Appendix 1

Name _____
Block _____ Date _____

Investigating the Stream Community

Objectives:

- Students will be able to design an experiment to investigate the stream community.

Materials needed:

Mesh bags
Waterproof markers
String/nylon twine
Scales
Scissors
Paper bags
Petri dishes
Strainer
Magnifiers and Stereo Microscopes if possible
White trays and tweezers
Classification key
bucket
thermometer
zip-lock bags
small paint brushes
cooler

Methods:

Preparing Leaf Packs

1. Prepare leaf packs following your experimental design.
2. Each pack should have the same weight approximately 30 grams of dry leaves.
3. Complete the information tag for each mesh bag using a waterproof marker. Include the following information: date, bag number, identify as control or experimental leaf pack, location, & school name.
4. Tie each bag closed
5. Loop a long length of nylon twine or string through the mesh bag so that the leaf pack can be attached to a large rock in the stream.

Placing Leaf Packs in Stream

1. Tie leaf pack directly to existing rock in the stream.
2. Position leaf packs facing upstream so that as much surface area of the bag is facing the current as possible. Make sure all leaf packs are submerged and securely tied.
3. Record appropriate information on the Field Data Sheet.
4. Draw a Site Map on the back of the Field Data Sheet that shows the position of each leaf pack in the stream. Leaf packs may become covered with sediment and algae making them hard to locate weeks later.
5. Complete the Habitat Data Sheet.
6. Keep the leaf packs in the stream for 3-4 weeks. If possible, check the packs periodically to make sure that they remain submerged.

Collecting Leaf Packs

1. Complete the remaining information on the Field Data Sheet.
2. Collect a few inches of stream water in the bottom of a zip-lock bag.
3. Have one group member gently hold onto the submerged leaf pack while another student cuts the twine securing it to the rock.

4. Pick up the leaf pack quickly and gently. Place it into the zip-lock bag and seal. Some insects are very quick and will try to escape.
5. Collect additional stream water in a bucket so that it can be used during macroinvertebrate sorting.
6. Place each bag into the cooler to bring the leaf packs indoors.

Analyzing Leaf Packs

1. Place the strainer over a tray or bowl in a sink. Remove the leaf pack from the zip-lock bag and place it into the strainer. Gently rinse sediment from the leaf pack with water.
2. Carefully cut or untie the twine that was keeping the mesh bag closed and transfer the leaves from the leaf pack to a bowl of stream water. Make sure all macroinvertebrates and leaves attached to the mesh bags are also included.
3. Carefully transfer the leaves from the bowl to sorting trays containing approximately ½ inch of stream water.
4. Repeat for each leaf pack. Make sure to keep each pack separated.
5. Begin the sorting process by placing some stream water in your white trays or in petri dishes.
6. Remove the leaves one at a time from the trays of water. Use a brush to separate the animals from the leaves. Inspect the leaves to make sure that there are no animals clinging to them. Place inspected leaves in a separate bowl of water so that a final check can be made later.
7. Using a brush or spoon, place each macroinvertebrate in the water-filled tray or dish. Macros that look alike should be put into the same container.
8. When the entire leaf pack has been sorted through begin identifying the macros.
9. Use hand lenses to check for the special characteristics of each animal. Use the identification keys to name each organism.
10. Count the number of each species and record the information in a table.
11. Make any final observations and recordings that you will need to evaluate your hypothesis.

Data:
You will need to construct your own tables to record your information.

You may want to present your information using graphs, charts, or other acceptable means.

Conclusions:
After you have completed your study you will need to write a conclusion. Your conclusion should contain the following information:

- A review of the purpose of your experiment
- Your original hypothesis
- An analysis of the data you collected
- Whether or not the data supported your hypothesis
- Overall summary of the experiment and what you have learned
- Any suggestions or revisions to the experiment that you would recommend