



# THE GREAT LAKES

## An Introduction

GREAT LAKES FACT SHEET



1



If you check the shelves of your local library or bookstore, you will likely find Dr. Seuss's *The Lorax*. In it, what you will *not* find is this reference to Lake Erie:

**"You're glumping the pond where the Humming-Fish hummed!  
No more can they hum, for their gills are all gummed.  
So I'm sending them off. Oh, their future is dreary.  
They'll walk on their fins and get woefully weary  
in search of some water that isn't so smeary.  
I hear things are just as bad up in Lake Erie."**

Included in the original 1971 version of the well-known children's book about environmental stewardship, the line about Lake Erie has been omitted since the 1992 edition. Surprised? The story of why reflects the story of the Great Lakes. And now, perhaps, it is time to put that line back in.



## WHAT MAKES THE GREAT LAKES GREAT?

The Great Lakes form the largest group of freshwater lakes on Earth, making up about one-fifth of the world's surface fresh water. Because of the wealth of resources and opportunities the lakes offer, the region around them has grown into one of the most economically powerful and culturally diverse in the world.



Over 40 million people rely on the Great Lakes for everything from water to power generation for their homes and businesses. A wide range of economic activities, including agriculture, commercial and sport fisheries, manufacturing, shipping and tourism, are dependent on the lakes and on resources from them. And the residents of the Great Lakes Basin also draw other, less tangible benefits from the lakes, such as recreational opportunities and access to the natural world, often in close proximity to urban centres.

## THE ENVIRONMENT OF THE GREAT LAKES

Just as the riches of the Great Lakes environment have shaped the development of the communities within it, that development has in return shaped the environment of the lakes, and often not for the good. As far back as the late 1800s, economic pursuits, such as fur trapping and widespread logging and farming, contributed to the depletion of wildlife populations and severe soil erosion in the Great Lakes Basin. Once-shaded bodies of water increased in temperature as vast areas of forest were cut down. Erosion from open land and dust from sawmills settled in warmer streams, choking off spawning grounds for a variety of fish and eventually all but destroying local fisheries.

The opening of the Erie Canal in 1825 and the Welland Canal in 1829 created a navigable waterway between Lake Ontario and Lake Erie and from Lake Erie to the Hudson River. Thousands of immigrants arrived from Europe, and farms, commercial enterprises and factories expanded in the area. Runoff and dumping from these activities polluted the water and depleted the vast populations of fish, animals and birds. Recognizing that something needed to be done, the governments of Canada and the United States signed the Boundary Waters Treaty in 1909.

The intensification of human settlement put increasing strain on the environment throughout the early 20th century. During the 1940s, industrial expansion led to increases in mining as well as steel, rubber and chemical production around the lakes. New chemicals were invented and used extensively in manufacturing. In 1959, the completion of the St. Lawrence Seaway opened the entire St. Lawrence–Great Lakes waterway, from the Atlantic

to the Lakehead at Thunder Bay on Lake Superior, to large vessels. This newly continuous shipping route resulted in a dramatic increase in trade and prosperity for the Great Lakes region but also made the entire waterway vulnerable to the introduction of invasive non-native species found in ships' ballast water.

A series of events from the 1940s through the 1960s brought greater attention to the dire environmental situation in the Great Lakes Basin. The Cuyahoga River in Ohio repeatedly caught fire due to its oily surface, and industrial wastes in Michigan's Rouge River turned the water orange. Earning it mention in *The Lorax*, Lake Erie was said to be "dying" as a result of too much phosphorus from detergents and untreated sewage, causing the proliferation of algae, foamy water and dead fish (the decomposition of algae uses up oxygen in the water, essentially "choking" the lake). In the year following the publication of *The Lorax*, limits on phosphorus in detergents were set under the binational Great Lakes Water Quality Agreement (GLWQA) when it was first introduced in 1972.

During the 1960s and '70s, toxic chemicals were found in Great Lakes fish and wildlife in greater concentrations than ever before, sparking concern about the implications for the ecosystem and human health. In response, a number of substances, including mercury, PCBs (polychlorinated biphenyls) and DDT (dichlorodiphenyltrichloroethane), were either banned or controlled, and fish and bird populations began to rebound.

Thanks to these efforts, the overall environmental state of the lakes improved. And so, in 1987, two Ohio State University graduate students wrote to Dr. Seuss to tell him about the progress in Lake Erie, convincing him to remove mention of it from the next edition of *The Lorax*.



While many of the most visible problems of the past have been addressed, there are still major issues facing the lakes today. These include toxic substances, returning algal blooms, the introduction and proliferation of invasive species, habitat destruction and a resulting loss of biodiversity, climate change, increasing water and energy demands, and sprawl in urban centres.

If Dr. Seuss were alive today, he might well be convinced to add that line about Lake Erie back into *The Lorax*. You can find out why by reading Pollution Probe's Great Lakes Fact Sheets.

## POLLUTION PROBE'S GREAT LAKES FACT SHEETS

The Great Lakes constitute a unique resource that faces challenges as communities continue to develop around them. Protecting the Great Lakes environment is vital to the economic, social and ecological wealth not just of the region, but of the continent as a whole. For residents of the Great Lakes Basin, and those beyond, understanding the issues facing these vital resources is becoming more and more urgent. Pollution Probe's series of Great Lakes Fact Sheets is intended to advance that understanding and create a context for public discussion and action, at both the institutional and individual level. The Fact Sheets look at some of the key challenges affecting the future of the Great Lakes and align with important issues under the Great Lakes Water Quality Agreement (GLWQA) and other initiatives. For a complete list of Pollution Probe's Great Lakes Fact Sheets, please see the accompanying box.

- ① **The Great Lakes: An Introduction**
- ② **Lake Profiles**
- ③ **Economy & Culture: The Society of the Great Lakes**
- ④ **Who's Who: Legislation and Institutions**
- ⑤ **Algae: Phosphorus and Algal Blooms**
- ⑥ **Energy: Wind, Water and Electricity Generation**
- ⑦ **Invasive Species: Ecosystems and Non-native Species**
- ⑧ **Biodiversity: Ecosystem Services, Habitat Loss and Species at Risk**
- ⑨ **Climate Change: Ecosystems, Infrastructure and Adaptive Capacity**
- ⑩ **Harmful Pollutants: Toxic Substances, Legacy Contaminants and Substances of Emerging Concern**
- ⑪ **Urban Sprawl: Land Use and Transportation**
- ⑫ **Wastewater Management: Stormwater Runoff and Sewer Overflows**



## SELECTED RESOURCES

For more information about a broad range of Great Lakes issues, consult the following resources:

Binational.net.

<http://binational.net/ourgreatlakes/ourgreatlakes.pdf>

Environment Canada. <http://www.ec.gc.ca/grandslacs-greatlakes/default.asp?lang=En>

Fisheries and Oceans Canada. <http://www.dfo-mpo.gc.ca/regions/central/science/greatlakes-grandslacs/index-eng.htm>

International Joint Commission. <http://www.ijc.org/>

Ontario Ministry of the Environment. [http://www.ene.gov.on.ca/environment/en/subject/great\\_lakes/index.htm](http://www.ene.gov.on.ca/environment/en/subject/great_lakes/index.htm)

Ontario Ministry of Natural Resources. <http://www.mnr.gov.on.ca/en/Business/GreatLakes/index.html>

United States Environmental Protection Agency. <http://epa.gov/greatlakes/>



**POLLUTION PROBE**  
CLEAN AIR. CLEAN WATER.

150 Ferrand Drive, Suite 208  
Toronto, Ontario Canada M3C 3E5

Tel 416.926.1907

Fax 416.926.1601

[www.pollutionprobe.org](http://www.pollutionprobe.org)

© 2013 Pollution Probe

### PHOTOS

Cover: Map of the Great Lakes, 1795.

What Makes the Great Lakes Great? The lake schooner York navigates the first Welland Canal at Port Dalhousie, c. 1840. Niagara Falls (Ontario) Public Library. Artist: Anton Akkerman. Used with permission.

The Environment of the Great Lakes: Cuyahoga River on Fire. Cleveland Press Collection, Cleveland State University Library. Photographer: James Thomas, 1952. Used with permission.