

Western Lake Erie Report Card

Talking Points

*Prepared by the University of Maryland Center For Environmental Science
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The Western Lake Erie Report Card provides a transparent, timely, and geographically detailed assessment of health of the Western Lake Erie basin and watershed. This is the first report card on the ecological health of Western Lake Erie. It is a product of the University of Maryland Center for Environmental Science funded by the City of Toledo, Ohio; Lucas County, Ohio; and the City of Oregon, Ohio through the Lake Erie Foundation.

In 2018, the Western Lake Erie watershed scored 49%, a C, a moderate score. Category scores ranged from poor (water quality, 35%) to good (toxics, 61%). Biology indicators had a moderate score (51%). Most regions in the watershed scored poor or moderate. The highest-scoring region was Tiffin, with 51%, a C. The lowest-scoring region was Essex with 28%, a D. Overall, excess nutrients are a big issue for the Western Lake Erie watershed.

In 2018, the Western Lake Erie basin scored 58%, a C+, which is a moderate score. Category scores ranged from poor (water quality, 28%) to good (algal blooms, 78%). The fish category had a good score (67%). In the lake overall, the highest-scoring region was the Northwest, (B-), and the lowest-scoring region was the Southwest (C+). Most regions were in moderate condition in 2018.

Overall, the 2018 algal bloom was smaller than in most recent years (3rd smallest since 2008), but still higher than 2012 (the target size). However, the algal blooms score of good represents a large geographic area. Even during small overall spatial blooms, intense bloom conditions and surface scums can be experienced in some locations because of wind and wave patterns. Even when toxin concentrations are low on average, under certain conditions cyanobacteria and their toxins may become highly concentrated at the surface and should be avoided.

Important values and indicators of ecosystem health were identified for both the watershed and the western lake basin. Three categories of indicators were assessed for the watershed: water quality, biology, and toxics; and for Western Lake Erie: water quality, fish, and algal blooms. Within these categories, each indicator was evaluated by comparing data to scientific thresholds or goals.

General Lake Erie talking points

About one-third of the total population of the Great Lakes Basin lives within the Lake Erie Watershed. The lake provides drinking water for approximately 11 million residents, and has

one of the largest freshwater commercial and recreational fisheries in the world. The western basin of Lake Erie is the shallowest part of Lake Erie with an average depth of 24 feet. The Western Lake Erie watershed includes areas of Michigan, Ohio, Indiana, and Ontario.

Since the 20th century, Lake Erie has suffered from chronic water quality issues stemming from large-scale industry, population growth, and intensive increased agricultural land use. Harmful algal blooms form in Western Lake Erie and generally occur from late July to mid-October; usually reaching their peak in August through September. Blooms are common because of warm water and nutrient loading (nitrogen and phosphorus) from the watershed. These blooms can produce toxins that are dangerous to humans and wildlife.

General about report cards

Report cards are powerful tools used around the world to describe ecosystem status, increase public awareness, and inform decision makers. This is the first Western Lake Erie Report Card, and it reflects the collective effort of dozens of stakeholders in the Western Lake Erie watershed. This report card directly connects the health of the watershed to the health of the lake. Through the report card, an information-dense, complex ecosystem health status can be communicated simply and effectively to decision makers and the public.

With repetition, report cards can show trends over time. The comparison across years allows managers and researchers to tease apart the annual variability that impacts ecosystems (rainfall, temperature, wind direction and speed, etc.) and underlying cumulative impact of human activities on watershed and lake condition. The indicators scored in this report card are not exhaustive, additional indicators will be added, and different thresholds ranges will be considered. Indicators that are chosen are critical to making assessments of condition.

Algal blooms

Harmful algal blooms are present in Western Lake Erie every year. Factors that affect the location and severity of these blooms include rainfall, water temperature, wind, and nutrient inputs. Warm, wet years produce larger blooms as precipitation washes nutrients into the lake. Early warming can cause blooms earlier in the year which may result in smaller blooms that last longer. Windy conditions can mix lake waters and move algae around, reducing the overall severity of blooms by diffusing the effects. 2018 was an unusual year, with an early bloom onset and strong westerly winds that resulted in the bloom being pushed offshore into the eastern islands region. From year to year there is a lot of variability in conditions, which lead to more or less severe blooms. Future blooms can be diminished if there are lower nutrient inputs

from commercial fertilizers and manure, wastewater treatment plants, urban and suburban runoff, and failing septic tanks. Not all of these inputs contribute the same amount of nutrients across the watershed and continued research is needed to inform the management of these inputs.

Sandusky Bay

Sandusky Bay is shallow and isolated from the open waters of Lake Erie. Excessive nutrient and sediment loading, low flushing rates, and resulting algal blooms have reduced water quality in Sandusky Bay. There is an almost year-round (March–December) bloom of the cyanobacteria, *Planktothrix*, in Sandusky Bay. Unlike the open waters of Western Lake Erie, nitrogen levels in the bay tend to be low, especially in the late summer. When algal blooms caused by excess nutrients die off, they are eaten by bacteria, which create oxygen-free (anoxic) conditions in sediment. This results in almost constant internal phosphorus loading when phosphorus is released from anoxic sediments.

Future actions

Western Lake Erie has a large, complex watershed, and solving its problems will take hard work and investment by all levels of government and non-government groups. Achieving a clean, healthy Lake Erie takes individual action too. Environmental regulations, management, and restoration have shown some signs of success, particularly in the resurgence of important fish species, but more progress in nutrient reductions is needed.

Western Lake Erie Report Card can track progress over time. Future report cards will be led by the University of Toledo, subject to funding.

All information about the Western Lake Erie report card is at www.LakeErieReportCard.org.