

Mapping Seafloor Geology off the Massachusetts Coast: A Cooperative State-Federal Project

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High-resolution geologic mapping is the first step toward understanding the distribution, type, and quality of subtidal marine habitats and resources in the coastal ocean. A cooperative effort to develop such a set of geologic maps for the inner continental shelf offshore of Massachusetts was initiated in 2003 by the U.S. Geological Survey, the Massachusetts Office of Coastal Zone Management, and the National Oceanic and Atmospheric Administration. The overall goal is to determine the geologic framework of the shallow (depths 5-90 m) seafloor inside the 3-mile limit of state waters, using bathymetric sonars (multibeam and interferometric), sidescan sonar, chirp seismic-reflection profiling, sediment sampling and bottom photography. The seafloor maps produced by this project have broad application to scientific research and resource-management issues in the region. Scientists use these data to better understand the processes that have shaped the coast and how the coast has evolved over time, thereby helping to evaluate the vulnerability of coastal environments to storms, sea-level rise, and long-term climate change. The geologic maps also provide a firm science foundation for management of ocean resources and evaluation of offshore development proposals (i.e., sand mining, pipelines, offshore facilities or energy projects). In addition, the Massachusetts Division of Marine Fisheries uses the mapping products to monitor habitat recovery following offshore construction activities and to design new ecosystem-based management practices for coastal fisheries. To date, we have mapped nearly 1450 km² of the seafloor within state waters, extending from the MA/NH border to Cape Cod Bay; additional mapping is planned south of Cape Cod in 2009-2013.