

Benthic Macroinvertebrates

Taxa 3 Poor Quality Water



Aquatic isopod



Aquatic worms



Backswimmer



Black fly larvae



Leeches



Midge larvae



Mosquito larvae



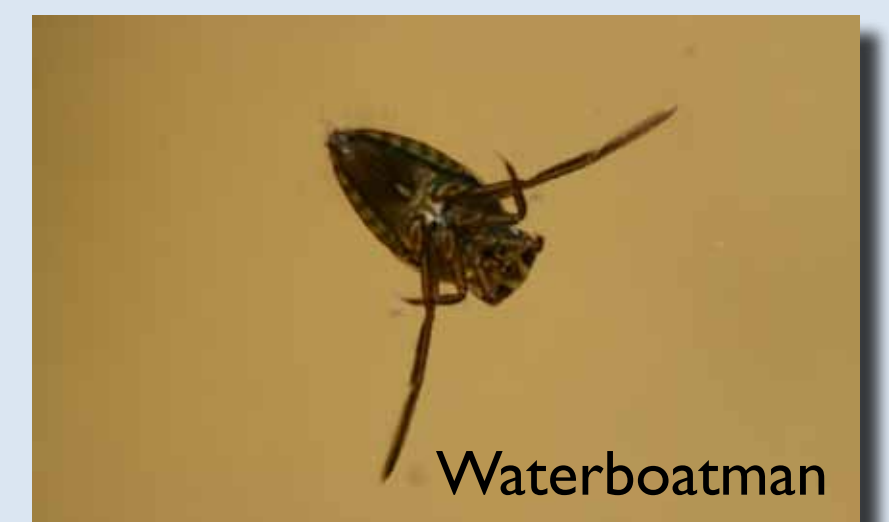
Giant Waterbug



Rat-tailed maggot



Pouch (lunged) Snails



Waterboatman

The critters we find tell us about the quality of the water they have been living in. Certain macroinvertebrates can live in good or poor quality water. If we only find them, and NOT members of the other two taxa, then we can know that the quality of the water is poor. We call this group Taxa 3.

Water Quality Index from macroinvertebrate data

A simple way to assess water quality from BMI data is to calculate the average sensitivity index of the various types of critters (taxa) collected. This is given by the sum of the sensitivity indices (S1, S2, etc.) for the various taxa divided by the number N of taxa collected:

$$\langle S \rangle = \frac{S_1 + S_2 + S_3 + \dots + S_N}{N}$$

For example, let's assume that we collected 5 midge larvae (1), 2 riffle beetle larvae (3), 2 caddisfly larvae with case (5), 4 damselfly nymphs (3), 2 gilled snails (5), 2 dragonfly nymphs (3), 5 water boatmen (1), 11 Hydropsychidae caddisfly larvae (3), 4 scuds (3) and 2 stonefly nymphs (5). The numbers in () are the sensitivity indices for the various critters, and we have a total of 10 taxa.

Then:

$$\langle S \rangle = \frac{1+3+5+3+5+3+1+3+3+5}{10} = 3.2$$

The larger the value of $\langle S \rangle$, the higher the water quality.