

SOIL, SOIL EVERYWHERE

Remember as a kid, going outside and just sitting down on the ground and play with the “dirt”. We didn’t have a care in the world. In fact, I always felt so relaxed and happy during and after that moment. As an adult, we really do not give “dirt” the props it deserves unless you are a gardener, farmer, or a soil scientist. We need to re-examine this. “Dirt” has so important and so much can be learned from examining the “dirt”. As educators, you could find so many lessons in what is beneath us.

First of all, I used the term dirt quite often, however, I would get into big trouble if I said that in front of the soil scientists. “Soil” would be the proper word for that cool stuff beneath us. Soil is a mixture of inorganic particles weathered from bedrock and organic material such as dead plants and animals. Dirt is term used for soil where you don’t want it such as under your fingernails or on your pants after you planted your garden.

Kinds of Soil

The inorganic particles in soil can be broken into three broad groups.

- Sand has a high ratio of large, granular particles.
- Silt is comprised mostly of medium-sized particles.
- Clay is mostly super-fine particles.

Soil is classified based upon the percentages of each material present, in addition to the percentage of organic material, which we discuss further below. It is also categorized according to the bedrock or “parent material” from which the particles originated.

The Recipe for Soil

Soil is partly composed of little bits of rock eroded over millennia from the underlying bedrock. What makes the top layer of Earth’s crust so awesome is all the organic material mixed in with the mineral matter, like decomposed leaves, proteins and minerals from the bodies of decayed animals, and earth-worm castings. Then there are the living things, from microscopic bacteria and fungi, and tiny nematodes

Here is an activity that you can do with your students:

Activity: What Kind of Soil?

You will need:

- Three quart jars with lids
- Soil from three different locations (do not use potting soil)
- Journals or record sheets for each student

Instructions:

- Fill the first jar about 1/3 full with soil from the first location, the second with soil from the second location, etc.
- Add water to nearly fill the jar and cap.
- Shake the jar thoroughly.
- Allow the contents to settle, undisturbed—overnight is best. The soil layers will fall out in roughly the following order (from bottom to top)—gravel, sand, silt, clay, organic material (which will be a top layer on the soil and/or floating on the top of the water). Not all material may be present in each sample.
- Have students look at each jar and draw/write their observations in their journals or on record sheets.



2020
Winter



PERRY SOIL AND WATER CONSERVATION DISTRICT
PERRY COUNTY WASTE REDUCTION & RECYCLING

Presents
THE GREENER SIDE
Providing “A Green Perspective” for Educators

MACROINVERTEBRATES WINTERING

When conducting a survey of aquatic life, field researchers generally take samples during the summer. Because of the warmer temperature, there is more stream activity and we get an accurate look at what species are present and how many. Trying to conduct a similar study in the winter wouldn’t give us much information, though, because there wouldn’t be enough bugs to find. It could deceive us into thinking that the stream is in poor health due to lack of biological activity. So unlike chemical sampling, field researchers do not usually take water samples year round.

But what happens to macroinvertebrates during the coldest part of the year? Do they die off leaving offspring to fend for themselves? In some cases, they do. But in others, these bugs have adopted some extraordinary means of staying alive in often frozen water. Aquatic snails, for example, will burrow into the muddy bottom of the stream (which can be a source of geothermal heat) and wait out the winter. They’ll enter a state of hibernation, remaining in place for months on end, until minute changes in moisture and temperature awaken them and let them know it’s time to start moving again. Some stoneflies, on the other hand, are active all winter long, keeping warm through movement as they hunt other bugs, usually without much competition or predation from fish. And then you have cases like midges and aquatic worms, which produce warming techniques within their own bodies. Midges will remove excess water from their insides and convert energy to sugar, forming a type of natural antifreeze. And aquatic worms encase themselves in a chrysalis of hardened mucus to act as a barrier against the cold, until they break out when the temperature rises.

As mentioned above, sometimes individual bugs do not survive the winter and instead ensure the survivability of their offspring. Damselflies, for example, lay eggs in plants (they do this by cutting slits in the plant using the tip of their tails), and the eggs, though alive, pause their growth process until the temperature is just safe enough to continue developing. Other species will remain in their larval stage instead of overwintering as an egg, again pausing in their growth until conditions are optimal.

Aquatic bugs, or macroinvertebrates, are indicator species. Their presence or lack thereof, tell us if the conditions of a stream are good enough to support life. If we sample a stream with no macroinvertebrates when there should be, that tells us that the chemistry of the water does not support life and is therefore poor quality. These bugs are important to us not just ecologically but to our efforts in improving water quality across Ohio. Understanding their life cycles helps us appreciate them even more. Credit to the Izaak Walton League of America, a conservation-focused non-profit, for these insights into macroinvertebrate biology.

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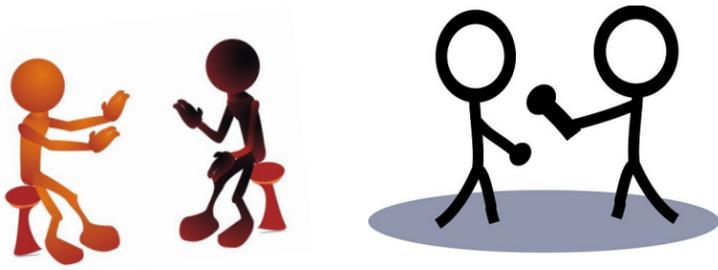
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High School Oral History DEFINING REUSE Scholarship Project!

2021

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WORKING ON CONFIRMING
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THE FOCUS: **"DEFINING REUSE-
TODAY COMPARED TO YESTERDAY"**

2021 projects underway! **Deadline February 26, 2021!**

Contact Katrina for details! karpenter@perrycountyohio.net or 740-721-0765

Eligibility criteria: Grade 9-12 student of any Perry County, OH School
HOME SCHOOL ENTRIES ARE WELCOME & ENCOURAGED TO PARTICI-

ATTENTION Teachers and Youth Club Advisors!!

- Would you like to start a special recycling project to: teach a lesson on weights and measures? ...not to mention, taking personal responsibility for a special project!
 - help raise awareness about recycling?
 - help your kids to a good deed and do something positive for the community?
 - get opportunity to purchase a recycled plastic bench or picnic table of your choice for 1/3 the cost? ... because your project would be providing the factory with the feeder stock to make that bench or picnic table
- Contact Katrina karpenter@perrycountyohio.net if you want details!

Recycled Paper Making Lend Out Kit Available!

Teachers! If you would like to borrow the paper making kit please contact Katrina karpenter@perrycountyohio.net

Tub contains:

- Blender
- Equipment for making recycled paper using the "pour method" (2 stations included)
- Buckets, cups, containers for making at least 2 colors of recycled paper
- Sponges, clean up cloths, trays, starter pasteboard place cards to reuse for holding finished fragile recycled paper to dry on.
- Step-by-step instructions for making paper and clean up before returning.



Make recycled paper Christmas ornaments for your students to put on their tree at home!

Green School Challenge!

Open to Perry County students! Elementary, Middle School, High School!

Exercise problem solving, communications skills...

Connect to civic responsibility!

Prize: Water Refill Station! Donated by WM, Inc.!



For details:

<https://www.perryrecycling.com/project-and-events>

call Katrina 740-721-0765

