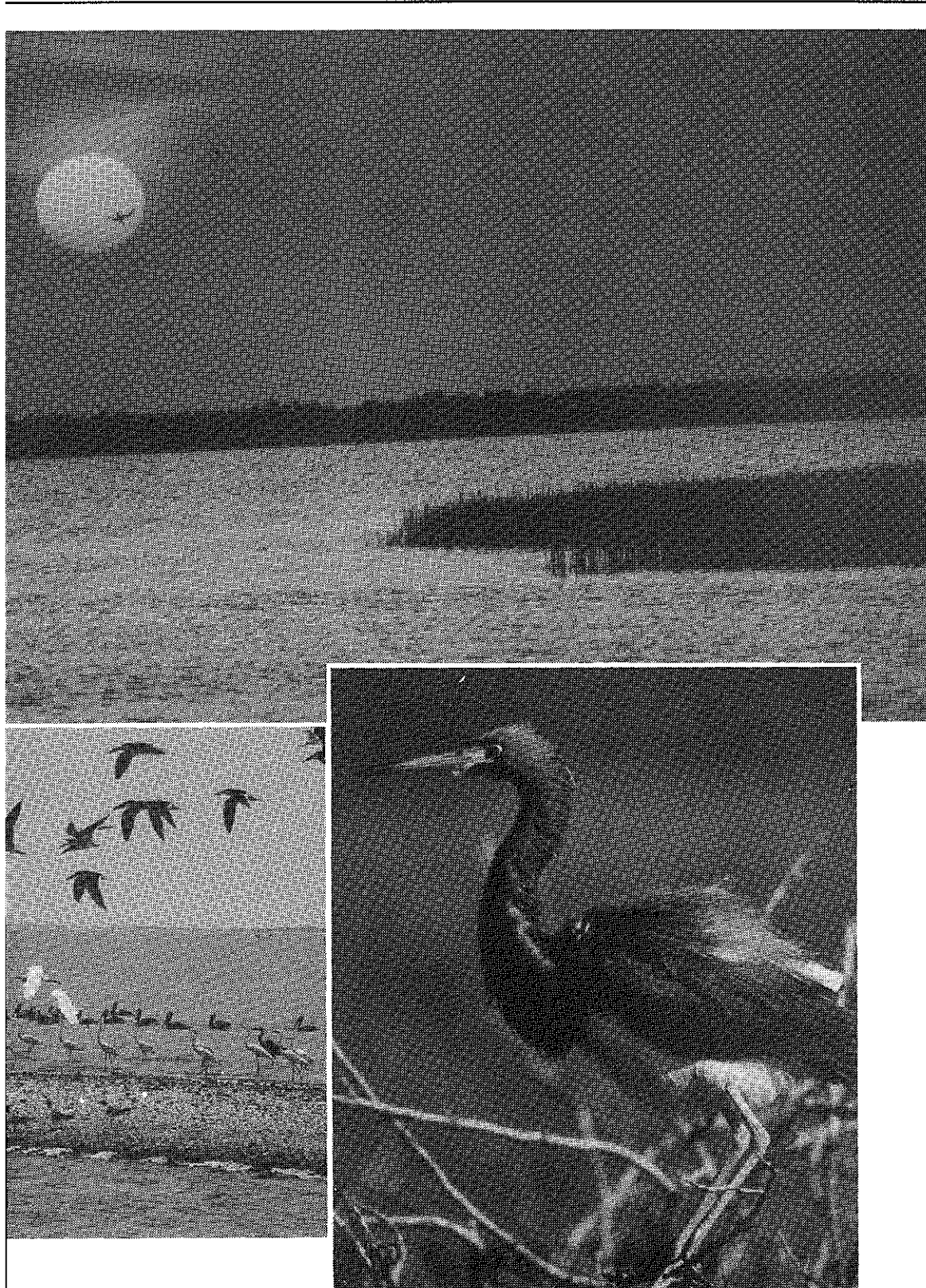




**U.S. Fish and Wildlife Service and**  
*The Galveston Bay National Estuary Program*

*Preserving  
Galveston  
Bay*



Galveston Bay is the largest estuary in Texas and the second most productive in the United States. The bay system provides habitat for the majority of the state's wintering migratory birds. Two federally protected national wildlife refuges adjacent to the bay contribute over 60,000 acres of this habitat.

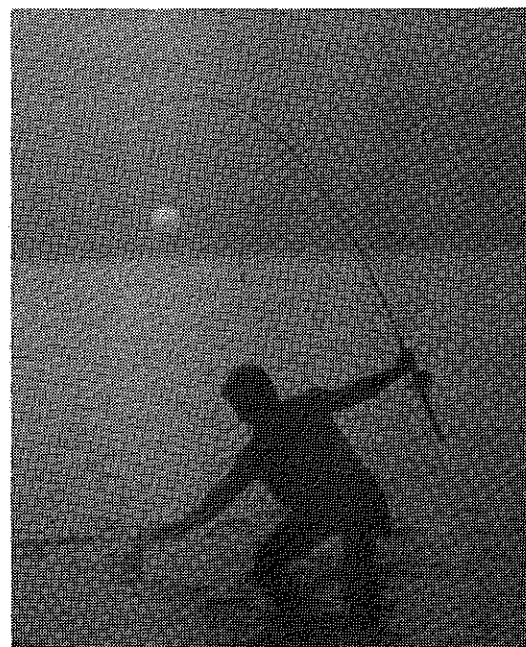
Commercial fishing, shrimping and oyster harvesting on Galveston Bay pump over \$167.6 million annually into Texas' economy. More than 30 percent of the shrimp and blue crabs harvested in Texas come from the estuary as well as approximately 70 percent of the state's oysters. Half of the state's recreational fishing occurs in Galveston Bay.

Houston, the nation's fifth largest city, sits at the bay's edge with approximately 3.5 million people living in the area surrounding Galveston Bay. The estuary serves as the final destination for over half of the permitted wastewater discharges in Texas. An astounding one half of the United State's chemical production takes place in the Galveston Bay area and 30 percent of the nation's petroleum refining industry is located along the bay's shore. The Port of Houston is the third largest in the nation and the sixth largest in the world. Its channel allows tankers to transit more than 50 miles of estuary to reach refining and chemical production facilities located at the head of the estuary.

The growing pressures on Galveston Bay and its resources are evident. Over 17 percent of the estuary's wetlands have been lost since the 1950s with areas such as the San Jacinto River suffering 40 percent wetland losses. Oyster harvesting has been severely limited; the shrimping season shortened; and commercial and recreational fishing placed under stricter control. Oil and gas development contribute to water pollution and shore erosion problems. An expanding trade market increases the need for more channel dredging. Larger channels and more shipping traffic increase the opportunities for tanker collisions and oil or chemical spills in the estuary. Two major oil spills occurred in the Galveston Bay area during the summer of 1990. Increased human population and the industries along the bay's shore have added to the sewage discharges and contaminated runoff received by the bay and its tributaries. Residential and commercial development has replaced marshes and wetlands which formerly provided habitat for finfish and shellfish.



*Galveston Bay provides nesting habitat for 22 species of colonial waterbirds, such as these roseate spoonbills.*



*More than half of Texas' sport fishing expenditures are in the Galveston Bay area.*

## Galveston Bay and The National Estuary Program

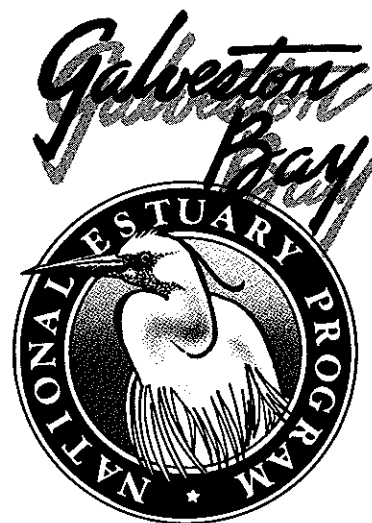
Estuaries across the nation face many of the same problems which impact Galveston Bay. With the passage of the Water Quality Act of 1987, Congress recognized that the health of the nation's estuaries had to be protected. The Act established the National Estuary Program (NEP) and stated that it is in the national interest to maintain the ecological integrity of these highly productive and valuable estuaries through long-term planning and management.

In 1989, Galveston Bay was included in the National Estuary Program. The Galveston Bay NEP Management Conference was formed to begin the process of addressing the many problems facing Galveston Bay. The Conference will develop a long-term management plan, the Comprehensive Conservation and Management Plan (CCMP), which will be completed in 1994 and implemented over the following 20 years.

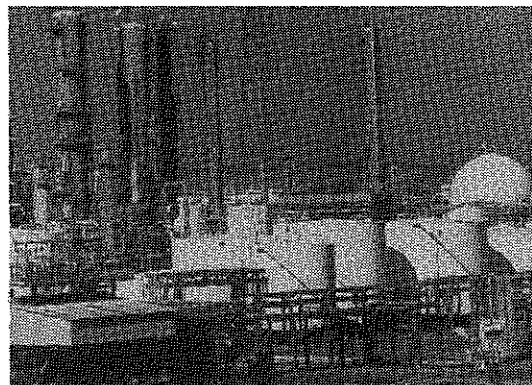
The Conference is composed of six committees: (1) the Policy Committee includes high level officials such as commissioners and legislators and influential members of the private sector; (2) the Local Governments Advisory Committee provides representation for city and county governments and other local officials; (3) the Management Committee targets environmental managers from federal, state and local agencies and key representatives of the users of Galveston Bay; (4) the Scientific and Technical Advisory Committee is composed of members of the local scientific and academic communities; (5) the Citizen's Advisory Steering Committee provides representation for the public, business, industry, and environmental organizations; and (6) the Galveston Bay Public Forum has an open membership for citizens interested in the bay's welfare.

### The Priority Problems of Galveston Bay

Identifying and ranking the critical problems facing Galveston Bay were the first steps in the development of a management plan. These "priority problems" provide the basis for formulating the general and specific management goals and are expected to evolve further as our understanding of the bay increases. The recognition of and ranking of these problems is an on-going process that is complete only when the results of the scientific and technical work are available. The priority problems identified by the Galveston Bay NEP Management Conference follow.



*Galveston Bay NEP*



*Over one half of the nation's chemical production occurs in the Galveston Bay area.*

## THE PRIORITY PROBLEMS OF GALVESTON BAY

### A. REDUCTION/ALTERATION OF LIVING RESOURCES

#### 1. Loss of Physical Habitat

- \* wetlands and sea grasses
- \* oyster reefs
- \* shallow bay bottom (unvegetated)

#### 2. Alteration of Salinity Gradients

- \* impoundment, diversion, and interbasin transfer of fresh water inflow
- \* bathymetric and circulatory changes (salinity intrusion)
- \* ungauged inflows from rainfall in coastal watersheds

#### 3. Alteration of Nutrient and Organic Loading

- \* eutrophication and hypoxia
- \* point and nonpoint sources

#### 4. Bathymetric and Circulatory Changes

#### 5. Land Subsidence and Sea Level Rise

#### 6. Chemical and Pathogenic Contamination (biotic impairment)

- \* point and nonpoint sources

#### 7. Increased Turbidity and Sedimentation

### B. PUBLIC HEALTH ISSUES

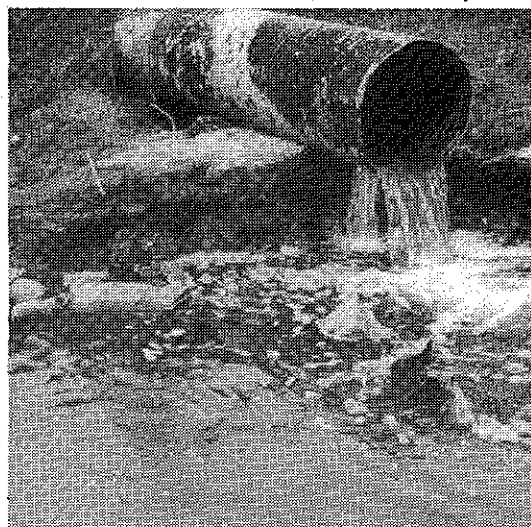
#### 1. Discharge of Pathogens to Bay Waters

- \* point and nonpoint sources

#### 2. Chemical Contamination of Water, Sediments, and Living Organisms

- \* point and nonpoint sources

*Galveston Bay NEP*



*Half of the permitted wastewater discharges in Texas flow into Galveston Bay.*

*USFWS*



*Galveston Bay is constantly threatened by oil and chemical spills. This oil slick is the result of the Apex barge/tanker collision during the summer of 1990.*



### 3. Restriction of Contact Recreation

- \* chemical and pathogenic contamination

## C. RESOURCE MANAGEMENT ISSUES

1. Regulatory Problems
2. Fisheries Resource Depletion
3. Marine Debris

## D. SHORELINE EROSION

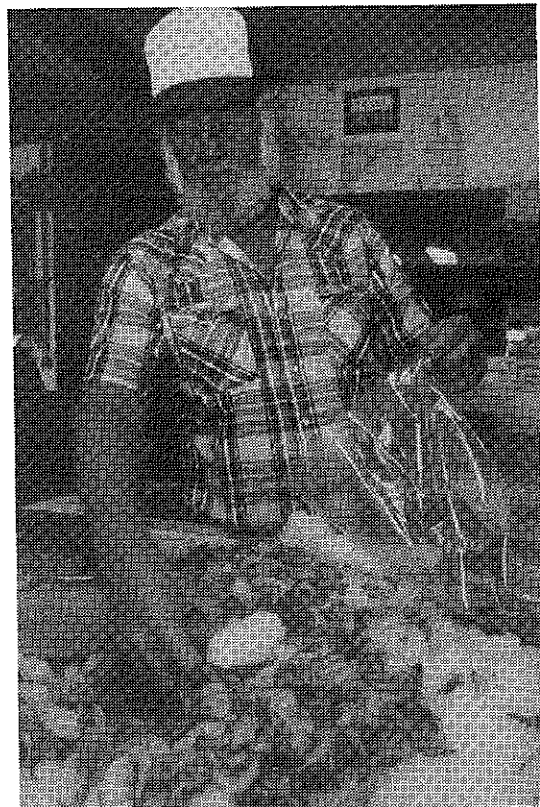
1. Land Subsidence and Sea Level Rise
2. Bathymetric and Circulatory Changes
3. Loss of Buffer Vegetation (wetlands)
4. Use of Littoral Property

### Galveston Bay Characterization

The Galveston Bay NEP is currently in its characterization phase. This involves research and data analyses directed specifically at the bay's priority problems. The characterization of Galveston Bay is based on the analysis of historical data and the findings of new scientific and technical investigations. The focus of the work is to determine historical trends in Galveston Bay and to identify the probable cause for these trends.

The goal of the characterization process is not to completely define cause/effect mechanisms and natural ecological processes in Galveston Bay. Rather, it is to investigate those aspects of the estuary which are specifically affected by human impacts and can be addressed through environmental management.

*Galveston Bay NEP*



*Commercial fishing, shrimping and oyster harvesting on Galveston Bay pump over \$167.6 million annually into Texas' economy.*

## The Fish and Wildlife Service and the National Estuary Program

The U.S. Fish and Wildlife Service (Service) Ecological Services Office in Houston has actively participated in the Galveston Bay NEP since it began in 1989. The Service is represented on the Management Committee and the Scientific and Technical Advisory Committee. The Service's goal is to successfully incorporate fish and wildlife concerns into the characterization and management of the bay. Three of the bay's four identified priority problems are associated with the estuary's fish and wildlife resources and their habitats.

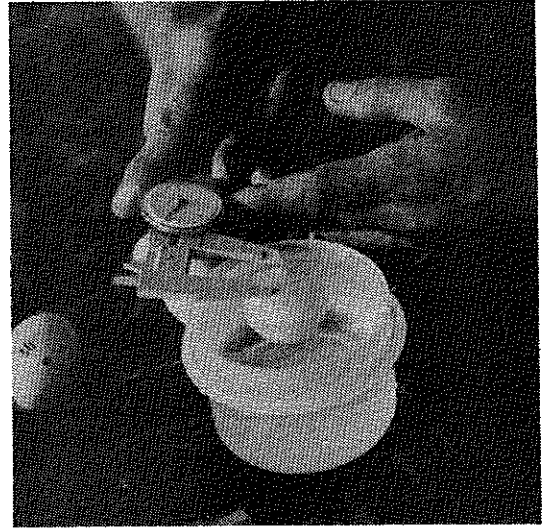
Characterization studies such as the living resources of Galveston Bay, the bay's existing water and sediment quality, point source and nonpoint source loadings, contamination of the bay's aquatic resources, and the status and trends of wetlands and aquatic habitats have all benefited from the Service's involvement in study design and development. In addition, the Service is the primary reviewer of the living resources contract and the Galveston Bay Information Center. The Center will make critical information about Galveston Bay available to the public.

The Service is conducting several studies independent of the Galveston Bay NEP which will also contribute to the characterization of the bay. These studies include an evaluation of the contaminants distributed across the bay and an assessment of the impacts associated with oil and gas production. The accumulation of contaminants in bird species found along the Houston Ship Channel has also been examined. Information obtained from these studies increases the Service's ability to make recommendations which effectively protect and manage the bay's living resources.

### Citizen Participation and the Service

Public support of the Galveston Bay NEP will be the backbone of its success. The Citizen's Advisory Steering Committee's role is to foster public involvement in the management and protection of Galveston Bay. The Service is also committed to educating citizens on the values of the bay's resources. Currently the Service is developing a conceptual model for the Citizen's Committee that describes how Galveston Bay functions and how man's uses impact the bay. The Citizen's Committee will use the model to educate the public on the problems facing Galveston Bay and to encourage citizen participation in the bay's protection.

USFWS



*The Service conducts a variety of studies throughout Galveston Bay.*

USFWS



*Scouts participating in the Service's "Take Pride in America" marsh sampling program learn about the values of the bay's habitats.*

The Service's nationally recognized "Take Pride in America" marsh sampling program developed for area scouts is another example of the Service's commitment to education on Galveston Bay. The Take Pride program gives area scouts a first-hand experience of the variety of life found within the bay's marshes. Scouts develop an understanding of how the bay functions, its importance to man, and how man's activities impact the bay.

Finally, the Service is also involved in Bay Day, a festival celebrating Galveston Bay. Bay Day is an event for citizens which spotlights the significance of the estuary and the need for wise use of its resources. The Service is coordinating those Bay Day activities which focus on the bay's living resources.

### **The Service's Role in the Galveston Bay NEP**

The Service is the primary steward of the nation's fish and wildlife resources. In working with the Galveston Bay NEP, the Service's goals are the protection of migratory birds, endangered species, wetlands, and federal lands. To address these priorities, the Service will focus on issues such as freshwater inflows, industrial pollution, urban and agricultural runoff, management of dredged material, and the protection of wetlands and other critical habitats. The Service will also pursue public awareness activities that will establish the broad base of public support that is essential to the successful implementation of the CCMP.

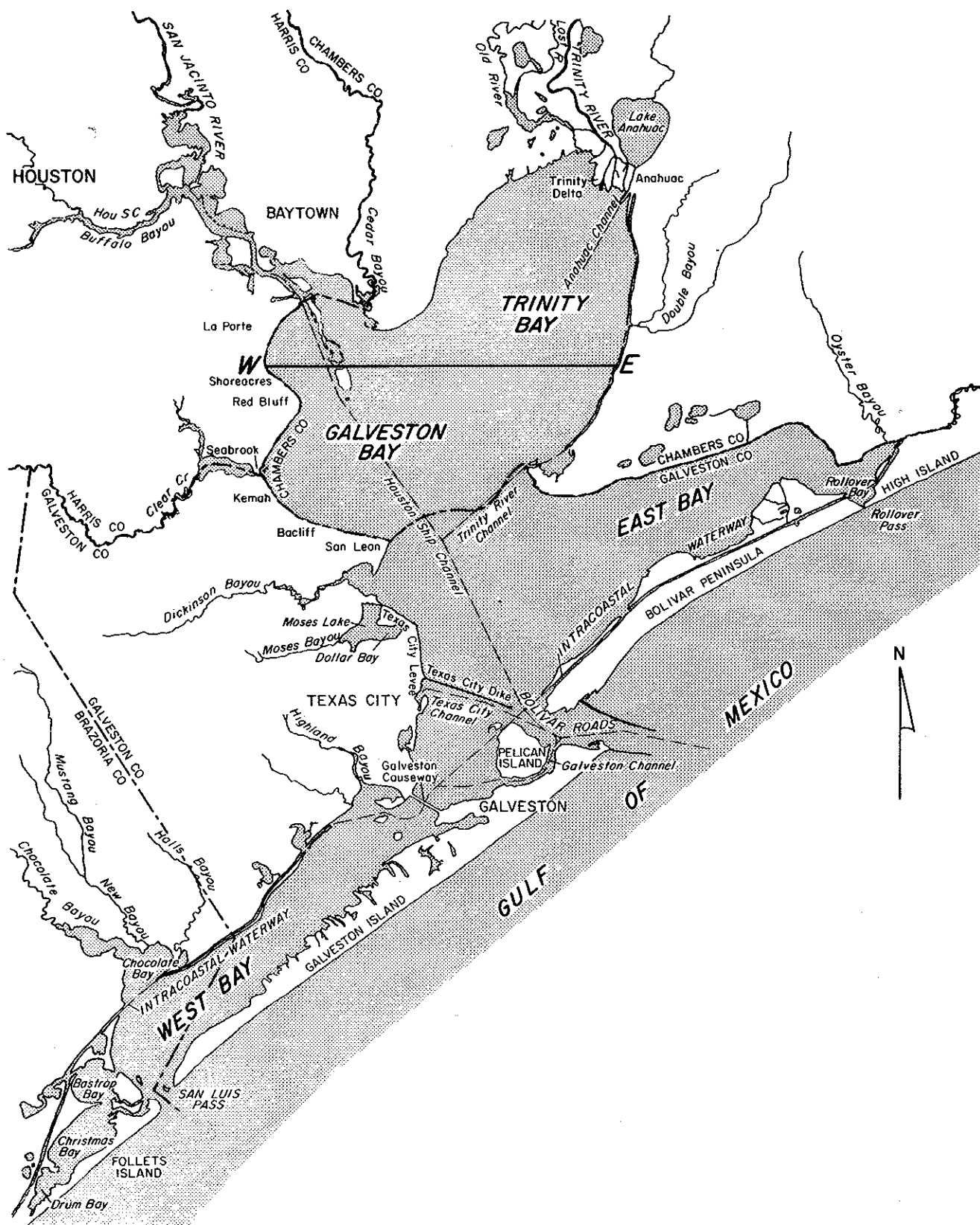
### **The Service's Future Involvement**

Currently, our involvement in the Galveston Bay NEP is limited. The opportunities to participate and provide leadership within the NEP far exceed the ability of the Houston field office to respond. At the conclusion of the current characterization process in the FY 1992, the Galveston Bay NEP will develop the Comprehensive Conservation and Management Plan. To facilitate improved management and restoration of estuarine fish and wildlife resources, the Service must increase the resources dedicated to the Galveston Bay NEP and the CCMP. A greater and more consistent level of Service participation will be essential to meaningfully contribute to the development and implementation of this significant management plan.

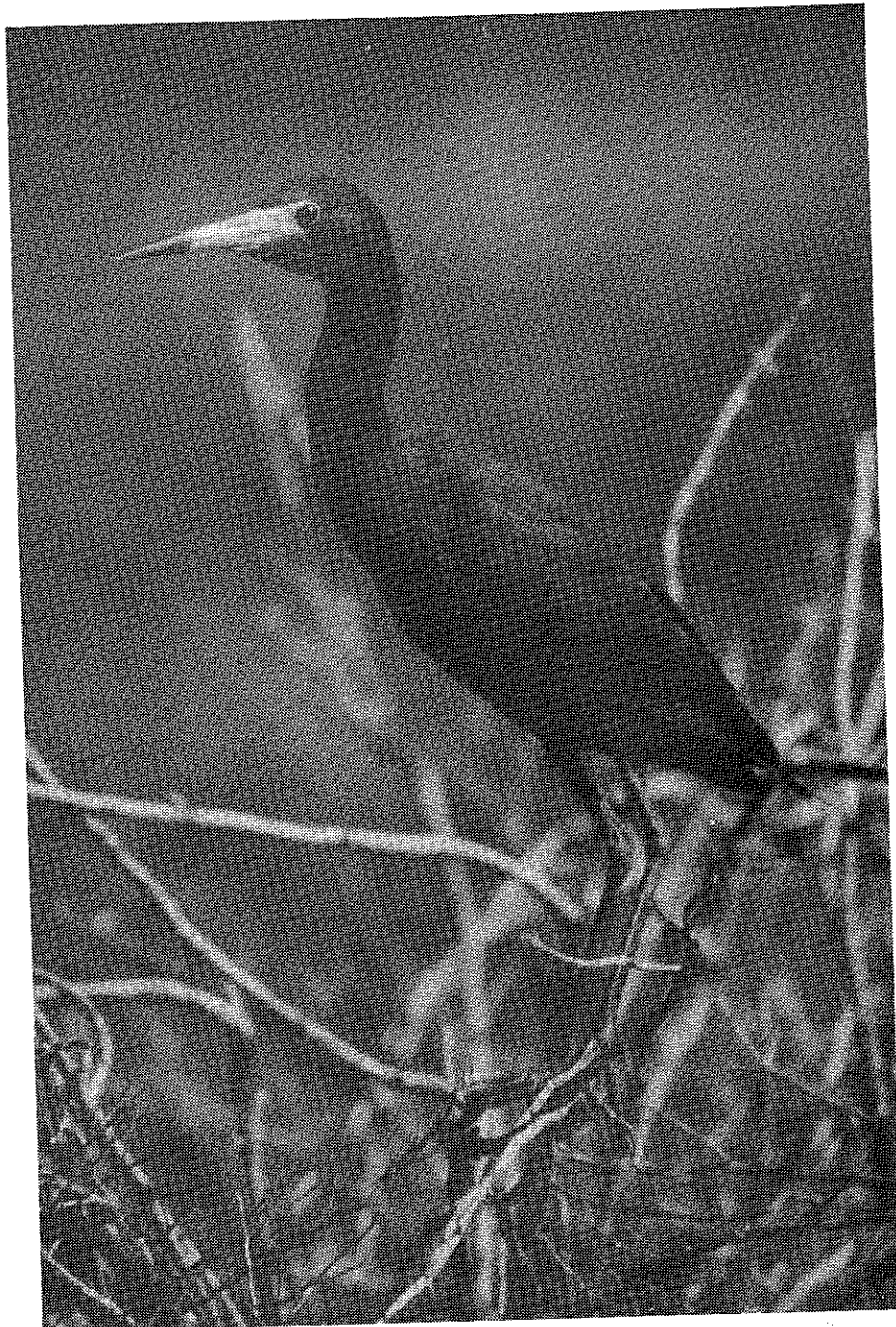
USFWS



*Thirty percent of the nation's petroleum refining occurs along the bay's shoreline.*







For more information, please contact:

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Houston, Texas 77058  
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Photographs by Galveston Bay National Estuary Program (File)  
and U.S. Fish and Wildlife Service (Will Roach)  
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