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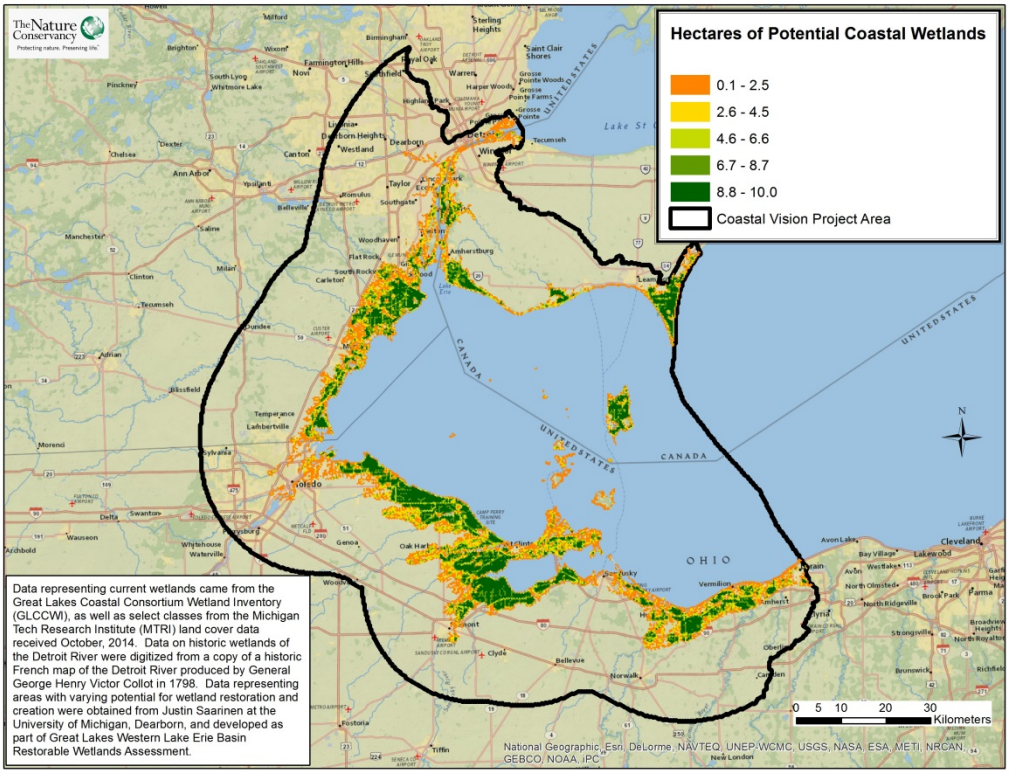
Western Lake Erie Coastal Conservation Vision Project

Engaging stakeholders to create
a shared regional vision that integrates ecological and social values
to provide solutions for people and nature.

Coastal Wetland Restoration



Potential Coastal Wetlands. This map shows areas with existing wetlands and potential for wetland restoration. Areas with the potential to be restored to wetlands are displayed on a gradient from green to orange, with green indicating areas with the highest density of restorable land and orange indicating the lowest density of restorable land. The WLEB analysis area is outlined in black.

Take Home Points

- Coastal wetlands provide ecological benefit by serving as a natural habitat for a variety of species, and by filtering the drinking water supply for over 11 million people.
- Coastal wetlands benefit the fishing and birdwatching industries, as well as serving as natural buffers against waves, winds and flooding.
- The LEBCS established the goal of a 10% increase in coastal wetlands, from 2011 levels, by 2030.

Coastal wetlands in relation to regional ecological and social values

Coastal wetlands provide habitat for birds, spawning fish, and a diversity of amphibians, reptiles, insects, and plants. They are the most biodiverse habitats in Lake Erie, and provide critical stopover and breeding habitat for local migratory birds. Wetlands are also crucial spawning habitat for fish, and serve as buffers for coasts in the face of erosion-inducing storm surge. Finally, wetlands filter nutrients and sediment out of runoff that otherwise threatens Lake Erie water quality. These functions are essential for maintaining the nutrient and material cycles of Lake Erie and for maintaining the health of its biota[1]. Residents of the Western Lake Erie Basin depend on these wetland functions to improve water quality and help provide for recreation opportunities that support the regional economy. The robust fish and bird populations supported by coastal wetlands provide for a recreational fishing industry worth US$1.4 billion (2012), for commercial fisheries worth over $4.6 million (2012) on the U.S side and $33 million (2012) in Ontario[2], and for annual birdwatching revenues that are estimated at $26 million (2011)[3]. By filtering runoff, wetlands additionally contribute to the health of beach-goers and swimmers while simultaneously helping to maintain a supply of fresh drinking water to over 11 million people[4]. Coastal wetlands play a critical role in serving as buffers against storm waves, winds and flooding, all of which are increasingly due to intensifying storm events. The Western Lake Erie Coastal Conservation Vision Project recognizes the ecological and socioeconomic value of wetland habitats and uses this data layer to ensure that existing wetlands and areas with potential for wetland restoration are included in the analysis.

Related Human Well-being layers: Recreational Fishing, Commercial fishing, eBird, Parks & Recreation, Drinking Water

Coastal wetlands data layer

The Lake Erie Biodiversity Conservation Strategy (LEBCS) established a 2030 goal of increasing coastal wetland area, as measured in 2011, by 10%[5]. The Western Lake Erie Coastal Conservation Vision Project analysis uses this data layer of current and potential coastal wetlands to determine optimal areas for restoration and creation of wetland habitat. This will aid in determining where to increase wetland habitat to achieve the LEBCS goal. The data layer shows present wetlands and potential locations for future wetland habitat along the Western Lake Erie coast from the Detroit River in Michigan to Sandusky, Ohio. The potentially restorable coastal wetlands data layer was created by combining data from four primary sources representing data on existing, former, or potential wetland areas.

Data sources and potential limitations

Data representing areas with varying potential for wetland restoration and creation were obtained from Justin Saarinen at the University of Michigan, Dearborn, and developed as part of Great Lakes Western Lake Erie Basin Restorable Wetlands Assessment[6]. This dataset was developed using a combination of hydroperiod, connectivity, and land use to create an index of wetland restorability. The Restorable Wetlands Assessment data did not exist for the Detroit River or anywhere in Ontario. To create approximately comparable data we compiled additional data for the Detroit River and Ontario and restricted the data to elevations less than 176 meters because elevations above that have very low inundation frequencies. Existing wetlands were compiled from The Great Lakes Coastal Consortium Wetland Inventory (GLCCWI)[7] and select land cover classes (wetland classes, agriculture, and fallow field) from the Michigan Tech Research Institute (MTRI) coastal land cover dataset[8]. In addition, data on historic wetlands of the Detroit River[9] were used as areas for potential wetland restoration after removing present day developed land.

The GLCCWI data can be downloaded as polygons or as centroid point coverage files. Our analysis used the "complete polygon coverage" file[7], as augmented by the Michigan Natural Features Inventory during the creation of the LEBCS. Products developed with this data should acknowledge the following groups: U.S. Geological Survey Water Resources Discipline, Environment Canada Canadian Wildlife Service-Ontario Region, Michigan Natural Features Inventory, and Ontario Ministry of Natural Resources.

References and links

1. Pearsall, D., et al. 2012. *Returning to a Healthy Lake: Lake Erie Biodiversity Conservation Strategy*. Technical Report. A joint publication of The Nature Conservancy, Nature Conservancy of Canada, and Michigan Natural Features Inventory. 340 pp. with Appendices. http://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/michigan/Pages/lakeerie.aspx
2. http://www.lakeerieimprovement.org/wp-content/uploads/2012/02/leia-strategic-plan-final-12-17-2012.pdf
3. http://ohioseagrant.osu.edu/research/economic/?ID=R/ME-033#benefits
4. http://www.lakeerieimprovement.org/wp-content/uploads/2012/02/leia-strategic-plan-final-12-17-2012.pdf
5. Pearsall, D., et al. 2012. *Returning to a Healthy Lake: Lake Erie Biodiversity Conservation Strategy*. Technical Report. A joint publication of The Nature Conservancy, Nature Conservancy of Canada, and Michigan Natural Features Inventory. 340 pp. with Appendices. http://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/michigan/Pages/lakeerie.aspx
6. Great Lakes Western Lake Erie Basin Restorable Wetlands Assessment (2013) developed by Justin Saarinen at the University of Michigan, Dearborn. (http://geodjango.mtri.org/coastal-wetlands/)
7. Great Lakes Coastal Wetland Inventory dataset (2004) developed by the Great Lakes Coastal Consortium. (http://glc.org/projects/habitat/coastal-wetlands/)
8. Michigan Tech Research Institute (MTRI) land cover data received October, 2014 (http://geodjango.mtri.org/coastal-wetlands/). Citation: Bourgeau-Chavez, L.L., Endres, S.L., , Battaglia, M.J., Miller, M.E,Banda, E.C., Laubach, Z.M., Higman, P., Chow-Fraser, P. and Marcaccio, J. 2015. Development of a bi-national Great Lakes coastal wetland and land use map for resource management using multi-date radar and optical satellite imagery.

9. Historic wetlands of the Detroit River were digitized from a copy of a historic French map of the Detroit River produced by General George Henry Victor Collot in 1798.

Contact

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