

# STREAM QUALITY MONITORING

## - ON THE DRY SIDE

A "dry run" through the Ohio Department of Natural Resources Stream Quality Monitoring process as a pre-lab activity can help prepare individuals for the real experience. It can help build confidence, facilitate group organization and clarify expectations as well as save time in the field. All of which can help achieve the objectives of having a safe, fun and meaningful experience collecting and interpreting data in the "wet" real stream visit which follows. When weather and/or stream conditions are unsuitable for stream visits, a dry stream indoor or outdoor lab simulation activity can be a very meaningful way to train SQM participants.

The SQM manual provides most of the information needed to complete this activity. Pictures with names (or without names if you want to give practice at identifying critters) of macroinvertebrate organisms are securely affixed to one side of small wooden or plastic blocks or disks, i.e. poker chips. These represent rocks, gravel and sand under and in which the organisms live. These "substrates" are distributed in the "dry stream" on the floor or ground with the organism pictures face down.

Kick seining teams can then begin seining their assigned section of the stream. First, the "seiners" can properly position their seine in a downstream location. Second, starting upstream and moving downstream, the "rock rubbers" can pick up some of the "rocks" and pitch them into the seine. Third, starting upstream and moving downstream, the "riffle dancers" can do their shuffle and pick up some of the "rocks" and pitch them into the seine.

The team can then pick up the seine, identify and count the critters and record the data and the water quality on the stream quality assessment form. Using unnamed critters will give practice in using the key to the stream-dwelling macroinvertebrates to identify them. All critters should be replaced in the "stream" at the conclusion of the activity to illustrate the importance of putting the live organisms back into their natural habitat.



## How to Create Your Own “Creek Critter Caper”



*The “Creek Critter Caper” is also referred to as “dry Stream Quality Monitoring”. It is a fabric stream that students of all ages can explore to learn more about our stream macroinvertebrates and how they reflect water quality.*

### **Materials:**

The stream is made of nylon tulle. Ten yards of aquamarine is the “clean” portion of the stream and 6 yards of brown is the “dirty” portion.

The stream banks are 6 yards of dark brown vinyl cut it in half length-wise in a wavy pattern to mimic the banks of a meandering stream.

The riffle zone is created with rocks gathered outside. Add a few sticks to make it more realistic.

The riparian corridor is created from real trees and shrubs already outside or artificial plants that you are able to acquire.

The macroinvertebrates are pictures from identification forms or assessment forms. The terrestrial adult pictures are taken from field guides. The pictures are colored to add realism and laminated for durability. The pictures of the adults are hung or taped on the plants in the riparian corridor or on branches and rocks in the stream.

Other aquatic or streamside “critters” can be added using stuffed animals or plastic models. Try to get them to fit your scale if possible.

A piece of corrugated pipe can be used as the storm drain outfall. A storm drain grate can also be added.

Litter pollution may be added to the downstream section in the form of pop cans, candy wrappers, etc.

Make plenty of copies of the “Creek Critter Caper” guide sheet and bring pencils!

*Creek Critter Caper works great with field days where people come and go throughout the event. This can be set up inside or outside and used with a variety of age groups! It may be used to either introduce or review Stream Quality Monitoring or Storm Drain Stenciling.*

*This was designed by:*



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## What do "Creek Critters" tell You?

1. What is the quality of the water in the entire stream?  
 excellent    good    fair    poor  
 excellent    good    fair    poor  
 What is the quality of the water in the upstream section above the pipe (blue)?  
 excellent    good    fair    poor  
 What is the quality of the water in the downstream section below the pipe (brown)?  
 excellent    good    fair    poor
2. What differences in creek "critter" biodiversity did you notice upstream compared with downstream?
3. What may account for these differences?
4. What things did you find in the stream that may not belong there?
5. How did these items get there?
6. What could you do to keep these pollutants out of our streams?

**What you do on land may affect the quality of streams and the "critters" which live there.**

**Be a watershed steward:**

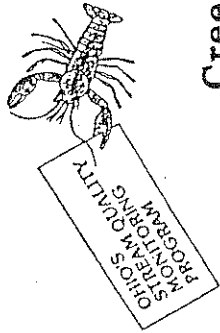
**To take care of the water, you must take care of the land!**

Contact your local Soil and Water Conservation District (SWCD) to learn how you can become a steward of our natural resources.

Delaware SWCD  
 557-A Sunbury Rd.  
 Delaware, Ohio 43015-8656  
 (740) 368-1921

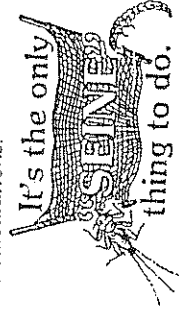


Franklin SWCD  
 1660 Gateway Circle, Ste. 2  
 Grove City, OH 43123-8560  
 (614) 801-9450






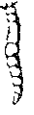









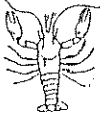

















## Creek Critter Caper

- Take a walk for wildlife along the stream and see how many of the "creek critters" you can find. The aquatic larvae or nymphs are the youth or juvenile stages of insects. In many cases the adult stages of these aquatic young are found on land (terrestrial).
- Check the "critters" you find as you search in and along the stream and attempt to match the young with its adult counterpart. What type of stream quality will your "sample" indicate? To find out, place an "X" beside each kind of critter you find in the blue water above the pipe and an "O" beside each kind you find in the brown water below the pipe. Place only one "X" or "O" per blank. Place an "A" beside each terrestrial adult you find.
- Water quality can be determined from the number of different kinds of organisms (biodiversity) living in the stream. The chart indicates the pollution tolerance level of various aquatic macroinvertebrate organisms.
- To determine the water quality of your stream sample, complete the math at the bottom of the chart. Multiply the number of different aquatic critters (both Xs and Os) in the columns labeled "Group 1, Group 2, and Group 3" by the appropriate multiplier. Add the three columns together to get your Stream Quality Index grand total.
- To determine the water quality in the blue section of the stream, count only the Xs and do the calculations. To determine their water quality in the brown section of the stream, count only the Os and do the calculations.



Delaware and Franklin Soil and Water Conservation Districts

Stream Quality Assessment

Group 1: live only in clean water		Group 2: can tolerate a little pollution		Group 3: can live in polluted water	
 Water penny beetle adult	 Water penny beetle larva	 Crane fly adult	 Crane fly larva	 Blackfly adult	 Blackfly larva
 Stonefly adult	 Stonefly nymph	 Beetle adult	 Beetle larva		 Aquatic worm
 Caddisfly adult	 Caddisfly larva		 Crayfish	 Midge adult	 Midge larva
 Dobsonfly adult	 Dobsonfly larva (Hellgrammite)		 Scud		 Pouch Snail
 Mayfly adult	 Mayfly nymph	 Damselfly adult	 Damselfly nymph		 Leech
	 Riffle Beetle Adult	 Dragonfly adult	 Dragonfly nymph		
	 Gilled Snail		 Clam		
			 Sowbug		
	Number of "X"s in Group 1 Total: <u>    </u> x 3		Number of "X"s in Group 2 Total: <u>    </u> x 2		Number of "X"s in Group 3 Total: <u>    </u> x 1
Stream Quality Index: Excellent > 22		Fair 11-17		Poor 0-11	
Grand total (of groups 1 + 2 + 3) = <u>                    </u>					

over