



WHAT ARE THE CURRENT PRESSURES IMPACTING LAKE ERIE?

Land use practices, the introduction of non-native invasive species and nutrient inputs are the greatest threats to the Lake Erie ecosystem. Natural resource use and chemical and biological contaminants also continue to impact the Lake Erie basin.

Pressures and Actions Needed

Land Use

Urban development and sprawl, intensive agriculture and construction of shore structures continue to harm water quality and quantity, and fish and wildlife habitats in Lake Erie and its tributaries. Unless significant changes are made, this trend is expected to continue as land use pressures in the Lake Erie basin intensify.

In some areas of the Lake Erie watershed, more than 90 percent of the land has been converted to agriculture, urban and industrial use. The rehabilitation of remaining natural habitats and the physical processes that support them is required in order to restore Lake Erie's aquatic ecosystems. Rural, urban and industrial land use best management practices must be adopted for either gains or no net loss in the amount and quality of natural habitats and/or water quality improvements. Protected area networks and other planning tools will protect existing habitats and the processes that maintain them, including habitat corridors that connect lake, wetlands and upland habitats.

Non-native Invasive Species

Non-native aquatic and terrestrial invasive species have irreversibly altered the Lake Erie ecosystem. The invasion of zebra mussels in the late 1980s triggered a tremendous ecological change in Lake Erie. The mussels altered food web dynamics, habitats and the cycles of nutrients and contaminants in the ecosystem. Additional invasive species such as the quagga mussel, round goby and several large zooplankton species have further altered the Lake Erie ecosystem and may render the ecosystem more susceptible to future invasions.



The combined effects of nutrient control and zebra mussel filtering have increased water transparency and reduced habitat for walleye, which avoid high light conditions. Increased water transparency and lower Lake Erie water levels have also resulted in an increase of submerged aquatic plants.

New non-native invasive species must be prevented from colonizing the Lake Erie ecosystem. The spread of already established non-native invasive species must be controlled and reduced where feasible.



Lake Erie beach covered by zebra mussel shells.
Photo Credit: U.S. Environmental Protection Agency,
Great Lakes National Program Office.

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Nutrient Inputs

Phosphorus controls have resulted in tremendous improvements in Lake Erie water quality over the past two decades. Continued nutrient inputs from both point and non-point sources, however, still reduce the use of beaches, cause changes in aquatic community structure and increase algal blooms in Lake Erie, especially in nearshore areas and tributaries.

All nutrient inputs from both point and non-point sources must be managed to ensure concentrations are within bounds of sustainable watershed management. In addition to phosphorus, nitrate inputs must be included in assessments of watershed and basin nutrient impacts. Best management practices and point source controls need to be implemented. To maintain and/or assist with the recovery of healthy aquatic communities in the watershed, the hydrologic cycle and water usage all need to be considered.

Natural Resource Use

Commercial and sport fishing, hunting, trapping, logging and water withdrawal, have negative impacts on target species and habitats of the Lake Erie ecosystem. Natural resource use must be sustainable and managed to ensure that healthy ecological communities are maintained and/or improved while also providing benefits to consumers.

Chemical and Biological Contaminants

Toxic contaminants are introduced into the Lake Erie ecosystem via combined inputs from point and non-point sources within the basin, the Detroit River system and long-range atmospheric transport from regional and global sources. Toxic chemicals degrade watersheds. They impact water quality, potentially affecting drinking water, fish, wildlife and humans. In addition, biological contaminants such as Type-E botulism bacterium may have caused a number of deaths of fish, fish-eating birds and mudpuppies

(an aquatic salamander) in the eastern basin of Lake Erie.

The concentrations of chemical contaminants within the basin are managed according to the principle of virtual elimination. Effective management of point and non-point sources and pollution prevention practices have improved watershed and basin ecosystem quality. Managing legacy contaminants in sediments and landfills and broad-based actions, such as those which address global atmospheric pollutant transport, are also required to fully reach the objective of virtual elimination of contaminants.

To Learn More

For further related to the state of Lake Erie, please refer to the *State of the Great Lakes 2005* report and other Great Lakes references which can be found at www.binational.net. The Lake Erie Lakewide Management Plan 2004 can be found at <http://cfpub.binational.net/erie/intro-e.cfm>.



Layers of Cladophora algae along a Lake Erie rocky shoreline.
Photo Credit: Upper Thames River Conservation Authority.

