

Gulf of Mexico Integrated Science - Tampa Bay Study



Overview

The U.S. Geological Survey's Gulf of Mexico Integrated Science - Tampa Bay Study combines the expertise of federal, state, and local partners to address some of the most pressing ecological problems of the Tampa Bay estuary. This project serves as a template for integrated research projects in other coastal ecosystems in the nation. The Tampa Bay Study focuses on the scientific needs of the Bay, as identified by resource managers.

Six major components of the Tampa Bay Study focus on scientific needs of resource managers:

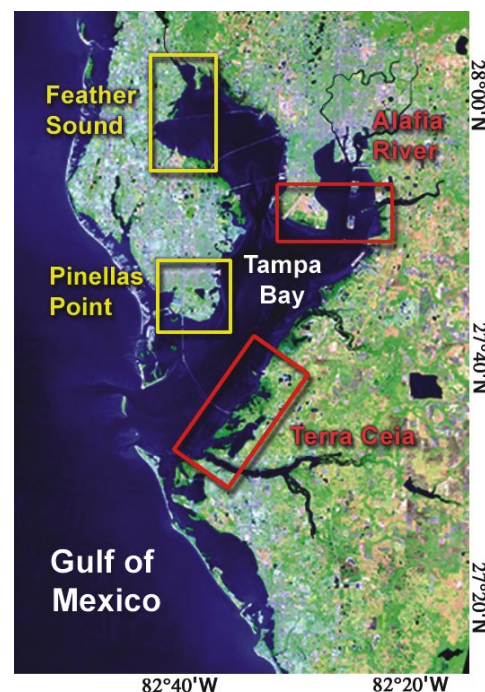
- Examining how natural and man-made physical changes affect ecosystem health through mapping and modeling;
- Identifying sources and quality of groundwater, surface water, and sediment;
- Determining current, historical, and pre-historical conditions in the bay to help serve as a guide for restoration planning;
- Assessing the natural and man-made changes affecting wetland health and restoration;
- Identifying and measuring the impact of urbanization on seafloor habitats;
- Providing a Web-based clearinghouse of information for scientists and the public, including a system that supports the work of those officials who must make decisions that affect the state of the bay.

Tampa Bay: A Resource for the Present and the Future

Tampa Bay, one of the Gulf of Mexico's largest estuaries, exemplifies the environmental stresses that our nation's bays and estuaries face. More than 2 million people live in the Tampa Bay watershed, and the population continues to grow. Increased development demands more fresh water and creates greater air and water pollution. Effective resource management requires an understanding of how both natural changes and increased urbanization in the bay area will affect the health of Tampa Bay.

Maps for the Future: Regional and Local Scales

Over the past 50 years, Tampa Bay has undergone increased urbanization that has resulted in significant land-use changes. Scientists are documenting these changes by compiling and digitizing historical maps that show land-use changes and patterns of historical wetlands growth and loss, water, chemical, and biological data. These data are being entered into a geographic information system (GIS), which is a digital map that allows the user to interact with

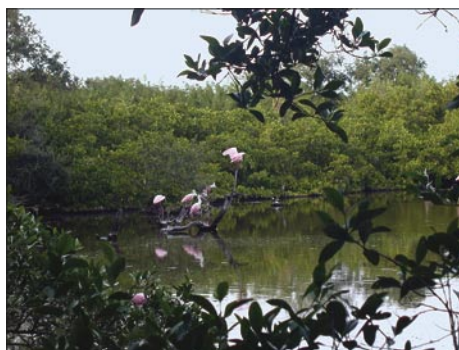


Tampa Bay Study area.

data, such as displaying overlays of various databases. The need for historical and recent maps at regional and local scales has been identified as a priority item by agencies and ecosystem managers in the bay area. Broad-scale maps provide an overview of the region, whereas fine-scale maps provide details on specific aspects of the bay, such as water quality and elevation.

Our Most Precious Resource: Quality and Quantity of Fresh Water into Tampa Bay

Freshwater discharge into Tampa Bay is critical for maintaining salinity gradients and water quality required to preserve ecosystem health. Little is known about the quality or quantity of groundwater seeping into the bay from local aquifers, or the impact of contaminants and sediments on water qual-



Tampa Bay provides essential habitat for many species of wildlife.



USGS scientists collecting fish species in coastal wetlands of Tampa Bay.

ity. In order to evaluate the watershed's influence on wetland and bay ecosystems, scientists within the USGS, partner agencies, and institutions are mapping sources of groundwater, sediments, and contaminants, and measuring their impact on water quality and bay health.

Wetlands of Tampa Bay: A Look into the Past to Predict the Future

The coastal wetlands around Tampa Bay are a critical interface between land and sea, providing habitat and nursery areas for a wide variety of plants and animals. Documentation of the formation and evolution of the wetlands and their flora and fauna provide the basis for predicting the future for wetlands in Tampa Bay. Cores of sediment taken from wetlands, and historical aerial photographs and maps, provide a window to the past. Historical and pre-historical information on wetlands, combined with the study of the current health of wetland vegetation and fish populations, are fundamental for plan-

ning and implementation of wetland restoration.

Healthy Habitats: Examining the Impact of Urbanization

Seafloor habitats, such as seagrass beds, provide essential habitat for fish and marine mammals, and are sensitive to water-quality changes. Whereas increased urbanization in the Tampa Bay area prompted a decline in seagrass beds, better management of nutrients entering the bay has also triggered a recovery. Researchers are currently examining the impact that other aspects of urbanization, including water quality and sediment quality, have on seagrass health.

Science of Tampa Bay in the Information Age

Scientific information needs to be easily accessed by managers at all levels, from city planners to state and federal legislators. All of the scientific information from Tampa Bay that is being acquired in this project, as well as

the decades of pertinent data that have been collected by agencies and partners throughout Tampa Bay, are accessible in a Web-based format. Specifically in collaboration with our partners at the Tampa Bay Estuary Program, the Florida Fish and Wildlife Research Institute, and the University of South Florida, the USGS has developed a digital library of relevant Tampa Bay data and a user-friendly query system that support the work of officials who make decisions that affect the state of the bay. These tools can be found on the Gulf of Mexico Integrated Science, Tampa Bay Study Web site at <http://gulfsci.usgs.gov>. USGS scientists are conducting research with partners and collaborators from 56 federal and state agencies, municipalities, universities, private agencies, and non-governmental organizations.



Sediment coring provides information about Tampa Bay's past.

For more information, please contact:

Kimberly Yates, Project Chief
U.S. Geological Survey
600 4th Street South, St. Petersburg, FL 33701
Phone: (727) 803-8747 x 3059
Email: kyates@usgs.gov

<http://gulfsci.usgs.gov>

Primary Partnering Agencies:

Eckerd College
FL Department of Environmental Protection
FL Fish and Wildlife Conservation Commission
Gulf of Mexico Program
Hillsborough County, FL
Pinellas County, FL

Southwest Florida Water Management District
Tampa Bay Estuary Program
University of Louisiana in Lafayette
University of South Florida
U.S. Army Corps of Engineers