PROJECT #2501 CBBEP Coastal Bird Program

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $333,932
Bays Plan, 2nd Ed. Actions: CB 1.1, CB 2.1, HLR 1.1, HLR 1.2

Background:

Coastal birds are important components of estuarine ecosystems and serve as indicators of ecosystem health. In addition, recreational bird viewing is a significant and growing component of ecotourism, a major facet of the local economy. The 2010 Environmental Indicators Report prepared by CBBEP documented the declining populations of many colonial waterbird species in Texas, with some species experiencing a 90% reduction in breeding pairs since the 1960's. CBBEP recently released the 2020 Environmental Indicators Report, which pointed out that a few species of colonial waterbirds have shown nesting pair recovery levels, but many are still declining. An ever-increasing body of research continually provides evidence of the importance of the Texas coast to many non-breeding coastal bird species, several of which are also experiencing population declines.

This project will build on the efforts of the CBBEP Colonial Waterbird projects from previous years through the continued implementation and improvement of specific management actions from the CBBEP Colonial Waterbird Rookery Island Management Plan. This plan outlines habitat management actions such as planting and establishing native shrubs, removing exotic/invasive vegetation, building artificial nest platforms, and removing nest predators as needed throughout the year. All habitat management actions such as planting native vegetation and removing exotic/invasive vegetation will be completed by February 1, as this is the beginning of the waterbird nesting season. Predator management will be conducted as needed throughout the year.

Additionally, these efforts will extend to activities that support the conservation of non-breeding coastal bird species and their habitat. This project will provide assistance to other partners, where appropriate, in efforts to assess changes in populations, current wintering and migratory movements, and important areas of habitat for non-breeding coastal species. The timeline for these efforts will depend on the seasonality of the non-breeding species, but will begin September 1, and be completed by June 15.

Years of experience working with coastal bird species in the Coastal Bend makes the CBBEP uniquely qualified to provide expertise and assistance to partners and stakeholders working to conserve coastal birds. The CBBEP will assist resource agencies, universities, and other stakeholders in joint efforts to monitor changes in coastal bird populations at a large scale. These monitoring efforts will take place primarily in December and May and provide information that helps direct waterbird management priorities for CBBEP for the coming years. In addition, the CBBEP will meet with partners and stakeholders throughout the year to provide updated information on coastal bird species' ecology and management in the Coastal Bend area.

Public outreach is also a key component of this project, with the objectives of minimizing anthropogenic impacts to rookeries, educating the public, and promoting stewardship of waterbird resources. This will be accomplished through on-site signage at rookery islands, public presentations and events, and other forms of public communications, such as the distribution of flyers, updates on social media, interviews with local news outlets, and regular engagement of volunteers. Public outreach efforts will take place throughout the year.

Project Objectives:

The objectives of this project include: (1) continue restoring waterbird populations through management of nesting sites, including habitat enhancement, protection, predator control, and reduction of anthropogenic impacts; (2) develop and implement public education and outreach programs that promote awareness and stewardship of coastal birds and their habitats, (3) assist partners in efforts to observe and monitor changes in coastal bird populations; and (4) provide resource agencies, researchers, and other stakeholders with expertise on coastal bird ecology, habitats, and conservation needs including assistance in tagging migratory birds for tracking.

PROJECT #2502 Delta Discovery

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $304,006
Bays Plan, 2nd Ed. Actions: DD 1.1, DD 1.2, DD 1.3, DD 2.1

Background:

Delta Discovery's mission is to connect Coastal Bend communities with opportunities and resources that plant the seeds of conservation for protecting our bays & estuaries. The educational program cost consists of the following: (1) field trips for students, (2) teacher workshops, and (3) community programs, such as Delta Discovery Days, Nature Story Times, and Home School Days.

Field trips: Many of the students that are being exposed to scientific concepts for the first time have never spent much time outdoors. CBBEP Environmental Educators provide field trip opportunities for teachers and students to visit the Nueces Delta Preserve. The cross-curricular trip may be organized by the teacher, with assistance from the Environmental Educator, to create an educational TEKS-aligned agenda for outdoor education. This program sees thousands of students per school-year. 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 animal and plant life.

Teacher Workshops: CBBEP Environmental Educators will facilitate a minimum of four workshops throughout the school year. These free workshops will address local environmental science topics and will align to the TEKS objectives, and participating teachers will receive SBEC credits. The workshops focus on equipping teachers with the skills, curriculum, support, and materials to strengthen science teaching as it relates to the environmental resources of the Coastal Bend. Hands-on learning in the field will be correlated to classroom instruction. The funding provides all fees for partnering, curriculum, and substitute teachers for these workshops to occur on weekdays.

Delta Discovery Days: The CBBEP will host a minimum of five Delta Discovery Days. These hands-on "family picnic days" provide multi-generational audiences time and guidance to discover, connect, and learn about the estuary in their back yard. Families bring a sack lunch and the CBBEP Education Staff facilitates interactive learning activities that model nature-play strategies throughout the half-day program. Delta Discovery Days serve two purposes: (1) encourage students attending Nueces Delta Preserve field trips to return with their families to demonstrate what they have learned, and (2) welcome new audiences -- families and members of the community -- to the Nueces Delta Preserve for a day of nature-based learning.

Nature Story Time: CBBEP will host a minimum of ten Nature Story Times. These early learner programs introduce children, ages 2-5, to nature and the joys of reading through stories, crafts, and outdoor play. Children and their "grown-ups" will build a sense of place and connection as they explore the estuary and its inhabitants.

Home School Days: The CBBEP will host a minimum of two Home School Days to meet the needs and interest of home school families seeking field experiences. Home School Day programming will provide home school families and their students an opportunity to connect their classroom science/environmental curriculum to the natural world of the Coastal Bend using both place-based and discovery education. CBBEP Education Staff and partners will facilitate a series of hands-on activities that support select program themes and the engagement of mixed age student audiences.

Nueces Delta Preserve Upkeep: Upkeep of the Nueces Delta Preserve consists of electricity, trash and water costs, phone and internet costs, temporary assistance for field trip days, and staff mileage.

Project Objectives:

The objective of this project is to provide educational field trip opportunities for K-12 students and to aid teachers in increasing their knowledge, skills, and resources to effectively teach science to students in local schools.

PROJECT #2503 Environmental DNA Assessment of the Texas Diamondback Terrapin

Performing Organization: Texas A&M University - Corpus Christi
Total Project Cost: $132,760
Bays Plan, 2nd Ed. Actions: HLR 1.2, HLR 1.3, HLR 2.1

Background:

The diamondback terrapin (*Malaclemys terrapin*) is a small to medium sized emydid turtle that lives in coastal wetlands and estuaries along the United States Atlantic coast, from Cape Cod, Massachusetts to Corpus Christi, Texas in the Gulf of Mexico. Diamondback terrapins are the only brackish water estuarine species of turtle found in North America. Their primary habitat includes salt marshes, tidal creeks, and mangroves; preferring areas with freshwater inflows. Within Texas, the subspecies *Malaclemys terrapin littoralis*, is found from Sabine Lake in the north to Baffin Bay in the south although only a few records exist beyond Nueces Bay.

Texas diamondback terrapins are listed as a 'T3 Vulnerable Subspecies' on the IUCN Red List, as 'S2 Imperiled' by the Texas Parks and Wildlife Department (TPWD), and are a Species of Greatest Conservation Need. This designation means this species is at high risk of extirpation in the jurisdictional range, has few populations or occurrences, recent and widespread steep declines, and severe threats to their population status. The Conservation Action Plan for diamondback terrapins in the Gulf of Mexico specifically recommends filling gaps in the geographic range data in Texas. Identifying the historical and contemporary range of a species and seasonal movement patterns is imperative to understanding critical habitat needs and the threats to species of conservation concern. This type of research is consequential to species dependent on coastal wetlands and estuaries that require shoreline habitat for physiological and reproductive requirements, like the diamondback terrapin, and that are negatively impacted by human disturbance and sea level rise. This project will identify the location of terrapin populations from the Mission-Aransas Estuary to Baffin Bay through the use of a previously developed protocol for environmental DNA surveys that was supported by the CBBEP. These surveys will help locate and determine critical nesting habitat for the species to inform vulnerability assessments and adaptive management and conservation strategies.

Specific tasks include: (1) manually classify and map potential nesting sites of Texas diamondback terrapins using aerial satellite imagery, (2) conduct proposed eDNA sampling for Texas diamondback terrapins between the Mission-Aransas Estuary and Baffin Bay, (3) map all locations positive for Texas diamondback terrapins, and (4) identify seasonal shifts in habitat utilization by Texas diamondback terrapins.

Project Objectives:

The proposed project will identify the distribution of Texas diamondback terrapin and potential locations of nesting habitat in the Texas Coastal Bend bays and estuaries. The project has three primary objectives: (1) determine the distribution of Texas diamondback terrapin populations in the Coastal Bend bay complexes using environmental DNA surveys; (2) determine if seasonal patterns of terrapin distribution exist; and (3) identify suitable nesting habitat sites in proximity to identified terrapin populations.

PROJECT #2504 Texas Gulf Region CWMA - Coordinator, Outreach, and Management

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $100,278
Bays Plan, 2nd Ed. Actions: HLR 2.6, HLR 1.1, HLR 1.2

Background:

Invasive species are a major threat to coastal biodiversity. They can have profound effects on coastal ecosystems, leading to the extinction of native plants and animals, destroying biodiversity, and permanently altering habitats through direct and indirect effects. This can result in huge economic impacts and fundamental disruptions of ecosystems and animals, destroying biodiversity, and permanently altering habitats through both direct and indirect effects.

In 2014, a voluntary network of public and private partners in the Texas Coastal Bend region formed the Texas Gulf Region Cooperative Weed Management Area (CWMA). The goal of the CWMA is to provide a more coordinated, regional approach to the management of invasive species, leading to better treatment methods, more funding for treatment and control activities, greater efficiency in use of funds and staff time, and earlier detection and more rapid response. The CWMA includes representatives from state and federal agencies, local governments, nonprofits (including CBBEP), academic institutions, and members of the community. To date, the CWMA has focused on the control of Brazilian peppertree on barrier islands. Brazilian peppertree is an invasive, noxious, and prohibited species within Texas that can quickly modify habitats and degrade the quality of ecosystems through rapid and aggressive growth, as well as with allopathic chemicals. The CWMA has reached thousands of landowners with more than 200-man hours allocated to outreach, completed 20 volunteer workdays that consisted of the removal of Brazilian peppertree adding up to more than 800-man hours, produced thousands of outreach materials, and improved land management practices on close to 10,000 acres of public and managed lands.

CBBEP will utilize funds to provide salary for a CWMA Coordinator who will advance the local Brazilian peppertree management efforts of the CWMA, and funds will be used to collaborate with CWMA partners on the removal and treatment (including retreatments) of invasive species, focusing primarily on Brazilian peppertree. Several areas in need of treatment have already been identified by the CWMA members (e.g., Port Aransas Nature Preserve, Padre Island National Seashore, and Nueces County Coastal Parks). CBBEP will work with CWMA partners to identify specific treatment areas that will be targeted with this funding. Prioritization factors will include the potential benefits to habitats and wildlife, as well as opportunities to leverage the EPA funds with investments from other sources.

Following the identification of priority treatment areas, CBBEP will develop requests for proposals to employ a Vegetation Management Firm to remove and treat the targeted invasive species. Contractual work with the qualified and licensed vegetation management firm may include services for removal, abatement, and site clearing of invasive species. Contracts will also include retreatment of areas. Possible removal and treatment techniques will include cut stump, basal bark, foliar application, or aerial application. Desirable plants often exist within the project areas, and the contractor will be advised to avoid damage to these plants during the clearing. Isolated trees requiring treatment and traversing sand/mud flats or wetlands will be accessed by foot. In total, we expect 15 acres of habitat will be improved upon project completion.

Project Objectives:

The objectives of this project are to perform habitat restoration activities, specifically, removal of invasive plant species, to improve the diversity of native plants and wildlife populations at the wetlands located on lands owned by Texas Gulf Region Cooperative Weed Management Area members and to advance the outreach efforts of the CWMA through community outreach events and workdays.

PROJECT #2505 Baffin Bay Water Quality Monitoring

Performing Organization: Harte Research Institute at Texas A&M University – Corpus Christi
Total Project Cost: $50,000
Bays Plan, 2nd Ed. Actions: WSQ 2.1, WSQ 2.2

Background:

The purpose of this project is to help continue a water quality monitoring program in Baffin Bay that will gather water samples and identify potential sources of water quality degradation in the system. Baffin Bay is undergoing significant eutrophication, as exemplified by a long-term increase in nitrogen and phosphorus loads and chlorophyll-a concentrations that have exceeded state criteria for nearly the past decade. Additional symptoms include blooms of potential harmful algal species (*Aureoumbra lagunensis, Pyrodinium bahamense*), episodic hypoxia, and fish kills.

In response to concerns over water quality changes in Baffin Bay, Texas A&M University-Corpus Christi (TAMUCC) initiated a spatially-temporally intensive water quality monitoring program to: (1) generate data for construction of nutrient budgets and to identify potential sources of nutrient/organic matter loadings that are contributing to water quality degradation in the system, and (2) characterize the ecosystem response to fish kills and loading events, including from episodic storm events.

As part of the ongoing water quality monitoring program, as well as a TAMUCC Ph.D. student project, samples will be collected monthly at six sites from Baffin Bay, as well as at higher frequencies in response to episodic storm events or fish kills. Two of the sites overlap with TCEQ quarterly monitoring stations, allowing for comparison with longer-term trends within Baffin Bay. At each site, vertical profiles will be performed and discrete surface samples collected. Additionally, a YSI Ecomapper Autonomous Underwater Vehicle (AUV), equipped with water quality sensors (temperature, salinity, DO, pH, chlorophyll fluorescence) may be deployed to identify water quality "hot spots" and to characterize environmental conditions pre- and post-storm.

Project Objectives:

The objective of this project is to support a water quality monitoring program through TAMUCC and collect monthly data, and rain event data, to identify nutrient concentrations and loading throughout the Baffin Bay system.

PROJECT #2506 Outdoor Classrooms

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $21,000
Bays Plan, 2nd Ed. Actions: DD 1.1, DD 1.2, DD 1.3, DD 2.1

Background:

Research suggests that children who play and learn in nature are healthier, happier, and perform better in school. However, children have become increasingly disconnected from nature. This disconnect has led to physical and emotional health problems and a sense of isolation. Additionally, there are not enough safe outdoor spaces close to home for most Texas children, especially those from disadvantaged families.

CBBEP created its environmental education program, called Delta Discovery, to help address this "nature-deficit" and connect classrooms and families to nature. Delta Discovery has an outstanding track record for environmental education in the Texas Coastal Bend. Every year we provide field trips to thousands of students, train teachers on how to connect classrooms to outdoor experiences and provide opportunities for families to experience nature. Delta Discovery operates primarily at the Nueces Delta Preserve, a 10,500-acre property that is comprised of diverse habitats, including wetlands and prairies.

However, teachers and principals at local schools are finding it more and more difficult to move students off campus to outside learning opportunities (e.g., field trips) like those offered by CBBEP at the Nueces Delta Preserve. Buses are expensive and finding personnel to supervise, as well as scheduling, has become challenging. Field trips at the middle school and junior high level are almost non-existent.

One solution is to bring learning opportunities to schools in the form of outdoor classrooms. An outdoor classroom is defined as an outdoor area on a school campus that is set aside for student investigation and learning. Outdoor classrooms directly support US Fish and Wildlife Service's Schoolyard Habitat Program that is designed to connect students with the outdoors, restore wildlife habitat on urban school grounds, and inspire the next generation of environmental leaders.

Components of outdoor classrooms are varied but often include benches or picnic tables adjacent to a study or natural area where students can gain field experience and spend time outdoors. While every outdoor classroom contains its own unique design elements, CBBEP will strive to ensure that they all observe the following key elements: ecologically sound, benefit wildlife and people, integrated into curriculum, designed to encourage long-term stewardship. Schools will be encouraged to follow the process described in the USFWS Schoolyard Habitat Project Guide for the development of outdoor classrooms, and CBBEP staff will be available to assist them with this process.

Project Objectives:

CBBEP will contract with local schools and other education partners (e.g., parks and recreation department, public library) to install three outdoor classrooms in the coming fiscal year.

PROJECT #2507 Maritime Commerce Marine Spill Response Readiness Program

Performing Organization: National Spill Control School at Texas A&M University – Corpus Christi
Total Project Cost: $96,094
Bays Plan, 2nd Ed. Actions: MC 1.4, MC 2.1, MC 2.2

Background:

The National Spill Control School (NSCS) aims to accelerate and expand the implementation of the Coastal Bend Bays Plan, 2nd Edition initiatives through the engagement and training of individuals involved in maritime Commerce in the Coastal Bend. This training will ensure resiliency in the event of an oil spill and utilize NSCS resources, such as equipment, classroom spaces, and talent, available within Texas A&M University-Corpus Christi to facilitate education, research, and training as a continuation of the 2024 project supported by Coastal Bend Bays and Estuaries.

Funds will be used to conduct two 24-hour Oil Spill Strategies and Tactics field training courses for maritime commerce workers in the Coastal Bend, create an on-demand 8-hour Marine HAZWOPER Refresher Course accessible via the TAMUCC website, and offer one annual 40-hour Marine Oil Spill Response course for newcomers to the Marine Commerce industry. To stay current with the best and most comprehensive technology for emergency response training and research, funds will also be used to purchase a new training boom, collapsible berm, 10hp motor and road trailer to bring NSCS Jon boat back to service, labor cost of a Graduate level Instructional Designer student sourced from the Texas A&M University-Corpus Christi Instructional Design and Educational Technology program, and labor cost of boat captains and administrative costs for the execution of the field exercise portions of this training initiative.

Project Objectives:

The objective of this project is to provide oil and hazardous material response engagement and training of individuals involved in maritime Commerce in the Coastal Bend to ensure resiliency in the event of an oil spill.

PROJECT #2508 Community Outreach Partnerships

Performing Organization: Coastal Bend Bays Foundation
Total Project Cost: $40,000
Bays Plan, 2nd Ed. Actions: PEO 1.1, PEO 1.2, PEO 1.4, PEO 1.5

Background:

As stated in the Coastal Bend Bays Plan, 2nd Ed., CBBEP is constantly working to promote public and private partnerships to help achieve its educational goals. The CBBEP partnership with the Coastal Bend Bays Foundation (CBBF) addresses our educational goals set forth in the Bays Plan, 2nd Ed. One of the benefits of the partnership between the CBBEP and CBBF 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, 2nd Ed. calls for continued involvement from CBBF, as the region prepares itself for the 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. This project will increase the community's awareness of local environmental issues through Earth Day Bay Day, forums, and an awards banquet. An estimated 12,000 people are expected to attend these events.

Project Objectives:

1. Organize, coordinate, and host turnkey operation of Earth Day Bay Day festival.
2. Organize, coordinate, and host CBBF Conservation and Environmental Stewardship Annual Awards Banquet.
3. Host Coastal Issues Forums to increase communication between resource managers, users, and the public.
4. Organize and coordinate bay-resource/related workshops with CBBEP's approval.
5. Continue to seek matching and/or leveraging funds.

PROJECT #2509 CBBEP Land Conservation and Stewardship

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $573,542
Bays Plan, 2nd Ed. Actions: LCS 1.1, LCS 1.2

Background:

CBBEP is owner and steward of conservation properties located across South Texas, primarily located within Aransas, Nueces, San Patricio, Refugio, and Cameron Counties. Included in the list of conserved properties is the CBBEP Nueces Delta Preserve which is located just outside of Odem, Texas and is the focal point of the CBBEP Land Conservation Program. The CBBEP Nueces Delta Preserve encompasses over 11,000 acres of the Nueces River Delta and is in both San Patricio and Nueces Counties. The Nueces Delta Preserve was purchased with the intent of preserving natural habitat, species, and function of the Nueces River Delta. This property is also home to the CBBEP Environmental Education Program known as "Delta Discovery." CBBEP has taken the successful model of the Nueces Delta Preserve and has focused on preserving contiguous acres of habitat in Refugio County's Mission River Delta, Aransas County's Lamar Peninsula, and Nueces County's Mustang Island.

The proposed project funds will be used to help support CBBEP's land ownership obligations and to achieve the program's management goals for the coming year. Management activities include, but are not limited to, habitat management, road and culvert repairs, maintenance and operation of CBBEP facilities, equipment repairs, purchases and maintenance, development and enhancement of public access sites, and the payment of property taxes. Past project accomplishments have included perimeter fencing, herbicide applications for brush control, development and implementation of prescribed burn programs, road reconstruction, installation of solar water wells, infrastructure upgrades, and wetland enhancement and creation.

Project Objectives:

The primary project goal is to promote the stewardship of coastal resources through the implementation of responsible and sustainable adaptive management techniques on CBBEP properties. Specific objectives include:

1. Provide ongoing maintenance and management of properties owned by CBBEP.
2. Implement prescribed burns, herbicide, and mechanical treatments to suppress woody vegetation encroachment on program owned lands.
3. Replacing old and or purchasing new equipment to aid in the management of CBBEP properties.
4. Replace sections of perimeter fence.
5. Support and assist organizations in land conservation efforts.

PROJECT #2510 Oso Bay/Oso Creek and Baffin Bay Watershed Public Education and Outreach

Performing Organization: Voices of the Colonias
Total Project Cost: $21,027
Bays Plan, 2nd Ed. Actions: WSQ 1.1, PEO 1.1, PEO 1.2, PEO 1.3, PEO 1.4

Background:

The Oso Bay/Oso Creek watershed drains an area of approximately 255 square miles and is located in the northern-most portion of the Nueces-Rio Grande Coastal Basin. Oso Bay is an enclosed, shallow body of water situated along the southern shore of Corpus Christi Bay, with a surface area of approximately seven square miles. Oso Bay (Segment 2485) and Oso Creek (Segment 2485A) are listed on the 303(d) list of impaired water bodies. Oso Bay is listed for depressed dissolved oxygen and bacteria in oyster waters. Oso Creek is listed for recreational bacteria. The TCEQ initiated a TMDL project for Oso Bay in September 2004 and also began developing a TMDL in Oso Creek in 2013. Currently, stakeholders with an interest in the Oso Bay/Oso Creek Watershed have been working to incorporate the draft Oso Bay/Oso Creek Implementation Plan (I-Plan) into a regional I-Plan for the Corpus Christi area and implement measures that reduce pollutants.

Additionally, the health of Baffin Bay has been of great concern to scientists and concerned citizens due to fish kills, water quality problems, and food web changes in the bay. The Baffin Bay Stakeholder Group, formed in 2012 , is composed of scientists from Harte Research Institute (HRI) at Texas A&M University-Corpus Christi, Coastal Bend Bays and Estuaries Program (CBBEP), USDA-NRCS, Texas State Soil & Water Conservation Board, Texas Water Resources Institute, Texas Commission on Environmental Quality (TCEQ), Texas Sea Grant, Texas General Land Office, Nueces River Authority (NRA), and a host of concerned citizens, including commercial and recreational fishermen, ranchers, and business owners. Researchers have determined that the primary causes of the water quality concerns are due to excessive nutrients in the bay. These water quality concerns have been further recognized, as evidenced by the 2019 Texas Coastal Waters: Nutrient Reduction Strategies Report which recommended the Petronila watershed as a priority for the implementation of nutrient reduction strategies and the EPA approval of San Fernando and Petronila Creek Watershed Protection Plan (WPP).

In 2020, CBBEP received funding via a TCEQ 319 grant to develop a watershed model for the Oso Bay/Oso Creek watershed and conduct three years of classroom education and public outreach to underserved communities (Colonias) in the watershed. Following the success of this project, CBBEP developed a watershed model for the Baffin Bay watershed in FY2023 to support watershed education and outreach efforts for the Baffin Bay region as well. As CBBEP continues to build off of these initial outreach efforts and implement other, complementary assistance programs to Colonias throughout the Coastal Bend, continued watershed education and outreach is critical to improving community understanding of environmental issues and to reduce polluting behavior.

The purpose of this project is to continue working with the Voices of the Colonias (VOC), a local non-profit which provides assistance and social services to the underserved populations in South Texas Colonias, to provide watershed education and outreach to residents of rural underserved communities in the Oso Bay/Oso Creek and Baffin Bay watersheds.

Project Objectives:

This project will deliver watershed education and outreach programming to residents of underserved communities (colonias) of the Oso Bay/Oso Creek and Baffin Bay watersheds at three outreach events.

PROJECT #2511 Nueces Delta Environmental Monitoring

Performing Organization: Conrad Blucher Institute at Texas A&M University – Corpus Christi
Total Project Cost: $36,136
Bays Plan, 2nd Ed. Actions: FW 1.1, FW 1.2, FW 1.3, FW 1.4

Background:

Normally, a river flows through a delta area prior to making its confluence with its receiving water body. The Nueces River is different in that it flows into Nueces Bay at a point along the south shore of the bay, 2.5 to 3 miles from the delta-bay interface, completely bypassing the delta. Only during times of severe flooding, causing over-banking of the river, or locally heavy rain, does significant freshwater make it into the delta proper.

To provide more frequent freshwater diversions during normal flow conditions, the City of Corpus Christi built the Rincon Bayou diversion pipeline and pump station to divert up to the first 3,000 acre-feet of passthroughs per month from above the saltwater barrier dam directly into the upper Rincon Bayou.

The purpose of this project is to continue maintaining monitoring equipment in and around the Nueces Delta to observe freshwater inflows downstream of the Rincon Bayou diversion pipeline so that spatial and temporal environmental effects can be calculated, as well as the amount of freshwater needed to manage a healthier estuary. This project will be conducted by the Conrad Blucher Institute (CBI) at Texas A&M University-Corpus Christi. CBI will monitor and maintain one (1) real-time meteorological station in the Nueces Delta, one (1) permanent real-time salinity station in the Nueces Delta, and one (1) real-time tide gauge station in Nueces Bay.

Project Objectives:

Maintain real-time water quality, tide gauge, and meteorological monitoring stations in the Nueces Delta and Bay to measure the effects of Rincon Bayou diversion pipeline freshwater inflows.

PROJECT #2512 Lamar Burton Wetlands Enhancement and Aransas Woods-Lamar Burton Wetlands Cattail Reduction

Performing Organization: Aransas First Land Trust
Total Project Cost: $33,000
Bays Plan, 2nd Ed. Actions: TR 1.1, TR 2.1, HLR 1.1

Background:

Wetland Enhancements: The 105-acre Lamar Burton Wetland Sanctuary (owned by Aransas First), became publicly accessible in 2024 with the recent installation of a parking area, trails, signage, and one uncovered and two covered observation kiosks. The observation areas overlook 58 acres of freshwater wetlands. The upper eight acres, only intermittently inundated with no cattails, and with solar well, has become an important Whooping Crane and Sand Hill Crane feeding area. The remaining 50 acres, where the covered observation kiosks are located, are over 90% covered with cattails, impairing its value as a shallow water area for wading birds and wintering ducks and other wildlife. In addition, this decreases its value as a public access area for wildlife observation and education.

USFWS, Aransas First, and Aransas County all have an interest in enhancing the wetlands at the Lamar Burton Wetland Sanctuary. USFWS wishes to increase wetland capacity for wildlife; Aransas First wants to enhance and preserve it, while making it safer for public access and education; and Aransas County would like to utilize it to better manage storm water from an adjacent subdivision. Currently, the southwest edge of the wetland has no elevated berm to use as a dry, safe walking trail to access the northern edge of the wetland where the second and third observation kiosks are located. The proposed project will (1) deepen the area along the south and southwest portion of the wetland to about 30-40 ft wide, 24-30 inches deep (enough to discourage cattail growth) and (2) remove the dead vegetation debris on and deepen by 6-12inches the adjacent wetland portion. The removed material will subsequently be used to build up the height of the upland to the west as a 2-ft by 10-12 ft wide walking trail reaching the existing berm trail and kiosks. Aransas County will also build drainage appropriate swales and culverts to direct excess wetland flood waters to Newcomb Bend.

Cattail Reduction: Since 2002, Aransas First has managed Aransas Woods (jointly owned by TxDOT, City of Rockport, and Aransas First) as Coastal Birding Trail Site# 47. This site contains approximately 22 acres of wetland on two large depressions that are more than half covered with cattails, and two smaller ones that are almost completed covered and currently allow no observation of wildlife. Aransas First also owns and manages the 105-acre Lamar Burton Wetland Sanctuary described in detail above. Both sites would benefit from implementation of cattail management, creating more diverse habitats and enhancing wildlife viewing opportunities. Funds were used in September 2023 to implement Phase 1 of cattail treatment at both sites. This involved the cutting and/or crushing of about half of the cattails in each area. Phase 1 was then completed in the Spring 2024, with an herbicide treatment. Phase 2 will continue the ongoing efforts by Aransas First and other partners to implement cattail management measures at both sites.

Project Objectives:

The primary project objective of this project is to enhance wetland productivity and wildlife viewing opportunities at two sites managed by Aransas First. Specific objectives include:

1. Cattail treatments at both the Lamar Burton Wetlands Preserve and Aransas Woods.
2. Wetland enhancements at the Lamar Burton Wetlands Preserve.

PROJECT #2513 Laguna Shores Hike and Bike Trail Amenities, Phase 1

Performing Organization: Friends of Redhead Pond
Total Project Cost: $133,000
Bays Plan, 2nd Ed. Actions: TR 1.1, TR 2.1, TR 3.1, HLR 1.2, HLR 1.3

Background:

The proposed project will provide the first step in design and construction of a hike and bike trail that will serve to improve public access for wildlife viewing and fishing at a series of ponds located along Laguna Shores Drive. Through the development of the Flour Bluff Area Development Plan and numerous community meetings held by Flour Bluff Citizens Council and facilitated by the National Park Service Technical Assistance team, citizens prioritized several wetland ponds along Laguna Shores Drive that could be enhanced for public access, while minimizing wildlife and habitat disturbances. They also developed the conceptual design for a designated path (with interpretative signage) that would not only help visitors access the site safely but would provide education on the importance of the area for shorebirds and waterfowl and decrease the habitat degradation that occurs from uncontrolled access and vehicle rutting in the sand flats and wetland portions of the properties.

For the proposed project, CBBEP will partner with the Friends of Redhead Pond to complete a feasibility study for the hike and bike trails that connect the City of Corpus Christi's conservation area at Duncan Pond to Redhead Pond Wildlife Management Area (WMA). The feasibility study will also look at placement of interpretive signage, parking, and restrooms. During the project period, the Friends of Redhead Pond will continue to control invasive species and promote a native vegetation establishment at the site.

Project Objectives:

The primary objective of the proposed project is to contract for civil engineering services associated with the proposed pedestrian trail system identified in the City of Corpus Christi's Flour Bluff Area Development Plan and associated restroom and parking areas located on approximately 55 acres in the Flour Bluff community of Corpus Christi, TX (between Hustlin Hornet Drive and Glenoak Drive on the west side of Laguna Shores Road).

PROJECT #2514 CBBEP Public Outreach Events and Activities

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $50,136
Bays Plan, 2nd Ed. Actions: PEO 1.1, PEO 1.2, PEO 1.3, PEO 1.4, PEO 1.5, TR 1.1

Background:

One of the most important goals of the Coastal Bend 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 is 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. CBBEP is constantly working to promote public/private partnerships as stated in the Coastal Bend Bays Plan to help achieve its educational goals.

Project Objectives:

CBBEP will raise awareness of environmental issues by connecting with the Texas Coastal Bend public through our websites and social media channels, as well as at community events and festivals. We will spread the CBBEP brand through promotional and educational materials, such as posters, reusable bags, and other items. We expect to reach thousands of people at various community events.

To accomplish its public education and outreach goal, CBBEP will:

1. Participate in community events and festivals.
2. Produce or purchase educational and promotional materials.
3. Maintain a website(s) and active social media channels (e.g., Facebook, Instagram).
4. Develop and provide electronic updates.
5. Participate in and host outreach opportunities, such as clean up events.

PROJECT #2515 Whooping Crane Traveling Outreach Trailer

Performing Organization: International Crane Foundation
Total Project Cost: $10,359
Bays Plan, 2nd Ed. Actions: PEO 1.1, PEO 1.2, TR 3.1

Background:

This project will convert an International Crane Foundation (ICF) owned cargo trailer into a traveling outreach trailer. This outreach trailer will increase awareness and understanding of Whooping Cranes and the Mid-Coast estuaries they call home. Over 15% of Aransas County citizens live in poverty (higher than the national average), and a mobile trailer creates additional opportunities for reaching the community with environmental education. The initial design of the trailer will involve local artists in depicting bay and estuary systems that will be added to the external design. This will be framed in a contest format with 2-3 art pieces being displayed on the trailer. Stipulations will include the use of native flora and fauna, the inclusion of Whooping Cranes, and artwork depicting local bay systems.

Outreach trailer programs will be developed using accessible learning and STREAM techniques to meet different learning styles and abilities. Additionally, we will develop and build a series of interactive games and resources to teach about food items, ecology, and life history. Other supplies such as sensory boards depicting salt marsh plant species, interactive tablets showing root systems and 3D water flows, and 3D models of the salt marsh complex will be created for audiences to visualize the connectivity of systems. The external door will be equipped with magnetic educational posters that can be interchanged based on audience and event. A TV mount will be added to one side of the trailer to showcase various videos including our Dance Like a Crane program, Whooping Crane migration and life history animation, and a Where Cranes Dance video. These new programs will be additive to the programs and materials we already have in place. Access to outdoor resources is not always possible for those with physical, financial, or geographic limitations, a mobile resource will help us target new and existing audiences from Aransas and surrounding counties in creative and inclusive ways. The trailer will be an added resource to our work with Rockport-Fulton ISD, Girl Scouts of Greater South Texas, Goose Island State Park, and other partner organizations and events across the Texas Gulf Coast.

The development of a new outreach trailer will aid in the distribution of conservation-based educational materials to diverse audiences, fostering stewardship within surrounding communities. Today, poaching of Whooping Cranes along with other threats remain an issue. Education of youth hunters and recreational shooters is important for future protections and to decrease poaching events. Furthermore, the Aransas-Wood Buffalo population has increased to an estimated 550 individuals and will require more bay resources as the population continue to grow. Increasing the mobility of outreach activities allows us to educate the public on the ongoing conservation story of these majestic birds and help increase awareness of the importance of healthy bay ecosystems on which they rely.

Project Objectives:

The primary project objective is to convert an ICF owned cargo trailer into a traveling outreach trailer that will be used to distribute conservation-based educational materials to diverse audiences, fostering stewardship within surrounding communities.

PROJECT #2516 Packery Flats Living Shoreline

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $60,000 (Funds are Pending)
Bays Plan, 2nd Ed. Actions: TR 2.1, SM 1.1, HLR 1.2

Background:

Nestled on the backside of Mustang Island adjacent to Packery Channel, Packery Flats Coastal Habitat is a well-known gem with lots to offer in terms of public access to coastal areas. The 1,000-acre protected area boasts extensive intertidal habitats that are heavily utilized by fish and wildlife and has many features that are appealing to passive recreation. Previous enhancement efforts by the CBBEP resulted in debris and trash cleanups, installation of interpretive signage, addition of road base material for roads, trails, and parking areas, and installation of a bollard and cable system to delineate the roadside and parking area boundaries.

The Kate's Hole Parking Area at Packery Flats is especially susceptible to waves generated by north winds, which is resulting in shoreline erosion. CBBEP is proposing to address the ongoing erosion issue through the installation of a living shoreline. CBBEP anticipates using bagged oyster shell or similar to create a structure that would reduce wave energy. The tidal area between the structure and shoreline would then be planted with smooth cordgrass. The project will utilize volunteers to place bagged shell or other suitable material and plant cordgrass along the shoreline. The proposed project will enhance coastal resilience and biodiversity using sustainable shoreline stabilization techniques, while also heightening community awareness and engagement in coastal conservation efforts through hands-on involvement in habitat restoration.

The Living Shoreline at Packery Flats represents a sustainable approach to coastal management that integrates ecological restoration with community involvement. By implementing nature-based solutions, this project aims to protect and enhance the natural beauty and resilience of the Packery Flats shoreline for continued public access use into the future.

Project Objectives:

1. Implement natural stabilization methods such as oyster reefs and marsh vegetation to reduce shoreline erosion at the Kate's Hole Parking Area.
2. Restore and enhance habitat diversity to support local flora and fauna. This includes creating nesting areas for birds, habitat for fish and invertebrates, and protective spaces for shoreline plants.
3. Foster community involvement through volunteer opportunities and public outreach events to increase awareness of coastal conservation and the importance of living shorelines.

PROJECT #2517 Educational Signage Initiative at Indian Point Pier

Performing Organization: City of Portland
Total Project Cost: $20,000
Bays Plan, 2nd Ed. Actions: TR 1.1, TR 2.1, PEO 1.1

Background:

The City of Portland recently completed a number of improvement projects at the Indian Point Area. This included several improvements to the Indian Point Pier - increased accessibility, upgraded pier railing and lighting, addition of green fishing lights, and upgraded fish cleaning stations.

The City of Portland would like to enhance the visitor experience at Indian Point Pier and foster environmental awareness through the addition of educational signage. The primary goal of the project is to install a series of informative signs at key locations around Pier and the adjacent birdwatching pier. These signs will offer insights into the local flora and fauna, featuring high-quality photographs and engaging content.

Signage Design: Each sign will be crafted to blend seamlessly with the natural surroundings while remaining highly visible and accessible. Signs will include information on various species of plants and animals found in the area, their roles in the ecosystem, and conservation status.

Educational Value: The signage will serve as an educational tool for visitors of all ages, encouraging ecological mindfulness and respect for nature. It will also be an asset for local schools and educational groups, providing a practical resource for outdoor learning experiences.

Sustainability and Maintenance: Materials chosen for the signage will be durable and weather-resistant, minimizing maintenance needs. A plan will be established for the regular upkeep of the signs to ensure their longevity and continued educational value.

Project Objectives:

The primary project objective is to install a series of informative signs at key locations around Indian Point Pier and the adjacent birdwatching pier that enhance the visitor experience and encourage stewardship of our bays and estuaries.

PROJECT #2518 Aransas First Rockport Church Trails

Performing Organization: Aransas First Land Trust
Total Project Cost: $10,000
Bays Plan, 2nd Ed. Actions: TR 1.1, TR 2.1

Background:

The St. Peters Episcopal Church in Rockport, TX approached Aransas First and Aransas Pathways in Spring of 2023 to possibly utilize their approximately five acres of forested area of Live Oak-Red Bay upland south of their church as a woodland sanctuary to preserve it, retaining green space in an urban area and not increase impervious cover which would occur if they sold that portion of their property. They also expressed a desire for this area to be open to the public for wildlife observation and as a respite area. Two months later, the adjacent First Baptist Church, also expressed an interest in preserving their more than three-plus acres of forested area adjacent to the church.

These properties are uniquely situated, with the drainage easement and swale that carries water from the Rockport Wastewater Treatment plant situated between the two properties and carrying a constant flow of >1.5 million gallons a day. The woodland habitat and consistent water supply create an area is heavy utilized by wildlife and birds. The properties also sit in close proximity to the City of Rockport Hike and Bike Trail and several nearby attractions along the trail. On the South side of these properties is the Aransas County Tiger Field which allows Parking and a south entry to the trail starting on the Baptist Church property. Parking on the adjacent parts of each church parking area would be allowed.

Representatives from the two churches and Aransas First met to discuss how the project could proceed as joint effort. Aransas First agreed to help in this effort with its experience in building simple walking trails in Aransas Woods and Tule East utilizing grant funds. Therefore, Aransas First is requesting funds to create a 6-8 foot walkable trail with a grass base that is easy to mow 2-4 times per year as part of each churches regular maintenance schedule. A small open area would be created on each property with 1-2 wooden benches for sitting, observation, and reflection. There is an open area in or adjacent to each forested area in which Aransas First and church volunteers will plant pollinator plants as part of a land trust initiative with the Mid-Coast Chapter of the Texas Master Naturalists. Appropriate educational signage will also be placed along the trails.

Project Objectives:

The objective for the proposed project is to create public access to areas of church-owned, but undeveloped forested Liveoak- Red Bay upland habitat in Rockport, TX.

PROJECT #2519 Nueces Bay Boat Ramp Dredging & Beneficial Use Project, Phase I

Performing Organization: City of Portland
Total Project Cost: $53,000
Bays Plan, 2nd Ed. Actions: D 1.1, HLR 1.1, HLR 1.2, TR 2.1

Background:

The purpose of the proposed project is to provide safe public access to Nueces and Corpus Christi Bay and to protect and restore locally degraded coastal habitats through marked navigable access and beneficial use of dredge material. The proposed project is a Phase 1 study to evaluate boating access and habitat restoration needs in the vicinity of the City of Portland public boat ramp. This work will include an assessment of available data, public outreach, development of navigable channel and beneficial use concepts, and preliminary design. Future phases of work will include field data collection, permitting, final design, bidding and construction.

The project shoreline has historically been a popular area for launching shallow draft bay boats and kayaks. This unrestricted access has resulted in impacts to undeveloped uplands, wetlands, tidal flats, and bay bottom. To provide responsible public access and mitigate further impacts to adjacent habitats, the City of Portland is currently constructing a public boat ramp and parking lot facility. This facility and adjacent habitats will be complimented by the proposed project. The proposed project will provide a designated boat channel, with navigation aids, to help boaters navigate to deeper waters without impacting the bay bottom and seagrass communities. Dredge material generated by the creation of the boat channel will be used beneficially to protect, restore, or create habitat.

Project Objectives:

1. Desktop Data Review: Involves review of currently available data for the project site via publicly accessible sources as well as any data provided by project stakeholders to support the development of design concepts. Upon review of this existing data, future project data needs will be identified which may include topographic and bathymetric, coastal boundary, and habitat surveys, geotechnical data, and other engineering/regulatory data needs.
2. Concept Development: Up to two concepts will be developed and early public involvement will be prioritized for the dredge template alignment and potential local restoration sites. Based on stakeholder feedback and public input, further design criteria will be established.
3. Preliminary Design: Concepts developed during task two will be progressed to determine preliminary engineer's opinion of probable construction costs, and preliminary design concept drawings will be generated.
4. Public Outreach: Up to two public outreach meetings will be hosted. The engineering consultant will present the preliminary design concepts to the public to gain further feedback and input. Feedback gathered will inform future phases of the project.

PROJECT #2520 Shoreline and Wetland Protection at the Cohn Preserve, Phase 2

Performing Organization: The Nature Conservancy
Total Project Cost: $200,000
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2, CR 1.1, CR 1.2

Background:

CBBEP is currently engaged with The Nature Conservancy (TNC), U.S. Fish and Wildlife Service (USFWS), and Texas General Land Office (GLO) to review alternatives for shoreline protection and breach closure and permitting regulatory coordination at the Cohn Preserve, Phase 1, located on the bayside of Mustang Island. The purpose of the "Shoreline and Wetland Protection at Cohn Preserve - Phase 2" project is to implement a stopgap project to address ongoing erosion to the current shoreline, south of the existing breach at Cohn Preserve while continuing the Phase 1 project. The Phase 2 stopgap project will be part of the larger shoreline protection system (initiated in Phase 1) being designed for the Cohn shoreline, north and south of the breach.

Phase 2 consists of design/permitting and installation of rip rap or other similar product at the mean tide level of the Preserve shoreline. The Cohn Preserve is owned and managed by TNC, who is currently working in partnership with CBBEP, USFWS, GLO, and a project engineer to implement Phase 1 of the project (funded from GLO CEPRA Cycle 12 and matched by CBBEP). Phase 1 consists of site data collection, alternatives analysis, preliminary engineering design (30%), and permitting for a living shoreline project. Phase 1 will require an individual construction permit from the US Army Corps of Engineers (USACE). Experience has shown that individual construction permits can take more than two years, and in the meantime the site continues to erode and lose sediment at an alarming rate. A review of aerial photographs from 2010, 2015, and 2020 indicate that over the 10-year period the shoreline eroded between 15 and 90 feet, with the largest impact being in 2017 at the breach along the northern shoreline during Hurricane Harvey. For this reason, CBBEP and TNC are proposing a Phase 2 stopgap project that can be more quickly permitted and implemented earlier than Phase 1 to stop the persistent erosion while the larger shoreline protection system undergoes regulatory coordination

Project Objectives:

The primary goal of the project is to slow down existing erosion and enable a more efficient, cost-effective construction option of the design identified in Phase 1. The objectives of this project include: (1) design and permit Phase 2 (early shoreline protection) and (2) construct early shoreline protection

PROJECT #2521 Relative Sea Level Rise and Habitat Assessment in the Nueces Delta

Performing Organization: University of Texas Marine Science Institute
Total Project Cost: $6,915
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.3, HLR 2.4, CR 1.1

Background:

The project will help determine the impacts of sea level rise on marsh habitats in the Nueces Delta Preserve by gathering data on both vegetative communities and elevation change. Funding for the proposed project will be used (1) to continue a long-term marsh vegetation monitoring program in the Nueces Delta and (2) to supplement the existing marsh monitoring program with elevation data by monitoring Surface Elevation Tables (SETs) and marker horizons (MHs) that were deployed in Spring 2017 with funding from CBBEP. This project will provide CBBEP, and resource agencies, with the information they need to plan for sea level rise in the future. More specifically, the results of this project can be used to help answer questions related to the management and protection of the Nueces Delta Preserve, which is owned by the CBBEP.

This scope includes the monitoring of Surface Elevation Tables (SETs) and marker horizons (MH) at two sites (near stations 270 and 450) on the Mitigation Channel and Rincon Bayou, respectively. Measurements are collected twice annually (Fall and Spring) at each station (total of 6 SETs and 24 MH). Using the elevation data gathered from SETs and MHs, we can compile a more complete picture of habitat changes due to relative sea level rise within the Nueces Delta. This project builds upon other efforts along the Texas coast to continuously maintain and monitor SETs and MHs, including those deployed at five locations in 2012 in the Mission-Aransas Estuary.

SETs and MHs help researchers acquire the fundamental data and information needed to understand the effects of changing local sea level and inundation patterns on the response of vegetative communities. Knowledge about other factors such as changes in vegetative communities, precipitation, temperature, water chemistry, and invasive species is helpful in segregating the impacts of changing land and water levels from other environmental influences. Previous, on-going, and planned research projects in the Nueces Delta will be invaluable in identifying the key indicators that are environmentally important and will complement the data gathered through this proposed project.

The SET and MH data greatly complement the long-term vegetation monitoring program that has been maintained and monitored by UTMSI for many years in the Nueces Delta. Measurements of vegetation transects have been made continuously for over 20 years and have included percent cover, species composition, sediment ammonium, pore water salinity, and sediment moisture. By placing SETs and MHs proximate to these transects, researchers will have a more complete picture of habitat changes due to relative sea level rise, inundation changes, and planned mitigation measures designed to slow the erosion of the deltaic habitat. The project includes funds to allow UTMSI to continue monitoring vegetation transects at both sites on a quarterly basis within the Nueces Delta.

Project Objectives:

1. Continuation of a long-term marsh vegetation monitoring program at the Nueces Delta.
2. Supplement the existing marsh monitoring program with elevation data by monitoring SETs and MHs.

PROJECT #2522 Wells and Water for Whoopers Cost Share Program

Performing Organization: International Crane Foundation
Total Project Cost: $50,000
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

This project will include improvements on 6 freshwater wetlands important for Whooping Cranes and other waterbirds. Under the "Wells and Water for Whoopers Cost Share Program," landowner agreements between private landowners and ICF will be established for five years, ensuring that sufficient amounts of water will be available during the winter season (November-April), and that wetland vegetation will be managed and maintained for Whooping Cranes. The agreement will also include the required protection and maintenance of a 50-meter herbaceous buffer around each wetland to protect against soil runoff into the wetlands and decrease predation risk to Whooping Cranes associated with dense woody cover stands. This project will provide drinking and foraging habitat for Whooping Cranes, shorebirds, and wintering waterfowl and provide Mottled Duck nesting habitat during the spring and summer. Monitoring of the project sites following implementation will allow ICF to monitor water levels, determine proper well-functioning, and avian use. The Mid-Coast Chapter of Texas Master Naturalists will assist with monitoring, and these data will better inform future wetland projects.

Since 2012, the San Antonio Bay Partnership, ICF, and various other organizations have worked to ensure that freshwater is available to Whooping Cranes and other wildlife. This "Water for Wildlife" Program has been successful in developing reliable wetlands on both Federal and private lands, and ICF has documented Whooping Crane use of these wetlands for over 10 years. The Aransas-Wood Buffalo Population of Whooping Cranes has continued to grow and the winter range of this population has expanded into new areas. In 2023, ICF initiated the "Wells and Water for Whoopers" Cost Share Program to build upon the many years of successful collaboration on "Water for Wildlife" projects, to formalize the agreements with landowners, and to work in these expansion areas. This new cost share program will pay for a portion of the installation costs associated with installing new wells, fixing broken wells and pumps when necessary, and enhancing wetlands through restoration, or excavation as needed.

Project Objectives:

The objective of this project is to provide drinking and foraging habitat for Whooping Cranes, shorebirds, and wintering waterfowl and provide Mottled Duck nesting habitat during the spring and summer.

PROJECT #2523 Gulf Coast Conservation Initiative

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: TBD
Bays Plan, 2nd Ed. Actions: LCS 1.1, LCS 1.2

Background:

The Gulf Coast Conservation Initiative (GCCI)'s purpose is to protect, enhance, and/or restore habitat for Whooping Cranes, northern Aplomado falcons, Attwater's prairie chickens, Sprague's pipit and associated migratory bird species. The Aplomado Falcon, Attwater's Prairie Chicken, and Whooping Crane are endangered species that occur in coastal Texas, and whose ranges overlap to varying degrees with one another, as well as with many migratory birds which have experienced long-term, broad-scale declines across much of their ranges. These species can neither recover, nor be sustained, unless habitat sufficient to support viable populations is conserved. Habitat for these species has been degraded by the production of food and fiber and is being lost to development and rising sea-levels. Protecting, enhancing, and restoring habitat for these species from development in this area will reduce or avoid impacts from recreational uses, protect and preserve functional sensitive natural habitat types, preserve open space, and restore degraded habitats in the GCCI priority area.

Since 2002, CBBEP has worked to acquire either fee simple titles or conservation easements for more than 12,000 acres of freshwater marsh, forested wetlands, mudflats, riparian corridors, and native upland habitat for conservation management. CBBEP has coordinated with U.S. Fish & Wildlife Service, Natural Resources Conservation Services, and The Nature Conservancy to develop and implement management plans and restoration actions throughout this protected habitat. CBBEP has also coordinated and worked with other property owners (such as Aransas National Wildlife Refuge, Texas Parks and Wildlife Department, City of Corpus Christi, South Texas Botanical Gardens and Nature Center, and private property owners) to develop and implement restoration actions on their properties. CBBEP will coordinate with USFWS, Grazing Lands Coalition, TNC, USDA-NRCS, and other conservation organizations to identify and implement restoration actions that benefit a minimum of 500 acres of habitat for Aplomado Falcons, Attwater's Prairie Chickens, and/or Whooping Cranes, as well as associated focal migratory bird habitats. For projects on private lands, CBBEP or a designated project partner will develop written 10-year agreements with landowners.

Project Objectives:

1. Identify and implement restoration actions that benefit habitat for Aplomado Falcons, Attwater's Prairie Chickens, and Whooping Cranes.
2. Establish cooperative agreements with partnering landowners.

PROJECT #2524 CBBEP Coastal Bird Program – Laguna Madre Initiative

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $100,000 (Funds are Pending)
Bays Plan, 2nd Ed. Actions: CB 1.1, CB 2.1, HLR 1.1, HLR 2.1

Background:

The Laguna Madre is one of the most important coastal wetland complexes for birds in the Western Hemisphere. Much of the value of this system for birds is based on the diversity of tidal flats and seagrass beds spread over a very large geography, extending from the Corpus Christi area down to Tamaulipas, Mexico.

Historically, the Coastal Bird Program has focused our management and monitoring efforts primarily on the mid-coast of Texas. However, bird populations span across program boundaries, and we recognized that expansion to the Lower Laguna Madre was needed to properly manage local waterbird populations. The Laguna Madre is used by the avian community as a contiguous ecological system and should be managed as such.

Thanks to the continued generosity of the Kleberg Foundation, the Coastal Bird Program has employed a full-time biologist in the Lower Laguna Madre who has, with the help of volunteers, implemented management actions at waterbird rookeries - installing protective signs, removing exotic vegetation, planting native shrubs, and eliminating nest predators. Staff have also focused on community engagement and coordinating volunteers. Consistent, annual efforts are vital in properly managing rookery islands. It takes several seasons of intense management to improve island habitat. Therefore, on-going investment in the Laguna Madre Initiative is needed to continue the habitat improvement and protection that is already underway.

In addition to rookery islands, other habitats found in the Laguna Madre support astounding numbers of migrating and wintering shorebirds. Millions of birds, many that migrate over 10,000 miles a year, make use of the beaches and tidal flats of the Laguna Madre. Advances in avian tracking systems are allowing us to learn more about these species and how important the Texas coast is to the migratory flyway. We have expanded our conservation and research efforts to include migratory shorebirds which depend on the Texas coast for portions of their life cycles.

Funding from the Kleberg Foundation and others has allowed us to effectively operate on the lower Texas coast and cultivate a network of local volunteers and partners. Continued investment in this program will allow us to build upon these partnerships, create new collaborative opportunities, and boost our volunteer and support base in the lower Laguna Madre, drawing us closer to our goal of a continuous, integrated, collaborative coastal bird conservation effort throughout the bi-national Laguna Madre system.

Project Objectives:

1. Improve colonial nesting waterbird populations in the Lower Laguna Madre by addressing proximate causes of nest failure such as predation, lack of suitable nesting substrate, and human disturbance.
2. Implement monitoring efforts on shorebird populations to identify potential conservation actions.
3. Engage volunteers and communities in coastal bird conservation efforts through the coastal portion of the Rio Grande Valley.

PROJECT #2525 Climate and Restoration-Driven Habitat Change: Nueces Delta

Performing Organization: University of Texas Marine Science Institute
Total Project Cost: $56,000
Bays Plan, 2nd Ed. Actions: CR 1.1, CR 1.2, CR 2.1, FW 1.1, HLR 1.1

Background:

Coastal marshes are among the most valuable natural ecosystems in the world. Marshes provide coastal protection, erosion control, water purification, and fisheries support. In addition, these "blue carbon" ecosystems are characterized by extremely high primary production (up to 3900 g C m-2 yr-1) and carbon sequestration. Along the Gulf of Mexico coast, marshes are being threatened by both sea level rise (5-6 mm yr-1) and macroclimatic change. Stressful abiotic conditions already limit the plant species that can survive in coastal marshes, and increases in stressors associated with dry periods have the potential to cause large scale dieback, loss of diversity, and spatial and temporal shifts in plant community composition. Additionally, deterioration of these coastal ecosystems is rapidly intensifying due to human activities, such as agriculture and development. Understanding how marsh ecosystem health and carbon storage will continue to respond to a rapidly changing climate is of key importance for scientists, conservationists, and coastal residents.

The Nueces Delta has been significantly modified by humans to provide water to the population of Corpus Christi. Two large reservoirs were constructed within the Nueces Basin: the Choke Canyon Dam on the Frio River in 1982 and the Wesley Seale Dam in 1958. Studies funded by a variety of local, state, and federal agencies have examined how reduced freshwater inflow has impacted the Delta ecosystem and habitat. Large efforts have been made to improve freshwater inflow to the Delta, the most significant of which was the Rincon Bayou Demonstration project overflow channel construction. Another major focus of past research has been the response of plant communities to climatic conditions and altered freshwater inflow. These studies provide a base of evidence that environmental and climatic factors are important in determining community composition. Understanding the causes of changes in marsh community dynamics is important because differences in vegetation patterns can influence key natural processes, such as erosion protection and carbon sequestration. In fact, high levels of shoreline erosion (up to 4.5 m yr-1) and slow increases in marsh surface elevation (~7 mm yr-1) have already been recorded in the Delta. If this trend of erosion and slow marsh accretion continues, the Nueces Delta marsh could drown with accelerated sea level rise.

The overarching goal of this work is to quantify the impacts of climate and restoration on the ecological integrity of the Nueces Delta. This is the second phase of a two-phase approach. Phase 1 focused on using historical data to assess long-term, climate-driven trends in marsh vegetation. Phase 2 will focus on assessing the impacts and efficacy of large-scale dredge placement restoration efforts spearheaded by CBBEP. Phase 2 entails continued vegetation monitoring at existing and newly established sites, assessment of seed production and dispersal, and outreach/education efforts. Overall, this project contributes to our understanding of the relationships between the physical and biotic parameters that ultimately control marsh health, resilience, and persistence under climate change and restoration scenarios.

Project Objectives:

1. Continue monitoring marsh vegetation at existing long-term monitoring sites and establish and monitor new marsh vegetation monitoring sites adjacent to dredge placement areas in the Nueces Delta.
2. Assess the potential for recovery and reestablishment of marsh vegetation in dredge placement areas (newly created marsh habitats) by characterizing marsh seed production, composition, dispersal traits (i.e., high seed abundance, low seed mass, high buoyancy), and dispersal patterns at reference sites.
3. Enhance climate literacy by engaging in informal educational opportunities with local communities.

PROJECT #2526 Better Understanding Juvenile Tarpon Ecology in Texas Coastal Bend Nursery Habitats

Performing Organization: Harte Research Institute for Gulf of Mexico Studies
Total Project Cost: $60,762
Bays Plan, 2nd Ed. Actions: HLR 2.1, HLR 2.3

Background:

The purpose of this project is to provide new information on the occurrence, abundance, and residency of juvenile tarpon (*Megalops atlanticus*) occurring in nursery habitats in the Texas Coastal Bend to inform the development of conservation plans for this important sportfish. In addition to overfishing of adult tarpon, scientists have speculated that the fishery collapse observed in Texas in the mid-1900s was the result of recruitment failure to the area. In fact, Winemiller and Dailey (2002) modeled population dynamics of tarpon using life history data and determined that small declines in juvenile survival resulted in marked reductions in the abundance of adults. Thus, the collapse of the fishery in Texas appears linked to the quality and availability of nursery habitats used by juvenile tarpon during the early years of life. Unfortunately, our understanding of basic habitat requirements of juvenile tarpon in Texas is very limited, precluding our ability to assess population trends and develop sound conservation strategies. These data are critical for understanding how human influences and future changes to habitat may affect tarpon distributions and ultimately population recovery along the Texas Coast. Importantly, tarpon have been listed as a Species of Greatest Conservation Need (SGCN) by the Texas Parks and Wildlife Department (TPWD) and ranked as S2S3 ("Imperiled" to "Vulnerable") during a 2019 status assessment. The development of effective conservation strategies is hindered without a full accounting of juvenile tarpon occurrence, abundance, and habitat needs in putative nursery habitats. Using standardized bimonthly field sampling, acoustic telemetry, and conventional tagging, the specific objectives of this project are to: (1) determine the frequency of occurrence, abundance, and habitat characteristics of juvenile tarpon in Coastal Bend nurseries, (2) monitor seasonal residency of juvenile tarpon in identified nurseries using acoustic tracking, and (3) collect and preserve fin clips for future genetic investigation of regional population size.

Project Objectives:

The information provided by this project will fill severe knowledge gaps pertaining to the juvenile ecology of this species and provide managers with data needed to develop effective conservation plans for these important sportfish.

PROJECT #2527 Temporal Changes in Aragonite Saturation State in Oyster Reefs

Performing Organization: San Antonio Bay Partnership
Total Project Cost: $187,506
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.3, WSQ 1.1, WSQ 2.2, WSQ 3.1

Background:

Aragonite saturation state (Ωarag) is a key parameter that reflects the suitability of water column for calcifying organisms, including oysters (larval stage shell is made of aragonite) and corals in coastal areas and pteropods in the open ocean. Ocean acidification, caused by increasing atmospheric CO_2, along with coastal eutrophication, reduces Ωarag and poses a threat to marine ecosystems and fisheries. Estuaries are particularly vulnerable to ocean acidification due to their complex hydrology because of varying inflow scenarios, and biogeochemical behaviors due to the input of nutrients and land-derived organic matter, both of which can modulate Ωarag in response to freshwater inflow, evaporation, mixing, and respiration.

The Mission-Aransas Estuary (MAE) is a shallow, semiarid estuary in the northwestern Gulf of Mexico, which hosts important habitats for oysters and other shellfish species. MAE experiences large variations in freshwater inflow due to climate variability and extreme events, such as droughts and hurricanes, which can affect its carbonate chemistry and Ωarag dynamics. However, the current knowledge of Ωarag in MAE is limited and based on sporadic measurements that do not capture its full spatiotemporal variability and drivers, especially the areas where both natural and artificial reefs are located.

The main objective of this proposal is to improve the understanding of Ωarag in MAE and its response to hydrological variability and biogeochemical processes (respiration) at a series of natural and restored oyster reefs on a seasonal basis, including periods after significant freshwater inflow. Methods for the project include: (1) quarterly water sampling will take place at the reef locations along the salinity gradient for analysis of total alkalinity, dissolved inorganic carbon, pH and calcium ion concentration and nutrients. Additional sampling is also planned post large pulse of freshwater inflow; (2) Ωarag will be calculated using the CO2SYS program based on water sample data; (3) a multiple linear regression model to partition the Ωarag variability using the measured carbonate system parameters and other environmental variables; and (4) characterize oyster population at each reef location (e.g., oyster density, size, spat density) for comparison with water carbonate chemistry conditions.

Project Objectives:

1. Measure the carbonate system parameters (pH, total alkalinity, dissolved inorganic carbon, and calcium ion concentration, which will be used to calculate Ωarag) in MAE using seasonal discrete sampling.
2. Quantify the contributions of freshwater inflow, evaporation, mixing, and respiration to the Ωarag variability in MAE using mass balance and statistical models.
3. Assess the vulnerability of MAE to ocean acidification.

PROJECT #2528 Baffin Bay Wastewater Treatment Plants - Agua Dulce Assessment

Performing Organization: Nueces River Authority
Total Project Cost: $134,750
Bays Plan, 2nd Ed. Actions: WSQ 1.1

Background:

This project will conduct an engineering assessment of the Agua Dulce Wastewater Treatment Plant (WWTP) System. Agua Dulce is one of the 13 wastewater treatment plants that discharges into Petronila Creek and ultimately into Baffin Bay. The Agua Dulce WWTP System is in need of major repairs, and they do not have the population base or tax base to fund the repairs. Similar to other small, rural communities, Agua Dulce suffers from not having city engineers with the ability to do WWTP assessments. They also lack the staff needed to put together competitive funding applications to seek money for the improvements. This project will assess the WWTP and prepare an application for the Texas Water Development Board - State Revolving Fund Clean Water Fund. This will allow Agua Dulce the ability to make the improvements needed at the WWTP to improve the quality of the discharge.

Project Objectives:

The primary objective of this project is to improve water quality in Baffin Bay through the identification of improvements at the Agua Dulce WWTP and completion of a funding application.

PROJECT #2529 Mapping Antibiotic Resistance in Baffin Bay

Performing Organization: Harte Research Institute at Texas A&M University – Corpus Christi
Total Project Cost: $45,731
Bays Plan, 2nd Ed. Actions: WSQ 1.1, WSQ 2.1, PEO 1.1

Background:

Baffin Bay is a national treasure and the jewel of the Texas coast. Yet the bay has experienced a long history of impairment from anthropogenic pollution. Impairments are commonly assessed measuring simple water quality parameters that provide limited information outside of narrow time points. There is an urgent need for integrative approaches that assess the collective effects of multiple stressors over long time periods. An ecosystem's resistome represents the collective effects of bacterial pollution and many additional contaminants that select for the maintenance and spread of antibiotic resistance; e.g., heavy metal pollution, residual antibiotics, and microplastics. Antibiotic resistance genes (ARGs) are emerging contaminants that threaten environmental and human health. This project will assess the abundance and temporal/spatial distribution of ARGs in Baffin Bay, Texas. A subsequent phase II of this project (FY26 grant cycle) will utilize the data to enhance management prioritization, resulting in an addendum to the Petronila and San Fernando Creeks WPP that aims to mitigate source load contributions.

The project will establish a knowledge baseline for the abundance and temporal/spatial distribution of antibiotic resistance genes (ARGs) in Baffin Bay, Texas. ARGs are emerging contaminants that threaten environmental and human health in Texas, the Gulf of Mexico, and beyond. The resistome is the aggregate of all ARGs in a system. ARGs are introduced through fecal bacterial pollution. However, unlike fecal bacteria (e.g., enterococci, E. coli) that persist for only a short time, ARGs carried on mobile genetic elements (e.g., transposons, conjugative plasmids) are passed along to natural bacterial populations where they can persist long-term. Understanding ARG abundance and distribution will improve understanding of the long-term consequences of anthropogenic pollution in coastal environments and inform/enhance management prioritization. The spread of antibiotic resistance is recognized as an emerging global environmental and human health challenge by all major regulatory, economic, and political bodies.

The project will address the urgent and challenging issue of contaminants of emerging concern in coastal waters. This project will utilize the framework, stakeholder/community linkages, water samples, and metadata from an ongoing and complementary EPA Gulf of Mexico microbial source tracking/risk assessment analysis project. ARG counts, identified by metagenomic sequencing, will be used to calculate the resistome richness, diversity, and composition. Temporal and spatial differences will be determined through non-metric multidimensional scaling (NMDS) and permutational multivariate analysis of variance (PERMANOVA), and Analysis of Compositions of Microbiomes with Bias Correction (ANCOM-BC). Relationships with physiochemical parameters and microbial source-tracking data will be tested. Results will reveal the abundance, drivers, land-to-sea transport, and temporal/spatial distribution of ARGs. Results will also identify the bacterial species harboring ARGs. Data produced by the project will ultimately inform/enhance management prioritization to mitigate source load contributions (phase II).

Project Objectives:

The project objective is to establish a knowledge baseline for the abundance and temporal/spatial distribution of antibiotic resistance genes (ARGs) in Baffin Bay, Texas.

PROJECT #2530 Long-Term Seagrass Monitoring in Corpus Christy Bay, Upper Laguna Madre, and Baffin Bay

Performing Organization: University of Texas Marine Science Institute
Total Project Cost: $43,170
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.3, HLR 2.4, CR 1.1, PEO 1.1

Background:

The overarching goal of this work is to continue the landscape approach to long-term seagrass monitoring to evaluate status and trends in Texas coastal seagrass populations with particular focus on Baffin Bay (BB), Corpus Christi Bay (CCB), and Upper Laguna Madre (ULM). A hierarchical strategy for seagrass monitoring outlined by Neckles et al. (2011) will be adopted to establish the quantitative relationships between physical and biotic parameters that ultimately control seagrass condition, distribution, persistence, and overall health. The approach proposed here follows a broad template adopted by several federal and state agencies across the country, but which is uniquely designed for Texas. The program is focused on "Tier-2" monitoring the includes a regional rapid assessment program using fixed stations sampled annually from a shallow-draft vessel and nutrient constituent analysis of leaf tissue.

For FY 2024, this research will continue to monitor long-term health of Texas seagrass in BB, CCB, and ULM in combination with leveraged funds from two other partners. This long-term program contributes to a broader Tier-2 state-wide effort to assess seagrass condition and distribution that began in 2011. The program strongly complements a long-term commitment by both the Mission-Aransas National Estuarine Research Reserve (Mission-Aransas NERR) for sampling in Redfish and Aransas Bays and the National Park Service for Tier-2 sampling in the ULM (Padre Island National Seashore only).

Data collected since 2011 is posted on the dedicated website (see http://www.texasseagrass.org/) and serves as an invaluable database of existing seagrass resources available for various local, state, and national groups. This project contributes to our understanding of the quantitative relationships between physical and biotic parameters that ultimately control seagrass condition, distribution, and persistence.

Project Objectives:

Monitor seagrass/water quality in Baffin Bay, Corpus Christi Bay, and Upper Laguna Madre to support the Texas Seagrass Monitoring Program and possible creation of water quality criteria for seagrass beds.

PROJECT #2531 Occurrence, Distribution, and Composition of Microplastics in Bays and Estuaries of the Texas Coastal Bend, Phase 2

Performing Organization: University of Texas Marine Science Institute
Total Project Cost: $130,678
Bays Plan, 2nd Ed. Actions: WSQ 1.1

Background:

To better understand the effects and potential risks of microplastics in bays and estuaries of the Coastal Bend, it is necessary to establish and maintain a long-term microplastics monitoring program to track changes in spatial and temporal distribution of microplastics in this region. Baseline data generated will be critical to evaluate contamination status of microplastics in this region and the potential impact on relevant coastal ecosystems. Current monitoring efforts funded via the FY2024 604(b) grant support spring and summer sampling in 2024, however, additional sampling is needed to establish spatial and temporal baseline trends.

The purpose of this project is to quantify the abundance and polymer types of microplastics in bays and estuaries of the Coastal Bend to collect baseline data to assess the occurrence, abundance, and temporal and spatial changes of microplastics in the Marine environment. Microplastics will be collected and analyzed in the waters of Copano Bay, Aransas Bay, Corpus Christi Bay, Nueces Bay, Upper Laguna Madre, and Baffin Bay quarterly (fall 2024 and winter 2024/2025), including some opportunistic sampling at the Cole Park and Brawner Parkway drain outlets right after floods (Corpus Christi Bay). Specifically, the size and polymer types of plastics in these waters will be identified, which will offer insights into the potential pollution sources. The seasonality of plastic abundance and polymer types will also be identified. These baseline data will help policy makers evaluate the source and degree of the plastics contamination and the potential ecological impact and take appropriate action to maintain healthy estuarine ecosystems.

Project activities and preliminary results will also complement microplastic outreach and education programming in the Coastal Bend, currently being conducted by the University of Texas Marine Science Institute (UTMSI), by providing participants with real world context for program curriculum. Outreach and educational activities being conducted including an annual Summer Science Program that involves K-12 students, the expansion of Teacher Nurdle Kits provided to schools, and a Summer Course at UTMSI that will involve UT undergraduate students.

Project Objectives:

The project objective is to support a sampling program to collect microplastics from the surface waters of Coastal Bend bays to reveal their occurrence, abundance, and temporal and spatial changes in the marine environment.

PROJECT #2532 Triangle Tree Rookery Island Restoration Monitoring

Performing Organization: University of Texas Marine Science Institute
Total Project Cost: $46,315
Bays Plan, 2nd Ed. Actions: TR 2.1, TR 3.1, HLR 1.2

Background:

CBBEP is working on a project to enhance and protect the existing Triangle Tree Rookery Island located within the Upper Laguna Madre in Kleberg County, Texas. CBBEP has partnered with the Texas General Land Office (TGLO) in this habitat restoration project to construct 1,130 linear-foot near-shore rock breakwater that will protect the Island from further erosion and provide secondary benefits to birds and other estuarine organisms.

An updated permit application for activities to enhance and protect the Island was submitted to USACE on August 3, 2023, which included temporary impacts to 0.44-acre of seagrass. Temporary impacts to seagrass beds are anticipated from short term turbidity and physical alteration by shallow draft barges and construction equipment within the project access corridor. The access corridor connects the southeast end of the breakwater to an existing channel remnant. This was the least damaging method for moving construction equipment on site.

A pre-construction survey of seagrass within the temporary impact areas will be conducted within six months prior to construction. Additionally, a post-construction survey of the temporary impact area will be completed both one month and 90 days after the completion of construction of the near-shore breakwater, pending weather and site access. Annual surveys will also be completed for up to three years after construction is completed, or until success criteria is achieved. Surveys will include collection of data of up to 50 locations within the 0.44-acre temporary impact area and one control site in the vicinity of the Island. Sample metrics include the following: (1) percent cover of vegetation, including species, (2) representative photographs, and (3) data points collected with GPS using submeter accuracy.

Project Objectives:

Project objective is to determine if seagrass areas impacted temporarily by construction activities have been restored to densities of similar equivalence to those observed in the pre-construction survey.

PROJECT #2533 Nutrient Sampling in Petronila Creek

Performing Organization: Nueces River Authority
Total Project Cost: $290,760
Bays Plan, 2nd Ed. Actions: WSQ 1.1, WSQ 2.1, WSQ 3.1

Background:

Petronila Creek is a tributary to Baffin Bay. The health of Baffin Bay has been of great concern to scientists and concerned citizens due to fish kills, water quality issues, and food web changes in the bay. The Baffin Bay Stakeholder Group, formed in 2012 , is composed of scientists from Harte Research Institute (HRI) at Texas A&M University-CC, Coastal Bend Bays & Estuaries Program, USDA-NRCS, Texas State Soil & Water Conservation Board, Texas Water Resources Institute, Texas Commission on Environmental Quality, Texas Sea Grant, Texas General Land Office, Nueces River Authority, and a host of concerned citizens, including commercial and recreational fishermen, ranchers, and business owners. This group has begun an effort to develop a watershed protection plan for Baffin Bay.

Scientists at HRI have determined that the primary cause of water quality issues in Baffin Bay is excessive nutrients in the bay. The purpose of the project is to conduct monthly water quality monitoring for nutrients in Petronila Creek and its tributaries. Water quality samples will be collected monthly from 4 sites along Petronila Creek and its tributaries. Samples will be analyzed for nutrients (nitrate, nitrite, total Kjeldahl nitrogen, total dissolved Kjeldahl nitrogen, ammonia, total phosphorus) and chlorophyll-a, and pheophytin. The nutrient data will be used to help fill the data gaps with respect to identifying all possible sources of the nutrient loading to Baffin Bay and to monitor impacts of watershed restoration efforts. This data collection project will also address two of the nine elements of the San Fernando and Petronila Creeks Watershed Protection Plan, approved by EPA in 2022: (1) Identify causes and sources of pollution and (2) Estimate pollution loading into the watershed and expected load reductions.

Project Objectives:

Collect monthly water samples at sites in Petronila Creek and its tributaries to quantify nutrient concentrations within these water bodies and help identify sources of nutrient loading into Baffin Bay.

PROJECT #2534 Protection and Restoration of Benny's Shack Islands, Phase II

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $6,260,000 (Funds are Pending)
Bays Plan, 2nd Ed. Actions: HLR 1.2, CB 1.1

Background:

Texas colonial waterbirds typically nest in spring/summer months in dense groups on small islands in the southern Texas bays. Threats such as development, habitat loss, and human disturbance are taking their toll on population numbers. Long-term data show that the majority of colonial waterbird populations in Texas are declining, some by as much as 60-70%. The rookery islands known as Benny's Shack have historically supported a large number of nesting waterbirds, but erosion on the northern shoreline due to winds from severe cold fronts is causing the loss of nesting habitat. The high rate of erosion has led to the loss of very old mature brush that supports a diverse community of nesting wading birds, making this a project of great urgency.

Benny's Shack Islands consist of two islands, North and South Island, and are located in the open water of the Lower Laguna Madre with significant fetch for wave development. The islands have undergone erosion in past years as evidenced by the large bluffs and land loss, especially on the northern side of the islands. While both islands have shown erosional issues, the proposed restoration and protection project will focus primarily on the South Island due to the dense seagrass distributions on the North Island that limit expansion of the Island and construction access.

Using previous GLO funding, CBBEP contracted with an engineering firm to complete Phase I of the project, which included an alternatives analysis, data collection, preliminary design (70%), and submission of a permit application for Benny's Shack Islands. CBBEP is ready to begin Phase II of the project which will involve construction of the chosen design. The chosen alternative will expand the existing South Island 2.9 acres north to re-establish land lost from erosion and sea level rise. It will also include the construction of a shoreline protection structure through the construction of a 1,975-foot traditional breakwater to armor the existing island and any expanded island space. This project was designed to reduce damage to the surrounding habitats and avoid encroachment into a nearby dredge placement area, while still providing protection to vulnerable shorelines and expansion of existing habitats. Specifically, expansion is oriented to avoid the majority of seagrass patches to the north of the Island.

Project Objectives:

The proposed project will Increase the amount of nesting habitat available for colonial waterbirds within the Lower Laguna Madre by protecting and restoring Benny's Shack Islands and implementing the following objectives:

1. Complete final engineering and design and bid document development.
2. Complete bidding process for protection and restoration.
3. Construct chosen restoration and protection alternative.
4. Conduct post-restoration monitoring to determine usage of restored island by colonial waterbirds.

PROJECT #2535 Nueces Delta Preserve Infrastructure Enhancements

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $197,802
Bays Plan, 2nd Ed. Actions: INSERT

Background:

The Nueces Delta Preserve is an 11,000-acre property owned by CBBEP and is located primarily in San Patricio County. The Preserve is comprised of diverse and highly productive habitats, including wetlands and prairies. CBBEP's Land Conservation Program implements responsible and sustainable management techniques (e.g., prescribed fire, hydrologic restoration) at the Preserve to ensure that it continues to provide long-term benefits to both wildlife and people. CBBEP also operates our environmental education program, known as Delta Discovery at the Preserve, providing opportunities for students, teachers, and families to experience nature.

Current infrastructure at the Preserve includes educational classrooms, screened pavilions, restrooms, and boardwalks/trails that are used by Delta Discovery for our educational programs. CBBEP is looking to enhance public access by providing ADA compliant access trails, boardwalks, and wildlife observation platforms at the Nueces Delta Preserve. CBBEP will also construct an ADA compliant pier that can be used to gather water samples and increase outdoor education opportunities located on the Rincon Bayou at the Nueces Delta Preserve.

Project Objectives:

Ensure accessibility for all individuals to the educational programs offered at the Nueces Delta Preserve by providing ADA-compliant access trails, boardwalks, pier, and wildlife observation platforms.

PROJECT #2536 Monitoring Water Quality in the Nueces River Tidal Segment

Performing Organization: Center for Coastal Studies at Texas A&M University – Corpus Christi
Total Project Cost: $62,558
Bays Plan, 2nd Ed. Actions: WSQ 1.1, WSQ 2.1, PEO 1.1

Background:

Fish kills within the tidal segment of the Nueces River have raised concerns about water quality degradation. These concerns led to the formation of the Nueces Tidal Stakeholder Group in 2022. Previous research to investigate these fish kills linked mortality to low dissolved oxygen events related to algal blooms, which were triggered by high nutrient loadings. These issues were noted in the 2022 TCEQ Texas Integrated Report. Possible sources of excess nutrient loadings include permitted point source discharges, runoff from urban and rural non-point sources, OSSF, groundwater discharges, and others. Additional stressors may include water management and engineered structures impeding flow and prolonging residence time of constituents in the tidal segment. Currently, TCEQ collects samples for chlorophyll-a analysis on a quarterly basis. However, little data regarding the nutrient loadings to this segment are available to decision makers and resource managers. The first year of higher resolution monitoring was funded in the FY2024 604(b) workplan and supports monthly sampling through March 2025. However, additional data is needed to inform our understanding of the drivers of water quality degradation and potential management strategies.

The purpose of the study is to continue to characterize water quality at a higher spatial temporal resolution, especially for bacteria and nutrient concentrations, in an effort to develop management strategies to improve water quality in the tidal segment of the Nueces River System. The study area will consist of the TCEQ designated Nueces River Tidal Segment (2101), extending from the river's confluence with Nueces Bay in Nueces County, to the Calallen Dam, 1.1 mi upstream of US 77/IH 37, in Nueces/San Patricio County. To characterize water quality, water samples will be collected from five sites on a monthly basis. Nutrient content, chlorophyll-a, and bacteria levels will be compiled and summarized. Results from this work will aid in determining which nutrients to target for load reductions.

Characterizing the pollutant loadings and drivers of eutrophication is the first step towards identifying solutions to improve water quality. This effort will benefit the residents of the disadvantaged communities near this segment of the Nueces River by leading to improved, local recreational opportunities and reduced health and safety risks associated with fishing and swimming in areas containing poor water quality.

Project Objectives:

Project objective is to collect surface water samples on a monthly basis for 12- months from the tidal segment of the Nueces River (Segment 2101) to be analyzed for nutrient, chlorophyll-a, and bacteria concentrations.

PROJECT #2537 Coastal Bend Watershed Education

Performing Organization: Nueces River Authority
Total Project Cost: $108,271
Bays Plan, 2nd Ed. Actions: PEO 1.1, WSQ 1.1, NPS 1.5, BD 1.1

Background:

The goal of this project is to support an education and outreach program that cultivates personal responsibility for water quality and polluting behaviors in the Coastal Bend. This program will connect urban and rural communities of bays and estuaries by educating the public about urban waters, the effects of polluting behavior, and the impacts land use transitions have on water quality.

This Project will deliver water resource stewardship education programming to 5th-grade students at all 5 Corpus Christi public school districts, all elementary schools in the Baffin Bay watershed, and 20 private and charter schools within the Coastal Bend. This project will increase public understanding and stewardship of Coastal Bend resources, improve water quality, reduce debris reaching the bay, and improve the quality of stormwater runoff. The classroom education program uses previously developed scaled relief models of the Baffin Bay, Oso Bay/Oso Creek, and/or the Nueces River watersheds, TEKS aligned science curriculum, and other hands-on activities to show students how pollutants enter and contaminate rivers, bays, and aquifers and how everyone can help protect and conserve water resources. Students are also encouraged to become personally responsible for keeping our water clean through the Up2U water conservation and litter prevention campaign. The curriculum reinforces 5th-grade Texas Essential Knowledge and Skills and cultivates students' understanding of our water resources, including watersheds and river basins. These hands-on lessons help students see where their water comes from and where it goes. Participants can identify where they live on the model and see how their activities impact the health of the water resources in their watershed and beyond.

This project will benefit residents of disadvantaged communities in the Corpus Christi and Baffin Bay area by providing programing to all 5th graders in the region, particularly those attending public school. Nearly all of the Baffin Bay watershed is classified as disadvantaged according to the EPA approved CBBEP Equity Strategy, as is much of Corpus Christi and Nueces County. For example, more than 70% of students in the Corpus Christi Independent School district (the largest school district in the region) qualify for and participate in the free/reduced lunch program provided by the district. By providing programming to all 5th grade students, this project will reach those that are most affected by the health and safety risks associated with exposure to areas containing poor water quality.

Project Objectives:

Project objective is to provide TEKS aligned watershed stewardship educational programming to 5th grade students at all 5 Corpus Christi public school districts, all elementary schools in the Baffin Bay watershed, and 20 private and charter schools within the Coastal Bend during the 2024/2025 school year.

PROJECT #2538 Rain to Resource Project – Rainwater Harvesting at the San Antonio & Aransas Pass Railroad Depot

Performing Organization: Clean Coast Texas
Total Project Cost: $63,000
Bays Plan, 2nd Ed. Actions: NPS 1.1, NPS 1.5, WSQ 1.1, FW 1.3

Background:

The Clean Coast Texas Collaborative is a program of the Texas General Land Office, which is administered by The Meadows Center for Water and the Environment at Texas State University. The Clean Coast Texas Collaborative is a primary initiative of the Texas Coastal Nonpoint Source Program and began implementation in January 2021. The Collaborative is a dynamic team of experienced engineers, scientists, planners, and educators who work to provide capacity and incentives to coastal communities that lack the expertise and/or resources to successfully implement Coastal NPS priority projects. The Collaborative supports environmental outreach and education, comprehensive planning, local/regional policy development, green stormwater infrastructure projects, floodplain management, on-site sewage facility maintenance, and funding strategies to support the adoption of Texas Coastal Nonpoint Source Program priorities.

The Collaborative is currently working to implement a green infrastructure project in Rockport, Texas to benefit Little Bay. The Rain to Resource project includes rainwater harvesting and irrigation systems at the historic San Antonio and Aransas Pass Railroad Depot located in Rockport, Texas. The average Texan uses about 100 gallons of water per day. Over time, this usage can stress Texas's water resources. One solution to this problem is rainwater harvesting, which collects rainwater into a storage container for outdoor watering or indoor use with the proper filtration system. Rainwater harvesting systems normally have a total storage capacity ranging from 1,000 to over 11 ,000 gallons. The proposed rainwater harvesting system can hold 2,000 gallons, having the potential to collect 26,000 gallons per year. Water collected from this rainwater harvesting tank is used to water the landscape.

Rainwater harvesting systems protect Litt e Bay and our water supply by: (1) reducing demand for fresh treated water; (2) reducing stormwater runoff and flooding by capturing rain from rooftops; and (3) reducing the amount of pollutants from sediments, pet waste, and car oils from entering Little Bay. By installing the system at a tourist attraction, the project will also serve as an educational tool for visitors about the benefits of rainwater collection and its uses.

Project Objectives:

Project objective is to implement a rainwater harvesting project at the historic San Antonio and Aransas Pass Railroad Depot that provides water for the site's landscaping, while also serving as a powerful educational tool that showcases the benefits of rainwater harvesting.

PROJECT #2539 Protection and Restoration of a Bird Nesting Island in Aransas Bay

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $1,845,247
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2, CB 1.1

Background:

Increased vessel traffic, rising sea levels, and impacts from storm surge have led to significant erosion of almost all remaining rookery islands in the Aransas Bay System, and in most cases the islands are no longer able to support nesting birds. The 2020 Environmental Indicators Report produced by CBBEP classified the Aransas Bay System as having poor nesting habitat for colonial waterbirds and identified this system as a priority area for island protection and restoration efforts. The urgency to provide additional rookery habitats was elevated even further after Hurricane Harvey struck the Coastal Bend in 2017. This Category 4 hurricane resulted in major erosion of every rookery island in the Aransas Bay system.

Deadman Island presents a good option for rookery island restoration in the Aransas Bay System. Historically, the Island has provided nesting habitat for colonial waterbirds like pelicans and egrets, and it has been especially important for ground-nesting birds like skimmers and terns. Despite its relatively small size, it has historically been an extremely important rookery island and represents some of the last remaining rookery island habitat within this system. With projected sea level rise and increasing human development further limiting available nesting habitat in this region, this island will likely become an even more critical nesting site in the near future.

Deadman Island is located in Aransas Bay, near Rockport, TX. The Island is part of the historical Long Reef that extends off the west side of San Jose Island. San Jose Island protects Deadman Island from waves of the Gulf of Mexico, but the Island is exposed to long fetches, up to 10 miles, in all directions. In addition, because of the location relative to the Gulf Intracoastal Waterway, the island is exposed to boat and barge wakes. When combined with rising sea levels and storm surges from recent hurricanes, these factors have led to significant erosion of the Island. Now, Deadman Island can no longer support colonial nesting waterbirds.

The goal of this project is to increase the amount of nesting habitat available for colonial waterbirds within the Coastal Bend by protecting and restoring a three-acre bird nesting island in Aransas Bay. The protection of Deadman Island from ongoing erosion and future sea level rise will help conserve this important rookery, making it more resilient to future threats. Although it is considered a secondary outcome of the project, the proposed breakwater structure will also allow for the recruitment and growth of oyster larvae, a threatened habitat. Development of an oyster reef complex will have the added outcome of creating complex fish habitat for numerous recreationally and commercially important species. The funds listed above from the Texas General Land Office, Coastal Erosion Planning and Response Act Program will be added to funds received from the National Oceanic and Atmospheric Administration, National Estuarine Research Reserve – Bipartisan Infrastructure Law competitive grant program, providing CBBEP with the funds needed to complete the chosen protection and restoration alternative.

Project Objectives:

1. Complete final engineering and design and bid document development for Deadman Island.
2. Complete bidding process for protection and restoration of Deadman Island.
3. Construct chosen restoration and protection alternative at Deadman Island.
4. Conduct post-restoration monitoring to determine usage of restored island by colonial waterbirds.

PROJECT #2540 Protection and Restoration of Ayres Point Oyster Reefs

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $1,951,512
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

Historically, oyster reefs stood as vibrant and dominant structural elements within estuaries worldwide, playing a critical ecological role and serving as sustenance for coastal economies. Oysters have since experienced a devastating decline, facing a staggering 50-90% loss compared to historic levels (Beck et al., 2011). The implications of this loss extended far beyond the oyster population, impacting the entire coastal ecosystem and the communities dependent on its vitality. In line with global trends, oyster reefs in the Gulf of Mexico, including Texas, have shown major declines. The Mesquite Bay Complex, encompassing Mesquite, Carlos, and Ayres Bays, along the South Texas coast was renowned for its productive oyster reefs, but these reefs have faced an unprecedented combination of stressors in recent years, including intense harvest pressure and Hurricane Harvey in 2017.

During the 2021 and 2022 commercial harvesting seasons, the Mesquite Bay Complex witnessed a surge of oyster-harvesting boats. This harvesting pressure was brought on by closures along the upper and mid-Texas Coast due to flooding, shell-size restrictions, and a major mortality event in Copano Bay. With low abundance and numerous closures, oyster boats congregated in the limited remaining harvestable areas, particularly in Carlos, Mesquite, and Ayres Bays. The Mesquite Bay Complex experienced unprecedented harvest pressure with a drastic increase from the seven-year average of about 50 oyster vessels per season to 144 reporting landings. Routine dredge sampling by the Texas Parks and Wildlife Department (TPWD) revealed a rapid decline in the number of harvestable oysters across all three bays. The sampling trend exhibited the pressing issue of declining oyster abundance in Mesquite Bay during the 2021-2022 commercial oyster season and the subsequent decline in ecological services. In response to heightened concerns from coastal residents and stakeholder groups, TPWD took a significant step in November 2022 to prohibit the oyster harvest of the 2,129 acres composing the Mesquite Bay Complex (TPWD 2022). This regulatory action has created an opportunity for comprehensive restoration efforts within the Mesquite Bay Complex.

The proposed oyster reef restoration project, located along Ayres Point, will restore and create close to 11 acres of oyster reef habitat, while also stabilizing Ayres Reef and the adjacent Matagorda Island shoreline. Ayres Reef is part of the larger Mesquite Bay Complex- an area consisting of 5 baffle oyster reefs, provides habitat and resources for countless species, water filtration, and shoreline erosion protection. In 2023, CBBEP received funding to contract with a qualified engineering firm to perform an alternatives analysis, submit permit applications, conduct data collection, and complete preliminary design (70%) for oyster reef restoration at Ayres Point. The funds listed above will be used to move the chosen alternative to final design and construction. Funds will also be used to contract for pre- and post-monitoring.

Project Objectives:

The project will enhance the resilience of oyster reefs in the Mesquite Bay Complex and prevent further shoreline erosion by rebuilding 11 acres of oyster reef complex along Ayres Point. Project objectives include:

1. Complete final engineering and design and bid document development for Ayres Point oyster reef and shoreline protection.
2. Construct chosen restoration and protection alternative at Ayres Point.
3. Conduct pre- and post-restoration monitoring to determine oyster recruitment success of restored reefs.

PROJECT #2541 Protection and Restoration of the Tatton Unit Shoreline, Aransas National Wildlife Refuge, Phase I

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $319,048
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

The Tatton Unit is located along the northwest shoreline of St. Charles Bay, within the Aransas National Wildlife Refuge (ANWR), and consists of 7,568 acres of South Texas coastal grassland and wetlands. It is managed by the U.S. Fish and Wildlife Service (USFWS) and lies withing the boundaries of the Mission-Aransas National Estuarine Research Reserve (MANERR) and the Coastal Bend Bays & Estuaries Program (CBBEP - one of 28 National Estuary Programs). The Tatton Unit encompasses ecologically significant habitats and vital species for the public to enjoy via a boat and kayak launch and an observation deck off of Highway 35. This area provides critical wintering habitat for endangered Whooping Cranes and numerous other species of migratory birds and wildlife. The tidal wetlands located on the 13-mile shoreline of the Tatton Unit also provide nursery habitat for many commercially and recreationally important species of fish, shrimp, and crabs. In addition, the inland habitats contain the increasingly rare Blackland Prairies. However, in the last ten years, the shoreline of the Tatton Unit has been rapidly eroding at an average rate of 1.5 ft/year. That is a total of about 22.6 acres (984,858 sq ft) of vital coastal marsh and upland habitat lost in the past 10 years.

The goal of this project is to prevent further shoreline erosion, restore tidal breaches, and enhance the coastal resilience of the Tatton Unit shoreline by completing the planning, engineering, and design of a living shoreline project. This will in turn increase the resiliency of the local communities that rely on the Refuge and the species it supports to provide nature tourism opportunities. The engineering and design phase will incorporate projected sea level rise scenarios, as well as modelling for increased recreational vessel traffic.

CBBEP will contract with the Mission-Aransas National Estuarine Research Reserve for this funding to administer and implement the following tasks: preliminary design, alternatives analysis, prepare 70% construction design, and submit a permit application and lease.

Project Objectives:

The objective of this project is to engage an engineering firm to produce preliminary design, alternatives analysis, 70% construction design, and submission of a permit application and lease for the protection of the Tatton Unit shoreline at the ANWR.

PROJECT #2542 Understanding Laws Protecting Rookery Islands & Coastal Nesting Areas from Human Intrusion

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $39,772
Bays Plan, 2nd Ed. Actions: TR 3.1, HLR 2.4, CB 1.1

Background:

The purpose of this project is to enhance protection of waterbird rookery islands and coastal nesting areas from human intrusion by researching the laws that apply and by working with law enforcement officials to understand how those laws can be applied, including possible regulatory revisions. This project will develop based on input from Texas and Federal wildlife enforcement officials as well as wildlife conservation groups.

Despite an observed problem with humans harming waterbird rookery security, past discussions with wildlife law enforcement personnel indicate a reluctance to enforce "taking" birds under the Migratory Bird Treaty Act unless those takings amount to an injury or death. In other words, law enforcement is unlikely to charge a person with disturbing the mating or nesting of waterbirds. Further, anecdotal evidence suggests that prosecutors are unlikely to pursue a charge, instead focusing on other priorities.

Four activities are proposed for this project: (1) present at a conference of agency officials to identify ambiguous understanding of laws and regulations pertaining to the issue; (2) develop a guide to relevant laws and regulations pertaining to adverse human interactions with rookery islands on the Texas coast - this will involve researching state, local, and federal laws pertaining to land management and wildlife management and will include examples from three Coastal Bend municipalities of fines applicable to disturbing or harming birds; (3) posit regulatory revisions to assist in promoting safer rookeries to ensure enhancement of waterbird populations; and (4) host smaller workshop to finesse final ideas.

Project Objectives:

Project objective is to enhance protection of waterbird rookery islands and coastal nesting areas from human intrusion by researching the laws that apply and by working with law enforcement officials to understand how those laws can be applied, including possible regulatory revisions.

PROJECT #2543 Texas Partners for Conservation - Enhancing Migratory Shorebird Habitat

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $139,112 (Year 1 Funding)
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2, HLR 2.1, CB 2.1

Background:

The purpose of this project is to conserve and create habitat for migratory birds dependent on wetlands and associated grasslands on the Texas coast. CBBEP will focus on the Texas Mid-Coast and Rio Grande Valley to provide conservation planning support, training, and education. CBBEP will help the Natural Resource Conservation Service (NRCS) meet strategic plan goals of Farm Bill Operations addressing climate-smart agriculture and conservation planning assistance.

The goal of the project is to provide capacity building to NRCS field offices through conservation planning and outreach, provide training to NRCS employees and partners to achieve and maintain NRCS Certified Conservation Planner levels and provide technical assistance, administrative support, coordination, outreach, etc. for watershed program activities that are not already specified as responsibilities of the sponsoring local organization under another agreement or regulation.

Additional capacity support will improve outreach to landowners and managers through technical assistance, conservation planning and improve habitat for shorebirds, secretive marsh birds, wading birds, and waterfowl in the Mid-Continent Flyway. These activities will increase conservation practices and promote on-the-ground management to improve farming practices, wetland and grassland habitats, and prescribed fire benefits in the Texas Coastal Plain.

CBBEP will dedicate one Coastal Bird Program staff member to work full-time functioning as a conservation planner, assisting county and regional offices by working directly with NRCS staff to assist landowners/managers who are interested in shallow water wetland conservation management or improving prairie habitat for migratory birds. This staff member will utilize NRCS Business Tools and contract implements for conservation planning to guide landowners through the application and implementation of conservation practices.

CBBEP will host or co-host workshops for landowners and managers and professional development meetings for partners and resource agencies. The workshops will cover topics including wetland management, shallow water migratory bird habitat and other conservation practices associated with positive avian response.

Project Objectives:

Project objectives are to (1) provide support to NRCS through Conservation Planning, (2) outreach to landowners and managers through technical assistance, and (3) host landowner workshops and professional development opportunities to improve wetland management for migratory bird habitat.

PROJECT #2544 Fred Jones Nature Sanctuary Habitat and Access Enhancements

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $118,628
Bays Plan, 2nd Ed. Actions: TR 2.1, TR 3.1, HLR 1.2

Background:

The Fred Jones Nature Sanctuary, managed by San Patricio County, is located near Portland, Texas and is part of the Great Texas Birding Trail. Situated on the north edge of Nueces Bay and surrounded by farmland, the site represents an important stopover point for trans-Gulf migratory birds and wintering grassland birds.

The Sanctuary's nine acres include hiking trails, a pavilion, and wildlife viewing areas. However, in recent years the site has suffered from neglect, with trails becoming overgrown and infrastructure deteriorating. The site has also suffered some from misuse by the public. However, San Patricio County has asked CBBEP for assistance with bringing this site back to its former glory - restoring trails, rebuilding infrastructure, and managing public access better to prevent vandalism and misuse. The funds requested would be used by CBBEP to begin working with San Patricio County to implement these improvements.

Project Objectives:

Project objective is to enhance the habitat and public access opportunities at Fred Jones Nature Sanctuary in San Patricio County.

PROJECT #2545 Lighthouse Lakes Park Public Access Enhancements

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $50,000 (Funds are Pending)
Bays Plan, 2nd Ed. Actions: TR 2.1, TR 3.1

Background:

The Lighthouse Lakes Paddling Trail was the first Texas Paddling Trail, mapped in 1999. From a City-maintained Park on the north side of the Texas Hwy 361 Causeway, paddlers can access the five-mile Cutters Loop, the 6.7-mile South Bay Loop, and 6.8-mile Redfish Loop. A 1.25-mile trail, the Electric Lake Loop, branches off of the Redfish Loop between markers 3 and 6. The Lighthouse Lakes Trails are unique among coastal paddling trails in that kayakers paddle through a seeming maze of head-high black mangroves that line the channels and open flats. The lighthouse from which the trails take their name figured in the Civil War, and its original Fresnel lens still lies buried somewhere in the surrounding marsh.

The Park, maintained by the City of Aransas Pass, is in great need of several repairs and enhancements, including but not limited to: road repairs, additional lighting, updated signage, and kayak launch repairs. CBBEP will partner with the City to begin implementing the highest priority repairs and improvements at the site.

Project Objectives:

The proposed project will begin the implementation of several much-needed repairs at the Lighthouse Lakes Park, ultimately providing a better and safer experience for individuals using this popular public access site.

PROJECT #2546 San Patricio County Navigation District Marina Pier Repair and Enhancements

Performing Organization: San Patricio County Navigation District
Total Project Cost: $576,313
Bays Plan, 2nd Ed. Actions: TR 2.1

Background:

The San Patricio County Navigation District is requesting funds for the C/D Center Pier Project which focuses on repairing the current pier used by tenants onsite at 426 Ransom Road. The pier itself has been heavily used by tenants in the area since its original construction in 1982 and needs updates in order to ensure the safety of its users.

The project will focus on elevating, reframing, and decking 11 finger piers which were not part of another recent installation project. The proposed work will be completed in 15-to-24-foot segments to allow for continuous use of the pier during the construction process. The selected contractor will also work daily with the Harbor Manager to coordinate construction segments as well as notify tenants when any work will take place in their immediate area.

This C/D Center Pier Project will allow for continued safe usage by local tenants in the area. By completing the project in sections, tenants will not lose access to the beloved pier; rather, they will be able to continue using the area while improvements take place.

Project Objectives:

The proposed project will repair the C/D Center Pier that is owned and managed the San Patricio County Navigation District, providing safer access for tenants and users of the pier.

PROJECT #2547 Rincon Reef Breakwater Project - Final Engineering and Design

Performing Organization: Texas Parks & Wildlife Department
Total Project Cost: $982,500 (Funds are Pending)
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

The Texas General Land Office estimates that 80% of Texas' shorelines are eroding at an average rate of four feet per year, and Corpus Christi's North Beach falls within the upper range of that estimate. The exposed North Beach shoreline has experienced significant erosion and is especially susceptible to further erosive damage during storm events, as witnessed during the recent impacts from Tropical Storm Alberto. The highly erosive conditions have diminished natural habitats (e.g., seagrass and marsh) and have caused instability to upland infrastructure, resulting in the need for five beach renourishment events since 1978. To reduce erosion, eliminate the need for future renourishment, and build community resilience, a multi-phase project consisting of a breakwater and multiple conservation islands is needed. For this phase, the goal is to complete the final design and bid package of a nature-based breakwater and five conservation islands to protect historic North Beach and surrounding essential infrastructure.

The proposed approach for this project will reduce wave energy from coastal hazards such as storms and boat traffic in the Corpus Christi ship channel, while also restoring marsh and seagrass habitat. The structures will also provide thousands of linear feet of complex fish habitat, allowing for oyster spat settlement in a bay where substrate is limited. The need for repeated beach renourishment will be reduced, saving residents millions of dollars long-term. The project will improve community resiliency both economically and physically by protecting critical infrastructure that services the low-income resident population and over 800,000 tourists annually, including the Port of Corpus Christi facilities, a National Historic Landmark (USS Lexington), the Texas State Aquarium, businesses, gas stations, and roads. Ecotourism is a major component of Corpus Christi's economy, accounting for 47% of all visitor trips to the area, $987 million in business revenues, and 12,914 jobs. The alternative analysis and 30% engineering/design is complete and permitting is underway.

Project Objectives:

The objective of this project is to complete the final design documents and bid package for the Rincon Reef Breakwater Project, resulting in a construction-ready project.

PROJECT #2548 Collaborative Restoration of a Network of Oyster Broodstock Spawning Reserves Across the Mission-Aransas Estuary, Texas

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $4,726 (Year 1 Funding)
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

This project is a collaboration between Texas Parks and Wildlife Department, Harte Research Institute at Texas A&M University – Corpus Christi, CBBEP, Mission-Aransas National Estuarine Research Reserve, and The Nature Conservancy. The Project Team is proposing to restore a network of 20 to 50 acres of oyster broodstock reserves throughout the Mission-Aransas Estuary, TX (final acreage ultimately depending on restoration design pending community feedback and cultch pricing). Up to six broodstock reserves encompassing 3-10 acres each will be constructed throughout the estuary. The team will employ both structural and regulatory approaches to create broodstock reefs; reefs will be constructed with self-policing cultch (e.g., large boulders that cannot be fished using dredges) in areas that are conditionally open to harvest (Copano and Aransas Bay) and will also be constructed with recycled shell in areas that are closed to commercial harvest by State regulation (Mesquite Bay and St. Charles Bay). The restoration sites will be selected in locations that maximize the larval distribution to "sink" (harvestable) reefs, and sites will be selected across the salinity gradient in the estuary to provide resilience to salinity variability over time. Oyster industry members and conservation stakeholders have already been engaged with preliminary site selection workshops and will continue to be engaged during the site selection to ensure maximum benefit to the sustainability of the oyster fishery. Restored broodstock reserves and reference sites will be monitored for one year to evaluate success and inform adaptive management and future restoration design.

Shell recycling and community-based restoration activities will be conducted to engage and educate the community about oyster restoration biology, oyster ecology, and oyster habitat conservation. Shell recycling workshops will provide opportunities for hands-on engagement in habitat restoration for underserved, primarily Hispanic, students and members of the community. Recycled shells will be used to build two broodstock sanctuary reefs within waters that are closed to oyster harvest. In addition, oyster fishers and anglers will be engaged throughout the project to provide input on site selection, monitoring and construction to ensure community buy-in for the project. A Community Engagement Plan will be developed for this project that includes efforts to mitigate for common factors that impact underrepresentation, such as language and geographic isolation and lack of trusting relationships.

While TPWD will contract the cultch placement for the self-policing restoration sites through the Texas state bidding process, CBBEP will work with the oyster fisher community to create a bidding process that is open to oyster fishers for restoration construction in Mesquite Bay. To accomplish this, CBBEP will host a pre-construction workshop to share information about construction techniques, get input from the oyster fisher community on the proposed construction plan, and give guidance to oyster fishers on the bidding process. Oyster fisher-led construction is only planned for Mesquite Bay as smaller cultch materials (recycled oyster shells from the SYS program) will be spread in a uniform layer in Mesquite Bay, rather than using large self-policing cultch that may require more robust heavy equipment. Construction contracts are expected to be finalized by the end of year 2 (24 months post-award).

Project Objectives:

Primary project objective is to create a bidding process that is open to oyster fishers and leads to the restoration construction of oyster reef in the closed Mesquite Bay area.