

SCIENCE IN AID OF A COMMUNITY ADAPTING TO AN UNEXPECTED NEW TIDAL INLET: CHATHAM, MASSACHUSETTS

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Chatham, Massachusetts, is a coastal community with a strong maritime tradition. Located at the extreme southeastern corner of Cape Cod, it is directly exposed to North Atlantic storms and its harbors lie behind a dynamic and rapidly changing barrier beach system. The town's beaches, waterways and coastal uplands are of great importance to the fishing industry, the town economy, and the Cape Cod National Seashore. For this reason the value of anticipating and adjusting to coastal change has long been appreciated, but efforts to accommodate rapid changes associated with the formation of a new tidal inlet in 2007 strained existing management programs.

Past studies had revealed a quasi-cyclic pattern of barrier beach evolution and tidal inlet formation with an approximately 150-year time scale and with significant impacts on navigation, coastal erosion and water quality. With the creation of a new deep-water inlet in 1987, a new cycle was thought to have been initiated, and the town undertook major coastal management activities to adjust to its anticipated impacts. However the barrier beach breaching that led to a second inlet just 20 years later produced new challenges to navigation, fishing fleet anchorage and upland home sites and required a significant readjustment of existing management practices.

To accomplish this, town, regional and federal agencies and groups are providing monitoring and research efforts that include annual vertical aerial photography, long term tide observations, GIS analysis of LIDAR data, GPS surveys of changing topographic and bathymetric features, historical review, and both numerical and conceptual modeling. Anticipated future studies will build on this information to provide estimates of the morphological evolution of the barrier beach – tidal inlet system over the course of the next 50 years to serve as a guide for improved resource management.

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