

Benthic Monitoring - Ril Lake May & August 2009

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Thanks to all who participated in the 2009 Benthic Monitoring program on Ril Lake. We were somewhat "lean" on volunteers at our May sampling but I am happy to say that the August 2nd turnout was fantastic. A huge thanks to all of you and from the feedback I have received, it was fun and informative for all. It came to my attention recently that some of the student volunteers who attended the August 2nd Benthic, did a project upon returning to school in the fall, based upon their experience with Benthics. A great sign that the "word is being spread".

Thanks to the Following VOLUNTEERS!!!

May 16th, 2009, Sampling

Jeff Duncan
Margaret Fielding
Nicole Chung
Greg Norton
Warren Cook

August 2nd 2009, Sampling

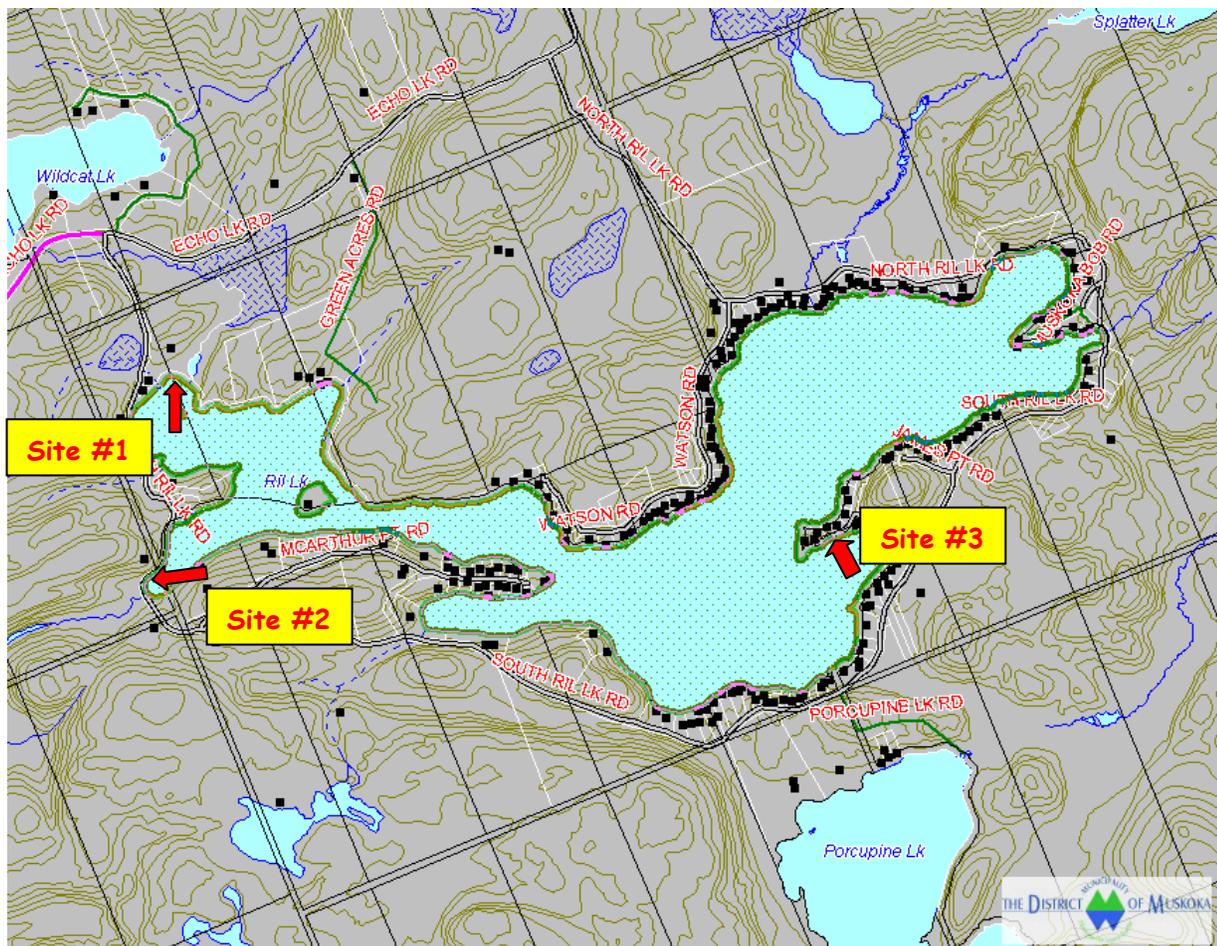
Barbara Billingsley Kevin and June Krawiec
Patty Southy Kelly, Riley and Darcy Henderson
Judith Felton Gary Chadwick
Margaret Fielding Mitchell and Alex Dorbyk
Dianne More Dianne More
Warren Cook
Susan, Julia, Nicholas, John and Laura DiFlorio

To refresh you on the procedure of this type of monitoring, we will be choosing six to eight sites on the lake for reference sampling. In each spot, we take three collections approximately 15 meters apart. The samples are taken back to our host location where the volunteers are given a "scoop/sample" from the bucket, this is put in a tray and we pick out the macroinvertebrate bugs that are in each scoop. We have to obtain a minimum of 100 bugs to meet the criteria of the Ontario Benthic Biological Monitoring Protocol (OBBN), a program spear-headed by Chris Jones and his assistant Sarah Sinclair, at the Dorset Environmental Science Centre.

We have completed two sites at this point and have started a third. Please refer to the map below for our chosen sites to date.

Site #2, sampled in May, was located in the west bay of Ril by the outlet culvert as noted on the map. Site #2 is an impacted site which is indicated by the type and number of macroinvertebrate species that were collected. We did not reach the minimum 100 species at this location in our May 2009 collection and although this does not meet the criteria of the OBBN Protocol, it is important data that will be noted in our file. This site is impacted by the close proximity of the road which in this section is paved, allowing run-off to enter directly into the lake. The contaminants on the road such as salt/sand in the winter, oils and residues from vehicles gets washed into the lake from rains or seasonal melts, impacting the quality of water. There is minimal vegetation to act as a buffer and filter contaminants along the road at this location.

Listed below the map is a summary of our data collected at the sites to date.



(District Municipality of Muskoka 2009)

Summary of Data To Date:

The following is a breakdown of our data. The specimens are broken down by predators, shredders and collectors/gatherers - an imbalance in numbers of any of these groups is an indication there is a problem in the ecosystem.

		Site 1	Site 2	Site 3
Variety of Species	Test #1	11	15	13
	Test #2	15	9	N/A
% of Total Species Intolerant to Stressors	Test #1	49%	30%	14%
	Test #2	30%	33%	N/A
% of Total Species Tolerant of Stressors	Test #1	10%	24%	11%
	Test #2	11%	33%	N/A
% of Predators	Test #1	48%	30%	22%
	Test #2	41%	19%	N/A
% Shredders (Breakdown Leaves/Plants)	Test #1	1%	4.7%	4%
	Test #2	6%	2.0%	N/A
% Collectors/Gatherers (Consume Organics)	Test #1	50%	56%	74%
	Test #2	45%	79%	N/A

Hilsenhoff Index is the combined information of the species and their tolerance to pollutants and nutrients such as phosphorous, nitrogen & carbon. High values indicate pollution, low values indicate healthy water quality. (NOTE: please note that the Muskoka Average of Shredders is low)

Hilsenhoff Index	<u>Muskoka Average</u>		<u>Ril Lake</u>
	5.99	<u>Site 1</u> Test 1	5.72
		Test 2	6.02
		<u>Site 2</u> Test 1	6.13
		Test 2	6.17
		<u>Site 3</u> Test 1	5.96
		Test 2	N/A

The Hilsenhoff Biotic Index is used to assess low dissolved oxygen due to organic input in a water body. The invertebrates are either; tolerant, semi-tolerant or intolerant of stressors and are therefore, good indicators if there are organic pollutants in the area.

Table 1. Water quality classifications for the Hilsenhoff Biotic Index (BI) (Hilsenhoff 1987)

Bi Value	Water Quality	Degree of Organic Pollution
0.00-3.50	Excellent	No apparent organic pollution
3.51-4.50	Very Good	Slight organic pollution
4.51-5.50	Good	Some organic pollution
5.51-6.50	Fair	Fairly significant organic pollution
6.51-7.50	Fairly Poor	Significant organic pollution
7.51-8.50	Poor	Very significant organic pollution
8.51-10.00	Very Poor	Severe organic pollution

(Shepard G, 1997. History of the Hilsenhoff Biotic Index 2009)

<http://www.uwsp.edu/cnr/research/gshepard/History/History.htm>