Macroinvertebrates– Indoor Lesson

Grade Fourth Grade (4th)

Lesson Fall Indoor

Time 50-60 minutes; conducted in the classroom or portable

Materials *From the Portable:*

- DVD "Stream Bugs"
- Macroinvertebrates flipbook
- Fake streams and bugs
- Kick nets
- Paper Macroinvertebrates
- Ice cube trays
- Spoons
- Wash tubs
- Gloves
- Water jar
- Microscope

Objective:

Test the quality of the water in the watershed by finding and classifying macroinvertebrates in the streams. Macroinvertebrates provide a food source for young salmon while also being an indicator of water quality.

Lesson:

1. Introduce yourself to the class.
2. We are going to test the quality of the water by looking for and recording the types of macroinvertebrates we can find in the streams.
3. *Ask: What is a macroinvertebrate?* A macroinvertebrate is a bug! Macro means small. Invertebrate means there is NOT a backbone.
4. *Ask: Why are macroinvertebrates important?* They are a key food source for the salmon and part of the food chain. Additionally, they can tell us the health of the stream by their presence or absence in the stream.

5. *Ask: Where do you find them?* In the streams near the "riffles". The parts of the stream near the surface that adds oxygen to the water. For example, when the water pours over rocks and you see small jumps (riffles) in the water. These riffles add oxygen to the water and create a healthy environment for them to live.
6. Some macroinvertebrates are highly INTOLERANT of pollution, if we find even one or two of that type that tells us that the water quality is good. By determining which types of macroinvertebrates are present in a specific area, helps determine if there is pollution in that area.
7. Show the DVD on macroinvertebrates. This will give the students a good overview of what they will be doing for their watershed outing.
8. Set up the fake paper stream and get out all of the equipment including: kick net, tub, ice cube trays, spoons, water jar, etc. Demonstrate with student volunteers how to use the kick net on the paper stream and collect the samples (fake bugs) in the tub. It is important to have the net at a good 45 – 60 degree angle to capture the bugs on the net. Remind the students that in the watershed they can pick-up and check rocks and leaves for macroinvertebrates.
9. Classify the samples by sorting them in the ice cube trays and using the flip book to identify them and record the type on the Macroinvertebrate Pollution Tolerance Index Sheet.
10. Use the flip book to complete the "Macroinvertebrate Pollution Tolerance Index Data Sheet" in small groups. Ask the students to fill it out. Guide them through the sheet using an example find "Crane Fly Larva" and ask them if it came from Group 1, 2 or 3 and record it. Repeat for each "sample" bug listed. Then add up the total number from each group and place in the section called "Calculation of the Pollution Tolerance Index (PTI)." This total is then used to determine the overall "Quality" of the stream.
11. Remind them that they will all need to work together in order to complete the Macroinvertebrate outing on time!
12. Remind students of the date of their upcoming outing and to remember to wear a jacket or coat, long pants and boots or old shoes.
13. Return all materials to the portable and put them away in their proper place.