The Gulf of Mexico Gets a Helping Hand

The Gulf states share a common challenge: preserving the environmental integrity of the shoreline and its bays and estuaries. This is becoming increasingly difficult with growing population and economic demands. A network of public and private organizations plays a vital role in preserving and restoring Gulf resources.

Partnerships play a key role in addressing coastal conditions

By Laura Tuma

In this story:

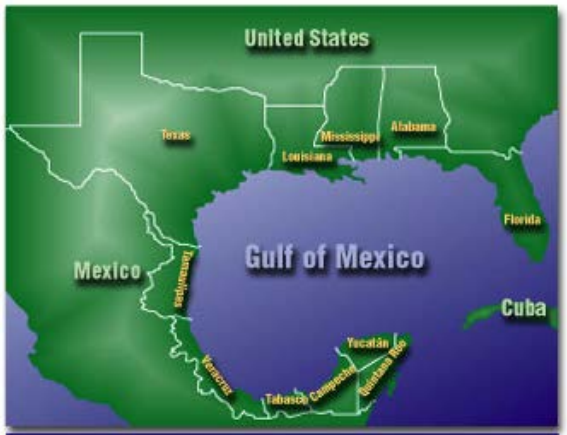
Brownsville school students helped with the restoration of Bahia Grande by growing black mangrove seedlings in their classrooms, then transplanting the native plants to the banks of the shallow basin. The tropical trees are salt tolerant and known to aid in soil stabilization. The revegetation project will help restore the ecological functions of Bahia Grande./*photo by Carrie Robertson/Gulf of Mexico Foundation*

To commercial fishermen, it is North America's richest source of shrimp and oysters, and home to four of the busiest fishing ports in the United States. To oil and gas producers, it is the source of about 23 percent of U.S. gas production and 30 percent of oil production.

To maritime shippers, it is the site of seven of the top 10 U.S. ports, including two of the world's top ports. To tourists who contribute $20 billion a year to local economies, it is an ideal location for swimming, sun, water sports, and recreational fishing.

And to the rapidly growing number of coastal residents, the Gulf of Mexico is the place they call home. The population already is five times denser along the coast than in inland counties and is growing at a prodigious rate--a near 40-percent jump is predicted from 1996 to 2025.

All this activity makes the Gulf of Mexico the most economically productive body of water in North America. Millions of Americans, Mexicans, and Cubans rely on its rich fishing grounds, offshore oil and gas production, shipping ports, and warm salt waters for their livelihoods and recreation.



Encompassing 582,000 square miles, the Gulf of Mexico is bounded by the states of Texas, Louisiana, Mississippi, Alabama, and Florida to the north; the Mexican states of Tamaulipas, Veracruz, Tabasco, Campeche, Yucatán, and Quintana Roo to the west; and Cuba to the southeast.

But the Gulf pays a price for its popularity. The most spectacular example is the "dead zone," created by pollutants spilling from the mouth of the Mississippi River. This yearly summertime phenomena, known as hypoxia, occurs when algae, fed by nitrogen and phosphorus from the Mississippi and Atchafalaya rivers, grows out of control in the warm waters and consumes the oxygen needed to sustain marine life. The dead zone reached 8,500 square miles in 2002, mostly off the Louisiana coast.

Along the Texas coast, the problems are less dramatic but still of concern: loss of coastal wetlands, pollution from inadequate wastewater treatment systems, chemical and storm water runoff, elevated mercury levels in fish, as well as other problems--natural and man-made.

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Coastal Regions Evaluated

The 2004 National Coastal Condition Report, issued in draft form by the Environmental Protection Agency (EPA), describes environmental conditions along the entire Gulf Coast as "fair." Drawing on monitoring data collected from 1997 to 2000, the report evaluates the health of all the country's major estuary systems.

The entire Gulf Coast region, according to EPA, lost about

7,750 acres of wetlands in the last decade--the largest net loss of any region of the country. Wetlands have succumbed to factors such as coastal development and subsidence.

Focusing on Texas, the state's coastline was described by EPA as having poor water and sediment quality.

The TCEQ's assessment of 3,880 square miles of the Gulf within the agency's jurisdiction has found the area does not meet water quality standards for fish consumption.

The TCEQ has a number of projects under way in coastal waters that should contribute to improved water quality. For example, total maximum daily load projects are being developed for the 14 bay segments deemed unsuitable for harvesting shellfish.

The Condition of Coastal Beaches

Of the 176 coastal beaches participating in the EPA coastal conditions study, there were 65—or 37 percent—that were closed or under an advisory for some period during 2002. The leading reason was elevated levels of water-borne bacteria, according to EPA.

Gulf states	Number of beaches	Number of advisories/ closures	Percent affected by advisories/ closures
Florida (Gulf Coast)	134	52	39%
Texas	30	8	27%
Alabama	11	4	36%
Louisiana	1	1	100%
TOTAL	176	65	37%

Note: Mississippi did not participate in the study.

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Working in Tandem

While the Gulf has environmental concerns, EPA has had to deal with far more severe pollution and habitat loss in the Great Lakes and Chesapeake Bay. To turn the tide with these crises, EPA was authorized to create the Great Lakes Program in 1972 and the Chesapeake Bay Program in 1983. Current funding is a combined $35 million a year.

Fishing and shrimping are economic mainstays along the Texas Gulf coast. This shrimp trawler returns to port after working long hours in Corpus Christi Bay./*photo by Texas Department of Transportation*

EPA is also committed to protecting the Gulf of Mexico, but with less funding. The agency's Gulf of Mexico Program has worked since it was created in 1988 to coordinate environmental efforts, provide a regional perspective, facilitate research, and encourage partnerships among public and private entities in the Gulf states. The nonregulatory program is headquartered at the Stennis Space Center in Mississippi.

Unlike the programs for the Great Lakes and the Chesapeake Bay, which have ongoing line-item budgets, the Gulf of Mexico Program must be funded each year from EPA's operating budget. As a result, only about $2 million a year is available for projects.

The Gulf of Mexico Program focuses on making the most of communications, education, and partnerships. The partners include federal and state regulatory agencies, including the TCEQ, the General Land Office, and the Texas Parks and Wildlife Department. In addition, there are seven National Estuary Programs (including the Galveston Bay and Coastal Bend programs in Texas), and about 70 Gulf ecological management sites (including about a dozen coastal state parks and wilderness areas in Texas). Also participating are academic research institutions, private businesses, and agricultural and environmental groups.

"We are a web of partners," says Thomas Weber, a TCEQ water quality specialist. "The greatest value of the Gulf of Mexico Program is that it provides a framework for us to coordinate our efforts and share information."

Weber said the federal program brings together diverse interest groups; shares technical information and resources; and provides avenues for communications through annual meetings, regular conference calls, and reports. One critical service is providing information on methyl mercury levels in fish and shellfish.

Two girls visiting Rockport get a taste of fun in the sun. Coastal beaches and parks are a big draw for visitors and vacationers. In fact, tourism is a major revenue source for many seaside communities./*photo by Texas Department of Transportation*

The Gulf of Mexico Program targets three areas: public health, the influx of pollutants, and habitat restoration. In most cases, the program provides seed money or other assistance.

Grant funds, for example, are being used to restore the Bahia Grande wetlands in the lower Rio Grande Valley. Once a productive shallow-water ecosystem providing habitat and nurseries for sport and commercial fish, Bahia Grande was cut off from the Laguna Madre in the 1930s with the construction of the Brownsville Ship Channel. The sandy, dried-out bay is being refilled, and native sea grasses and black mangrove trees are being planted to create habitat for many species of fish, shrimp, crabs, shorebirds, wading birds, and waterfowl. Project partners include the Ocean Trust, the National Fisheries Institute, the National Oceanic and Atmospheric Administration (NOAA) Restoration Center, and the U.S. Fish and Wildlife Service.

The Texas portion of the Gulf of Mexico covers 624 shoreline miles—from Sabine Lake on the Texas-Louisiana border to the lower Laguna Madre near the U.S.-Mexico border. Much of the shoreline is made up of large bays, lagoons, extensive wetlands, sandy beaches, and barrier islands.

Estuaries are formed where rivers, streams, and bayous meet the salt water. Tides mix inflowing freshwater with saline water from the Gulf. In Texas, estuaries are protected by barrier islands. These estuaries are monitored primarily by the TCEQ, the Texas Clean Rivers Program, and the Texas Department of Health.

Another important partner in the network is the Gulf of Mexico Foundation, a private, nonprofit in Corpus Christi that supports restoration projects in all five Gulf states. Bahia Grande is one of 18 habitat restoration projects that the foundation has supported since 2002.

Quenton Dokken, the foundation's executive director, explained the significance of the Gulf network: "If it was the Gulf of Mexico Program by itself, NOAA by itself, or any individual organization by itself, habitat restoration along the Gulf would be a small program. But by leveraging funds and resources, we have been able to get more than $2 million invested over the last two years. None of us working alone would have been able to do that."

Among the key partnerships established by the Gulf of Mexico Program are relationships with the Gulf Coast's seven National Estuary Programs. Texas' oldest is the Galveston Bay Estuary Program (GBEP), which was created in 1989 to represent diverse public and private interests, including more than three dozen governmental agencies located along the bay and adjacent watersheds.

GBEP Executive Director Helen Drummond says the group's priorities include restoring wetland habitat lost primarily to subsidence, and reducing nonpoint source pollution caused by storm water runoff and failing septic systems.

"We have made great strides in the area of habitat creation, restoration, and protection," said Drummond. "About 5,500 acres have been created, restored, or protected, but this work is very expensive. The challenge is money and manpower. Success often requires coordination with local communities and businesses, in addition to state and federal agencies."

The Coastal Bend Bays and Estuaries Program, established in 1994, also focuses on habitat restoration. One of its most successful programs is the Colonial Waterbird Rookery Island Management Program, funded by the Gulf of Mexico Program, with assistance from the U.S. Fish and Wildlife Service and the Texas Audubon Society (see story below).

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Colonial Waterbird Rookery

Sometimes you have to look up to know what's going on beneath the water. A plentiful population of terns, gulls, roseate spoonbills, and other water birds is one indication of a healthy marine environment. But when the population for some bird species declines 80-90 percent--as it has in the Coastal Bend in recent decades--that is a clear indication something has gone awry.

Birders from around the country have found the Texas coastline to be an ideal location for viewing hundreds of species. This flock of pelicans takes advantage of a quiet lagoon./*photo by Texas Department of Transportation*

"Water birds are the canary in the mine," said Ray Allen, executive director of the Coastal Bend Bays and Estuaries Program (CBBEP), a nonprofit based in Corpus Christi. "When they aren't doing well, something is wrong with the ecosystem."

Birds are at the apex of the marine food chain, feeding on worms, crabs, shrimp, and fish. When their numbers decline, he said, the cause must be identified so corrective action can be initiated.

"We have spent a lot of money looking at water quality, and we can't see any significant problems that aren't being dealt with," Allen continued. "The fish population is good, so we're left with the question of what is going on with the birds? Why isn't the apparent healthiness of the ecosystem being expressed in the birds?"

One obvious problem is that colonial water birds have lost most of their nesting habitat because of the erosion of islands in the bays.

Using funding from the Gulf of Mexico Program and partners such as the TCEQ, the CBBEP has created rookeries on several islands and even rebuilt one island to a spacious four acres. The Nueces Bay Island Habitat Restoration Project took $1.5 million and months of planning and construction. The much-needed bird sanctuary, which includes undisturbed bare-ground habitat, was designed to attract a variety of colonial water birds.

"At first, we wondered--would the birds know to nest there?" Allen recalled. "As it turned out, we barely got the construction equipment off the island before the birds were nesting. Once we had created better habitat, the birds left their marginal habitat areas to come to this area. We're already seeing better nesting and fledgling success."

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Earning Special Recognition

EPA's Gulf of Mexico Program gives credit to successful environmental, educational, and outreach programs. Texas received five Gulf Guardian awards in 2004.

- **Gulf of Mexico Foundation:** 1st place in the Civic/Nonprofit category. The foundation, based in Corpus Christi, was recognized for its activities supporting research, education, and conservation. In addition to restoring habitats in all five coastal states, the foundation conducts programs such as dive workshops to educate teachers about coral reefs, the National Ocean Sciences Bowl to encourage students in ocean studies, online and field-study lessons about the marine environment, and multicultural educational programs that bring together science students and Spanish clubs.
- **Port of Houston Authority:** 1st place in the Government category. The port was singled out for its storm water pollution cleanup program, including the operation of a skimmer boat that collects floating debris from watersheds emptying into the Port of Houston and flowing toward Galveston Bay. The effort has improved the appearance of the bayous and the port, and is helping to restore the ecology of Buffalo Bayou.
- **Texas A&M University-Corpus Christi:** 2nd place in the Youth Education category. The university was commended for its Gulf Coast Environmental Education Program, which educates diverse groups about the coastal wetlands. The program is designed for elementary and secondary teachers and students, community members, and "winter Texans" visiting from other states.
- **Texas A&M University-Corpus Christi:** 2nd place in the Partnership category. The university was applauded for its role in designing and operating six waste oil recovery units in the Coastal Bend. The units give boat operators a suitable site to pump out waste oil and oily bilge water at the same location where they buy fuel and other supplies. Since the units were activated in early 2004, thousands of gallons of bilge water and waste engine oil have been recovered and recycled.
- **James R. Matz of Palm Valley:** 2nd place in the Individual category. Matz was recognized for his tireless leadership in promoting education, public health, and conservation projects in the lower Rio Grande Valley.

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Bay Conference

The TCEQ's Galveston Bay Estuary Program will hold its 7th Biennial State of the Bay Symposium Exit in Houston on Jan. 25, 2005. For more information, call 281/332-9937.

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