



## Presidents Pen

By Dr. Jaclyn Rhoads

### DCVA President

On behalf of DCVA, I hope all of our members are doing well. This year has brought about many challenges for individuals and organizations. DCVA is continuing to do its best to protect our watershed and help improve conditions for future generations. I would like to take the opportunity here to highlight our work over the past several months.

In 2014 DCVA created its first strategic plan. Typically, these plans identify actions for about five years. DCVA is now working on a new strategic plan which has taken several meetings and dozens of hours to develop. I would like to thank the DCVA Board members and staff for their participation. DCVA will continue to gather feedback from its members and volunteers as well to help shape the future of DCVA.

DCVA continues to work with Save Marple Greenspace, Delaware Riverkeeper Network, and Clean Air Council in the fight to protect Whetstone Run, a very pristine stream in Marple Township that DCVA identified and has applied to the state to protect. Fortunately, the Marple Planning Commission did not vote in favor of the development application for the site, but the Marple Commissioners have the final say. This battle continues and luckily the DCVA membership includes many experts who help to bring scientific rigor to the discussions plus energetic volunteers.

Lastly, DCVA staff have worked hard to promote webinars and a special fall cleanup in the watershed communities. I hope that you had the chance to participate in the exciting online webinar sessions and if not please join us at our next one or join us in a fall clean-up! Our annual spring clean-up is still in the works for 2021, so we look forward to gathering everyone together around Earth Day.

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*Happy Fall*



## Fall Watershed-Wide Cleanup

Since 1984 the Darby Creek Valley Association (DCVA) has hosted a watershed-wide cleanup event focusing on removing trash, tires, and other debris from regional waterways. Regrettably, due to Covid-19, our 36<sup>th</sup> Annual Watershed Wide Cleanup scheduled for April 2020 was cancelled. While some community members participated in individual and family clean ups which helped to remove trash from their neighborhoods, trash and debris still fill our waterways.

As the quarantine was lifted, DCVA decided to continue the tradition of doing a yearly cleanup, but this time it would be in the fall, and on numerous days. DCVA has plans for several smaller, socially distant clean ups this fall throughout the watershed following COVID-19 safety protocols. The cleanups are being held throughout the fall every Saturday from September 12<sup>th</sup> through November 30<sup>th</sup>. Pick a date or a location and come on out and help protect our waterways. The list is growing so check back weekly for updated information. A complete list of locations and dates can be found on <https://www.dcva.org/watershed-cleanups>.

By Susan Miller  
Director, DCVA



Upper Darby High School Science Honor Society:  
From left to right (top): Nick Gjidede, Emma Scouten, Alfonsus Rahardjo, Denize Cisco, Lucy Fekade, Jasmin Rashed, Olivia McConnell, Renee Purnell, Jessica Gian, Tasneem Siddique



Venture Crew 151 above and at right

Photos by Susan Millers

# DCVA'S PROJECT HEADWATERS

By Derron LaBrake

The mainstem of the Darby Creek watershed begins in Tredyffrin and Easttown Townships, Chester County. Headwater tributaries in the eastern part of the watershed are in Radnor, Delaware County and Lower Merion, Montgomery County. Knowledge of water quality in the upper watershed would add to our understanding of the watershed as a whole. With that in mind, DCVA will be monitoring temperature and water depth with data collecting equipment called loggers in one or two of the Darby Creek tributaries that flow through Sharp's Woods Preserve. This preserve is located in Berwyn (Easttown Township) close to Rte. 252, a few miles south of Rte. 30, Paoli. In addition to temperature and depth, Citizen Scientist volunteers affiliated with DCVA will periodically visit the monitoring stations to measure the conductivity of the water (typically during base flow conditions and during times of snow melt) using a DCVA supplied conductivity meter. In addition, the Citizen Scientists may also be responsible for downloading the data collected by the temperature and depth loggers. On approximately a monthly basis, DCVA's partner organization (Williston Conservation Trust) will be collecting water samples from the same locations and analyzing them for total suspended solids (sediment in the water).



## Temperature Logger:

The temperature monitoring will be done with a temperature logger mounted to either a small piece of terracotta pipe as pictured at left or a red brick. The objective is to use something inert that will be visibly different enough from the cobble in the creek so that it can be easily located if it is washed down stream during a significant storm event.

## Water Depth Logger:

The water depth will be measured with a Hobo data logger inside of a slotted length of PVC pipe anchored in the stream similar to the photo below. The pipe will be labeled with DCVA's logo and contact information similar to the park service's well shown below:





Water level measurement device

### **Project Purpose:**

This project is actually dual purposed. The primary purpose is to gather water quality information for Darby Creek's headwater streams and the secondary purpose is to engage the residents of the upper watershed in measuring and understanding the impact of land use in the headwaters has on water quality in Darby Creek. All of the data will be logged on a public website so that anyone can look at how the headwater streams compare to those farther down in the watershed. This is an opportunity for DCVA to begin engaging our watershed residents and more fully understand how their actions directly and indirectly affect the quality of the water that is flowing in Darby Creek.

## **Darby Creek—Bringing Generations and People Together**

**By Nicholas Hoyt**

When I was a young boy, one of the great leisure activities we did with Dad was a stroll by (and sometimes in) the Darby Creek water by Hoffman Park. He would take us down to skip rocks or try and cross without getting wet or drop a line to catch some fish. We lost him in 1990 at the young age of 33 before any of us reached middle school. The time we spent down the crick made up a large percentage of my memories of him.

When I became a dad in 2007, one of the few things I could relate to was bringing my son to the water when he was old enough. Just hanging out and watching him explore the rocks as he climbed across the shoreline was a surreal experience. It was as if it was 1985 all over again but this time, I was the one trying to keep the kid dry.

In 2015, I learned of a group called the Friends of Upper Darby Trails. They had hiked the Darby Creek from one end of the township (Drexeline Shopping Center) to the other (Penn Pines Park) and I became enamored with the project. Now a father of an 8-year-old boy and a 5-year-old-girl, I was excited to see an advocacy group that was promoting green space that I loved visiting with them. We reached out to the elected officials of the time, Mayor Tom Micozzie and State Representative Jamie Santora and organized the first Upper Darby Trails Day in 2016. This was to be in conjunction with the American Hiking Society's

National Trails Day that takes place on the first Saturday of every June. We had a great turn out with hikers that were old, young, black, white, republican, and democrat. You really got the sense that the community was craving something like this.

By the time the 3rd Trails Day occurred, the county was there with a ribbon cutting to officially open a paved section that would connect the Kent Dog Park and the Lower Swedish Cabin. It was a beautiful day and brought great satisfaction to see that many people care about the preservation of our beloved green space.

In the years since, the trail has seen a lot of action. The folks who operate the Swedish Cabin remark that they certainly see a lot more visitors because of this trail. I know that when I go down there, it is no longer the secluded place that would often collect litter but a well-travelled piece of tranquility that seems to be cleaner as a result of those pounding the pavement for their recreation.

Unfortunately, when the storm hit last month ravaging the watershed, large chunks of this pavement were ripped up. Fencing was uprooted and leaned precariously over the water's edge. So much beauty disrupted by Mother Nature's wrath. The county has begun to fix the damaged segment and with any luck it will once again be ready for visitors to enjoy the changing fall foliage. I hope to see you down there with your kids, enjoying nature and showing them how to be good stewards of the land....for this will be theirs to share with their own kids one day.

# Bringing Environmental Education Home

By Aurora Dizel

When DCVA's Young Naturalist program kicked off in February 2019 I was excited about the opportunity to create engaging hands-on educational experiences for the young people in our watershed. Studies have shown that positive childhood experiences in nature are associated with pro-environmental attitudes in adults, so having programs that connect children with nature is an important part of ensuring future generations will carry on DCVA's mission to protect and enhance our watershed. The Haverford Community Recreation & Environmental Center (CREC) provided the perfect location for our programs, with access to the environmental lab and beautiful streamside trails allowing for both indoor and outdoor learning. We engaged children in programs ranging from identifying trees in the wintertime to discovering what a barn owl eats by dissecting owl pellets. We searched for water critters and learned about different spiders and their webs. We were off to a great start! Then COVID-19 reached our part of the world and like everyone else, we paused our programs.

When it became clear that we would be living in this "new normal" for months to come, I wondered if we could continue to engage children in meaningful environmental education experiences in a virtual format. Those of us who love spending time in nature know that it is a sensory experience - the smell of the forest, the visual calm of the landscape, the sounds of the birds, rustling leaves, and trickling stream, the feel of cool, smooth rocks in our hands, the soft moss on our fingertips, the wind in our hair. How could looking at a screen possibly compare to that? It can't. Virtual programming can never be a substitute for in-person experiences that prioritize an immersion in nature. But perhaps what virtual programming can do is inspire children (and adults!) to spend more time immersed in nature, asking questions, curious about what they see, hear and feel. That was our goal in developing the Young Naturalist Lunch & Learn series of webinars that began in July 2020.

In addition to loving nature, I also love books. Since developing these programs was also an outlet for me personally during our time quarantined at home, I was drawn to the idea of reaching out to children's authors to share their books about watershed and environmental topics.



Right away it became clear that not only were authors willing to generously volunteer their time with us, but there were also enthusiastic children grateful for the opportunity to connect with DCVA and book authors in a virtual format.

We quickly learned how to utilize Zoom technology right alongside the rest of the world. While some may have questioned children's ability to adapt to this new way of learning, lo and behold, children are experts at learning and adapting! As of this writing our Young Naturalist Lunch & Learn programs have included:

Connie Nye, an author and environmental educator in Chester County, shared her 2 books with us - the picture book *Can He Keep It?* and an excerpt from her middle grade novel *Sweet Water Hunt* which explores the Brandywine River watershed in a fact-filled fictional story that includes many corresponding field trip and activity ideas.

Jennifer Keats Curtis helped children make the connection between macroinvertebrates and stream health with her book *Creek Critters*.

When Jacqueline Briggs Martin read us her book *Creeking* we learned about how streams can sometimes become hidden and how they can be restored to health once again by caring and determined people.

In *Crawdad Creek* we experienced the wonder and joy of discovering the treasures that abound when children explore a backyard creek, inspired by the author Scott Russell Sanders' own childhood in Ohio.

Author and photographer Doug Wechsler guided us through *The Hidden Life of a Toad* which is full of his own close-up photography of the life cycle of toads.

After the reading, the children have the unique opportunity to speak directly with book authors and have their questions answered in a live virtual setting which often leads to great discussion and sharing. We always wrap up the sessions by encouraging everyone to take what they've learned outside with them on their next nature exploration.

I can't wait until our Young Naturalists can be out there exploring and experiencing nature together again, but in the meantime these virtual programs have allowed us to connect with authors all over the country that we may have never connected with otherwise. We continue to add more youth programming and have many more ideas in development - check out our Young Naturalists page on DCVA.org to see what we're up to!

On Friday, September 18th we held a small in-person Introduction to Water Monitoring program at Ithan Valley Park.



# Isaias and Floyd

By Tim Denny

This past August 4<sup>th</sup> our youngest son Jonny turned 21. Also, on August 4<sup>th</sup>, Merry Place park in Havertown got flooded from the 7 inches of rain dropped by Tropical Storm Isaias. As I walked and filmed the rushing water flowing through the park that day, I thought back to September 16, 1999, when Hurricane Floyd flooded Merry Place and other low areas all along Darby Creek with more than 10 inches of rain.

Jonny had just come home from the Intensive Care Unit at Bryn Mawr Hospital when Hurricane Floyd struck. Jonny was born with Down Syndrome and other health issues. Ironically, for the previous 4 years, I had worked with a group of parents of children with special needs, to raise funds to design and build a park for people of all ages and abilities. We chose the site of the former sewage treatment plant located on Glendale Rd. in Havertown. Volunteers had just completed the first phase of the project when Hurricane Floyd arrived.

Darby Creek was one of the primary reasons we chose that location. Water, especially moving water, is one of nature's gifts that connects people of all ages and abilities; and make us more conscious of our interconnection to the earth. There is beauty and power in moving water. Our goal at Merry Place was to transform the old sewage treatment plant into a park and build accessible pathways to a pier that would allow people to enjoy the flowing creek. Merry Place sustained less damage from Isaias than it did from Hurricane Floyd in 1999. Some of that was due to the reduced amount of rainfall and some was due to the mitigation efforts we have made in the past 20 years. All of which emphasize the critical work and important advocacy of DCVA..

Over the past 20 years Haverford Township has removed some of the fencing along Darby Creek which acted as a barrier to flow and created blockage during storms. The township has also installed rain gardens, created wetlands and daylighted some of the streams feeding into Darby Creek to mitigate stormwater damage. The single biggest pro-active step Haverford Township took was to preserve 125 acres of open space at the former Haverford State Hospital site, now Haverford Reserve, which is two miles upstream from Merry Place.

Because much of Darby Creek flows through long-developed areas, especially in eastern Delaware County, the challenge we face is how to make improvements along the waterway and also prevent future development from exacerbating the current flooding problems.



As Director of Parks and Recreation, I learned the value of using our parks to help with storm water control. I also saw the opportunities the outdoors provides to teach people, especially young people, an awareness of the impact of our daily lives on the health of our waterways and our planet.

Each time we have a big storm like Isaias or Floyd, it magnifies the significance of DCVA's efforts to educate people and improve lives in the Darby Creek watershed. Let's commit ourselves to continue the good work our founders initiated more than 35 years ago. Hopefully in 20 years we will appreciate the benefits of our current efforts.



2009 Article by David Bjorkgren. Wreakage and flooding from Hurricane Isaias in 2020 in Merry Place Haverford Township. Photos above by Tim Denny

# Stream Ecology: Mayflies

By Alan Samel

This is the first in a series of articles about the aquatic organisms that we find in and around the Darby Creek and why they are important to us. This first article focuses on the mayfly. Why start with the mayfly? Why not start with the mayfly? You have to start somewhere, and I choose the mayfly for a number of reasons that I will explain. So, read on!

First, science! Mayflies are in the Order Ephemeroptera; the oldest of the winged insects. “Ephemeros” means short-lived and “Pteron” means winged. Mayflies are found in all types of freshwater around the world, except the high Arctic and Antarctica. Mayflies are also poorly represented on oceanic islands and isolated mountaintops because of their poor dispersal abilities. Mayflies have a hemimetabolous life cycle meaning that they undergo incomplete metamorphosis. Wait, what!?

Patience. Insects that undergo complete metamorphosis hatch from eggs into larvae that become pupae and then emerge from the pupae as an adult. During pupation, the pupa goes through massive physiological changes that result in an adult that looks nothing like the larval stage. Think caterpillar to pupa (chrysalis) to butterfly---that is complete metamorphosis. The mayfly, on the other hand, has an immature stage called a nymph or naiad rather than a larva. Unlike soft bodied caterpillars that will eventually become butterflies, nymphs have jointed legs and a hard exoskeleton. As the nymph matures, it sheds its skin, or exoskeleton, and increases in size; each stage (“instar”) looks like a larger version of the previous instar. This growth pattern will continue until the nymph develops wing pads and eventually emerges as an adult. Here’s



the big difference between incomplete and complete metamorphosis--the adult mayfly looks exactly like the nymph except now it has wings! That’s the difference between complete and incomplete metamorphosis. Still with me?

Trivia time: The term mayfly first appeared in the “Epic of Gilgamesh,” a tale of the life of the Babylonian ruler Gilgamesh that was written around 2000 B.C on clay tablets. *‘Ever the river has risen and brought us the flood, the mayfly floating on the water. On the face of the sun its countenance gazes, then all of a sudden nothing is there.’*

Moving on.

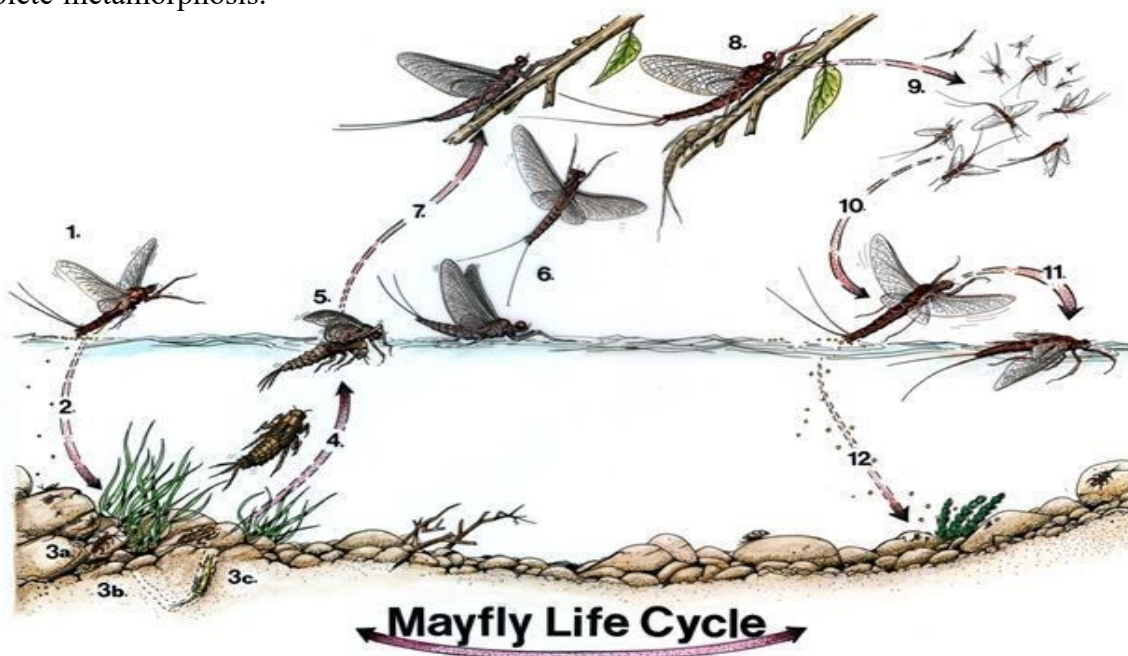


Image from Dave Whitlock's Guide to Aquatic Trout Foods



A concept that will appear often in this series of articles will be **form = function**. That is, the form, or body type, of an insect defines/enables its function in its environment. For mayflies, there are 3 basic body types, or forms: swimmers, clingers, and crawlers: Although they don't live in direct currents, **swimmers** are streamlined and cylindrical with long legs. Their body shape allows them to avoid being swept away by currents. Swimmers swim in short bursts, also to avoid being swept downstream. They are found on the surfaces of rocks and other hard substrates which they grasp with their long legs. **Clingers** have flattened bodies to allow currents to glide over them and are found on the bottom or in rubble in areas of slowed down currents. **Crawlers** are round or nearly round. They survive without the need for flattened or streamlined bodies as they crawl in still water areas or along the edges of riffles or packed leaves, also sand, silt, or areas of detritus.

In addition to body form, mayflies are also identified by what the nymphs eat—their functional feeding group. **Scrapers** scrape and eat algae from rock surfaces. **Collectors** feed on small particles of detritus found in the sediment. **Filterers** collect food that is suspended in the water column, and **Predators**. Adult mayflies have no mouth parts and do not feed during this final stage of their life history.



For those of us who fish, the mayfly has for centuries been a model of lures for fly fisherman. In fact, flies are often identified by the mayfly they are designed to copy.

Before we go much further, let's discuss the term "life history" because we need to understand the life history of mayflies when we think about using them in a stream watch program. In the DCVA Stream Watch Program we use the presence and absence of aquatic organisms, including mayflies, to assess stream water quality. Life cycle is the stages of development: egg, nymph, adult and so on. Life history is basically a description of everything else: diet, environment, emergence patterns, etc. It is critical to an understanding of the life history of mayflies to understand emergence patterns. Mayflies like cold streams that have high levels of dissolved oxygen. Nymph remain longer in a cold-water stream than a warm water stream. In some really cold waters, the nymph life stage can last more than one year before emergence. Darby Creek is a warm water stream. As the water gets warmer, the mayflies have an internal clock that tells them that it is time to complete development and emerge as adults and reproduce, lay eggs, and start the cycle all over again. The adults lay their eggs and then die soon after they emerge from the water.

The adults can emerge in great numbers and have been known to in some parts of the country to create health and safety issues. Sometimes, the mayfly emergence is so dense, snow plows are needed to move all the dead adult mayflies off the road, for fear of cars sliding all over the road, like driving on ice! Yuk!

Now that you know more about mayflies, let's move on to why mayflies are so important, particularly to the Stream Watch Program. Mayflies are very sensitive to stressors, such as pollution (fertilizers, chemicals, road salt, sewage, etc.), changes to the landscape that could cause erosion or changes in stream flow or changes to the overhead canopy that could impact the stream temperature.

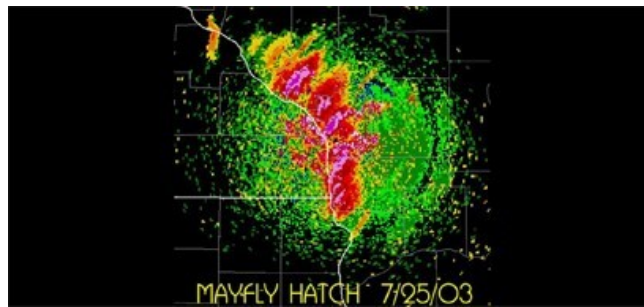
Because they are very sensitive to stressors, mayflies have become an important indicator organism of stream health and water quality. If a stream, say Darby Creek, has mayflies in it, those of us who carry out the Stream Watch Program get very excited because that means that the water quality of that stretch is high. If we come back a year later and there are no mayflies, we start to wonder if something is going on. What caused the absence of the mayfly population?

Where are they? Will they come back? These are relevant and important questions. But we need to be very careful when considering these questions.



One year of observations does not set a trend. It sometimes takes years before clear trends can be identified, and there are years like 2020 where we were not able to get into the stream because of the pandemic. The Stream Watch Program has been sampling streams for over 15 years; we have a pretty good idea of the water quality along the creek and the organisms we expect to collect when we sample in the spring. If we get mayflies in our samples, we all dance in circles and rejoice (not really)! If the mayflies are not there, we start to dig a little deeper into our historical data to determine if there are any trends from previous samples or if we need to see what the data looks like next year.

Because of their early emergence life history, it is critical for us to conduct our Stream Watch samples before emergence occurs. That's why we go out there in March or April. If we took samples in June, then all the mayflies would have emerged and we would have collected very few, if any, mayflies. If we did not have a clear understanding of the mayfly life history, we could mistake the lack of mayflies in our samples as due to an introduction of a stressor to that part of the stream where, in fact, we missed the sample window. DCVA relies on a small army of volunteers to help with the annual Stream Watch program. If you are interested in learning more, contact me at [alan.samel@gmail.com](mailto:alan.samel@gmail.com).



Top: When mayfly swarms are large, they show up on radar. This one in Wisconsin was in the month of July. Photo by NOAA.

Bottom: Plowing up emerged mayflies along a lake shore. From Fark.com

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## Understanding Riparian Buffers: Their Benefits, Regulations, and Opportunities

**By Cindy Mehallow, Penn State Master Watershed Steward, Newtown Square EAC**

*"It is a wise public investment to provide financial incentives to private landowners to prevent or reduce pollutants from entering water bodies."<sup>1</sup>*

A stream is not just the water that flows through a channel. A stream includes its bed, its banks, and the lands that run along its length. The land along our streams and rivers is an essential and living part of the stream ecosystem. Streams that are surrounded by turf lawns, parking lots, or even worse - imprisoned in concrete channels or metal pipes cannot fully function. To be healthy, a stream needs adjacent lands covered with healthy, varied and native vegetation called riparian buffers.

### The Costs of Removing Buffers

When buffers are removed or reduced, surrounding and downstream communities experience a variety of negative impacts.

**Financial:** Once pollutants enter a stream or river, they become a public problem and the cost for clean-up becomes more complicated and expensive. Flash flooding in downstream communities, such as the Eastwick community along the Lower Darby Creek, causes extensive property damage to residents and businesses.

**Environmental:** Erosion, polluted waters, and flash flooding are direct results of inadequate riparian buffers. When we devegetate, clear or build in our riparian buffer areas we not only destroy their ability to provide these community benefits, but the opposite harmful reaction results:

- Rather than flood storage, we have increased flooding because precipitation quickly flows to streams over impervious surfaces (roads, roofs, parking lots) and into streams which rise fast and flow dangerously fast.
  - Rather than aquifer recharge, we have increased drought as the impervious surfaces prevent precipitation from soaking into the land.
- Rather than healthy streamside lands and habitats, we have erosion and degraded ecosystems as bare sediment melts and flows into streams.

**Social:** The aesthetic and recreational value of parks and private property are diminished when streams become eroded, polluted, overheated by loss of shading vegetation, and devoid of aquatic life.

### The Benefits of Protecting Buffers

Riparian buffers are a highly efficient and cost-effective means of protecting and restoring stream water quality, as well as mitigating flash flooding. Research by the Delaware Riverkeeper found that buffers provide over \$10,000 per acre per year in monetized benefits. Scientific studies show that when properly installed and maintained, vegetated buffers can be up to:

- 75% effective in removing sediment,
- 60% effective in removing certain pathogens,
- 50% effective in removing nutrients and pesticides.



### Best Practices and Current Practices

The benefits of riparian buffers are directly proportional to their width. The PA Department of Conservation of Natural Resources (DCNR) recommends a minimum buffer of at least 35 feet on each side of a waterway. According to research cited by the Delaware Riverkeeper, a minimum 100 foot buffer on both sides of a waterway is best for protecting water quality, preventing and removing pollution, and protecting habitats in the stream and on the land. The Delaware Valley Regional Planning Commission (DVRPC) recommends that municipalities adopt legislation requiring minimum riparian buffer protection of at least 100 feet for all streams and 300 feet for High Quality (HQ) and Exceptional Value (EV) streams, where they do not already exist. Buffers from 300 to 1000 feet on both sides of a waterway provide the greatest level of protection our natural waterways and habitats need.

### Lack of State Protection for Riparian Buffers

In Pennsylvania, except along Exceptional Value (EV) and High Quality (HQ) streams, [state regulations](#) do not protect riparian buffers, not even for streams designated as impaired and where pollutant load limits or TMDLs (Total Maximum Daily Loads) have been established. This leaves 70% or more of Pennsylvania's riparian buffers reliant on protection from local land use regulation. Therefore, local regulations are critical.

### Local Regulation is Critical

Pennsylvania municipalities have been both empowered and mandated to keep our water resources safe from degradation by both state law (Clean Streams Law, Dam Safety and Encroachments Act, Flood Plain Management Act, Storm Water Management Act and Municipalities Planning Code) as well as federal law (Coastal Zone Management Act and Clean Water Act). This empowerment is critical for protecting water quality, especially given that 70% of Pennsylvania streams, as well as other surface waters such as ponds, lakes and wetlands, do not benefit from the state's Chapter 102 regulations.<sup>2</sup>

### Failure to Protect: Newtown Square Example

Legacy land use decisions and common landscape practices (e.g., mowing turf grass up to a stream bank) have left many of Newtown Township's streams eroded and subject to flash flooding. Recent and pending

land use decisions by the Newtown Township Planning Board have granted relief permitting riparian buffers below the Newtown Township minimum recommended level of 50 feet, e.g., new residential construction on Caley Road, the site development plans for the new Marriott Hotel on West Chester Pike, and the pending Fort Joy Settlement Agreement. Sediment from erosion is the primary pollutant that Newtown Township must remove to achieve the goals of its five year, \$1.5+ million Municipal Separate Storm Sewer System (MS4) Pollution Reduction Plan.

Under current Newtown Township ordinances, riparian buffers are protected under Chapter 143, Stormwater Management, Article III. Stormwater Management, Sec. 143-21 Water Quality Requirements:

“If a perennial or intermittent stream passes through, or a waterbody (i.e., lake, pond, wetland) is present on the site, the landowner shall create a riparian buffer extending a minimum of 50 feet to either side of the top-of-bank of the channel, lake, or wetland. The buffer area shall be planted with native vegetation and maintained in a vegetated state (refer to Appendix B, Pennsylvania Native Plant List, contained in the *PA Stormwater Best Management Practices Manual*)<sup>3</sup>.

The following provisions also apply to riparian buffers on lots in existence at the time of adoption of this chapter:

- If the applicable rear or side yard setback is less than 50 feet, the buffer width may be reduced to 25% of the setback or 25 feet, whichever is greater.
- If a stream traverses a site in a manner that significantly reduces the use of the site, the buffer may be either:
  - Reduced to 25 feet on either side, with Township approval; or
  - Reduced to 10 feet with Township waiver.”

### **Newtown Township Opportunities for Enhancing Buffers**

The Newtown Township EAC sees great opportunities for achieving multiple benefits through synergistic action with other Township initiatives including providing financial incentives as recommended in *The Landowners Guide*<sup>1</sup> cited previously. The EAC has proposed immediate action in four major areas:

**Planning:** Expand MS4 Plan to include enhancement of riparian buffers on private properties upstream from areas on public property targeted for streambank restoration (Foxes Run, Greer Park, Brookside Park); Include riparian buffer restoration in the Greer Park Master Plan

**Community Involvement:** Encourage homeowners who live on first-order streams to plant buffers by providing information and financial incentives; Engage homeowners in planting 1,000 trees as part of achieving the Township’s MS4 Plan.

**Regulatory:** Expand regulatory protection of riparian buffers, as recommended in the *2016 Newtown Township Comprehensive Plan*, The Natural Resource Protection Plan, “Riparian and Wetland Buffers – add provisions requiring a minimum 100-foot buffer adjacent to surface waters and wetlands.” This effort is currently underway as part of a larger zoning rewrite.

**Policy:** Inform and engage key township officials, the Planning Commission, and Zoning Hearing Board about the importance of protecting riparian buffers. This material was presented to the EAC, Township Manager and Supervisor at a recent EAC meeting.

### **Pennsylvania’s Ambitious Goal**

This July, DCNR launched and committed \$1.5 million to a new “Buffer My Stream” program to educate and encourage landowners to plant stream-side buffers to help improve water quality and lessen erosion by planting native trees and shrubs along the water’s edge. DCNR’s goal is to plant 95,000 acres of new riparian forest buffers by 2025. Newtown Township aspires to support this initiative through the planting of 1,000 trees in the next five years.



## **References For Cindy Mehallow's article**

<sup>1</sup> *A Landowner's Guide to Conservation Buffer Incentive Programs in Pennsylvania*, American Farmland Trust, pg. 2, <https://pacd.org/wp-content/uploads/2009/09/LandownerGuide-1.pdf>

*Riparian Buffer Protection via Local Regulation: A Guide and Model Ordinance for Pennsylvania Municipalities*, pg. 4, PALTA and Brandywine Conservancy, [https://conservationtools.org/library\\_items/1273-Riparian-Buffer-Protection-via-Local-Regulation-A-Guide-and-Model-Ordinance-for-Pennsylvania-Municipalities](https://conservationtools.org/library_items/1273-Riparian-Buffer-Protection-via-Local-Regulation-A-Guide-and-Model-Ordinance-for-Pennsylvania-Municipalities)

<sup>3</sup> *PA Stormwater Best Practices Manual*, PA DEP, Appendix B, <https://pecpa.org/wp-content/uploads/Stormwater-BMP-Manual.pdf>

For reference articles and resources visit DCVA.org for the online Fall 2020 Edition of the Valley or click [HERE](#) if you are reading an electronic version of the *Valley*.

## **Upper Darby Rain Gardens Begin**

**By Stephen Lockard**

Recently, a donation to the DCVA enabled a small group of us who had worked with the Haverford Township "Hav-A-Rain Garden" Program, to try to start a rain garden group in Upper Darby. We had learned a few things, purchased necessary tools without trouble, and thought we'd just use that. It so happens that the launching of a new program quickly humbled us, but we forged on and have made great progress!

A rain garden workshop run by Deron LaBrake and Jamie Anderson was conducted in March at the Drexel Hill Middle School. From that, assessments of four properties for their appropriateness to house a raingarden were performed. However, the Covid-19 pandemic caused a delay in any installations until this fall.

On Labor Day weekend, numerous volunteers came out to 900 Belmont Avenue in Secane to construct a somewhat complicated rain garden complex on a private property. Located just

above the Muckinipattis Creek, this rain garden intercepts storm water from the street as well as a large volume of water from homeowner's roof. We anticipated that heavy thunderstorms will rush intense volumes of water at the complex, so we constructed a check dam at that point. The homeowners also had a landscaper run piping from their roof, underground and into the complex.

Any venture, such as this, requires lots of time, effort, and many resources. The homeowners themselves, Jill and Richard Williams, expended the sweat equity that we had hoped for. Countless hours of consultation and planning with them, besides the heavy movement

of earth, rock and mulch, were necessary to get the garden to its current state. The real expertise for the design and construction came from Jamie Anderson from the Eastern DelCo Stormwater Collaborative, and Chuck and Michelle Smith, rain garden volunteers from Springfield.

I cannot thank the volunteers enough for their efforts. Hopefully, the photographs and the completed project can be a tribute to them for a job well done. Additional rain garden construction took place in Penn Pines on September 19<sup>th</sup> and 20<sup>th</sup>. Two more are scheduled for October in Drexel Hill.



The first Upper Darby rain garden built by DCVA and volunteers

# CALENDAR

DCVA Board Meeting.....Third Saturday of each month, Delaware County Peace Center  
Young Naturalist Program.....Third Saturday of each month, Haverford Comm. Rec. and Environ Center  
Fall and Spring Cleanups.....See DCVA.org

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