

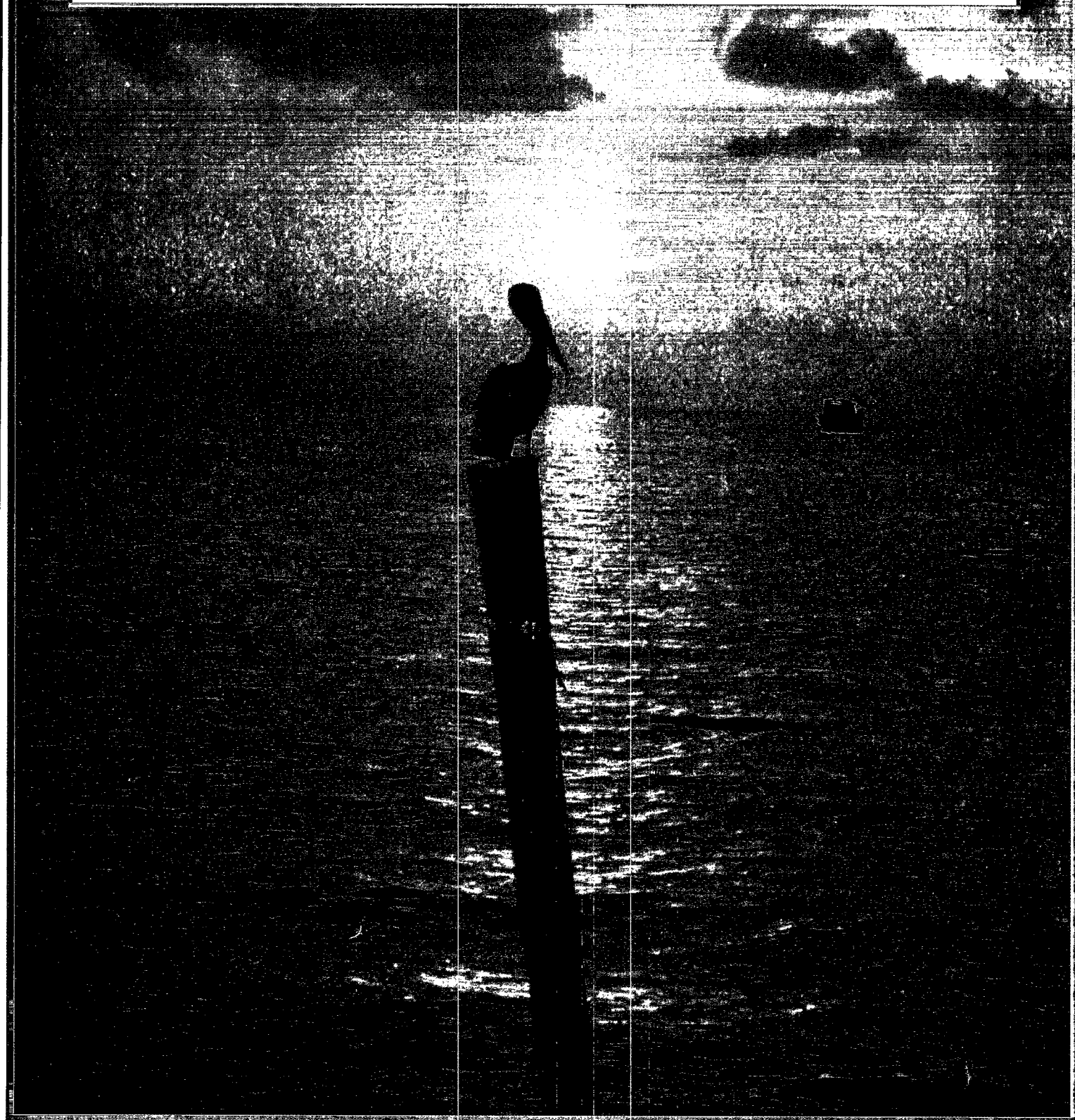


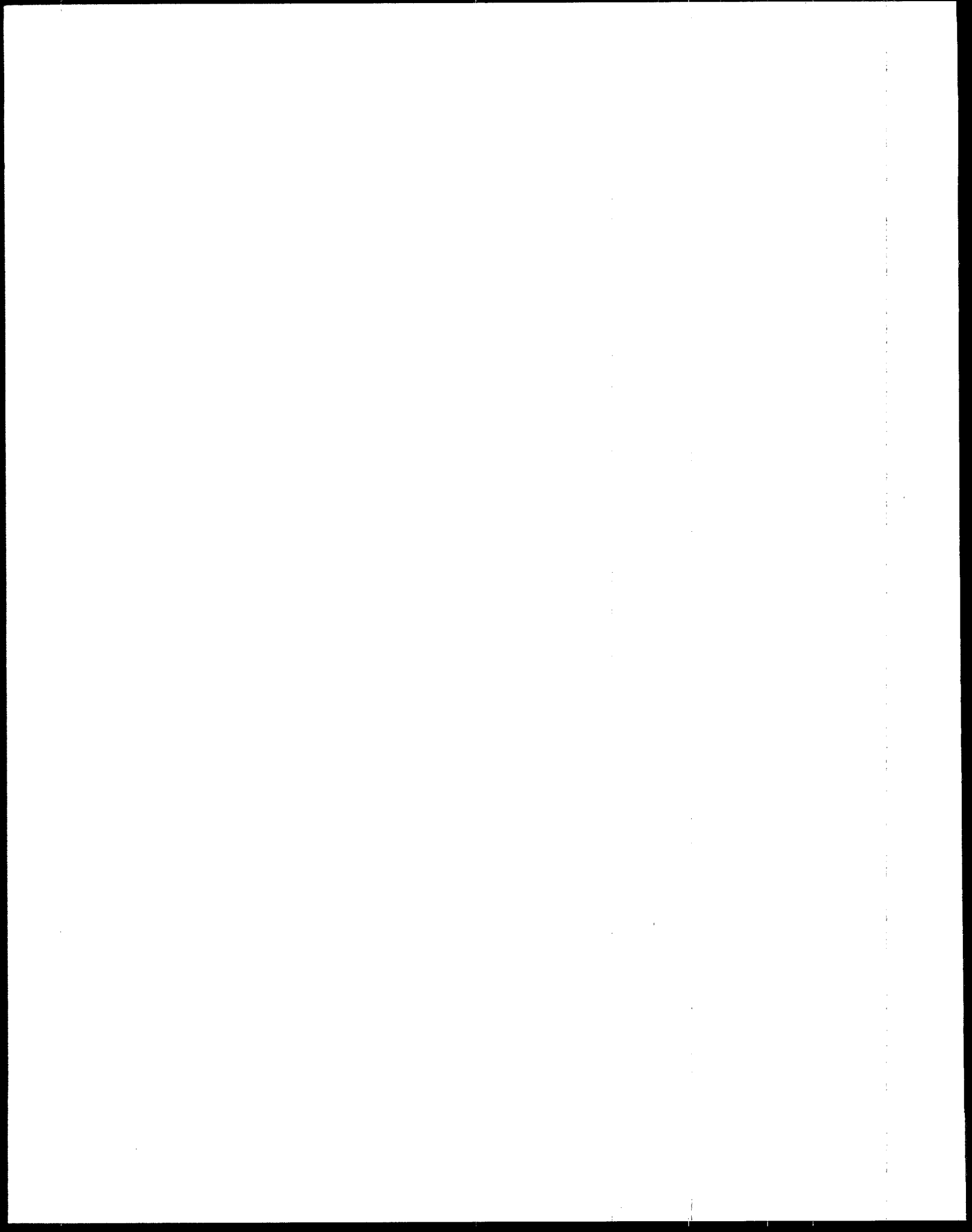
United States
Environmental Protection Agency

Gulf of Mexico
Program Office

EPA 855-R-97-003
December 1997

Gulf of Mexico Program 1997 Shareholder Report





Mission Statement

The mission

of the Gulf of Mexico

Program is to facilitate the

protection and restoration of the

coastal marine waters of the Gulf

of Mexico and its coastal natural habitats;

to sustain living resources; to protect human health

*and the food supply, and to ensure the recreational use of
Gulf shores, beaches and waters in ways consistent with the economic
well-being of the region, through a network of citizens and institutions*

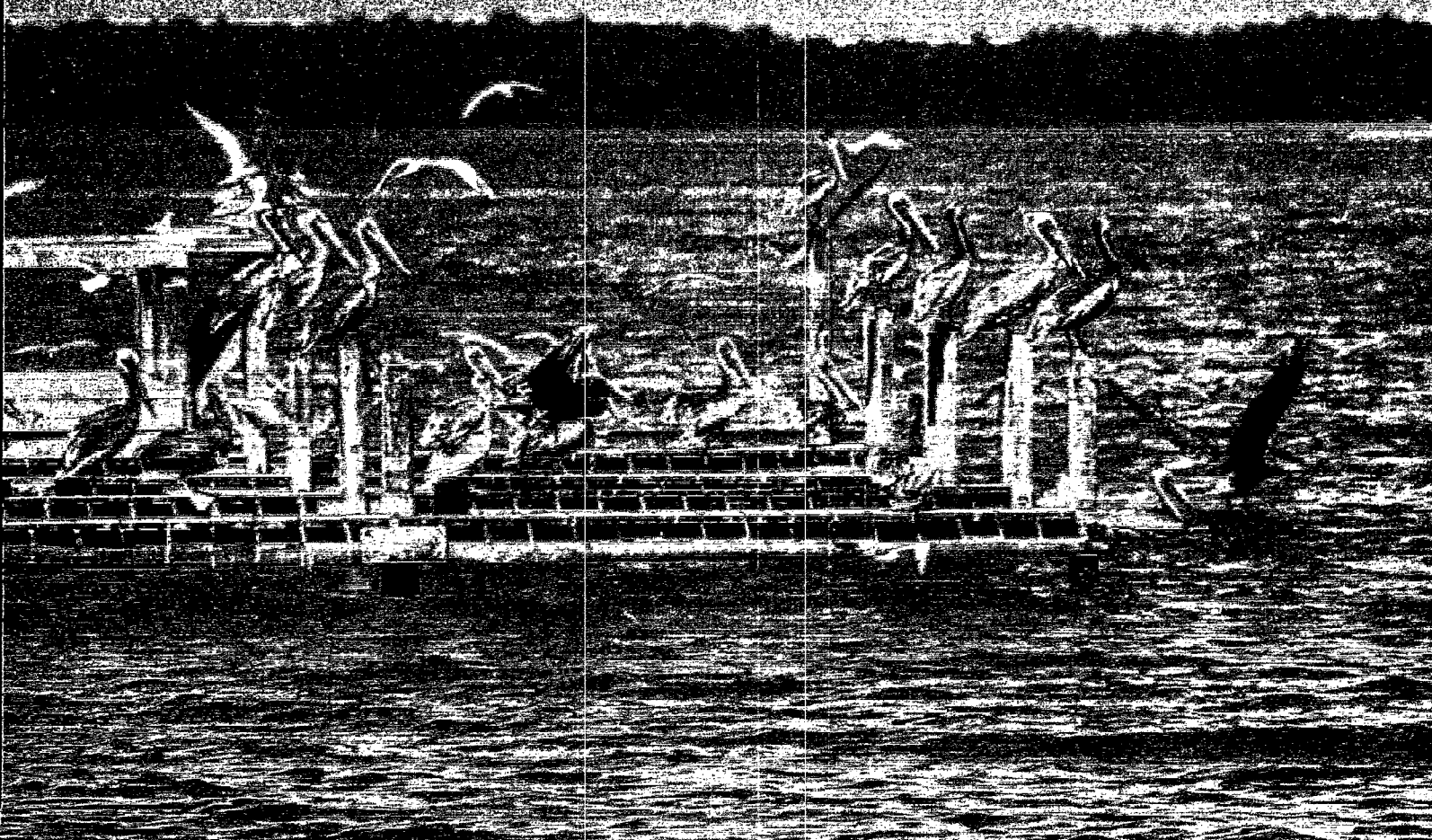
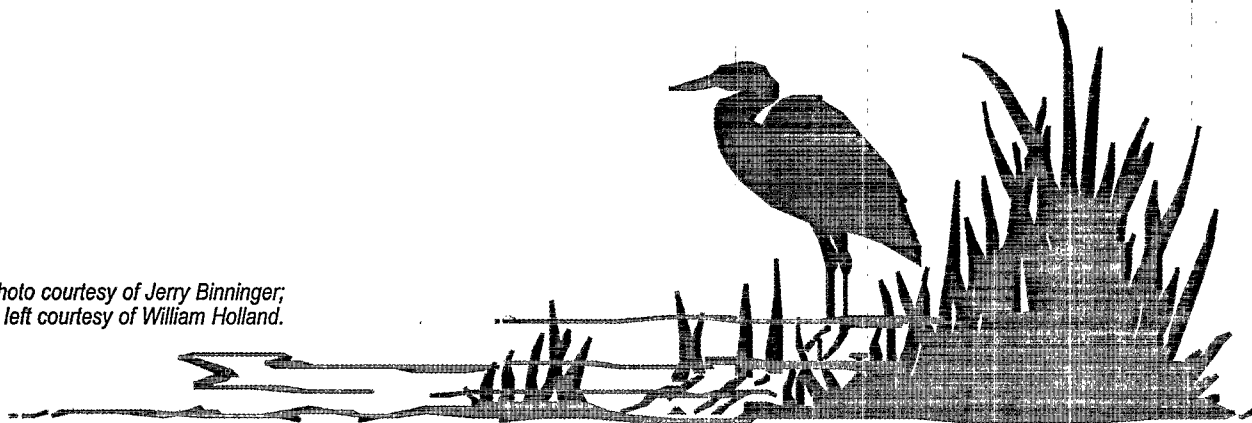


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*Cover photo courtesy of Jerry Binninger;
photo at left courtesy of William Holland.*



Why a Shareholder Report?

The Gulf of Mexico is truly a resource of national importance, containing a rich variety of estuarine and marine habitats and significantly contributing to the national economy. Since 1988, the protection of this publicly-held resource has been the focus of the Gulf of Mexico Program (GMP), a network of federal, state, and local government agencies; business and industry; nonprofit organizations; educational institutions; and interested citizens. Through the Program, the Nation has made an investment to protect *America's Sea* by channeling our collective capabilities, energies and resources. We must work towards a common goal – protecting, restoring, and maintaining the health and productivity of the Gulf of Mexico.

Just as a corporate Board of Directors is accountable to its shareholders, we at the Gulf of Mexico Program believe we have an obligation to demonstrate that the talents and resources dedicated to protecting the Gulf have been used wisely. Therefore, the Gulf of Mexico Program has developed this report to communicate the results of this public investment.

We are proud of the work that has been accomplished through the Gulf of Mexico Program, such as fostering community-led efforts in the Barataria-Terrebonne estuarine system to improve shellfish growing waters, focusing national attention on the voluntary reduction of pollutants to the Mississippi River, and enhancing public-private partnerships with Gulf business and industry leaders to improve environmental stewardship.

We are also excited about the direction that the Program will take in the future to protect human health and the food supply, enhance the sustainability of living resources, and improve habitats that support living resources. These are challenges that must be met for us to achieve our common vision.

This first annual Shareholders Report is dedicated to those already participating in the mission to ensure a bright future for the Gulf of Mexico. In addition, we would like to take this opportunity to invite anyone who shares our vision for the Gulf of Mexico to join us as the partnership gains momentum.

Together we can achieve great things!

James D. Giattina
Director, Gulf of Mexico Program Office

SHAREHOLDERS

States

Alabama
Florida
Louisiana
Mississippi
Texas

Public & Private Organizations

Citizens Advisory Committee
Business Council

Federal Partners

U.S. Environmental Protection Agency
U.S. Dept. of Health & Human Services
U.S. Department of Commerce
U.S. Department of Agriculture
U.S. Department of Interior
U.S. Department of Transportation
U.S. Department of Defense

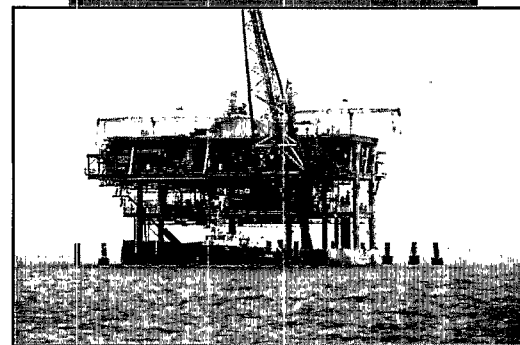
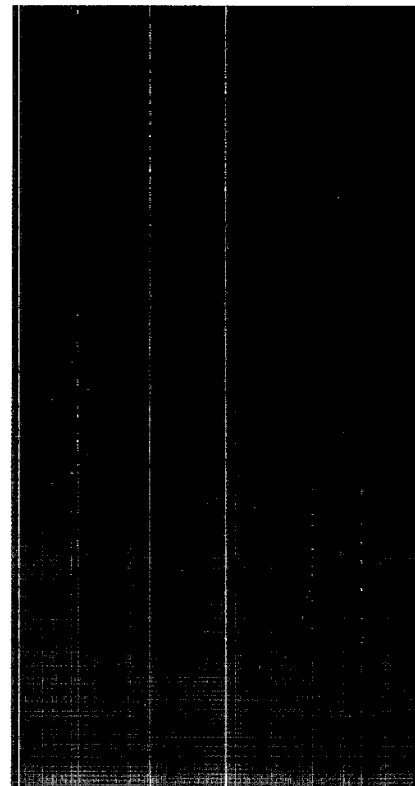
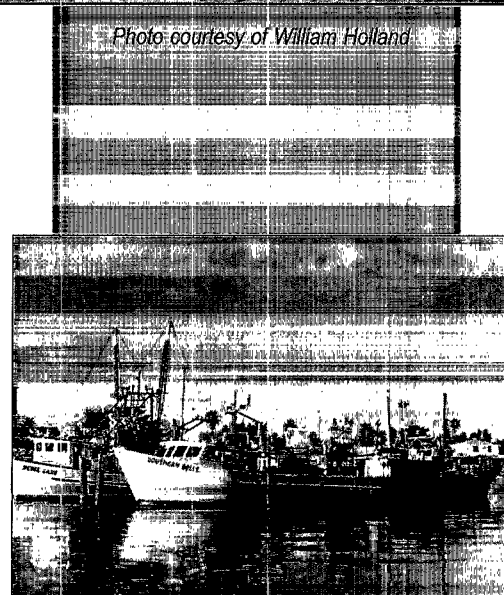


Photo courtesy of William Holland



THE GULF OF MEXICO PROGRAM

"Our vision is of a Gulf of Mexico flourishing in all its natural richness and variety — beaches glistening in the sunlight, thriving coastal vegetation, and abundant fish, shellfish and waterfowl. The Gulf ecosystem is of incalculable value in itself, but our vision also embraces the many human uses of the Gulf which are part of the cultural fabric of the region and which are critical to the economic well-being of both the region and the nation."



Photo courtesy of William Holland

The Gulf of Mexico Program is an approach to environmental protection that emphasizes **community-based, ecosystem management**. The hallmarks of this approach are:

- (1) an emphasis on **equal partnership** among government agencies, private and non-government interests to define problems and implement solutions;
- (2) use of the **best science and knowledge** available to support decisions and guide actions; and
- (3) **public involvement** in all phases of the Program to generate the consensus needed for action.

Since its inception in 1988, the Program has focused on working with its partners to assess the scope and magnitude of the issues confronting the Gulf and to develop and implement management strategies to address these issues. These efforts have included the assistance of over 400 representatives from public service, the private sector, academia, and countless citizen volunteers from the Gulf States. Recognizing that natural resources of the Gulf are of global significance, the Program is working to strengthen its role in bringing the issues that confront the Gulf to both national and international attention.

The Gulf of Mexico Program is not a regulatory program; although some of the partner agencies at the federal and state levels have regulatory responsibilities. The Gulf of Mexico Program provides a forum whereby issues that cross political or social boundaries can be clearly identified, discussed and collaboratively resolved to benefit the ecological and economic resources of the Gulf of Mexico.

Given the vast geographic scope of the Gulf, protection of these critical resources requires a long-term commitment and focused attention. Through its dedicated partnerships, the Program has fostered a new depth of understanding concerning the problems affecting the Gulf. From this vast knowledge base, the Program has developed three strategic goals:

- Protect public health and the food supply.
- Maintain and improve Gulf habitats that support living resources.
- Maintain and enhance the sustainability of Gulf living resources.

A strategic assessment process is being implemented to focus future efforts, identify resources at greatest risk, and establish quantitative goals to measure progress. Currently, the Gulf of Mexico Program is specifically addressing four priority environmental concerns:

- 1) restoration of shellfish growing waters and reefs; 2) hypoxia (low dissolved oxygen); 3) habitat loss; and 4) introduction of nonindigenous species.

PUBLIC HEALTH GOAL

Protect human health and the food supply

In 1996, \$300 million were generated from oysters landed in the Gulf of Mexico. However, as indicated in the preliminary results of the *1995 National Shellfish Register of Classified Waters*, over half of the nine million acres of shellfish growing waters in the region have regulatory limitations on harvest. The reasons for the restrictions range from administrative rules to degraded water quality. Exposure to pathogens via consumption of raw molluscan shellfish is a significant public health threat.

The Gulf of Mexico Program has identified the increase in shellfish beds available for safe harvest as one of its priority objectives, and is currently determining where and how to direct its efforts. In February 1994, through a partnership between the U.S. Environmental Protection Agency, Federal Food and Drug Administration, National Oceanic and Atmospheric Administration, and Gulf States, the Program undertook a strategic assessment of the issues impacting shellfish bed closures in the Gulf region. The assessment was considered strategic because it sought to define the scale and scope of problems across the watersheds of the US portion of the Gulf. It brought together stakeholders with relevant data through a structured process designed to identify the most feasible strategies to meet the environmental objective, while taking into account time and resource constraints, as well as competing priorities.

What are shellfish?

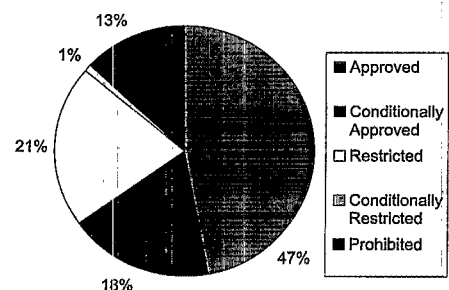
Shellfish are aquatic invertebrate animals having a shell, such as oysters, clams, and mussels.

The strategic assessment resulted in the development of 32 restoration strategies and the identification of Gulf watersheds where each of these strategies have the greatest potential for success. The Program is sponsoring the first Watershed Implementation Assessment in the Barataria/Terrebonne system in Louisiana. Other assessments will be conducted in the best candidate watersheds of the other Gulf States over the next five years.

Restoration strategies for the Barataria/Terrebonne system include reducing fecal coliform bacteria inputs to shellfish growing waters from pollution sources; enhancing shellfish habitat; and changing management and administrative procedures. At a workshop held in February 1997, over 60 attendees, representing parish governments, the shellfish industry, state and federal agencies, academia, local environmental organizations, and other interested stakeholders, worked together to nominate eight priority shellfish restoration projects. Each of these projects will lead to progress in meeting the shellfish objective and improving the quality of coastal waters in Louisiana. The Program is currently developing detailed feasibility analyses on five of these projects and will support the implementation of one or more of these in 1998.

Protect human health and the food supply by increasing the availability of safe shellfish harvest areas.

1995 Classification of Shellfish-Growing Waters in the Gulf of Mexico



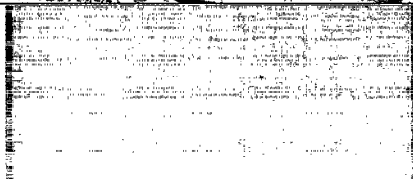
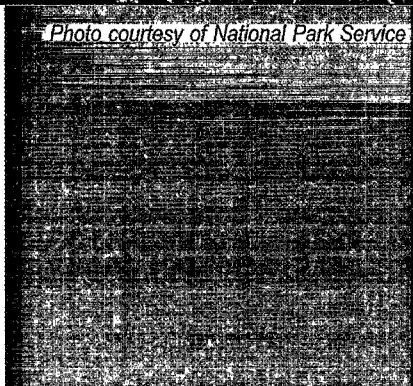
Local participants at the Barataria/Terrebonne Shellfish Workshops (above and below).



PRIORITY OBJECTIVE:
*Protect and restore key
Gulf habitats, including
coastal wetlands, submerged
aquatic vegetation,
important upland areas,
and marine/offshore areas.*



Photo courtesy of National Park Service



HABITAT GOAL

Maintain and improve Gulf habitats that support living resources

Habitats and living things are interrelated in a delicate balance. A plant may provide the habitat necessary for the survival of an animal, and the behavior of an animal may support the growth of a plant. The coastal zone of the Gulf of Mexico is endowed with immensely productive habitats, including five million acres of coastal wetlands (approximately half of the total wetlands in the United States). Many species, including some that are threatened or endangered by extinction, utilize this rich ecosystem. For example, of the world's seven endangered, threatened, or rare species of sea turtles, five inhabit Gulf waters. Approximately 92-98 percent of the Gulf's commercial fish and shellfish rely on estuaries (wetlands and open water) for at least part of their life cycle.

During the last few decades, Gulf of Mexico habitats, including forested wetlands, marshes, seagrass beds, mangrove forests, and coral reefs, have begun to show signs of declining environmental quality. Both natural and human-related factors can degrade habitats and lead to the disruption of the entire ecosystem. In the Gulf of Mexico, these human-related factors include runoff from various land use practices, discharges of sewage, marine debris, and physical alterations, such as dredging and construction. Even with the increased awareness of their value, coastal habitats also continue to be lost to development.

What is habitat loss?

In coastal waters and wetland types, vegetation is a defining habitat feature. Thus, reductions or the disappearance of coastal vegetation are indicative of habitat loss. Such losses have occurred extensively. Habitat losses are most often linked to geologic instabilities, rapid changes in meteorologic conditions, and human activities. Local, statewide, regional, and even national implications to the economy, social customs, and food supplies, as well as the health and well-being of people and their property, are consequences of historic and future habitat losses.

Hypoxia is a low oxygen condition that occurs annually off the Louisiana/Texas coast. Hypoxia conditions have been linked tentatively to excessive nutrients, specifically nitrogen and phosphate, from urban, municipal, industrial and rural sources with the Gulf of Mexico watershed that comprises two-thirds of the continental United States, as well as parts of Canada and Mexico. The hypoxia zone occurs primarily during the summer months and has been known to reach an estimated 7000 square miles in size.

Of the five leading causes of water quality impairments nationwide, nutrient enrichment ranks first for lakes and estuaries and third for rivers. According to recent studies, it has been estimated that over 70 percent of the total nitrogen entering the Gulf comes from the combined drainage of the Mississippi and Atchafalaya Rivers. For this reason, the Gulf of

HABITAT GOAL

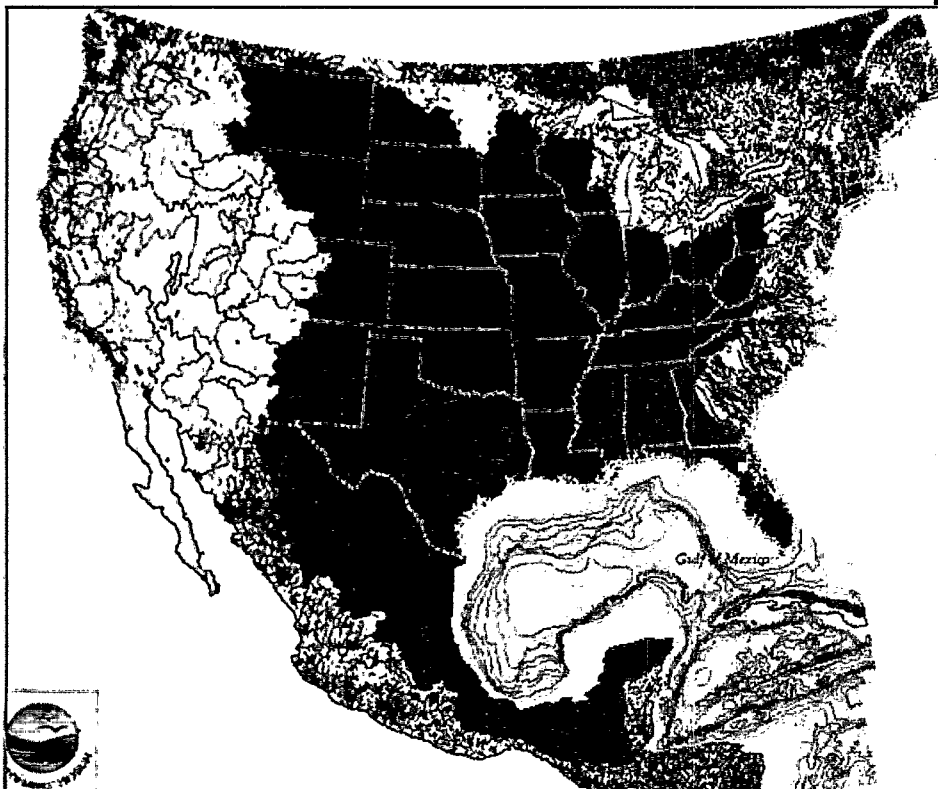
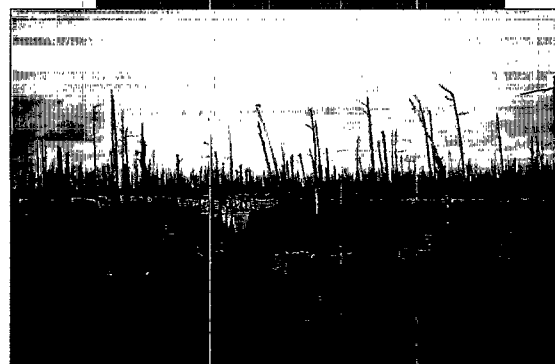
Mexico Program has launched significant efforts to educate citizens about the impacts of excess nutrient loadings to surface water throughout the drainage basin.

The Gulf of Mexico Program's solution to the problem of nutrient over-enrichment relies on supporting national efforts to improve land management practices throughout the watershed and to prevent and reduce releases by significant air and water sources of nutrients. Innovative actions at the federal, state, and local levels that can be taken without new laws and regulations are being encouraged and supported. The Program's approach, incorporating public and private stewardship actions and science support, will address environmental changes in the system and develop the data and science-based tools needed to formulate water resource policies, improve ecosystem health and protect valuable living resources and their habitats in the Mississippi watershed and northern Gulf of Mexico.

Program Goal: To reduce the loading of nutrients to the Gulf of Mexico from the Mississippi River system by reducing the loading of nutrients to the Gulf of Mexico from the Mississippi River system.

What is excess nutrient enrichment?

While nutrients (nitrogen, phosphorus) and silica are essential for the growth of plants, excess amounts can literally be too much of a good thing. Too many nutrients can cause an overgrowth, or bloom, of algae. When these algal blooms decay, oxygen is depleted in the water, resulting in fish kills and other detrimental effects to sea life.



The Gulf of Mexico receives the drainage of the Mississippi/Missouri River system, the largest river system in North America and fourth largest in the world. This watershed drains a 1,245,000 square mile area that includes parts of 31 states and two Canadian provinces. This system carries 41 percent of the drainage of the contiguous United States to the Gulf of Mexico.

LIVING RESOURCES GOAL

*Priority Objective:
Reduce the impact of
human activities on
important fisheries,
including mortality
caused by pollution and
through the introduction
of undesirable,
nonindigenous organisms*



*Photos above and below courtesy of
Louisiana Sea Grant College Program*



Maintain and enhance the sustainability of Gulf living resources

Living resources include all living organisms, both animals and plants, that depend on the Gulf of Mexico for nourishment for all or a portion of their life cycles. All living resources within an ecosystem are connected in an intricate balance. A nonindigenous species, once it is established in a new habitat, can drive out native species and disrupt the ecological balance. To respond to the threats to living resources in Gulf coastal waters and habitats, the Gulf of Mexico Program is focusing on the emerging issue of introductions of nonindigenous species.

Within the United States alone, humans have introduced more than 4,500 terrestrial and aquatic species to areas outside their historic ranges. While many of these introductions have economic and social benefits, a number of them pose a significant threat to the biological diversity of coastal waters and ecosystems, and can have tremendous negative economic impacts as well. For example, the Barataria/Terrebonne Estuary Program reports that nutria populations have skyrocketed from a few accidentally released animals in 1937, to a currently uncontrollable level. In 1991, nutria caused an estimated \$2 million in damage to the sugarcane industry in Louisiana. Nutria, which have virtually replaced the native muskrat population, eat vegetation down to the ground level and build burrows in mud banks, thus contributing to Louisiana's serious coastal erosion problem.

The problem to be addressed with nonindigenous species is how to control their spread in the Gulf of Mexico. The solutions will often lie in the hands of a knowledgeable and caring public. For example, it appears that recreational boaters are one of the major causes for the rapid spread of the zebra mussel. The water in the boat's live wells and bilge, or the aquatic plants that catch on boat trailers, are the probable culprits. First introduced in the United States from Europe, zebra mussels have spread from the Great Lakes to the Gulf Coast States of Mississippi, Louisiana, and Alabama through the Mississippi drainage basin.

The Program is currently working to determine the status of nonindigenous species, identifying how they reach the Gulf region, and determining which native species are at risk.

What are "nonindigenous" species?

A nonindigenous species is a plant or animal that has been released, either naturally, on purpose, or by accident, beyond its historical geographic range. These species can eradicate or reduce native species through predation and competition. Some nonindigenous species can degrade wetlands and marsh areas through overgrazing. These impacts can fundamentally alter the food web and shift the ecosystem balance.

CURRENT PRIORITIES

Public Health Goal: Shellfish Beds

Over half of the nine million acres of shellfish-growing waters in the Gulf of Mexico have regulatory limitations on harvest, due to pollution or regulatory requirements associated with pollution sources.

Habitat Goal: Hypoxia

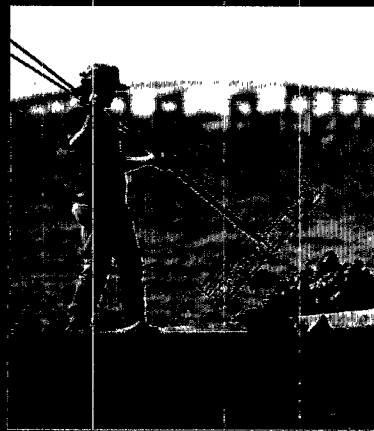
Hypoxia, tentatively linked to excessive nutrients, is a serious threat to the United States' economy and the environment. In years past, the hypoxic zone in the Gulf of Mexico covered an area of nearly 4,000 square miles. After the 1993 Mississippi River flood, it increased to nearly 7,000 square miles. In addition, approximately one-third of Gulf estuaries are either experiencing hypoxia or are potentially affected by excessive nutrient enrichment.

Habitat Goal: Habitat Loss

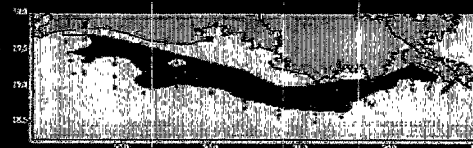
Fifty percent of the original wetland acreage has been lost in Alabama, Florida, and Texas. Wetland acreage in Louisiana, once half of the state's surface area, has declined to less than one-third over the last 200 years. Nearly three-fifths of Mississippi's wetlands have been converted to non-wetland uses.

Living Resources Goal: Nonindigenous Species

Introduced plant and animal species are a significant concern in the coastal states due to their encroachment on sensitive native wetland communities, and their potential social and economic impacts on the Gulf of Mexico ecosystem. For example, the phenomenal growth of brown mussels has dramatically increased the maintenance requirements of navigational aids.



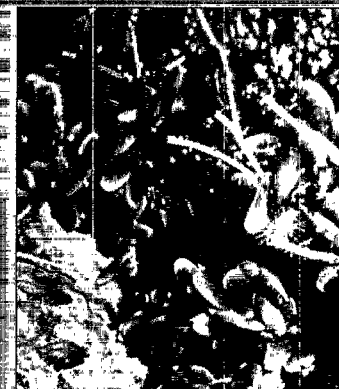
July 23-29, 1997
Area of Hypoxia



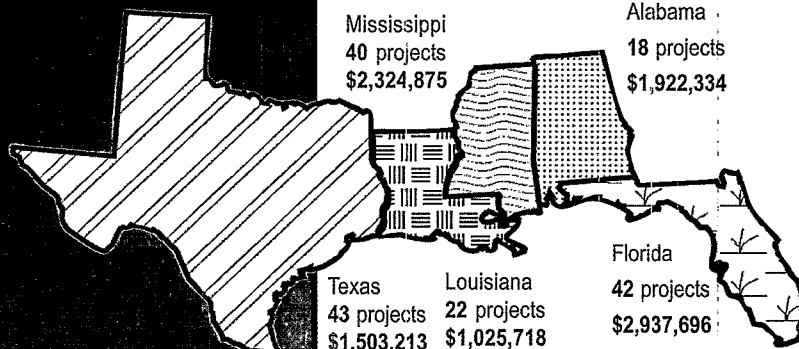
Data Source: Louisiana Universities Marine Consortium



Photo above courtesy of National Park Service.



THE GULF OF MEXICO PROGRAM AT WORK



Gulfwide	44 projects	\$ 2,356,064
Caribbean	2 projects	\$ 151,250
Total	211 projects	\$12,221,423

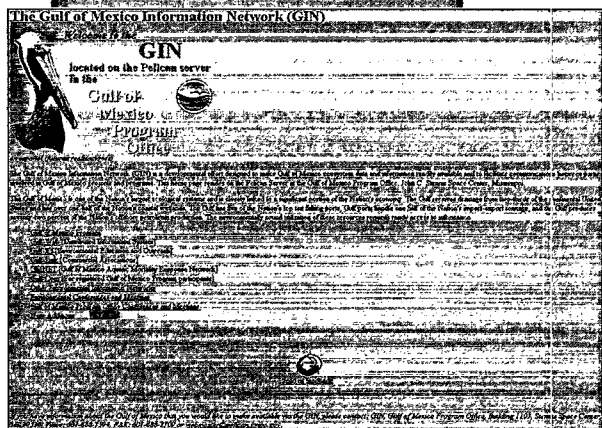
Since its formation in 1988, the Gulf of Mexico Program Office has been committed to sponsoring projects that will benefit the environmental health of the Gulf region. These projects, numbering over 200, vary immensely, from "shovel-in-the-ground" demon-

stration projects to scientific research to public education. While different in their approaches, the projects have a single united purpose – to improve the ecological vitality and enhance the economic sustainability of the Gulf region. These projects have also fostered the development of successful partnerships between federal, state, and local governments, as well as research, academic, non-governmental, business, and industry shareholders. The following five case studies provide examples of the range of projects sponsored by the Program Office and highlight the progress that has been made towards protecting Gulf resources.



Public Outreach

In support of the concept that environmental progress happens one person at a time, approximately 35 percent of the over 200 projects funded by the Gulf of Mexico Program have been public outreach and education oriented. The Gulf of Mexico Program has also forged a tradition of giving a "report card" to the public on the status of the Gulf by sponsoring "The Gulf of Mexico Symposium." Held in 1990, 1992, and 1995, the symposia have averaged approximately 1,500 in attendance, and have brought together teachers, students, the general public, government representatives, and scientists to share information on the status of the health of the Gulf of Mexico.



Information Management

One of the major challenges in managing a resource as geographically and organizationally broad as the Gulf of Mexico is information management. The Gulf of Mexico Program provides the information management structure and coordination to effectively utilize and share environmental data among all of the participating resource agencies and organizations. The Gulf of Mexico Program has a homepage on the Internet and data and information transfer is largely accomplished through the Gulf Information Network (GIN).

<http://www.pelican.gmpo.gov>

GULF OF MEXICO PROGRAM PROJECT: TEXAS

Wetland Restoration

Texas' Galveston Bay System is worth hundreds of millions of dollars to the local economy, and habitat destruction is the number one environmental problem in the bay system. For decades, salt water marshes in Galveston Bay were drowned by severe subsidence and destroyed by harmful dredging practices. The U.S. Fish and Wildlife Service has documented the loss of more than 20,000 acres of salt marsh since the 1950s.

Today, the switch from ground to surface water supplies has subsidence under control. Dredging practices have also been drastically improved. Now, the push is on to restore thousands of acres of wetlands. The process of restoration is slow and tedious. Restoration workers create marshes plant by plant, acre by acre. They alternately fight deep mud, invasive water hyacinths and animals, like nutria, carp, deer, and rabbits, that graze on the new plants.

To support wetland restoration efforts in Galveston Bay, the Program Office funded a project through the U.S. Department of Agriculture's (USDA) Natural Resource Conservation Service (NRCS). The objective of this project was to speed up marsh restoration efforts, boost their effectiveness, and improve the overall chance for success.

The project's approach was to cultivate various species of salt marsh plants in containers for use in marsh restoration along the Texas Gulf Coast. Previously, these plants were not grown for restoration projects. Instead, young plants were removed from native stands and transported to a marsh restoration site. This old method is costly and time-consuming, and limits the extent and location of possible restoration. It can also risk the health of native plant stands. This project made the use of these species of wetland plants more practical and less damaging to native stands.

Once the cultivated plants were ready, volunteers planted them in various areas around Houston and Galveston Bay. Approximately four acres of smooth cordgrass were planted along the Trinity River. One thousand bald cypress trees were planted in the Trinity River National Wildlife Refuge. An additional 4,000 bald cypress trees were planted along the San Jacinto River and other sites. The overall success rate for all of these plantings is greater than 90 percent. In total, 12 sites received plantings, including bald cypress trees, black mangrove trees, as well as other species of wetland plants. NRCS will continue to monitor these sites for survival and success.

Most of the species used in this project were successfully raised in an artificial environment. Once the initial stock was obtained, new plants were obtained through seed harvesting and germination, or propagation through cuttings. This technique allows for the acquisition of plants without damaging existing wetlands. This project successfully demonstrated that the taking of plants from one marsh to another does not have to be the standard method of practice for wetland restoration.



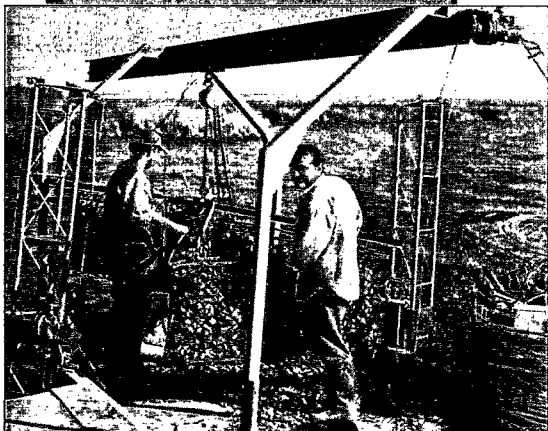
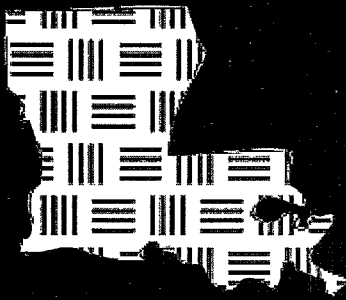
GULF OF MEXICO PROGRAM PROJECT: LOUISIANA

Bay Rambo Artificial Reef

The Bay Rambo artificial reef is located within Lafourche Parish, Louisiana. The site was chosen because Bay Rambo is a rapidly eroding shoreline. Erosion of Louisiana's coastal marshes is aggravated by the fact that the lowland soils are composed largely of clays devoid of sand. Production of calcium carbonate by shellfish is one of the few ways in which such beach-forming particles can be introduced into the environment.

The purpose of the project supported by the Program Office was to initiate growth of a 500-foot-long chain of high, vertical profile reefs along the shoreline of Bay Rambo that would provide a stable framework for oyster growth, help form a barrier against future erosion, and diversify shoreline habitat in the area. Implementation of the project involved the fabrication of 80 hollow core, triangular cross-section units that were loaded with seed oysters and installed at the project location to form the nucleus areas of oyster reefs. The triangular units were then arranged to form the reef skeleton. This technique resulted in a more rapid formation of reef habitat than would be possible through natural reef evolution.

One year after installation, the reef blocks are still withstanding and adapting to the natural conditions of the Bay. Preliminary studies indicate that the number of seed oysters per cultch shell has doubled, and are exhibiting a strong tendency to grow through the openings of the plastic mesh bags. Sediment has been accumulating behind the reef, further stabilizing the in-place structures, and many species of fish and wildlife, including game fish and shrimp, are populating the environment created by the artificial reef. Some saline marsh has also been restored between the reef and the shoreline as the areas of increased sediment deposition have become naturally more vegetated.



Increase in oyster shell valve weight and volume based on installation and monitoring inspection data:

<u>Per Reef Unit for 12 cm oysters</u>	<u>Dec. 1995</u>	<u>Sept. 1996</u>	<u>Projected</u>
Total seed oysters	1419	2787	2787
Total seed valves	2839	5575	5575
Weight of seed oyster shells	2 lb	37 lb	2089 lb
Volume of seed twister GAIL	.04 yd ³	2 yd ³	

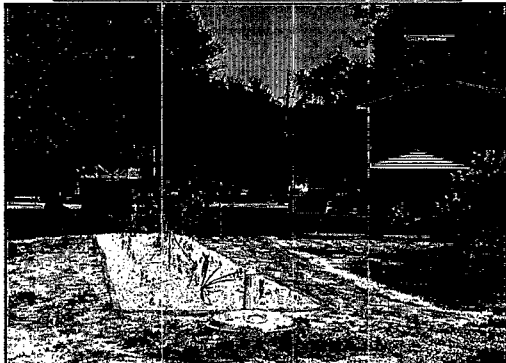
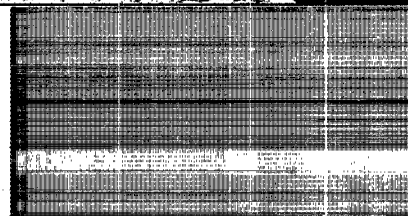
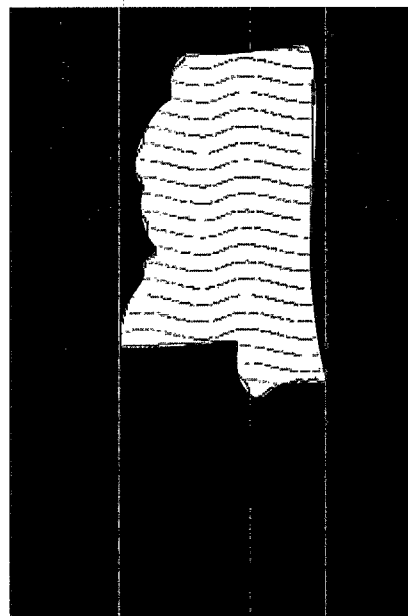
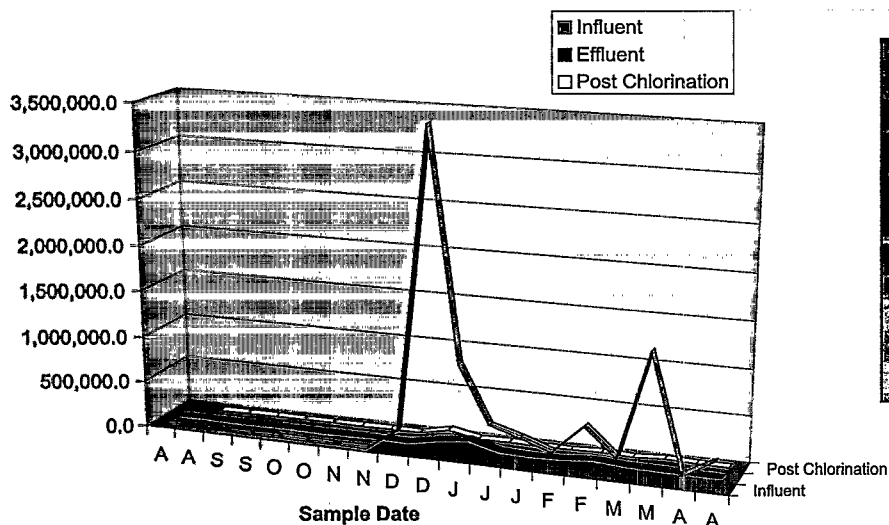
Shellfish Growing Water Restoration

In 1993, the Jackson County Board of Supervisors received a grant from the Program Office as part of the Gulf Program's Shellfish Growing Water Restoration Demonstration Program. Under this restoration program, the Gulf Program sought to fund projects in each Gulf State that would lead to improvements in water quality in nearshore shellfish growing areas. The major cause of poor water quality and harvest closures in these areas is elevated levels of fecal coliform bacteria that enter these waters from poorly functioning or failed residential septic systems. This problem is common to coastal areas due to poor soil conditions and high water tables that limit the functional capabilities of traditional septic systems.

The major goals of each project funded under the Gulf Program Shellfish Growing Water Restoration Demonstration Program was the demonstration of ways that would lead to reduced levels of fecal coliform in shellfish growing waters and the subsequent reduction of their closure time.

The Jackson County project called for the replacement of approximately 41 failing or poorly operating septic systems along Bayou Cumbest in the southeastern area of the county. This area has the highest concentration of residences in the region and is the apparent source of fecal coliform that pollutes the nearby Bangs Lake oyster beds. Under this project, the existing septic systems were replaced with the recently developed rock-reed treatment system. Rock-reed systems are one of the few types of systems that allow adequate treatment of residential wastewater and reduce leaching of effluents in poor soil conditions.

Rock-Reed Filter Systems: Mean Fecal Coliform Levels



GULF OF MEXICO PROGRAM PROJECT-ALABAMA

Demonstration Project in Sewage Management

There is a strong connection between the presence of fecal coliform bacteria and the permanent or conditional closure of over half of the shellfish-growing waters along the Gulf Coast. The Weeks Bay Estuary, situated on the eastern shore of Mobile Bay, in Baldwin County, Alabama, has been closed to commercial shellfishing for many years due to elevated fecal coliform levels. Surveys of the shorelines of Mobile Bay and Weeks Bay Estuary pointed to the heavy reliance on septic tank systems for onsite wastewater disposal. Almost 65 percent of Baldwin County's population is served by onsite sewage treatment and disposal system, with more than 1,250 septic tank systems being installed annually.

In October 1992, the Gulf of Mexico Program approved funding for a project in sewage management to demonstrate a reduction of fecal coliform bacteria in shellfish-growing waters in the Weeks Bay Estuary. The Alabama Department of Public Health selected twenty residential properties along the shoreline adjacent to Weeks Bay—all had defective sewage disposal systems that were contaminating the bay. New Puraflo™ biofiltration systems, developed in Ireland, were installed at each site. Bord na Mona, the Irish quasi-government Peat Board, provided funding for the equipment needed for this project.

The Puraflo™ systems use peat, a more fibrous type than commonly used in gardening, for filtration and purification of wastewater effluent. Traditional septic systems use soil for filtration and purification. Unfortunately, much of the soil along the Gulf Coast is unsuitable for proper treatment of wastewater effluent. Also, the high water-table in the area keeps the soil saturated and causes septic systems to malfunction.

The results of the Weeks Bay Estuary project showed that the peat medium produced good removal rates of fecal coliform bacteria and biological oxygen demand in the treated effluent—a significant improvement over the removal rates for traditional septic systems. The project was a success because it demonstrated an alternative onsite wastewater treatment system for the purposes of protecting sensitive coastal environments, or places where space and other site limitations prevail.

Bord na Mona has applied the knowledge learned at Weeks Bay to another demonstration in Tuscaloosa, Alabama, which consistently achieved even higher reduction numbers. The results of both demonstration projects confirm that alternative systems can provide an effective option for reducing contamination of shellfish-growing waters along the Gulf Coast.

GULF OF MEXICO PROGRAM PROJECT: FLORIDA

Health Professional Education Program

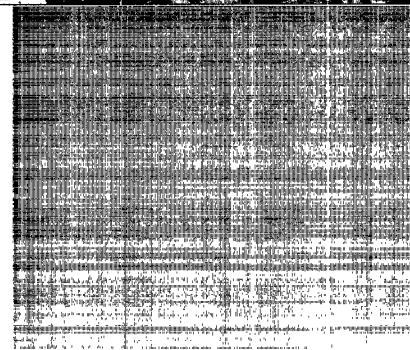
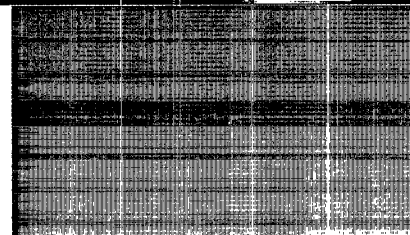
The health care profession can play a critical role in preventing and reducing illness due to seafood consumption. The challenge was to provide these professionals with answers to questions such as: How prevalent is seafood poisoning in your state? Who are the "at risk" patients? What are the best ways to counsel patients on this topic?

The goal of the Five-State Health Professional Education Program was to provide education on shellfish consumption risks, potential sources of contamination, diagnosis and treatment, patient education, and individual state reporting requirements. The training program was developed with specific sessions on the scope of seafood-borne illness, common microorganisms which affect the safety of seafood, classes of nonmicrobial seafood-borne biological toxins, sensitive populations and predisposing conditions that increase susceptibility to seafood-borne illness, and effective means of communicating risks to patient populations at high risk.

To date, this program has been responsible for the training and education of over 800 health professionals, including physicians, nurses, physician assistants, pharmacists, and local public health staff, throughout the five Gulf States.

The training materials and presentations have been enthusiastically received and the response from health professionals has been uniformly and demonstrably excellent. Over 90 percent of the participants indicated that they would be able to use the course information in their medical practices.

With funding provided by the Program Office, this project was conducted by Florida State University's Center for Biomedical and Toxicological Research, in collaboration with the Department of Human Nutrition at the University of Florida. This project fosters a continued joint effort providing an excellent and proven base for the development and implementation of quality education programs.

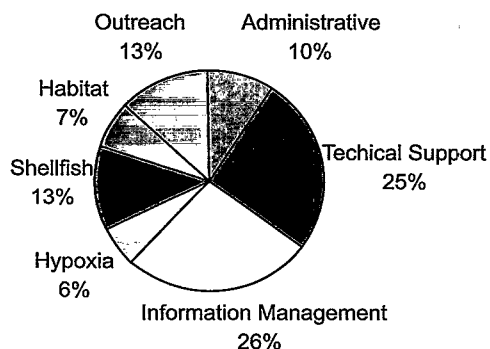


HISTORY OF FUNDING

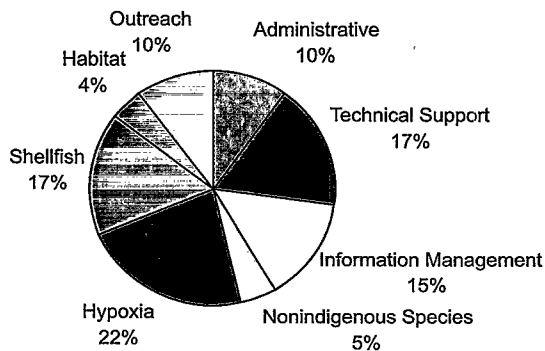
The Gulf of Mexico Program began reallocating its available extramural resources in 1996 to better address the four priority environmental objectives for near-term focus. The majority of resources were directed toward hypoxia and shellfish strategic assessment and implementation with outreach and information management efforts also directed in these areas.

Support for the Gulf of Mexico Program is through the Coastal Environmental Management appropriation for the U.S. Environmental Protection Agency. This base funding has decreased substantially because of directed and agency cuts. Despite these reductions, the Gulf of Mexico Program has continued to fund approximately \$2 million in strategic community projects in both 1996 and 1997. The Program will implement a streamlined planning and budgeting process in 1998 based on strategic assessment of the four focus areas. A funding guidance plan and a specific request for proposals will be distributed in the fall of 1997. This funding plan will focus on results that strengthen the sustainability of the regional economy and environment, while seeking the most cost-effective solutions to problems in the most expedient time frames.

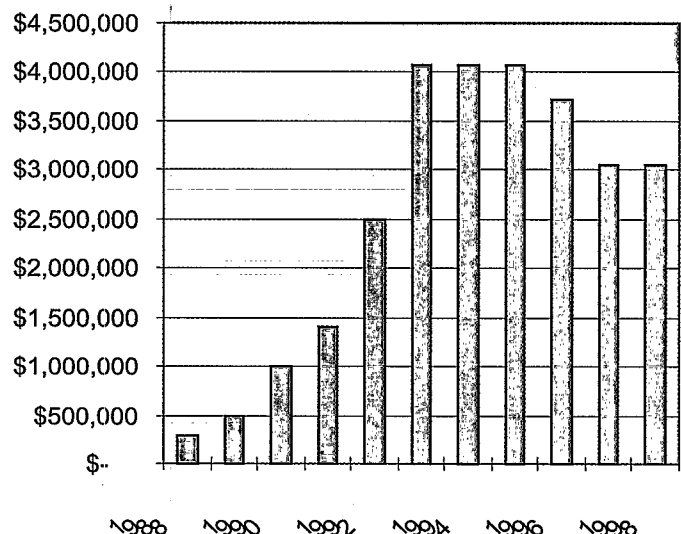
Distribution of FY96 Extramural Funds (\$3.7M)



Distribution of FY97 Extramural Funds (\$3.1M)



Historical Base Funding 1988 - 1998



This chart does not include in-kind support from Gulf of Mexico Program partners.

Did You Know?

- The Gulf of Mexico is home of 14 hard-shell fish and 100 soft-shell fish species. The Gulf of Mexico is the largest body of water in the United States, covering 1.6 million square miles.
- More than 17 million fishing trips are made per year in the Gulf of Mexico, making it the most popular fishing area in the United States.
- The Gulf of Mexico is home to the largest area of coastal land the size of a football field, the Mississippi River Delta, which is surrounded by open water.
- The Gulf of Mexico has 1,356 miles of coastline and 33 major rivers along the Gulf.
- More than 90 percent of the Gulf fish and shellfish species that commercial and recreational fishermen catch depend upon estuarine habitats at one or more points in their lives.
- The Mississippi River deposits more than 3.3 million gallons of water into the Gulf every second.
- The Gulf is used as a wintering spot for most of the migratory waterfowl in the United States.
- Waterfowl hunters spend more than \$600 million per year in hunting-related expenditures.
- More than half of the shellfish-producing areas along the Gulf Coast are permanently or conditionally closed.
- Oil and gas from the Gulf account for 90 percent of the United States offshore production.
- Gulf ports handle almost half of United States import/export shipping tonnage.
- The value of the Gulf tourism industry is estimated at \$20 billion annually.
- Gulf wetlands comprise almost half of the Nation's total wetlands.
- Four of the Nation's ten busiest ports are located on the Gulf Coast.
- More than 22,000 commercial fishing boats harvest seafood from Gulf waters annually.
- One out of every three oysters harvested in the United States comes from Louisiana waters and one out of two oysters are landed from the Gulf.
- Over 2,000,000 sacks of oysters were harvested from Louisiana in 1996, with a dockside value of \$30 million.
- Tourists spent over \$15.3 billion while visiting counties and parishes along the Mississippi River in 1995. This tourist industry supports more than 300,000 jobs.
- There are 1,356 oyster producers in Louisiana alone.

Data supplied by National Marine Fishery Service, Center for Marine Conservation, Mississippi State University, Coalition to Restore Coastal Louisiana, Environmental Institute of Houston and National Oceanic and Atmospheric Administration.



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For general information on Gulf of Mexico
environmental issues, please visit the Gulf of Mexico
Program website: <http://pelican.gmpo.gov>

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