

Tuesday August 23rd, 2022

David White & Fox Lake Association,

I wanted to say thank you for your help with the benthic monitoring on Fox Lake this summer. It was a great group of friendly and genuinely interested people. I am happy to see the Fox Lake Association continually participating in the program each year. I have summarized the results from our sampling event this summer below.

Each year we sample our established sites to determine which benthic macroinvertebrates are found. These benthos indicate the health of the riparian zone (section between shallow water and dry land) and the littoral zone (shallow water nearest to dry land). These two zones are especially important to lake health as they are impacted by snowmelt, runoff, sedimentation, etc. It is important to continually monitor these sites to collect data over time, which will give more insight into the health of these zones. The data that we have collected is important for continual monitoring of the health of our lakes in Muskoka. This data will be uploaded to a provincial database that will be used to assist in comparison of lake health with other similar waterbodies across the province.

Collected benthos are grouped into seven (7) different categories, in which three (3) are mainly focused on: EOT, Chironimids, and Richness. The % EOT includes mayflies, dragonflies, and caddisflies, which are benthic macroinvertebrates who are **intolerant** to pollution. The % Chironimids is focused on the invertebrate named a Midge (or blood worm) which are **tolerant** to pollution and can survive in harsh environments. Richness is the biodiversity of species found within the sample, and with biodiversity, the more the better. The other four (4) categories are more used as reference, in that if one year a number drastically jumps or falls, further investigation might be required.

With these numbers alongside the Muskoka Average*, we are able to compare and gain an understanding of the direction the lake may be heading in regards to shoreline and lake health. If the % EOT (intolerant) is low, and % Chironimids (tolerant) is high, this indicates that the environment may not be suitable for the intolerant benthic invertebrates. This indicates to us that this section of the lake could be impacted by sources such as development, runoff, or other anthropogenic sources. It is important to acknowledge that benthic macroinvertebrate monitoring is important for establishing trends. Observing changes in these numbers over time is more important than the individual numbers themselves every year.

This year we collected a sample from site 1 & 2 on Fox Lake on August 19, 2022. The results of this sampling event are listed below:

Site 1:

- Richness is at 10. As stated above, richness is important as it represents biodiversity within the lake. Biodiversity shows that there is a healthy relationship between benthos. Even though this is slightly less than the average in Muskoka, this is still a good number.
- %EOT is at 10. This is below the average observed in Muskoka, and a very good value.
- %Chironimids is at 2. This is below the average observed in Muskoka.

The following categories are the reference categories. The importance for these values is that there are no large increases or decreases. This number should be monitored closely for any changes. Its value relative to the average within Muskoka is not as important.

- %Predators is at 10, which is below the average.
- %Shredders is 0, below the average.
- %Collectors/Gatherers is at 84. This is above the average for Muskoka.
- Hilsenhoff Index looks very good at 5.95. The lower the number, the better for the Hilsenhoff Index. This number is lower than the observed average in Muskoka.

Site 2:

- Richness is at 12. Even though this is less than the average in Muskoka, this is still a good number.
- %EOT is at 12. This is below the average observed in Muskoka.
- %Chironimids is at 2. This is below the average observed in Muskoka.
- %Predators is at 22, which is above the average.
- %Shredders is 0, below the average.
- %Collectors/Gatherers is at 70. This is below the average for Muskoka.
- Hilsenhoff Index looks very good at 6.02. This number is lower than the observed average in Muskoka.

These values are consistent with values collected in the past at these sites. A change from 3 buckets to only 1 bucket at each site may cause slight variation in the values compared to past values. I would recommend continually alternating and sampling at the 2 sites established on Fox Lake. I hope I have answered any possible questions or concerns about the results, but if you have any others please feel free to e-mail me at biotech@muskoka.on.ca or call my cell number at 705-644-9047. I hope you all enjoy the rest of your summer!

Sincerely,

Jess Lario