

Macroinvertebrates – Outdoor Lesson

Grade Fourth Grade (4th)

Lesson Fall Outdoor

Time 60 minutes

Materials Backpacks for sites #1, 2/3, 4, 5 and 6 with:

- Macroinvertebrates flipbook and marker
- Kick nets
- Ice cube trays
- Spoons
- Wash tubs
- Gloves
- Water jar
- Microscope
- Walkie Talkies (tune to channel #6)

Beads for Watershed Necklaces (give to teacher at end)

Rain Boots

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.

Before the lesson:

1. A couple days before the outing, send reminder email to the volunteers and let them know to arrive at the Watershed Portable at least 15 minutes before the scheduled departure.
2. Obtain the parent/student list from the Teacher. This is the list of what students will be going with each volunteer parent.

Day of the Lesson Prep:

1. Arrive at the Watershed Portable about an hour before the outing, to assemble the materials in the backpacks and review the lesson.
2. When you check in at the office, ask Kathy Conrad to turn on her walkie-talkie and let her know of your outing time.

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3. Visit the classroom to see who needs boots and either bring the students to the portable to get them or find out their sizes and bring them to the classroom. At least 3 students per group will need to get into the stream, so try to make sure all students have boots.
4. When the volunteers arrive, introduce yourself and review the contents of the backpack. Let them know there is a Map and First Aid kit in the backpacks as well.
5. Review the lesson with the parents by showing them the flipbook. Let them know that they will be assisting the students complete the macroinvertebrates data sheet in the flipbook and the instructions are all in there.
 - a) Make sure that each group takes a kick net.
 - b) Make note that the net should be at a 45-60 degree angle.
 - c) Stream dancers need to spend two minutes in the stream.
 - d) The first part will be to collect the macro invertebrate samples
 - e) The second part will be to classify them and complete the data sheet.
 - f) PLEASE NOTE: the collection of bugs can be done more than once if not enough samples are obtained the first time.
6. Give each parent the assigned list of students they will have in their group for the outing and the watershed site number for their group.
 - a) Check to make sure at least 3 students per group have rain boots for this outing.
7. Remind volunteers that students need to stay with their assigned groups at all times. Volunteers need to stay with students until they are back in the classroom with their teacher.
8. Answer any questions. Give the parents the time they should be leaving the watershed site to come back to the portable.

The Lesson:

1. Introduce yourself to the students and ask them some review questions as a group.
 - a) *Who remembers what we are going to do on our outing today?*
 - b) *What is a macro invertebrate?* Bug without a backbone that is visible to the naked eye. A food source for the salmon and wildlife in our streams.
 - c) *Why do we want to classify them?* To tell the health of the stream since some macroinvertebrates are highly intolerant of pollution.

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- d) *What is important about holding the kick-net and stream dancing?* Hold the net at 45 – 60 degree angle and stream dancers need to work for about 2 minutes.
 - e) Remember to stay with your assigned parent leader and follow the guidelines for working in the watershed.
2. Start walking as a group to the watershed sites. Group cross at the crosswalk stopping the entire group and reminding them to “stop, look and listen.” Have a parent or two go out and guard crosswalk. Remind student and parents that students are on the inside of the white line and parents are on the white line.
 3. First direct groups to Site #6 and #7 by dropping them off on the trail to the R/D Pond. Maps are provided in the backpacks. Tell the parent volunteers to walk to their site and retrieve materials from backpack to get lesson started.
 4. Then proceed along the road to drop off groups for Sites #1, 2/3, and 4. Help the last group you dropped off to get started and be sure they are on track. Now proceed to the other sites to check-in on the groups and be sure they are guiding the students through the collection of bugs and classification to complete the data sheet. All the students can help classify the bugs.
 5. Approximately 5 -7 minutes before students are due back, notify parents by walkie talkie that it is time to finish up and start walking back to the school. They should follow the same route for the return. Be sure to verify that all groups have left their site and are returning to school before you leave the watershed.

Finishing up:

1. Have students return boots and follow teacher’s directions on returning to classroom.
2. If time permits, have parents put the new watershed bead on student’s necklaces; otherwise, give beads to teacher to have put on necklaces as their schedule allows.
3. Remove materials from backpacks and return them back to their place in the watershed portable. Wipe down any wet and muddy backpacks or other materials before putting them away.
4. Thank parent volunteers! You can also send them an email later.
5. When you check out at the office, let Kathy Conrad know that the outing is complete and she can turn off her walkie-talkie.
6. Remember to fill out the Lesson Feedback form on the website.