Gulf of Mexico Division

Protecting and Preserving
the Gulf of Mexico

2022 Annual Report

Our Mission

EPA's Gulf of Mexico Division is focused on the health, productivity and restoration of the Gulf of Mexico and the communities that rely on this national resource.

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Message from the Director

The marine and estuarine ecosystems of the Gulf of Mexico are the basis for the well-being of the Gulf and support the resiliency and financial steadfastness of its watershed. This year's FY 2022 Annual Report for the Gulf of Mexico Division (GMD), which highlights our work and accomplishments from October 1, 2021, to September 30, 2022, unveils the hard work of our staff and partners in enhancing the resources and resiliency of this marvelous and complex region.

During FY 2022, we were delighted to be able to start meeting in person with our partners and communities. Staff, as usual, were very innovative in developing strategies to implement our efforts to improve the Gulf and its watershed. GMD's $12 million investment in the environmentally sound agricultural practices for underserved farmers through the Farmer to Farmer program, along with our research initiatives, public education and outreach to underserved communities, continue to demonstrate our dedication to enhancing the Gulf of Mexico Watershed.

This report is dedicated to the communities in the Gulf of Mexico Watershed. GMD's knowledgeable and skillful staff and myself are committed to finding innovative and constructive ways to improve the Gulf's watershed. By improving the watershed, we can help enhance and protect the Gulf for future generations. I offer my utmost appreciation to my staff, our partners and Gulf communities for their devotion, hard work and support in this immense effort.

Sincerely,

Marc Wyatt
Director, Gulf of Mexico Division

Who We Are

The Gulf of Mexico Division (GMD) is one of EPA's Great Water Body Programs whose geographic focus is on the major environmental issues of the Gulf of Mexico region and its watershed.

GMD is committed to voluntary, nonregulatory actions and solutions that are based on sound scientific and technical information as substantiated by our work with partners and the public.

Our program consists of two teams of experienced staff:

Science Integration and Analysis Team

Promoting and implementing science to benefit the Gulf of Mexico and its communities, this team assists Gulf of Mexico stakeholders by participating in activities such as collecting and testing water samples in the watersheds that flow into the Gulf to monitor water quality.

Partnerships Team

Encouraging positive behavioral practices and promoting awareness of resources, technologies and environmental practices or initiatives, this team works closely with Gulf partners to identify environmental concerns and provides up-to-date education on how shifts in behavior among Gulf stakeholders and tourists can effect change.

What We Do

The Gulf of Mexico is recognized worldwide as a vast and productive body of water with tremendous value in ecological, economic and social terms. The Gulf of Mexico Watershed is made up of 33 major rivers draining from 31 U.S. states and a large portion of Mexico. The U.S. Gulf of Mexico coastline is 1,630 miles long. Environmental challenges facing the Gulf of Mexico include excess nutrients that can cause hypoxic conditions, marine debris and degradation of natural features such as wetlands that provide vital ecosystems services.

The Science Integration and Analysis Team and the Partnerships Team work with Gulf of Mexico stakeholders to explore methods to:

- Support the assessment, development and implementation of programs, projects and tools that strengthen community resilience.
- Protect, enhance and restore coastal and upland habitats within the Gulf of Mexico Watershed.
- Promote and support environmental education and outreach to inhabitants of the Gulf of Mexico Watershed.
- Restore and/or improve water and habitat quality to meet water quality standards in watersheds throughout the five Gulf states and the Mississippi River Basin.

Active Investments

LOCATION	DOLLAR AMOUNT	AGREEMENTS
Mississippi	$10,584,130	7 Grants, 9 Cooperatives
Iowa	$10,460,937	2 Grants, 7 Cooperatives
Louisiana	$7,756,583	9 Grants, 10 Cooperatives
Florida	$6,716,374	9 Grants, 9 Cooperatives
Alabama	$5,312,558	7 Grants, 6 Cooperatives
Virginia	$4,999,594	1 Grant, 4 Cooperatives
Texas	$4,831,076	9 Grants, 4 Cooperatives
Arkansas	$4,150,000	2 Cooperatives
District of Columbia	$3,853,866	1 Grant, 1 Cooperative
Wisconsin	$2,985,255	3 Grants
Maryland	$2,600,000	2 IAs
Tennessee	$1,800,623	1 Grant, 1 IA
Oklahoma	$932,516	2 Grants
Kansas	$750,000	1 Grant
Missouri	$499,757	1 Grant
Georgia	$300,000	1 Cooperative
Total	**More than $68 million**	

4 Performance Measures

GMD works with each of the five U.S. Gulf Coast states and other stakeholders in the Gulf of Mexico Watershed including the six Mexican Gulf Coast states on projects that support the following priority areas:

Water Quality

GMD continuously works with Gulf Coast states to maximize efficiency and utility of water quality monitoring efforts for local managers. GMD supports efforts to improve water and habitat quality to meet water quality standards throughout the five Gulf states and Mississippi River Basin.

Target: Improve 6 water quality health indicators

Results: Improved indicators in 112 water bodies

Environmental Education and Outreach

These efforts are cornerstones to environmental stewardship. GMD's goal is to heighten citizens' appreciation of the Gulf, which leads to positive behavior practices. This can be accomplished by developing hands-on environmental initiatives and engaging residents in restoration programs/projects.

Target: Reach 10,000 individuals

Results: 47,534 individuals reached

Habitat Restoration

Through funding and partnerships, GMD is restoring habitat in the Gulf states, especially related to wetlands, coastal prairies and stream banks corridors. This work helps provide for protection from storm damage; supports commercial and recreational fisheries; provides nesting and foraging habitat for birds and other wildlife; protects pollinators; and improves water quality for recreational use and aquatic life.

Target: Restore 350 acres

Results: 253,649 acres restored

Community Resilience

Resilience is the capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy and the environment. GMD supports community capacity building through vulnerability assessments and development of adaptive capacity or resilience plans to assist communities in preparing for potential changes in the environment or future, disruptive events.

Target: Reach 40 communities

Results: 183 communities reached

Traditional Measures

Mississippi Water Stewards: Expanding Community-Based, Science-Based Water Monitoring Throughout Gulf of Mexico Watersheds

Recipient

Mississippi State University

Partners

- Alabama Water Watch
- Global Water Watch

Summary

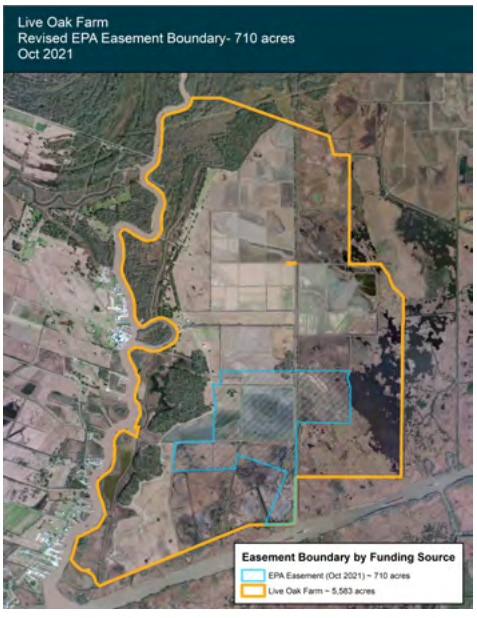
This project will expand the Alabama Water Watch citizen volunteer water monitoring program and youth 4-H program to Mississippi through the Mississippi Water Stewards program. The project will provide water resource education and outreach activities that will build stewardship and citizen monitoring networks, and educate citizens about water resources and best management practices in three priority Gulf of Mexico watersheds. This project will train a group of certified trainers to lead the state program. The trainers will then train citizen volunteers throughout the Coastal Independent Stream, Pearl-Pascagoula and Tennessee-Tombigbee river basins.

Cumulative Results

Habitat Restoration: **35 acres** enhanced, restored and/or protected.

Environmental Education: **344 individuals** reached.

Live Oak Farm Habitat Protection Easement, Vermilion Parish, Louisiana



Recipient

The Conservation Fund

Partners

- USDA/NRCS
- National Fish and Wildlife Foundation
- North American Wetlands Conservation Act

Summary

This project utilizes funding from EPA, USDA, NFWF and NAWCA to permanently protect over 5,000 acres of critical freshwater prairie wetland via a conservation easement. The easement, on a working rice farm in southern Louisiana, complements other marsh protection projects in the 2017 Coastal Master Plan and will provide habitat for migratory birds and wildlife. This project was highlighted in the passage and funding of the Louisiana Outdoors Forever program (a one-year authorized funding source of $10 million for conservation acquisition in Louisiana) as the prime example of how more state dollars are needed to complement and leverage the investment of federal agencies, such as EPA, in Louisiana.

Cumulative Results

Habitat Restoration: **710 acres** protected.

Enhancing Coastal Habitat in the Gulf of Mexico by Identifying Best Practices in Mangrove Restoration for Multiple Ecosystem Services

Recipient

New College of Florida

Partner

- Sarasota Bay Estuary Program

Summary

The project is implementing a novel, experimental restoration to identify how alternative methods for exotic deadwood disposal alter mangrove carbon cycling, fish communities and native revegetation. The project removed exotic plants from spoil ridges and implemented experimental native revegetation on a subset of those ridges, and is monitoring how multiple services respond within the 188 acres of enhanced mangrove swamp habitat. Underserved high school students are learning "How the Health of the Bay Affects Citizens." Additionally, a decision chart is being produced for restoration practitioners to quantify how alternative exotic control methods impact different ecosystem services in mangroves. Habitat restoration is taking place at Tidy Island, the most extensive intact mangrove habitat in Sarasota Bay. Outreach is impacting underserved (Title IV) high school students in the greater Sarasota Bay region and restoration managers across south Florida.

Cumulative Results

Habitat Restoration: **13.5 acres** enhanced, restored, and/or protected; **188 acres** of mangrove swamp habitat being monitored.

Environmental Education: **70 individuals** participated.

Strengthening Resilience Through Community-Based Flood Planning in Northwest Florida

Partners

- Escambia and Santa Rosa County staff
- Escambia and Santa Rosa County Extension

Recipient

University of Florida

Summary

This project will provide stakeholders a framework to assess risks and vulnerabilities in stormwater flood-prone communities of Escambia and Santa Rosa counties in northwest Florida. The purpose is to improve community resilience by utilizing existing tools and techniques to provide information to county staff, municipalities and other stakeholders. The potential for communities to mitigate flooding and pollution through green infrastructure, including vegetative swales, bioretention cells, permeable pavement, rainwater harvesting and rain gardens, represents an untapped tool to promote the resilience of many communities in Escambia and Santa Rosa counties.

Cumulative Results

Environmental Education: **1,407 individuals** reached.

Community Resilience: **72 communities** reached.

Healthy and Resilient Gulf

Building Community Resilience in Pontchartrain Park

Recipient

Sustaining Our Urban Landscape (SOUL)

Partners

- Pontchartrain Park Neighborhood Association
- City of New Orleans, Department of Parks and Parkways
- I See Change (Contractor)

Summary

This project will plant 1,500 native, water-loving trees in historic Pontchartrain Park in New Orleans to build community resilience, demonstrate the effectiveness of the urban forest as green infrastructure, absorb stormwater (estimated annually at 3 million gallons) and mitigate non-point source pollution. Planting events will span two years, and each tree will be professionally watered and maintained for the following year. Stormwater volume and pollution reduction will be modeled to determine the project's effectiveness.

Cumulative Results

Habitat Restoration: **439 trees** planted, restoring approximately **22 acres**.

Community Resilience: **1 community** with improved resilience.

Improving Community Health: Microbial Source Tracking and Quantitative Microbial Risk Assessment on the Texas Coast

Recipient

Texas A&M University-Corpus Christi

Partners

- Laboratory for Microbial and Environmental Genomics at Texas A&M University-Corpus Christi
- Harte Research Institute
- Nueces River Authority
- Water Utilities Lab in Nueces County
- Physical and Environmental Sciences Laboratory
- University of Texas Health Science Center at Houston School of Public Health
- Texas Water Resources Institute
- Voices of the Colonias

Summary

The purpose of the project is the identification of fecal pollution sources and their associated health risks in the Baffin Bay Watershed, and the communication of those results to the local community. Funding for this project will result in the identification of fecal pollution sources (e.g., humans, cows, pigs, gulls) for the purpose of informing mitigation measures to improve water quality. In turn, these results will be used in a risk assessment to estimate the human health risks (i.e., number of illnesses per recreation event) associated with the pollution. The results will be shared with South Texas colonias residents, who depend on the Baffin Bay Watershed for its economic importance and recreational opportunities.

Anticipated Results

Water Quality: Improve **2 to 3 watersheds**.

Community Resilience: **5 communities** more resilient.

Communities Count: Single-Use Plastic Data to Change Policy

Summary

This project presents an innovative approach to source reduction: the Remora mobile application (anticipated Apple and Android release at the end of 2022), designed by Eckerd College faculty. The app is designed to complement education and outreach activities by sustaining Reduce Single-Use action. Remora app users will track their single-use plastic uses and refusals, thus increasing individual accountability and the potential for successful long-term behavioral change. The app incorporates game play elements such as point-scoring and competition. At the same time, the data generated via the app will contribute to a geo-referenced global database that can be used by researchers to understand behavior patterns, by stakeholders to inform policy and infrastructure decisions, and by sustainably minded entrepreneurs to identify new product niches. Cleanups will be held to advertise the new app and to clean up communities around St. Petersburg and Tampa, Florida. Altogether, the project plans on reducing single-use plastic throughout communities and educating children and adults about the problems as well as solutions surrounding single-use plastic.

Recipient

Eckerd College

Partners

- Keep Pinellas Beautiful
- Mayor's Office of Sustainability for the City of St. Petersburg
- Arts Conservancy for Teens (ACT)
- St. Pete Youth Farm
- Tampa Bay Watch
- Tampa Bay Estuary Program
- Suncoast Rise Above Plastics Coalition

Anticipated Results

Environmental Education: **2,259 individuals** reached and **2,500 individuals** attend **72 cleanup events**.

Community Resilience: **8 city council districts** represented in cleanups with **25% of app users** participating in trash reduction strategies.

Plan-It Marsh and Dunes: Advancing Career Skills and Outreach Education

Summary

This project is engaging Mississippi Gulf Coast high schools and residents in marsh and dune restoration activities. As coastal marsh and dune habitats provide benefits to recreational and commercial fishing, water quality, biodiversity, storm impacts and more, this project will leverage partnerships to restore marsh and dune habitats through building upon current collaborative outreach programs and the development of new educational opportunities.

The activities of this project broadly include: 1) the expansion of educational training programs on growing native plants for habitat restoration; 2) education and training programs that develop skills in installation of green infrastructure through restoring Mississippi Gulf Coast marsh and dune habitats; 3) advancement of outreach education through formal training in a master's degree program in conservation education, and partnership of outreach educators with Gulf Coast high schools and community; and 4) improvement of community resilience through a virtual student exchange program where each participating school would become plant restoration ambassadors for native marsh and/or dune plants.

Cumulative Results

Environmental Education: **100 individuals** reached

Anticipated Results

Environmental Education: **400 individuals** trained in installing green infrastructure.

Habitat Restoration: **10 acres** of native marsh and dune plant communities restored.

Recipient

Mississippi State University

Partners

- Mississippi State University
- Mississippi State University Coastal Research and Extension Center (CREC)
- Mississippi-Alabama Sea Grant Consortium (MASGC)
- Mississippi Gulf Coast High Schools

Underserved Fund the Farmer

In 2022, EPA awarded $12 million in grant funding for the Gulf of Mexico Historically Underserved Farmer to Farmer Grants Program.

Four organizations—one working in each of the following regions—will provide competitive subawards to eligible entities to directly collaborate with underserved farmers on projects within the Gulf of Mexico Watershed to support Gulf of Mexico Farmer to Farmer objectives:

1. Missouri-Arkansas – White-Red Region (HUCs 10 and 11)
2. Ohio-Tennessee Region (HUCs 05 and 06)
3. Non-Mississippi River Drainage (HUCs 12, 13 and a portion of 03)
4. Mississippi River Region (HUCs 07 and 08)

Projects will be focused on novel or innovative techniques, methods or approaches to improve adoption of resilient and sustainable practices and to increase collaboration, including within and among farming communities to inform future farm management.

EPA/NACD Gulf of Mexico Historically Underserved Farmer to Farmer Grants Program

Recipient

National Association of Conservation Districts

Summary

This project will develop a competitive subaward program in the Non-Mississippi Region of the Gulf of Mexico for organizations to collaborate with underserved farmers on farm resilience, water quality, habitat or forestry improvements, thus reducing sediment, phosphorus and nitrogen runoff.

Anticipated Results

Environmental Education: **15–35 organizations** and **100 farmers** reached.

Habitat Restoration: Impact **100,000–170,000 acres** with a mix of agriculture, habitat and forestry management practices, and reduction in nitrogen, phosphorus and sediment runoff.

Supporting Projects Through Farmer-Led or Farm-Focused Organizations in the Gulf of Mexico Watershed

Recipient

National Association of State Departments of Agriculture Research Foundation

Summary

The NASDA Foundation's deep relationships with farmer-serving organizations in every state targeted by this regional award will result in almost $2 million provided to regional subawardees. Subawardees will provide technical assistance to underserved farmers to protect and improve water quality and habitat, and to implement programs to prevent or reduce nonpoint source pollution, including nutrients and plastic pollution.

Anticipated Results

Farmers or farming communities will adopt practices that support sustainability and resiliency; improve water quality (reduce nutrient losses, turbidity and total suspended solids, and improve dissolved oxygen, pH and temperature); and enhance, protect and restore habitat.

Iowa's Underserved Missouri River Region Subaward Program

Recipient

Iowa Department of Natural Resources

Summary

This project will develop a competitive subaward program to engage applicants across its Missouri River Region, increasing the ability of historically underserved farm communities to address nutrient pollution and frequent flooding.

Anticipated Results

Water Quality: **41% reduction** in nitrate loads, **29% reduction** in phosphorus loads, and reduce subwatershed-wide runoff coefficients **below 50%** for large storms.

Strengthening the Support Ecosystem for Underserved Farmers

Recipient

Winrock International

Summary

This project will develop a competitive subaward program in the Upper and Lower Mississippi River basins for organizations to collaborate with underserved farmers on water quality, habitat or forestry improvements, thus reducing phosphorus and nitrogen loss.

Anticipated Results

Environmental Education: **8–20 organizations** and **100 farmers** reached.

Habitat Restoration: Impact **7,500 acres** with a mix of agriculture, habitat and forestry management practices. **1,400 pounds** reduction in phosphorus loss or **19,000 pounds** reduction in nitrogen loss in the Mississippi River Region.

Farmer to Farmer

Farming Systems Research: Demonstrating an Innovative and Scalable Watershed-Based Approach to Advancing Sustainable Agriculture

Summary

The project is conducting field studies and demonstrating Farming Systems Research (FSR) to evaluate innovative technologies and strategies for Advanced Nutrient Management in Cover Crop – Minimal Tillage (CCMT) systems. Delta F.A.R.M. is demonstrating this approach to achieving sustainable agriculture that is being scaled to meet local needs for watershed-based demonstration. FSR is being integrated with traditional watershed-based planning to engage farmer stakeholders and an interdisciplinary support team in developing and implementing nutrient management strategies and agricultural systems that enhance environmental quality and farm profitability. Working directly with landowners with on-farm trials and associated water quality monitoring are also key components of this research study and field demonstration.

Cumulative Results

Habitat Restoration: **3,884 acres** enhanced, restored and/or protected, as well as approximately **10,000 acres** of cover crops providing habitat windows.

Environmental Education: Over **100 individuals** reached.

Recipient

B.F. Smith Foundation

Partners

- Mississippi State University
- Mississippi Department of Environmental Quality

Middle Cedar River Targeted Wetland Demonstration Project

Photo courtesy of Vern Fish, Black Hawk Soil and Water Conservation District

Recipient

Iowa Department of Agriculture and Land Stewardship

Partners

- City of Cedar Rapids
- City of Cedar Falls
- City of Waterloo
- Iowa State University
- Iowa Corn Growers Association
- Iowa Soybean Association
- Iowa Farm Bureau Federation

Summary

Nine targeted wetlands have been installed under this project, treating over 3,800 acres of drainage in the Middle Cedar River Watershed in Iowa. Working with both agricultural and urban groups, this project will foster expanded delivery of wetlands on the landscape and disseminate the information necessary to watershed stakeholders to build upon this success. Once completed, these wetlands are anticipated to benefit 5,000 acres and reduce N loading by 52% on average based on values in the Iowa Nutrient Reduction Strategy Science Assessment, with an estimated 58,000 pounds of annual reduction of N loading.

Cumulative Results

Habitat Restoration: **105 acres** restored, impacting **3,800 acres** of drainage.

Environmental Education: **1,293 individuals** reached through in-person and virtual meetings and **over 10,000 individuals** reached through social media.

Algae Harvesting and Biomass Reuse for Sustainable Nutrient Reduction in Agricultural Runoff to the Gulf of Mexico

Recipient

Northwest Florida Water Management District

Partners

- May Nursery in Havana, Florida
- University of Florida/Institute of Food and Agricultural Sciences
- AECOM (Contractor)

Summary

This project uses an innovative technology to harvest nutrient-rich algae from a retention pond within an agricultural setting and reuse the algae as fertilizer on the originating nursery operation, creating a closed-loop farming system. This is expected to significantly reduce export of nutrients and potentially toxic algae from the agricultural operation while also releasing highly treated water back into the natural environment.

Anticipated Results

Water Quality: **85% and 95% reduction** in nitrogen and phosphorus in the retention pond, respectively, and **97% reduction** in microcystins.

Virtual Fencing to Control Cattle for Improved Ecosystem Services

Summary

To protect critical components of water quality, riparian ecosystem function and wildlife habitat, controlling how and where livestock graze on grazinglands is fundamental to grazingland conservation. With the drawbacks related to physical fences (e.g., costs, maintenance, inflexibility), virtual fencing (VF) is being studied in this project. Cutting-edge VF uses GPS-enabled collars on individual cattle that provide auditory and electric stimulus as needed to control cattle location and implement critical area protection and rotational grazing. This in turn prevents overgrazing of pastures and critical areas.

This project evaluates the efficacy of VF for achieving water quality, habitat and other conservation objectives (e.g., soil health); develops needed standards, specifications and guidance; and delivers results to producers to achieve successful VF adoption. Near-commercial-ready VF systems are being installed in up to three ranches in Oklahoma, in addition to an OSU Research Ranch, assessing effects of improved grazing management via VF on water quality and watershed health, and transferring results to stakeholders. The project will evaluate effects using EPA-approved watershed monitoring and modeling methods, supplemented with spatial analysis of precision cattle and vegetation data gathered through VF technology and drones.

By the end of the project, we should see increased producer awareness of VF and guidelines for ranchers and others to successfully implement VF as a novel solution for conservation objectives. We will also identify needed improvements and features in VF technology to improve its effectiveness as a conservation tool.

Recipient

Oklahoma State University

Partners

- Cooperative Extension Service
- Oklahoma Conservation Commission
- USDA NRCS, Conservation Districts

Cumulative Results

Environmental Education: **111,225 individuals** reached through social media.

Trash-Free Waters

Alabama's Litter Abatement Project

Summary

Alabama's Litter Abatement Project to "Help Keep Our Waters Clean" will improve water quality by abating sources of nonpoint source pollution, specifically litter prevention. The project will work with communities and the Alabama Department of Transportation (ALDOT) to achieve sustainable measures that result in the reduction of land-based trash from entering water bodies by focusing on abating roadway litter from motorists.

Educating stakeholders about watersheds and practices to reduce litter along interstates promotes the protection of watersheds by encouraging good stewardship of the state's valuable rivers, streams, wetlands, lakes and groundwater. Fourteen watershed signs were installed successfully in the initial stage of the project. This project includes funding for the remaining 34 watershed signs across the state.

The next step identified by the project committee is to engage motorists at transition points. Major interstate stopping points, such as welcome centers managed and maintained by ALDOT, were selected as a priority area due to the high frequency of use. Several locations were selected to have litter collection sculptures installed. Each of the selected locations were evaluated using EJ Screen to identify disadvantaged communities that would be prioritized to receive focused watershed and litter prevention education in local schools.

Recipient

Alabama Department of Environmental Management

Partners

- ALDOT
- Alabama Department of Tourism
- Mobile Bay NEP
- Alabama Coastal Foundation
- Alabama River Alliance

Cumulative Results

Environmental Education: **3,000 individuals** reached and over **300,000 visitors** to Grand Bay Welcome Center to see Loggerhead Sea Turtle educational sculpture filled with recyclable bottles.

Trash Removal: Over **300 pounds** removed.

Up2U Litter Prevention Campaign: Cultivating Personal Responsibility for Litter Prevention in the Texas Coastal Bend

Recipient

Coastal Bend Bays & Estuaries Program

Partner

- Nueces River Authority

Summary

The Up2U Litter Prevention Campaign is a project of the Coastal Bend Bays & Estuaries Program (CBBEP) that establishes a sustainable behavior-changing litter prevention program in the Coastal Bend of Texas by expanding the Up2U litter prevention program from the headwaters of the Nueces River Basin to six counties and 10 watersheds within the Coastal Bend. The five-year campaign includes strategic billboards, radio spots, litter bag distribution points and community cleanup events all centered around a yellow mesh litter bag emblazoned with the empowering Up2U message. The litter bags hold approximately one-third of a yard of litter and serve as a tool for trash removal, trash prevention and outreach.

The CBBEP has established distribution partnerships with Aransas County Navigation District, Center for Coastal Studies at Texas A&M University-Corpus Christi, City of Portland, City of Port Aransas, Coastal Bend Council of Governments, Keep Aransas County Beautiful, Mission-Aransas National Estuarine Research Reserve at University of Texas Marine Science Institute, Nueces County Coastal Parks, Nueces River Authority, Port of Corpus Christi Authority, Padre Island National Seashore, Refugio County, Texas State Aquarium and Valero, who have installed 26 unmanned distribution sites at public access points throughout the Texas Coastal Bend.

Cumulative Results

Trash Removal: Over **52,000 Up2U litter bags** have been distributed, removing **17,333 cubic yards** of trash.

Enhancing Community Resilience Through Water-Borne Trash Removal and Reduction

Recipient

Escambia County

Partners

- Santa Rosa County
- Escambia County
- City of Pensacola
- Ocean Hour
- Santa Rosa Creek Tribe
- Emerald Coast Keeper
- Navy Federal
- UF IFAS Extension / Sea Grant
- Blackwater Pyrates
- Emerald Coast Utilities Authority
- University of West Florida
- Bagdad Waterfront Partnerships
- Warrington Revitalization Committee
- West Florida Public Libraries
- Santa Rosa County Library System
- Baldwin County Library Cooperative
- Santa Rosa School District Schools
- Escambia County School District Schools
- Nurdle Patrol
- 850 Eco

Summary

Escambia County, through the Pensacola & Perdido Bays Estuary Program, is working to reduce and eliminate water-borne trash in three creeks of the Pensacola Bay system: Jones Creek in Escambia County, Carpenter Creek in the city of Pensacola, and Pond Creek in northern Santa Rosa County. All three creeks have experienced degradation due to alteration and development, and all three drain into impaired water bodies. This project is engaging the community and local businesses in trash removal and prevention to reduce water-borne trash and improve the safety, health and beauty of local creeks.

Cumulative Results

Environmental Education: **325 individuals** reached.

Water Quality: **3 water bodies and/or segments** improved.

Community Resilience: **3 communities** strengthened.

Trash Removal: Over **4,600 pounds** of trash removed.

Expanding a Comprehensive Strategy to Create Trash-Free Waters Across the Gulf of Mexico Through a National Estuary Partnership

Recipient

Tampa Bay Estuary Program

Partner

- Mobile Bay National Estuary Program

Summary

This project will improve water quality by directly removing trash from two "estuaries of national significance" in the Gulf of Mexico, expanding the use of marine debris removal technologies, and directly engaging communities and businesses in trash removal activities and formulation of future trash prevention initiatives. The TBEP has employed several tactics and community-based initiatives to help understand and reduce marine debris impacts within the Tampa Bay Watershed. Through sales of a specialty license plate, the TBEP has been able to fund a variety of watershed-specific cleanup events, installation of marine debris reduction devices (i.e., Water Goats), and education and outreach campaigns raising awareness of marine debris issues within the community.

Cumulative Results

Habitat Restoration: **1,789 acres** enhanced, restored and/or protected.

Environmental Education: **1,346 individuals** reached.

Community Resilience: **30 communities** reached.

Water Quality: **53 segments** improved.

Trash Removal: **7,832 pounds** removed.

Deepwater Horizon Natural Resource Damage Assessment and Restoration

The April 2010 explosion of the *Deepwater Horizon* (DWH) drilling rig resulted in the largest marine oil spill in U.S. history, causing the loss of 11 lives and extensive natural resource injuries. The oil spread from the deep ocean to the surface and nearshore environment from Texas to Florida, prompting an extensive response and Natural Resource Damage Assessment (NRDA). In 2016, the historic BP settlement required the company to pay up to $8.8 billion over 15 years—the largest ever for natural resource injuries.

As a member of the DWH NRDA Trustee Council, EPA supports eight Trustee Implementation Groups (TIGs). GMD staff serve as primary and alternate EPA Trustee representatives on the TIGs for Alabama, Florida and Mississippi, as well as the Region-wide TIG. Supporting the Office of Water lead for NRDA, GMD staff also provide technical expertise to the five Gulf states related to monitoring and adaptive management, and approaches to restore oysters and sturgeon injured by the oil spill. As a result of the NRDA restoration efforts, measurable results-oriented projects are being implemented to restore the Gulf of Mexico ecosystem and the natural resources injured by the DWH oil spill by restoring and conserving habitat, restoring water quality, replenishing and protecting injured coastal and marine species, and providing and enhancing recreational opportunities.

Examples of specific DWH NRDA work being supported by GMD staff

Region-wide TIG

In September 2021, the Region-wide TIG released its first Restoration Plan and Environmental Assessment, which includes projects to restore Birds, Oysters, Marine Mammals and Sea Turtles. During 2022, the Region-wide TIG has been completing work on project implementation plans, and monitoring and adaptive management plans to support the projects in the first restoration plan. The 2021 Region-wide TIG-approved plan includes 11 restoration projects valued at $99.6 million to be implemented across the Gulf states and offshore waters. It also targets specific locations in Mexico and on the Atlantic coast of Florida.

Florida TIG

In 2022, the Florida TIG approved the Phase V.4 Florida Coastal Access Project Plan for the acquisition of the Dickerson Bay parcel. This newly acquired coastal parcel will become part of the St. Marks National Wildlife Refuge, and the U.S. Fish and Wildlife Service will conduct minor restoration activities and implement recreational improvements. The public will have access to hiking and wildlife viewing around unique shrub-scrub and longleaf pine uplands. The estimated cost of the project is $685,000.

Louisiana TIG

The Louisiana TIG approved nine separate Monitoring and Adaptive Management (MAM) activities in 2022 to support assessment of overall program effectiveness. The selected activities would support the MAM Strategy developed in 2021, which outlined an approach to prioritize MAM activities in Louisiana for effective and efficient evaluation of the restoration of resources injured by the DWH oil spill.

GMD staff assisted in the development of the strategy document and continue to assist the TIG's MAM efforts. GMD staff continue to support the EPA Office of Water on the MAM workgroup in developing OO TIG ecosystem-level objectives and potential MAM activities. GMD staff also provided subject matter expertise for marine debris, oysters and sturgeon projects.

Mississippi TIG

In June 2022, the Mississippi TIG published its third Restoration Plan and Environmental Assessment, "Mississippi Trustee Implementation Group Final Restoration Plan 3 and Environmental Assessment: Habitat Projects on Federally Managed Lands, Sea Turtles, Marine Mammals, Birds, and Provide and Enhance Recreational Opportunities." The Mississippi TIG selected seven long-term restoration projects valued at over $19 million.

GMD staff completed third project year water quality monitoring for the Upper Pascagoula Water Quality Enhancement Project nutrient reduction project. This approved Mississippi TIG restoration project will help restore injuries to water quality by developing and implementing conservation plans and practices to reduce nutrient and sediment runoff into coastal waters from the Chunky-Okatibbee Watershed.

Texas TIG

The Texas TIG approved the Oyster Restoration Engineering Project Completion Report completed by the Texas General Land Office as part of oyster restoration planning in Galveston Bay. The 2017 Texas TIG Oyster Restoration Engineering Project provides planning, engineering and design, and permitting for future restoration of nearshore oyster reefs and the rehabilitation of oyster reef habitats buried by sediment in the Galveston Bay system.

Gulf Coast Ecosystem Restoration Council

Pensacola & Perdido Bays Estuary Program on the day the Policy Board approved their first CCMP (Comprehensive Conservation Management Plan).

Following the catastrophic 2010 *Deepwater Horizon* oil spill, Congress passed the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast Act of 2012 (RESTORE Act). The RESTORE Act established the Gulf Coast Ecosystem Restoration Council (the Council) and the Gulf Coast Restoration Trust Fund. The Council membership includes the governors of the states of Alabama, Florida, Louisiana, Mississippi and Texas, as well as the secretaries of the U.S. Departments of Agriculture, Army, Commerce, Homeland Security and the Interior, and the Administrator for EPA. EPA currently serves as the chair of the Council. If you are interested in reading more about the RESTORE Act or the Council, please visit: www.RestoreTheGulf.gov

On April 28, 2021, the RESTORE Council voted to approve the final FPL 3b, with Administrator Michael Regan voting as the Chair. FPL 3b supports funding 20 activities to address ecosystem needs across the Gulf.

Conservation Enhancement Grant Program

Awarded $2.5 million in 2021

This project will enhance public-private partnerships that support land protection and conservation across the Gulf Coast region by providing funding for the following projects:

- **Atlanta Botanical Garden:** This project will test whether restoration through vegetation removal in coastal wetlands leads to differences in hydrologic and nutrient parameters in soil, shallow groundwater and stream water flowing into coastal dune lakes.
- **Galveston Bay Foundation:** This project will fund habitat management, restoration or enhancement activities that impact an estimated 800 acres of habitat within GBF's conservation lands.
- **Partnership for Gulf Coast Land Conservation:** This project will provide funding for the completion of due diligence for 16–20 land conservation projects with a goal of protecting over 20,000 acres.
- **The Nature Conservancy:** The Nature Conservancy in Louisiana will partner with the U.S. Fish and Wildlife Service to restore oyster reef habitat along rapidly eroding shorelines in Calcasieu Lake along Sabine National Wildlife Refuge, a priority landscape on the Gulf of Mexico.
- **Woodlands Conservancy:** This project will remove invasive vegetation from 840 acres of forested wetlands within two properties, plant native vegetation, and complete bird banding and bird surveys.

Mobile Bay National Estuary Program (MBNEP)

Awarded $1.65 million in 2020

This project will:

- Restore approximately 1,800 linear feet of stream on the headwaters of Twelve Mile Creek, a tributary of Three Mile Creek.
- Implement an extensive Invasive Species Control Plan in priority areas identified in the Three Mile Creek Watershed.
- Address stressors affecting water quality and habitat in the Three Mile Creek Watershed.

Pensacola & Perdido Bays Estuary Program (PPBEP)

Awarded $2 million in 2018

- The PPBEP Management Conference has been established and is made up of the Policy Board, the Technical Advisory Committee, the Education and Outreach Committee and the Business Advisory Committee.
- The PPBEP has developed its first Comprehensive Conservation Management Plan (CCMP), which was approved by its Policy Board in September 2022.

Tampa Bay Estuary Program (TBEP)

Awarded $1.4 million in 2018

The TBEP will implement five water quality and habitat improvement projects throughout the Tampa Bay watersheds:

- Biosolids to Energy (City of St. Petersburg).
- Copeland Park Stormwater Enhancements (City of Tampa).
- Coastal Invasive Plant Removal / Cockroach Bay Aquatic Reserve (Hillsborough County).
- Robinson Preserve Water Quality and Habitat Restoration (Manatee County).
- Ft. De Soto Recirculation and Seagrass Recovery (Pinellas County).

Research Program Participants and Fellows

Oak Ridge Institute for Science and Education (ORISE) Participants

The Internship and Research Participation Programs at EPA are managed by the Oak Ridge Institute for Science and Education (ORISE) under an interagency agreement between EPA and the U.S. Department of Energy. The ORISE Internship and Research Participation Programs at EPA are STEM-related educational and training programs designed to provide students, recent graduates and university faculty opportunities to participate in project-specific EPA research and developmental activities.

Amy Moody

This year, Amy Moody defended her dissertation research, titled "The effect of submarine groundwater discharge (SGD) on nutrient and trace metal dynamics in coastal systems." This work highlighted the importance of groundwater on coastal ecosystems and how it plays a role in coastal water quality. In February 2022, one of the papers from this research, "Groundwater-derived U and Ba exports from a coastal acid sulfate soil (CASS) catchment following rain events," was published in the journal *Estuarine, Coastal and Shelf Science*. In addition, Amy has been participating in a writing group that is reviewing work on trace metals in subterranean estuaries, with the goal of publishing a review paper that summarizes previous work and identifies gaps in the research. Also, she has been a lead co-author on a meta-dataset paper looking at nutrient dynamics in subterranean estuaries on a global scale. All this work will help pave the way to understanding more about groundwater dynamics and its role in the coastal ocean.

Jenny Paul

During the last year, Jenny Paul participated in the first in-person workshop held by the Pensacola & Perdido Bays Estuary Program, where she worked with other stakeholders to identify focus areas for management needs. At the 2022 GoMCon and the Joint Aquatic Sciences meeting, she presented some of the work GMD is doing on benthic indicators. Jenny has also been very active in outreach, leading a workshop at the Pensacola Mess Hall for younger children and leading a benthic ecology unit on the USM STEM Survey.

At GEMMD, Jenny is involved in projects related to benthic ecology, biotic indices and rapid assessment tools, which serve to better inform monitoring in northern Gulf of Mexico estuaries and coastal habitat. She is also developing a pilot project to study benthic environmental DNA using sediment cores as an early assessment tool. Additionally, GEMMD is working on a new technique called Sediment Surface Imaging using GoPro cameras to capture an image of the sea floor, which can also be used in surveys. GEMMD will be using the fall and winter to plan the pilot project, which will occur in the spring and summer of 2023. These research products will support the objectives of GEMMD and GMD while assisting entities like the PPBEP.

Taylor Screws

Taylor Screws is currently in his second year as an ORISE Fellow at GMD. This year, Taylor has continued to take ArcGIS courses in preparation for an ESRI certification. He has been using these skills to help GMD with project mapping, including the USM STEM Survey in July 2022. The highlight of his year was participating in the survey, which allowed him to gain experience working aboard a research vessel in the Gulf. Taylor has also attended a variety of virtual seminars, as well as the 2022 GoMCon, and recently attended a Floodplain Managers course, "Managing Floodplain Development through the NFIP," in preparation for the Certified Floodplain Managers exam.

National Academy of Sciences (NAS) Fellow

The NAS Gulf Research Program's Science Policy Fellowship program helps scientists hone their skills by putting them to practice for the benefit of Gulf Coast communities and ecosystems. Fellows gain firsthand experience at the interface of science and policy as they spend one year assigned to staff of federal, state, local or non-governmental environmental, natural resource, oil and gas, and public health agencies in the Gulf of Mexico region.

Theo Hilton

Theo Hilton is a National Academies of Science-funded Gulf Policy Fellow at GMD for the 2021–2022 academic year. During his time at GMD, he has contributed to efforts in effecting environmental justice through partnerships and grant funding opportunities. In March 2022, he helped to conceptualize and coordinate a series of web-based input sessions to inform the development of an Environmental Justice RFA expected for release in fall 2022. Each of the five sessions focused on residents in Gulf of Mexico-adjacent states. Theo also initiated planning for GMD's Environmental Justice discussion group, a quarterly web-based meeting bringing together stakeholders from Gulf-adjacent states in Regions 4 and 6. The first meeting in July 2022 drew over 80 participants for a lively conversation.

2022 Gulf Guardian Awards

GMD developed the Gulf Guardian awards as a way to recognize and honor the businesses, community groups, individuals and agencies that are taking positive steps to keep the Gulf healthy, beautiful and productive. The Gulf Guardian Award exemplifies what GMD is all about: innovative solutions that come about when we pool resources and look for creative ways to positively impact our quality of life and economic well-being. The first Gulf Guardian Award winners were recognized in 2000. This year, a first, second and third place award were given in five categories:

Business/Industry; Civic/Non-Profit Organization; Partnerships; Youth Environmental Education; Individual.

Since 2009, the Gulf Guardian awards have been recognized on a biannual basis.

First Place Gulf Guardian Winners

1st Place Civic/Non-Profit Organization

Home System Inspections in Decentralized Wastewater Areas of Bayou Liberty
St. Tammany Parish Government and Pontchartrain Conservancy
Mandeville, Louisiana

In partnership with Pontchartrain Conservancy, St. Tammany Parish has looked to improve watersheds in the parish through a cooperative approach. PC was tasked with conducting door-to-door inspections in the Ozone Woods subdivision. The PC team inspected home wastewater systems in the project area and provided homeowners and residents with instruction and education on proper operation and maintenance. By the completion of the project, 347 on-site wastewater systems (ATUs) and 82 septic tanks became compliant or functional as a result of the inspection program.

From left to right: Marc Wyatt, EPA GMD; Ronny Carter and Kristi Trail, Pontchartrain Conservancy; Jeanne Marino, Dr. deEtte Smythe, Timothy Smith, Michael Cooper, Bridget Saladino, and Tim Brown, St. Tammany Parish Government; LaKeshia Robertson, EPA GMD

From left to right: LaKeshia Robertson, EPA GMD; Renee Collini, PLACE: SLR; Marc Wyatt, EPA GMD

1st Place Individual

Renee Collini
Program for Local Adaptation to Climate Effects: Sea-Level Rise (PLACE: SLR)
Biloxi, Mississippi

Renee Collini is the Coordinator for the Program for Local Adaptation to Climate Effects: Sea-Level Rise (PLACE: SLR). Her focus on actionable science and stakeholder engagement has made a significant positive impact on sea-level rise resilience in Mississippi, Alabama and northwest Florida. Under her guidance, PLACE: SLR has helped to advance and communicate storm surge and marsh modeling, develop a sea-level rise curriculum, fund community and ecosystem resilience projects, and integrate sea-level rise into municipal-level planning. Renee's genuine commitment to the people of the northern Gulf and unparalleled work ethic make her an asset to the Gulf community.

1st Place Partnerships

Lightning Point Restoration Project
The Nature Conservancy in Alabama
Mobile, Alabama

For the Lightning Point Restoration Project, the Nature Conservancy constructed one mile of overlapping segmented breakwaters and jetties and utilized more than 240,000 cubic yards of dredged material to create 40 acres of marsh and upland habitats and 10,000 linear feet of tidal creeks. This project resulted in creating diverse habitats to support a wide range of fish, shellfish and birds, while protecting this locally important waterfront area of Bayou La Batre for fishing community culture.

From left to right: Marc Wyatt, EPA GMD; Meg Goecker, Moffatt & Nichol; Mary Kate Brown and Judy Haner, The Nature Conservancy; LaKeshia Robertson, EPA GMD

From left to right: LaKeshia Robertson, EPA GMD; Samantha Capers and Jessie Kastler, University of Southern Mississippi Marine Education Center; Marc Wyatt, EPA GMD

1st Place Youth Environmental Education

Community Resilience in the Classroom
University of Southern Mississippi Marine Education Center
Ocean Springs, Mississippi

Community Resilience in the Classroom is an educational program developed by USM and Mississippi-Alabama Sea Grant Consortium with local K-12 schoolteachers to promote student awareness of watersheds and their connections to the Gulf of Mexico through classroom and field instruction in climate change and rising sea level, especially high tide flooding and increased storm surge. Since 2016, over 1,000 students from 12 schools in Mississippi and Alabama have completed the program. Selected teams have competed in six Stewardship Summits judged by several dozen community resilience professionals. In 2020, the full program of teacher training and classroom implementation was successfully completed online.

Second Place Gulf Guardian Winners

2nd Place Civic/Non-Profit Organization

Galveston Bay Report Card
Houston Advanced Research Center
Corpus Christi, Texas

The program is built on the annual analysis of 22 environmental indicators across six categories: habitat, water quality, human health risk, pollution events and sources, wildlife, and coastal change. Results are used to guide the direction of environmental work and provide opportunities for the public to become environmental stewards of Galveston Bay and its watershed. The program serves as the model for watershed report cards, with outreach efforts directly connecting to 5,700 people each year and media outreach to hundreds of thousands more.

From left to right: Marc Wyatt, EPA GMD; Charlotte Cisneros and Erin Kinney, Houston Advanced Research Center; LaKeshia Robertson, EPA GMD

From left to right: LaKeshia Robertson, EPA GMD; Andrew Barron, Barataria-Terrebonne National Estuary Program; Marc Wyatt, EPA GMD

2nd Place Individual

Andrew Barron
Barataria-Terrebonne National Estuary Program
Thibodaux, Louisiana

Andrew Barron is a prominent scientist who has devoted 25 years to water quality research and education. He is well respected in the science community for his work with the Barataria-Terrebonne National Estuary Program. Andrew's expertise goes further than water quality, as he can be found teaching on Louisiana's land loss issues, edible plants, soil types, invasive species and cultural sciences.

2nd Place Partnerships

Resilience to Future Flooding
Program for Local Adaptation to Climate Effects: Sea-Level Rise (PLACE: SLR)
Biloxi, Mississippi

The Resilience to Future Flooding project addresses communication and financial barriers to sea-level rise (SLR) resilience in the northern Gulf of Mexico by providing 1) videos describing the science and impacts of SLR and case studies on SLR resilience, and 2) funding for five community resilience projects. The project engaged both professional and nontechnical audiences, resulting in better understanding of SLR impacts and increased knowledge of adaptation opportunities. It also increased how often SLR is discussed and directly enhanced future flood resilience across the region. Further, this project has added innovative and novel examples of SLR resilience across the Gulf.

From left to right: Marc Wyatt, EPA GMD; Melissa Daigle, LA Sea Grant Law & Policy Program; Carrie Stevenson, University of Florida, IFAS Escambia County; Marian Hanisko, NOAA; Christina Mohrman, GOMA; Stephen Deal, MS-AL Sea Grant Consortium; Renee Collini, PLACE: SLR; LaKeshia Robertson, EPA GMD

From left to right: LaKeshia Robertson, EPA GMD; Eric Sparks, Mississippi State University and MS-AL Sea Grant Consortium; Tracie Sempier, MS-AL Sea Grant Consortium; Stephanie Patch, University of South Alabama; Renee Collini and Sonia Vedral, PLACE: SLR; Marc Wyatt, EPA GMD

2nd Place Youth Environmental Education

Sea-Level Rise in the Classroom
Program for Local Adaptation to Climate Effects: Sea-Level Rise (PLACE: SLR)
Biloxi, Mississippi

The Sea-Level Rise in the Classroom curriculum is the first comprehensive sea-level rise curriculum in Mississippi and Alabama. The curriculum, which was born of a need voiced by local educators, integrates science and civics to provide students with a holistic understanding of the causes, impacts and approaches for resilience to sea-level rise. The curriculum was co-developed by a team of subject matter experts and educators and refined through rounds of iterative testing. After engaging with the curriculum, both educators and students have demonstrated knowledge gain and behavior change, helping to achieve the goal of an empowered and informed coastal citizenry.

Third Place Gulf Guardian Winners

3rd Place Civic/Non-Profit Organization

Egery Flats Restoration Project
Coastal Bend Bays & Estuaries Program
Corpus Christi, Texas

The purpose of this project is to restore hydrology and reduce salinity in the Egery Flats marsh area, which has lost about 100 acres of emergent marsh in the past 60 years. Egery Flats is a 600-acre semi-enclosed basin near the confluence of the Aransas River and Copano Bay. To measure the success of the project, CBBEP worked with the Mission-Aransas National Estuarine Research Reserve at the University of Texas Marine Science Institute and Texas Parks and Wildlife Department to collect valuable data. The data will help determine the effectiveness of the culvert replacement and success of the restoration project.

From left to right: Marc Wyatt, EPA GMD; Adrien Hilmy, Coastal Bend Bays & Estuaries Program; LaKeshia Robertson, EPA GMD

From left to right: LaKeshia Robertson, EPA GMD; Larry Handley, Retired USGS; Catherine Lockwood, CNL World; Marc Wyatt, EPA GMD

3rd Place Partnerships

Advancing Best Practices for Seagrass Monitoring in the Gulf of Mexico
Gulf of Mexico Seagrass Monitoring Community of Practice
Eureka Springs, Arkansas

Since its inception in 2017, the CoP has been active in gathering expertise, identifying information priorities, synthesizing existing needs and coordinating with scientists and resource managers in the Gulf. This has been accomplished through workshops and expert webinars, as well as numerous group meetings and calls. These efforts have resulted in a series of reports, including the 2017 Need Assessment Workshop Report, a dynamic web-based Citation Inventory, guidance documents, and the Gulf of Mexico Status and Trends Update Report for 2020. At this stage, there is now a well-established network of experts routinely communicating in the region and coordinating on project activities.

GMD Spotlight

EPA USM STEM Educational Gulf Survey

Summary

This survey provided critical ocean survey methods training for University of Southern Mississippi (USM) undergraduate and graduate-level college students, EPA fellows/interns, EPA postdocs and an EPA student trainee. The survey occurred over five days out at sea. Participants learned hands-on research skills using ocean sampling equipment and methodologies for water quality (CTD and nutrients chemistry), sediment (sediment box core), benthic community (processing and identification), plastics/microplastics (manta net, whole water, and lab processing/analysis), bacteria (most probable number via fluorescence), marine mammal observation (surface visual detection), and fish/shellfish community observation (manta net, sediment, and sargassum).

Participants worked side by side with USM faculty and EPA scientists and fellows to learn these ocean survey techniques. Following the survey, participants gained skills on several pieces of ocean survey equipment and methods, and gained a better understanding of the importance of ocean research. These skills can be very important for future careers and/or advanced education. For many participants, this was their first major ocean survey training. Fortuitously, participants saw sperm whales and spinner dolphins during this survey, which helped emphasize the importance of protecting and conserving the Gulf of Mexico and its watershed.

Survey took place: July 18–22, 2022

Leading this survey: For GMD, Dr. Troy Pierce, and for USM faculty, Dr. Jennifer Walker, Associate Dean for Coastal Operations and Associate Professor

EPA staff: Calista Mills (expert planning and logistics) and Jerry Binninger (on-board coordination)

USM students participating: Rose Gooding, Karina Ledezma and Baylor Lynch

EPA ORISE fellows, postdocs and interns: Dr. Jenny Paul (benthic), Dr. Huy Vu (microplastics), Amy Moody (nutrients; also a USM graduate student) and Taylor Screws (data analysis)

EPA student trainee: Colby McClain (environmental mind mapping; also a USM graduate student)

Hypoxia Cruise

Summary

Calista Mills and Tasheena Powers worked alongside researchers from the Louisiana Universities Marine Consortium and Louisiana State University, including world-renowned Dr. Nancy Rabalais, during the annual shelf-wide hypoxia cruise from July 24–30, 2022. The purpose of the cruise is to measure the hypoxic zone—an area where low oxygen in the water can kill fish and marine life—in the Gulf of Mexico. Over 80 stations were sampled along established transects, measuring dissolved oxygen, conductivity, temperature, depth, chlorophyll, salinity and nutrients.

The size of the hypoxic zone was measured to be approximately 3,275 square miles, or 2 million acres. However, the average size over the last five years is 4,280 square miles, which is still over two times larger than the 2035 goal of the Mississippi River / Gulf of Mexico Hypoxia Task Force (HTF). The HTF uses the five-year average to measure progress toward reducing the size of the hypoxic zone. GMD activities complement the efforts of the HTF through funding for coordinating and supporting nutrient management activities, restoring habitats to trap and assimilate nutrients, and supporting other hypoxia-related activities in the Mississippi River and Gulf of Mexico watersheds.

Protecting Human Health and
the Environment

GMD | GULF OF MEXICO DIVISION
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