



## Think Like a Scientist

Provided by: Karlene Fullerman, Zachary Ockunzzi, and Julie Wojnar

Total Time: 35 minutes

### LEARNING STANDARDS

<b>4th grade</b>	<ul style="list-style-type: none"><li>4.LS.1- Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful.</li></ul>
<b>5th grade</b>	<ul style="list-style-type: none"><li>5.LS. 1 Organisms perform a variety of roles in an ecosystem.</li><li>5.LS.2 All of the processes that take place within organisms require energy</li></ul>
<b>6th grade</b>	<ul style="list-style-type: none"><li>N/A</li></ul>

### LEARNING OBJECTIVES

Students will be able to identify evidence that can be used to determine the existence of an organism. Students will be able to list organisms and a description of their interactions within an ecosystem, classify them as producers, consumers, or decomposers.

### MATERIALS NEEDED

- Water Bug Counter Page Handout (attached)
- Bug Data Collection Table Handout- [Water quality sheet](#)

## LESSON PLAN

### 1 WATCH: Spot on Science: Wanted Water Bugs!

Time: 4:48 minutes

Video link: <https://youtu.be/KiBHfCaPqTk>

### 2 OPENING CLASS DISCUSSION

Time: 10 minutes

- How do the "water bugs" show that the water is clean?
- Why is it important to have a clean water source?
- How did the volunteers track if the river was clean?

**3 ACTIVITY: Think Like A Scientist**

Time: 10 minutes

Students will be given a 1-page handout with a random collection of damselfly nymphs, crayfish, hellgrammite (dobsonfly larvae), and other local water insects. Students will use this handout and identify, count and tally the presence of these 3 different organisms, as shown in the video. They will record the number of each organism on the tally sheet handout. Students will use this data to determine whether or not the sample shows a clean water source or polluted water source.

**4 WRAP-UP QUESTIONS**

Time: 10 minutes

- Which page 1, 2, or 3 has the best water quality? Explain how you know this.
- What could be some factors as to why page 3 has poor water quality?
- How many different combinations of bugs could you add to come up with to help page 3 become GOOD in water quality?
- 5th grade: Are the insects producers, consumers, or decomposers? What are their interactions within the ecosystem?

Water Bug Counter Page 1



Water Bug Counter Page 2



Water Bug Counter Page 3



## Bug Data Collection Table



**Ohio Department of Natural Resources  
Division of Parks and Watercraft  
Stream Quality Monitoring Form**

Assessment Date:
River Name:
Volunteer Name:

### Macroinvertebrate (Insects+Small Crustaceans) Tally

Group 1	Amount	Group 2	Amount	Group 3	Amount
Dobsonfly larvae		Crayfish		Damselfly Nymph	
Amount x 3		Amount X 2		Amount X 1	

### Cumulative Value Index (CIV): How healthy is your stream?

To calculate CIV, add up the 3 numbers from your bottom row. Then, rate your stream quality based on the following criteria (check the box that matches your number):

- CIV > 22=Excellent
- CIV between 17-22=Good
- CIV between 11-16=Fair
- CIV < 10=Poor

**Return this completed form to your Stream Quality Monitoring Coordinator:**

Central Region.....	3615 S. Old State Road .....	740-513-0455 ofc .....	<a href="mailto:CentralSQM@dnr.state.oh.us">CentralSQM@dnr.state.oh.us</a>
	Delaware, OH 43015.....	740-548-4945 fax	
Northeast Region.....	5708 Esworthy Road.....	330-298-9195 ofc .....	<a href="mailto:NESQM@dnr.state.oh.us">NESQM@dnr.state.oh.us</a>
	Ravenna, OH 44266.....	330-297-5653 fax	
Southwest Region .....	1750 Osborne Road .....	937-481-4510 cel.....	<a href="mailto:SWSQM@dnr.state.oh.us">SWSQM@dnr.state.oh.us</a>
	Wilmington, OH 45177 .....	937-383-7790 fax	
Northwest Region.....	952 Lima Ave .....	614-570-4372 cel.....	<a href="mailto:NWSQM@dnr.state.oh.us">NWSQM@dnr.state.oh.us</a>
	Findlay, OH 45840 .....	419-422-4875 fax	