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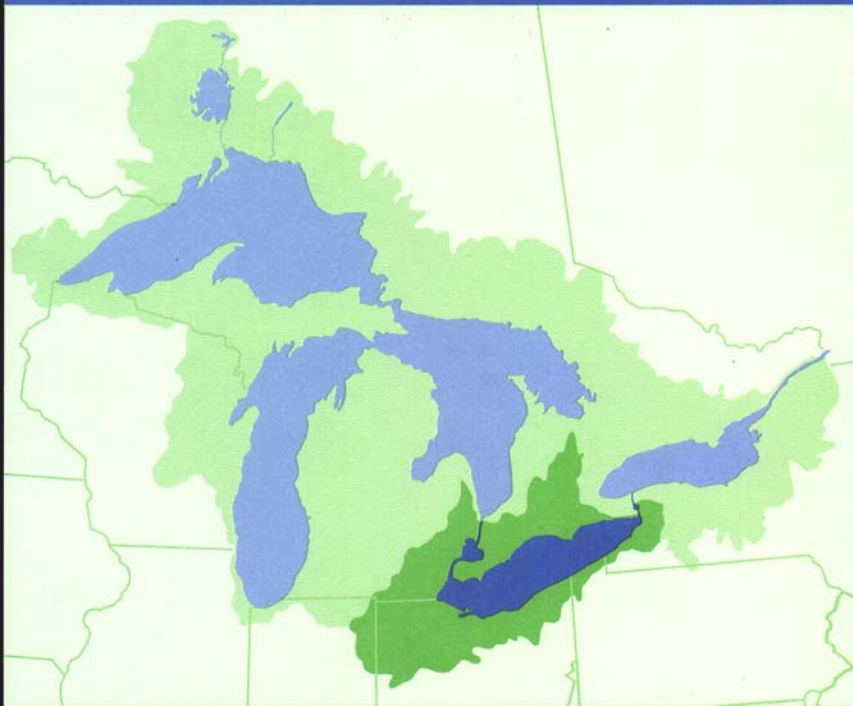
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Lake Erie Basin
Michigan State University Cooperative Extension Service
Michigan SeaGrant
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Lake Erie Basin



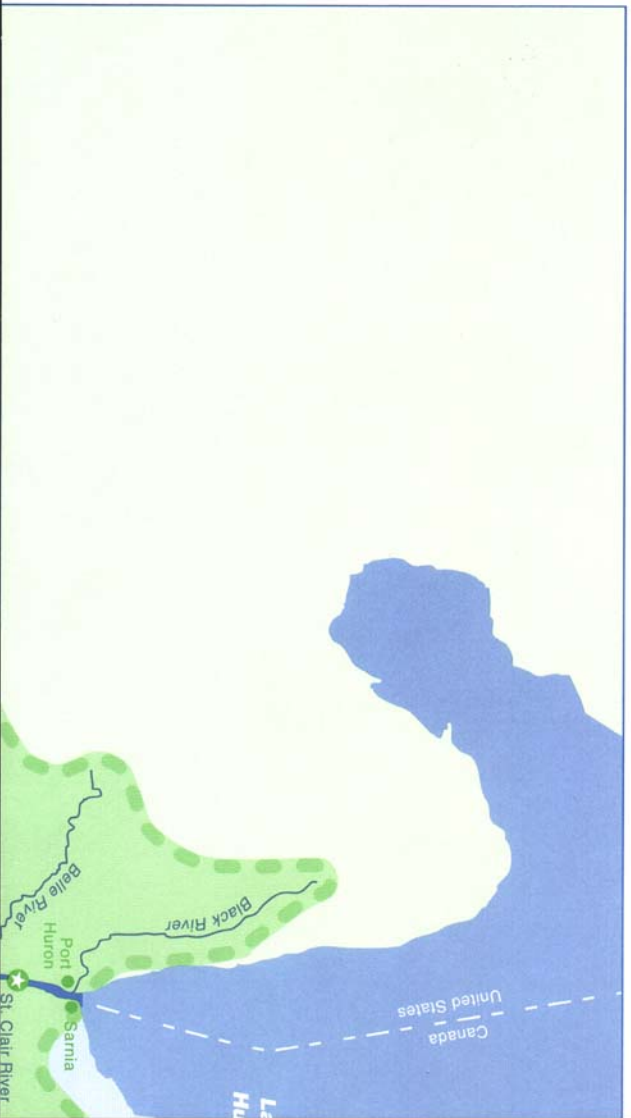
Lake Erie Basin Statistics

| | | | |
|---------------------|--|----------------------------|---------------------------------------|
| Length | 241 mi/388 km | Shoreline Length | 871 mi/1402 km (including islands) |
| Breadth | 57 mi/92 km | Elevation | 569.2 ft/173.5 km |
| Depth | 62 ft/19 m average 210 ft/64 m maximum | Outlets | Niagara River and Welland Canal |
| Volume | 116 mi ³ /483 km ³ | Retention/Replacement Time | 2.7 years |
| Water Surface Area | 9,910 mi ² /25,655 km ² | Population | 12,532,977 |
| Drainage Basin Area | 22,700 mi ² /58,788 km ² | United States | 10,640,671 |
| | | Canada | 1,892,306 |

e Basin



Lake E



Lake Erie is the 11th largest lake in the world (by surface area). It is the fourth largest of the Great Lakes in surface area and the smallest by volume. Four states — Michigan, Ohio, Pennsylvania and New York — and the Canadian province of Ontario border the lake. Lake Erie is the shallowest of the Great Lakes and the only one whose bottom is completely above sea level. Ninety-five percent of Lake Erie's inflow comes from the upper lakes — Superior, Michigan and Huron — Lake St. Clair and through the connecting channels of the St. Clair River, Detroit River and numerous tributaries. The rest comes from precipitation. Lake Erie was the last of the Great Lakes to be discovered by European explorers, but its basin has grown to become the most densely populated of all and has several large metropolitan areas — Detroit, Toledo, Cleveland and Buffalo.

Point Pelee National Park, which juts out into the lake, is the southernmost point on Canada's mainland.

Shoreline Use

United States

32.6%
11.3%
3.9%
52.2%*

Residential
Commercial/Industrial
Agricultural
Other

Canada

21.4%
.7%
1.3%
76.6%**

* U.S. "other" classification includes public, beaches, forests, barren lands.

** Canadian "other" classification includes transportation and communications, recreation, extraction, water, wetlands, forestry, grassland, barren and unknown.

Economy

The Lake Erie basin supports a varied economy with strong industrial, agricultural and recreational sectors.

Industry: The Lake Erie basin supports a very important automobile manufacturing center. In 1996, 30 percent of all automobiles produced in the United States and Canada were produced in the Lake Erie basin. One of the largest sandstone quarries in the world is in South Amherst, Ohio. Large salt mines are located on the south shore of Lake Erie. Large reserves of natural gas are located under the lake. Glass manufacturing is another significant industry.

Fisheries: Lake Erie's commercial fishery is as productive as the fisheries of the other four Great Lakes combined, with a catch of more than 33 million pounds in 1996. The Lake Erie walleye fishery is widely seen as the best in the world, with more than 12 million pounds caught in 1996. Other major species harvested are smelt and yellow perch. Lake Erie is also the most popular of the lakes with recreational anglers, who also fish for walleye and perch.

Agriculture: The Lake Erie basin has the largest percentage of land in agriculture in the Great Lakes. Agriculture dominates the economy of the western and northern shores of the lake. Lake Erie waters help to moderate coastal temperatures, making the growing season there last up to three weeks longer than farther inland, benefiting fruit farms, orchards, nurseries and vineyards along the shoreline.

Shipping: Ten major commercial ports on Erie's shores serve as major distribution centers for iron ore, coal, manufactured goods and grain. More than 100 million tons were shipped out of Lake Erie ports in 1996.

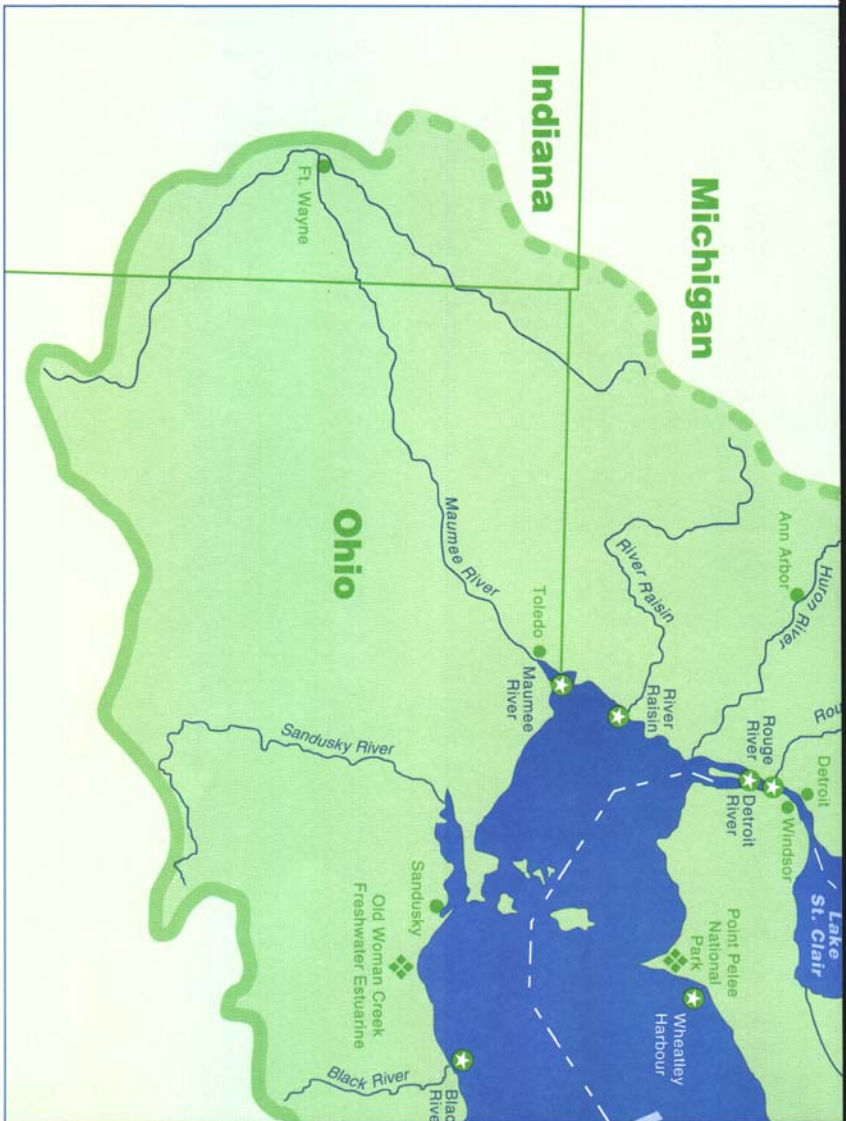
Tourism/Recreation: More people visit parks in the Lake Erie basin than visit those around any of the other Great Lakes. In 1997, more than 30 million people visited state, provincial and national parks in the United States and Canada.

Ecology

Lake Erie is the most nutrient-rich and the warmest of the Great Lakes and is, therefore, the most biologically productive. Its coastal wetlands thrive in this climate and contain the greatest diversity of plant and animal species in the Great Lakes. The lake and its marshes are home to more than 100 species of fish — walleye, perch and bass are among the most popular. More than 300 species of birds have been documented in the wetlands within the Lake Erie basin. Mammals in the region include gray and red foxes, white-tailed deer, woodchuck, raccoon, and various mice, voles and shrews. The lake basin lies within the deciduous forest region of eastern North America. Little of the original forest remains today, but major plant communities include the beech-sugar maple forest and the mixed conifer-hardwoods forest.

Natural Resource and Environmental Issues

Water Quality: In the 1970s, Lake Erie showed severe effects of pollution. Years of chemical dumping and the release of millions of gallons of untreated sewage and non-point runoff had polluted the waters and triggered severe effects on the lake's ecology and economy. One of the pollutants was phosphorus, found in sewage, fertilizers and



Michigan

Indiana

Ohio

Lake St. Clair

Ft. Wayne

Ann Arbor

Toledo

Detroit

Windsor

Point Pelee National Park

Wheatley Harbour

Huron River

Rouge River

Detroit River

Maumee River

Raisin River

Maumee River

Sandusky River

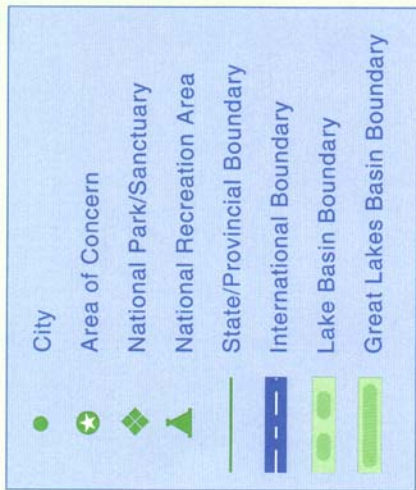
Sandusky

Old Woman Creek Freshwater Estuarine

Black River

New York

Pennsylvania



Presque Isle Bay

Erie

Ashtabula River

Ashtabula River

Grand River

Ohio River

Akron

Canada

United States

some detergents. The large amounts of phosphorus released into the lake caused an increase in algae growth. When this excess algae died, its decomposition depleted oxygen at the bottom of the lake. Without oxygen, only the most tolerant life forms could survive there. In recent years, after implementation of Canadian and U.S. environmental legislation, Lake Erie has improved significantly. The U.S. and Canadian governments have designated nine locations on connecting channels and the Lake Erie shoreline as areas of concern where beneficial uses have been impaired and environmental standards are not being met.

Fisheries: Lake Erie's fishery tops the Great Lakes in commercial production, and its walleye fishery is widely seen as the best in the world. Despite the evident success of this resource, some of Lake Erie's fisheries are threatened. Thirty-four species of Lake Erie fish are rare, endangered, threatened, extinct or of special concern. Species such as the sturgeon and the brook trout, which were once abundant, are declining. Causes of this decline include toxic contamination, overharvesting and invasion by aquatic nuisance species. Other species, such as the lake's famous walleye, are intensively managed to keep them productive. Still other species, such as yellow perch and lake whitefish, are now stable or increasing. These are examples of the success of cooperative fish management between the four Lake Erie states and the Canadian province of Ontario.

Exotic Species: Lake Erie has had to contend with several aquatic nuisance species, the most notable being the zebra mussel. This mollusk is causing widespread ecological and economic problems in many Great Lakes basin locations. Large colonies of zebra mussels cluster inside water pipes, disrupting normal inflow necessary for industrial, agricultural and residential use. In addition, zebra mussels are creating problems for native mussels by encrusting their shells, which impairs their ability to function and kills them.

Another significant aquatic nuisance species is purple loosestrife. This plant takes over wetlands, reducing habitat for native animals and plants that depend on wetlands for their survival. Another Lake Erie aquatic nuisance species is the round goby, introduced to the lake basin in 1993 and well established in the central basin by 1994. Gobies are suspected of competing for food with native fish species such as darters and sculpins, driving native species from their preferred habitat and preying on the eggs of lake trout, whose reproductive capacities are already limited.



The Michigan Sea Grant College Program is a joint effort of the University of Michigan and Michigan State University, funded by the National Oceanic and Atmospheric Administration, to conduct research, outreach and education on Great Lakes issues. MICHU-SG-00-404