

A LESSON IN BIODIVERSITY: DETERMINING WATER QUALITY THROUGH IDENTIFICATION OF INSECT LARVAE

BIOLOGY LAB LESSON PLAN: POST-SECONDARY 1

<p>OVERVIEW</p>	<p>of water in order to determine the water quality. Students, working in pairs, will then use an identification key to figure out which insects they collected and then will construct a small presentation on 280slides.com to present their findings in their Biology lab. *School must be near a water source in which conditions permissible to wade more than 4 feet from the shore. *This lesson will take place over two lab periods.</p>  <p><i>A quadrat placed in a river to collect samples.</i></p>
<p>OBJECTIVE</p>	<p>Given a net, a quadrat, and an identification key, students will collect insect samples and present their findings to the class with 100% accuracy.</p>
<p>STANDARDS</p>	<p>STEM Discipline-Science & IN standard: 8.1.32</p>
<p>MATERIALS</p>	<p>1-4x4 PVC quadrat per group 1-large net for collecting samples per group 1-pair of waders per person 1-water testing kit per group 1-pair of tweezers for collecting larvae from the net 1-jar ½ full of rubbing alcohol for insect preservation 1-identification key of local insect larvae 1-notebook per group</p>
<p>PROCEDURE</p>	<p>Day One:</p> <ol style="list-style-type: none"> 1. Students will walk or drive to a local specified river/lake/ocean with their materials. 2. Professor/lab TA will discuss the importance of sampling insect larvae in the water, which is that the larvae present in the water source can only survive at a specific pH. For example, leeches can survive in very dirty water conditions with a low pH, so if leeches are found in the samples, it can be gathered that the water source is unclean. Teacher/TA will then demonstrate the process for collecting the samples.

	<ol style="list-style-type: none">3. One group at a time, the students will wade out into the water source. One student will hold up the net, against the current, while the other will pick up rocks, shells, etc. from the bottom of the water source close the net.4. The student collecting the sample will rub the rocks, shells, or other solid objects found at the bottom of the water source close to the net so that the flowing water will send possible insect larvae on the rocks into the net.5. After 5 minutes of collecting, groups will pick up the net and quadrat and wade to shore. When they get to shore, they will use a set of tweezers to look for any moving life on the net. Using the tweezers, they will pick up the insect larvae and put them into a jar that is half full of rubbing alcohol, which will preserve the specimens.6. Once the insect larvae are in the jar, the students must use their water testing kit to determine the pH of the water, using the testing strips in the kit.7. Have the students record all findings in their notebook and explain that they must come to lab the following week with their specimens identified. <p>Day Two:</p> <ol style="list-style-type: none">8. Students should have their specimens identified by this lab period, using the identification key they were provided with.9. Introduce the students to 280Slides.com and have them work in their pairs to make a short presentation with their findings. Have them include a photo and a video into their presentation.10. Students will present their findings to the class.
EVALUATION	<p>The teacher and lab TA will evaluate the students' findings based on which specimens the students found compared with specimens that should exist in the water source based on the pH. The teacher and TA can also use past information to evaluate the students' findings. Presentations also must be evaluated based on the guidelines provided to the students.</p>

