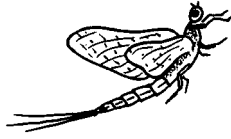


Stream Ecology



Post-Visit Activity

WHO IS IT FOR?

- ◆ Young Scientists . . .
- ◆ Evolving Mathematicians . . .
- ◆ Emerging Linguists . . .
- ◆ Sprouting Historians . . .
- ◆ Budding Artists . . .

TARGETED LEVEL:
(Fifth Grade)

THE CHALLENGE:

The students will . . .

- ⇒ students will analyze the results of a leaf pack experiment demonstrating and using an experimental variable to draw conclusions about freshwater macroinvertebrate habitat quality and food preferences.
- ⇒ students will learn the distinguishing characteristics and adaptive features of major groups of freshwater macroinvertebrates.

SAFETY ISSUES & CONCERNS:

None

WHAT'CHA NEED?

1. *Journals* from the Elm Fork Education Center.
2. Two Summary Leaf Pack sheets

TIME NEEDED FOR THE ADVENTURE:

Minimum of 45 minutes.

Scientists must analyze data that they collect in order to be able to draw conclusions about their investigations and/or field collections.

The student scientists also collected data while investigating at The Elm Fork Education Center (EFEC). The fieldwork conducted by the students at the EFEC was focused on insect habitat in a lotic or flowing water environment - a stream.

While at the EFEC, the students focused on determining the habitat preference of freshwater macroinvertebrates and examining the quantity and diversity of the freshwater macroinvertebrates within their leaf packs.

This *Post-Visit Activity* will provide the students the opportunity to analyze the data they collected in the field and will provide an opportunity for the students to combine their data into one Leaf Pack Summary in order to determine the taxa richness of the selected experimental locations.

Taxa richness is a measure of the number of distinct taxonomic groups in any particular sample. In general, a greater variety of organisms will be found in samples representing good water quality and suitable habitat and food sources. High numbers of organisms may be found in polluted water, but the diversity of the taxa often will be extremely low.

In this particular case, the students will use their data to compare the "richness" between the two tested locations in order to determine if there was a habitat preference.

WORDS TO KNOW?

1. ecology
2. lotic
3. macroinvertebrate
4. biodiversity
5. colonize
6. habitat
7. taxa

DID YOU KNOW . . .

Lotic means flowing waters while Lentic means still waters?

Macroinvertebrates can be divided into groups, known as functional feeding groups, based on their feeding methods and adaptations?

Different leaf-types offer different levels of nutrition for freshwater macroinvertebrates?

EXTRA STUFF?

Related books/stories and on-line sources:

Iowa State University Dept. of Entomology:
<http://www.ent.iastate.edu/>

Young Entomologist Society
(Y.E.S.):

<http://hometown.aol.com/YESbug/bugclub.html>

TEKS

CONNECTIONS:

Science TEKS - Fifth Grade:

3.2 (D) The student is expected to communicate valid conclusions.

Denton ISD Science S.P.O. Fifth Grade:

S1.3 – The student will ask well-defined questions, formulate hypotheses, collect information through direct and indirect observations, analyze and interpret information to construct reasonable explanations, construct graphs, tables, maps, and charts using computers, and organize, examine, and evaluate information as well as begin to develop simple experimental designs for investigations.

PROCEDURES:

Ready, Set, Go . . .

1. Since scientists often work in groups or teams to gather and analyze their collections, students should also be placed into groups to analyze and interpret their data.
2. The groups should be formed on the basis of their “experimental condition.” (In other words, they should be formed based on where their leaf packs were located when they removed them from the stream.)
3. The students should discuss the data they collected.
4. Once they have compared their data in small groups you will want to collect all of the class data on two summary forms. (See attached Summary Leaf Pack sheet)
5. Place all of the data from experimental group “A” on one of the *Summary Leaf Pack*, data analysis sheets.
6. Place all of the data from experimental group “B” on another one of the Summary Leaf Pack data analysis sheets.
7. How does the individual data differ from the group data.
8. How do the two experimental factors differ?
9. Were there particular organisms who, by looking at their numbers, appeared to colonize in one particular location versus another?
10. Ask the students, would there be an easier way to compare the data?
11. Graphing is often an easy tool to use when comparing information. Allow the groups the opportunity to graph their individual data as well as the group data from both experimental groups.
12. What do the graphs show?
13. How “taxa rich” was experimental group “A”?
14. How “taxa rich” was experimental group “B”?
15. Ask the students “what do *you* think it means?”

Assessment:

Teacher observation

Journals

Graphs

The Bottom Line: The students will analyze, interpret summarize and present information collected during fieldwork.

Summary Leaf Packs

Date Collected _____ Experimental Condition _____

<input checked="" type="checkbox"/>		TOTAL FOUND
	Freshwater Macroinvertebrates	
	Ephemeroptera (mayflies)	
	Odonata	
	Anisoptera (dragonflies)	
	Zygoptera (damselflies)	
	Plecoptera (stoneflies)	
	Hemiptera (true bugs)	
	Megaloptera	
	(dobsonfly)	
	(alderfly)	
	Coleoptera (water beetles)	
	(beetle larvae)	
	(adult beetles)	
	Trichoptera (caddisflies)	
	Diptera (true flies)	
	Chironomidae (midges)	
	Simuliidae (black flies)	
	Tipulidae (crane flies)	
	Miscellaneous Diptera	
	NON INSECT INVERTEBRATES	
	Tubellaria (planarians)	
	Oligochaeta (aquatic earthworms)	
	Hirudinae (leeches)	
	Gastropoda (snails)	
	Isopoda (sowbugs)	
	Amphipoda (scuds)	
	Miscellaneous Non-Insect	