





growth. Mesotrophic systems have moderate amounts of nutrients and increased phytoplankton growth.

**RESULTS OF RESEARCH & MONITORING**



Researchers conduct a net haul while sampling for phytoplankton and zooplankton

Environment and Climate Change Canada collected water quality and phytoplankton data to examine spatial and seasonal changes in the phytoplankton community in the nearshore and offshore waters of the Detroit River. The data suggested there was no impairment of the phytoplankton community. The University of Windsor led a zooplankton study which found

no evidence of impairment in the zooplankton community. While these studies indicated no impairment within either of the plankton communities, a comprehensive study to evaluate *both* plankton communities and *microbial* communities collectively, was recommended.

In 2019, this comprehensive study was completed by the Department of Fisheries and Oceans. Samples of phytoplankton, zooplankton, and microbial communities were collected in May, July, September, and November, from 8 sites between Peche Island (upstream) and Amherstburg (downstream) from nearshore and offshore areas.

Key findings of this study were:

- Phytoplankton and zooplankton populations were low, but their levels were consistent with expectations of a fast flowing river environment.
- Despite the low phytoplankton populations, primary production (i.e., when plants make their own food and use that food to live and grow) rates were moderately high, indicating that the river supports viable phytoplankton populations.
- Zooplankton populations decreased significantly from upstream at Peche Island to downstream in

Amherstburg and the community was predominantly comprised of small organisms suggesting the larger zooplankton are being readily consumed by fish in this stretch of the river.

- Lake Huron is not an appropriate comparison area for the Detroit River, as the zooplankton community has already undergone substantial changes as it has passed through both the St. Clair River and Lake St. Clair, each of which is likely to decrease plankton populations and change species composition.

**HOW DOES PLANKTON COMPARE TO OTHER AOCs?**

The type of fish food in the river provides insight into the health of the food web. Healthy food webs have a high percentage of plankton and zooplankton populations as a food source for fish. Over 80% of the fish food in the Detroit River is made up of plankton, which is higher than other AOCs with impaired or requires further assessment status for this BU.

AOC	BU Status	Phytoplankton
<b>Detroit River</b>	<b>RFA</b>	<b>83.2%</b>
Bay of Quinte	Impaired	63.5%
Hamilton Harbour	RFA	62.4%
Inner Toronto Harbour	RFA	44.8%
Outer Toronto Harbour	RFA	39.1%

**CONCLUSIONS**

Overall, the planktonic communities in the Detroit River were found to behave as expected in a high flow connecting channel, responding more to seasonality and river conditions than to factors attributable to human activities. Further, given the changes in plankton communities with distance down river, it was also determined that Lake Huron was not an appropriate reference area for the Detroit River.

Based on the research results, there is no evidence of impairment within the phytoplankton and zooplankton communities of the Detroit River AOC. As a result, the DRCC is recommending the status of this BUI be designated as "not impaired". **For more information, please visit [www.detroitriver.ca](http://www.detroitriver.ca).**

The Detroit River Canadian Cleanup implements the Remedial Action Plan on behalf of a community-based partnership working together to protect, restore, and enhance the Detroit River ecosystem.

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