



## WHAT IS THE STATE OF GREAT LAKES COASTAL WETLANDS?

Great Lakes coastal wetlands are in peril as indicated by the decrease of coastal wetland area, declining wetland-dependent bird and amphibian populations, and deteriorating plant community health.

### *The Issues*

- An estimated 50 percent of Great Lakes wetlands have been lost basinwide, with losses of up to 90 percent occurring in some areas. Currently, 216,743 hectares of coastal wetlands have been identified along the Great Lakes and connecting rivers up to Cornwall, Ontario. However, the inventory is incomplete and underestimates the total wetland area remaining, especially for the upper Great Lakes.
- Great Lakes coastal wetlands are degrading because of impacts from water level stabilization, sedimentation, contaminant and nutrient inputs, climate change, non-native species invasions, and intensive industrial, agricultural and residential development.

### *The Indicators*

Thirteen indicators have been recommended to assess the status of Great Lakes coastal wetlands. These indicators evaluate coastal wetland plant and animal (invertebrate, fish, amphibian, bird, snapping turtle) community health, the effects of water level fluctuations on wetland habitats, and the quantity and quality of remaining coastal wetland area.

### *The Assessment*

Despite significant historical loss of coastal wetland habitat in some regions of the Great Lakes, the Great Lakes and connecting rivers still support diverse wetlands. Barrier protected coastal wetlands (wetlands that are physically separated from the Great Lakes by barrier beaches or a series of beach ridges) account for over 60,000 hectares of identified coastal wetland area in Lakes Superior, Huron and Michigan. One-third of Lake Erie's 22,057 ha of coastal wetlands are protected embayment wetlands (wetlands protected from

wave action by a partial barrier beach or dike across the wetland mouth). In Lake Ontario, barrier protected and drowned river mouth coastal wetlands (wetlands formed where streams slow as they enter the lake and deposit fine sediments) account for 19,172 hectares, approximately three-quarters of the total coastal wetland area. The St. Clair River delta is the largest single wetland feature in the Great Lakes, occupying over 13,000 hectares. The upper St. Lawrence River, near Lake Ontario, supports a large area of wetland habitats, typically numerous small embayment and drowned river mouth wetlands associated with the Thousand Islands region.

Coastal wetland plant community health varies across the Great Lakes region. Long-term water level fluctuation, vital to maintaining wetland plant diversity, naturally stresses coastal wetlands. In some wetlands, plant communities are deteriorating due to extremely low water levels. One consequence of reduced water level fluctuation due to water level stabilization in Lake Ontario is that coastal wetlands are comprised of fewer plant species. Recent low water levels on the other Great Lakes have facilitated the germination and expansion of diverse plant communities in many coastal wetlands, especially in Lake St. Clair and southern Lake Huron. Low water levels and shoreline alterations facilitate non-native plant species invasions that further degrade coastal wetland plant communities.



Southern Michigan coastal wetland. Photo: Dennis Albert.

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Fish community composition is often related to plant community type and quality. Coastal wetlands in northern Lake Michigan, northern Lake Huron, and Lake Superior have relatively diverse fish communities. Lakes Erie and Ontario have more wetlands containing cattails, which are indicative of nutrient enrichment, and fish communities in these wetlands tend to be less diverse than fish communities in other plant community types. Wetlands may be a refuge for native fishes from the influence of certain invasive fish species, such as the round goby and ruffe.

From 1995 - 2002, 53 bird species that feed and/or nest in marshes were recorded by volunteers throughout the Great Lakes region. Population index declines were observed for the least bittern, black tern, marsh wren, undifferentiated American coot/common moorhen, pied-billed grebe, red-winged blackbird, and Virginia rail. Population index increases were observed for the willow flycatcher, common yellowthroat, and mallard. In the coastal wetlands of Lakes Erie, Michigan, and Huron, population index trends of the American coot, least bittern, marsh wren, pied-billed grebe, sora, swamp sparrow, and Virginia rail tracked fluctuations in Great Lakes water levels.

Snapping turtles are predators at the top of the coastal wetland aquatic food web, and through their diet they accumulate persistent toxic contaminants that have become concentrated in their prey. Although contaminant concentrations are declining in snapping turtle eggs, levels of many contaminants in fish still exceed the 1998 Canadian Council of Ministers of the Environment and 2001 Ontario Ministry of the Environment sport fish consumption guidelines. This indicates that contamination is present throughout the coastal wetland aquatic food web.

Basin-wide surveys have detected declines in the occurrence of American toad, chorus frog, green frog, and northern leopard frog throughout wetlands in the Great Lakes region.

### *Current Actions*

The Great Lakes Coastal Wetlands Consortium was formed in 2000 to develop coastal wetland indicators and establish a long-term coastal wetland monitoring program. This Consortium, funded through a cooperative agreement between the Great Lakes Commission and the U.S. EPA Great Lakes National Program Office, in partnership with a binational group of agencies and organizations, serves as decision support for programs and policies affecting the conservation and management of Great Lakes coastal wetlands.

### *Actions Needed*

Loss of wetland habitats and adjacent upland areas must be prevented. There is also a need to address impacts that degrade wetland health such as water level stabilization, contaminant and nutrient inputs, sedimentation, and invasion of wetlands by non-native plants and animals. Future water withdrawals and diversions from the Great Lakes are potential pressures on wetlands. Climate change also has the potential to alter water levels in wetlands.

### *To Learn More*

For further information related to Great Lakes coastal wetlands, refer to the *State of the Great Lakes 2005* report which, along with other Great Lakes references, can be accessed at [www.epa.gov/glnpo/solec](http://www.epa.gov/glnpo/solec). For more information about the Great Lakes Coastal Wetlands Consortium, visit [www.glc.org/wetlands](http://www.glc.org/wetlands).



Duck Bay, Lake Huron. Photo: Ted Cline.

