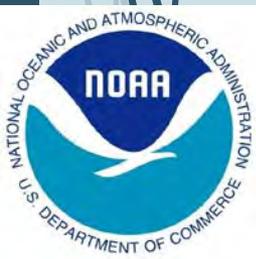


Hydrologic Restoration in the Gulf of Mexico:

Accomplishments and lessons learned from a partnership
between the
NOAA Restoration Center and
Sea Grant

Jessica Berrio, Stephen Sempier,
LaDon Swann and Jamie Schubert



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Coastal and Estuarine Restoration
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Goals of the Partnership



- ▶ **Develop an inventory** and prioritize hydrologic restoration projects to benefit living marine and estuarine resources in and adjacent to the Gulf of Mexico
- ▶ **Establish a set of monitoring criteria** for use in assessing success of hydrologic restoration projects and environmental and ecological changes that result from restoration activities
- ▶ **Develop an RFP** that will support the funding of on-the-ground hydrologic restoration

Goal 1: Develop an inventory and prioritize hydrologic restoration projects to benefit living marine and estuarine resources in and adjacent to the Gulf of Mexico

Process to identify and prioritize hydrologic restoration sites:

1. **Define Hydrologic restoration**
2. **Establish criteria** to both identify and prioritize hydrologic restoration sites
3. **Utilize local regional staff** to identify candidate hydrologic restoration sites throughout the Gulf Coast region
4. **Prioritize** the identified hydrologic restoration sites
5. **Assemble a report** of prioritized hydrologic restoration sites in the Gulf of Mexico coastal region

**Gulf of Mexico
Hydrological Restoration Criteria for
Identifying and Prioritizing Projects**

Project Name: Beauvoir Oyster Bayou Restoration Project
Project code: boy050201a

Estimated Cost: Less than \$100,000

Site Location
Latitude: 30.3958
Longitude: -88.777

Total Number of Acres Positively Affected: 336

Number of Acres Positively Affected by Habitat Type
Brackish marsh acres: 15
Freshwater marsh acres: 4
Mixed Pinewood Hardwood Forest acres: 15
Mixed commercial/residential for Biloxi residents acres: 300

Footprint of Restoration Activity
500 feet by 50 feet

Level of confidence of design cost: Very High Confidence

Level of confidence that project could be completed within three years: Very High Confidence

Background Information

Historical hydrological modification:
More than 300 acres of stormwater from West Biloxi drains under Beauvoir Road to this site. Also the construction of Highway 90 has impacted the hydrology of oyster bayou and the bayhead swamp.

Impacts from historical hydrological modification:
Flooding, scouring, erosion, sedimentation, degraded water quality, loss of natural habitat and loss of marsh grasses.

Explicit goals and objectives of this project:
Increase stormwater buffering while expanding capacity of stream and oyster bayou; along with, improving water quality and restoring natural habitats within this urban forest and bayhead swamp.

Purpose of the hydrological modification in terms of salinity:
Restore historic/natural salinity exchange

Types of restriction impeding or preventing historical hydrological flows:

- Undersized culvert
- Road
- Foot path
- Sedimentation
- Unrestricted stormwater runoff (in terms of volume and debris)

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Inventory Criteria- Things to Consider

Project Site Background

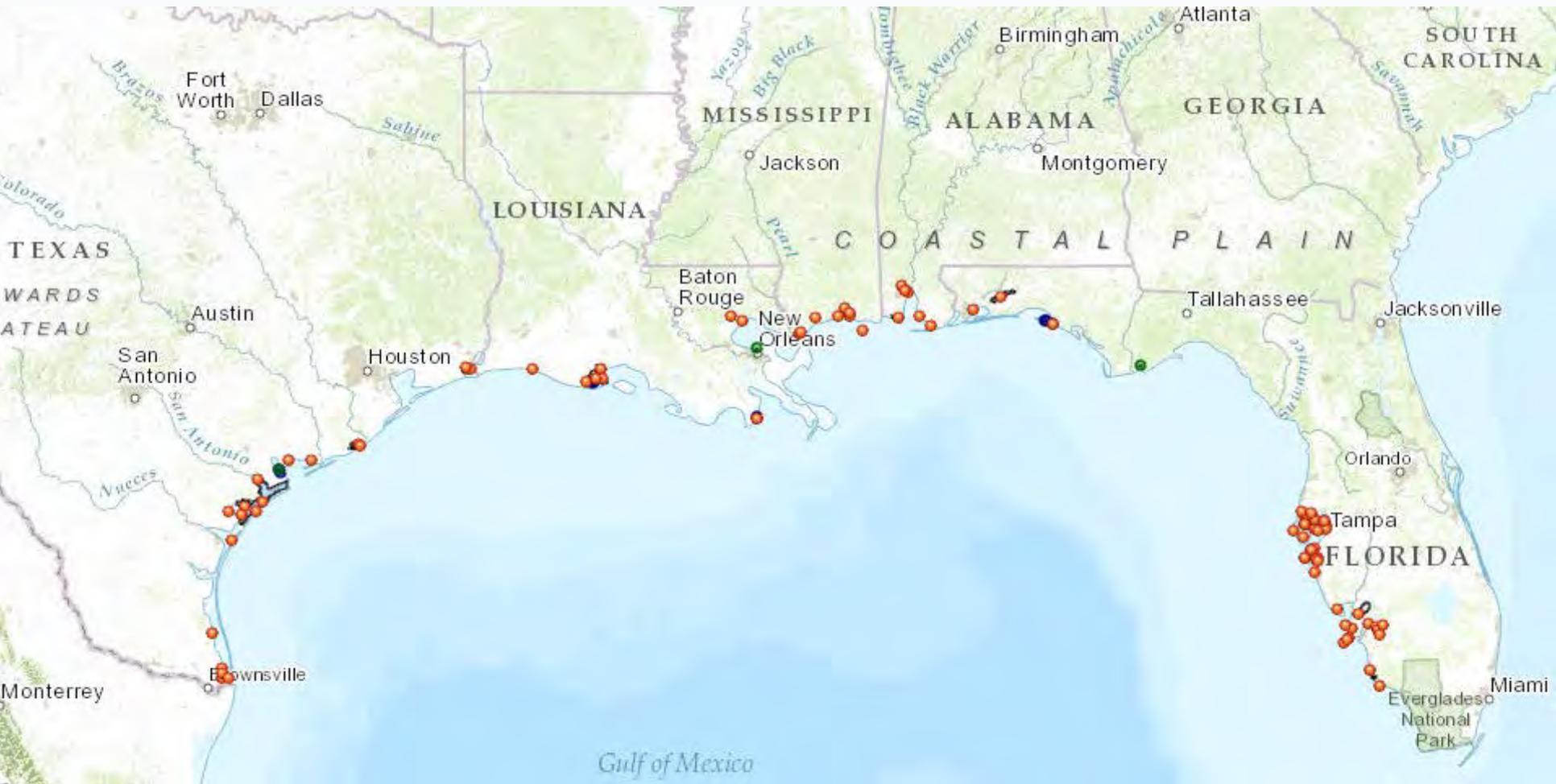
- Location
- Acres restored
- Type of habitat(s)
- Historical information
- Description of barrier
- Cost

Ownership, Benefits & Partners

- Private versus Public
- Adjacent to conservation area(s)
- Species benefited
- Ecosystem services
- Volunteer opportunities
- Funding partners

Projects in Inventory

<https://maps.google.com/maps/ms?msid=200852967964615085153.0004e2abdfd021b73f198&msa=0&dg=feature>



Goal 1: Develop an inventory and prioritize hydrologic restoration projects to benefit living marine and estuarine resources in and adjacent to the Gulf of Mexico

Lessons learned-

- Defining a standard set of criteria to use across hydrologic restoration projects can be difficult. To overcome this ground truth with on the ground practitioners.
- It can take time to populate an inventory and requires a lot of outreach.
- Regional Disasters such as (Deep Water Horizon Oil spill)- can impact regional priorities and redefine the scale and scope of many projects in the region.

Success-

- End result- A total of 89 projects are in the inventory. Currently being used by NOAA and partners. In addition, GoogleEarth and Google Map products were created that highlight the location of projects.



Photo credit: Meg Goecker- IMSG

Goal 2: Establish a set of monitoring criteria for use in assessing success of hydrologic restoration projects and environmental and ecological changes that result from restoration activities

Monitoring: *Evaluating the success of hydrologic restoration projects. In order to accurately evaluate the success of hydrologic restoration projects robust monitoring criteria and techniques must be developed prior to initiation of a restoration project.*

Draft Monitoring Parameters for hydrologic restoration projects:

- Identified **implementation parameters** in four broad categories:
 - Assessment of Barrier Removal (Constructed as Designed)
 - Water Salinity
 - Area positively affected (Inundation Area)
 - Biotic parameters
 - Nekton (Presence or Absence), and/or
 - Vegetation (Survival)

- Identified **effectiveness parameters** in 5 broad categories:
 - Water Salinity
 - Water Depth
 - Flow Pattern/Flow Rates
 - Open Water Benefits
 - Biotic parameters
 - Nekton (Density, Growth, Survival, Movement)
 - Vegetation (Present Cover, Community Composition, Quality of Coverage)





Goal 2: Establish a monitoring criteria for use in assessing success of hydrologic restoration projects and environmental and ecological changes that result from restoration activities

Lessons Learned:

➤ **Defining terms**

- Developing monitoring criteria takes time, especially coming to consensus on what parameters would be included as part of the criteria.
- Defining expectations for short/long term monitoring.

➤ **Defining the End product**

- Had to determine the scale and delivery.
- Had to determine target audience.

➤ **Success**

- A set of draft monitoring criteria was developed.
- Currently being used by NOAA RC to help develop national criteria and consistency for hydrologic restoration projects around the country.

Goal 3: Develop an RFP that will support the funding of on-the-ground hydrologic restoration in the Gulf of Mexico

First RFP process-

- To determine interest a request for letters of intent was released by Sea Grant
- Full proposal RFP guidance was developed and RFP released
- Five full proposals were received and reviewed and three projects were chosen and funded



Additional RFPs-

- Two subsequent RFP processes were used to identify additional projects but neither processes resulted in fundable projects.
- A third approach was taken to actively seek out viable projects in the region by using the newly created inventory, and a project in Texas was selected.

Goal 3: Develop an RFP that will support the funding of on-the-ground hydrologic restoration

Lessons Learned-

- ▶ Be prepared to change project selection process if needed
- ▶ Match requirement can be a limiting factor
- ▶ Maturity of a project can impact funding decisions
- ▶ Amount of funds available can be a limiting factor



Photo credit: NOAA 2010, Returning the Tide



On-The-Ground Restoration Projects funded through the Partnership

Bayou St. John, LA

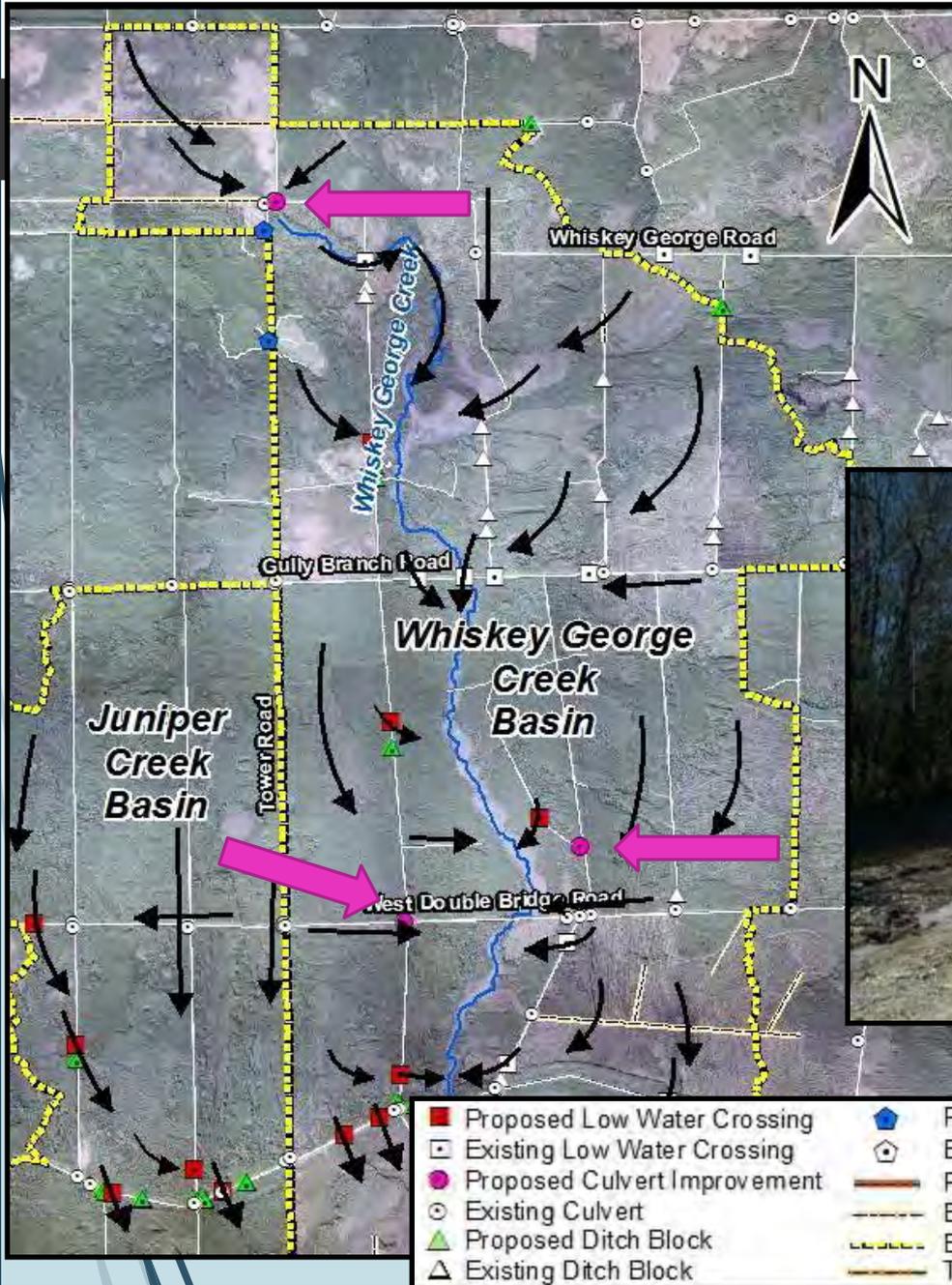


Project
complete!



Upper Apalachicola Bay, FL

Project complete!



- | | |
|--------------------------------|---------------------------------------|
| ■ Proposed Low Water Crossing | ⬠ Proposed Flashboard Riser |
| ◻ Existing Low Water Crossing | ◻ Existing Flashboard Riser |
| ● Proposed Culvert Improvement | — Proposed Road Removal |
| ○ Existing Culvert | --- Existing Road Removal |
| ▲ Proposed Ditch Block | --- Basin Boundaries |
| △ Existing Ditch Block | --- Tate's Hell State Forest Boundary |

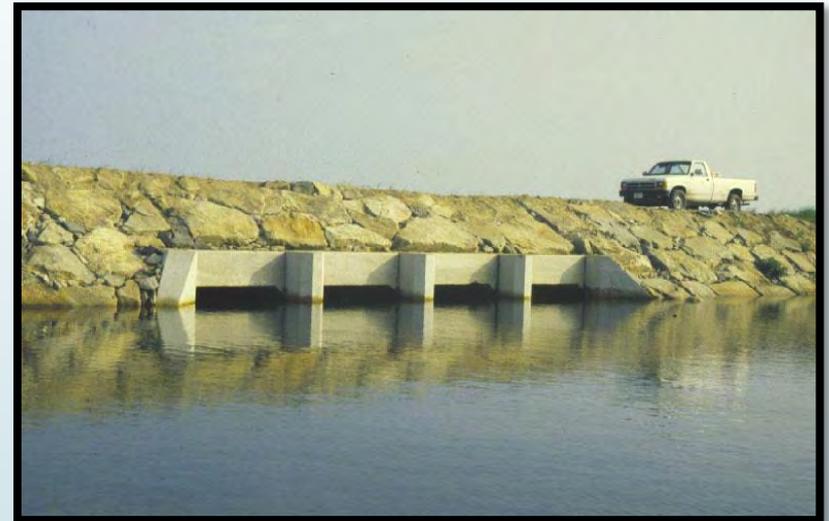
Northwest Florida Water Management District
81 Water Management Drive
Havana, FL 32333-4712



0 0.25 0.5 0.75 1 Miles

Next Steps

- The inventory is still open and taking new projects.
- Monitoring criteria is actively being used by the NOAA RC.
- Continue to wrap up projects funded through the partnership and celebrating successes!



Contacts

Jessica Berrio:

Jessica.Berrio@noaa.gov

Steve Sempier:

stephen.sempier@usm.edu

Jamie Schubert:

jamie.schubert@noaa.gov