

How Creepy Crawlies Can Determine The Health of Halls Lake and Kabakwa Lake, ON.



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Background

Benthic macroinvertebrates are small aquatic animals, often the larval stages of insects, and can be used as bioindicators to assess water quality. Their presence or absence within a water body may be determined by their tolerance level to pollution. Sampling benthic invertebrates as bioindicators nursing the Ontario Benthic Biomonitoring Network protocols was used for monitoring water quality in both Halls Lake and Kabakwa Lake.

Purpose

The purpose of this study is to partner with Halls and Hawk Lake Property Owners Association (HHLPOA) and Property Owners on Kabakwa Lake to monitor the lakes health and quality. This data will be used to assist the lake partners with their long-term management plan to better understand the health of the surrounding lakes and to ensure a sustainable future.

Methods

Samples were collected on shorelines, taken at 6 sites on Halls and 2 on Kabakwa. Samples were collected using a kick and sweep method for 3 minutes, 10 meters off the shore (or 100cm deep), while slowly walking back towards shore. Two replicates were collected at each site and stored in 1L containers with preservative.

Benthic invertebrates were identified using the 27 group OBBN classification system. Picked invertebrates are stored in small labelled vials containing 70% ethanol. Once a sub-sample/replicate has been sorted through, the process was repeated with the rest of the samples.



Figure 1: Students sifting through a benthic sample on Kabakwa Lake

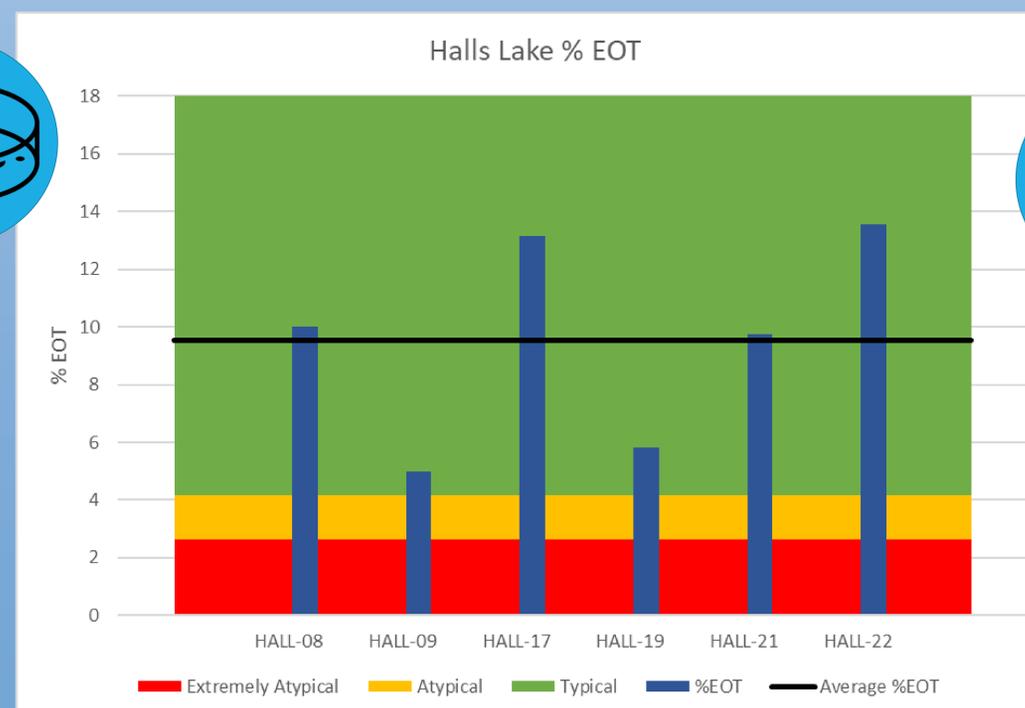


Figure 2: % EOT of Halls Lake compared to the Normal Range of Haliburton Region

Results

For each site %EOT is calculated (*Ephemeroptera*, *Odonata*, *Trichoptera*) as they have low tolerance to disturbances and are often found in healthier, less polluted waters. All Halls Lake sites fall within the Typical range. Kabakwa Lake Site 1 had an %EOT value of 74.5%. This falls within the upper "Extremely Atypical" range and may reflect healthy waters and the ideal habitat for EOT species. More sampling should occur for a better understanding of the Lake as a whole

Discussion

Preliminary results from this study suggest that the Lakes are in fair to good health currently, although there are variations in the health of specific sites.

Recommendations

Based on the preliminary data collected in this study, we recommend that sampling of Kabakwa and Halls Lakes continues to occur on an annual basis for a minimum of 5-10 years. With the current information available, trends in lake health cannot be identified with any level of certainty. Future sampling should occur at the same sites each year if possible to ensure that the observed trends are true to the nature of what is occurring within the lake. A potential next step could include the identification of taxa to the species or genus level to aid in providing a better understanding of the true lake health.