

## **NOAA Study Shows Seafloor Recovery from Fishing Gear Impacts in Stellwagen Bank National Marine Sanctuary Slow, Unstable**

University of Connecticut and California State University researchers have found that seafloor communities in a restricted fishing area in NOAA's Stellwagen Bank National Marine Sanctuary show evidence of recovery from chronic fishing gear impacts. The finding is significant because bottom trawlers, dredges and certain gillnets, for example, can alter the ocean floor and benthic ecosystems that provide food and shelter for fish and other marine species.

The Western Gulf of Maine habitat closure area overlaps 22 percent of the sanctuary and was implemented in 1998 by NOAA's National Marine Fisheries Service and the New England Fishery Management Council to aid in the recovery of groundfish. The closure area has also provided an opportunity to assess how restricting an area's use can be a tool for conserving biological diversity. Most commercial fishing was prohibited in the closure area, but lobster traps, recreational hook-and-line, and mid-water trawls were allowed.

"We clearly see effects of the closure from the different responses of the seafloor communities inside and outside the closure area," said Peter Auster, research professor of marine sciences at the University of Connecticut. "The closure is working in terms of habitat protection and recovery continues, even after 12 years."

Scientists note that species within marine communities are closely associated with one another, and an understanding of these relationships can assist in understanding the overall health of the environment. In areas unhampered by the chronic impacts of fishing gear, it appears that communities have begun to recover and regulate themselves based on local interactions between species such as predation and competition. This is evidence of a return to the status of a healthy ecosystem.

These findings have been published in a NOAA Office of National Marine Sanctuaries' Conservation Series report. Researchers conclude that seafloor communities inside the closure area are recovering from fishing gear impacts but they haven't yet returned to a state of ecological stability. Compared to habitats studied elsewhere, seafloor habitat recovery at Stellwagen has not progressed as anticipated, the study notes.

"Most people assume that once fishing ceases in an area that recovery will rapidly occur to a stable community, like the recovery of old farm fields in New England shifting ultimately to mature forests," said Alison Tamsett, a University of Connecticut biologist and principal author of the study. "We now realize that the recovery process in the seafloor ecosystem is more complex than previously thought."

The authors caution that their observations "neither support nor reject" the assumption that cessation or reduction of fishing will allow populations and communities to fully recover. They recommend continued monitoring, over a larger number of sites within the sanctuary, to determine how seafloor communities in the Gulf of Maine respond to various human uses.

The Stellwagen Bank study, "Dynamics of Hard Substratum Communities Inside and Outside of a Fisheries Habitat Closed Area in Stellwagen Bank National Marine Sanctuary," and other Marine Sanctuaries Conservation Series reports are available online:  
<http://sanctuaries.noaa.gov/science/conservation>.