

Cooks Current

"To protect, preserve and improve the quality of water, land and life in the Cooks Creek Watershed"

Volume 15, Issue 2

Newsletter of the Cooks Creek Watershed

Spring 2018

2018 Events

Regular Board Meetings:

Springtown Fire House- 7:30PM

4th Thursday of the month except Nov. and Dec. which is the 3rd Thursday;

June 28, July 26, Aug. 23, Sept. 27,
Oct. 25, Nov. 15 (3rd Thursday),
Dec. 20 (3rd Thursday)

Special Events

June 16, Sat. of Father's Day weekend, Mini Monster Mayhem

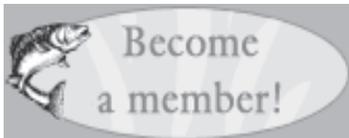
July 21, Native and Invasive Plant Workshop

Springfield Community Day 275 yr. celebration - September 22

Oct. 6, first Sat. of Oct., Fall Dinner

Oct. 13, second Sat. of Oct., Durham Community Day

Nov 10, second Sat. of Nov., Fall Clean-Up



See back for details!

We're on the web!
www.cooks creekpa.org

Cooks Current is a publication of the Cooks Creek Watershed Association.

Board Members:

President: W. Scott Douglas

Vice President: Hans Reimann

Treasurer: Jim Orben

**Communications Director/
Recording Secretary/Editor:**
Lois Oleksa

Marketing and Public Relations:
Lois Oleksa

Additional Members:
Sarah Snider, Stephen Smith, MD,

Layout & Graphic Design:
Ellie Scheitrum

From Across the Board...

After a lot of fits and starts, spring is finally here. I see that the creeks are all flowing nicely, but there were red flag and ozone warnings today, so I guess we have to take the good along with the not so good. I am still hoping that we get the wet year the Almanac predicted and we at least make up some of our groundwater deficit. On that note, we are still waiting on the contracts from PADEP for our Growing Greener grant which will enable me to tell you about the actual ups and downs of creek flow. We hope to hear from Harrisburg soon, and get that project underway. We will keep you posted.

A number of newsworthy items to report. I inspected the riparian buffer plantings at the Springtown Firehouse last week and noticed that many of the plants made it through and are showing buds. There are a few that popped out of their holes and will need to be re-planted soon, but overall I believe that the project will be a success. Joe



Spring is the time for MORELS

Mihok from Trout Unlimited will let us know if a work party is needed. Watch Facebook and the website for updates.

Considerable progress was made on the Durham tailrace cleanup earlier this year thanks in no small part to the boys of Troop 27. A whole lot of brush and deadwood was removed, as well as some of the mature trees. Charlie Orben will be cutting up the remainder of the Norway Maples and other invasives soon. Consideration should be given to planting some

natives along the top of the bank for stabilization.

Apparently, the meteorologists at NOAA were asleep at the switch on our cleanup weekend. The forecast was for snow, but the day was pleasant and sunny. Unfortunately, PennDOT is adamant about not holding cleanups during snow events, so we had to postpone the event until the first weekend in May, with limited participation. However, many folks did their cleanups on either side of that weekend and

(Continued to page 2)

(Continues from page 1)

many of the roads are looking good. Many thanks to the anonymous citizens who took it upon themselves to pick up Route 412 on the east side of Springtown – that was a disaster! Hopefully we will have better weather the first weekend in April next year.

The Sustainability Expo was held in March at Palisades High School in April and was a huge success. I presented a watersheds and water quality workshop to two groups of students in the afternoon, focusing on sustainability and what they could do to protect water quality and quantity. In the evening the CCWA booth featured mushrooming by the Oleksa's and our ever-popular groundwater model was piloted by Jim Orben.

I received an interesting call from a member and former Springtown resident a couple weeks ago regarding a bunch of baby squirrels that were dislocated by roadside tree trimming at the Moravian Village in Bethlehem. The mother fled, so our member put them in a box and was feeding them milk, but didn't know what else to do. Now I am not a wildlife expert either, so I referred her to a rehabilitation center. She told me later that the Pocono Wildlife Rehab and Education Center in Stroudsburg took the babies. I caution anyone to be very careful about handling wildlife, and make absolutely sure before you rush in that babies are actually abandoned. Once you do touch them, the mother will rarely come back, so their life is literally in your hands. If you find yourself in a similar situation, remember that it is illegal to keep wildlife as pets without a license. The Pocono rehab can be reached at 570-402-0223.

Finally, I want to publically thank the Art of Preservation folks for again contributing a portion of the proceeds from their fall art sale to the work of the CCWA. We certainly appreciate any and all donations and rest assured that they will be put to good use. No one at the organization receives any compensation for their time, and all donations are tax deductible (for now anyway).

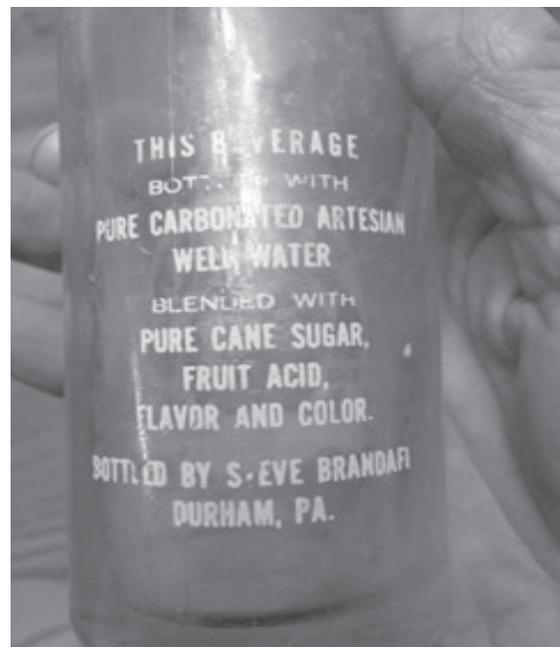
Yours in conservation

W. Scott Douglas, President

Sparkle Plenty Bottle

In the last issue of *Cooks Current*, a question was raised concerning a bottle found in the township. The bottle had at one time contained a carbonated beverage and was labeled "Sparkle Plenty". The beverage was supposedly bottled here in Durham, PA and we asked our readers if anyone had information. Several people came forward and verified that a small bottling operation had existed in Durham on Red Bridge Road. The operation was short-lived and eventually moved to Bethlehem. We were told that the beverage was called "Sparkle Plenty" after the owner's daughter who had that as her nickname. Another bottle of the same type is on display at the Durham Municipal Building.

Thank you to all who provided information on this matter.





Botanical Focus: Dutchman’s breeches (*Dicentra cucullaria*) By: David Oleksa

This is the 7th installment in a series of articles on the flora of the Cooks Creek Watershed.

A magnificent spectacle can be seen on the cliffs (the Palisades) overlooking the Delaware River in Nockamixon Township every late April. Thousands upon thousands of Dutchman’s breeches bloom and turn the cliffs white with their unusually shaped flowers. They are among the first wild flowers to bloom in the deciduous woodlands of the eastern United States.

The name “Dutchman’s breeches” is quite descriptive in that the flowers are shaped like a delicate pair of white pantaloons hanging upside down. At the bottom of each flower are small flanges which are yellow and can easily be imagined as a belt around the pantaloons. These flowers are ½ to ¾ inches long and grow cluster-like on a stalk with no leaves. The stalk protrudes from a low growing mass of dark green leaves shaped similar to those found on parsley.

Dutchman’s breeches prefer moist well-drained soil in a deciduous environment with quite a bit of leaf litter and humus. The soil pH should be 6.8 to 7.2 (slightly above or below neutral). Leaf cover is the most important element however, since without it, no Dutchman’s breeches will be found. The scientific name *Dicentra cucullaria* is derived from the Greek words for “two-spurred”, but the common name, *Dutchman’s breeches* is far more descriptive and fun.

Pollination of the flowers is interesting with bumble bees being the most effective pollinators due to their long proboscis. Their status as chief pollinators for Dutchman’s breeches is also due to the fact that bumble bees winter-over deep in the ground and the timing of their re-emergence co-insides with the Dutchman’s breeches being in flower. The bees need nectar to feed the larvae back in the nest and the Dutchman’s breeches, although they have no fragrance, attract the bees by the bright white and yellow colors that their flowers exhibit. While sipping the nectar from the blossom, the hairy body of the bumble bee collects pollen and transmits it to the stamens of other blossoms, completing the act of pollination. The seeds form in pod-like fruits and as the pressure of the growing seeds rises in the pod, the pod splits and the mature seeds are expelled.

Honey bees assist in the pollination efforts but because of their shorter proboscis are not as efficient since they can only gather the pollen with their front legs. There is some evidence that other insects including ants also assist in the pollination process. The tiny seeds are dispersed by rain but mostly by ants who take the seeds back to their nests. The tiny black seeds have small white food bodies called elaiosomes attached to them. These are relished by ants and they carry the seeds back to their nests for future sharing by the ant colony. The elaiosomes are consumed and the remainder of the seeds are discarded. Unconsumed seeds that have been left behind in abandoned ant nests, sprout and create new colonies of Dutchman’s breeches.

Despite the fact that the seeds are consumed by ants, all parts of the plant are toxic to most mammals, especially most ruminants and other grazers. The plants contain high levels of isoquinoline alkaloids which cause staggering and trembling with convulsions, diarrhea, and vomiting in animals. Deer are especially prone to the poison and avoid Dutchman’ breeches as we do the plague.

Interestingly enough, sheep are immune to the poison and farmers can allow sheep to graze in areas with high concentrations of Dutchman’s breeches before allowing other grazers to move into the area.

Interestingly, even with the negative connotations concerning the toxic nature of the plant, science has found that the botanical drug complex, corydalis, (found in the Dutchman’s breeches bulblets) is useful in treating skin lesions. This drug had previously been used to treat syphilis as well.

Although the plant is found primarily in the eastern and mid-West portions of the U.S., there is a population of Dutchman’s breeches found in the Pacific Northwest in the states of Washington and Oregon. It is a mystery how these plants got there.

It is unfortunate that the plant blooms for only a couple of weeks each year and then even its foliage disappears. But if you’re lucky enough to have this marvelous bit of flora on your property or if you have the opportunity to see a large area covered in these cute little pantaloons, it will go a long way in cheering you up and getting your day started on a high note.



Children's Backyard: Spring and Milk Paints *By Lois Oleksa*

Spring was once called Lent. Around the 14th century the word was “springing time” and later “spring-time” and again shortened to “spring”. Plants spring from the ground. Look around and see plants shooting up where there were no shoots yesterday – only dirt. New life literally springs up from the ground.

The Latin word for “spring” is “vernal”. You may be familiar with vernal pools which exist in the spring time and disappear in the summer. There is also a term called vernal equinox. “Equi” means equal and “nox” means night. The vernal equinox is the spring equinox when both the night and day last for an equal amount of time; each lasting around 12 hours.

Based on the Earth's axis and the sun's position over the equator, the astronomical calendar gives us spring as March 20, 2018. The meteorological calendar is split into four clear periods of three months across the calendar and spring is given one of these periods. The meteorological spring started March 1. Spring's months are March, April, and May, with May 31 being the last day of spring.

Signs of spring in the Cooks Creek Watershed? I look for skunk cabbage and trout lilies, the call of mourning doves, rhubarb peeking out in the garden and spring peepers singing from the swamps three days in succession. What do you look for?

Signs of spring on a farm in our watershed? I look for lambs and kids romping in the fields, calving of cows and freshening goats. All revolve around new life. Springer or springing, meaning a cow is close to calving (having a baby calf), came from the ideal calving period being in the spring. Having a baby in the cold winter is hard, but the warmth of the sun in the spring time makes calving, kidding, or lambing (having a baby goat or sheep) more pleasant. What happens when a cow or goat has a calf or kid, respectively? It's the start of the milking season. A mammal must have a baby before producing milk. In the spring time mammas will produce enough milk for their babies and extra. What to do with the extra? Drink it, make cheese or soap AND MAKE MILK PAINT.

Milk paint is one of the oldest forms of paint. It has been found in cave drawings and paintings made thousands of years ago. It was made of simple ingredients: milk, lime, and earth pigments. King Tutankhamen's tomb contained models of boats, people, and furniture painted with milk paint. In Colonial America wandering painters roamed the countryside. Mixing pigments they carried with the farmer's own milk coming from his own cows or goats and lime from the local lime pit, the painters painted furniture and plaster walls. The paint being made from milk was a calcium-casein paint named after the protein “casein” found in milk and the lime also known as calcium. The original milk paints varied in color, texture and permanence as there were so many individual recipes. If it was thick it covered the surface being painted and if it was thin it acted as a stain just coloring the surface of the wood but letting the grain of the wood show through. When the milk paint was mixed it had to be used immediately because trying to keep the milk paint for days would result in its spoiling just like any milk left out, without refrigeration, would spoil. Today there are companies that try to duplicate this original milk paint, however, they use powdered milk to give it lasting properties.

Try your hand at making the original milk paint.

(Continued on page 5)

(Continued from page 4)

Children’s Backyard Activity: Making Milk Paint

Ingredients: _____ →

Skim milk at room temperature.

Hydrated lime which is the same stuff that is used on the garden or lawn; use the powdered form.

Pigments such as natural berries, chalk ground into a fine powder – use mortar and pestle, or even spices such as turmeric or mustard powder. When working with pigments wear gloves to avoid staining your hands.

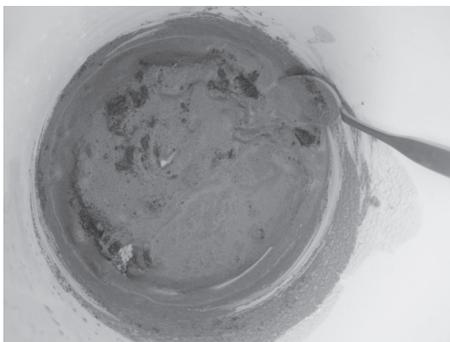
Also, cheese cloth or muslin, metal or glass container, stirrer, brush, rough wood to be painted.



1. Add a bit of hydrated lime to a metal or glass container. If you’re using 1 quart of skim milk, 1 ounce of hydrated lime should be sufficient. _____ →



2. Stir in enough skim milk into the hydrated lime to make a cream. This will prevent lumps. Then add more skim milk to the mixture to give the mixture a paint like consistency. _____ →



Paprika for color

3. Add sufficient pigment powder or berries or spice until you get your desired color.

Blueberry for color



Continued on page 6

4. Stir well for a few minutes.
5. If you've used berries, strain the mixture through multiple layers of cheese cloth or a piece of muslin cloth.
6. Apply the milk paint to raw wood with a cheap natural bristle brush.



7. If another coat of milk paint is needed, allow the first coat to dry thoroughly before applying the next coat.
8. Extra milk paint can be kept in the refrigerator for several days before the milk goes sour.

Native and Invasive Plant Workshop

July 21, Noon-2pm

Where: 969 Spring Hill Rd., Durham PA 18039

Contact: Jeff Heehs 610 749 2102

Walk with Durham landowners Maureen O'Brien and Jeff Heehs through woodlots heavily impacted by invasive shrubs and grasses, encroaching vines, and loss of large trees to disease and pests. We'll talk about different attempts to restore and replace trees and understory with native plantings. Just clearing space in selected areas to advantage indigenous plants may gradually re-balance the mix of vegetation toward native species.

Green Tip #42: Stopping That Drain Clog Naturally *By: Doug Moss and Roddy Scheer of EARTHTALK*

Chemical drain clog removers do contain some pretty harmful stuff. The three main types available to consumers—caustic, oxidizing and acid—work by using harsh chemicals that heat up clogs to melt the congealed grease impeding the outflow. All three are acutely toxic to humans and animals if swallowed, and coming into contact with them can burn your eyes, skin and mucous membranes. Even the fumes can cause respiratory distress. These chemicals can also explode inside your home's pipes—especially if inadvertently mixed with other chemicals or cleaners.

Unfortunately, you'll have to look hard to find drain clog removal formulations that don't come with big risks. The Environmental Working Group (EWG) Guide to Healthy Cleaning gives drain clog removers from the likes of Amway, Clorox, CVS, Drano, Liquid Plumr and Safeway an "F" grade, given their toxicity to humans and animals and harshness to the environment. And don't be fooled by a product's branding, as an eco-friendly name can sometimes belie toxic ingredients. To wit, EWG also gave an "F" to Up and Up Drain Pipe Opener and Earthworm Family-Safe Drain Cleaner for their environmental and health dangers.

EWG found that a few products—Biokleen Bac-Out Drain Care Gel, Drainbo The Natural Solution Natural Drain Cleaner and Earth Friendly Products' Earth Enzymes Drain Opener—did a decent job unclogging drains without using especially toxic chemicals, but it's always better to try to avoid the problem in the first place.

In the kitchen, refrain from putting eggshells, coffee grounds, pasta, potato peels, rice, flour, produce stickers, paint and cleaning products down your sink drain, even if you have a garbage disposal. As for keeping grease out of the drain, try to scrape or mop it up with a paper towel and throw it away. Also, keeping your garbage disposal clean—pour a little dish detergent down the drain and run the disposal under cold water for a minute or two each night after doing the dishes—will also prevent back-ups.



As for the bathroom sink, shower or tub, hair—whether from dad's shaving or sister's styling—is likely the chief suspect in clogs. A hair catcher like the [TubShroom](#) (or SinkShroom or ShowerShroom) could help. This ingenious little mushroom-shaped device pops into the drain and attracts and coils hairs around itself before problems start. Pop it out every couple of weeks, peel off and dispose of the collected hair in the garbage, and start the process all over again.

A little preventive maintenance goes a long way to keep drains clear. Health and wellness site [Mercola.com](#) suggests filling sinks with a mix of white vinegar and warm water, then releasing the drain so this all-natural dynamic cleaning duo can do its work degreasing your outflow pipes. If the drain still runs slowly, pour in several tablespoons of baking soda followed by a white vinegar chaser.

Plastic!

By: Debra Orben

As Earth Day approaches I am reminded of the word “Plastic!” from the movie *The Graduate*. Here’s why.

A few weeks ago, I heard a 20 year old Lehigh student, Sam Benchehib, talk about a trip he took with his brother Gary, down the Citarum River in Indonesia. They weren’t going on a sightseeing adventure to view wildlife or pristine nature. Wildlife doesn’t exist in the most polluted river in the world, unless you count the dead dogs and pigs floating by. Instead they paddled the kayaks they constructed out of plastic bottles down the river to bring awareness to the plastic pollution that is floating there and headed for the sea, harming not only the wildlife but also the people who live along the banks of the river. Ben and his brother, who grew up in Bali, were appalled to discover that the beautiful ocean they swam in as children was becoming awash in plastic. They did something about it and raised people’s awareness. Now even the government of Indonesia has joined in their cleanup efforts. You can view videos about their creative and heroic efforts at *Make a Change World*.

The next week in Pennsylvania, Tim, a former classmate, spent a cold wet Sunday morning with an army of volunteers from the Brodhead Chapter of Trout Unlimited. They were wading in the Pocono Creek, not to fish for their favorite trout, but to do their best to clean up as many Nurdles, as possible. A tractor trailer crash spilled tons of bright blue plastic pellets called Nurdles into a headwater of the creek. The pellets aren’t considered toxic, but they could be harmful to wildlife and contribute to the widespread plastic pollution in our oceans. Thanks to Tim and all the volunteers along the way who are trying to clean up this spill before it reaches the Delaware River and ends up in the ocean.

Closer to home, in the Cooks Creek Watershed where I live, our roadside clean up day had to be postponed due to cold weather and the threat of snow. Several weeks will have passed before we can go outside to clean up the litter along our local roads. In those short weeks, how much more litter has been tossed, how much single use plastic has been consumed and discarded? How much more is floating out to sea?

Meanwhile in Washington DC, I have a friend who works for the EPA, formerly known as the Environmental Protection Agency. She reports that the federal government is censoring and limiting her research. Climate change has been deleted from their official reports and must not be mentioned. Environmental regulations have been loosened on purpose to allow big business to grow and prosper.

Wait, you say, what does climate change or environmental regulations have to do with Plastic? There must be some mistake. No, actually when you look at the big picture, plastic and carbon pollution are two sides of the same coin. One is visible and one is not. Both have been spewed into our environment with abandon, never thinking of their cumulative effects, the unforeseen consequences. Most of our plastic is derived from oil and much of our carbon emissions are too. Once released into the atmosphere or floating down our rivers they are nearly impossible to stop. They do not biodegrade or become harmless.

So, as Earth Day approaches, we can continue on our well-worn path of consume and clean up. Better yet, as some folks in Washington want us to believe, consume and not bother with the clean up part. Or perhaps we can embark on a brave new adventure and stop the sources of both plastic pollution and carbon emissions.

We could, like the Benchehib brothers, see plastic in a whole new light. We could see it as a valuable resource not to be tossed lightly away. We could demand that single use plastic be banned and that our food be packaged in biodegradable materials. We could invest in renewable energy, install solar panels, and drive electric cars. We could think of the consequences of our actions, the sea turtles, albatrosses, and whales choking on plastic. We could think more about the coral reefs dying because of warming seas or our parks, forests, and farmland violated by gas and oil drilling and unnecessary pipelines. We could become kind stewards and helpful caretakers of the earth’s resources instead of just toss and turn away consumers. We could be grateful for all the gifts of our earth and realize that clean air, fresh water, wildlife, and a healthy sustainable planet are more valuable than all the bank accounts in the world. Please join in this effort, and tell all your friends, including your representatives in Washington, that you love our big blue ocean planet and that it is worth caring for.

Creature Feature :American Woodcock (*Scolopax minor*)

By W. Scott Douglas

This is the 44th installment in a series of articles on the fauna of the Cooks Creek Watershed.

One morning in early March this year, when I was walking my dogs in the first light of dawn around 6am, I heard a very odd bird call. It was a loud scratchy *preeeeeet*, followed by a gurgling warble and whistling like a wiffleball that seemed to be coming from something that was flying high in circles around me in the dark. Later, after some poking around the internet (www.allaboutbirds.org is a great site) I was able to



determine that the call was a Woodcock performing its “roding” (courting) display. I had seen a Woodcock on my property many years ago, but had not seen one since, and I’d never heard them calling like that. For a couple of weeks, I was treated to the sound in the morning. I even heard them the morning after the bad snowstorm. They would also perform at dusk, after the sun had gone fully down but just before it was fully dark. I tried to see them doing their dance, but the light was poor both in the morning and at night, making it impossible to figure out exactly where they were without spooking them. I had to be content just standing on the lawn and listening to them.

The American Woodcock, *Scolopax minor*, is actually a shore bird related to the snipe; even though it lives in old fields, wet woods and swampy meadows. Woodcocks are colored like a shorebird, with a striped brown, black, and white pattern that makes them well camouflaged on the forest floor and in the scrubby streamside thickets they prefer. Their bills are long and flexible, like a lot of shorebirds, but their large eyes give away their upland and nocturnal ways. Woodcocks use their long bills to probe under leaves and in the soil for earthworms and insect larvae. They tend to wobble when they walk and scientists think they do this to create vibration patterns underground that attract (or annoy) earthworms and make them move.



Woodcocks, or “timberdoodles” as some call them, make their nests out of dead leaves in early spring right on the ground. The female lays a clutch of 1-5 eggs and tends them for 20-22 days. The young leave the nest a few days after hatching and fledge within a couple weeks. While they can survive at this point on their own, they tend to stay with the female for as long as five weeks. Woodcocks are the only shorebird that it is still legal to hunt, and many are still taken every year, although their numbers are declining. It is more likely that this is due to loss of habitat than hunting pressure, however. Since the areas they like are also prime tick habitat, I suggest listening for them in the cold days of late February and early March in overgrown fields near the Creek. Since no other birds are awake when they are calling, you won’t mistake them for something else. Good luck with your snipe hunt!

PART II: Can Our Soils Save us from Climate Chaos? *By: Lorna Yearwood*

In Part I of this article (see Volume 15, Issue 1 of Cooks Current – Winter 2018), I described the role of the soil microbiome and plant roots in fixing carbon from the atmosphere. In this part, I will describe the agricultural practices and their many benefits that increase carbon storage or sequestration in the soil.

Regenerative Agricultural Practices

The agricultural practices that can help us sequester carbon back into the ground include the following:

Minimize tillage (e.g. ploughing)

Tilling exposes microbes to air which temporarily increases their carbon dioxide emissions. Low or no till reduces disturbance to soil microbiome which in turn helps keep aggregates and the mycorrhizal fungi population intact. New crops are seeded into crop residues which adds organic matter to soil.

Elimination of bare soil

Bare soil leaves the soil vulnerable to erosion by water and wind and is also a missed opportunity for plants to fix carbon from the atmosphere. In addition to reduction in erosion, cover crops have many benefits¹:

- help build soil organic matter
- reduce nitrogen leaching
- improve soil structure
- increase water infiltration
- reduce evaporation

It has been shown that the more diverse the cover crops used, the greater the benefits. For example, leguminous cover crops such as vetch and clover can be used to add nitrogen and reduce the quantity of chemical fertilizers needed. One downside is that in “conventional” or chemical farming, herbicides are usually used to kill the cover crop prior to planting.

Diversity and enhanced crop rotations

One of the key factors to supporting microbial life is to encourage diversity and even going from a two crop rotation e.g. from corn-soy to three or more crops e.g. corn-soy-wheat-alfalfa has shown to increase soil carbon sequestration² along with productivity and profitability. Cover crops can add to this diversity too.

Compost

Composted manure or plant matter is rich in microbial life and can add diversity and mass to the soil microbiome. It also provides other benefits such as disease suppression, nutrient cycling and enhances soil structure³.

(Continued from page 10)

These agricultural practices may seem a little remote to the average homeowner – but they are not! You can practice them in your own garden - you can take steps to increase the organic carbon in your soils:

Where possible, do not till or turnover the soil – once a bed is established, you can use a broadfork to aerate the soil with minimal disturbance.

Make your own compost from garden waste, leaves, vegetable scraps and apply it to your garden soil annually.

Keep your soil covered at all possible times, preferably with a mixture of cover crops or mulch.

Sow some nitrogen fixing clover into your lawn or even better, plant trees or consider turning your lawn into a perennial meadow.

In general, leave roots in the ground to decompose. After harvesting vegetables, cut the top growth and leave the roots. Mow, cut back or heavily mulch weeds instead of pulling them.

Carbon Sequestration

It should be noted that the science of carbon sequestration is not settled and both the quantity and permanence of carbon sequestered into soil is not definite and it is affected by many factors such as initial carbon stock of the soil, the climate, soil characteristics and historical and current land use practices⁴. Also, depending upon the type of soil, initial carbon sequestration can be very high and then taper off with time until soil-carbon equilibrium is reached. In one study, a degraded desert in Egypt⁵ was farmed regeneratively, the first five years were the highest carbon sequestration at 2.7 metric tonnes of carbon per hectare (t C/ha), but this tapered off to an average of 0.5 t C/ha for the remaining time of the 30 year study. For the reasons cited above, the reported rates of sequestration for regenerative agriculture vary considerably.

So, getting back to the fundamental question of whether we can significantly reduce the carbon dioxide levels in the atmosphere by changing the way we practice agriculture. Project Drawdown's calculations use 0.35 t C/ha as the average sequestration rate⁶, show that there would be a total reduction of 23.2 gigatons of carbon dioxide (Gt CO₂e) over 30 years if 25% of the total global cropland (a "plausible" scenario) was managed in organic regenerative agriculture - this equates to 0.76 GtCO₂e per year (and includes both sequestration and a reduction in emissions primarily from a reduction in tilling and lower quantity of fertilizer used). This is only 1.8% of total 2017 global emissions (41GtCO₂e). However, according to IPCC⁷, in order for us to have a "likely" chance of staying below 2°C of warming, we need to reduce our annual emissions 40-70% by 2050 and by 2100 have reduced our net emissions to near zero.

With the latter numbers in mind, it seems to me that realistically speaking, regenerative agriculture cannot *by itself* reduce carbon dioxide in our atmosphere down to livable levels and save us from climate chaos. However that does not mean it isn't worth advocating for.

(Continued on page 14)

Back to the Past: The Durham Iron Mines, Tunnels, &c.

1876 By C. Laubach. (For the Doylestown Democrat.)

A column highlighting the natural history of the Watershed

Continued from Volume 15, Issue 1; Winter 2018

New Tunnel

About five hundred yards west of this series of tunnels is another tunnel called "New Tunnel," on account of its being the latest and most recent of all the tunnels in this locality. This tunnel is considered to be quite an achievement; and if the time, labor and money is taken into consideration, it may well be termed such. But to give the reader a better idea of the magnitude of this work, we will to try and describe it:

First, having provided ourselves with lamps, we again commenced our tramp through mud and wet places--the water sometimes being ankle deep, and the mud so sticky as to almost pull our boots off our feet. We however managed to get along by walking on the rails of the track, running the whole length of the tunnel, which is used to accommodate the cars, when loaded with rock and ore. After going a distance of about thirteen hundred feet, we come to a natural cave in the solid rock. When the workmen were employed upon this cave, they met with what might have been a serious casualty; they drilled a hole into what seemed, and was, a solid rock, put in the blast and fired it, and waited as usual for the report, but what was their surprise--when simultaneous with the report there came a tremendous rushing sound like of water, and in an instant it was upon them, carrying everything floatable before it. There was mixed up in the debris trucks, pick-axes, sticks of wood, and every conceivable object used in a well-ordered tunnel. The workmen had to flee for their lives, but all miraculously escaped. This mishap delayed the work for a short time. The time required to remove the mud and debris was upwards of two weeks, showing that the quantity of mud and water pent "up in the natural cavity waiting for an opportunity to belge (sic) forth, was nothing to be sneezed at." Going on a little further we heard the puffing and exhaust of an engine, which is used to pump fresh air into the tunnel and drive out the foul air. Once in awhile (sic) we came upon side drifts, where the miners have struck veins of ore, and followed them to some extent to ascertain the quality of the ore. We were now about eighteen hundred feet from the outer opening of the tunnel, and about three hundred feet in perpendicular depth. When of a sudden the words, "Halt! Stop! They are going to fire!" and we did stop. If we had no inclination to stop before we would have regard for the imperative mood then.

Presently there was a terrible, spiteful, sudden bend, tremble,

(Continued to page 13)

(Continued from page 12, *Back to the Past*)

and and (sic) awful reverberating roar, with a sudden flap against your clothes, as if a person had been slapped with a broad shingle. The reverberations and roar leave a very peculiar sensation which is felt for some time after.

The air, which before was quite impure, now became thick and heavy with smoke and sulfurous gases. We now felt what an important part the little engine at the other end had to perform.

Were it not for its silent and efficient working, no human being could live in here, much less perform the arduous work of the miners. The unpleasant smoke and gas was soon dissipated, and we advanced to where the men were at work. We found that the blast had done its work well, in breaking loose several carloads of chlorite slate, of which the rocks at this depth principally consist. The average progress is at the rate of sixty feet in a month. The length of the tunnel is twenty-two hundred feet or nearly half a mile, the extreme length when finished will be almost a mile. The main object of this stupendous work is the draining of the "*Mine Hill series of tunnels*" which are now flooded with water, and consequently are not being worked at present. In some future article we will give you a description of this series of tunnels, which by far exceed all the rest in extent, and dates its commencement back to upwards of one hundred years, and in connection we will also give a geological description of the township of Durham.

Transcribed and may contain errors due to transcription into digital format.



Renew Your Membership

Cooks Creek is an important resource for our community. Don't forget to renew your membership and stay up to date on issues concerning our Watershed.

If you want to get more involved, come to a meeting and share your talents and interests!

Find the membership form on the back page.

(Continued from page 11)

Over the long term soils are a significant natural carbon sink and have a significant role in reducing net emissions – by up to an estimated 188 Gt CO₂e (~4.5 years worth of emissions)⁵.

Perhaps more importantly though, the “side” benefits of implementing healthy soils initiatives are *really* important in terms of us adapting to climate change. In our region, climate change is predicted to bring heavier rainfalls, longer periods of drought and higher temperatures¹⁰. Healthy soils with plenty of organic matter can help us to continue to grow food under these conditions by increasing water holding capacity, increasing soil aggregate stability and increasing availability of nutrients.

I will conclude by quoting the Intergovernmental Panel on Climate Change⁷. “Many adaptation and mitigation options can help address climate change, but no single option is sufficient by itself. Effective implementation depends on policies and cooperation at all scales and can be enhanced through integrated responses that link adaptation and mitigation with other societal objectives.”

Regenerative agriculture (and gardening) is both an adaptation and mitigation option and we can all start doing it right here, right now!

List of references (PART II):

1. Kitterage, J. *Soil Carbon Restoration, Can Biology Do the Job?* Northeast Organic Farming Association, 14 Aug. 2015, www.nofamass.org/sites/default/files/2015_White_Paper_web.pdf.
2. Davis, Adam S., et al. “*Increasing Cropping System Diversity Balances Productivity, Profitability and Environmental Health.*” *PLoS ONE*, vol. 7, no. 10, Oct. 2012, doi:10.1371/journal.pone.0047149.
3. Rodale Institute, “*Regenerative Organic Agriculture and Climate Change.*” Rodale Institute, 2014, pp.1-24
4. Lewandrowski, J, and Peters, M. *Economics of Sequestering Carbon in the U.S. Agricultural Sector.* USDA, 2004.
5. Luske, B, and J Van der Kamp. *Carbon Sequestration Potential of Reclaimed Desert Soils in Egypt.* Louis Bolk Institute & Soil & More International , 2009, pp.1-3
6. Project Drawdown “*Food Sector Summary.*” Project Drawdown, 13 Dec. 2017, www.drawdown.org/solutions/food.
7. IPCC, 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
8. Lal, R. “*Soil Carbon Sequestration Impacts on Global Climate Change and Food Security.*” *Science*, vol. 304, no. 5677, Nov. 2004, pp. 1623–1627, doi:10.1126/science.1097396.
9. Nichols, Kristine A., and James Millar. “*Glomalin and Soil Aggregation under Six Management Systems in the Northern Great Plains, USA.*” *Open Journal of Soil Science*, vol. 03, no. 08, 2013, pp. 374–378, doi:10.4236/ojss.2013.38043.
10. Commonwealth of Pennsylvania, Department of Environmental Protection, “*Pennsylvania Climate Impacts Assessment Update.*”, 2015, pp. 1–199

Recycle! Local Recycling Information

Durham Township Recycling Center

Location: Municipal Building, 215 Old Furnace Rd, Durham

1st Saturday of every month (2nd Saturday if 1st Saturday is on a holiday weekend)

Hours: 8:00AM – 12:00 noon, 1:00PM-4:00PM, (call ahead)

Accepting newspapers, magazines, junk mail, phone books, glass, tin, plastic, aluminum and cardboard, and CFL bulbs, rechargeable batteries (during office hours).

Please note that this facility is available to all, not just Durham Township residents!

Contact Dani McClanahan at the township building for more info. 610-346-8911

Springfield Township

Location: Township Building, 2320 Township Road

Paper Recycling Bin Available at Township Building.

A Recycling bin was recently placed here and is available to anyone. Cut down on trash and help the township earn extra money. You can drop off: Magazines, Shopping Catalogs, Phone Books, Newspapers, Office and School Papers, Mail.

Please do NOT include: Plastic, glass, metal, trash

Hours: Anytime ; See website: www.springfieldbucks.org or call (610) 346-6700.

Blinderman & Son

Location: 1320 Whitaker St, Hellertown. 610-838-9221

Hours:
7:30AM – 4:00 PM, Monday – Friday

7:30 AM – 11:30AM, Saturday

Accepting cardboard and most metals.

City of Bethlehem Theis/Cornfeld Recycling Center

Web site: www.bethlehem-pa.gov/recycle/services/theis_cornfeld.htm

Location: 635 Illick's Mill Rd, Bethlehem

Phone: 610-865-7082 Hours: Weekdays: 9AM to 5 PM, Saturday 9 AM to 4 PM, Sunday 11AM to 4 PM

Accepting glass, cans, plastics, newspapers, all books, magazines, catalogs, cardboard, mixed office paper, metals, textiles (clothing, shoes, etc.), large appliances (certified freon-free). Call or go to the web site for specifics.

Bonus!! They provide FREE on site shredding services for businesses and private individuals. If you have 4 or more boxes, call 610-865-7082 to schedule an appointment.

Schedules of Local Government Meetings

Springfield Township:

www.springfieldbucks.org

610-346-6700

2320 Township Road

Supervisors: 2nd Tuesday @ 7:30 PM

Planning Commission: 1st Wed. @ 7 PM

Supervisors/Planning Commission

Work Session: 3rd Thurs. @ 7 PM

Environmental Advisory Council:

2nd Thurs. @ 7:30 PM

Open Space Committee:

1st Tuesday @ 7:30PM

Historic Commission:

3rd Tuesday @ 7:30 PM

Durham Township:

www.durhamtownship.org

610-346-8911

215 Old Furnace Road

Supervisors: 2nd Tuesday @ 7:30 PM

Planning Commission:

1st Tues. @ 7:30 PM

EAC: 3rd Tues. @ 7:30 PM

Lower Saucon:

www.lowersaucontownship.org

610-865-3291

3700 Old Philadelphia Pike

Council: 1st and 3rd Wed. @ 7 PM

Planning Commission:

3rd Thurs. @ 7 PM

EAC: 1st Tues. @ 7 PM

Williams Township:

www.williamstwp.org

610-258-6060

655 Cider Press Road

Supervisors: 2nd Wed. @ 7 PM

Planning Commission: 3rd Wed. @ 7 PM

Land Preservation Board:

3rd Mon. @ 7 PM

Richland Township:

www.richlandtownship.org

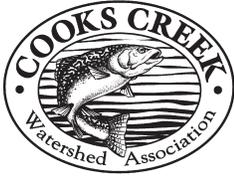
215-536-4066

1328 California Road

Supervisors: 2nd and 4th Mon. @ 7 PM

Planning Commission: 3rd Tues. @ 7 PM

Preservation Board: 2nd Thurs. @ 7 PM



Cooks Creek Watershed Association
 P.O. Box 45
 Springtown, PA 18081
 www.cooks creekpa.org

If you hold precious the beauty that surrounds us in the Cooks Creek Watershed area and would like to be actively involved in its preservation, then consider joining our association as a member. Reach out to your community! We would love to hear from you! Please drop us a line at info@cooks creekpa.org

CCWA is a 501 (c) (3) non-profit organization.



Find us on Facebook

Please Join Us... Cooks Creek Watershed Association-Membership Form

All of us who reside in the area enjoy the beauty of Cooks Creek.

Those of us who are fortunate enough to live here are dependent upon this watershed not only for the beauty of the creek but our wells, the wetlands, the wildflowers and all of the beautiful landscapes in our townships.

It's up to all of us to protect this treasure. The Cooks Creek Watershed Association asks that you become a member and help in the task of protecting this special resource.

Name: _____

Other household members: _____

Address: _____

Phone: _____ E-mail: _____

Interests: (circle)

Newsletter	Website	Roadside Cleanup	Event Planning
Membership	Fundraising	Stream Studies	Wherever I'm Needed

Individual Membership Fee: \$ 15.00 per year _____

Family Membership Fee: \$ 25.00 per year _____

Student Membership Fee: \$ 10.00 per year _____

Donation: to legal defense fund: _____

Total:

I wish my membership and donation to remain anonymous in our board minutes. Check box.

Please detach and mail to Cooks Creek Watershed Association, (CCWA)

P.O. Box 45, Springtown, PA 18081. **THANK YOU!**

Checks can be made payable to Cooks Creek Watershed Association.

CCWA is a 501 (c) (3) non-profit organization.