

# THE STEWARD

Newsletter of the Lower Merion Conservancy

# Getting to the Bottom of a Salty Situation

The Lower Merion Conservancy, in partnership with Villanova University, recently received two grants from the National Fish and Wildlife Foundation (NFWF) to gain a better understanding of how road salt impacts local waterways. Through this initiative, we will investigate the benefits of utilizing brine as an alternative to conventional salt in reducing environmental impacts. We will also examine the role citizens play in the introduction of salt into our creeks, looking for ways to engage the public in more sustainable practices.



Runoff from salt-treated roadways flows into storm drains, then directly into Cobbs Creek.

The watersheds of Philadelphia's inner-ring suburbs have high amounts of impervious surfaces, such as roads, driveways, and sidewalks. During winter months, these surfaces and associated storm drains act as direct

conduits for road salt to enter freshwater streams, leading to spikes in salt concentrations. This presents an increased burden on fish, wildlife, and human health, particularly for downstream environmental justice communities. This issue occurs across various regions in the United States and highlights the worrying trend of rising salinity levels in our streams. This financial support from NFWF will enable us to analyze this problem and pinpoint the most effective strategies to ensure public safety while safeguarding our invaluable freshwater resources.

An objective of the project will be to explore the financial and environmental benefits of converting salting operations to brining operations. The project will also delve into analyzing and comprehending the social and behavioral motivations behind salt usage within our communities. Throughout the project, long-term data, including information about conductivity levels in waterways, will be gathered through strategically placed loggers in local streams. Conductivity, a measure of the water's ability to pass an electrical current, is affected by the presence of chloride, a component of road salt. As salt levels in streams increase, conductivity levels rise.

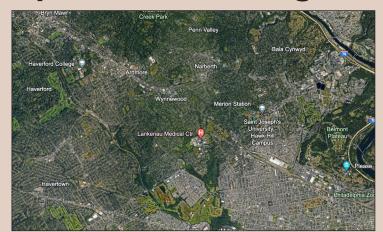


Conservancy Director Maurine McGeehan and Dr. Steve Goldsmith of Villanova University install an EnviroDiy logger along the East Branch of Indian Creek.

As a current component of the project, the Conservancy and Villanova University have deployed loggers within Vine Creek along the Cynwyd Heritage Trail, as well as in the East Branch of Indian Creek in Narberth Borough. These devices are tasked with monitoring and recording the environmental conditions of these streams. The loggers, known as EnviroDIY Loggers, take readings of conductivity, as well as depth and water temperature, every 5 minutes. Data from the readers are uploaded to a webpage called "Monitor My Watershed." This technology allows for real-time data collection, including during storm events, when in-person access to the stream is not possible. The loggers will remain in the stream throughout and beyond the study to allow for a more complete understanding of how shifting behaviors can impact water quality.

Through this study, we aspire to create a model for communities aiming to lessen the impact of road salt on local streams. Our goal is to foster a deeper understanding of the connection between road salt usage and human behavior, ultimately contributing to the enhancement of water quality within the Delaware River watershed in the Greater Philadelphia area.

### **April Showers Bring Stormwater Pollution**



Google Earth satellite image. Notice the impervious surfaces of development and areas of diminished tree cover. The Main Line is situated in the top left, Philadelphia in the bottom right.



Stormwater runoff, visibly laden with loose sediment, flows down a street and floods into a storm drain, which will eventually empty into a nearby creek. The rapid and forceful influx of water into the creek can lead to erosion along its banks, further exacerbating sediment pollution in the watercourse.

Scan the QR code to watch stormwater runoff in action!



We live in a landscape altered by human development -which has changed the way the water cycle works. Much of what was once forest or wetland is now developed, often paved or covered by impervious surfaces. When rain falls in a forest, large amounts of water are captured by the tree canopies. Precipitation either slowly drips from the trees to the spongy forest floor and soaks into the ground, recharging groundwater, or it evaporates when the sun comes back, falling again another day as rain. Very little water in these natural systems will run off overland and into our streams. This natural pathway for rainwater, however, has been disrupted by human activities. In our developed world, rainwater lands on impervious surfaces such as roofs, roadways, parking lots, driveways, and even our lawns. These surfaces allow little to no rainwater to soak through. To prevent flooding, water has been directed to flow directly into a vast storm sewer system which carries this stormwater runoff directly into our streams.

As the water flows over the built landscape, it can pick up debris and pollutants on the ground, such as road salt in the winter, fertilizer and pesticides in the spring and summer, motor oil or antifreeze leaking from cars, sediment from exposed soils, and litter left on the ground. This stormwater runoff can be a large source of pollution to our local streams, creating harsh environments for aquatic life and making streams less hospitable for recreation. The inability of water to soak into the ground has reduced overall groundwater levels in urban and suburban areas. Our streams are fed by groundwater, so dropping levels can impact the amount of water flowing in our streams, particularly in dry summer months.

Further creating issues is the large volume of water that enters our streams via the storm sewer system. This creates flashy stream systems that fluctuate rapidly, creating unsafe conditions that lead to flooding within our direct communities and, in particular, downstream communities. This large volume of water can disrupt habitat for aquatic species, particularly macroinvertebrates that are an essential part of the food web. The large volume of water flowing during storms also erodes streambanks, leading to sedimentation in our streams, further degrading

aquatic habitats. Stormwater runoff and variable discharge have left many of our local streams impaired (a designation used by the PA DEP and US EPA to note that streams are not meeting the thresholds needed to support the aquatic life that should be present in these waterways).

Minimizing the impact of stormwater runoff is imperative to restore our waterways to a healthy state. There are small, simple steps everyone can take that collectively contribute to these needed improvements. For instance, using less salt in winter and promptly clearing salt from walkways after snowstorms will decrease salt inflow into our streams. Fertilizing only when necessary, avoiding application right before a rainstorm, and using the appropriate amount will minimize nutrient runoff into our streams, preventing potential algal blooms that deplete oxygen levels. Litter removal significantly reduces trash entering streams.

Boosting tree presence on properties replicates the advantages of forests in the water cycle, absorbing substantial rainwater and reducing runoff. Swapping conventional grass for deeperrooted native plants decreases runoff from compacted lawns and enhances water infiltration. Rerouting gutters to planted areas diminishes runoff volume.

If we all take a few small steps, we can create great benefits for our stream systems. Collectively, even small projects can yield big results!

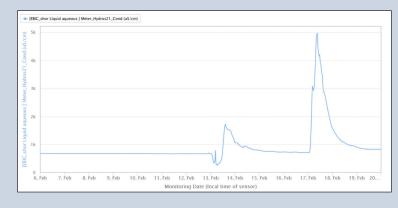


A raingarden in Narberth effectively retains a significant amount of rainfall during spring storms. Take note how downspouts channel roof runoff directly into the garden.



A summer-time view of a Green Street garden planted in 2021. These native plants will help absorb rainwater and boost local biodiversity.

# **Understanding Enviro-DIY Logger Data**



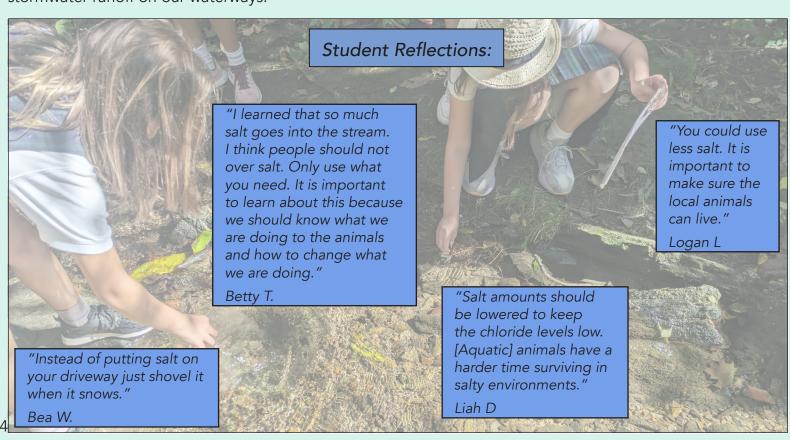
Data from the Enviro DIY Logger in the East Branch of Indian Creek show conductivity readings during a February snowstorm. This fast-moving storm saw roads salted the day before. The snow melted rapidly on the 17th and 18th. As the snowmelt ran over roads and parking lots, it carried the road salt with it into the storm sewer system (which discharges directly into Indian Creek) causing spikes in conductivity readings.

### **Detective Work of Student Citizen Scientists**

The Lower Merion Conservancy visited Dan Del Duca's fifth-grade class at Shipley Lower School in the fall to commence our Introduction to Watershed Health course. The course began with an overview of what a watershed is - an area of land where precipitation drains to a common place. Using our Enviroscape watershed model we illustrate to students in an interactive way how land use and everyday activities within our watershed, such as fertilizing a garden or applying road salt, can contribute to non-point source pollution through stormwater runoff. We discuss the times of year we might expect surges in varying pollutants - fertilizer in spring, road salt in winter - and why that is. We then bring the students from the classroom to the creek where they conduct chemical tests and can look, firsthand, for evidence of pollution.

Unexpectedly, our students' chemical testing revealed a mystery! Across the board, the students' chloride test results were coming back high, which was odd because the tests were conducted in October, well before any snow. Del Duca remarked, "At first, we thought maybe the testing was impaired, but as more tests returned with the same results, we realized we needed to dig deeper." Dan collected water samples from various sites upstream, leading to the discovery of a large salt shed upstream near Mill Creek, which appeared to be contributing to the elevated chloride levels in the stream.

This discovery sparked a particular interest among the students in road salt application practices, leading to extensive discussions throughout the winter months. Reflecting on their findings, the students feel empowered to make small changes by educating and reaching out in their own communities. As budding citizen scientists, they are now contemplating how to raise awareness among relevant community groups about their surprising findings, demonstrating their commitment to environmental stewardship and community engagement. This spring, we will return to the same creek site to further investigate stream health by identifying macroinvertebrates, which are not only an important part of the food chain, but also indicators of stream health. This additional investigation will add a deeper understanding of the ecological impacts of stormwater runoff on our waterways.



### Planting for Fish at Harriton Preserve

The condition of the area next to a stream has a significant influence on aquatic life and water quality. These streamside areas are known as riparian buffers. A healthy riparian buffer extends at least 35 feet from the edge of the stream and contains a mix of native trees, shrubs, grasses, and flowering perennials. Riparian buffers provide a range of benefits:

- Plant roots absorb pollutants and hold soil, slowing erosion.
- Shade from tree leaves helps keep streams cool during hot summer months. Warm water holds less oxygen than cool water, so fewer fish can survive in unshaded streams.
- Leaves, flowers, and fruits serve as food for pollinators, birds, and other beneficial creatures.
- Plant stems, trunks, and leaves provide cover from predators.



The current riparian buffer zone along a portion of the creek at Harriton Preserve. There is a lot of work to be done.

Few streams in our area have healthy riparian buffers. Many streamside properties maintain lawns that take up much of the 35-foot buffer. Some streamside areas feature walking paths or roads, which cut off the buffer and pollute the stream. Other riparian buffers have been taken over by invasive plants, which do not provide the same benefits as native plants. We cannot move roads, but we can strategically replant spaces and reshape trails.

One of the main goals of our Cynwyd Heritage Trail Wildlife Expansion project—funded by the National Fish and Wildlife Foundation—has been to improve the riparian buffer along Vine Creek. We have replaced lawn areas with shrubs and meadows and cut back invasive plants to plant native species. Early success at the Cynwyd Heritage Trail helped create a new opportunity to expand a riparian buffer in a public space.

The Conservancy recently received a Growing Greener Plus grant from the Pennsylvania Department of Environmental Protection to expand and restore habitat at the Preserve at Harriton, in partnership with the Friends of Harriton Preserve (FHP) and Lower Merion Township (LMT). The Preserve at Harriton is an 8.9-acre parcel within Harriton Park in Bryn Mawr. The Preserve contains woodlands and two streams, including a section of Mill Creek. The Harriton Association maintains the buildings and upper section of Harriton Park, while LMT works with the FHP to maintain the 8.9-acre Preserve. Invasive plants like multiflora rose and Japanese knotweed occupy large, spreading sections of the Preserve. Most local pollinators cannot eat multiflora rose or Japanese knotweed, so the populations of pollinators—and other important organisms—at the Preserve are lower than they could be.

We plan to cut back the patches of multiflora rose and Japanese knotweed regularly for two growing seasons. The cuttings will weaken the invasive plants, creating room to plant new native species, like the successful efforts at the Cynwyd Heritage Trail. Weakened plants are easier to cut back than established ones, so volunteers can handle more of the maintenance in the future. After two growing seasons of cutting, we will replant the area with a diverse mix of native plants to restore the woodlands and expand the riparian buffer.

The plantings will provide tangible ecological benefits at the Preserve and serve as an example for other streamside properties. We are excited to get started and will share updates as the plans develop.

### **Historic Preservation**

### Penrhyn, Haverford - An Architect's Home

Penrhyn, the location of this year's Gala celebration, was completed in 1898. The threestory gambrel-roofed colonial revival residence was not only the country home of Rebecca C. Evans and her husband Allen Evans, a partner in the architectural firm of Furness, Evans & Co.; it was also one of Allen Evans's own designs. With a "slate roof, steam heat, electric work, finest of plumbing, enameled bath tubs [sic], plate and leaded glass, and all modern comforts," the new house (described in a December 1898 issue of the Philadelphia Real Estate Record and Builders' Guide) replaced a ca. 1875 frame residence (also designed by Evans) that was destroyed in a blaze just one year earlier. The house occupied a 34acre property that also contained residences that Evans designed for family members, including



A image of the re-built Penrhyn home, circa 1930, courtesy of the current owners.

his mother and father, Rebecca and Edmund Evans, and his brother, Rowland Evans and his family. In his "Notes on the Main Line," an undated monograph about the neighborhood in which he grew up, Evans noted that the family property (which his father had purchased during the mid-1860s) once measured 100 acres and stretched from Montgomery Avenue almost to the Mill Creek. Although the estate was subdivided during the early 1870s, parcels split from it bear the distinct imprint of Allen Evans. The 1897 clubhouse of the Merion Cricket Club, for example, is a design of Furness, Evans, & Co. The nearby estate of Cheswold (commissioned by Alexander J. Cassatt, president of the Pennsylvania Railroad president) is credited to the firm of Furness & Hewitt, but was likely the work of Evans, a draftsman in the company. The Cheswold mansion is not extant, but the gatehouse survives.



Left: A view of the main Penrhyn staircase and 6 leaded glass sky light.

Built on the ashes of its predecessor, Penrhyn (a name that honored the eponymously-named Welsh castle of Evans's ancestors) is a testament to Allen Evans's outsized impact on one neighborhood. Although Penrhyn now occupies just over one acre of land, the house itself retains outstanding architectural integrity.

The Conservancy is grateful to Penrhyn's owners for honoring the legacy of Evans and for being such mindful and loving stewards of the house. We are also indebted to the owners for supporting our work to preserve our community's historic fabric by opening their home for this year's Gala.



To join us at Penrhyn for our Annual Gala, visit our website or scan the QR code!

LMConservancy.org



### **Traditional Neighborhoods**

Lower Merion and Narberth are full of "traditional residential neighborhoods." If you call either of these places home, the likelihood is high that you live in such a neighborhood! What is a traditional residential neighborhood? Well, to start, traditional neighborhoods are usually highly walkable; they are close to community amenities, shopping, and public transportation. Traditional residential neighborhoods also exhibit patterns of developments established before WWII; they contain dense or moderately dense concentrations of houses and/or multi-unit residences, they often have sidewalks, and they are planned with gridded or connected streets (rather than cul-de-sacs). In scale, buildings in these neighborhoods relate to one another, but they also relate to the street. Setbacks, for example, are relatively shallow and allow the occupants of a house to interact with neighbors or pedestrians but also to maintain a level of privacy. Front porches, a common feature of houses in traditional neighborhoods afford this balance.

Traditional neighborhoods also have a unique character derived, in large part, from their architecturally-varied buildings. Indeed, neighborhoods in Lower Merion and Narberth are not characterized by "cookie cutter" housing! Even in neighborhoods planned by a single developer, houses that are similar in plan are differentiated by materials, window and door placement, roof shape, and detailing. All of these features give traditional residential neighborhoods a strong "sense of place."



Homes on Owen Road in the Toland Farm neighborhood developed by the Lower Merion Realty Company. Image from Concrete Magazine, February 1925.

So, do you live in a traditional neighborhood? This spring, follow our social media accounts, linked at the bottom of our website, to learn more about these special places in the township and borough!



G. W. Bromley, Atlas of the Properties of the PA Railroad From Overbrook to Paoli, 1926, showing the Toland Farm neighborhood.



Homes on Kent Road in the Toland Farm neighborhood. Image ca. 1908. Courtesy of the Lower Merion Historical Society. 7

## Spring planting recommendations

Spring is always an exciting time in the garden. Your established plants are getting ready to take another leap, and new spaces are ripe for garden expansion. Here are a few tips to consider as you start the 2024 gardening season:

### 1. Identify plants before pulling anything.

New plants may pop up, either from seeds sprouting or plants sending out runners, while existing plants may not have survived. If you do not see some of your favorites, they may still pop up later in the season. Look out for emerging invasives, particularly early-season plants like lesser celandine (Ficaria verna) and creeping charlie (Glechoma hederacea). These plants can be relentless but are manageable in a home garden.

If you are unsure about an identification, give the plant more time to grow. Plant ID apps are helpful but imperfect, especially when plants are young. It is better to let an invasive plant grow than to pull a misidentified native plant by mistake.

### 2. Note spaces for new plants.

Once you have a sense of what plants have returned, you can identify gaps and create a planting plan.

### 3. Select your new plants.

A wide range of plants are indigenous to southeastern Pennsylvania, so you can find something for every condition (wet or dry, shady or sunny, sand or clay, etc.). Many plants are available at nurseries, plant sales, and online. You can also transplant or divide existing plants. You may be surprised at some of the great plants that pop up in your garden naturally.

\*An important note: plants at hardware stores like Lowe's and Home Depot are treated with pesticides that pollute the environment. If you want to create wildlife habitat in your garden, buy from native plant nurseries and native plant sales or get plants from friends who do not use pesticides.

#### 4. Plant!

When planting, group plants by species instead of scattering them around your garden. Grouped plants are easier for pollinators to find. As the plants re-seed, they will pop up in different areas around the garden. You can plant native plants anytime as long as the ground is not frozen. Remember to water, even if the weather is still cold.

There is no way to guarantee success in the garden - plants are living organisms, after all - but plants are adaptable. If a plant struggles you can always move it to a different site. Experimenting is the best way to learn.

### Woodland Poppy (Stylophorum diphyllum)



A great option for deep shade. Once established, it is low maintenance and can spread rapidly, with ants dispersing the seeds. With its bright yellow flowers and distinctive lobed leaves, Woodland poppy adds visual interest to garden beds or naturalized areas.

### Red Osier Dogwood (Cornus sericea)



Known best for its red stems that stand out during the winter, red osier dogwood blooms attract a range of insects. The pollinated flowers turn around berries by mid-summer, which birds quickly snatch up.

# Jacob's Ladder (Polemonium reptans)



Named for the appearance of its leaves, Jacob's ladder is a good option for garden borders. The flowers provide nectar in the spring. By summertime slower-to-emerge plants get large enough to shade the Jacob's ladder, which helps it handle the heat.

# Coral Honeysuckle (Lonicera sempervirens)



With invasive vines plaguing woodlands, native vines can go overlooked. Coral honeysuckle is a great native vine that is easy to manage. The bloom starts in the spring and lasts for months, providing nectar for hummingbirds and other pollinators.

### **Gradients of Growth**

Artist in Residence: Deirdre Murphy

This spring, the Conservancy is excited to announce we are teaming up with a local artist for a residency program at the Cottage in Rolling Hill Park! Deirdre Murphy is a contemporary visual artist whose work delves into the intricate connections between art and science. Through the mediums of painting, printmaking, and collaborative sculpture, she explores the effects of climate change on avian migration, nesting structures, and ecosystems. Deirdre's artistic journey has been deeply intertwined with scientific inquiry, leading to collaborations with a diverse array of experts including ornithologists, biologists, neuroscientists, molecular scientists, and virologists from institutions such as the University of Pennsylvania, Drexel University, Penn State, Lehigh University, and Integral Molecular Laboratory.



Artist Deirdre Murphy gathers inspiration from the natural world around her.

The Conservancy was introduced to Deirdre through our Delmont Avenue Green Streets project. Deirdre was a leader throughout the project and implemented many artistic green stormwater strategies on her own property. Deirdre is currently working on a series of paintings titled "Gradients of Growth" and a series of prints titled, "Contemporary Herbarium." This artwork explores the effects of climate change on native Pennsylvania plant species and woodland environments from the perspective of owls and woodpeckers and other cavity nesting birds. Over the past 25 years, her research-based studio practice has explored bird migration and the effects of climate change. The research is primarily sourced through artist residencies and collaborations with scientific institutions to do deep data dives into seminal naturalists such as Bartram and Audubon to contemporary climate change science and environmental naturalist queries.



Deirdre explains the perspective of her painting (in background). The series portrays the world from the inside the 10home of a woodpecker, looking out.

The outcome of Deirdre's residency with the Conservancy will be an exhibition at Chimaera Gallery in the fall of 2024 where she will show the Gradients of Growth painting series and the Contemporary Herbarium print series and wallpaper. When asked about her residency project, Deirdre stated, "This is ideal in that I can engage with environmental scientists, ornithologists and horticulturalists which directly feeds my research, not to mention the solitude, light and natural environment of Rolling Hill Park."

Additionally, this summer, Deirdre will start a second residency and public art project with Washington College's Foreman Branch Bird Observatory in Chester, Maryland to research the migratory birds of the Chesapeake Bay and design climate change awareness art for a diverse audience.

Deirdre's art has been showcased in prominent museums and galleries, including Winterthur Museum, Zillman Art Museum, Palm Springs Museum, Biggs Museum of American Art, New Bedford Museum, Tacoma Art Museum, and the Philadelphia International Airport. Currently, she serves as an Assistant Teaching Professor at Lehigh University. Her artwork is represented by Chimaera Gallery in Philadelphia, and more of her portfolio can be explored at www.deirdremurphyart.com.

We are delighted and inspired by Deirdre's artistic vision as well as her passion and commitment to the showcasing the interconnectedness of our wild world and can't wait to see what this residency will bring!



# Supporter Spotlight



Board Member Shivannee Raj speaks on why she and her husband support the Conservancy: "Saideep and I have been supporters of the Conservancy because of the work they do in our area to preserve open land and help reduce stormwater runoff. As the world faces climate change, the Conservancy is working on the ground to help make changes that are positive for our environment."

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