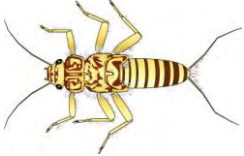


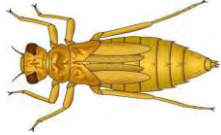














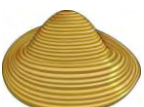





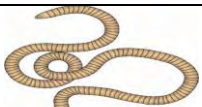
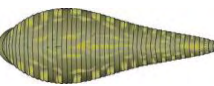



LEVEL-ONE SURVEY DATA SHEET

**BENTHIC MACROINVERTEBRATES:** Use the table below to record information about your collections. Record their abundance using these codes: (A) > 50, (C) 5 – 50 and (R) < 5 and also record the number of different kinds. The # of kind's box indicates groups in which multiple kinds (FAMILIES) are possible. Note: Always record the # OF KINDS when necessary. Illustrations courtesy of the [Cacapon Institute](#); Jennifer Gillies, artist

 Stoneflies	C # OF KINDS <input type="text" value="3"/>	 Mayflies	C # OF KINDS <input type="text" value="4"/>	 Caddisflies	R # OF KINDS <input type="text" value="1"/>
 Dragonflies	C # OF KINDS <input type="text" value="1"/>	 Common netspinner	C	 Caddisflies	C # OF KINDS <input type="text" value="1"/>
 Damselflies	# OF KINDS <input type="text"/>	 Riffle beetle	R	 Water penny	C
 Fishfly/Hellgrammite	C	 Alderfly		 Other Beetles/Bugs	# OF KINDS <input type="text"/>
 Midges	C	 Black fly		 Crane fly	
 Watersnipe fly	C	 Other True flies	# OF KINDS <input type="text"/>	 Crayfish	A
 Clams	# OF KINDS <input type="text"/>	 Mussel		 Scud/Sideswimmer	
 Operculate snails	# OF KINDS <input type="text"/>	 Non-operculate snails	# OF KINDS <input type="text"/>	 Aquatic sowbug	
 Aquatic worm	R	 Leech		 Flatworm	

Other aquatic life observed or collected: **COLLECTED THE ELK RIVER CRAYFISH (CAMBARUS ELKENSIS).**  
**OBSERVED SEVERAL KINDS OF SHINERS AND DARTERS.**

**STREAM SCORE**

After the sorting and identifications is complete, the macroinvertebrates are assessed using four **metrics**. First, transform your abundance rating into numbers using this code (**A = 6; C = 3; R = 1**) and follow the instructions below to complete all calculations. **Note:** The **SHADING** indicates that multiple kinds are possible within the group.

- Biotic Index:** Multiply the abundance number by the tolerance value to calculate the tolerance score. Add the entire tolerance score column and the abundance column. Divide the tolerance total by the abundance total.
- Total Taxa:** Calculate the total number of kinds.
- EPT Taxa:** Calculate the total number of kinds from the stoneflies, mayflies, and all caddisflies.

The final step is to determine a **point value** for each metric. These points are added together to determine your overall **stream score** and integrity rating. **Note: Don't forget to record the number of kinds.**

BENTHIC MACROINVERTEBRATES	Abundance	Tolerance Value	Tolerance Score	Number of Kinds
Stoneflies (Order <b>Plecoptera</b> )	3	2	6	3
Mayflies (Order <b>Ephemeroptera</b> )	3	3	9	4
Case-building caddisflies (Order <b>Trichoptera</b> )	1	3	3	1
Net-spinning caddisflies (Order <b>Trichoptera</b> )	3	4	12	1
Common netspinner (Family <b>Hydropsychidae</b> )	3	5	15	1
Free-living caddisfly (Family <b>Rhyacophilidae</b> )		3		
Dragonflies (Sub-order <b>Anisoptera</b> )	3	4	12	1
Damselflies (Sub-order <b>Zygoptera</b> )		7		
Riffle beetle (Family <b>Elmidae</b> )	1	4	4	1
Water penny (Family <b>Psephenidae</b> )	3	3	9	1
Other Beetles (Order <b>Coleoptera</b> )		6		
True Bugs (Order <b>Hemiptera</b> )		8		1
Hellgrammite (Family <b>Corydalidae</b> )	3	3	9	
Alderfly (Family <b>Sialidae</b> )		6		1
Non-biting midge (Family <b>Chironomidae</b> )	3	8	24	
Black fly (Family <b>Simuliidae</b> )		6		
Crane fly (Family <b>Tipulidae</b> )		4		1
Watersnipe fly (Family <b>Athericidae</b> )	3	3	9	
Other True flies (Order <b>Diptera</b> )		7		
Water mite (Order <b>Hydrachnida</b> )		6		1
Crayfish (Family <b>Cambaridae</b> )	6	5	30	
Sideswimmer (Family <b>Gammaridae</b> )		5		
Aquatic sowbug (Family <b>Asellidae</b> )		7		
Operculate snails (Sub-class <b>Prosobranchia</b> )		5		
Non-operculate snails (Sub-class <b>Pulmonata</b> )		7		
Clams (Order <b>Veneroida</b> )		6		
Mussel (Family <b>Unionidae</b> )		4		1
Aquatic worm (Class <b>Oligochaeta</b> )	1	10	10	1
Leech (Class <b>Hirudinea</b> )		10		
Flatworm (Class <b>Turbellaria</b> )		7		
<b>Other invertebrates</b> (describe)	Total Abundance		Total Tolerance	Total Taxa (# OF KINDS)
	36		152	18

Metrics	Results	Points	10	8	6	4	2
1. Total Taxa	18	8	> 18	18 - 15	14 - 11	10 - 7	< 7
2. EPT Taxa	10	8	> 10	10 - 8	7 - 5	4 - 2	< 2
3. Biotic Index	4.22	8	< 3.5	3.5 - 4.5	4.6 - 5.4	5.5 - 6.5	> 6.5

		Integrity Rating Scale			
<b>STREAM SCORE</b>	24	> 24	24 - 18	17 - 12	< 12
		Optimal	Suboptimal	Marginal	Poor