

New views of bottom topography of Fire Island Inlet and Great South Bay

Roger D. Flood
Marine Sciences Research Center
Stony Brook University
Stony Brook, NY 11794-5000

A detailed understanding of underwater environments in the coastal zone requires that the shape and character of the bottom be known. We have been new high-resolution data on bottom topography and character in Long Island's coastal zone using a shallow-water multibeam echosounder (Simrad EM 3000). Recent studies in Fire Island Inlet and in Great South Bay provide new insights into the sedimentary processes active in these regions and the scale of sediment variability.

Fire Island Inlet is the primary route of water exchange between Great South Bay and the Atlantic Ocean, and the amount of exchange depends in part on the cross-sectional area of the inlet and the bed roughness. Existing nautical charts of the area do not adequately represent the sea bed as sand bodies in the area move frequently. Our results show that the bed is complicated here with several shoal, several holes, and numerous sand waves. Ship wrecks and other features formed by man are also identified, including materials placed on the sea bed to form artificial fishing reefs.

Hard clams populations have been in decline in Great South Bay for several decades, and oysters haven't been abundant since the 1930s. Previous work using side-scan sonar in Great South Bay has identified several areas where high hard clam populations coincide with old oyster reefs. We have investigated one of these regions in detail to understand the present-day morphology of a former oyster reef. Other areas of Great South Bay have also been studied to characterize local variability in sedimentary environments and habitat. These studies show a unexpected range of bed variability in a relatively small area suggesting a strong interaction between sediment processes and benthic organisms.