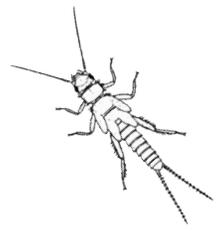




HARPETH RIVER WATERSHED ASSOCIATION



What's In Your River?

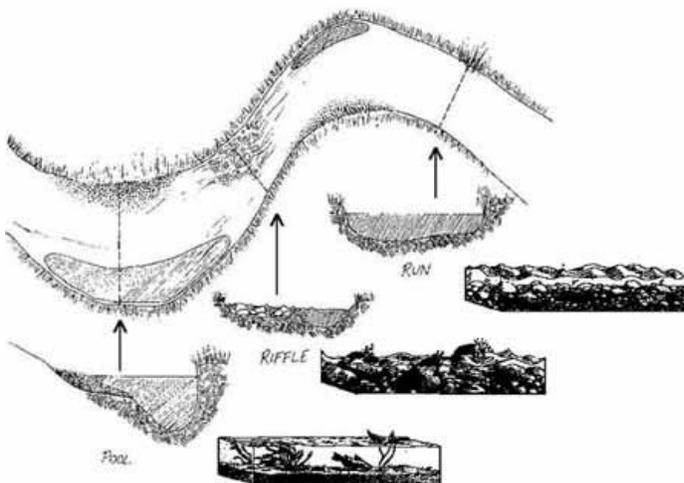
Our Tennessee rivers and streams are full of life! There's a whole world of other critters beside fish that live in the bottom of the stream, such as aquatic insects, mussels, crayfish, and worms. We call these **macroinvertebrates**. Certain kinds of macroinvertebrates can live in pollution easier than others. Knowing this, we can study the macroinvertebrates in a river or stream and determine if it is polluted.

Today, you're going to be an environmental scientist and collect a macroinvertebrate sample in order to make an assessment about the water quality of the stream.

Supplies Needed:

- Kick nets and or D-nets
- Sample containers
- Ice cube trays (# depends on class size)
- Pen/pencil
- Identification sheets
- Calculators
- Tweezers
- Magnifying glass

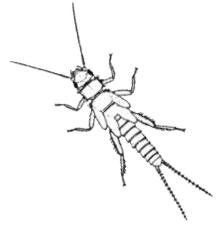
Step 1: Identify 3 habitat types in the stream and take a sample from each.



A **Riffle** is fast and choppy and usually flows over gravel and rocks

A **Run** is an area of smoothly flowing water

A **Pool** is still water with no flow and usually has piles of dead leaves and sand and silt at the bottom

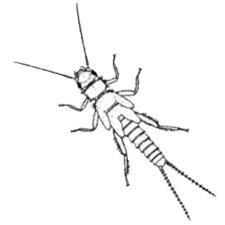


Step 2: Collect the macroinvertebrate sample using the kick net and put the sample in the sample container.

How to use a kick net:

1. Approach the sample site from downstream. It's important not to disturb the site before collecting the sample.
2. Place the kick net in the current so that the water is flowing into it. One or two people hold the net and another person places rocks on the bottom edge of the net to weight it down.
3. Collect your sample: First, scrub the larger rocks so that the macroinvertebrates flow into the net. Then, stand upstream of the net and shuffle your feet to stir up the macroinvertebrates in the bottom of the stream.
4. Carefully remove the rocks from the bottom of the net and lift the bottom edge so that the net is flat. Carry the net to the bank and empty the sample into the sample container.



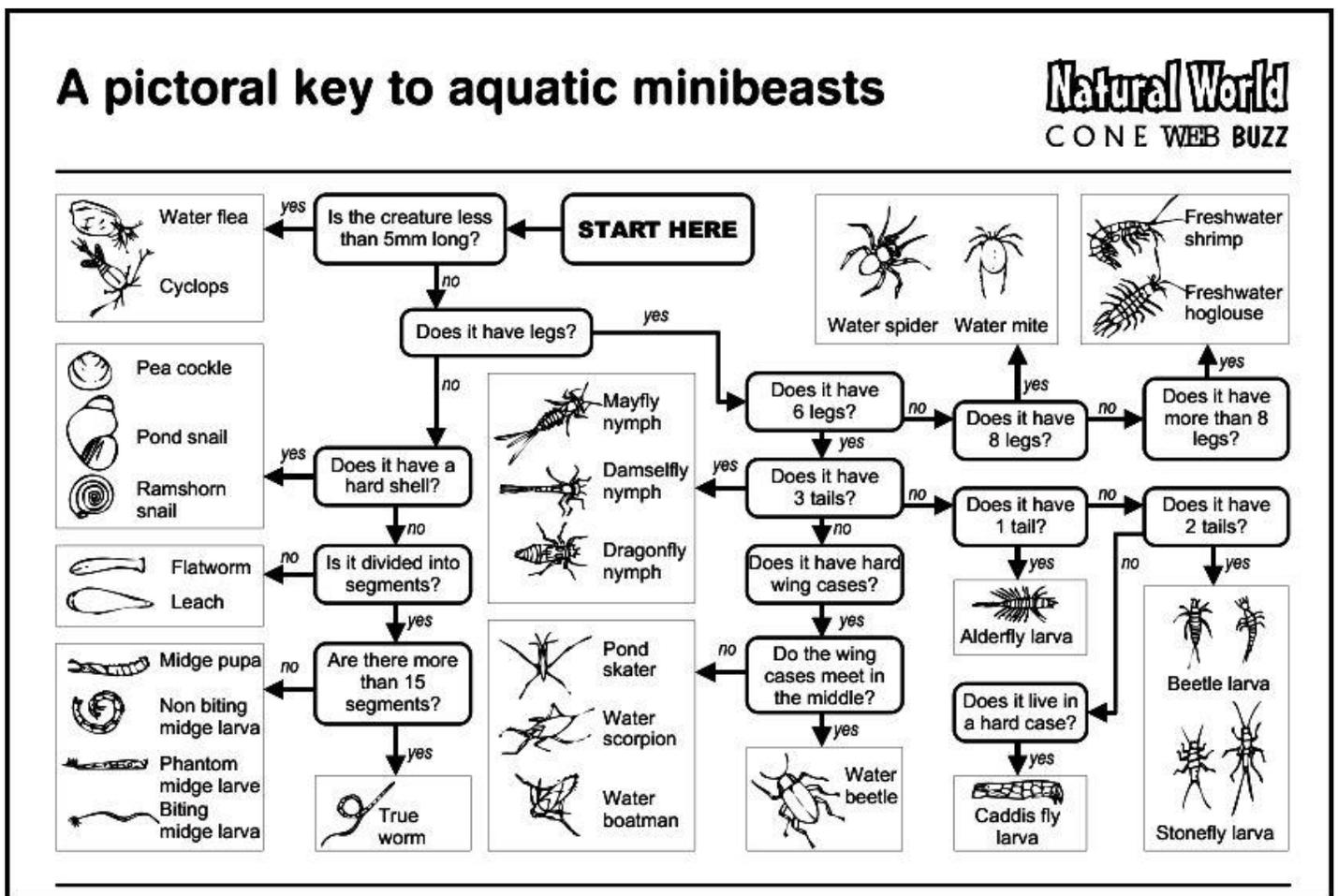


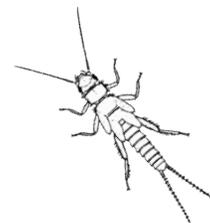
Step 3: Sort the Macroinvertebrates

Identify the macroinvertebrates you collected into groups in the sample trays. We will be categorizing the macroinvertebrates by **Order**. The **Order** is the 4th rank in scientific classification (kingdom, phylum, class, order, family, genus, species). Do you know what order humans are? The identification posters are categorized by **Order** and contain some helpful hints to help you correctly identify.

Caution! Some macroinvertebrates look very similar! If you are not certain, ask for help.

For further assistance, you can use the dichotomous key below.





Step 4: Fill in the Chart Below

1. Identify the macroinvertebrates you found and put a check next to their Order name.
2. Total the checks in each column.
3. Multiply the total checks by the given number in the table.
4. Calculate the total index value by adding together the final 3 values.

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Sensitive Somewhat Sensitive Tolerant total index value

Sensitive	Somewhat Sensitive	Tolerant
<input type="checkbox"/> Caddisfly Larvae	<input type="checkbox"/> Beetle Larvae	<input type="checkbox"/> Aquatic Worms
<input type="checkbox"/> Hellgrammite	<input type="checkbox"/> Clams	<input type="checkbox"/> Blackfly Larvae
<input type="checkbox"/> Mayfly Nymphs	<input type="checkbox"/> Crane-fly Larvae	<input type="checkbox"/> Leeches
<input type="checkbox"/> Gilled Snails	<input type="checkbox"/> Crayfish	<input type="checkbox"/> Midge Larvae
<input type="checkbox"/> Riffle Beetle Adult	<input type="checkbox"/> Damselfly Nymphs	<input type="checkbox"/> Pouch (& other)
<input type="checkbox"/> Stonefly Nymphs	<input type="checkbox"/> Dragonfly Nymphs	Snails
<input type="checkbox"/> Water Penny Larvae	<input type="checkbox"/> Scuds	
	<input type="checkbox"/> Sowbugs	
	<input type="checkbox"/> Fishfly Larvae	
	<input type="checkbox"/> Alderfly Larvae	
	<input type="checkbox"/> Atherix	
<input type="checkbox"/> # of types found	<input type="checkbox"/> # of types found	<input type="checkbox"/> # of types found
<input type="checkbox"/> above # times 3	<input type="checkbox"/> above # times 2	<input type="checkbox"/> above # times 1

Step 5: Determine Water Quality Rating

Based on key to the right, the health of this stream is:

Water Quality Rating

Water Quality Index Key

Excellent	>22
Good	17-22
Fair	11-16
Poor	<11