

COMMUNITY-BASED FINAL ECOSYSTEM GOODS AND SERVICES:

ENVIRONMENTAL QUALITY OF THE PENSACOLA BAY SYSTEM: RETROSPECTIVE REVIEW FOR FUTURE RESOURCE MANAGEMENT AND REHABILITATION

Report Overview

This report presents an analysis of the environmental quality of Pensacola Bay, the fourth largest estuary in Florida (with a surface area of 373 km², 889 km of coastline and an approximate 18,000 km² watershed). It is a collaborative effort of USEPA's Gulf Ecology Division Research Laboratory (Gulf Breeze, FL), West Florida Regional Planning Council (Pensacola, FL) and Escambia County Water Quality and Land Management Division (Pensacola, FL).

The objective of this report is to summarize the assorted environmental information for the Pensacola Bay System (PBS), which is essential for understanding its current environmental condition and needed for future cost-effective and science-based resource management. It provides a synopsis of the environmental database (1680-present) and recommendations on the research needed to maintain and improve the

environmental quality of the PBS.

Issue

The Pensacola Bay System is one of many estuaries that have been impacted by the effects of increasing population growth. As a result of population increases, many of the habitats of the PBS have been degraded, fragmented, or destroyed. A current synthesis of environmental quality in PBS is needed since a considerable amount of published and unpublished technical information has become available since the last summary published 15 years ago.

Impacts and Value

This report serves as a technical resource for the public, regulatory, and scientific communities related to resource management. This review and synthesis provides a comprehensive, updated, and critical evaluation of the environmental condition of the PBS based on historical, recently published, and unpublished information. The review also includes



summaries for ecological information lacking or under-reported in previous reviews.

In the Pensacola Bay area, there presently are no models capable of predicting the effects of different levels of stressors on the economic value of the ecological services and goods produced by the ecosystem. In developing management recommendations for future cost-effective and science-based resource management, the report examines data gaps and priorities among geographic locations, environmental parameters, stressor monitoring, and condition assessment needs.

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Outcomes and Applications

Using peer-reviewed published values, estimates of total non-habitat value for environmental goods and services of seagrass meadows, oyster reefs, and tidal wetlands are examined for current values associated with habitat decline over the past half century. These values are used to highlight the importance of the environment to local decision makers, especially as the region is examining how to best utilize funding for Gulf of Mexico restoration following the 2010

Deepwater Horizon oil spill.

The management and regulatory response to: (1) the on-going increase of human-caused contaminants; (2) the effects of episodic events (hurricanes, oil spills); and (3) the effects of climate change, depend upon technically-based information such as that contained in a current state-of-the-science synthesis report.

The information provided in this report will be used to establish validated models, which in turn will help inform

policy-makers on the outcomes of their decisions.

Next Steps

Long-term improvement in environmental condition in Pensacola Bay will be greatly facilitated by well-designed, goal orientated, financially supported studies, with accompanying public involvement and active management actions. This is necessary because the Pensacola Bay system is a shared resource with multiple Federal, state, regional and local jurisdictional organizations.

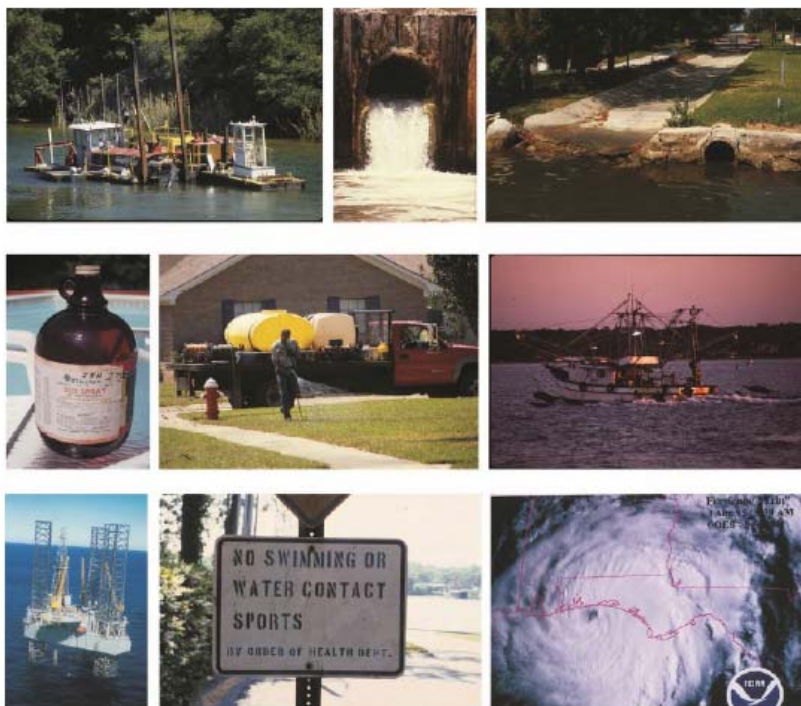
References

Lewis, Michael, J. Taylor Kirschenfeld, and Traci Goodheart. Environmental Quality of the Pensacola Bay System: Retrospective Review for Future Resource Management and Rehabilitation. U.S. Environmental Protection Agency, Gulf Breeze, FL, EPA/600/R-16/169, 2016.

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Examples of natural and anthropogenic stressors, or “drivers of change”, for the Pensacola Bay System.