

Life Cycle of Lakes

The lakes of St. Germain and most of Northern Wisconsin were created by the Laurentide Ice Sheet which retreated approximately 10,000 years ago. The lakes were very cold and likely crystal clear immediately after the ice melted. The landscape was also barren. Eventually the soil and lakes began to warm and terrestrial plant life slowly emerged. With more time and the assistance of rainwater runoff, biological matter was slowly washed into the lakes which began the process of eutrophication, which eventually results in extinction of lakes.



***Eutrophication is an ecological process, akin to aging, in which a water body is increasingly enriched with organic matter. Although the most obvious signs of eutrophication in lakes and rivers involve algal blooms and fish kills, the systemic of eutrophication, although profound, are often not as noticeable to the casual observer. Eutrophication of lakes and rivers is accelerated by nutrient pollution, one of the most**

pervasive water quality problems in the world. Increases in populations and intensification of land use have accelerated eutrophication of water bodies from the Great Lakes of North America, to Lake Tai of China to Lake Victoria in Africa. Because nutrients can come from many sources, point as well as nonpoint, comprehensive strategies are required to curb eutrophication. A variety of watershed programs have yielded success, but they are outnumbered by the ever-expanding number of lakes and rivers that are undergoing eutrophication.

- **Eutrophication of lakes and rivers is caused primarily by inputs of phosphorus and nitrogen.**
- **Accelerated eutrophication can render a water body unusable for many uses, from fishing to swimming to drinking water.**
- **Point source pollution comes predominately from industrial sources and wastewater treatment plants.**
- **Nonpoint source pollution, or diffuse pollution, derives from urban and rural land uses, ranging from lawns and golf courses to agricultural fields.**

*(Duncan, Emily, Kleinman, Peter JA, and Sharpley, Andrew N(Feb 2012) Eutrophication of Lakes and Rivers. In: eLS. John Wiley & Sons Ltd, Chichester. <http://www.els.net> [doi: 0.1002/9780470015902.a0003249.pub2])

During the first approximately 9,900 of the past 10,000 years, the lakes of northern Wisconsin have succumbed to eutrophication gracefully and naturally. Only during the past 100 years (or so) have human activities around lakes begun to speed the aging process. Many lakes and rivers were heavily used and abused during the logging era of the late 1800's and early 1900's. Shoreline development followed the logging era as people began to appreciate the solitude of lakeside living and the pleasures of on-water recreation. In the decades since, human activity in the lake rich areas of northern Wisconsin has prompted heavily developed shorelines resulting in excess rainwater runoff into lakes, depletion of the critical near shoreline buffer zone (land side and water side) critical to nearly all aquatic and terrestrial fauna who live in and around lakes.

Some other human factors contributing to the advanced aging of lakes:

- Manipulation of water levels for human interests
- Mismanagement of wastewaters
- Failure to understand the function and importance of the watersheds and their relationship to lakes
- Rapid expansion of bigger, faster and more environmentally unfriendly recreational watercraft
- Introduction of non-native ecologically harmful life forms (invasive species) into lakes