DIGGIN' IT!

2018

Conservation Writing and Jim Claypool Art Contest | SOIL

Sponsored by the Kentucky Farm Bureau Federation and Kentucky Association of Conservation Districts

Photo courtesy of USDA Natural Resources Conservation Service

WHAT IS SOIL?

What is the first thing that you think of when you hear the word “soil”? Is it thoughts of playing in your backyard with toy tractors and shovels? Is it planting the garden with your grandfather? Or potting plants in the spring with your mother? All of these examples are fun things to do with the soil, but what actually is “soil?”

Soil is made up of minerals, air, water, and organic matter. Air and water make up 50 percent of the soil composition (25% air and 25% water). Another component of soil is organic matter. Organic matter makes up 5% of the soil’s composition. It is the rich material in the soil consisting of decomposing leaves, residue, and decaying bugs. Minerals are the main component of soils. Mineral particles are mainly broken down into three different types: sand, silt and clay. Typically, sand particles are larger than silt particles, and silt particles are larger than clay particles. The texture of the soil is determined by the composition of these particles.

The Importance of Soils

Soils are the foundation of everything that we are and do. Soil is the upper layer of the Earth's surface in which plants grow. It is made of tiny rocks, clay, minerals, and organic matter (humus—the remains of dead plants and animals). Soil also contains pore space for air and water movement.

From the clothes we wear, the food we eat, to the houses we live in, every person and thing gets its start from the soil. Just like us, plants need to be healthy to grow correctly and be nutritious for us (and other animals) to eat. Plants get started by growing in healthy soils. So if you think about it, healthy soils make us healthy by making the plants healthy. We all need healthy plants to live and grow.

Some plants grow food above ground like apples and corn while other plants grow food below the surface like peanuts and carrots. How many foods can you name that grow beneath the soil's surface? How many can you name that grows above the surface of the soil?

Soils Are Alive

There are a lot of critters that call soil home. Microbes, worms, moles, and ants just to name a few. Some critters are very large and make burrows such as ground hogs and foxes and some are so tiny that we need a microscope to see them such as bacteria and fungi. One tablespoon of soil has more organisms in it than people here on Earth. That is over 7 billion.

We often think that all bacteria and microbes are bad, but a lot of them are very important to healthy soil. Most soil bacteria and microbes are very useful in decomposing plant and animal material which help make soil fertile. Even the worms living in your yard, garden, and farm field are a good sign that you have a very fertile and healthy soil. Worms make holes all through the soil which helps get water and air moving deep within the soil layer.

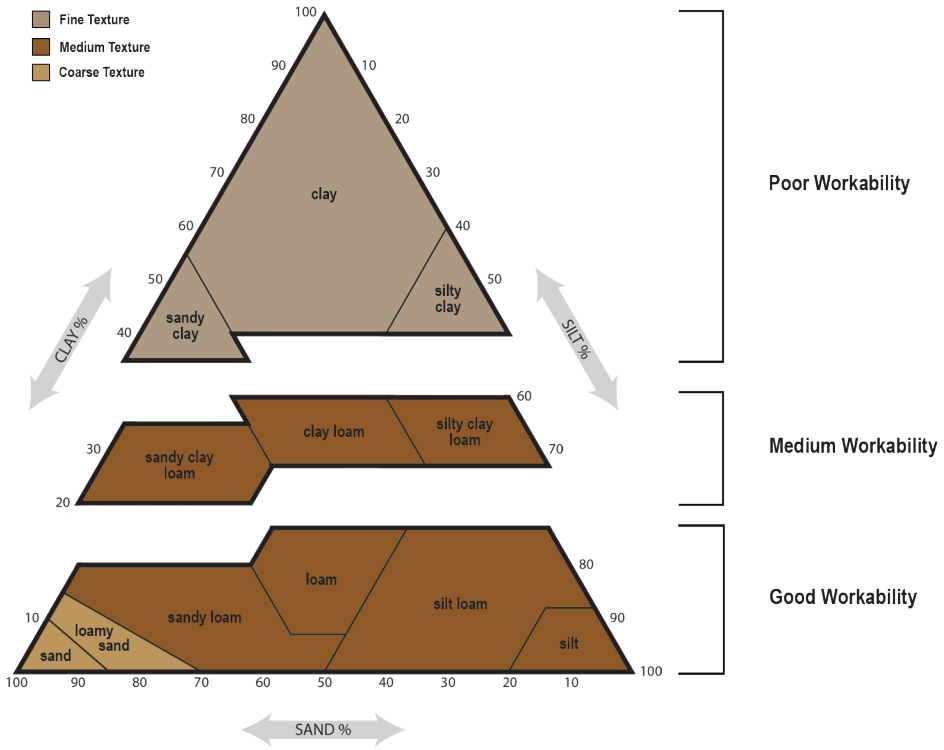
Are All Soils Alike?

Just as humans are a result of genetics and environment, we could also say almost the same about soils. Soils don't have parents like we do, but they do have parent materials. It would be like their version of DNA. Soils are formed from parent material and by the results of environmental influences that have occurred in their past.

Parent materials in soils are rock and minerals that have been broken up into tiny pieces forming sand, silt, and clay. Soils can be many different colors because they come from many different rocks and minerals. The composition percentage of sand, silt, and clay determines the soil's texture as we can see with a soil texture triangle. More sand will feel gritty, more clay will feel sticky and elastic, while more silt will feel velvety and smooth. Each soil forms as a unique expression of five soil-forming factors:

1. Climate 2. Vegetation (organic matter) 3. Topography 4. Parent Material 5. Time

People have certain talents and abilities and so do soils. Some soils are deep, well drained, and highly productive and are great for growing the crops that become our food. Others may be shallow and not very fertile and can be used for other purposes such as forests and recreational areas. When we look at family pictures we see different people with unique talents, and we can certainly do the same with soils.



There are over 70,000 different types of soils in the United States. That's a lot. The next time you travel around Kentucky, notice the different types of plants growing on the different types of terrain and know that there are more than likely different types of soil beneath each section which is specifically needed to grow the plants that they do. Just as our Commonwealth is diverse from the mountains in the East to the Mississippi flood plains in the West, take pride in knowing that our soils are also that diverse.

SOIL PROFILE

A soil horizon is a layer of soil. This soil profile has five horizons: O, A, B, C, and R. Only well-developed or healthy soil has all of these layers. Usually each horizon is obviously different – generally in color and texture. If soil isn't healthy, it may lack distinct horizons.

O Usually about 2 inches deep, this organic layer consists of fallen leaves and decomposing plants and animals. This layer cushions falling raindrops, slows runoff and filters out pollutants. This layer is usually very dark.

A This layer is about 10 inches deep. It is the topsoil layer that may or may not be tilled and planted for crops. This layer is also where most plant roots are located.

B The subsoil layer is about 30 inches deep. This layer is where most of the minerals from the topsoil layer collect, but it has fewer organic materials.

C This layer is about 48 inches deep. It is a transition layer between soil and the partially disintegrated parent material that will eventually become soil.

R The bedrock layer is about 60 inches deep. Over a long period of time, this rock becomes new soil.

Photo courtesy of USDA Natural Resources Conservation Service

Soils Filter

1. Soil particles in place physically clean water as it passes (infiltrates) into the groundwater.
2. Soil particles are negatively charged causing positively charged nutrients and pollution to chemically get stuck to them.
3. Microbes in soil through biological processes can decompose and change pollution into forms that are less harmful.

SINKHOLES AND SOILS

Sinkholes like those surrounding the barn in the diagram are direct routes into the groundwater, this reduces the beneficial filtration properties of soil. Areas characterized by underground drainage systems with sinkholes and caves are known as karst. Parts of Kentucky are known for karst and these areas are more susceptible to pollution.

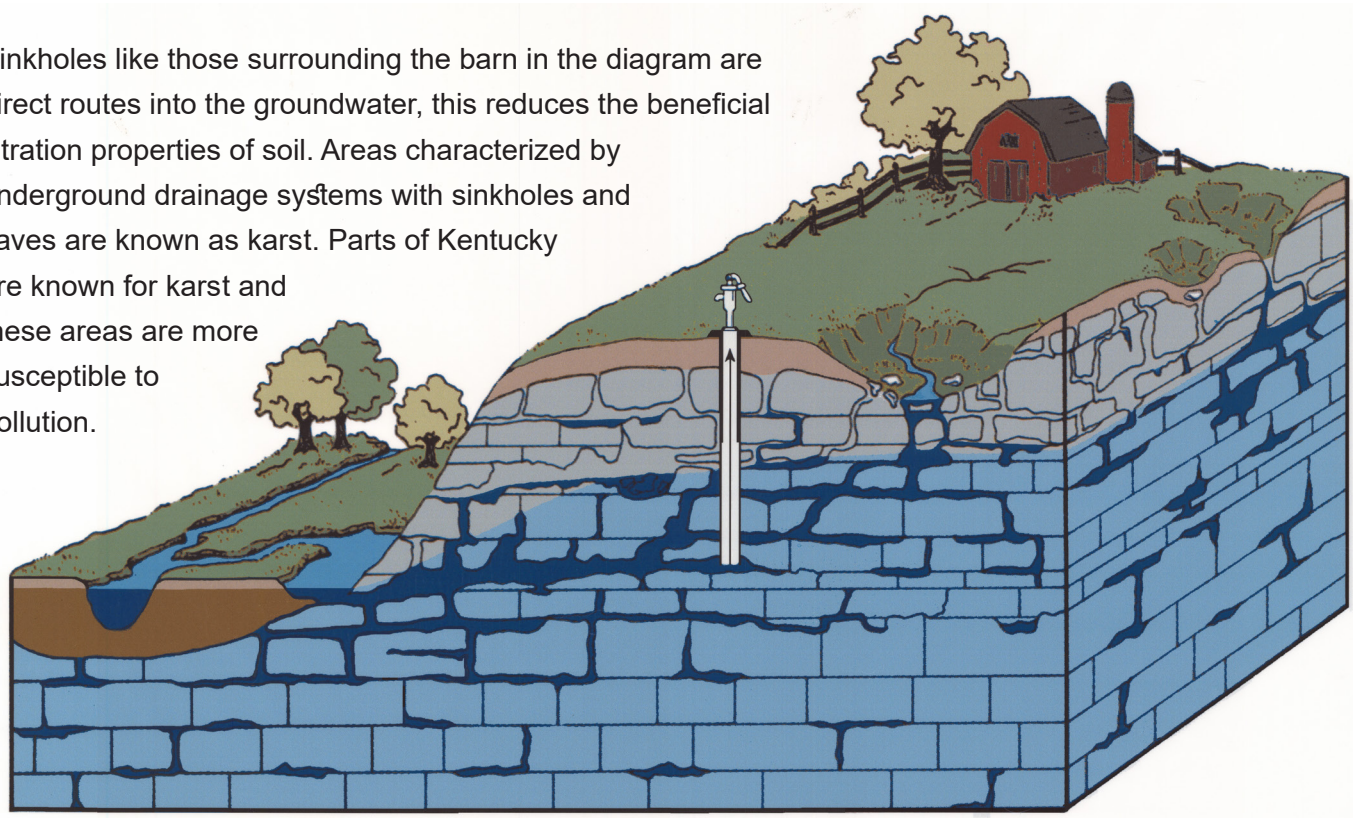


Diagram courtesy of the Iowa Geological Survey

Hard Surfaces vs. Soils

Much like sinkholes reduce the ability of soils to filter water so do hard (impervious) surfaces. Impervious surfaces are surfaces water cannot penetrate like blacktop and roofs. Rainwater that can't reach the soil will run across the surface picking up pollution as it goes becoming what is known as runoff. Not only does more pollution go into streams, but more water considering the rainwater is not being absorbed and filtered by the soil. More water entering the stream than ever before means increased flooding and more erosion of soils. Eroded soils no longer filter pollution, but actually contribute to the pollution in our water.

ASK A BIOLOGIST ABOUT SOIL

"If you're managing habitat for White-Tailed Deer, quality habitat starts in the soil. Whether you're creating cover habitat or incorporating a food plot, the soil can be one of the biggest determining factors in terms of success with improving habitat management."

Kyle Sams, Deer Program Biologist

"Soil. It is the basis of what we do. Although many professionals may not recognize this fact, every time we plant trees, restore native grasses, repair riparian zones, the selection of plant materials depends on many factors such as slope, aspect, hydrology, and YES –SOILS! To create habitat that can thrive, we must consider if that habitat type will prosper where we establish/manage it. So, for successful wildlife management, healthy soils are our ultimate foundation."

Sunni Carr, Wildlife Diversity Coordinator

"We do not conduct any soil monitoring or management with our current avian projects but as the article 'Birds and butterflies respond to soil-induced habitat heterogeneity in experimental plantings of tallgrass prairie species managed as agroenergy crops in Iowa, USA' shows soil is an important factor to our job."

Loran Taylor, Avian Biologist

"Hellbenders are very environmentally sensitive salamanders. Meaning that for them to survive they must have the right environment and if anything differs from that need it can be harmful to their health. They live in aquatic ecosystems that are affected by the soil in and around the water. The soil collects and leaches into the water any chemical around, the soil can also change the clearity and ultimately the temperature of the habitat- all changes can be detrimental to the hellbenders. Soil is an important factor to the health and survival of this species."

Rachel Young, Conservation Educator, Hellbender Keeper at Salato Wildlife Education Center

LAND JUDGING 101

How on earth do you judge soil? Land judging is a way of appraising the physical nature and capability of soils. This allows us as agriculturalists and conservationists to use the land wisely and for the correct purposes. Some land areas are better for crop production while others would be more suited for pasture, hay, or forest production. How do we know which is the best if we cannot "judge" or classify the land?

Certain soil properties, such as slope, depth and color, and others that can be seen, felt or measured, are reliable indicators of soil characteristics. Land judging does not replace soil testing. Laboratory tests that determine the chemical and physical nature of soil help us predict plant response to lime and fertilizer, estimate the amount of a waste product that can be safely applied to the soil and determine the limitations for various uses such as home sites and roads.

In one way or another, people have always judged soil. Early settlers observed the kinds of trees predominant in the forest. They knew that a poplar forest indicated a different soil than a beech or red oak forest. People judge soil for many different reasons: farmers judge soil when buying land and planning farm operations; a house builder judges or classifies soil for its suitability for a good foundation and for septic tank operation; road builders judge soil in designing stable roadbeds; and a regulatory agency may judge soil for its suitability as an environmentally safe landfill.

Kentucky designates land in Classes I, II, III, IV, V, VI, & VII (Roman Numerals 1 – 7). Class I land is level, deep, well drained, non-eroded, has no limitations and is best used for cropland. Classes II-IV have increasingly more limitations such as increasing slope, increased erosion or erosion potential, but are also suited for cropland with the implementation of conservation farming methods including contour and no-till practices, cover crops, strip cropping, and rotating with hay or pasture grasses.

Class V land has more increased limitations such as rock outcrops, sink holes, or may be prone to annual flooding and must be left in permanent cover such as pasture or hay.

Class VI land is usually too steep for row crop production due to erosion potential, but can still allow for tractor operations for planting pasture and hay grasses and legumes. Class VII has many limitations, to include very steep slopes, and is designated for forestry and recreational uses.

(Continued on next page)

Two of the basic needs of all people are adequate food and clothing. A productive soil, along with water, air, light and temperature, is essential in supplying these needs. The treatment, efficient use and conservation of land resources is controlled by people and is of vital concern to everyone as the world faces an increasing population growth. Many career opportunities are available in this field. Soil scientists are needed to teach people to assess the productive capabilities of their land and the treatment, natural resources, cropping systems, and conservation practices needed for efficient production and maintenance of the productive capacity of soil. Job opportunities for soil scientists are many and varied, including:

Cooperative Extension Service

Teaching in high schools, colleges and universities

Natural Resources Conservation Service

Division of Conservation

Research (private or public)

Agribusiness

Consulting (agronomic or environmental)

Landscape Design or Architecture

For more information about Land Judging in Kentucky refer to the UK Land Judging Publication www2.ca.uky.edu/agcomm/pubs/4BA/4BA08MH/4BA08MH.pdf or talk to your 4-H Agent or FFA Advisor in your county or high school.

SOIL ON THE LAND GOOD, SOIL IN THE WATER BAD

On land soils serve many functions like filtering water and holding nutrients for plants. Once soils wash off the land and erode from stream banks it can become pollution, in fact sediment is the biggest contributor to Nonpoint Source pollution in Kentucky. Nonpoint Source pollution results from runoff and comes from many different sources.

How can sediment be pollution? Look at streams and rivers after a rain. What color are they? Usually brown from the sediments turning rivers to mud. Muddy water isn't just ugly, it contains pollution such as nutrients. Sediments cloud the water making it difficult for organisms that live there to see, breathe and feed. Some organisms like mussels that live on the bottom of rivers can be buried in sediment.

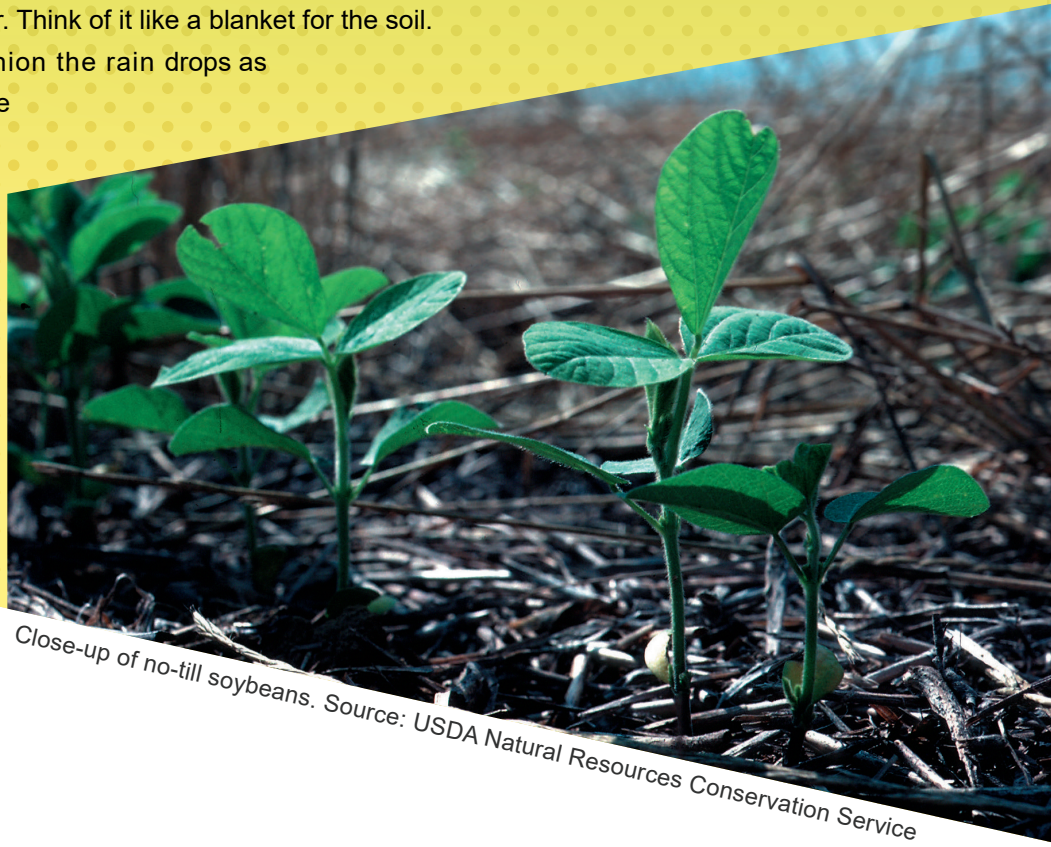
Something else to consider is the cost. Soils washed into streams is precious fertile land lost that we need to grow crops. Sediments from eroding stream banks damage homes and infrastructure. Sediments fill ponds and lake and make it more costly to treat water for drinking.

Soil Erosion

Think about a freshly tilled field just prior to planting, where there are no plants or residue to be seen. Only the soil is visible. Now imagine a hard rain on that freshly tilled field. The rain hits the soil fast and hard causing a splash with each drop. The pounding of the drops on the soil causes the particles to break apart making them vulnerable to erosion, which is the movement of soil from place to place.

There are four types of erosion. One is wind erosion, which causes the soil to be blown to a different place, like in the Dust Bowl. The next type is rill erosion, which is caused by moving water forming small channels in the soil. Another type of erosion is sheet erosion, which is the movement of a layer of soil by water. The last type of erosion is gully erosion, which is the movement of soil caused by running water which also forms channels in the soil. Gully erosion is a lot like rill erosion, except that gully erosion forms large, deep channels in the soil.

A lot of soil erosion can be prevented by maintaining a cover on the soil consisting of plants and/or crop residue. Just like us, soil needs a cover. Think of it like a blanket for the soil. The plants and residue help to cushion the rain drops as they fall onto the soil. Many farmers use specialized equipment, like no-till grain drills to plant their crops into fields that maintain a cover. These drills plant the seed into a shallow channel in the soil. Minimal or no tillage is necessary for this type of farming, which helps prevent soil erosion.



Close-up of no-till soybeans. Source: USDA Natural Resources Conservation Service

What is Soil Conservation?

Soil conservation is when you prevent soil from eroding away from where it was formed. This can be as simple as keeping grass growing on the ground and not having bare spots, planting trees on hillsides and streambanks to hold soil in place, or using contour plowing and strip cropping when we have row crops on our farms. It is important to keep our soil in place and healthy. Otherwise we wouldn't be able to plant the crops that are necessary to feed all of the people and animals on Earth. It can take up to 1,000 years to form an inch of top soil and that could be washed away during one heavy rain storm if we don't do our part to prevent erosion and conserve our soils.

Photo courtesy of USDA Natural Resources Conservation Service

Photo courtesy of USDA Natural Resources Conservation Service

BEST MANAGEMENT PRACTICES CAN PREVENT SOIL EROSION

Many farmers use Best Management Practices (BMPs) to help prevent or control soil erosion on their land. When soil erodes, some of the most valuable soil (the topsoil) can be lost in water sources or moved to less desirable places. Topsoil is the top layer of the soil. It is the richest soil layer in nutrients and is needed to help grow abundant crops for food, forage, and fiber. Utilizing BMPs helps reduce soil erosion and increase or sustain profitability.

One BMP used to help prevent or control soil erosion is a Grassed Waterway. Grassed Waterways can be implemented to control or prevent soil erosion in livestock operations and cropland operations. The USDA Natural Resources Conservation Service Conservation Practice Job Sheet for Grassed Waterways defines one as “a shaped or graded channel established with a suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet.” According to the 2018 Kentucky Soil and Water Quality State Cost Share Program Manual, the Grassed Waterway BMP would be implemented, “to control gully erosion from concentrated flow areas as a result of an animal feeding operation” and also “to control gully erosion from concentrated flow areas occurring in cropland areas.”

Grassed Waterways as well as other BMPs are eligible for cost share under the Kentucky Soil and Water Quality Cost Share Program. Qualifying applicants must receive approval prior to implementation. Applications can be obtained on the Kentucky Division of Conservation’s website conservation.ky.gov/Pages/default.aspx or at your local conservation district office.

THE DUST BOWL

In the early 1930s and throughout most of the decade, a natural phenomenon occurred that shaped our farming practices today. That phenomenon was the Dust Bowl. The Dust Bowl occurred due to land in the mid-west being tilled in ways that should not have been in the first place. Along with this, a drought occurred that lasted nearly 10 years. Adding insult to injury, strong windstorms would pass through the area creating what was described as "black blizzards."

Photo courtesy of USDA Natural Resources Conservation Service

The wind would pick up the loose soil and carry it through the air. Most of the topsoil, which is necessary for plant growth, was swept away by the strong winds. Homes were dusty inside and people wore masks to prevent inhaling the dust particles. It was a dire time and many people moved west to get away from the dust and the dreadful conditions in which they lived.

In the mid-1930s, the Soil Conservation Act was signed which allowed the creation of the Soil Conservation Service. This agency, now known as the Natural Resources Conservation Service or NRCS, is a government agency that was put into place to aid in preventing soil erosion and assisting with fixing the problems created by the Dust Bowl. Later, soil conservation districts started being formed across the country. These were and are locally led entities whose aim is to conserve, preserve and protect the natural resources.

Over time, with education and a desire to protect the soil and other natural resources, less invasive means of tillage were developed. Some land that was vulnerable to erosion was completely taken out of production. Trees were planted or grass was sewn to prevent soil erosion. All of these practices are important to protect our natural resources and prevent a situation like the Dust Bowl from occurring in the future. The soil is vital for our survival. Hugh Hammond Bennett, who was a leader in the soil conservation movement as well as the Soil Conservation Service once said, "Out of the long list of nature's gifts to man, none is perhaps so utterly essential to human life as soil."

Soil Can Indirectly Affect the Population of Birds and Butterflies

A study published in 2015 used three soil types with varying characteristics to show how each grew variable habitats. Then in each soil area, visual surveys of birds and butterflies were conducted to see if the soil types effected the population of birds and butterflies.

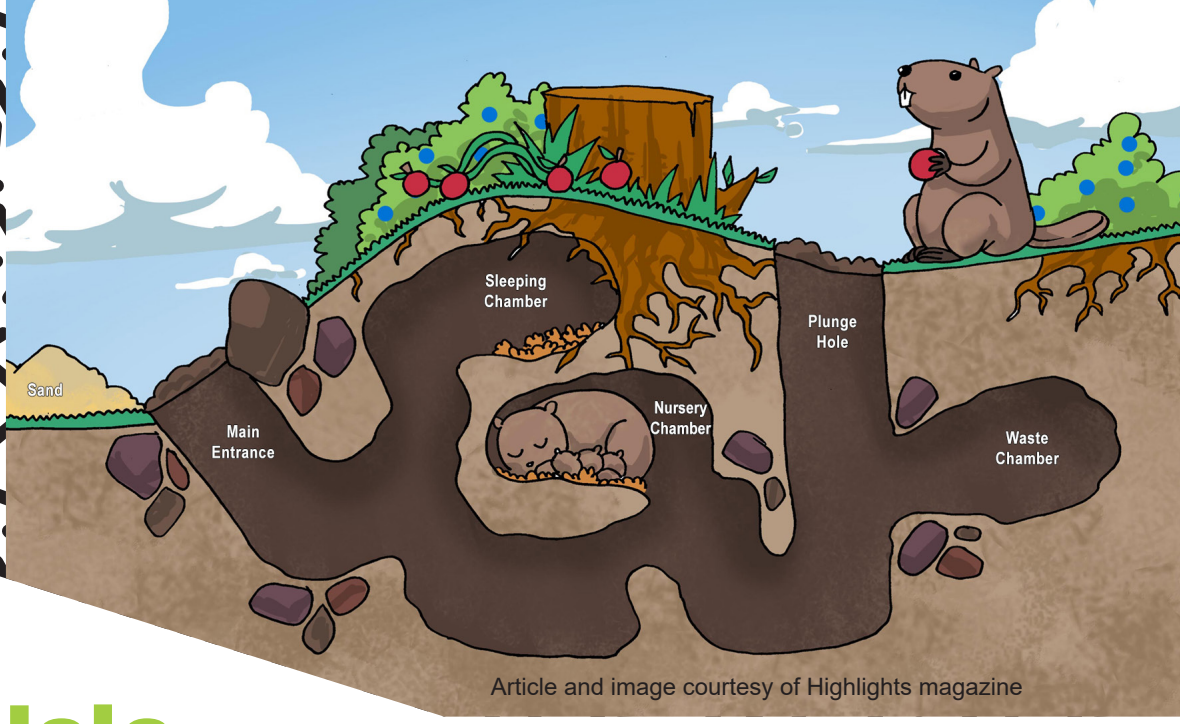
Field plots in Iowa, USA were monitored from 2009 to 2010. In 2009 core soil samples were collected and examined for chemical and physical properties. The three soil types came down to clay loam, loam and sandy loam. Macro and micro nutrient concentrations for the most part differed among each soil type- clay loam being the highest and sandy loam being the lowest. Throughout 2010, people studied and did repeated visual surveys of the vegetation make up, birds and butterflies in the field plots.

"Soils strongly affected vegetation structure and composition. Generally, plots on loam and clay loam were characterized by taller, more uniformly dense vegetation with abundant residual standing dead vegetation and litter accumulation, whereas plots on sandy loam had more bare ground with shorter, patchier vegetation and sparse litter accumulation."

The number and diversity of birds and butterflies did not differ among soil types. The difference seen among soil types were the types or species of birds grass plots and the species of butterflies found on prairie plots. Sandy loam grass plots created shorter vegetation, barer spots thus there were more ground foraging, ground nesting birds in this area. Where as in the loam and clay loam grass plots which created denser vegetation, birds that nest and feed above ground were more abundant. The same habitat association differences were seen in butterflies among the praire plots. Habitat associations included larval host plants and adult butterfly nectar/food sources.

"Our findings suggest that when particular animal species are being targeted for conservation, identifying soils that will support the establishment and growth of plants in a manner yielding the particular habitat characteristics required by the target species should be considered in selecting candidate sites for grassland restoration."

Quotes from and summary of 'Birds and butterflies respond to soil-induced habitat heterogeneity in experimental plantings of tallgrass prairie species managed as agroenergy crops in Iowa, USA' by Mark C. Myers, James T. Mason, Benjamin J. Hoksch, Cynthia A. Cambardella, Jarett D. Pfrimmer. First published 18 July 2015 in Journal of Applied Ecology, Volume 52, Issue 5. besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2664.12503



Article and image courtesy of Highlights magazine

Not Just a Hole

The woodchuck sits up on its hind legs, chewing a wild strawberry. Looking around, the chuck freezes when it spies the farmer's dog. The dog sniffs the air, spots the chuck, and charges toward it. The woodchuck watches the enemy coming closer and closer, then POOF! The chuck disappears from sight, and the dog is left puzzled. The woodchuck has dropped into its burrow to escape.

A woodchuck burrow is more than just a hole in the ground. It is a complex system of entrances, tunnels, and rooms called chambers. Burrows give woodchucks a place to sleep, raise young, and escape enemies. When a woodchuck hibernates (sleeps through the winter), it makes a simple burrow and plugs the entrance with sand.

A woodchuck uses its strong claws to dig its own burrow. In soft soil, a woodchuck can dig an entire burrow in one day.

Each summer burrow usually has several entrances. This lets the woodchuck roam and still have a safe hole nearby in case danger comes along.

For the main entrance, a chuck may choose the woods at the edge of a meadow. The hole must be hidden from view but close to food.

The plunge hole is a special burrow entrance. It goes straight down two or more feet. When an enemy comes near, the woodchuck may give a shrill whistle, then drop straight down into the hole. This is how the woodchuck “disappeared” from the dog's sight!

Under the ground, tunnels and chambers connect the entrances. There is a sleeping chamber, a turnaround chamber, and a nursery chamber. A woodchuck burrow can even have a bathroom! A woodchuck may bury its waste in a chamber. Sometimes it adds waste to the mound of sand that marks the main entrance. This mound lets other animals know whether or not a burrow is active (being used).

Many animals look for empty woodchuck burrows. And why not? The burrows are warm in winter, cool in summer, and ready-made. Rabbits use empty burrows to avoid summer heat. They may even pop into an active burrow to escape an enemy. Skunks, weasels, and opossums use empty burrows as woodchucks do – for sleeping, hiding, and raising their young. Foxes may take over active burrows to raise their own young in the warm dens.

Now you can see that a burrow is more than just a hole in the ground. It's the perfect place for woodchucks - or other animals - to sleep, hide, and raise young. To a woodchuck, there's no place like its burrow!

Cicada Killer Wasps Dig the Soil

Cicada killer wasps look like big scary dangerous wasps. Instead of thinking about trying to sting people though, the female wasp is more interested in finding the right spot to dig in the soil and about carrying cicadas to feed the larvae. Soil under our feet hold not only nutrients for plant life but can be the actual shelter for many creatures. All animals need food, water and shelter. Soil helps with all three but for many, like the cicada killer wasps, the earth is the shelter.

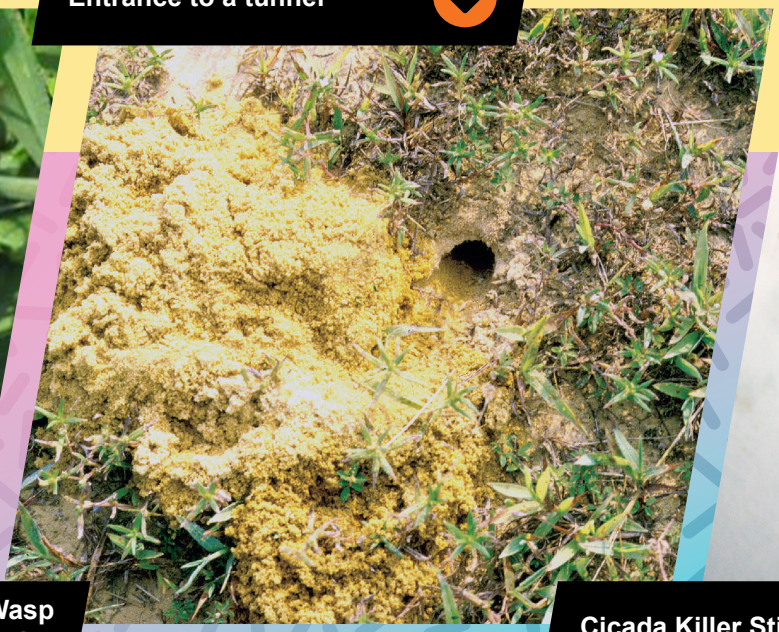
Female cicada killer wasps are the only ones with a stinger and they use them to paralyze cicadas, which are then food for the young. Even though the females have stingers, they tend to ignore people around them- their sole focus is on getting paralyzed cicadas. Male cicada killer wasps are ones that tend to bother people but they do not possess stingers, just big egos.

Female wasps dig their own tunnels and chambers in the ground. A female wasp can grow up to 2 inches in length but can dig tunnels 30 to 70 inches long, some at a depth of 15 inches. That is 35 times her length- an average 5 foot tall human would have to dig 175 feet in the ground at a depth just under 40 feet. A female can move over 100 cubic inches of dirt/sand to make the tunnels. Along the tunnel are chambers where she places 1 to 3 paralyzed cicadas in each chamber (that means she can carry up to 45 cicadas if she makes the typical 15 chambers). A cicada is about the same size, if not bigger, than the female cicada killer wasp. Each chamber in the tunnel will receive an egg. When the egg hatches, the larvae eat the cicadas and then overwinter in the chamber. Adult wasps emerge from the underground tunnels the following summer.

Photos courtesy of Ric Bessin, University of Kentucky Entomology

Entrance to a tunnel

Female Cicada Killer Wasp carrying paralyzed cicada



Cicada Killer Stinger

Do Trees TALK to One Another?

Trees may look like solitary individuals but the ground beneath our feet tells a different story. Trees are secretly talking, trading and waging war on one another. They do this using a network of mycorrhizal fungi that grow around and inside their roots. The fungi provide the trees with nutrients-like nitrogen and phosphorus-and in return, they receive sugars (food).

While they're incredibly thin, the threads of the fungi can be up to 1000 times the length of a tree root. This allows the fungi to connect together many different trees. Once connections are made, the fungi can act almost like the neurons in our brain, transporting signals from tree to tree. Scientists have found this connection runs far deeper than first thought. By plugging into the fungal network, trees can share resources with each other. The system has been named the Wood Wide Web.

It's thought that older trees will help out younger relatives by using this fungal network to supply shaded seedlings with sugars giving them a better chance of survival. Those trees that are sick or dying may dump their resources into the network, which can be used by healthier neighbors. Trees also use fungi in the soil to send messages to one another. If they are attacked, they can release chemical signals through their roots, which can warn their neighbors to raise their defenses. In the western United States, Douglas-fir trees connected by a fungal network can alert their ponderosa pine neighbors if they're attacked by budworms. In response, the neighboring ponderosa pine trees will produce insect-repelling chemicals—even though they haven't been directly exposed to the insects themselves.

But like our internet, the Wood Wide Web has its dark side also. Take black walnut trees, for example. They can spread poison through the network, hindering the growth of their neighbors. And the fungi making up the network can be just as tricky. Mycorrhizal fungi tend to pick favorites. They may share resources with one species of tree, but bleed another species dry without giving anything back in return. The fungi may also judge a plant's health. If they think it's too weak or sick, they may not allow it to receive nutrients or danger signals from the network.

The hidden network creates a thriving community between individuals. When you are next in a woodland, you might like to think of trees as part of a big superorganism chatting and swapping information and food under your feet.

Scientists are only beginning to understand how complex these relationships get. But imagine the possibilities for agriculture and forestry. If we find out certain species share well across the network, we can plant them near each other to yield better harvests, or grow healthier forests.

WANT MORE INFO?

The Secrets of the Wood Wide Web
by Robert Macfarlane; August 7, 2016
newyorker.com/tech/elements/the-secrets-of-the-wood-wide-web

The Wood Wide Web
by Ed Yong; APR 14, 2016
theatlantic.com/science/archive/2016/04/the-wood-wide-web/478224/

The Wood Wide Web
by Dr Karl Kruszelnicki, Joanna Khan and Carl Smith; Tuesday 1 May 2018 12:00PM
www.abc.net.au/radionational/programs/greatmomentsinscience/wood-wide-web/9699104

START AN ENVIROTHON TEAM

If you really dig environmental issues; grab your like-minded friends and form an Envirothon team. The statewide competition allow high school students to team up on a series of hands-on outdoor contests to solve environmental problems and test their knowledge of natural resources.

The event is made up of a team of five high school students competing in five different areas: aquatics, forestry, soils, wildlife and a current issue. The 2019 current issue is “Agriculture and the Environment: Knowledge and Technology to Feed the World.” At each site, students will use their knowledge to participate in hands-on activities to complete a test.

The Kentucky Envirothon consists of two regional competitions. Top scoring teams from each of the regional competitions will move on to the state competition. The regional competitions are held in April of each year, and the state competition is held in May. Registration for next year’s competition will begin in December.

CONTACT INFORMATION

Your local conservation district:

conservation.ky.gov/Pages/ConservationDistricts.aspx

Division of Conservation:

conservation.ky.gov/Pages/Envirothon.aspx

Johnna McHugh (502-782-6703 or johnna.mchugh@ky.gov)

2018

DIGGIN' IT!

Conservation Writing and Jim Claypool Art Contest | RULES

STATE WINNERS:
First: $250; Second: $150; Third: $50

REGIONAL WINNERS:
$50

COUNTY LEVEL WINNERS:
$25

** State/Regional winners will receive a personalized certificate. County winners that win regional or state awards will only receive one check for the top prize.*

RULES

1. Kentucky students grades 6-12 are eligible to compete in the writing contest. Students up to grade 5 may compete in the art contest.
2. A student may not enter both the art contest and the writing contest during the same contest.
3. An entry must be created by one and only one student. Any entry submitted by more than one student will be disqualified.
4. All entries become the property of the contest sponsors. The decisions of the judges at all levels of competition are final.
5. Top three writing entries and/or artworks from your school must be submitted to your local county conservation district by Dec. 1, 2018.

ARTWORK: Student entries shall be 8 ½" X 11". Entries may be submitted on any color or thickness of art board (poster board, mat board, etc.) or may be on art paper, which is firmly affixed to art board. All artwork must be two-dimensional (2-D). Three-dimensional (3-D) artwork will not be accepted. Artwork may be rendered in any medium: pencil, ink, charcoal, pasttel, crayon, paint, photography, etc. Mixed media and collage work is acceptable as long as all pieces are securely glued to the surface of the work. All entries must convey at a glance the theme of the competition to persuade the viewer to take action toward good soil conservation practices. All entries must be the original work of the student.

WRITING: Entry may not exceed 1,000 words and must be written in ink or typed on one side of paper only. No photographs or artwork may be included with the written work. It is suggested that the written entry take the form of persuasive or informative/explanatory. Students should write from the perspective of an informed writer to a less informed reader and may be in the form of a letter, article, editorial or speech. It should persuade the reader to take action toward good soil conservation practices. The work should be from the student author and avoid plagiarism from this source or other sources. Sources should be cited.

6. The entry form below must be completed and secured to the back of your entry.

POINT SYSTEM FOR ART

- 30 points: Composition/Creativity/Craftsmanship (layout, originality, and quality of work, such as neatness)
- 20 points: Language/Correctness (word choice, usage, spelling, punctuation, capitalization)

POINT SYSTEM FOR WRITING

- 30 points: Purpose/Audience (establishes and maintains a purpose, communicates with audience, employs a suitable tone)
- 20 points: Organization (logical order, coherence, transition organizational signals)
- 20 points: Idea Development/Support and Evidence of Research (student's original work shows sources of research)
- 30 points: Correctness (spelling, punctuation, capitalization), Language (word choice, usage), Sentences (varied in structure and length, constructed effectively, complete and correct)

DIGGIN' IT ENTRY FORM

Conservation Writing and Jim Claypool Art Contest

Name (Miss, Mr) _____

Parent's Name _____

Home Address _____

City _____ Zip _____

Home Phone ( ) _____

Age _____ Grade _____ Teacher _____

County _____

School _____

School Phone ( ) _____

☐ I hereby certify that I have read the rules and helpful hints and this entry is the original work of:

_____
Student Signature

_____
Parent/Guardian Signature (required)

_____
Teacher or Principal Signature (required)