
Project # 1026 The Socioeconomic Dimensions of Hypoxia

Performing Organization: **Harte Research Institute for Gulf of Mexico Studies**
Total Project Funding: **\$100,000**
CBBEP Bays Plan Actions: **WSQ-3, WSQ-4, WSQ-5**

The purpose of this project is to assess the social, economic, and ecosystem services impact of hypoxia on Corpus Christi Bay, Texas and to take a look at impacts on a national scale. This project will improve our understanding of low dissolved oxygen levels and their impacts so that better management strategies can be made.

Half of estuaries in the U.S experience natural or human induced hypoxic conditions at some point each year, and recent evidence suggests that the frequency and duration of hypoxic events have increased exponentially in the last few decades worldwide. Yet, the socio-economic implications of hypoxia are not well understood, much less the potential impacts on ecosystem services. Thus, it is important to connect hypoxia back to the impact on human well-being to improve decision making that is supported by both natural and social sciences. While the natural science of hypoxia is well documented, there is little understanding of the social and cultural conditions and political realities, which can be assessed with socio-economic analyses.

The current project will begin the process of providing socio-economic data at two levels by asking two questions: 1) where does hypoxia pose the greatest threats to human well being nationwide, and 2) what kinds of specific data are needed at local scales to support decision making. Thus, this project will address the socio-economic issues surrounding hypoxia on a national and local scale. The project will have two specific objectives:

- I. Assess hypoxia risk nationally. This will be accomplished by using data that currently exists on hypoxia (i.e., typology, location, severity, and areal extent) and combining it with socio-economic and ecosystem services data (i.e., population, economic activity, land use, and valued ecosystem components).
 1. A matrix of environmental resources and ecosystem services vs. hypoxia types will provide insight into what resources are at the biggest risk and then the impact on human well-being.
 2. A national map of hypoxia disturbance and the impact on ecosystem services and environmental assets.
- II. A case study of the localized human impact of hypoxia in Corpus Christi Bay. Corpus Christi Bay has been subject to seasonal hypoxia since 1988, and it has increased in size, duration, and frequency.
 1. The socio-economic and ecosystem services impact will be analyzed using existing data sources and by conducting stakeholder meetings and surveys which will then be used to estimate the relative value of impacted ecosystem services.
 2. The costs of ameliorating the hypoxia will be estimated.

Outcomes: This project will examine the approaches that can be used to identify the human dimensions of hypoxia events. The information is needed to improve our ability to implement hypoxia management strategies.

Project Objective:

- To assess socio-economic and ecosystem services impacts from hypoxia nationally and in Corpus Christi Bay.
1. Review existing data for national look at hypoxia.
 2. Perform case study of hypoxia impacts in Corpus Christi Bay.