

Project Information

1. **Project name:** Safe Harbor Restoration – Phase one
2. **Project site location:** Fairhope, Baldwin County, Alabama
3. **Latitude/Longitude coordinates:** N30.421 W87.829
4. **Land ownership:** Public
5. **GEMS site:** Yes, Weeks Bay NERR
6. **Number of acres to be restored:** 82
7. **Types of habitat:** Brackish marsh, forested and scrub shrub estuarine wetland, soft bottom, and associated uplands.
8. **Anticipated NOAA Trust Resources expected to benefit from restoration:**
 - Commercial and recreational fishery
 - Blue crab-*Callinectes sapidus*, Striped Bass-*Morone saxatilis*, Flounder-*Paralichthys lethostigma*, Menhaden-*Brevoortia patronus*, Speckled trout-*Cynoscion nebulosus*
 - Coastal Habitats as described above
 - Living resources associated with the Weeks Bay National Estuarine Research Reserve
9. **Identification of required federal, state, or local permits:** Commercial Applicator Permit
10. **Project start date:** 01/08
11. **Project end date:** 07/09
12. **Project map attached (attachment A)**

Project Description

Summary

In October of 2004 title for the 82 acre Safe Harbor tract was acquired by Weeks Bay NERR. Previous to acquisition the property had been employed as a recreational vehicle and mobile home park which resulted in massive alterations to the property. Money is sought to enact a first phase effort to alleviate ecologically detrimental property alterations. First phase efforts will result in the formation of an expert advisory panel, completion of a baseline flora survey, reduction of exotic invasive species, removal of anthropogenic structures, enactment of a monitoring system and creation of a long term management plan.

Need for the project:

Anthropogenic alterations to the Safe Harbor tract that persist include terrestrial infrastructure (roadways, trailer pads, utility lines, lampposts, buildings, and sewer lines), aquatic recreational structures (boat docks and piers) and dredged canals (see attachment A). These alterations dramatically disturbed habitat within tract boundaries and resulted in

- a. hydrological modifications
- b. increased abundance of exotic invasive species
- c. increased fringe habitat
- d. localized elimination of upland and estuarine marsh habitat
- e. suppression of fire

Maintenance activities and traffic has significantly diminished since closing the tract for recreation and leisure purposes. It is probable that this will result in further spread of exotic invasive species as flora is allowed to re-establish in the formerly maintained areas. Implementing invasive species control measures at this time will significantly benefit long term reestablishment of native flora composition.

Overshadowing from docks and piers alters biogeochemical processes and carbon budgets by impeding the growth of marsh plants, submerged aquatic vegetation (SAV) and benthic algae. The resulting reduction in primary productivity negatively impacts food availability for commercially and recreationally important fauna species (Alexander, C. and Robinson M. 2006). Marsh plants and SAV provide critical nursery habitat for fish, amphibians, reptiles, birds and mammals that live in coastal waters or adjacent marsh and uplands. Marsh plants and SAV stabilize shoreline and bottom sediments and take up contaminants and excess nutrients

(<http://coastalmanagement.noaa.gov/initiatives/media/environmentalimpacts.pdf>). Removing the approximately 180 square meters of dock and pier surface will allow remediation of benthic processes and biota assemblages thus enhancing food supply and habitat of NOAA trust resources.

Project objectives

The long term restoration goal for the Safe Harbor tract is to maximize habitat health, integrity, and sustainability.

Objectives of phase one restoration efforts are to:

1. Establish an advisory panel to determine feasible long term restoration actions.
2. Establish a long term monitoring plan
3. Obtain baseline inventory of aquatic and terrestrial flora species and map extent of invasive species.
4. Reduce impervious surface
5. Eliminate aquatic overshadowing structures
6. Control exotic invasive species proliferation
7. Plant native flora
8. Educate and mobilize citizen volunteers

On-the-ground activities

1. Drs. Clinton and Kelly Major of Southeastern Biological Inventories in conjunction with students from the University of South Alabama will produce a detailed map of exotic invasive flora species within the restoration area, perform a baseline inventory of native terrestrial and aquatic flora species and assist with monitoring efforts and identifying appropriate target values.
2. Alabama Department of Conservation and Natural Resources State Lands Division personnel will remove trailer pads and infrastructure from within the restoration area.
3. Volunteers and State Lands personnel will remove decks and piers from the waterways within the restoration area.
4. Fred Nation Environmental Services along with the assistance of volunteers will suppress exotic invasive species.
5. Weeks Bay NERR and Weeks Bay Foundation staff will recruit and train volunteers to assist in restoration efforts. Weeks Bay NERR has an established relationship with numerous organizations including regional scout troops, civic groups, high schools and universities from which to obtain citizen volunteers.
6. Margaret Sedlecky of the Baldwin County Board of Education will provide and plant aquatic native species, via the Grasses in Classes program, for placement in appropriate areas. The Weeks Bay Volunteer Association will provide and plant native terrestrial species.

Restoration methodology/scientific techniques to be used.

Invasive species will be treated using the following herbicide formulations.

- a. Woody trees and shrubs will be cut and immediately painted with ~ 50% Glyphosate – 50% water with a small amount of Terramark dye.
- b. Herbaceous plants will receive a foliar treatment consisting of 4 oz Glyphosate, 2oz blue dye, and 2oz surfactant per gallon.
- c. Wild Taro (*Colocasia esculenta*) treatment will consist of a foliar application of 0.5%Weedar 64, 0.5% Rodeo, 0.5% - 1.0% Kammo D-limonene and 1.0% silicone surfactant.

Monitoring as described in section 7.

Nutrient analysis per Standard Methods.

Measures of success.

- a. 100% removal of unnecessary manmade aquatic structures (approximately 180 square meters)
- b. 90% reduction in amount of targeted invasive species (*Sapium sebiferum*, *Colocasia esculenta*, *Ligustrum sp.*)
- c. 75% reduction of unnecessary impervious surface area.
- d. Accruement of 400 volunteer hours spent working on the restoration project
- e. Creation of a long term restoration management plan for the Safe Harbor Tract via the formation of a small workgroup of experts.
- f. Acquiring baseline flora survey data and successfully monitoring project.

Monitoring plan

Incorporating information from *Science-Based Restoration Monitoring of Coastal Habitats* the following parameters will be monitored

- d. Variability in marsh water level via deployment of three Solinst Levelloggers. (Responsibility of Eric Brunden, Weeks Bay NERR).
 - e. Nutrient availability to marsh vegetation via monthly well sampling and analysis of POx and NOx. (Responsibility of Eric Brunden, Weeks Bay NERR).
 - a. Flora species richness, diversity, density and percent cover in marsh and upland habitat. (Responsibility of Southeastern Biological Inventories.)
- Habitat change analysis: if historic aerial photos of adequate resolution can be obtained a habitat change analysis using Geographic Information System techniques will be conducted by staff of the Weeks Bay NERR.
 - Marsh Bird Survey: volunteers and staff of the Weeks Bay NERR conducted marsh bird surveys that incorporated the restoration area in 2006 and 2007. The seasonal survey is slated to continue into the future.

Community involvement

There are three avenues towards involving community members with the Safe Harbor restoration project. The Weeks Bay Volunteer Association has agreed to assist with the project via providing labor and limited funding. Margaret Sedlecky of the Baldwin County Board of Education has agreed to contribute her time towards the restoration project. Mrs. Sedlecky will familiarize local high school teachers with the project and guide their high school students in propagating and transplanting appropriate aquatic native species. Eric Brunden, Walter Earnest and Maureen Nation will solicit civic groups to assist with attaining project goals. Groups that have helped with past projects include scout troops, Rotary members, church groups, university based organizations, and high school ecology clubs.

April – June 2009: Final analysis of restoration actions. This activity needs to occur during the growing season to evaluate exotic invasive treatment efficacy and success rate of native flora reestablishment.