Lake Erie Sedimentation and Sediment Distribution.

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Numerous studies collected sediment distribution data from open lake and nearshore zones of Lake Erie. The earliest regional data were collected in the 1870's during the U.S. Lake Survey of the Great Lakes. Subsequent studies utilized various; sampling devices and shallow cores to sample the bed of Lake Erie. Many site specific and regional maps were published illustrating sample locations and surface sediment distributions. Cores, jetted holes, and geophysical (seismic) tools were used to probe the sediments below the bed of Lake Erie. More recently, geophysical tools such as sidescan and swath sonar were integrated with GPS (Global Positioning Systems) and GIS (Geographic Information Systems) to more accurately map surface sediment distributions on the bed of Lake Erie. Subsurface data show that bedrock, glacial and glacio-lacustrine, and more recent lacustrine sediments partially fill the Lake Erie Basin. In general, fine-grained sediments (clay and silt) are distributed in deep-water areas of Lake Erie. Coarse-grained sediments (sand and gravel) are distributed in nearshore zones within 650 meters of the shoreline in water depths less than 10 meters. Coarse-grained sediments are also associated with several relict cross-lake morainal deposits in the Central and Eastern basins of Lake Erie. The most pronounced changes in sediment distribution are occurring in nearshore zones where shoreline armoring and dam construction impact sediment source areas that supply coarse-grained sediments to Lake Erie beaches. The reduction in sediment supply has reduced the width and thickness of beaches, accelerated coastal erosion and downcutting in the nearshore zone, and eliminated many of the coastal barriers that \protected Lake Erie's coastal marshes and wetlands. Moreover, zebra mussels (Dreissena polymorpha) in the nearshore zone have changed the character of Lake Erie beaches and are spreading rapidly across soft substrates in the Western Basin and shallow-water areas of the Central Basin of Lake Erie. The potential socio-economic and ecosystem impacts of these changes in sediment distribution have not been evaluated.