Shoreline Characterization and Change Analyses

South Coastal Region

Regional Coastal Erosion Commission Workshop
New Bedford - May 21, 2014

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Coastal Erosion Commission

SHORELINE CHARACTERIZATION

Description
Coastal landforms, habitats, developed lands, and hardened coastal structures (collectively referred to as "classes") were identified at the immediate, exposed shoreline for coastal Massachusetts. Protected harbors and estuaries were generally excluded. Classes were identified for every ~50 meters of assessed shoreline and summarized by percentage of total assessed shoreline for each community.

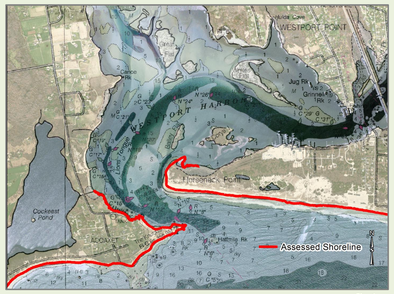
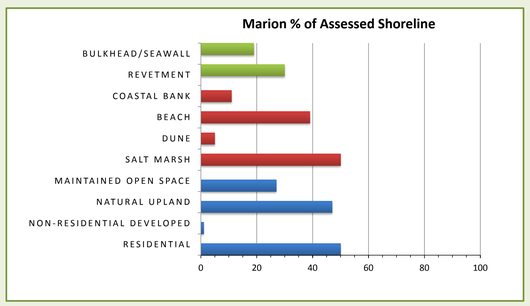


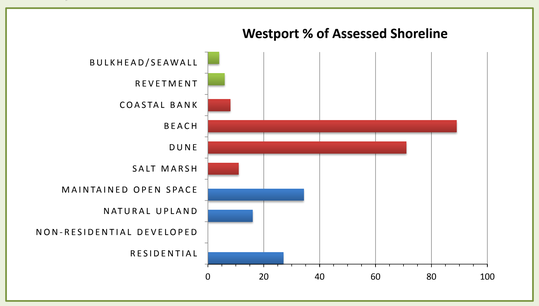
Fig. 1


Fig. 2

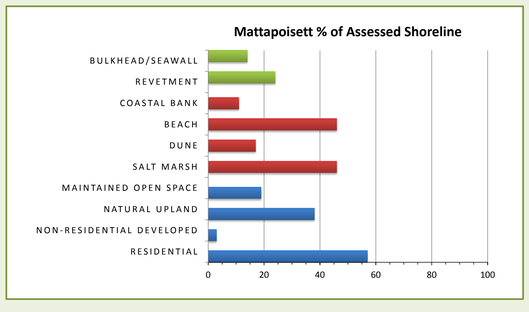
Marion

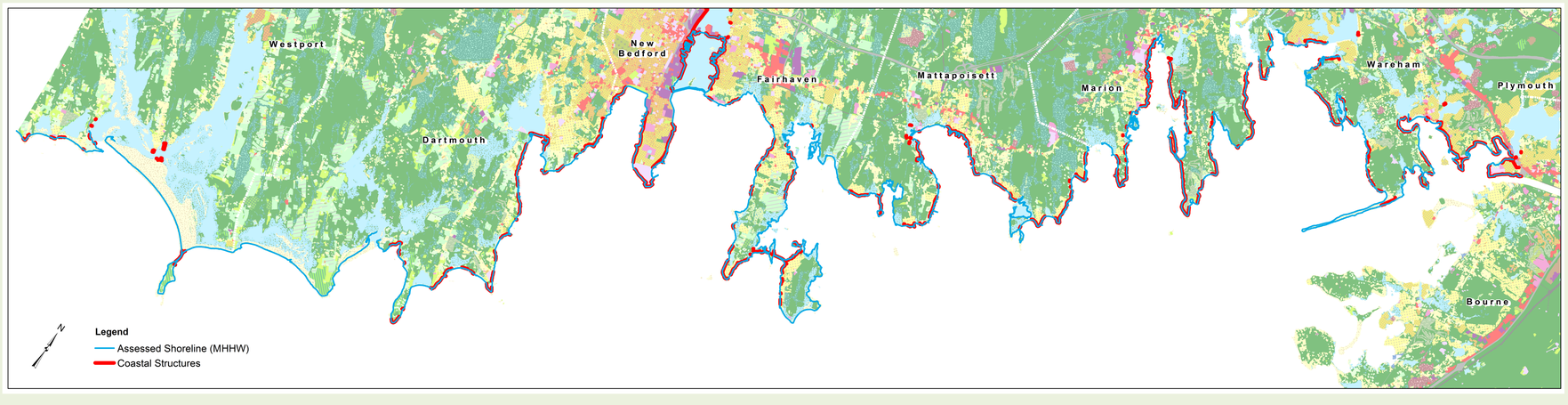


Westport

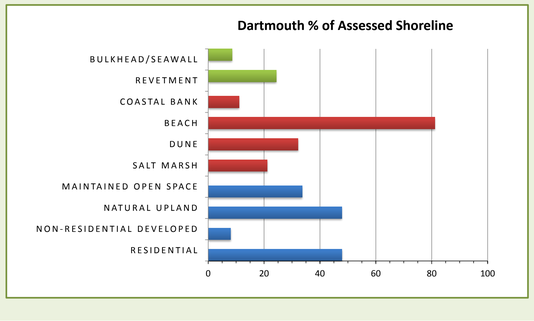


Mattapoisett

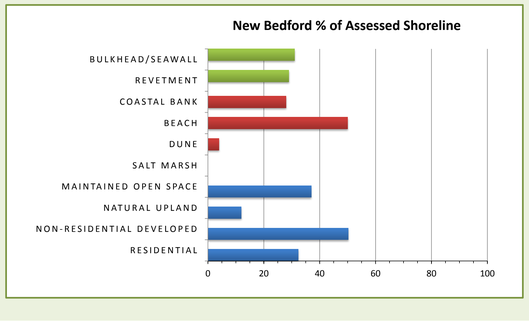




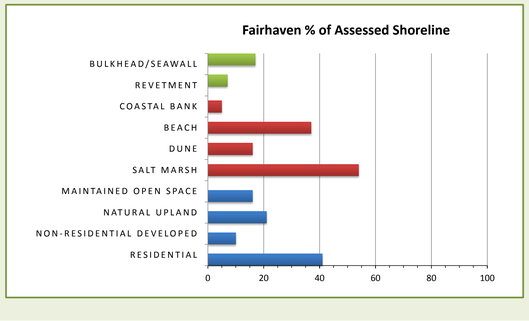
Dartmouth



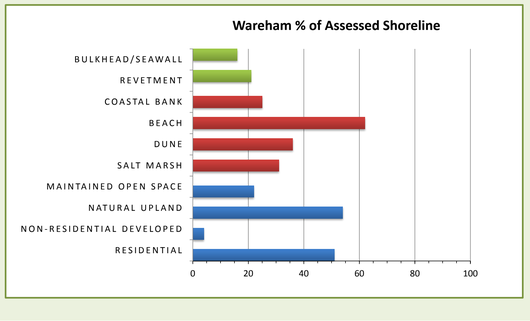
New Bedford



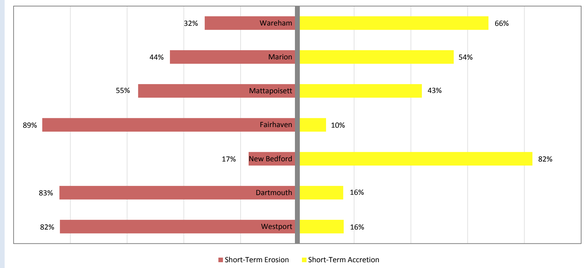
Fairhaven



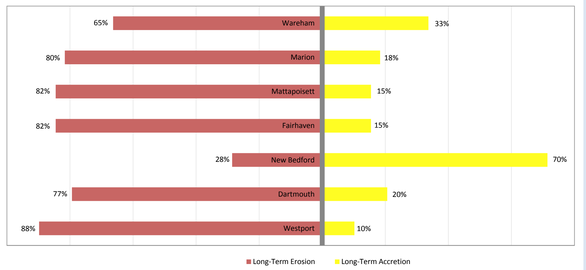
Wareham



SHORELINE CHANGE



Short-term erosion and accretion trends (1970-2009) per community in the South Coast region. This plot denotes dominant *direction*, not magnitude, of shoreline movement based on the number of shoreline change transects in each town.



Long-term erosion and accretion trends (1844-2009) per community in the South Coast region. This plot denotes dominant *direction*, not magnitude, of shoreline movement based on the number of shoreline change transects in each town.

Methods
The project uses a transect approach to identifying classes along the shoreline. This approach allows us to examine features for any given ~50 m segment of shoreline. It provides more information at a finer scale than one where areal coverage of features are summarized within a specified shoreline buffer. Methods can be extended to include additional information on the order in which features occur moving landward, their landward extents, and that rate at which they co-occur along the shoreline.
Data sources include the 2011 USGS-CZM Shoreline Change Project's contemporary shoreline (MHHW) and transect data, CZM and DCR's Coastal Structures Inventory data, MassDEP's Wetlands map data, and MassGIS's 2005 Land Use data.
Shoreline Change Project transects generally occur every ~50 meters along exposed shoreline (Fig. 3). Shoreline segments begin and end with shoreline midpoints between transects (Fig. 4). Attributes for hardened coastal structures, wetlands and landforms, and other land use/land cover features were spatially joined to transects, then to their respective shoreline segments (Fig.2). More than 50 classes from three types of datasets were identified in this process. Classes were binned into 10 important classes to make analysis and reporting more useful. Data were further processed to generate class summaries and a co-occurrence matrix for each town. **Natural Upland is comprised of Forest and Brushland/Successional land cover classes only.*

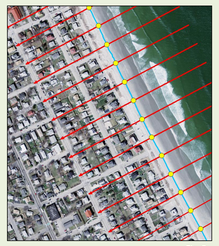


Fig. 3

Fig. 4