technologies involved and any relevant past experience or proven success with similar projects):

A pilot of this approach was completed within the Charlotte Harbor National Estuary Program (CHNEP) study area. The 2013 document is entitled "Estimating and Forecasting Ecosystem Services within Pine Island Sound, Sanibel Island, Captiva Island, North Captiva Island, Cayo Costa Island, Useppa Island, Other Islands of the Sound, and the Nearshore Gulf of Mexico " The final product can be seen at www.swfrpc.org/content/Natural_Resources/Ecosystem_Services/20130204_Estimating_and_Forecasting_Ecosystem_Services_complete.pdf.

Environmental Benefits (Describe the nature, magnitude, and timing of any environmental benefits attributable to the project. If possible, describe potential environmental performance measures [e.g. pollutant reduction]. Please address any potential environmental impacts associated with implementing or maintaining the project [e.g., loss of a habitat or conversion of habitat from one type to another during implementation]).

This tool will assist local, state and federal decision-making in meeting key components of the *Gulf of Mexico Regional Ecosystem Restoration Strategy*. It will critical to help prioritize ecosystem restoration in the Gulf of Mexico by ensuring that social, environmental and economic outcomes are fully considered in all coastal management decisions, and by placing it on equal footing with other priorities such as navigation and flood damage risk reduction.
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Economic and Social Benefits (describe the economic and social benefits including those related to the project's improved ecosystem services and any estimates on jobs created or preserved).

In 2003, Florida's direct ocean economy (GSP) was an estimated $13 billion, ranking second in the nation behind California. Florida's total ocean economy that same year (including multipliers) was an estimated $23.2 billion, which contributed 3.2% of Florida employment and 4.5% of Florida GSP in 2003. Employment forecasts project 73% growth with more than 268,000 new jobs by 2015. The Tourism & Recreation was the fastest growing sector GSP in the ocean economy, far surpassing the others with 90% growth between 1990 and 2003. The Marine Transportation Sector GSP grew 82% during the period 1990-2003. This tool can be used to protect these interests.

Community Resilience (describe if the project assists Florida's ability to anticipate, withstand, or recover from hazards or threats [e.g. hurricane preparedness, establishing living shorelines]).

This project will develop and implement a wetland ecosystem services survey and mapping methodology derived from wetland functional analyses which will then be utilized to forecast, evaluate and report trends in wetlands ecosystem services.

Products of the study will be an updated multi-entity wetland type definition; an updated wetland type GIS mapping of the project study area, a documentation and quantification of the ecosystem services provided by each wetland type, multiple ECOSERVE layers GIS maps for the many ecosystem services provided by the various wetland types; and an analysis and quantification of current and alternate future ECOSERVE landscapes resulting from existing path, projected future landscape change, climate change, and alternate wetland protection programs.

The results will be directly applicable throughout Florida and throughout the GOM study area, where coastal wetland permitting and mitigation are regulated by the same agencies in a similar manner. The methodology utilized to develop the ECOSERVE layers should also be applicable elsewhere, where wetland impacts are anticipated and permitted.

Conflicts or Complements to Existing Efforts (describe any ongoing activities in the project implementation area, if the project is part of another plan, and why the project does or does not interfere with that work. Please consider how the project may complement existing local, regional, and state efforts/plans/objectives).

For the pilot area this tool was developed, better measurements of economic benefits of proposed projects and justification were derived.

This project occur within the Gulf Coast National Estuary Program boundaries can assist in implementing the NEPs federally-approved Comprehensive Conservation and Management Plans. The four Florida gulf coast Water Management Districts develop Surface Water Improvement and Management (SWIM) Plans, of which the project could assist in

implementing. In addition, all of these projects are elements of the *Southwest Florida Regional Ecosystem Restoration Plan*, adopted on March 8, 2013.

Complies with Federal, State, Local and Tribal Laws/Regulations (describe any concerns or potential conflicts).

This project helps to implement NEP Comprehensive Conservation and Management Plans.

Readiness for Implementation (describe if the project has had any design or permitting work started or completed [attach permits or design work]. Please address any issues that may delay start or finish of the project).

The three-year project can be implemented immediately.

Public Acceptance (describe any known or potential public approval or opposition to the project).

All projects contained in the Southwest Florida Regional Ecosystem Restoration Plan, including this Analytic Tool for Planning, were reviewed and ranked through publicly-noticed meetings of a Work Group (January 28-29 and February 11, 2013), followed by a Joint NEP Management Board on Feb 20, 2013. The Joint NEP Policy Board, consisting of 39 elected officials, Water Management Governing Board members, and agency leads (listed on page 8 of the SWFRERP) approved the process and resulting plan on March 8, 2013. All meetings were noticed (1) in the Florida Administrative Register; (2) through direct notice to the three National Estuary Program Board members and all applicants; and (3) on the websites of the three NEPs.

Additional Information you may wish to provide (Please include any maps, designs, drawings, photos, or background resources that may assist in completely and accurately understanding the project):

Two documents are attached:

- Attachment 1- Estimating and Forecasting Ecosystem Services within Pine Island Sound, Sanibel Island, Captiva Island, North Captiva Island, Cayo Costa Island, Useppa Island, Other Islands of the Sound, and the Nearshore Gulf of Mexico (Beever and Walker 2013).

- Attachment 2- A listing of the 2 projects included in *Florida Gulf Coast Comprehensive Coastal Management Planning*.

The Southwest Florida Regional Ecosystem Restoration Plan (SWFRERP), approved by the Joint NEP Policy Board members on March 8, 2013 has been previously provided to FDEP.