RESTORE Act Interest Form

Please fill out the form below to express your interest in funding a project or proposal from the RESTORE Act. (Additional pages may be used, if needed.) Completion of this form does not guarantee funding.

Project Name: Long-term enhancement of tropical mangrove wetland ecosystem services through tidal creek restoration
Project Sponsor (your organization): Everglades Wetland Research Park, Florida Gulf Coast University
Contact Person: William J. Mitsch
Address: 4940 Bayshore Drive, Naples, FL 34112
Phone: 239-325-1365
Email: wmitsch@fgcu.edu

Project Type according to the Allowable Uses for RESTORE Act Funds:

- Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region

Project location (attach map if applicable): SEE ATTACHED MAP
Collier County. Part of the restoration area (70 acres) is referred to as the Collier Enterprises South Wetlands Preserve at the Naples Botanical Gardens. The primary restoration area is a disturbed tidal creek on Naples Bay. That part of the property is owned by Minto Florida and City of Naples. Please see attached map for the location and approximate property boundaries.

Project Description
The wetland area to be restored is a clogged tidal creek that needs to be reconnected to the sea to revive the riverine mangrove wetlands. We propose to reconnect this area to Naples Bay by re-excavating the tidal creek, which will allow for the establishment of a premier wetland mangrove restoration research site operated by FGCU and an interpretive site for visitors to the adjacent Naples Botanical Garden. SEE ADDITIONAL PROJECT DESCRIPTION ATTACHED

Total Cost: $2,750,000

Additional Funding Partners or sources of matching funding if available: RESTORE Act funds through Gulf Coast Ecosystem Restoration Council’s Comprehensive Plan 2012

Suggested implementation timeline:

<table>
<thead>
<tr>
<th>Year</th>
<th>2013-14</th>
<th>2014-15</th>
<th>2015-16</th>
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<tbody>
<tr>
<td>Cost</td>
<td>$750,000</td>
<td>$1,500,000</td>
<td>$500,000</td>
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Mail completed form to:
Deadline: April 9, 2013

William Lorenz, Director
Natural Resources Department
2800 North Horseshoe Drive
Naples, FL 34104
Attachment:

Project name: Long-term enhancement of tropical mangrove wetland ecosystem services through tidal creek restoration

Additional Project Description
Funding for years 1-3 would involve some construction and/or excavation of a tidal creek and construction of research infrastructure—boardwalks, towers and monitoring stations for long-term water quality, vegetation, and greenhouse gas emission research. (See Figure 1.) A detailed bathymetric map/cross sections will be developed for the wetlands and tidal creek by an engineering consultant working with FGCU students before construction to enable design of the proper excavation. A computer model will be used to predict changes in hydrology and salinity after the tidal creek is restored. Data and model results will be used to find an optimum strategy for the tidal creek restoration, assuming that the restoration is approved by stakeholders and collaborators.

Figure 1. sketch of the tidal creek restoration area southeast of the Naples Botanical Garden in Naples

A YSI monitoring system (salinity, temperature, and water stage) and staff gauges have already been installed in the brackish marsh near the botanical gardens at the northern part of the
restoration site. After restoration, water samples will be collected regularly along the tidal creek after restoration and analyzed for nutrients and other water quality parameters in the FGCU labs at the Kapnick building located at the Naples Botanical Garden (center is called Everglades Wetland Research Park). Mangrove vegetation structure and function will be estimated along transects perpendicular to the tidal creek flow. Similar sampling will be done on an un-impacted reference tidal creek about 2 miles to the east on Naples Bay.

Economic benefits (including ecosystem services) will be estimated from this project, including protection and enhancement of ecotourism and beach tourism in southwest Florida; protection of human structures from hurricanes; improvement of water quality along the tidal creek; carbon sequestration by the wetlands. The site will be an ideal location for enhancing environmental education for thousands of visitors to the Naples Botanical Garden every year and will provide a secure site for wetland and coastal research for FGCU for many years at their new Kapnick Environmental Center located on the Naples Botanical Garden campus.

Fifty jobs will be preserved at Naples Botanical Gardens and FGCU for interpretation tours and research, and 50 jobs will be created during the construction in phases over years 1 through 3. This project could result in a permanent team of 10 to 20 researchers (professors, post-docs, and students from FGCU and collaborating institutions) conducting applied and basic research at these wetlands while based at the Everglades Wetland Research Park at the Naples Botanical Garden.

Approximately 40 to 70 acres of mangrove wetland habitat along 0.5 to 1.0 miles of tidal creek will be restored in Naples Bay area. At least 1,300 species of wildlife depend on or utilize these types of coastal ecosystems in Florida, including 628 species of fish, birds, mammals, reptiles, and amphibians. Some of these are endangered or threatened such as the wood stork, hawksbill sea turtle, and West Indian manatee. This mangrove forest corridor should attain a biodiversity similar to that of the mangrove forests in the area, such as nearby Rookery Bay National Estuarine Research Reserve and our adjacent reference tidal creek.

The restored mangrove forest would protect the immediate inland areas (residential areas and especially the Naples Botanical Gardens) from winds and storm surges generated by a direct hit by a tropical hurricane. In the long term it will serve as to enhance the coastal resilience should sea levels rise. The site is in a key location adjacent to an expanding urban area where preserving the biodiversity of this and adjacent coastal ecosystems is especially vital. Mangrove habitats are integral for a variety of marine life, from commercially caught fish and shellfish to threatened and endangered animals.

Protection of remaining mangrove communities and restoration of damaged mangrove forests is vital to the environmental and economic future of Southwest Florida. Without mangroves, fish populations would plummet and coastal areas would become vulnerable to beach erosion and the full force of hurricanes. The local community's economy is vitally connected to the vitality of its coastline.

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