



*The Georgian Bay Association (GBA) is an umbrella organization for 18 community associations along the east and north shores of Georgian Bay, representing around 3,000 families. We have been advocating on behalf of our land-owning members for over 100 years and estimate that we reach and influence around 18,000 residents of the Georgian Bay. Our mandate is to work with our water-based communities and other stakeholders to ensure the careful stewardship of the greater Georgian Bay environment.*

*For over 22 years our aquaculture committee has been advocating for open net pen aquaculture operations in Georgian Bay and the North Channel of Lake Huron to comply with international guidelines and standards to ensure sustainability. The purpose of this memo is to set out why we are extremely concerned that the fish farm operation in Lake Wolsey, and embayment of the North Channel, has been restarted after the license was cancelled by the Ministry of Natural Resources & Forestry (MNRF).*

### **History, Status and Future of Lake Wolsey 2021**

The open-cage fish farm in Lake Wolsey, Manitoulin Island, was permitted to operate continually under increasingly unsuitable conditions since the 1980s until it was officially closed in 2020. The farm was poorly sited and should never have been granted a licence.

***Under current aquaculture licence guidelines and restrictions, the Lake Wolsey site would not be approved today, because of the lack of flushing capacity in hypolimnetic (lower depth) waters below the cages.***

Adequate flushing is required to remove aquaculture-related fish waste, which is a major contributor of phosphorus, a limiting nutrient for algal growth leading to biological/biochemical oxygen demand (BOD).

From 1999 to 2018 Lake Wolsey has experienced an accelerating series of blue-green algae (cyanobacteria) blooms, including every year from 2015 to 2018. During this period there has been a downward trend in dissolved oxygen (DO) concentrations in the water column related to increased BOD, and wide-spread hypolimnetic anoxia (complete lack of DO) has occurred since the mid-2000s. To date no remediation measures have been taken, and both the acute and long-term cumulative effects of the nutrient loading from fish waste on the local benthic community and other organisms higher in the food web have yet to be determined.

The operation was closed down by Blue Goose in 2019 and the MNRF Aquaculture Licence was cancelled. The Land Use Permit (LUP) was kept open until 2020 by agreement between Blue Goose/Dundee Corporation and MNRF to allow for the last net to be removed and was then also cancelled. Now there is an unlicensed operation at the location, which is currently under investigation by the Enforcement Branch of MNRF. We understand that the Sheshegwaning First Nation are in discussions with the current operator of the unlicensed facility.



The Sheshegwaning are also in partnership with John O Foods at a location adjacent to their reserve lands, which we understand is well located, has had the benefit of a rigorous environmental assessment, and is planned to become a large operation.

In periods of high water levels in Lake Huron, the Lake Wolsey embayment will experience higher flushing rates and the probability of algae outbreaks will be lower. In addition, there will likely be reduced incidences of hypolimnetic anoxia. However, in low water levels eras, the reverse is true. Furthermore, water temperatures are steadily increasing year on year, which will steadily increase the potential for both algae outbreaks and hypolimnetic anoxia.

Higher water temperatures also reduce the productivity of growing Rainbow Trout in Lake Wolsey, as cold-water fishes such as trout and whitefish cease to grow when the water temperature gets too high. Thus, to compensate there will be additional costs associated with moving and/or lowering the cages into cooler water.

At this time, there is a strong probability that we are heading towards a low-water levels era, possibly extreme low water levels. History often repeats itself, and, if a fish farm is allowed to continue at this location, the likelihood is high that the Lake Wolsey water quality will be compromised and future cyanobacteria blooms will occur, especially given the predicted higher temperatures and lower water levels related to climate change. This will put any fish farming operation in the lake at risk for poor production, taste and odour issues, and potentially toxic contamination.

***Accordingly, it would be prudent to shut this operation down without delay and ensure that Lake Wolsey can never be used for commercial fish production in the future.***

For further information, please see:

- For general information on the environmental side effects of open net cage aquaculture: <https://georgianbay.ca/fisheries/cage-aquaculture-issue/>
- For specific information on the Lake Wolsey issues, see items 17-19, under the heading “GBA Submission on Bill C-68” near the foot of this page: <https://georgianbay.ca/fisheries/cage-aquaculture-issue/cage-aquaculture-submissions/>
- For a 2006 case study of the Lake Wolsey algae bloom: K.A. Hille. 2008. Appendix II: Aquaculture in Lake Wolsey, p. 296-315 *in* Does aquaculture impact benthic algal ecology? A study on the effects of an experimental cage aquaculture operation on epilithic biofilms. MSc thesis, Department of Biological Sciences, University of Manitoba. <https://mspace.lib.umanitoba.ca/bitstream/handle/1993/3124/Hille%20Final%20Thesis%202008Dec18.pdf?sequence=1&isAllowed=y>
- For factors related to phosphorus cycling: S. Markovic, A. Liang, S.B. Watson, J. Guo, et al. 2019. Biogeochemical mechanisms controlling phosphorus diagenesis and internal loading in a remediated hard water eutrophic embayment. *Chemical Geology* 514:122–137. <https://doi.org/10.1016/j.chemgeo.2019.03.031>
- For factors affecting cyanobacteria abundance in Georgian Bay: M.J. Verschoor, C.R. Powe, E. McQuay, S.L. Schiff, and L.A. Molot. 2017. Internal iron loading and warm temperatures are preconditions for cyanobacterial dominance in embayments along Georgian Bay, Great Lakes. *Canadian Journal of Fisheries and Aquatic Sciences* 74:1439–1453. <https://cdnsiencepub.com/doi/10.1139/cjfas-2016-0377>



- For information on ecosystem effects of phosphorus from cage aquaculture: M.K. Otu, D.P. Bureau, and C.L. Podemski. 2017. Freshwater cage aquaculture: Ecosystems impacts from dissolved and particulate waste phosphorus. Canadian Science Advisory Secretariat, Research Document 2017/059, Fisheries and Oceans Canada, Ottawa, ON. <https://waves-vagues.dfo-mpo.gc.ca/Library/40643761.pdf>