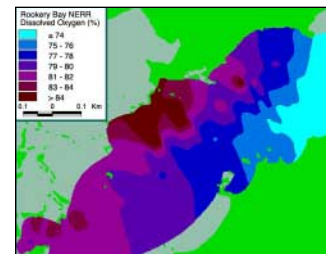


Cost-Effective Monitoring of Estuarine Habitats

Challenge

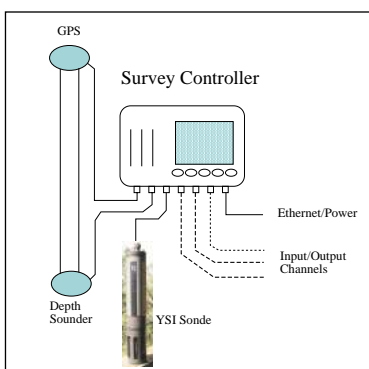
Assessing habitat change requires a detailed understanding of habitat type and quality, especially of highly variable parameters such as temperature and dissolved oxygen. This project is developing cost-effective instrumentation and methodology to accurately and rapidly map bottom and water column habitat conditions over large spatial scales. The project will develop a computer module to accept inputs from sonar, water quality sensors and global positioning instrumentation (GPS). The project will also develop software to integrate the geographically referenced data and create continuous contour maps of bottom and water column habitat features.



Science

Design Concept

Project researchers collaborated with Marisys, Inc., of Boca Raton, FL, to design and construct a "survey controller," housed in a rugged, waterproof box, that integrates the inputs from a GPS, a YSI 6600 datalogger and depth sensor, all of which are towed adjacent to a boat. The controller has additional ports that can be used to receive other information such as multibeam sonar data or additional YSI dataloggers.



Field Results

- In tests run during the summer of 2001, the system proved simple to operate and very rugged.

Researchers were able to create georeferenced maps for large areas (such as Masonboro Island, NC as shown in the adjacent map) ranging from 0.5 to 1.4 sq. km). The maps include data on habitat parameters that exhibit high short-term variability, including: salinity, temperature, dissolved oxygen, pH, and turbidity.



- True to the goal of the project, the assessments were conducted rapidly and with less cost in human resources than is usually associated with mapping projects of this magnitude.

Application

Integrating Bottom Characteristics and Biotic Diversity

While work at the North Carolina reserve concentrates on highly variable parameters, researchers at the Jacques Cousteau NERR in New Jersey are developing new techniques to rapidly assess less variable parameters, such as sediment and bottom characteristics. Specifically, investigators are fine-tuning methods for using multibeam sonar to map shallow habitats and video systems for groundtruthing purposes. Eventually, multibeam and video inputs will then be integrated into the survey controller box to offer a suite of inputs for rapid assessment of estuarine habitats. These maps can then be compared with measures of biotic diversity.

Three Survey Controller Units Available to NERRS System

Marisys, Inc. is currently finalizing hardware and software designs associated with the prototype survey controller. By summer, 2002, three units will be built and made available to the NERRS system for habitat mapping activities.

Project Essentials

Title: Assessment and Monitoring of Estuarine Habitat Diversity: Developing the Tools to Protect and Restore Estuarine Habitats.

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Start - End Date: 09/01/1999 - 06/31/2002

NERR Reserve(s): Elkhorn Slough, CA • Jacques Cousteau, NJ • North Carolina, NC • Rookery Bay, FL • Wells, ME

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