

UNH, fishermen analyze WGOM closure impacts

DURHAM, NH - Since 1997, the Western Gulf of Maine (WGOM) Closure Area has put parts of Stellwagen Bank, Jeffrey's Ledge, and Wildcat Knoll off-limits to the fishing industry. These shallow water features are known to be productive fishing grounds and their closure has represented a significant hardship to fishermen.

The closure, which is not dissimilar from a marine protected area (MPA), is intended to allow fish stocks and benthic communities to rebuild. Now, more than eight years later, what really has been the impact of the area closure from an ecological perspective?

Numerous influences affect fish stock abundance. The quality of habitats, impact of oceanographic events, availability of food and the degree to which breeding sites remain undisturbed all factor into the equation. There is no guarantee that removing fishing pressure alone will enable fish populations to rebound.

So, do closures make a difference? This fundamental question is currently being addressed by various institutions along the US coast, which include several University of New Hampshire (UNH) scientists and commercial fishermen with funding from the Northeast Consortium.

Looking for answers

In 2002, the Northeast Consortium and several other funding sources began support of a long-term study of the WGOM closure area. The project, submitted and coordinated by Dr. Ray Grizzle of the UNH Jackson Estuarine Laboratory, assembled seven UNH researchers and five New Hampshire and Massachusetts commercial fishermen to begin an intensive "IN vs. OUT" analysis of the WGOM closure.

The science participants brought technical expertise in benthic habitat ecology, satellite imagery, bathymetric mapping, and video analysis to the table. The industry participants brought expertise in identifying historically fished and nonfished habitats within the closure area and retrofitting vessels for oceanographic sampling.

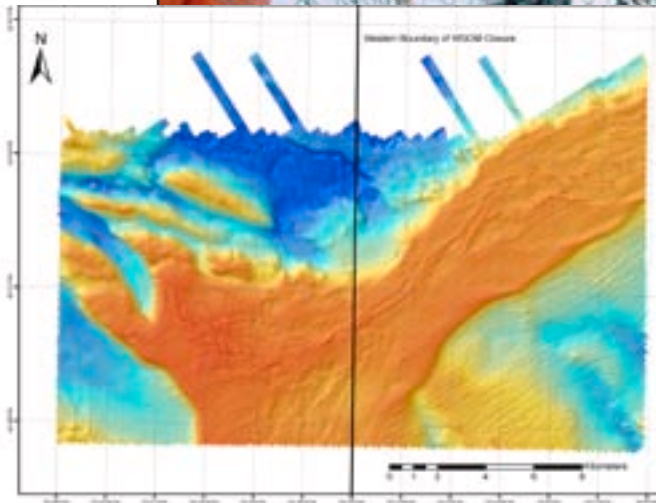
At approximately 1,400-square-miles, the WGOM is designed to provide protection for habitat and promote the recovery of overfished stocks.

The project's long-term goal is to provide an ecosystem-level understanding of the closure that will allow management to make more informed decisions regarding existing and future closures.

The project currently involves satellite remote sensing of primary production, multibeam acoustic and videographic mapping of the sea floor, as well as



Ray Grizzle/UNH Jackson Estuarine Laboratory photos



Fisherman Peter Kendall, left, one of five commercial fishermen participating in the long-term study of the WGOM closure area along with David Goethal, F/V Ellen Diane; Bob Hannah, F/V Terri Lynn; Craig Mavrikis, F/V Marion Mae; and Mike Leary, F/V Lori B.

The graphic is the high-resolution, bathymetric map of the WGOM Closure Area created with multibeam sonar (not the Hubbard camera).

characterization of sediments and benthic communities.

Industry perspective

Peter Kendall, a New Hampshire fisherman and manager of the Portsmouth Fishermen's Cooperative and a committed industry partner for the last three years, is working with Dr. Grizzle to sample the benthic fauna inside and outside of the closure area.

"My theory is, if these studies prove the WGOM has made or is making a difference, that's one thing," Kendall said. "If not, let's reopen it."

The area was initially closed to protect juvenile fish – cod in particular.

So is the area actually an important nursery ground?

While no one can really say for sure, Kendall believes the results of this project will be an important step in understanding how juvenile fish are using the closure area and if the benthic ecosystem has benefited from the absence of fishing.

He also feels strongly that the results of cooperative research projects like these need to be made available and integrated into management deliberations in a much more timely manner.

"The project is three years underway. It may be three more before we have some answers. Managers may use our information to open Jeffrey's but by that time we could be down to 30 days-at-sea and it wouldn't matter," he said.

"As it is, the industry is so limited by days we could do away with closures," Kendall added. "But I know that isn't realistic."

Looking for "epifauna"

What does a sea squirt have to do with cod stocks in the WGOM? Sea squirts are epifauna – benthic organisms that live attached to hard substrates such as boulders. Dr. Grizzle believes that the return of epifauna to the study site may be a sign of habitat recovery for the entire closed area.

"Based on video surveys, we have seen much higher abundances of some sponges, sea squirts, and other sessile invertebrates within a portion of the closed area compared to similar bottom types outside," Grizzle explained.

The larger epifauna may provide protective habitat for juvenile fish and invertebrate prey. To try to assess the connection between epifauna and juvenile fish abundance, Grizzle is collaborating with another fisherman, Mike Leary from Hampton Falls, NH, on ways to sample the rocky areas.

"Typically, otter trawls are used to survey fishing grounds. We have been modifying small-mesh gillnets to target those areas trawls can't get to," Grizzle explained.

Mapping the bottom

A major accomplishment of the project to date has been the development of a high-resolution, bathymetric map that is providing unprecedented detail on seabed topography in the study area.

Dr. Larry Mayer's lab at the UNH Center for Coastal and Ocean Mapping was responsible for generating the map using multibeam sonar.

Dr. Larry Ward, another UNH partner, received funds through the Hubbard Grants program to develop a camera system that could be used to document bottom type and epifauna for the project.

The result was the "Hubbard Camera," a stand-alone video capture system that can be towed up to 2 knots and to a depth of 150 meters. The video system is being used to ground-truth the acoustic maps generated by Mayer and to provide additional habitat information for the project.

More resources

The subject of closures and MPAs are important both regionally and nationally. To get a national perspective on the MPAs that are affecting US commercial fishermen, visit the National Oceanic and Atmospheric Administration-sponsored web site at <www.mpa.gov>.

For answers to questions regarding the WGOM project, e-mail Dr. Grizzle at <ray.grizzle@unh.edu> or visit the Northeast Consortium projects web site at <www.northeastconsortium.org>.

Ken La Valley

Ken La Valley is an extension specialist with University of New Hampshire (UNH) Cooperative Extension/New Hampshire Sea Grant who is working to connect commercial fishermen interested in cooperative research with scientists who want to work with fishermen. He encourages anyone with ideas to get in touch.

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Ray Grizzle measures a fish with undergraduate student Krystin Ward, who works in Grizzle's lab, in the background.

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