

DESIGNING COSTAL RESTORATION TO DELIVER CONSERVATION AND HUMAN WELL-BEING BENEFITS IN WESTERN LAKE ERIE

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The Western Lake Erie Coastal Conservation Vision is engaging conservation, business and community interests from the U.S. and Canada along a 150-mile stretch of Lake Erie coast to map the places where conservation actions could optimize benefits for people and nature.

Lake Erie has three basins, each with distinct physical characteristics. The western Lake Erie basin (WLEB) is the warmest, shallowest, and most biologically productive region in Lake Erie and in all the Great Lakes. It provides world-renowned fishing and migratory bird-watching opportunities, which contribute important economic revenues to the region. Despite these natural assets, the WLEB has been severely degraded due to high human population densities, intensive agriculture, and significant shoreline hardening. Historically, roughly 1,500 square miles (4,000 km²) of the watershed was occupied by the Great Black Swamp which was drained and converted to farmland in the second half of the 19th century. Today only 5% of the original 307,000 acres of coastal wetland remains.

There is a resounding call to prioritize conservation action in the Great Lakes and in western Lake Erie specifically. Conservation and restoration actions will need to meet measurable ecological goals and sustain the multiple, nature-based activities that contribute positively to the region's coastal communities and their economies. Since it is impractical to restore the entire 150 mile coastal region, conservation practitioners must understand which stretches of the coast are the highest priority for conservation or restoration to benefit both ecological systems and people.

Prior WLEB planning has focused on ecological features and threats to these features. We have extended that focus by identifying and integrating aspects of human well-being to create a vision for conservation that can meet multiple ecological and socioeconomic goals. We have engaged public and private partners to clarify priorities and obtain data to spatially represent these values, and have spatially optimized conservation areas to identify priority places to achieve ecological and socioeconomic goals at the lowest economic and social cost. Analysis results confirm that current and potential wetlands and areas of high terrestrial biodiversity are of greatest importance for coastal conservation and support values such as hunting, birding, and public access to water. We have employed this analysis to assess restoration opportunities in Ohio and Michigan and have obtained funding to improve water management for a high- priority state wildlife area that provides multiple benefits. Next steps include working with a suite of partners to provide several coastal communities with information about the potential tradeoffs of alternative, climate-adapted planning and management decisions so that assessment of natural infrastructure, coastal wetland restoration and similar actions could be considered in future coastal planning and management updates. Additionally, we are concurrently working with the Upper Midwest & Great Lakes Landscape Conservation Cooperative which is building upon our optimization analysis to extend the study area north to Saginaw Bay, MI and add additional coastal resilience parameters into the analysis.

