Fox Lake Benthic Survey Results 2012 to 2017

In general,
1. Richness should be high (close to the average for Muskoka or above).
2. % EOT will decrease and % Chironomids will increase over time with water quality impairment.
3. % Predators should be less than the other types of benthos (shredders, collector/gatherers) and these percentages should remain relatively constant over time.
4. The Hilsenhoff Index value should be close to the average for Muskoka or less, as a lower value indicates healthier water.

Even though most of the lakes in Muskoka are quite similar, no two lakes are identical and there are various factors that play a role in determining the relative abundances of different types of aquatic invertebrates. Comparing your lake's data to the rest of the lakes in Muskoka is not definite, but it can give you an idea. If there is a trend in all the types of indices and data, either above or below normal, it may indicate your lake's overall quality.

Richness

The number of taxa is a measure of biological diversity. Richness increases with increasing habitat diversity, suitability, and water quality; therefore, the healthier a site's community, the greater its number of taxa.

	2012	2013	2014	2015	2016	2017
Fox Lake	16	15	16	13	15	11
Muskoka Average	14	14	14	14	14	14

EOT

Ephemeroptera (mayflies), Odonata (dragonflies and damselflies), and Trichoptera (caddisflies) are very sensitive to pollution and habitat alteration. They should be prominent in healthy ecosystems, but their numbers will decline in response to stress imposed by human activities.

	2012	2013	2014	2015	2016	2017
Fox Lake	16	14	10	22	16	8
Muskoka Average	22	22	22	22	22	17

Chironomidae

Midges (true flies in the family Chironomidae) are tolerant of pollution and habitat changes so their dominance indicates water quality problems.

	2012	2013	2014	2015	2016	2017
Fox Lake	8	3	7	6	7	12
Muskoka Average	12	12	12	12	12	12

Predators

In a healthy ecosystem, the numbers of predators and prey are maintained within a narrow range. Extreme fluctuations in this balance signify that the ecosystem is sick.

	2012	2013	2014	2015	2016	2017
Fox Lake	18	36	50	33	21	52
Muskoka Average	23	23	23	23	23	19

Shredders

Shredders are a group of plant eaters adapted to breaking down leaves, wood, and other plant matter that originates on land but gets transported into waterbodies. Such animals should be abundant if there is a good connection between a lake and its watershed. In addition to recycling nutrients, shredders are food for other animals.

	2012	2013	2014	2015	2016	2017
Fox Lake	2	2	1	1	1	0
Muskoka Average	3	3	3	3	3	3

Collectors / Gatherers

Collector-gatherers feed on small pieces of organic matter that arise from the processing activities of shredders (described above). Their presence indicates a good population of shredders, which provide them with food. Like shredders, these animals perform a vital role in energy cycling, and are prey for other animals.

	2012	2013	2014	2015	2016	2017
Fox Lake	81	59	46	66	73	45
Muskoka Average	70	70	70	70	70	73

Hilsenhoff Index

The Hilsenhoff index combines information about the abundances of different types of animals collected at a site with information about those animals' sensitivities to sewage pollution, farm wastes, and other sources of nutrients like phosphorus, nitrogen, and carbon. High values of this index indicate pollution; low values indicate good water quality.

	2012	2013	2014	2015	2016	2017
Fox Lake	6.34	6.08	5.69	5.9	6.21	6.24
Muskoka Average	6.1	6.1	6.1	6.1	6.1	6.25