CBBEP FY26 ANNUAL WORK PLAN		
Project #	**Project Name**	**Page No**
2601	CBBEP Coastal Bird Program	1
2602	Delta Discovery	2
2603	Wastewater Treatment Plant Assessment	3
2604	Identification of Cattle-Associated Fecal Pollution and its Impact on Human Health in Oyster Harvesting Waters	4
2605	Baffin Bay Water Quality Monitoring	5
2606	Outdoor Classrooms	6
2607	Up2U Anti-Litter Campaign	7
2608	CBBEP Community Outreach Partnerships	8
2609	CBBEP Property Management	9
2610	Oso Bay/Oso Creek Watershed Public Education and Outreach	10
2611	Nueces Delta Environmental Monitoring	11
2612	Dagger Island Silt Curtain Removal	12
2613	Public Access Enhancments - Laguna Shores Road	13
2614	CBBEP Public Outreach Events and Activities	14
2615	Airport Kayak Launch Site Improvements	15
2616	Padre Island National Seashore - Bird Island Boat Basin Dumpster	16
2617	Master Plan for New Wetland Park - City of Port Aransas	17
2618	Baffin Bay Watershed Champions Program	18
2619	Nutrient Source Tracking in the Nueces Tidal Segment	19
2620	Integrating MST and QMRA to improve Environmental Health in a Coastal Community	20
2621	Relative Sea Level Rise and Habitat Assessment in the Nueces Delta	21
2622	Operational Support for Imaging FlowCytobot at the Texas State Aquarium	22
2623	Texas Mid-Coast Initiative – Wetland Reserve Enhancement Partnership, Phase 2	23
2624	CBBEP Coastal Bird Program – Laguna Madre Initiative	24
2625	Adaptive management of the Nueces Delta: Beneficial use dredge placement for marsh restoration	25
2626	Relocation of Water Level Station in the Nueces Delta	26
2627	Ocean Acidification Monitoring in Port Aransas Ship Channel	27
2628	Outreach to WWTP in Aransas County	28
2629	Fennessey Ranch Invasive Species Treatment	29
2630	Long-term seagrass monitoring in Coastal Bend Estuarine Systems	30
2631	Welder Flats Circulation Enhancement	31
2632	Tern Island Rookery Island Restoration Monitoring	32
2633	Nutrient Sampling in Petronila Creek	33
2634	Black Rails and Nocturnal Flight Calls: Bioacoustical monitoring at PINS	34
2635	Nueces Delta Preserve Infrastructure Enhancements, Phase II	35
2636	Monitoring Water Quality in the Nueces River Tidal Segment	36
2637	CBBEP Classroom Water Quality Education	37
2638	Landowner Outreach - Prescribed Burns, Habitat Incentives, and Invasive Species Management	38
2639	Carbon Stocks and Fluxes in Black Mangrove Communities of the Coastal Bend	39
2640	Long-term monitorng of the Texas tortoise at the Nueces Delta Preserve	40
2641	Aransas Woods Widlife Viewing Features, Phase 1	41
2642	Aransas First Programatic Signage	42
2643	Protection of the GIWW Shoreline at the ANWR, Phase II	43
2644	Copano Bay Shoreline Protection and Restoration, Phase II	44
2645	Protection and Restoration of Matagorda Island West Marsh, ANWR, Phase III	45
2646	Educational Programming at the Oso Bay Wetlands Preserve and Learning Center	46
2647	Newcomb Bend Marsh Restoration Phase 2	47
2648	Expansion of Whooper Walk	48
2649	Nueces Delta Shoreline Restoration	49
2650	Bahia Grande Protection and Restoration, Phase II	50
2651	Development of a "Bringing Baffin Back" Dashboard	51
2652	Floodirng risk assessment for nests of imperiled shorebirds in South Texas	52

Red text = Funds Pending Approval

PROJECT #2601 CBBEP Coastal Bird Program

Performing Organization: Coastal Bend Bays & Estuaries Program – Coastal Bird Program
Total Project Cost: $213,622
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 #2602 Delta Discovery

Performing Organization: Coastal Bend Bays & Estuaries Program – Delta Discovery Program
Total Project Cost: $256,398
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.

Fieldtrips: 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 to be organized by the teacher, with assistance from the Environmental Educator, to create an educational TEKS-aligned agenda for outdoor education. This program sees 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 (4) 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 environment 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 in order for these workshops to occur on weekdays.

Delta Discovery Days: The CBBEP will host a minimum of five (5) 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 facilitate interactive learning activities that model nature-play strategies throughout 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: The CBBEP will host a minimum of ten (10) 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 (2) 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 also to aid teachers in increasing their knowledge, skills, and resources available to effectively teach science to students in local schools.

PROJECT #2603 Wastewater Treatment Plant Assessment

Performing Organization: Coastal Bend Council of Governments
Total Project Cost: $200,000
Bays Plan, 2nd Ed. Actions: WSQ 1.1, NPS 1.1

Background:

Previous studies implemented by CBBEP and area stakeholders have identified wastewater and septic as being significant contributors to nutrient and bacteria loadings to the Coastal Bend bays. Additionally, outreach efforts to area wastewater treatment plants (WWTPs), provided an initial needs assessment of these facilities. This outreach found that many communities lack the capacity needed to identify operational and infrastructure needs, identify and pursue funding to address these needs, and lack the personnel, funding, and resources (such as city engineers) needed to conduct and/or manage the formal assessments of WWTPs needed to be competitive during the grant and loan application process.

This project will conduct an engineering assessment of up to two communities in the Coastal Bend, identified by CBBEP in collaboration with Clean Coast Texas and the Coastal Bend COG. This project will assess the community's WWTP and prepare funding applications to address the infrastructure needs. This will provide the support the community needs to make the improvements needed at the WWTP to improve the quality of the effluent discharge; thus, improving water quality in local creeks and bays.

The project will build on current efforts by Clean Coast Texas and the Coastal Bend COG to reduce pollutant loads by working with WWTPs and operators. Clean Coast Texas is currently contracting with the COG to facilitate meetings and workshops to engage and train wastewater treatment facility staff and associated local decision makers across coastal areas in the Coastal Bend on the implementation of WWTP BMPs; how to secure funds (grant writing/administration); and how to coordinate with state and federal entities and other organizations to improve water quality. As an outcome of this effort, participants will design Action Plans for water quality improvement at five (5) wastewater treatment plant. This project also involves formal engineering assessments of the WWTP and funding applications for each site. Funds will provide the resources to complete up to two (2) additional WWTP assessments and funding applications.

Project Objectives:

The proposed project will conduct engineering assessments of wastewater systems in the Coastal Bend and assist communities in the preparation of a funding application to address infrastructure needs.

PROJECT #2604 Identification of Cattle-Associated Fecal Pollution and its Impact on Human Health in Oyster Harvesting Waters

Performing Organization: Harte Research Institute at Texas A&M University – Corpus Christi
Total Project Cost: $55,488
Bays Plan, 2nd Ed. Actions: WSQ 2.1, WSQ 3.1, PH 1.1, PH 2.1, NPS 1.4

Background:

This project builds upon an ongoing microbial source tracking project in Copano Bay and the lower Aransas River (US Department of Agriculture Cooperative Agreement, Federal Award Number AP24WSHQ0000C009) that is assessing the impact of feral swine and human fecal pollution on local water quality and oyster safety. Recent visual evidence of the study region revealed numerous cattle with abundant cow fecal waste at the study sites, warranting the inclusion of a cow-associated fecal marker in addition to the pig and human- associated markers. Fecal waste from cattle is known to pose a significant risk to human health, due to the high abundance of human pathogens; thus, a human health risk assessment is also needed to determine the health implications of the fecal pollution. Identifying the fecal sources and human health risks associated with recreation and consumer consumption in the oyster harvesting waters will help improve water quality and safeguard public health in the Copano Bay watershed.

The results of this project will include the concentration of cow-associated fecal markers in 72 water samples and 24 oyster samples as well as estimated human health risks associated with the cow fecal marker (measured during this study) and the previously quantified pig and human fecal markers. The health risks will be compared to the U.S. Environmental Protection Agency's tolerable risk benchmark of 32 illnesses per 1,000 primary contact recreation events, and the sources contributing the largest risk will be identified. These results will be analyzed in the context of environmental data to determine potential drivers of fecal pollution or predictors of the health risks (e.g., preceding rainfall, water turbidity, water temperature, salinity). The expected project outcomes will include a better understanding of water quality and public health risks associated with the oyster-harvesting and recreational waters in Copano Bay. Ultimately, these outcomes will help guide targeted remediation and mitigation recommendations that address the fecal source(s) contributing to the largest public health risks within the system.

Project Objectives:

The objectives of this project include: (1) quantifying cow-associated fecal markers in oyster tissue and water samples from Copano Bay and the lower Aransas River, (2) performing a human health risk assessment using quantitative microbial risk assessment (QMRA) based on the cattle waste (measured during this project) and the previously quantified pig and human fecal markers to estimate the overall risk to human health in the system, (3) determining which fecal source (i.e., cow, pig, human) contributes the largest risk to human health, and (4) communicating project findings, including recommendations for which fecal source(s) to prioritize in mitigation efforts, to local stakeholders to help guide the best management practices for improving water quality.

PROJECT #2605 Baffin Bay Water Quality Monitoring

Performing Organization: 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, 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 an ongoing 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 #2606 Outdoor Classrooms

Performing Organization: CBBEP Delta Discovery
Total Project Cost: $43,000
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 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 (i.e., 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 way to solve this problem 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 are 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. Outdoor classroom partners 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 or other public learning venues (e.g., libraries, public parks) to install up to six outdoor classrooms in the coming fiscal year.

PROJECT #2607 Up2U Anti-Litter Campaign

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $55,773
Bays Plan, 2nd Ed. Actions: BD 1.1, PEO 1.1, PEO 1.3

Background:

Texas leads the nation in marine debris (weight/coastline mile). Previous campaign research found Texans between the ages of 16 to 25 are most likely to litter but can be motivated to change their behavior and adopt personal responsibility for resource protection through positive messaging and logical fact-based challenges.

Up2U is the battle cry of an innovative debris prevention program begun in 2004 by the Nueces River Authority and partners to prevent trash from reaching waterways in the Upper Nueces Watershed by distributing recognizable yellow mesh litter bags. In 2020, CBBEP expanded the program's geography to include the greater Coastal Bend and expanded it programmatically in 2022 to target illegal dumping by providing dumpsters in rural communities. The goal of these campaigns is to curb litter along the waterways using a direct, empowering campaign message, while also providing the resources needed to properly dispose of debris and trash. This message can also be found in ad campaigns featured on billboards and posters, in radio advertisements, and on the CBBEP website. Since 2020, CBBEP has distributed 189,000 bags and deployed 184 dumpsters, keeping 13,690 cubic yards of trash out of our environment.

Project Objectives:

The goal of the project is to provide resources and support for the ongoing implementation of the Up2U Litter Prevention program. Specific objectives include: (1) purchasing and supplying Up2U Litter distribution partners in the Coastal Bend with litter bags for removal of trash and harmful debris from the environment; (2) hosting tire collection events in the upper reaches of the Coastal Bend watershed to prevent illegal dumping of these items; and (3) supporting billboard and radio advertising.

PROJECT #2608 CBBEP 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 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, coastal issue 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 #2609 CBBEP Property Management

Performing Organization: Coastal Bend Bays & Estuaries Program – Land Conservation Program
Total Project Cost: $536,433
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 some routine maintenance associated with land ownership. Maintenance activities include, but are not limited to, habitat management activities, 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, mechanical and/or herbicide treatment of invasive woody plants for brush control, development and implementation of prescribed burn program, road reconstruction, installation of solar water wells, 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/or mechanical treatments to suppress woody vegetation encroachment on program owned lands.
3. Replace sections of perimeter fence.
4. Support and assist organizations in land conservation efforts

PROJECT #2610 Oso Bay/Oso Creek Watershed Model & Outreach and Education

Performing Organization: Voices of the Colonias
Total Project Cost: $21,000
Bays Plan, 2nd Ed. Actions: WSQ 1.1, PEO 1.1, PEO 1.2, PEO 1.3, PEO 1.4

Background:

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 rural communities in the watershed. Following the success of this project, CBBEP developed a watershed model for the Baffin Bay watershed 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, such as Up2U+ which provides free disposal of bulk waste to these communities, and an on-site sewage facility (OSSF) assistance program, which provides free inspection, repair, and/or replacement of failing septic systems to low income residents, 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 that provides assistance and social services to the colonias communities in South Texas, to provide watershed education and outreach to residents of rural communities in the Oso Bay/Oso Creek and Baffin Bay watersheds. The previously developed Oso Bay/Oso Creek and Baffin Bay watershed models will be used to conduct four (4) outreach events in rural communities to share information with residents about public health risks and environmental effects from runoff and promote community engagement to protect and improve water quality and reduce polluting behavior.

Project Objectives:

The primary objective is to deliver watershed education and outreach programming to residents of rural communities of the Oso Bay/Oso Creek and Baffin Bay watersheds at a minimum of four (4) outreach events.

PROJECT #2611 Nueces Delta Environmental Monitoring

Performing Organization: Conrad Blucher Institute at Texas A&M University – Corpus Christi
Total Project Cost: $50,882
Bays Plan, 2nd Ed. Actions: FW 1.1, FW 1.2, FW 1.3, FW 1.4

Background:

The City of Corpus Christi (City) is required to provide freshwater inflows into the Nueces Estuary based on the 1995 Agreed Order. Very simplistically, every month the City is required to "pass through" to the bays and estuaries an amount of water equal to the measured inflow into the Choke Canyon Reservoir / Lake Corpus Christi Reservoir System (Reservoir System), up to a target amount. The target amount varies by month and combined volume of the Reservoir System. The City may receive credits for excess flow from the previous month or from salinity relief credits based on the salinity in Nueces Bay.

The CBBEP has entered into a memorandum of agreement with the National Oceanic Atmospheric Administration (NOAA), National Ocean Service for quality control and dissemination of data for the Nueces Water Level Station. NOAA Physical Oceanographic Real-Time System (PORTS®) is a decision support tool that improves the safety and efficiency of maritime commerce and coastal resource management through the integration of real-time environmental observations, forecasts and other geospatial information. PORTS® measures and disseminates observations and predictions of water levels, currents, salinity, and meteorological.

The purpose of this project is to maintain monitoring equipment in and around the Nueces Delta to observe freshwater inflows downstream of the Rincon Bayou diversion pipeline so that spatial and temporal effects can be calculated, as well as the amount of freshwater needed to manage a healthier estuary. The 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 and one (1) permanent real-time salinity station in the Nueces Delta. These stations will collect and report meteorological and water quality parameters downstream of a diversion pipeline that provides spatial and temporal resolution of environmental effects of the freshwater inflows.

Funds will be used by CBI for the continued maintenance and operation of the data collection stations in and around the Nueces Delta. Funds are also requested to upgrade the data sonde used at NUDE 2. The data sondes have exceeded their life expectancy and upgrades are required.

Project Objectives:

The primary project objectives will be to monitor the freshwater inflows coming into the Nueces Delta via the pipeline by recording salinities within the water column at a strategic location along the Rincon Bayou and maintain a real-time weather station in the Nueces Delta.

PROJECT #2612 Dagger Island Silt Curtain Removal

Performing Organization: Texas Parks and Wildlife Department
Total Project Cost: $10,000
Bays Plan, 2nd Ed. Actions: DD 1.1, WSQ 3.1

Background:

The Dagger Island Restoration Project was initiated in 2018 with the intention of creating two sites within the Dagger Island complex. Site one is located towards the south-end of the complex and consists of an approximately 2,912-foot-long breakwater along the shoreline of an existing island. Site two consists of an approximately 28-acre containment area within the footprint of a historical island for the placement of dredged material to construct a beneficial use site. Site two, known as the Dagger Island Beneficial Use Site, contains a Type II silt curtain that is approximately 700 feet in length and was initially placed to help reduce sedimentation impacts to adjacent seagrass beds. This silt curtain will need to be removed before dredge material can be placed beneficially within the site. Once this containment area is filled, TPWD will monitor the area for a 5 year post construction period. The removal of the silt curtain in this containment area is the last step that needs to be completed before the beneficial use material can be placed.

Project Objectives:

The objective of this project is to remove the Type II Silt Curtain from the Dagger Island Beneficial Use Site.

PROJECT #2613 Public Access Enhancements - Laguna Shores Road

Performing Organization: Friends of Redhead Pond & Coastal Bend Bays & Estuaries Program
Total Project Cost: $120,000
Bays Plan, 2nd Ed. Actions: TR 2.1, TR 3.1

Background:

Utilizing FY 2025 funding, CBBEP and the Friends of Redhead Pond are currently collaborating on a feasibility study for extending and improving the trail system for the Laguna Shores ponds, as well as providing restrooms, parking, and fishing/kayaking access where appropriate. While that study is underway, areas were identified where several features could be improved in the near future without the need for permitting. These features include creating: (1) a crushed stone, unimproved parking lot at the corner of Debra and Glenoak for access to Redhead Pond, (2) refurbishment of the Redhead Pond overlook, (3) crushed gravel for maintenance and improvement of the Flour Bluff Independent School District (FBISD) wetland trails, (4) construction of two small kiosks and shaded benches for the FBISD wetland trails, and (5) information trails signage. A contractor will be utilized for the gravel and overlook work. For the kiosks, benches, and signs we will enlist the assistance of the FBISD Construction class and Art class.

Project Objectives:

The objective of this project is to enhance public access for the Laguna Shores ponds, (Redhead Pond WMA, Duncan Pond and the FBISD Wetlands) through the implementation of the following components: (1) a crushed stone, unimproved parking lot at the corner of Debra and Glenoak for access to Redhead Pond, (2) refurbishment of the Redhead Pond overlook, (3) crushed gravel for maintenance and improvement of the FBISD wetland trails, (4) construction of two small kiosks and shaded benches for the FBISD wetland trails, and (5) information trails signage.

PROJECT #2614 CBBEP Public Outreach Events and Activities

Performing Organization: CBBEP
Total Project Cost: $50,354
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 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 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 and host community outreach events and festivals,
2. Maintain a volunteer program that allows the public opportunities to participate in CBBEP projects and programs,
3. Host volunteer events that promote the stewardship of coastal resources and support CBBEP projects and programs,
4. Produce or purchase educational and promotional materials, and
5. Maintain a website(s) and active social media channels (i.e., Facebook, Instagram),
6. Develop and provide electronic updates (e.g., newsletters, videos).

PROJECT #2615 Airport Kayak Launch Site Improvements

Performing Organization: Aransas Pathways
Total Project Cost: $80,000
Bays Plan, 2nd Ed. Actions: TR 1.1, TR 3.1, SM 1.1

Background:

The Airport Kayak Launch in Aransas County currently has limited parking and lacks ADA access. The existing road is too narrow for vehicles with kayak trailers to turn around, and access to the shoreline is either down a path that floods or through a freshwater pond that has experienced degradation from individuals using that path. This project will improve parking, prevent shoreline erosion from individuals walking through wetlands and dragging kayaks across shoreline areas, and allow for a broader range of users to enjoy the shoreline including the mobility impaired. Overall improvements will encourage more tourism by creating an attractive, easy to access site that is also one of the launch sites for the new TPWD proposed paddling trail.

Project Objectives:

The primary objective of the project is to construct a new boardwalk and make roadway improvements to facilitate access to the kayak launch site, coastal birding, and fishing opportunities.

PROJECT #2616 Padre Island National Seashore – Bird Island Boat Basin Dumpster

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $10,000
Bays Plan, 2nd Ed. Actions: BD 1.1

Background:

CBBEP will utilize the funds to work with the Padre Island National Seashore (PINS) resource managers to continue the placement of a roll off dumpster at the Bird Island Basin Boat Ramp. This service would be provided throughout the year and emptied as needed. CBBEP has provided a dumpster at this location for several years, and it is heavily utilized by the thousands of boaters that launch at the Bird Island Basin.

Project Objectives:

Project objective is to reduce litter and marine debris in the Upper Laguna Madre by providing a location at PINS where people can properly dispose of their trash and waste, including larger bulk items that may come from cabins.

PROJECT #2617 Master Plan for New Wetland Park - City of Port Aransas

Performing Organization: City of Port Aransas
Total Project Cost: $50,000
Bays Plan, 2nd Ed. Actions: TR 2.1, HLR 1.1, HLR 1.2, WSQ 1.1, NPS 1.5

Background:

The City of Port Aransas has acquired a six-acre tract of land in the middle of the City that includes wetlands. At a minimum the City would like to explore adding public access, enhancing and creating habitat, reducing stormwater quantity and improving stormwater quality. This project is the first step towards developing this parcel into a new Nature Preserve site that also helps the City with drainage issues and improves water quality. The second step will include design and permitting, and the final phase will be construction of the identified improvements. The City plans to explore other grant opportunities for future work but needs to explore these ideas and create a plan as a first step.

Project Objectives:

The objective of this project is to create a master plan for the new six-acre property purchased by the City of Port Aransas.

PROJECT #2618 Baffin Bay Watershed Champions Program

Performing Organization: Harte Research Institute at Texas A&M University – Corpus Christi
Total Project Cost: $18,513
Bays Plan, 2nd Ed. Actions: WSQ 1.1, NPS 1.1, LCS 1.1

Background:

The Baffin Bay Watershed Champion Program will encourage residents of the Baffin Bay watershed to participate in watershed-friendly practices in their daily lives by providing accessible resources and recognizing their efforts. Participants will complete action items across several categories to become a certified Watershed Champion. Collectively, these actions will contribute to reducing non-point source pollution, improving water quality, and will promote long-term engagement in watershed restoration. Action-items will include a range of simple and intensive tasks designed to be educational and impactful, including stormwater management, agricultural best management practices, septic system maintenance, fertilizer use, illegal dumping, pet waste management, and wildlife management. Participants will also be encouraged to attend watershed-related workshops, volunteer for cleanup events, join the Baffin Bay Stakeholder Group, and share program information with neighbors. Additional action items will be developed in consultation with members of the Bringing Baffin Back™ team, but at a minimum will address management measures identified in the San Fernando & Petronila Creeks Watershed Protection Plan.

This program will create a comprehensive list of educational resources, guides, and technical support associated with each action item. This approach aims to deepen participants' understanding of how everyday choices affect downstream water quality and will equip them with the tools and knowledge to implement sustainable practices effectively. Project methodology will involve: Content development (compiling existing educational materials such as infographics, technical resources, and how-to guides for each action item); Design and development of a user-friendly webpage to house the program, application, and educational materials. A dedicated webpage managed by HRI and linked to the Bringing Baffin Back™ webpage (www.bringingbaffinback.org) will serve as the central platform for program resources, applications, and participant engagement. Outreach efforts will leverage existing Bringing Baffin Back™ events and communication channels to maximize visibility and participation. Participants will apply for free by filling out an online application or by contacting the Watershed Coordinator, and will complete action items to earn a minimum score and become eligible to receive rewards. With participant permission, the project team will intermittently select a Watershed Champion to publicly highlight on the project website and social media pages.

Project Objectives:

The objective of the project is to develop an incentive and recognition program to encourage residents of the Baffin Bay watershed to participate in watershed-friendly practices in their daily lives. By meeting a clear need for at-home engagement opportunities and recognizing participant efforts, this program will promote a voluntary, community-driven approach to watershed restoration and stewardship.

PROJECT #2619 Nutrient Source Tracking in the Nueces Tidal Segment

Performing Organization: Texas A&M University – Corpus Christi
Total Project Cost: $37,755
Bays Plan, 2nd Ed. Actions: WSQ 2.1, PH 1.1, NPS 1.5

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 had been 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.

Reports of high chlorophyll-a concentrations and fish kills in this segment, documented by the Texas Commission on Environmental Quality (TCEQ), have prompted two previous related studies funded by CBBEP: (1) Project #2536: Monitoring Water Quality in the Nueces River Tidal Segment and (2) Project #2429: Nueces River Tidal - Nutrient Bioassays Investigation. Preliminary findings from these efforts indicate that nitrogen is the limiting nutrient for algal growth in the system. Building on these findings, this project seeks to further investigate the sources of nitrogen, focusing on NH_4^+ and NO_3^- and examine the processes that regulate their dynamics in the Nueces Tidal Segment.

This project will collaborate with another ongoing and proposed project determining water quality in the Nueces River Tidal Segment. Surface water samples will be collected monthly from five locations and NH_4^+, NO_3^-, and dissolved organic nitrogen concentrations will be measured along with the isotopic composition of NH_4^+ ($15N\text{-}NH_4^+$) and NO_3^- ($18O\text{-}NO_3^-$, $15N\text{-}NO_3^-$). Nitrogen exists in nature as stable isotopes with a mass of14 atomic mass units (14N) and a mass of 15 amu (15N). Due to this mass difference, different sources of nutrients have different ratios of 15N:14N, and these different ratios act as a fingerprint for distinct nutrient sources. Nutrient processing mechanisms also have unique isotope ratio effects associated with them. For instance, algae tend to preferentially assimilate the lighter isotope of nitrogen (14N) when assimilating nutrients for growth and energy. This leads to a change in the 15N:14N ratio of the nutrient pool which allows insight into how the nutrients are processed. This approach has been used extensively to investigate inorganic nitrogen (NO_3^-, NH_4^+) sources and cycling in marine and freshwater. The isotope data generated by the proposed project will be incorporated into a Bayesian type isotope mixing model to determine NO_3^- source apportionment (e.g., sewage, fertilizer, rainwater) and NH_4^+ and NO_3^- isotopic composition and concentrations will be investigated to understand processing (e.g. nitrification, denitrification). The findings will be shared with local stakeholders to support the development of informed nutrient mitigation strategies.

Project Objectives:

The objective of this project is to identify the sources and processing pathways of nutrients, specifically ammonium (NH_4^+) and nitrate (NO_3^-), in the Nueces Tidal Segment.

PROJECT #2620 Integrating MST and QMRA to improve Environmental Health in a Coastal Community

Performing Organization: University of Texas Health - Houston
Total Project Cost: $83,109
Bays Plan, 2nd Ed. Actions: WSQ 2.1, WSQ 2.2, WSQ 3.1, PH 1.1, NPS 1.1

Background:

Fecal pollution in coastal recreational waters continues to be a persistent environmental challenge, impacting ecological health and posing a public health threat. Traditional approaches for monitoring recreational water quality include measuring culturable fecal indicator bacteria (FIB), specifically enterococci in marine water, as a proxy to protect bather health. When enterococci concentrations exceed the beach action value of 104 colony forming units (CFU) per 100 mL, the Texas General Land Office (GLO) Beach Watch program signals a 24-hour beach advisory. Monitoring assessments of FIB typically employ culture-based enumeration of live bacteria (which requires a 24-hour processing time) and assume that all FIB originate from human sewage. However, FIB can come from a variety of sources, including bather shedding and non-human, and persist in the environment. Consequently, these different fecal sources contribute varying levels of human health risks which are not captured in traditional FIB water quality monitoring approaches.

Identifying and targeting fecal sources through microbial source tracking (MST) can inform best management practices for improving water quality and protecting human health. MST can identify the source(s) of fecal pollution, but it does not estimate the human health risks associated with these fecal sources when engaging in recreational activities. To address this knowledge gap, human health risk assessment can be employed to estimate potential health risks. Quantitative microbial risk assessment (QMRA) is a human health risk assessment tool which can characterize health risks from pathogens not adequately represented by traditional fecal indicators. Integrated MST-QMRA based studies, which are supported by US Environmental Protection Agency (EPA) technical guidance have been conducted in an array of recreational waters in Florida, Texas, and California, all revealing the distinct differences in health risks associated with both human and non-human fecal sources. Recently, risk based thresholds (RBTs) for MST markers have been proposed, which are molecular marker concentrations that correspond to the EPA health risk benchmark of 32 illnesses per 1,000 primary contact recreation events (probability of 0.032). Proposed RBTs for the human and gull markers, assuming unknown fecal age, is 525 copies/100 mL and 200,000 copies/100 mL, respectively.

The goals of the project are to characterize fecal contamination and assess public health risks in Little Bay (Rockport, Texas) recreational waters using a combined MST and QMRA approach during the peak tourist season. This data will be integrated into a human health risk assessment to (1) determine recreational contact health risks for beach users, (2) identify factors that may be influencing fecal pollution sources, and 3) provide management recommendations based on the pollution sources posing the greatest risk to human health. The work proposed is a collaborative effort between UTHealth Houston and the Harte Research Institute.

Project Objectives:

The four main objectives of this proposed work include: (1) conducting water quality sampling that includes quantifying human, gull, and canine-associated fecal markers and environmental parameters (e.g., nutrients) in water samples from Tule Creek, Little Bay, and Aransas Bay (n=72 samples); (2) developing a human health risk assessment utilizing QMRA and fecal marker concentrations (measured in objective 1) to estimate the source-specific and overall human health risks for contact recreation, (3) assessing relationships of MST markers and human health risks with environmental metadata, including nutrient concentrations, and beach usage during peak tourist season; and (4) disseminating project findings to local community and coastal water quality managers to discuss the feasibility of expanding this integrated framework to other coastal areas to address environmental health concerns.

PROJECT #2621 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: CR 1.1, HLR 1.1, HLR 1.3

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. Information generated by the project will help CBBEP and resource agencies plan for and adapt to future sea level rise impacts at the Preserve. More specifically, the results of this project can be used to help answer questions related to the management and restoration of the Nueces Delta Preserve, which is owned by CBBEP.

This scope includes the monitoring of Surface Elevation Tables (SETs) and marker horizons (MH) at two sites within the CBBEP Nueces Delta Preserve (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 maintain and monitor SETs and MHs. The Mission-Aransas NERR has worked with UTMSI researchers to install, maintain, and survey five groups of SETs and MHs since 2012. These existing Mission-Aransas NERR SETs and MHs are located in the NERR boundary, which are situated just north of Nueces Bay.

Over time 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 at 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.

In particular, the SET and MH data will greatly benefit a long-term vegetation monitoring program that has been maintained and monitored by the University of Texas Marine Science Institute (UTMSI) for many years at the Nueces Delta. Measurements at vegetation transects have been made continuously for over 20 years (since 1999) and have included: percent cover, species composition, sediment ammonium, pore water salinity, and sediment moisture. By placing SETs and MHs in close proximity to these transects, researchers will have a much more complete picture of habitat changes due to relative sea level rise and inundation changes. Since funding is no longer available for UTMSI to monitor these vegetation transects on a regular basis, the current project also includes funds to allow UTMSI to continue monitoring vegetation transects within the Nueces Delta.

Project Objectives:

Project objectives include: (1) continuation of a long-term marsh vegetation monitoring program at the Nueces Delta and (2) supplement the existing marsh monitoring program with elevation data by monitoring SETs and MHs.

PROJECT #2622 Operational Support for Imaging FlowCytobot at the Texas State Aquarium

Performing Organization: Harte Research Institute at Texas A&M University – Corpus Christi
Total Project Cost: $50,900
Bays Plan, 2nd Ed. Actions: PH 1.1, HLR 2.5

Background:

A harmful algal bloom (HAB) is the proliferation of an algal species that has harmful effects on marine life and human health. While some HAB events are natural features of the environment and unavoidable, HAB events have been increasing in frequency and magnitude globally, in the Gulf and on the Texas coast. Coastal watersheds in Texas are experiencing rapid population growth and urbanization, changes that can lead to increased nutrient loads that stimulate HAB growth. In addition, hydrologic changes are occurring in some Texas estuaries that favor HAB growth. Indeed, red tides that have occurred naturally in the Gulf for many centuries have increased in frequency on the Texas coast since the mid-1990s due to complex environmental and hydrologic changes. Likewise, "brown tide" algal blooms that have had significant negative impacts on Baffin Bay and the Laguna Madre first appeared in 1989 and have now been linked to growing nutrient inputs to the bay.

A growing network of Imaging Flow Cytobots (IFCBs) will provide sustained, proactive HAB monitoring data that can give early warning of an impending HAB event to resource managers and coastal communities. This, in turn, may reduce: (1) economic loss to tourism and seafood-reliant industries, (2) adverse human health impacts, and (3) negative publicity associated with HABs. In addition, data obtained from a monitoring network can lead to an improved understanding of the environmental drivers of HABs, which can inform agency-led policies and practices that facilitate sustainable growth on the Texas coast.

HRI recently entered into a new partnership with the Texas State Aquarium (TSA), where HRI is operating an IFCB that the TSA purchased. That IFCB will be operational in early 2025 and draws water from the Corpus Christi Ship Channel, providing a relevant snapshot of HAB presence for the Corpus Christi Bay complex. Data from HRI-operated IFCBs are shared with relevant agency partners upon detection of an HAB, and in mid-late 2025 will be accessible online on a dedicated project webpage.

Project Objectives:

The primary objective of this project is to support the operation and maintenance of an Imaging FlowCytobot at the Texas State Aquarium, which detects the presence of harmful algal bloom-forming phytoplankton in near real-time.

PROJECT #2623 Texas Mid-Coast Initiative – Wetland Reserve Enhancement Partnership, Phase 2

Performing Organization: Coastal Bend Bays & Estuaries Program – Land Conservation Program
Total Project Cost: $30,000
Bays Plan, 2nd Ed. Actions: LCS 1.1, LCS 1.2

Background:

The purpose of this project is for CBBEP to work collaboratively with Natural Resources Conservation Service, other conservation partners (Guadalupe-Blanco River Trust, Matagorda Bay Foundation, International Crane Foundation, Texas Parks and Wildlife Foundation, and Ducks Unlimited), and private landowners to implement Phase 2 of the Wetland Reserve Enhancement Partnership (WREP) for the Texas mid-coast area encompassing Aransas, Calhoun, Goliad, Jackson, Matagorda, Refugio, San Patricio and Victoria counties. Land protection through wetland conservation easements and subsequent restoration activities will ensure habitat needs are met for critical wildlife species and that these systems will function as intended and improve water quality and quantity over the landscape and eventually into the coastal bays and estuaries.

Project partners will prioritize easement acquisitions that are adjacent to or in the immediate vicinity of existing conservation easements, or otherwise protected lands. Within "Priority Watershed Zones," partners will identify specific properties of interest that include all desired characteristics, particularly key targeted wetland habitats and connectivity to existing conservation lands. These acquisitions will increase the size and connectivity of protected wetlands, creating larger habitat blocks and migration corridors.

Conservation and restoration of these "Priority Watershed Zones will improve water quality, water quantity and wildlife habitat, including habitat for migratory waterfowl, shorebirds, wetland dependent wildlife, and state and federal listed species, including Whooping Cranes, Piping Plover, Northern Aplomado Falcon, black- spotted newt, Peregrine Falcon, Wood Stork, Brown Pelican, White- tailed Hawk, Sooty Tern, and White-faced Ibis.

Restoration will include, but is not limited to, maintaining a buffer around the stream and wetland flows including best management practices for agriculture (sediment flows, erosion control, grazing rates and rotation to encourage early succession plant communities), exotic and invasive species control, brush and vegetative control, establishment and promotion of native plant communities.

As a partner to the WREP, CBBEP will serve as a conduit to speak with landowners interested in conserving habitat on private lands. More specifically CBBEP will administer site visits on subject tracts and provide an initial site report to document habitat types and conditions on tracts within the focus area. CBBEP will coordinate with landowners and project partners to initiate due diligence documents, including but not limited to survey, Phase 1 Environmental Site Assessment, and Appraisals that meet the Uniform Appraisal Standards for Federal Land Acquisition commonly known as "Yellow Book" appraisals. CBBEP will coordinate with the NRCS and other entities throughout the process of acquiring conservation easements on private lands.

Project Objectives:

The objectives of this five-year project are to: (1) conserve priority wetland habitats for migratory birds and other state and federally listed species within targeted areas and (2) through restoration and enhancement efforts, improve habitat conditions for fish and wildlife and improve overall health and freshwater inflows of streams and riparian areas into the coastal bays and estuaries.

PROJECT #2624 CBBEP Coastal Bird Program – Laguna Madre Initiative

Performing Organization: Coastal Bend Bays & Estuaries Program – Coastal Bird Program
Total Project Cost: $100,000
Bays Plan, 2nd Ed. Actions: CB 1.1, CB 2.1, HLR 1.1, HLR 1.2

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 has 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 #2625 Understanding Adaptive Management of the Nueces Delta: Beneficial Use Dredge Placement for Marsh Restoration

Performing Organization: University of Texas Marine Science Institute
Total Project Cost: $45,500
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2, CR 1.1, CR 2.1

Background:

The Nueces River Delta is a tidal marsh system near the City of Corpus Christi. Studies funded by a variety of local, state, and federal agencies have examined several aspects of marsh health within the Nueces Delta. Understanding the causes of changes in marsh community dynamics is important because differences in vegetation patterns can influence key natural processes. These benefits include erosion protection and litter accumulation for nesting birds. Organic debris also serves as food sources for important invertebrates (polychaetes and gastropods) that are key prey species.

High levels of shoreline erosion (up to 4.5 m per yr) and slow increases in marsh surface elevation (~5 mm per yr) have already been recorded in the Delta. In collaboration with local, state, and federal partners, CBBEP is actively working to slow shoreline erosion, increase marsh platform elevation, and create new marsh habitat via breakwater installation and beneficial use of dredge material at targeted sites throughout the Nueces Delta.

The overall goal of this work is to evaluate the application of beneficial use dredge placement as a marsh restoration strategy in the Nueces Delta to better inform the adaptive management of coastal habitats. This study is Phase 2 of a two-part approach investigating post-restoration marsh health in the Nueces Delta. Phase 2 focuses on (1) characterizing marsh ecological condition across long-term monitoring sites, (2) establishing vegetation sites adjacent to and within the dredge placement areas, and (3) assessing the potential for dispersal of vegetation into newly created marsh habitat. We will use this information to help inform future management and restoration efforts within the Nueces Delta marsh.

Project Objectives:

The project objective is to 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.

PROJECT #2626 Relocation of Water Level Station in the Nueces Delta

Performing Organization: Conrad Blucher Institute at Texas A&M University – Corpus Christi
Total Project Cost: $88,080
Bays Plan, 2nd Ed. Actions: FW 1.1

Background:

During FY 2024 and FY 2025, the United States Army Corps of Engineers (USACE) beneficially placed dredge material from the deepening and widening of the Corpus Christi Bay ship channel in the Nueces River Delta and adjacent designated placement areas. Placement of material in one of the designated placement areas along the south shore of Nueces Bay resulted in the disruption of the 8775244 Nueces Bay water level station, requiring removal of the station in the Fall of 2024. Operation of this station has been supported by CBBEP since FY 2012.

The station was incorporated into National Oceanic and Atmospheric Administration's (NOAA's) Corpus Christi Bay Physical Oceanographic Real Time System (PORTS) in 2022, and maintained to the NOAA's standards, reporting water level, water temperature, wind speed, wind direction, and barometric pressure. Continued operation of this station is integral to understanding the impact of freshwater inflows to the Nueces Estuary and of pumped water on salinities in the upper Rincon Bayou. Data from this station, coupled with real-time salinity monitoring stations in the Nueces Delta are critical for the Nueces Estuary Advisory Council (NEAC) to develop and adaptively manage an operational plan to maximize the benefit of environmental flows to the Nueces Delta.

The purpose of this project is to relocate and reinstall the 8775244 Nueces Bay water level station that was removed during a beneficial use dredge material placement project conducted by the USACE. A new 4-pile platform (or similar design) will be built in a location to be determined. Sensors and components that were removed from the previous station will be reinstalled and a station package will be submitted to NOAA for their review and eventual dissemination of data collected.

Project Objectives:

Project objectives include: (1) relocate and reinstall the 8775244 Nueces Bay water level station and (2) develop and submit a station package to NOAA for the re-inclusion of the station into NOAA's PORTS system and to allow for data dissemination by NOAA.

PROJECT #2627 Ocean Acidification Monitoring in Port Aransas Ship Channel

Performing Organization: University of Texas Marine Science Institute
Total Project Cost: $37,960
Bays Plan, 2nd Ed. Actions: WSQ 3.1, WSQ 2.2

Background:

Ocean acidification is reflected by the decrease in pH caused by the uptake of atmospheric carbon dioxide (CO_2). Atmospheric CO_2levels have been increasing steadily since the industrial revolution. As of now, ~30% of anthropogenically produced CO_2since the industrial revolution has been absorbed by the world's oceans. As CO_2dissolves into the ocean, carbonic acid is formed and leads to increase of hydrogen ion concentration (or a decline in pH). Changing the chemistry of the ocean has many adverse effects on marine organisms. Examples of organisms that can be negatively impacted are oysters, shrimps, corals, sea urchins, some plankton species, and even fish species. For many organisms, an environment with decreasing pH hinders them from producing and maintaining their carbonate shells/skeletons or causes developmental delays. This is an important issue because the decline of these organisms would have many cascading effects, such as changing marine food web structure, decreasing shellfish fishery production, and decreasing coral reef production.

Prior research revealed an overall decline in both pH and alkalinity (i.e., acidification) in almost all estuaries (including estuaries and coastal bays) in the State of Texas. This study is based on a long-term dataset that has been collected by the Texas Commission on Environmental Quality. Among these estuaries, the ones in the southern Texas that are subject to semi-arid conditions experiences the most decline in alkalinity and pH, including the Mission-Aransas Estuary (comprised of Copano, Aransas and Mesquite Bays). One of the reasons proposed is that long-term decrease in freshwater inflow, which is rich in alkalinity, causes declining alkalinity and pH. In addition, there is growing interest among both the industry and academic community to use the ocean to remove CO_2 on long time scales (hundred years or longer). One of the approaches involves injection of CO_2 under continental shelves offshore. Therefore, sustained monitoring of seawater carbonate chemistry will also provide a baseline against which increase in water pCO_2 level due to possible leakage can be detected.

The project will continue ongoing monitoring of ocean acidification conditions in Aransas Ship Channel using high precision monitoring equipment to examine the effect of freshwater inflow and ocean acidification on the carbonate chemistry of this semiarid estuary. Multi-decadal water chemistry data in Mission-Aransas Estuary exhibit a long-term reduction in alkalinity and pH, symptoms of freshwater inflow reduction and ocean acidification that may affect the calcifying organisms (e.g., shellfish). The southern-most commercial oyster harvesting in Texas is located in this region, sustained monitoring that provides up to date information on the water carbonate chemistry and suitability of estuarine water to this important calcifying organism is needed.

Project Objectives:

The project objective is to continue efforts to collect high temporal resolution pH and pCO_2 monitoring in the Aransas Ship Channel (Port Aransas, Texas).

PROJECT #2628 Outreach to Wastewater Treatment Plants in Aransas County

Performing Organization: Nueces River Authority
Total Project Cost: $55,488
Bays Plan, 2nd Ed. Actions: WSQ 1.1

Background:

CBBEP has been partnering with the Nueces River Authority (NRA) to conduct outreach and offer assistance to the domestic wastewater treatment plants (WWTPs) that discharge into the tributaries of Baffin Bay to help identify and address possible equipment, personnel, and capacity needs. NRA works to form relationships with elected officials and WWTP operators to provide free assessments of WWTPs on a voluntary basis to identify and address infrastructure needs in both wastewater collection and treatment systems. In 2023, NRA and CBBEP expanded the program to include San Patricio and Refugio counties. In FY26, NRA and CBBEP will expand the program even further to Aransas County, which contains seven WWTPs (Aransas Bay Utilities, Aransas County MUD #1, Aransas National Wildlife Refuge Water Plant, City of Rockport, Holiday Beach WSC WTP, Lamar WSC and Live Oak Point Plant). The ultimate goal is to provide guidance towards improving these facilities to reduce threats to water quality in local waterways.

Project Objectives:

The primary project objective is to provide outreach to local officials within Aransas County and their WWTP operators to assess the current condition of existing infrastructure and to provide guidance towards improving these facilities to reduce threats to water quality in local waterways.

PROJECT #2629 Fennessey Ranch Invasive Species Treatment

Performing Organization: Mission-Aransas National Estuarine Research Reserve
Total Project Cost: $30,000
Bays Plan, 2nd Ed. Actions: HLR 1.2, HLR 2.6

Background:

In 2006, the privately owned Fennessey Ranch in Refugio County, Texas came under a conservation easement granted to The University of Texas System. The University utilizes the Mission-Aransas National Estuarine Research Reserve (MA-NERR) to oversee the easement and assist with management efforts on the Ranch. Management efforts have focused heavily on invasive species management. St. John's Prairie is nearly 265 acres of grassland prairie located on the northern-most portion of Fennessey Ranch. However, the encroachment of mesquite and huisache trees has diminished the coastal prairie habitat on this section of the Ranch. Removing the encroaching vegetation will result in less woody plant material, an increased water table (from the reduction of water demands from these species), and increased open space, encouraging native coastal prairie species to flourish. CBBEP will work with MA-NERR to restore native vegetation by managing shrubs and invasive species, using fixed-wing aerial herbicide treatments and "hack-and-spray" techniques to create a more resilient and balanced habitat. Activities will include contracting with qualified specialists to implement aerial treatments over most of the landscape and individual plant treatment of invasive species for removal in sensitive areas along rivers and creek beds. USFWS will work as part of the project team and assist CBBEP and Fennessey Ranch in review of potential contractors and field surveys.

Project Objectives:

The project objective is to restore 230 acres of coastal prairie habitat at Fennessey Ranch through invasive species removal.

PROJECT #2630 Long-Term Seagrass Monitoring in Coastal Bend Estuarine Systems

Performing Organization: University of Texas Marine Science Institute
Total Project Cost: $45,000
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.3, HLR 2.4, CR 1.1

Background:

The overarching goal of this work is to continue our landscape approach to long-term seagrass monitoring to evaluate status and trends in Texas coastal seagrass populations with particular focus on the Upper Laguna Madre (ULM), Corpus Christi Bay (CCB), and Baffin Bay (BAF). For Baffin Bay, we will adopt the hierarchical strategy for seagrass monitoring outlined by Neckles et al. (2011) 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 (Dunton et al., 2011). For Baffin Bay, the program is focused on "Tier-2" (Neckles et al., 2011) monitoring that includes (1) a regional rapid assessment program using fixed stations sampled annually from a shallow-draft vessel, (2) nutrient constituent analysis of leaf tissues, and (3) quantitative analysis of seagrass algal epiphytes.

For 2025-26, this research will also include ground-truthing efforts to support a Tier 1 satellite-based seagrass mapping aimed at ULM, CCB, and BAF in combination with leveraged funds with three other agency partners. The last coast-wide census was conducted in 2004/06. This long-term program contributes to a broader Tier-1 state-wide effort to assess seagrass distribution that was recently funded by the General Land Office Coastal Management Program ($295,000). The program strongly complements a long-term commitment by both the Mission-Aransas National Estuarine Research Reserve Program (MA-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). The data collected since 2011 is posted on the dedicated web (see http://www.texasseagrass.org/) that 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.

The objective of this project is to provide an update on the status of Texas coastal seagrass populations with a particular focus on the CBBEP area as part of the Texas Seagrass Monitoring Program. Field studies would occur from September 2025-August 2026. Baffin Bay field work is part of the statewide seagrass assessment and would occur in fall 2025. Tier 2 stations in Corpus Christi Bay and Upper Laguna Madre would be visited in conjunction with the Tier 1 mapping program funded by GLO. These stations will be used to train the mapping software and validate the accuracy of the mapping analysis. The last census in the CBBEP area was completed in Fall 2024.

Project Objectives:

To monitor seagrass in the ULM, CCB, and BAF for species composition and percent cover, seagrass leaf tissue nutrient content, and physical parameters to establish the quantitative relationships between physical and biotic parameters that ultimately control seagrass condition, distribution, persistence, and overall health.

PROJECT #2631 Welder Flats Circulation Enhancement

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $60,000
Bays Plan, 2nd Ed. Actions: HLR 1.2

Background:

The Welder Flats area of the Matagorda/San Antonio Bay Complex is suffering habitat loss and decline in part due to an old oilfield road, known as "Boat House Road," that is interfering with estuarine circulation, reducing habitat availability for endangered Whooping Cranes and other estuarine-dependent species. Installing culverts in the road would increase freshwater inflows, tidal exchange, and sediment transport across the road, improving the marsh's potential to accrete sediments and keep pace with rising seas.

CBBEP will work with other non-profits, resource agencies, and a private landowner to design and permit a culvert system along Boat House Road located at Welder Flats. The area encompassing Boat House Road has been protected in perpetuity through the grant of a Conservation Easement that is held by the USDA/NRCS. However, there is a small portion of the road that is not subject to the Conservation Easement - this portion of the road is owned by the Texas General Land Office and is part of the Welder Flats Wildlife Management Area managed by Texas Parks & Wildlife Department. Activities for this project include: (1) contract with an engineering firm to provide design and permit assistance; (2) obtain a nationwide permit to install the culverts; (3) obtain a lease from the Texas General Land Office; and (4) obtain an access license or access permission from the private landowner that will provide road access to the project site. Additional funds are being sought to move forward on the construction phase of this project.

Project Objectives:

The project objective is to improve up to 700 acres of estuarine habitat at Welder Flats through increased water circulation.

PROJECT #2632 Tern Island Rookery Island Restoration Monitoring

Performing Organization: University of Texas Marine Science Institute
Total Project Cost: $19,450
Bays Plan, 2nd Ed. Actions: HLR 1.2

Background:

CBBEP is working on a project to enhance and protect the existing Tern Rookery Island located within the Upper Laguna Madre in Nueces County, Texas. CBBEP has partnered with the Texas General Land Office (TGLO) in this habitat protection and restoration project which received a permit from the US Army Corps of Engineers on October 11, 2024. The project will construct a 1,155-linear-foot erosion control structure around the perimeter of the Island and place fill in shallow open water habitat to expand upland nesting habitat and tidal wetlands. 1.35 acres of shallow open water habitat with bare bottom and 0.15 acre of tidal wetland will be directly impacted by placement of fill (2,600 cubic yards of sand and 2,100 cubic yards of rock riprap), resulting in a 1.02-acre expansion of the Island and creation of 0.33 acre of tidal wetlands with planted native vegetation to replace the functions and values of the directly impacted tidal wetland by a ratio of 2.33 to 1. Temporary impacts to 0.06-acre of seagrass habitat is also authorized for shallow-draft barge access to the Island during construction.

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 within sixty (60) days after the completion of construction of the project, pending weather and site access. Annual surveys will be completed for up to three years for seagrass and for up to five years for estuarine emergent wetland after construction is completed, or until success criteria is achieved for the respective monitoring efforts. The wetland creation and temporary impact seagrass area will be visually monitored once per year for a period of up to: (1) five years for wetland creation and (2) three years for temporary impact seagrass area. Annual monitoring reports of findings from the visual monitoring survey will be prepared and submitted to USACE within 60 days after each annual monitoring event. Observations made will include: (1) percent cover of vegetation, including species, (2) representative photographs, and (3) data points collected with GPS using submeter accuracy.

Project Objectives:

The 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 #2633 Nutrient Sampling in Petronila Creek

Performing Organization: Nueces River Authority
Total Project Cost: $52,000
Bays Plan, 2nd Ed. Actions: WSQ 2.1

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 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 & 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. The scientists at HRI have determined that the primary causes of the water quality concerns are due to excessive nutrients in the bay. The 2019 Texas Coastal Waters: Nutrient Reduction Strategies Report recommended the Petronila watershed as a priority for the implementation of nutrient reduction strategies. The Stakeholder Group has begun an effort to develop a watershed protection plan (WPP) for Baffin Bay.

The purpose of the project is to continue conducting monthly water quality monitoring for nutrients in Petronila Creek and its tributaries. This is a continuation of current monitoring at 13 sites. Parameters to be collected include Ammonia, Total Kjeldahl Nitrogen, Dissolved Total Kjeldahl Nitrogen, Total Phosphorus, Nitrite Nitrogen, Nitrate Nitrogen, Total Suspended Solids, 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 as well as by project partners to evaluate the effectiveness of agricultural best management practices and management measures implemented within Tier 1 HUCs under the USDA-NRCS “Petronila Creek Watershed Nutrient Reduction Initiative” project. This data collection project will also address two of the nine elements of a WPP: (1) identify causes and sources of pollution and (2) estimate pollution loading into the watershed and expected load reductions.

Project Objectives:

The objective of this project is to conduct monthly water quality monitoring of nutrients in Petronila Creek and its tributaries to identify sources of excess nutrient concentrations in Baffin Bay. The nutrient data from Petronila Creek and its tributaries will be utilized by the Baffin Bay Working Group and other project partners to help guide them in their watershed planning and restoration.

PROJECT #2634 Black Rails and Nocturnal Flight Calls: Bioacoustical monitoring at Padre Island National Seashore

Performing Organization: CBBEP Coastal Bird Program
Total Project Cost: $49,311
Bays Plan, 2nd Ed. Actions: HLR 2.1, CB 1.1, CB 2.1

Background:

Autonomous Recording Units (ARUs) are invaluable for avian monitoring, offering continuous recording across habitats and temporal scales while reducing observer bias and logistical challenges. They are particularly effective for secretive species like the federally Threatened Eastern Black Rail (*Laterallus jamaicensis jamaicensis*). This elusive bird, listed as Threatened in 2020, faces steep population declines, with estimates suggesting only 455–1355 breeding pairs remain. The PI's lab has been researching Black Rails since 2015, focusing on their occupancy, habitat use, and detection methods. Recent findings highlight low interannual winter site fidelity and the use of novel technologies to observe and document critical ecological questions informing conservation strategies.

Much of the research on Black Rails in Texas has focused on the mid- and upper-Texas coast. Relatively little is known about the status of Black Rails in the Coastal Bend area. In the hopes of detecting Black Rails, Padre Island National Seashore (PINS) set out six ARUs during May - June 2023 and collected approximately 2,000 hours of data. These recordings have not yet been analyzed but have the potential to include vocalizations from Black Rails obtained from sites that were not examined during the 2024 surveys. In addition to providing additional potential information on the distribution of this rare species, these recordings may also be useful from a land management perspective.

Additionally, these recordings can also help shed some light on the distribution and relative abundance of Northern Bobwhites (*Colinus virginianus*). Populations of these game birds in Texas have been experiencing a steady decline, with estimates suggesting a decrease of over 4% annually since the 1960s. This decline is attributed to various factors, including habitat loss and fragmentation, which have significantly impacted their breeding and survival rates. The bobwhite's population dynamics are characterized by a "boom and bust" cycle, where periods of increased productivity are followed by sharp declines, often exacerbated by environmental stressors. In coastal Texas, habitat degradation due to urban development and agricultural expansion has been particularly detrimental, leading to reduced nesting success and increased vulnerability to predation. Northern Bobwhite are present in small numbers at PINS but are detected only infrequently. For example, there were only five observations of Northern Bobwhites from PINS entered in eBird during 2023. The analysis of this ARU data would thus help elucidate the distribution and relative abundance of this gamebird at PINS.

Another promising ARU application is monitoring nocturnal flight calls of migratory birds. Nocturnal flight calls are vocalizations produced by migratory birds during their nocturnal flights and serve multiple ecological and behavioral functions. Understanding these calls can provide insights into migration patterns, species interactions, and responses to environmental changes.

Project Objectives:

The project objectives are to: (1) analyze PINS' 2023 ARU recordings for Black Rails, (2) analyze the same recordings for Northern Bobwhites, and (3) deploy nocturnal flight call monitoring stations to document migration phenology of select Species of Greatest Conservation Need.

PROJECT #2635 Nueces Delta Preserve Infrastructure Enhancements, Phase II

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $50,812
Bays Plan, 2nd Ed. Actions: DD 2.1

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. In FY25 CBBEP began the process of enhancing public access at the Preserve by providing ADA compliant access trails, boardwalks, and wildlife observation platforms at the Nueces Delta Preserve. Phase II will continue these previous efforts and provide additional funds to ensure accessibility enhancements are completed.

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 #2636 Monitoring Water Quality in the Nueces River Tidal Segment

Performing Organization: Texas A&M University – Corpus Christi
Total Project Cost: $54,615
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 Annual Work Plan and monitoring will continue through April 2026 through the FY2025 Annual Work Plan.

The purpose of the study is to continue characterizing water quality for a third straight year 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 important for identifying solutions to improve water quality and tracking the success of future implementation efforts. This project will benefit the residents of 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 #2637 CBBEP Classroom Water Quality Education

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $76,110
Bays Plan, 2nd Ed. Actions: NPS 1.3

Background:

The goal of this project is to support CBBEP's efforts to provide classroom education and outreach programs that cultivate personal responsibility for water quality and polluting behaviors in the Coastal Bend. This Project will utilize a CBBEP educator to deliver water quality programming to students in school districts throughout the Coastal Bend. The educator will use scaled relief models of the Baffin Bay, Oso Bay/Oso Creek, and/or the Nueces River watersheds with TEKS-aligned curriculum to provide hands-on activities that show students how pollutants enter and contaminate rivers, bays, and aquifers and how everyone can help protect water quality. 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 educator will also be responsible for utilizing the model at outreach events, such as school science nights and local festivals. These hands-on lessons help students and the public 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. When not participating in classroom lessons, the educator will assist and support CBBEP's other hands-on discovery-based learning programs at the Nueces Delta Preserve.

Project Objectives:

To provide TEKS aligned water quality educational programming to Coastal Bend students and the general public. The programming is designed to show individuals how pollutants enter rivers, bays, and aquifers and how everyone can help protect and conserve water resources.

PROJECT #2638 Landowner Outreach - Prescribed Burns, Habitat Incentives, and Invasive Species Management

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $10,000
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2, HLR 2.6, LCS 1.1

Background:

The State of Texas is reported to be over 96% privately owned. While there are several large blocks of habitat in the CBBEP program area that are under some form of governmental ownership (e.g., Aransas National Wildlife Refuge), the majority of the habitat remains owned and managed by private landowners. CBBEP and other resource agencies working on private lands have observed and documented the spread of invasive species and loss of grassland habitats through the encroachment of woody vegetation.

This project will address the spread of invasive species by providing educational opportunities, and where applicable and achievable, provide hands-on demonstrations of habitat management techniques and share information about potential incentive programs available for managing specific habitats. CBBEP will work with other nonprofit organizations and resource management agencies to develop a landowner focused workshop that will be hosted in three (3) different locations through the Coastal Bend. These comprehensive workshops will focus on implementation of management techniques like the use of prescribed burning (i.e., understanding the prescribed burn process and weather forecasts), herbicide application, identification of invasive species, and managing for migratory species. CBBEP will work to make portions of the workshop applicable for USDA Continuing Education Units.

Project Objectives:

The project will address the spread of invasive species on private lands by providing three (3) educational workshops to private landowners that focus on the implementation of prescribed burning, herbicide application, identification of invasive species, and managing for migratory species. This process will provide landowners with important information needed to implement sound management practices on their properties that enhance the stewardship of threatened habitats, such as coastal grasslands.

PROJECT #2639 Carbon Stocks and Fluxes in Black Mangrove Communities of the Coastal Bend

Performing Organization: Texas A&M University – Corpus Christi
Total Project Cost: $89,752
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 2.4

Background:

Coastal wetlands harbor immense stocks of blue carbon, provide sequestration hotspots, and thus play a critical role in the global carbon cycle and mitigation of greenhouse gas emissions. The expansive south Texas Gulf coast comprises abundant Black Mangrove (*Avicennia germinans*) ecosystems, but carbon pools and fluxes are poorly documented.

Avicennia are extending their range northward due to global temperature increases and are increasingly prominent in intertidal areas of the Texas coast. In the absence of winter freezes, which induce high mangrove mortality, *Avicennia* has a competitive advantage over lower stature salt marsh species. Recent temperature increases and reduced freeze events are driving gradual replacement of salt marshes by *Avicennia*. This shift in dominant vegetation is exacerbated by decreases in freshwater inputs to Texas estuaries, and resulting salinity increases, which are better tolerated by mangroves.

Previous research indicates that mangrove forests are huge sinks for organic carbon, even exceeding the sequestration capacity of salt marshes. Recent studies also show that mangroves are significant sources of the greenhouse gas methane (CH_4), which has an approximately 28 times higher warming potential than carbon dioxide (CO_2). The net positive impact of mangroves as CO_2 sinks could be equaled, or exceeded, by the net negative impact from methane release to the atmosphere. How this methane is produced remains unclear, with potential sources including methanogenic archaea that live below the mangroves in anoxic sediments or in associations with mangrove roots, and mangroves themselves.

Carbon stocks and fluxes will be measured at three sites spanning Avicennia's latitudinal distribution along the south Texas coast: Aransas NWR, Oso Bay, and Laguna Atascosa NWR. At each site, replicate plots will be established. Small-scale destructive sampling will be used to estimate above-ground carbon stocks, and replicate soil cores taken for determining carbon pools in roots and soil. Because carbon estimates often suffer from insufficient below-ground data, we will also pilot-test use of ground penetrating radar to better quantify stocks in roots. Fluxes will be assessed monthly through photosynthetic measurements, and release of CO2 and CH4 from soil and the mangrove plants. Samples will be processed at TAMU-CC. Subsamples will be prepared for Loss-on-Ignition (LOI) and total C and N analyses. Total C estimates will be determined through extrapolation from subsamples to total sample standing vegetation.

The project will focus on methane and locate the areas within mangroves (e.g., roots, leaves) with highest methane emissions, and investigate the potential sources based on carbon-isotopic analyses of methane and extract DNA for the molecular analysis of mcrA, a metabolic gene that is diagnostic of methane-producing archaea. We will quantify mcrA copy numbers in sediments, roots, and within plant tissue and compare these data to methane emissions rates and carbon-isotopic compositions to identify the locations where methane is produced. If mcrA copy numbers indicate a significant role of methanogenic archaea in the production of methane within mangrove forests, we will additionally sequence mcrA genes to determine the community structure of these methane-producing archaea.

Project Objectives:

The objective of this project is to assess carbon sinks and sources associated with intertidal mangroves on the south Texas coast.

PROJECT #2640 Long-term Monitoring of the Texas Tortoise at the Nueces Delta Preserve

Performing Organization: Texas A&M University – Corpus Christi
Total Project Cost: $98,944
Bays Plan, 2nd Ed. Actions: HLR 1.3, HLR 2.1, LCS 1.1, PEO 1.1, DD 2.1

Background:

The Texas tortoise is a threatened species in Texas and is considered a Species of Greatest Conservation Need; internationally, it is listed as threatened under the Convention on International Trade in Endangered Species, but it remains one of two North American tortoise not receiving US federal protection. An inhabitant of the Tamaulipan thorn scrub of South Texas into northeastern Mexico, its northern boundary lies along a line from Del Rio east to San Antonio and south to Rockport, with the southern boundary extending to Coahuila, Nuevo Leon, and east to Tamaulipas, Mexico.

Features of their life history (low reproductive rate, long generation time, and limited dispersal) leave Texas tortoises susceptible to population declines in the face of anthropogenic disturbances. Intensive tracking of the species has only been conducted at three locations in Texas and represent different habitat types in comparison to the project site at the Nueces Delta Preserve (NDP), the easternmost extent of the species range along the Texas Gulf Coast. The Texas tortoise, a species integral to the ecological balance and cultural heritage of south Texas and northeastern Mexico, faces unprecedented threats from habitat loss, road mortality, and climate change.

Gridded camera trap surveys will initially be conducted to identify hotspots of tortoise activity at the NDP. Automated image processing will identify tortoises using a deep neural network model custom built in the PI's research lab. Beginning in Fall 2025, surveys will be conducted throughout the NDP for Texas tortoises and alternate between road-cruising surveys and visual encounter surveys. Morphometric data will be collected and a general health assessment will be conducted. A blood sample will be taken for future molecular analyses and disease screening . Tortoises will be marked for individual identification by marginal scute notching pattern and injection of a PIT tag subcutaneously. For a select number of tortoises (approximately 30), we will attach GPS tracking units to the shell. Analyses of GPS location data will provide insight on their movement patterns, habitat use, and responses to environmental changes. Real-time tracking and interactive maps will provide an immersive experience for the public, allowing them to follow the movements of tortoises in a dynamic and engaging manner. This research will be disseminated through community outreach initiatives, including the creation of educational content and interactive experiences, to engage the public and stakeholders. Current conservation strategies are hindered by a lack of detailed, long-term data on tortoise movements, habitat use, and population dynamics. This project proposes a novel approach to wildlife monitoring, combining scientific rigor with community engagement to not only advance our understanding of the Texas tortoise but to cultivate an informed and engaged public. It will establish an innovative long-term monitoring program at the NDP dedicated to the study of the Texas tortoise, employing cutting-edge GPS tracking technology to fill knowledge gaps and inform conservation.

Project Objectives:

The project will establish a long-term monitoring program for the Texas tortoise (*Gopherus berlandieri*) population at the Nueces Delta Preserve (NDP) with three primary objectives: (1) perform surveys to identify the habitat used by tortoises at NDP, (2) employ GPS tracking technology to describe their movement ecology, and (3) use this data to create a cutting-edge and captivating education and outreach program.

PROJECT #2641 Aransas Woods Wildlife Viewing Features, Phase 1

Performing Organization: Aransas First Land Trust
Total Project Cost: $64,000
Bays Plan, 2nd Ed. Actions: TR 3.1, HLR 1.3, PEO 1.1, TR 2.1

Background:

Aransas Woods Wildlife Sanctuary is 120 acres of wetland and woodland habitats, jointly owned by the State of Texas, Aransas First, and the City of Rockport. It has been managed by Aransas First since 2002 as Site #47 of the Great Texas Coastal Birding Trail. In 2024, Aransas First developed a management plan for the site that focuses on species and habitats of conservation concern, public education and outreach, and site security and safety.

Approximately 31 acres are classified as freshwater wetland, and 89 acres as woodland, including the imperiled Live Oak-Redbay Forest, critical habitat for neotropical migrants. Forty-six bird species of conservation concern have been documented at site (26 wetland-dependent, 20 woodland and/or grassland species), and potentially 30 or more non-avian species of conservation concern may be present.

The management plan identified human disturbance as a primary threat to wetland-dependent species at the site and made the recommendation that "Human disturbance can be reduced by a well-designed trail system, including the use of strategically placed wildlife viewing blinds, along with educational signage and programs." The plan proposes to implement a range of public outreach and education efforts, including site walks, involvement with local school programs, educational signage, on-line information, and ecological research programs. The viewing blinds will enable these activities with limited disturbance to wildlife.

Project Objectives:

The project will install up to five (5) strategically located wildlife viewing blinds that will allow for safe viewing, photography, and nature study.

PROJECT #2642 Aransas First Programmatic Signage

Performing Organization: Aransas First Land Trust
Total Project Cost: $64,000
Bays Plan, 2nd Ed. Actions: TR 2.1, TR 3.1, HLR 1.1

Background:

Part of the Aransas First mission is to increase public awareness of ecosystems that are unique to the area through education, access, and participation. The proposed project will allow Aransas First to develop unified programmatic signage for the Aransas First properties that feature public access, ultimately leading to an improved visitor experience and a more well-educated public. Signs will be designed to be cohesive among multiple sites and allow for quick and easy comprehension by visitors. Aransas First will develop a consistent message for all of its properties and educational signage that addresses specific natural resources at each site. This will enhance visitors perception of the sites, and of the Coastal Bend, as an interesting and accessible destination. It will also make it easier for visitors to learn about the importance of the coastal resources they are visiting and promote enhanced stewardship.

Project Objectives:

The project objective is to design, produce, and install uniform programmatic signage at three (3) Aransas First sites.

PROJECT #2643 Protection of the GIWW Shoreline at the ANWR, Phase II

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $108,600
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

The Aransas National Wildlife Refuge (ANWR) was bisected by the Gulf Intracoastal Waterway (GIWW) in 1941. This created approximately 12 miles of GIWW shoreline on each side of the waterway that the ANWR is responsible for managing. Much of the existing GIWW shoreline is covered in protective revetments known as articulated concrete block mattresses to prevent erosion of the shoreline. Portions of the revetment, however, have been dislodged or out of place since their original installation in 1999. The failure of various portions of this shoreline protection system has led to localized erosion and habitat loss along the shorelines of the ANWR.

CBBEP contracted with a qualified engineering firm to conduct an existing condition evaluation and develop potential shoreline stabilization concepts for the GIWW shoreline at ANWR. The entire 12-mile length of the GIWW shoreline within the ANWR was visually inspected, and select areas along the northern shoreline were logged, surveyed, and photographed. Using the data collected, a structural condition indicator for the existing revetment was assigned to sections throughout the entire area.

In certain sections where damage to the structural revetment was observed, the integrity of the revetment structure may be repaired (or modified) using rock rubble. For sections of the revetment structure that have completely failed and cannot be feasibly repaired in a way that would restore operational functionality, a free-standing breakwater may be constructed immediately in front of the existing revetment structure, or rock rubble cover may be used to encapsulate the damaged segment after subgrade preparation. Further detailed engineering analysis and surveying is required to determine the exact dimensions, alignment, and materials used for each segment of proposed revetment repairs and modifications.

Priority areas were identified by the contracted engineer for restoration and include: (1) Mustang Lake, (2) Sundown Bay, (3) Lakes North of Dunham Bay, (4) Southern ANWR near Grass Island, (5) Southern Islands of Sundown Bay, (6) Back-Bay Shoreline of Sundown Bay, and (7) Southwestern Mustang Lake. With Texas General Land Office (GLO), Coastal Erosion Planning and Response Act (CEPRA) Cycle 12 funding, CBBEP contracted with an engineer to (1) complete surveying and geotechnical probing, (2) develop preliminary engineering and design (30%), and (3) submit a permit application and coastal lease application for the construction of the protection structure. This phase of the project is complete.

CBBEP and ANWR are moving into Phase II of the project which includes final engineering. Phase II will include the 60% and 100% design/engineering for Priority Areas 1-5 listed above. Deliverables include construction drawings, technical construction specifications, and opinion of probable construction cost. The total budget for Phase II is $108,600. CBBEP has requested $65,160 from the Texas General Land Office, Coastal Erosion Planning and Response Act, Cycle 14 (funding is pending), and CBBEP will provide $43,440 in match.

Project Objectives:

The project will protect degraded shoreline and improve resiliency to future sea level rise within the ANWR through the installation of approximately 2.2 miles of nearshore rock breakwaters. The specific project objective includes completion of final engineering and design and bid document development for Priority Areas 1-5.

PROJECT #2644 Copano Bay Shoreline Protection and Restoration, Phase II

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $340,000
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

The northwestern portion of Copano Bay has recently experienced severe erosion along a 1.6-mile-long section of shoreline adjacent to private property in the Mission River Delta region. The majority of the property, including all its wetlands, is protected by a conservation easement with the Natural Resources Conservation Service through the Wetlands Reserve Program (see uploaded copy of conservation easement). The area contains valuable coastal marshes and tidal flats that provide critical habitats for migratory waterfowl, shorebirds, waterbirds, fish, shrimp, crabs and other wildlife. Recent observations also show the use of this area by the endangered Whooping Crane. However, the shoreline is rapidly eroding, and these valuable habitats are being lost at an alarming rate.

Between 2008 and 2020, estimated erosion rates along most of the shoreline were 140 ft or greater - this is an estimated erosion rate of 11.7 ft/yr. In some areas, erosion rates were greater than 225 ft over the same timeframe. In 2017, Hurricane Harvey resulted in a significant breach of the shoreline, and erosion of this particular area was further exacerbated by Hurricane Hanna in 2020. The breach now measures approximately 130 ft wide. Breaching into large ponds of the lower marsh is especially concerning because it serves to further accelerate marsh loss and can seriously compromise estuarine habitat of the lower marsh system. The landowner of this property reached out to CBBEP to explore options for protection and restoration of the shoreline. After documenting the rapid erosion of the important habitats in this area, CBBEP agreed to collaborate with the landowner and other relevant partners to implement protection and restoration strategies for the eroding shoreline. The property was sold to the Ed Rachal Foundation in April 2025. CBBEP has discussed the project with the Foundation, and they have indicated their interest in continuing the previous landowner's shoreline protection efforts and are eager to work with CBBEP on the project.

In 2023, CBBEP contracted with a qualified engineering firm to conduct a feasibility study and alternatives analysis for the eroding shoreline. CBBEP chose three living shoreline alternatives to evaluate from several concepts the engineers developed for consideration. As part of the current phase, the engineers have also completed a cultural resource survey, submerged aquatic vegetation and oyster surveys, develop a 30% design, and submit a permit application.

CBBEP is looking to move into Phase II of this important shoreline protection project, which will include completion of the 60% engineering and design of the selected alternative for shoreline stabilization. The total cost for Phase II is $340,000. CBBEP has requested $204,000 from the Texas General Land Office, Coastal Erosion Planning and Response Act, Cycle 14 (funding is pending), and CBBEP will provide $136,000 in match.

Project Objectives:

The overall project goal is to construct a structure to restore and protect 1.6 miles of shoreline and surrounding estuarine habitats along Copano Bay. The specific project objective is to complete the 60% engineering and design of the Copano Bay Shoreline Protection and Restoration project.

PROJECT #2645 Protection and Restoration of Matagorda Island West Marsh, ANWR, Phase III

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $2,415,000
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

On August 25, 2017 Hurricane Harvey passed over the Matagorda Island Unit of the US Fish & Wildlife Service (USFWS) Aransas National Wildlife Refuge (ANWR) and caused damage to facilities on Matagorda Island as well as the levee/water control infrastructure within the West Marsh area. These levees and water control structures protect and preserve important coastal marshes within the ANWR that provide critical habitat for numerous types of wildlife, including significant numbers of wintering waterfowl and shorebirds, as well as the endangered Whooping Crane.

In February 2019, CBBEP entered into a cooperative agreement with USFWS to perform levee and water control infrastructure repairs on Matagorda Island. CBBEP is partnering with USFWS to repair and replace the highest priority of 15 miles of levees and 26 water control structures to facilitate water management on approximately 6,000 acres of the West Marsh area on the Matagorda Island Unit. CBBEP received $1.95 million from the USFWS to implement this project ($1.645 million specifically for construction), but early assessments by contracted engineers revealed that damages were more severe than initially estimated and extensive repairs were needed to the levees and culverts. As a result, CBBEP sought additional funds to add to the construction budget of this scalable project. In 2020, CBBEP secured an additional $2 million ($1.9 million specifically for construction) from the Texas General Land Office (GLO) Coastal Erosion Planning and Response Act Program (CEPRA) to help support engineering and construction costs. In 2021, the CBBEP also secured $498,000 from the Matagorda Bay Mitigation Trust (MBMT).

The project went out for bid in June 2023 which included repairs at five locations. The CBBEP received one bid which exceeded the opinion of probable cost by 44%. The CBBEP was able to secure an additional $423,011 from the GLO Gulf of Mexico Energy Security Act (GOMESA). The available funds allowed the CBBEP to award the project but only included two of the five locations. The two locations completed were large breaches of the levee and included the installation of new culverts. In 2024, the CBBEP secured $200,000 from the MBMT which allowed the repair of two of the remaining three locations, which included repairs to the breached levee.

One location (DE-SR-1) from the original scope remains, which consists of the repair of a large breach and the installation of one set of culverts. The estimated cost for the work at DE-SR-1 is $2,085,000. There are also two locations where the breach was repaired but the original culverts remained. We hope to upgrade those two locations for a cost of $330,000. Therefore, the total cost to fully complete the restoration of Matagorda Island's West Marsh is $2,415,000. CBBEP is requesting $2,265,000 from GLO, CEPRA Cycle 14 (funding is pending) and will contribute $150,000 in matching funds to complete the project.

Project Objectives:

The overall project goal is restore the infrastructure needed to facilitate water management by USFWS on approximately 6,000 acres of estuarine wetlands in the West Marsh area. The project objective is to repair and replace levees and water control structures on the Matagorda Island final location and upgrade culverts at two locations where the breach was previously repaired.

PROJECT #2646 Educational Programming at the Oso Bay Wetlands Preserve and Learning Center

Performing Organization: City of Corpus Christi – Oso Bay Wetlands Preserve and Learning Center
Total Project Cost: $150,000
Bays Plan, 2nd Ed. Actions: PEO

Background:

In the early 2000's, the Coastal Bend Bays & Estuaries Program (CBBEP) along with the City of Corpus Christi set out to establish a nature preserve on the City's south side. Numerous partners have been involved over the last almost 20 years in the creation of what has evolved into the City of Corpus Christi Oso Bay Wetlands Preserve & Learning Center. The Preserve is approximately 160 acres in size and is nestled along the rapidly developing western shore of Oso Bay. The Preserve is dedicated to enhancing the knowledge of the flora and fauna of South Texas and to safeguarding our valuable coastal ecosystems. The public is welcomed on the property and encouraged to come out and explore nature on the over two miles of nature trails. The Preserve staff also hosts organized fieldtrips during the school year and several educational camps when area students are on summer break. The Preserve is a very popular attraction – from Jan-Jun 2025, there were 96,000 total visits to the Preserve, with 48,500 individual visits.

In 2024, due to budget shortfalls, the City of Corpus Christi reduced the FY25 funding level for the Oso Bay Wetland Preserve and Learning Center. These cuts caused significant concern from the community about potential impacts to this important resource and recognition by the City Council and staff about the popularity and benefits of the Preserve. To date, the City has been able to maintain its operations and some of the educational programming, but staffing was reduced and many positions remain unfilled. The City also expressed an interest in exploring options with third-party partners to assist with the long-term funding for the Preserve. However, during the FY25 budget year, no agreements could be reached with a third-party entity, and the City now faces additional budget shortfalls for upcoming year, which means there is a strong possibility for additional cuts to be made.

Recognizing the importance of the Oso Preserve and CBBEP's long history of working with the City of Corpus Christi, CBBEP will provide financial assistance to the City during FY26 to be utilized to support the education staff at the Oso Bay Wetlands Preserve and Learning Center. This would allow the City to avoid making additional education staff cuts during the upcoming fiscal year and maintain educational programming (i.e., field trips, summer camps, teacher trainings, etc.) at current levels. This partnership will also provide opportunities for CBBEP's own environmental education program to better coordinate with similar education programs being offered at the Oso Preserve, which will allow both educational programs to grow in their reach to the community.

Project Objectives:

The overall project objective is to support the educational programming at the Oso Bay Wetlands Preserve and Learning Center which provides residents and visitors with opportunities to explore nature and learn how to become better stewards of our coastal resources.

PROJECT #2647 Newcomb Bend Marsh Restoration, Phase 2

Performing Organization: Texas Parks and Wildlife Department
Total Project Cost: $50,000
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

TPWD and several conservation partners, including CBBEP, own and manage properties on the eastern shore of Copano Bay in the areas known as Newcomb Point and Newcomb Bend. Estuarine emergent marsh and adjacent uplands in this area are known wintering habitat for the federally-endangered Whooping Crane, which has led to this area being prioritized for conservation by numerous partners. Estuarine emergent marsh in this area also provides high quality nursery and foraging habitat for fish and other wildlife, many of which are commercially and recreationally important.

Erosion and marsh habitat loss in the Newcomb Point and Newcomb Bend areas have increased in recent years. Since 1995, an estimated 50 to 120 feet of shoreline have eroded and an unquantified, but significant number of acres of marsh, have been converted to open water. This is likely due to a combination of factors, including dredging and removal of oysters immediately offshore, reduced sediment availability in the Copano Bay system, subsidence from drought and mineral extraction, sea level rise, and most recently Hurricane Harvey which passed directly over this site.

Texas Parks and Wildlife Department is seeking funds from the Texas General Land Office, Coastal Erosion Planning and Response Act, Cycle 14 (funding is pending) to complete the sediment source assessment, preliminary design, stakeholder engagement, and regulatory permitting for restoration of the Newcomb Bend marsh area. CBBEP will provide TPWD with $50,000 to support the match needed for the funding application.

Project Objectives:

The overall project goal is to continue efforts to conserve and restore the shoreline, emergent marsh, and associated nearshore and upland habitat, and wildlife dependent upon this habitat at Newcomb Marsh in Copano Bay. The specific project objective is to complete the sediment source assessment, preliminary design, stakeholder engagement, and regulatory permitting for restoration of the Newcomb Bend marsh area.

PROJECT #2648 Expansion of Whooper Walk

Performing Organization: International Crane Foundation
Total Project Cost: $10,000
Bays Plan, 2nd Ed. Actions: PEO 1.1, PEO 1.2, TR 3.1

Background:

Last winter, the International Crane Foundation (ICF) initiated the first year of Whooper Walk, a guided bird walk where participants get to view this charismatic bird while also learning about their history and tie to local systems. In our first year, we were able to reach 80 attendees across 10 walks. Walks are set to a max capacity of 15 attendees to minimize disturbance to birds. Attendees came from 10 different states, 39 cities, and we had even had some visitors from Canada. We are currently starting our second year of the program.

We would like to expand this program, and our goal is to reach new audiences and provide additional resources such as loaner binoculars for participants that may not have access to optics. We will be expanding the number of days we're hosting Whooper Walk to at least 15 events which will in turn increase our volunteer numbers, printed materials, and Outreach Biologist's time on the project. We also plan to include specialty days for K-12 audiences, which will include added activities.

This program serves as an educational pathway between the community, visitors, and ICF. The Big Tree area is one of the best places in the world to view wild Whooping Cranes and draws in many visitors to observe cranes specifically. It's important to essentially meet people at the door. We are able to provide materials and instruments for better crane viewing, foster community engagement with Whooping Crane conservation, and mitigate any negative interactions for a rare, endangered species. We hope to achieve behavioral changes where people are interacting with Whooping Cranes and nature with a broader perspective. Learning about the habitat needs, threats, and conservation challenges along the coast while viewing such a charismatic species, makes conservation personal for attendees. During the walk, we share both past, present, and planned work with Whooping Cranes along with their conservation story. As Big Tree is a somewhat urban environment, we also want to ensure visitors are engaging with cranes respectfully and understanding their importance.

Project Objectives:

The overall project is to expand ICF's weekly guided bird walk in an effort to increase outreach impact and accessibility of the program. Through the use of guided interpretation, ICF will introduce new audiences to the rare and endangered Whooping Crane along with their tie to local bay and estuary systems.

PROJECT #2649 Nueces Delta Shoreline Restoration

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $225,000
Bays Plan, 2nd Ed. Actions: HLR 1.2

Background:

CBBEP has funded several long-term monitoring projects in in the Nueces Delta focusing on relative sea-level rise, the health of wetlands, and the impacts of climate change. With the data available from the monitoring projects, including one study that showed around 14 ft of erosion per year, the need to protect and replenish the Delta was given high priority by CBBEP. Eventually, CBBEP would receive the $4,995,000 needed to build a rock breakwater system that protected a portion of the shoreline. CBBEP's contractor completed the construction of the 0.74 miles of rock breakwater in 2023. This breakwater structure is built with a crest elevation of 3.5 feet and width of 10 feet meandering down the shoreline with a break in the rock every 200 – 300 feet to allow necessary tidal flushing and not obstruct fish movement.

With the breakwater in place, CBBEP turned our efforts to replacing the sediment that had been lost over the years of erosion and building back the disappearing marsh habitat. The timing could not have been better, with the US Army Corps of Engineers (USACE) looking for opportunities to beneficially use dredged sediments from the Corpus Christi Ship Channel Improvement Project. Through numerous meetings and conversations with the USACE and other resource agency partners, CBBEP identified the most beneficial locations to focus the placement of material within the Delta. We also worked with the USACE to identify target elevations for the sediment that would be ideal for reestablishing the marsh habitat that had been lost. These conversations also led to the USACE agreeing to add to the protection of the shoreline by constructing their own breakwater of the same design, essentially extending CBBEP's breakwater by another 2,000 feet. The combination of these structures will help hold the sediment in the Delta and keep it from washing into the bay, while also shielding the Delta from wind driven erosion impacts coming across the bay. The construction of the entire breakwater complex was completed near the end of 2024.

With the full breakwater system in place, placement of material behind the breakwaters began in late 2024 and was completed in the spring of 2025, focusing in areas where historic wetlands had been lost to erosion. When complete, 571,124 cubic yards of material was placed along this stretch of the shoreline, and an additional 1 million cubic yards was placed in an area known as the Elbow Marsh. Prior to placing the sediment in these areas, the USACE tested the dredge material for contaminants to confirm that all contaminants were below the accepted screening guidelines and could be used for wetland restoration.

While the USACE funded the placement of sediment within the Nueces Delta and Elbow Marsh areas, they will not be assisting CBBEP with any sculpting of the material following placement (i.e., grading, cutting channels) or vegetation planting efforts to enhance the marsh restoration and recovery efforts - the costs for these activities must be covered by CBBEP. CBBEP is working with an engineering firm to monitor the placement areas and determine the best path forward for restoration, which could begin at the end of 2025.

Project Objectives:

The objective of the project is to enhance the marsh restoration and recovery efforts in the Nueces Delta and Elbow Marsh areas following the beneficial placement of dredge material through the sculpting of the material and vegetation planting.

PROJECT #2650 Bahia Grande Protection and Restoration, Phase II

Performing Organization: Coastal Bend Bays & Estuaries Program
Total Project Cost: $4,630,110
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

The goal of this project is to protect colonial waterbird nesting islands within the Bahia Grande basin located in, and under the management of Laguna Atascosa National Wildlife Refuge. The objective of this project is to protect a total of 17 acres of colonial waterbird nesting islands. This is a phased project. Phase I of this project was completed in May 2025 and included planning, engineering, preliminary design, and final engineering and design. Phase II, proposed here, will include implementation/construction, and monitoring.

The project will also seek to restore the hydrologic regime to the western portion of the Paso Corvinas Wetlands (approximately 173 acres) for the benefit of fish and wildlife resources by reducing the extreme environmental conditions that currently occur on the site. This is a phased project. Phase I was completed in May 2025 and included planning, engineering, preliminary design, and final engineering and design. Phase II, proposed here, will include implementation/construction.

Project Objectives:

The objectives of this project are to: (1) protect a total of 17 acres of colonial waterbird nesting islands in the Bahia Grande and (2) restore the hydrologic regime to an area of the Bahia Grande known as the Paso Corvinas Wetlands

PROJECT #2651 Development of a "Bringing Baffin Back" Dashboard

Performing Organization: Harte Research Institute at Texas A&M University – Corpus Christi
Total Project Cost: $60,230
Bays Plan, 2nd Ed. Actions: HLR 1.1, HLR 1.2

Background:

The health of Baffin Bay and its watershed (composed of Petronila, San Fernando, and Los Olmos Creeks) has been of great concern to scientists and concerned citizens due to fish kills, water quality problems (nutrient and bacteria loading), and food web changes in the bay. The tidal and above tidal segments of Petronila Creek were first identified as impaired in the 2016 and 2010 Texas Integrated Report and 303(d) List, respectively, while San Fernando Creek was first identified as impaired in the 2006 Texas Integrated Report and 303(d) List. Los Olmos Creek, was first identified as impaired in the 2024 Texas Integrated Report and 303(d) List. The Baffin Bay Stakeholder Group, formed in 2012, is composed of scientists from Harte Research Institute (HRI) at Texas A&M University-Corpus Christi, 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, and a host of concerned citizens, including commercial and recreational fishermen, ranchers, and business owners. The scientists at HRI 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).

Implementation of management measures identified in the above-mentioned planning documents has been ongoing since 2022. Many efforts have focused on engaging with local governments, agricultural producers, WWTP operators, and owners of septic systems, and efforts are ongoing to expand engagement to individual residents to provide community members the resources and tools to "get involved at home". As such, there is a growing need to develop a platform to track management measures and best management practices implemented throughout the watershed and, importantly, communicate this information with stakeholders and the general public to help drive further engagement and implementation.

The development of a Bringing Baffin Back online dashboard will provide an interactive, online platform through which the Baffin Bay Watershed Coordinator can compile, track, assess environmental benefits, and communicate to the public best management practices implemented by the broad range of stakeholders and implementing partners throughout the Baffin Bay watershed. The dashboard will be modeled after the San Antonio River Authority Green Stormwater Infrastructure (GSI) Dashboard. This dashboard will be housed and maintained at Texas A&M University – Corpus Christi but can be directly embedded into partner websites to greatly expand reach and public interaction.

Project Objectives:

The project objective is to develop an online dashboard to provide an interactive, online platform through which the Baffin Bay Watershed Coordinator can compile, track, highlight, assess environmental benefits, and communicate to the public best management practices implemented by the broad range of stakeholders and implementing partners throughout the Baffin Bay watershed.

PROJECT #2652 Flooding risk assessment for nests of imperiled shorebirds in South Texas

Performing Organization: Harte Research Institute at Texas A&M University – Corpus Christi
Total Project Cost: $99,926
Bays Plan, 2nd Ed. Actions: CB 1.1, CB 2.1, HLR 1.3, HLR 2.4, CR 1.1

Background:

Populations of Snowy Plovers and Wilson's Plovers are declining across their range, prompting their classification as Species of Greatest Conservation Need in Texas. CBBEP has been monitoring nesting Wilson's Plover and Snowy Plovers to identify and guide management actions that could maintain or increase their nesting success, including the establishment of exclusion zones and placement of signage within recreational areas. However, effective management strategies for these species are hindered by a lack of spatial tools that identify high- and low-value areas for nesting, particularly tools that integrate quantitative assessments of flooding risk, a substantial cause of nest failure. Identifying areas with a lower risk of flooding will support the prioritization of areas for management strategies and investment and allow resources to be shifted towards areas with longer-term benefits to nesting birds.

The project will leverage long-term monitoring data of nest locations and flooding events documented by CBBEP's Coastal Bird Program at Mustang Island and the Lower Laguna Madre. The study area includes tidal flats of Mustang Island and the Upper and Lower Laguna Madre. Phase I, conducted in year 1, will occur on Mustang Island and the Upper Laguna Madre, whereas phase 2, in year 2, will be done in the Lower Laguna Madre.

To quantify and map nesting habitats with a low risk of flooding, we will use the existing Tidal inundation Model of Shallow-water Availability (TiMSA) developed by Calle et al. (2016) and applied by us in the Gulf Coast of Florida. TiMSA will be calibrated using topobathymetric data and water level data from tide gauges in our study area to estimate the availability of nesting habitats with a lower risk of flooding based on elevation and hydroperiod.

There is a small field component of this study to deploy dataloggers so that in situ water level data can be integrated to calibrate the model with the locations and times of nesting birds in the CBBEP monitoring data. Water level dataloggers will be placed using a stratified random sampling design by elevation and distance to the nearest gauge. In addition, several bird surveys will be conducted during the nesting season to ground-truth the model estimates for areas not monitored by CBBEP.

Project Objectives:

The primary objective of the project is to (1) assess the risk of flooding to nesting sites for Snowy Plover and Wilson's Plover identified by CBBEP monitoring and (2) identify suitable nesting areas outside the CBBEP monitoring sites that have low risk of nest flooding and recommend areas where management and conservation benefits would be highest.