



**FY 2011 Comprehensive Annual Work
Plan Projects**

**Recommended by
CBBEP Coordination Team**

and

CBBEP Bays Council

August, 2010

Project # 1101 Protecting Important Shorebird Habitat Using Piping Plovers as an Indicator Species

Performing Organization: CBBEP
Total Project Funding: \$95,000

CBBEP Bays Plan Action Items: HLR-1, HLR-4

Background:

The Texas coast hosts many thousands of migrating and wintering shorebirds each year. Certain sites along the Texas coast are internationally recognized as important shorebird habitats because these areas support huge concentrations of a variety of shorebird species. Levels of threats to these sites vary among different bay systems, but in almost all cases the intertidal areas required by these species are threatened by rising sea levels and in many areas these habitats are also exposed to increasing degradation from certain management practices and/or increasing levels of human use. Research on piping plovers, a federally listed threatened species, has shown that this species uses a mosaic of habitats during winter, moving from Gulf beach to bay shorelines to seasonally emergent habitats further out in the bay. These movements coincide with changes in lunar tidal regimes and are also due to the effects of wind-driven water across intertidal zones. There is some potential for an ecological “bottleneck” on the Gulf beach when wind-driven tides and/or water levels cause plovers to converge on beach habitats for foraging. When this coincides with beach recreation and development, adequate beach habitat may be a limiting factor for piping plovers, and therefore other shorebirds, in Texas.

To develop protection strategies and management recommendations that will effectively preserve continuing shorebird use of each bay system, it is important to identify all the “pieces of the puzzle” (all the habitats in the mosaic), especially in those bay systems that are seeing the greatest pressure from recreational use and development.

Project Objectives:

- 1) For two study areas (southern Mustang Island/northern North Padre Island and Galveston Bay/Bolivar Flats), determine piping movement and habitat use among beach and bayside habitats.
- 2) Evaluate habitat characteristics at sites used by shorebirds.
- 3) Assist with the USFWS 2011 International Wintering Piping Plover census in the Texas Coastal Bend
- 4) Compile baseline data on piping plover numbers in areas where development has occurred.
- 5) Develop a GIS product for use in developing management strategies.

Project # 1102 Coastal Waterbird Management

Performing Organization: CBBEP
Total Project Funding: \$175,000
CBBEP Bays Plan Action Items: HLR-1, HLR-4

Background:

The Living Resources Characterization Report prepared for the Estuary Program documented the declining populations of certain colonial waterbird populations. Some species of colonial waterbird have experienced a 90% reduction in breeding pairs since the 1960's. Colonial waterbird populations are indicators of the overall health of the estuary. Bird watching, especially viewing colonial waterbirds, is an important and growing component of ecotourism and the local economy.

Building on the efforts of the CBBEP Colonial Waterbird projects in previous years, this project will continue the implementation of specific management actions of the *CBBEP Colonial Waterbird Rookery Island Management Plan*. Management actions will include efforts to reduce human-disturbance, nesting substrate management, vegetation management to enhance rookery island habitat, and predator control where necessary. Outreach will continue to be a crucial component in achieving project objectives.

Project Objectives:

- 1) Continue efforts towards the enhancement and construction of nesting habitat.
- 2) Continue to promote public programs to protect colonial waterbirds.
- 3) Assist in efforts to note fluctuations of colonial Waterbird populations for management purposes.
- 4) Install signage to reduce impacts of human disturbance on waterbird colonies.
- 5) Implement predator control efforts.

Project 1103 Coastal Bend Environmental Science: Learning on the Edge

Performing Organization: CBBEP
Total Project Funding: \$141,000
CBBEP Bays Plan Actions: PEO 3, PEO 5

Background:

Learning on the Edge began as a partnership that focuses on equipping teachers with the skills, curriculum, support and materials to strengthen science teaching as it relates to the environmental treasures of Texas Coastal Bend. The Coastal Bend Bays & Estuaries Program partners with the already successful educational programs. By combining all of these resources into one program, *Learning on the Edge* seeks to provide teachers the tools needed to successfully teach science and promote student awareness of local ecology and environmental issues affecting the bays and estuaries.

Project Objective:

The Coastal Bend Bays & Estuaries Environmental Educator will provide field trip opportunities for teachers and students to visit the Nueces Delta Preserve. The co-curricular trip is to be organized by the teacher, with assistance from the Environmental Educator, to create an educational TEKS-aligned agenda for outdoor education. This program sees over 4000 students a year.

The Coastal Bend Bays & Estuaries Environmental Educator will facilitate three summer workshops designed for teachers to address local environmental science topics. Participants will enhance their science knowledge through direct instruction, hands-on learning, field excursions, and TEKS-aligned lesson presentations. As a State Board for Educator Certification (SBEC) continuing professional education (CPE) provider, teachers will receive CPE credits as well as Texas Environmental Education Advisory Committee (TEEAC) credits.

Specific Tasks and Deliverables:

Coastal Bend Bays & Estuaries Program partners will facilitate and perform a portion of teaching during the week long teacher academy. The teachers will receive all information provided by these partners, a curricula guide from the Coastal Bend Bays & Estuaries Program, and Equipment for the classroom. The workshops will be small scale educational seminars with equipment provided. The Coastal Bend Bays & Estuaries Program will provide fieldtrips for classrooms to come to the Nueces Delta Preserve.

Timeline:

The *Learning on the Edge* Fieldtrips and Workshops will be scheduled and held August through July. Planning and Implementation by the Coastal Bend Bays & Estuaries Program Environmental Educator will take the full year.

Project # 1104 CBBEP Habitat Protection Media Campaign

Performing Organization: CBBEP
Total Project Funding: \$35,000
CBBEP Bays Plan Actions: BTR: 1, PEO 2, PEO 3 and PEO 5

Background:

Public outreach continues to be a key element of the CBBEP to educate Coastal Bend residents about the importance of bays and estuaries to their communities. The CBBEP will utilize local and regional media, which includes television, radio, print, and websites, to implement the goals of the CBBEP Public Outreach Strategy. The priority issues for this media campaign as identified in the Coastal Bend Bays Plan are: altered freshwater inflow into bays and estuaries; non-point source pollution; loss of wetlands and estuarine habitats; degradation of water quality; condition of living resources; altered estuarine circulation; public health issues.

Some or all of the priority issues listed above will be considered for public outreach through the media.

Project Objective:

The goal is to use the media to provide the public with the environmental science knowledge to make sound decisions regarding the effective management of bay resources and to promote environmental stewardship through increasing awareness of the resources and the issues regarding their use.

Project # 1105 Water Quality Status and Trends in the CBBEP Area - Phase I: Data Archiving and Publishing

Performing Organization: **Harte Research Institute**
Total Project Funding: **\$50,000**
CBBEP Bays Plan Actions: **WSQ-3, WSQ-4, WSQ-5**

Background:

The purpose of this project is to develop a modern data archiving and delivery system of existing data in the CBBEP area by placing existing status and trends data in a modern data base, updating the existing status and trends data base, and constructing web services to make the data available. See attached appendix for specific data to be gathered and analyzed. The overall end product of this project after both phases are completed will be an interactive web based data management system, identification of areas with parameters that are trending higher or exceeding standards, and list of management recommendations developed from linking major water quality concerns in the Coastal Bend to specific parameters being analyzed, such as hypoxia, TMDL's, and bacteria.

The original status and trends report for the Corpus Christi Bay area was completed more than 10 years ago (Ward and Armstrong 1997), and included analyses of data through December 1994. A status and trends project is actually two projects: one to assemble and organize the data base, and one to perform analyses and write the report. This kind of project can require multiple years of effort, and each time the data base has to be re-invented unless permanent data archives exist. In fact, the original report made four data management and eight data archiving recommendations regarding this that have yet to be implemented. Much change has occurred since 1997 in the world of data management, especially with respect to developing access to data over the internet using web services. Therefore, scientists are currently in a position to finally address the data management recommendations made in the 1997 report.

Recently the entire Rincon Bayou and Corpus Christi Bay hypoxia data bases have been archived using a data base technology called the CUAHSI Observations Data Model (ODM for short), and made available over the web by creating CUAHSI Web Services. A similar approach will be used in this project. Follow this link to the recently completed ODM:

<http://ccbay.tamucc.edu/dash/>

This project is an outgrowth of existing projects and builds on previous CBBEP projects. The ODM, programming, and web-server infrastructure are paid for by existing multi-million dollar National Science Foundation projects to electronically publish water data.

PHASE I (FY2011) \$50K

- 1) Put the existing status and trends data in a modern data base.
- 2) Update the existing status and trends data base.
- 3) Enhance existing web services to make the new data available.
- 4) Put all data collected at end of Phase I on a hard drive.

Project Objective for Phase 1:

Enhance the modern data archiving and delivery system of existing data in the CBBEP area.

Project # 1106 Nueces Delta Environmental Monitoring Project

Performing Organization: **Conrad Blucher Institute**
Total Project Funding: **\$40,000**
CBBEP Bays Plan Actions: **FW-1, FW-2, FW-3, FW-4**

Background:

The purpose of this project is to maintain 6 environmental monitoring stations in the Nueces Delta and Bay that are key instruments in various ongoing projects with CBBEP, City of Corpus Christi, Harte Research Institute, Center for Coastal Studies, United States Geological Survey (USGS), and Conrad Blucher Institute (CBI). CBI has installed and currently maintains 6 environmental monitoring stations in the Nueces Delta and Bay. Four stations measure salinity and water temperature, one station is a meteorological monitoring site, and one is a tide gauge equipped with meteorological instruments.

Three of the salinity stations (Nude01, Nude02, Nude03) were established in 2008 along the Rincon Bayou in the Nueces Delta and are currently sponsored by the CBBEP until August 2010. The other salinity station (Salt08) was established for the City of Corpus Christi in 1999, and support ended for this station in 2008. These 4 stations are currently being used to observe the effects of the freshwater passthru into the Rincon Bayou.

The installation and first years' maintenance of the Nueces Delta Meteorological station (NUDEWX) was sponsored by the Fort Worth District Army Corps of Engineers and was established in 2008. There is currently no support for this station, but is utilized by several research entities and CBBEP for localized rainfall and wind data along the Rincon Bayou.

The Nueces Bay Tide Station (NUEBAY) platform installation was sponsored by the CBBEP, and was installed in 2009. There is currently no support for maintenance and operation of the tide gage. This tide gage is instrumental in data collection projects in and around the Nueces Delta, especially in collecting topographic, bathymetric, and sea level rise data.

Project Objective:

Maintain six real time water quality and meteorological monitoring stations in the Nueces Delta and Bay.

Project # 1107 Nueces Bay Rookery Island Habitat Enhancement

Performing Organization: **To Be Determined**
Total Project Funding: **\$85,000**
CBBEP Bays Plan Action Items: **HLR-2, HLR-4**

Background:

Most Colonial nesting waterbird populations have declined over the past 40 years, according to data from the Texas Colonial Waterbird Survey. The reasons for the decline include mammalian predators, imported red fire ants, human disturbance of nesting sites, loss of coastal wetlands, and the direct loss of nesting habitat to erosion and sea level rise.

In 2001 CBBEP constructed New Island in Nueces Bay to help address the loss of nesting habitat. As part of that project, five other remnant islands were protected with geotextile tubes to prevent further erosion. The geotextile tubes were placed to allow for the addition of fill material that would increase nesting area (but due to financial constraints, the placement of fill has not occurred).

This project will restore three of the five islands, adding a total of approximately 1 acre of new nesting area, by placing approximately 4,800 cubic yards of material between the islands' current shorelines and existing geotextile tubes. The new material will provide habitat for bare-ground nesters, such as a black skimmers and gull-billed terns.

Project Objectives:

- 1) Enlarge three rookery islands in Nueces Bay by placing material between the island's current shorelines and existing geotextile tubes.

Project # 1108 Suter Wildlife Refuge Public Access Enhancements

Performing Organization: **Corpus Christi CVB/City of Corpus Christi**
Total Project Funding: **\$20,000**
CBBEP Bays Plan Actions: **HLR-2, PEO-3, BTR-2**

Background:

To protect and improve sensitive habitat for resident and migratory bird species in Hans & Pat Suter Wildlife Refuge located on Ennis Joslin at Nile. Enhancements include installation of irrigation system in the bird and butterfly garden, removal of invasive plants, installation of updated interpretive signage, additional signage, security cameras, **and a shade structure at the end of the boardwalk**. The project includes improving prime native habitat with the concentration of removing invasive species primarily guinea grass and the Brazillian Pepper Trees along the channel.

Park maintaince is provided by the City Parks Department, Friends of the Park, and a volunteer group of Citgo Refinery employees. Local Audubon clubs record bird sightings and document regular bird counts. Increased security and usage of the park will also be factors pointing to the success of these efforts. The desired outcome will be a healthy and balanced habitat for dependent bird species and an educational wild bird viewing area for visiting nature enthusiasts which fosters appreciation for the environment.

Park Description:

The 22-acre Suter Wildlife Refuge provides a home for many migrating birds along the banks of Oso Bay. The park boasts an impressive birding and butterfly checklist which attracts visitors and locals alike. The refuge is known for the waterfowl and shorebirds that frequent the Oso and channel outlet.

The park has an 800-foot boardwalk designed for birding which stretches across marshes (created by fresh water inflow from a wastewater treatment plant), tidal pools, and into Oso Bay. By removing invasive species, repairing broken boards, and improving the signage in the park, nature enthusiasts will have a better understanding and appreciation for the protection of native wildlife and habitat.

The park signage is worn and outdated and in some cases missing and incorrect. The Corpus Christi CVB is committed to improving and enhancing the park to showcase its natural beauty through a community wide education campaign. The park serves as one of the primary nature refuges in the Corpus Christi area for migratory birds and butterflies.

Objective:

1. Construct a shade structure on the end of an existing pier.
 - a. Engineer required to make sure structure is compliant with wind code
 - b. The shade structure is primarily being requested to provide shade to educational groups and visitors.

Project #1109 San Antonio Bay Partnership Wetlands Assessment

Performing Organization: **CBBEP and San Antonio Bay Partnership**
Total Project Funding: **\$15,000**
Section 104(b)3 Funding: **\$15,000**
CBBEP Bays Plan Actions: **HLR-2, PEO-3, BTR-2**
OMB PART:

Objectives:

Experience in the development of the Coastal Bend Bays and Estuaries Program indicates the value of implementing "pilot projects" early in the process as a means of building stakeholder support and involvement. In the San Antonio Bay System, projects aimed at wetlands protection, restoration and enhancement to protect/expand Whooping Crane habitat would provide an early focal point and a means to encourage stakeholders through the tedious process of compiling scientific and technical information, identifying priority issues and producing a management plan.

It is proposed that an inventory be developed of potential wetlands projects in order to provide a means of guiding investments (as funding may be available in the future from various sources, including Supplemental Environmental Projects (SEPs) associated with environmental enforcement actions) in wetlands protection, restoration, and enhancement projects within the San Antonio Bay System.

Need:

The San Antonio Bay System, located at the terminus of the San Antonio River and the Guadalupe River watershed (approx. 53,100 km²), is one of the seven major estuaries along the Texas coast. This large (531 km²) estuarine complex is extremely unique in that wetlands associated with large portions of the surrounding shoreline provide critical habitat for the last wild flock of the endangered Whooping Crane (*Grus americana*). The protection, restoration and enhancement of wetlands within the San Antonio Bay System has assumed a high priority as factors such as diminished freshwater inflow and hydraulic modifications within wetland areas have affected habitat quality within the historic wintering grounds for this iconic bird species. San Antonio Bay also supports important commercial (oysters and shrimp) and recreational fisheries, which depend on surrounding wetlands for maintaining water quality and providing nursery grounds for fish and shellfish.

Project Deliverable Description:

The deliverable for this project will be a summary report documenting a prioritized inventory/list of wetland sites that have been identified as in need of protection/restoration, including a brief description of proposed protection/restoration activities and associated planning level cost estimates.

Project Outcomes:

The outcome of this project will be to prioritize the wetland sites identified for implementation of the proposed activities as additional funding may become available.

Project Deliverables/Schedule:

Quarterly Progress Reports quarterly
Draft Summary Report 7/30/11
Final Summary Report 8/31/11

Project Budget:

EPA FY'11 Funds	\$15,000
Other Funding	\$ 0
TOTAL	\$15,000

Project # 1110 Hydrodynamic Model for the Nueces Delta – Phase 2

Performing Organization: **University of Texas**
Total Project Funding: **\$141,571**
CBBEP Bays Plan Actions: **FW-1, FW-2, FW-3, FW-4**

Background:

The purpose of this project is to (1) conduct field research to establish how the principal ecological communities in the Nueces Delta respond to water flow, elevation and salinity, and to establish an empirical basis for predicting ecological responses to upstream changes in water supply, local diversion efforts and/or restoration interventions; and (2) develop a hydrodynamic model necessary to understand the transport of water through the Nueces River Delta located near Corpus Christi, Texas.

This project is part of the U.S. Army Corps of Engineers (USACE) catchment-to-estuary restoration efforts for the Nueces River and its tributaries. The focus on the present project is in the field research to establish how the principal ecological communities in the Nueces Delta respond to water flow, elevation (i.e., inundation) and salinity, and to establish an empirical basis for predicting ecological responses to upstream changes in water supply, local diversion efforts and/or restoration interventions.

Phase 1 of this two phased project consisted of developing a preliminary hydrodynamic model and beginning field research in the Nueces Delta. This work is closely coordinated with a separate project by the Harte Research Institute for the Gulf of Mexico Studies to develop an ecological model of the vegetation community responses to changes in the physical regime.

Project Objective:

The objectives of this project are to

- 1) Perform field work to estimate the distribution of vegetation assemblages in the Rincon Delta by species, cover, and biomass;
- 2) Perform field experiments to determine the response of the predominant species assemblages to pore-water salinity and nutrient inputs;
- 3) Quantify gross photosynthesis, and its seasonal and geographical variation in predominant species.
- 4) Develop computational models of key physical fluxes through the Delta (water levels, salt and temperature).
- 5) Conduct the data
- 6) collation, collection and analysis necessary to build these foundational models.

Project # 1111 Corpus Christi Bay Bacteria Assessment

Performing Organization: **To be determined**
Total Project Funding: **\$50,000**
CBBEP Bays Plan Actions: **FW-1, FW-3, FW-5, PH-1**

Background:

The purpose of this project is to identify sources of bacterial contamination at beaches on the state's impairment list in an attempt to characterize fecal sources that are posing a human health risk and to provide a basis for making management decisions. This project may look at performing bacteria source tracking (BST) techniques to identify specific species origin, and may collect data on possible sanitary sewer overflows (SSO) or other actions.

The determination of sources of contamination in recreational waters is key in efforts to remediate impaired waters. While the Texas Beach Watch Program (TBWP) monitors recreational beach water quality using *Enterococcus* as an indicator of fecal contamination, source identification is currently not a component of the program. Two beach parks along Corpus Christi Bay, Cole and Ropes Parks, which are monitored as part of the program have been identified as impaired and included on the Texas 2008 303 (d) list category 5c.

CBBEP is currently (FY2010 Work Plan) implementing a project tracking sources of contamination at these sites, detection of several molecular markers of human contamination by PCR assays is being used to assess human contamination. However, while presence of these markers will confirm human/sewage sources it will not provide information critical for remediation efforts on other contamination sources that may be contributing to the impairment, it will not identify issues with SSO, or quantify relative proportions of sources of contamination.

Texas Commission on Environmental Quality and the City of Corpus Christi will be involved in developing and implementing an overall project. The information from the study will be used to aid in identifying the causes contributing to poor water quality at these sites and provide a basis for decisions on effective remediation efforts.

Project Objectives:

- 1) To conduct a study to identify possible sources of fecal contamination contributing to elevated levels of fecal bacteria at Cole and Ropes Parks.
- 2) Support TCEQ's initial study of the impairment and assist in potential future TMDL development and provide a basis for appropriate remediation efforts to restore the bay sites to meet water quality standard(s).

Project 1112 Partnering for Teacher Workshops

Performing Organization: CBBEP
Total Project Funding: \$10,000
CBBEP Bays Plan Actions: PEO 3, PEO 5

Background:

Learning on the Edge is an exceptional partnership that focuses on equipping teachers with the skills, curriculum, support and materials to strengthen science teaching as it relates to the environmental treasures of Texas Coastal Bend. The Coastal Bend Bays & Estuaries Program Educator has noticed that some teachers would like continuing education in Environmental Science. Partnering throughout the year would allow quarterly workshops to introduce environmental issues to teachers who may not be able to spend a full week in the summer at a workshop. It will also allow those teachers who may need more instruction in a specific area of science to continue their education.

Objective:

The Coastal Bend Bays & Estuaries Environmental Educator will facilitate quarterly workshops designed for teachers (grades 3-8) to address local environmental science topics by collaborating with well-regarded science education programs of the Coastal Bend. Participants will enhance their science knowledge through direct instruction, hands-on learning, field excursions, and TEKS-aligned lesson presentations. As a State Board for Educator Certification (SBEC) continuing professional education (CPE) provider, teachers will receive 2-4 hours of CPE credits.

In addition to continuing education, this project will address the gap that exists between teachers learning about environmental science and the delivery and implementation of environmental science in the classroom. The purpose is to help teachers recognize their strengths and weaknesses in science, while allowing the Environmental Educator to assist with requested help from the teacher.

Specific Tasks and Deliverables:

Coastal Bend Bays & Estuaries Program partners will perform a portion of teaching during the teacher workshop. The teachers will receive a copy of classroom activities from the Coastal Bend Bays & Estuaries Program, and Equipment for the classroom. The workshops will be small scale educational seminars with equipment provided.

Timeline:

The *Learning on the Edge* Workshops will be held the quarterly throughout the year. Planning and Implementation by the Coastal Bend Bays & Estuaries Program Environmental Educator will take the full year.

Project # 1113 Field Trip Funding for the Delta Preserve

Performing Organization: CBBEP
Total Project Funding: \$15,000
CBBEP Bays Plan Actions: PEO 3, PEO 5

Background:

Classroom teachers today face an almost overwhelming challenge of helping students progress through the required subject material. Many of the students that are being exposed to scientific concepts for the first time have never really spent much time outdoors or in dedicated environmental education facilities. There is a need to bring classroom concepts alive in the proper setting through field trips.

The Coastal Bend Bays & Estuaries Program will conduct environmental education leaning experiences for students and their teachers. The funding is intended to support the education trip in its entirety, including associated educational materials, and the necessary and reasonable costs associated with transporting the teacher and students from the school to the destination.

Project Objective:

Getting students out of the classroom and into the outdoors adds greatly to the students understanding of natural processes. The goal is to plant seeds of appreciation and passion for a new generation of naturalists, biologists, and nature lovers to protect and preserve the Coastal Bend through educating school children about preserving our environment and protecting our animals and plant life.

Specific Tasks and Deliverables:

Coastal Bend Bays & Estuaries Program Educator and her partners will organize and conduct fieldtrips for students throughout the Coastal Bend.

Timeline:

The *fieldtrips* will take place throughout the school year. Planning and Implementation by the Coastal Bend Bays & Estuaries Program Environmental Educator will take the full year.

Project # 1114 Coastal Bend Wetland Conservation Initiative (Acquisition)

Performing Organization: CBBEP
Total Project Funding: \$1,500,000
(\$0 CBBEP + \$1,500,000 TGLO-CIAP)
CBBEP Bays Plan Action Items: HLR-1

Background:

This initiative is a multi-phased project that includes the acquisition, restoration, and long-term management of habitat within the Nueces Delta and other priority areas. This phase (Phase 2) of the project will be to continue acquiring valuable, functioning habitat within the Nueces River Delta for conservation purposes, focusing on the largest parcels of land that are key pieces to wetland protection. CBBEP is specifically targeting one owner of approximately 5,000 acres that will connect scattered tracts of essential habitat types that are already owned and protected. Additional owners have been identified in this area, including some remaining tracts along the Nueces River and Nueces Bay. Other priority areas include tracts in San Patricio County along Copano/Port/St. Charles Bays and on Live Oak Peninsula.

CBBEP ownership will ensure that both habitat protection and water quality functions will continue without fear of potential development.

Also integral to the success of this project is the establishment of a long-term operation and management fund.

Project Objectives:

- 1) Conduct preparation and negotiation activities that are necessary for the acquisition of property within the Nueces River Delta (or other identified priority areas). These activities include (but may not be limited to) title searches, conducting boundary surveys, appraisals, and contracting.
- 2) Complete the acquisition of property within the Nueces River Delta (or other identified priority areas), utilizing the services of a licensed Title Company.

Project # 1119 Coastal Bend Rookery Island Site Selection

Performing Organization: CBBEP
Total Project Funding: \$15,000
CBBEP Bays Plan Action Items: HLR-2, HLR-4

Background:

Most Colonial nesting waterbird populations have declined over the past 40 years, according to data from the Texas Colonial Waterbird Survey. The reasons for the decline include mammalian predators, imported red fire ants, human disturbance of nesting sites, loss of coastal wetlands, and the direct loss of nesting habitat to erosion and sea level rise.

Preliminary assessments by CBBEP waterbird staff and other technical experts using the Texas Colonial Waterbird Survey indicate a need for protected nesting islands in San Antonio Bay and the Upper Laguna Madre. For a number of reasons, a small island positioned in a bay that has intact foraging and roosting sites is likely to be more productive than a larger island located near degraded or developed shorelines.

This project will form an advisory team to aid in the identification of island creation projects, conduct preliminary field work and feasibility analysis studies, and make specific recommendations for the restoration/creation of 1 or 2 new rookery islands.

Project Objectives:

- 1) Conduct preliminary field work and feasibility analysis studies to determine the appropriate size and location for island restoration/creation projects.
- 2) Make recommendations for the restoration/creation of one or two new rookery islands.

Project # 1120 CBBEP/CBBF Community Outreach Partnership

Performing Organization: Coastal Bend Bays Foundation
Total Project Funding: \$50,000

CBBEP Bays Plan Actions: PEO 1, 2, 3,4 and 5

Background:

The CBBEP is constantly working to promote public/private partnerships as stated in the Coastal Bend Bays Plan to help achieve its educational goals. One of the benefits of the partnership between the CBBEP and the Coastal Bend Bays Foundation is addressing the need for continued dialogue between competing user groups and the need for an engaging public forum to allow for individual input in the public policy debate. The Bays Plan calls for continued involvement from CBBF, as the region prepares itself for ever-increasing number of people wanting to make use of the bays and estuaries. Minimizing conflict through informed discussion will help achieve the overall objective of ensuring the public's safety, health and enjoyment of our bays and estuaries.

The CBBEP will work closely with the CBBF on the project objectives outlined below but will not be limited to only those listed. The environmental education and outreach activities will include: monthly Coastal Issues Forums; bay-resource or related workshops; the Adopt-a-Beach program, continuation of the Earth Day celebration held in April; and the coordination of the annual CBBF Conservation and Environmental Stewardship Awards. The CBBEP will be acknowledged as one of the major funding partners at the various events and activities.

CBBEP is the most important funding partner for CBBF programs. The CBBF is a public interest organization (non-profit 501 (c) (3) dedicated to the conservation of freshwater and coastal natural resources through communication, advocacy, research and education.

Project Objective:

Host, organize and coordinate turnkey operation of Earth Day festival.

Host, organize and coordinate turnkey operation of Adventure Day at Bayfest.

Host, organize and coordinate CBBF Conservation and Environmental Stewardship Annual Awards Banquet.

Conduct monthly Coastal Issues Forums to increase communications between resource managers, users and general public.

Organize and coordinate Adopt-a-Beach cleanups.

Organize and coordinate bay-resource/related workshops with CBBEP's approval.

Continue to seek matching funds.

Project # 1121 CBBEP Public Outreach Events and Activities

Performing Organization: **CBBEP**
Total Project Funding: **\$30,000**

CBBEP Bays Plan Actions: **PEO 1, 2, 3, 4 and 5 and BTR 1**

Background:

One of the most important goals of the Bays Plan is to educate citizens about the ecology of the bay system, its many environmental and economic values, and how an individual can make a positive difference to ensure its long-term health. To accomplish this, the Public Education and Outreach Action Plan is designed to raise the public's environmental awareness, foster community stewardship of bay resources; and increase individual involvement in bay resource management issues.

Helping residents and visitors understand the complex issues concerning bay resource management will be a priority. In addition to understanding how the bay system functions, it is important that citizens develop a sound appreciation for the significant value and economic impact derived from the renewable resources of the bays. As a result of the need for the public outreach events and activities, the CBBEP will participate in the following:

Community events and festivals

CBBEP educational materials

CBBEP web site

CBBEP e-newsletter

Other outreach opportunities

National Ocean Science Bowl

Project Objective:

To provide the general public with the environmental science knowledge to make sound decisions regarding the effective management of bay resources and to promote environmental stewardship through increasing awareness.

Project # 1122 CC Beach North Jetty Kayak Launch Site Improvements

Performing Organization: City of Corpus Christi, CBBEP
Total Project Funding: \$12,600

CBBEP Bays Plan Actions: BTR-1, BTR-2, SM-2

Background:

The City of Corpus Christi is proposing to install an ADA compliant/wheelchair accessible kayak launch north of the jetty at Corpus Christi Beach. This project is part of an overall effort by the City to remove barriers to beach access for people with disabilities, increase public recreational opportunities near and in coastal waters, and promote environmental awareness about coastal natural resources.

Providing beach access for people with disabilities is complicated due to the dynamic nature of coastal shores. Corpus Christi Beach, an urban waterfront within Corpus Christi Bay, provides the perfect location for the ADA compliant/wheelchair accessible kayak launch. There are no other kayak launches in the area (the nearest one located at Lighthouse Lake).

Kayakers and canoeists use the area north of the Corpus Christi Beach Jetty as an unimproved launch site to access Nueces Bay. While the jetty minimizes wave energy making the area suitable for launching, the area also contains rock groins that present a public safety issue. An improved kayak launch designed to protect kayakers will make Corpus Christi Beach a destination location for paddlers and significantly increase public access to Nueces Bay.

As part of the installation, the city will install two educational signs that will (1) encourage paddlers to remove floatable trash from the water when they encounter it, and (2) interpret native landscaping that will be placed near the kayak launch. The City will host an annual trash removal event at the site to encourage paddlers to remove debris from the bay that is not accessible from the shoreline. The installation site of a kayak will be close to existing ADA accessible bathrooms and parking. Funding provided by CBBEP will be used as a match for a GLO grant that the City has received for this project.

Objectives:

- 1) Provide beach access for people with disabilities.
- 2) Increase public recreational opportunities near and in coastal waters.
- 3) Promote environmental awareness about coastal natural resources.

Project # 1123 East Flats Nature Preserve and Park

Performing Organization: Nueces County & CBBEP
Total Project Funding: \$10,000

CBBEP Bays Plan Actions: BTR-1, BTR-2, HLR-1

Background:

The Redfish Bay Causeway and adjoining Redfish Bay marine resources and seagrass meadows are a priority coastal natural resource and priority recreational resource of statewide importance. The CBBEP has funded prior Shoreline Management land use planning as well as the nearby Lighthouse Lakes Park. In addition, the public and resource agencies have also identified this area for compatible public access and resource protection. The Redfish Bay Causeway and easy access to production shallow water seagrass conservation arena is increasingly used by the public and under increasing pressure to protect. Nueces County has met with the City of Aransas Pass regarding future Nueces County Park and facility plans along Redfish Bay Causeway. Nueces County is interested in improving public park facilities along Redfish Bay Causeway. The entire area south of Highway 361 between Morris and Cummings Cut and Bridge No. 7 (near Lighthouse Lakes Park) is Texas Department of Transportation (TxDOT) right-of-way including what is considered wetlands, sand flats, submerged land and Sailboat Cut. The lands typically considered state-owned submerged land was deeded by TxGLO to TxDOT in the 1950's. As a result the plans for an East Flats Preserve and Park would be located on TxDOT-ROW and would involve an agreement between TxDOT and Nueces County. Projects within wetlands and submerged land are regulated by the USACE (requiring USACE permits). However, a TxGLO Coastal Lease would not be required within this TxDOT-ROW.

The park concept has been coordinated with TxDOT and the road access improvements can be approved at the local level. The future park expansion facilities such as bollards and picnic tables will require further TxDOT coordination and approvals. The future park will also require USACE – Nationwide Permits which are “permissible” and similar to those already permitted at the Lighthouse Lakes Park. The proposed project will provide the following benefits:

Project Description

Use CBBEP dedicated funds to continue to work with project partners toward the development of improved access points along the Redfish Bay Causeway.

Project # 1124 Live Oak Nature and Education Trail Improvements

Performing Organization: **Aransas County**
Total Project Funding: **\$58,800**

CBBEP Bays Plan Actions: **BTR-1, BTR-2, HLR-1, WSQ-1, PEO-3**

Purpose:

To provide coastal natural resource protection and enhancement through public access and awareness of protecting Live Oak Woodlands

Partnerships:

Aransas County Independent School District (ACISD), TCEQ Non-Point Source Program, Aransas First, Aransas County Stormwater Management Committee (Cities of Rockport, Fulton, Aransas Pass and Aransas County Navigation District)

Background:

Aransas County and the ACISD have recently established a partnership regarding a 13.4-acre tract of undisturbed native live oak woodlands located within the ecologically important Live Oak Peninsula of Aransas County. This important habitat is recognized as a unique coastal natural resource area and is owned by the ACISD.

This woodland area is to be preserved as protected habitat and is also to be used for education and public access. The woodlands are located in Rockport, Texas and are adjacent to the Tule Ditch/Tule Creek Watershed which is a riparian drainage-way that ultimately discharges to Little Bay and then to Aransas Bay. The ACISD is interested in utilizing the woodlands as an educational tool and nature awareness/interpretation opportunity where field trips and outdoor nature classrooms can be performed in combination with ACISD elementary, junior high, and high school science curricula.

The proposed Live Oak Nature and Education Trail was developed in response to the combined interests between Aransas County and the ACISD. The CBBEP project funding and sponsorship by Aransas County will establish an opportunity to help the ACISD develop the necessary facilities to allow for low impact access with an ADA accessible path, and observation decks/kiosks for nature awareness and education.

The location of the Live Oak Nature and Education Trail is across from the Rockport Aquatic Center and Skate Park and nearby ACISD schools and offices. In addition, the City plans a hike and bike trail along Tule Ditch and the Tule Woodlands and a planned bridge for the hike-bike trail is concurrently located between the proposed Live Oak Nature and Education Trail and the City Park providing easy access by students, teachers, and the public.

The proposed project will incorporate facilities for nature awareness, education, and passive

recreation, such as birding, photography, nature interpretation. Centrally located in Rockport and Fulton, the woodlands will be a convenient “living laboratory” for educating, teaching, training, communicating, and imparting knowledge and ideas about the natural resources and how to protect these resources through greenspace protection compatible with stormwater management practices that provide habitat and water quality benefits. The ACISD will maintain and operate the facilities with a focus on student education, as well as allowing public access.

Project Description:

The public access and awareness/education facilities funded by the proposed CBBEP project include the following:

- A 900-foot long crushed limestone trail that will wind through the woodlands with access near the riparian corridor located at Tule Ditch/Tule Creek
- Two (2) covered timber observation kiosks that will overlook the Live Oak woodlands protected habitat areas
- Three (3) interpretive areas (timber observation blinds with interpretive signage) that will be established to demonstrate awareness of protecting woodlands as a natural stormwater management practice, and also to demonstrate the benefits of both woodlands and living shorelines as a stormwater best management practices. The interpretive areas will be situated in three different areas to demonstrate one, the live oak woodlands terrestrial habitat, two, the riparian stream and living shoreline habitat, and three, the freshwater bird ponds and stormwater management area.
- Signage at the interpretive areas educating the students and the public regarding habitat and greenspace protection, stream bank/living shorelines as stormwater BMP’s that provide habitat and water quality benefits.

Project # 1125 Joe Fulton Trade Corridor Public Access Improvements

Performing Organization: CBBEP, Port of Corpus Christi Authority
Total Project Funding: \$35,000

CBBEP Bays Plan Actions: BTR-2, PEO-3

Background:

The opening of the Joe Fulton Trade Corridor gave the public access to a portion of the lower Nueces River and to Nueces Bay that had previously only been accessible by boat. With the growing popularity of fishing in the access areas provided by the Port a need for improved public access points was created. The public access areas are in need of delineated boundaries and an improved parking surface. A bollard and cable system will keep vehicles in the parking area while continuing to allow pedestrian access to the bay for fishing or launching a non motorized water craft. The establishment of this area will help control erosion caused by vehicles driving over vegetation.

The Port of Corpus Christi has security and safety concerns about vehicles pulling off the edge of the Joe Fulton Trade Corridor in restricted areas. The creation of an improved park area would help direct recreation seekers to use the provided area instead trespassing across restricted property.

Objectives:

- Develop a parking and staging area for fisherman and paddle craft users.
- Install a bollard perimeter to keep vehicles in the approved parking areas.
- Work with the Port of Corpus Christi to install rules and regulation signage in the access area.

Project # 1126 Public Debris Management at Public Access Sites

Performing Organization: **CBBEP**
Total Funding: **\$12,000**
CBBEP Bays Plan Actions: **BD-1**

Background:

Bay debris poses public health risks and reduces the aesthetic appeal of the bay system. It can degrade habitats, snare aquatic and wildlife species. These impacts result in costs: to the shrimper who tears his net by hanging up on debris; to the windsurfer who steps on a broken bottle; to the tourist industry when hotel rooms are unfilled because potential visitors would rather visit cleaner beaches; and to agencies and organizations who devote thousands of hours to cleaning the beaches along the bays.

Debris clean-up along the shoreline is a continual challenge along the Texas Coastal Areas. Every year, numerous clean-up events are coordinated and hundreds of tons of debris are collected and disposed. During certain periods of the year, heavy visitation by tourists results in overflowing garbage receptacles causing debris to be spread over large areas. Additionally, frustrated beach goers leave debris behind, not willing to transport it with them to their lodging site. Since prevention is generally more cost-effective than clean-up, CBBEP will approach this issue by strategically placing large garbage receptacles by request and in areas of high use to prevent debris from being mismanaged and ending up along the bay shorelines.

The CBBEP will also make dumpster service available upon request for Coastal Cleanups. The CBBEP will determine which cleanups to provide dumpsters to based on the amount of project funding available.

Project Objectives:

- 1) To reduce the amount of debris along coastal roadsides and shorelines by the placement of large garbage receptacles in strategic locations:
 - Lighthouse Lakes Kayak Park
 - Padre Island (exact location TBD)
 - Clem's and Billing's Marina
 - Extra locations if necessary
- 2) The CBBEP will also make dumpster service available upon request for Coastal Cleanups. Some examples of possible partners are the City of Corpus Christi Spring Break cleanup, TGLO Adopt a Beach, and other organized coastal clean ups. The CBBEP will determine which cleanups to provide dumpsters based on the amount of project funding available.

Project # 1127 CBBEP Property Management (Nueces Delta, Oso, Padre Island, etc.)

Performing Organization: **CBBEP**
Total Project Funding: **\$30,000**
CBBEP Bays Plan Actions: **HLR-1**

The CBBEP is responsible for several properties including over 5,400 acres along the Nueces River and Nueces River Delta, 35 acres along Nueces Bay (HWY 181) and 53 acres on Mustang Island.

The CBBEP Nueces Delta Preserve is located 3 miles from the City of Odem and 20 miles from downtown Corpus Christi. The CBBEP Nueces Delta Preserve consists of approximately 5,400 acres in San Patricio and Nueces Counties that are owned and managed by the CBBEP as a conservation site for the purpose preserving natural habitat, function and species diversity in the Nueces River delta. The preserve is rich in diversity that can be characterized by Tamaulipan thorn scrub, grasslands, lomas, freshwater wetlands, riparian habitat, brackish wetlands, coastal wetlands mud flats and shoreline. The CBBEP's secondary goal for the preserve is for the property to be used for a variety of educational and research opportunities.

The funds provided by the project support the necessary management and routine maintenance of the properties, including but not limited to road maintenance; fencing maintenance, gates, brush control, equipment purchases, habitat and predator management (as appropriate necessary), and property taxes.

Past project accomplishments include dike repair to a 50 acre created wetland, management equipment purchases, nest box construction, building maintenance, volunteer projects, aerial application of herbicide to invasive huisache, road repairs, construction of a parking area for school buses, creation of a wildlife observation area and water sampling station, establishing routine mowing of common areas, portable toilet and trash collection service.

Project Objective:

Provide for the ongoing maintenance and management of the Nueces Delta Preserve and other CBBEP Properties.

Project # 1128 Weather Stations for CC Marina

Performing Organization: Conrad Blucher Institute, TAMU-CC

Total Funding: \$7,500

CBBEP Bays Plan Actions: BTR

Background:

The Conrad Blucher Institute (CBI) installed a weather station at the Boaters Facility on the Lawrence Street T-Head in mid 2005. The CBBEP provided funding for the installation, and the CC Marina provided the facilities. All equipment (meteorological instruments, data logger, communication, etc.) were provided by CBI, and consisted of used components that were no longer of use to the various projects for which equipment was purchased. It was known at the time of installation that any and all components would be of limited life span. That life span has expired and the station is no longer in operation. The CBI platform in CC Bay is being renovated thanks to an award from the CBBEP, as well as the new platform which will be established in the eastern side of the bay. Both stations will be used to support the hypoxia study conducted by the Harte Research Institute at TAMU-CC.

This request is to replace the system at the CC Marina with a new system. This project is for equipment only, as installation, data collection, database management, and data display on the Division of Nearshore Research website and at the monitor at the Marina Boaters Facility will be provided as a public service by CBI. (<http://lighthouse.tamucc.edu/kiosk/135> & <http://lighthouse.tamucc.edu/kiosk/108>)

Objective:

We propose to purchase a Campbell Scientific meteorological system, similar to the one presently used in the Nueces Delta, with Intuicom line of sight radio communications providing real time wind speed and direction, barometric pressure, air temperature, rainfall, solar radiation, and relative humidity.

Timeline:

The station will be operational within 1 month of delivery of the equipment.

Project # 1129 Student Research at the Nueces Delta Preserve

Performing Organization: CBBEP
Total Project Funding: \$3,000
CBBEP Bays Plan Actions: PEO 3, PEO 5

Background:

The Nueces Delta, owned and managed by CBBEP, is a unique and diverse habitat. The Delta has primarily been used for educational purposes and is an excellent location for field trips. To date, little student led research has been conducted at the Nueces Delta site, and the goal of this project is to provide a mechanism to increase research in this site.

Funds are requested to begin a program for local 9-12 students as well as college students at UTMSI, TAMU-CC, TAMUK and Del Mar to apply to perform research at the Nueces Delta. Research may be observational or empirical. We anticipate high school students applying science fair and capstone projects and graduate students completing longer term studies. The benefits from this program are many. First, by encouraging science and research, the Educational and Outreach Implementation Team is promoting science in the community and using the CBBEP facility. Second, the data collected by students will be available to the CBBEP and help to better understand the ecology of the Nueces Delta. Finally, the funding program will increase the prestige of CBBEP in the community and provide unique educational opportunities for local students.

Specific Tasks and Deliverables: By funding multiple research projects, CBBEP can increase research activity at Nueces Delta. Data collected from each study will be available to CBBEP

Budget and Timeline: \$3,000 ; this amount will be used by the CBBEP Educational and Outreach Implementation Team as a discretionary fund for which local high school and college students may complete research projects at the Nueces Delta Preserve