

Biotic water sampling

How is the quality of a stream determined by the macroinvertebrates present?

Directions

1. Observe the collected macroinvertebrates and identify as many as possible using both the Aqua Bugs app and the Internet.
2. Check the boxes of the identified species below and place the number of each species on the blank next to the box (or use the Water Quality iPad app to determine the index).

sensitive	somewhat sensitive	tolerant
<input type="checkbox"/> Caddisfly Larvae <input type="checkbox"/> Hellgramite <input type="checkbox"/> Mayfly Larvae <input type="checkbox"/> Gilled Snails <input type="checkbox"/> Rifle Beetle Adult <input type="checkbox"/> Stonefly Larvae <input type="checkbox"/> Water Penny Larvae	<input type="checkbox"/> Beetle Larvae <input type="checkbox"/> Clams <input type="checkbox"/> Crane Fly Larvae <input type="checkbox"/> Crayfish <input type="checkbox"/> Damselfly Larvae <input type="checkbox"/> Dragonfly Larvae <input type="checkbox"/> Scuds <input type="checkbox"/> Sowbugs <input type="checkbox"/> Fishfly Larvae <input type="checkbox"/> Alderfly Larvae <input type="checkbox"/> Watersnipe Larvae	<input type="checkbox"/> Aquatic Worms <input type="checkbox"/> Blackfly Larvae <input type="checkbox"/> Leeches <input type="checkbox"/> Midge Larvae <input type="checkbox"/> Lunged Snails
boxes checked × 3 = _____ index value	boxes checked × 2 = _____ index value	boxes checked × 1 = _____ index value
Water Quality Rating Total Index Value = _____	Excellent (> 22)	Fair (11–16)
	Good (17–22)	Poor (< 11)

3. Calculate the pollutant category index values for the stream by first counting the number of boxes checked in the first column and then multiplying that number by 3, repeat for the second column, but multiply by 2, repeat for the third column, but multiply by 1.
4. Next, calculate the Cumulative Index Values (CIV) by adding up groups 1, 2, and 3.
5. Label your stream’s water quality according to your Cumulative Index Value Score = _____

Reflection

1. What aspects of water quality would limit the range of “sensitive” organisms?
2. Why are “tolerant” organisms not typically found in excellent water quality?
3. Why are you only multiplying the number of species found in each category instead of the number of organisms?