

# Streamlines

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GREEN VALLEYS  
WATERSHED  
ASSOCIATION

Protecting Northern Chester County's  
Watersheds for 50 Years

**GREEN VALLEYS WATERSHED  
ASSOCIATION at  
WELKINWEIR**

The mission of Green Valleys Watershed Association is to protect, preserve, and restore the natural waterways of northern Chester County. We inspire, educate, and involve our community to make a difference for this generation and for generations to come.

**Welkinweir**

Our headquarters in East Nantmeal Township is a spectacular property which showcases our organization's Mission. Originally the home of founding members Everett and Grace Rodebaugh, the 197 acres of permanently preserved land feature a 55-acre arboretum, wetlands, meadows and forest habitats. The property hosts many of our environmental education programs, along with a growing collection of sustainability demonstration projects. **Visiting hours on page 5.**

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**Cover Image:**

*Eastern Tiger Swallowtail drinking nectar from Butterflyweed (Asclepias tuberosum) amidst native meadow grasses.* © 2016 GVWA.

# FROM THE DIRECTOR: Be Our Guest

**We look forward to seeing you at our 2016 Annual Celebration, *Weaving Watershed Narratives*, taking place on Thursday, October 13th, from 5:30 to 8:30 PM at Welkinweir. Our guest speakers this year will be **Clare Billet from the William Penn Foundation**, and **Jan Bowers from the Chester County Water Resources Authority**.**

Everett Rodebaugh wrote in our very first newsletter of our Association's place in the middle of the Schuylkill River watershed, which itself is the largest tributary to the watershed of the Delaware River-the longest undammed river east of the Mississippi. This perspective, where we are a part of a much larger whole, is essential to making the connections we need to pursue our mission. *Weaving Watershed Narratives* embraces this perspective: Clare Billet

will provide her unique insights as Program Officer for the William Penn Foundation's *Delaware River Watershed Initiative*; Jan Bowers, as Director of the Chester County Water Resources Authority, will draw from her decades of experience to speak on the key issues facing our watersheds today.

Please join us in celebrating our achievements and looking forward to the opportunities and achievements ahead! An evening of delicious food, thanks to our partner *Jeffrey A. Miller Catering*, at a gorgeous venue, mixed with great conversations with friends and community members who care about our local environment, awaits you.



Victoria Laubach, *Executive Director*



*Save the Date:*  
**MEMBER'S ANNUAL  
CELEBRATION**  
**Thursday**  
**October 13**  
**5:30-8:30 P.M.**  
**Welkinweir**

**Mark your calendars for a memorable evening of delicious food and wine in the fine company of fellow Green Valleys supporters! Our Annual Celebration will be held at the historic Welkinweir Estate House, where you will be surrounded by lovely autumn scenery. Guest speakers will weave a fascinating story of the Delaware River Watershed and the work to protect it.**



**ANNUAL  
BIRDSEED  
SALE**

*Support  
winter birds  
and Green  
Valleys!*

Stock up on the highest quality birdseed to supplement birds' natural winter food supplies. Proceeds will support our programs!

All sales are on a pre-order/pre-pay basis. Complete the enclosed order form *OR* order online from [www.greenvalleys.org](http://www.greenvalleys.org). Orders are picked up at GVWA headquarters.

**Order Deadline: Friday, October 28**

**Order Pickup: November 14-November 16, 9am-4pm or by appointment.**



*Save The Date:*  
**HOLIDAY CELEBRATION  
& OPEN HOUSE**  
**FRIDAY, DECEMBER 9**  
**OPEN HOUSE 9 A.M.-4 P.M.**  
**GVWA MEMBER CELEBRATION**  
**5:30-7:30 P.M.**

Welkinweir will be festively decorated for all to enjoy! Come enjoy the holiday finery of the Estate House, whose history spans three centuries. Afterwards, GVWA members are invited to join an evening seasonal soiree, complete with music, food & drink, and friends! Bring an appetizer or dessert to share.

Donations are welcome. Please contact [gva@greenvalleys.org](mailto:gva@greenvalleys.org) for more information.

# MAKING THE LAND-WATER CONNECTION

## Evidence-based Watershed Conservation

Green Valleys was created in 1964 by a group of concerned citizens who vigorously opposed the Army Corp of Engineers' plan to create a reservoir on French Creek. At a time when other reservoirs in Chester County were being approved this one was not. This impoundment would have submerged Pughtown and surrounding lands, forever changing the character of a state-designated Scenic River, and it would have devastated the ecology of the Exceptional Value French Creek.

In this example the evidence of benefits is clear: miles of healthy stream corridor and trout habitat kept intact, thermal pollution avoided, migratory fishes not barred from passage, and water quality & quantity preserved. However, as the size of the conservation project decreases, measuring the benefits of land conservation to water quality and quantity becomes increasingly difficult. Yet, it is just this evidence which is needed to make the case that small land conservation projects do result in water quality benefits, and that a large number of small projects will have an impact similar to one large one.

To gather this evidence, the William Penn Foundation's **Delaware River Watershed Initiative (DRWI)** has recently developed a comprehensive suite of metrics to assess projects under the DRWI. These metrics will be tracked closely over the first ten years of the DRWI (and very likely well into the future). A few examples of these metrics are given below.

Conservation on the Land:

### Number of miles of forested riparian buffer protected through longterm easement or acquisition:

- Tier 1: buffer greater than 150 feet wide on each side of stream
- Tier 2: buffer between 101 and 150 feet wide
- Tier 3: buffer between 35 and 100 feet wide

### Number of acres of priority, forested lands protected:

- Tier 1: forest located within the catchment of an intermittent or first-order (headwaters) stream
- Tier 2: forest located within the drainage area of isolated wetlands

## Volunteers needed for Fall Tree Planting

Saturday, October 15<sup>th</sup> 9a.m. - noon

Crabby Creek Park, Walnut Lane, Berwyn

We are teaming up with Tredyffrin Township and the Valley Forge Chapter of Trout Unlimited to plant trees at Crabby Creek Park. Volunteers are needed to help improve the forest buffer of this Exceptional Value tributary to the Valley Creek. Come join the fun with like-minded environmental stewards!

We ask that you dress for working in the outdoors and bring a shovel, pick-axe, and/or sledgehammer; gloves; and plenty of water. We will supply the trees and instruction. Contact Margot Taylor, Watershed Restoration Coordinator, at [margot@greenvalleys.org](mailto:margot@greenvalleys.org) for more information.

- Tier 3: forest located within the drainage area of the active river area

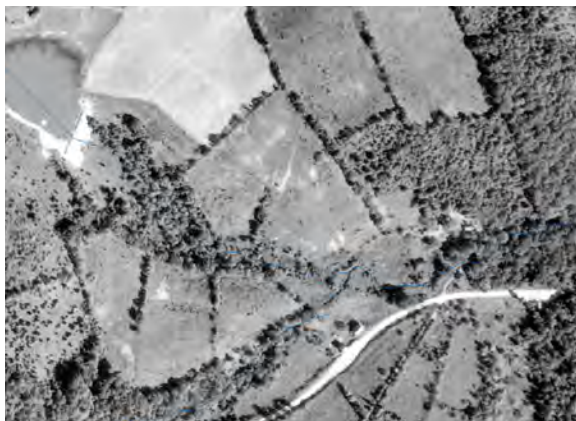
### Percent of streams with permanently protected buffers:

- Tier 1: first-, second-, and third-order streams (small tributaries which contribute the most volume of water to a watershed)
- Tier 2: higher than third-order streams

Outcomes in the Water:

- **Achieve reductions in nutrient, sediment, and bacterial runoff/pollution in stream baseflow and storm-flow**
- **Achieve reductions in the volume of stormwater runoff**
- **Achieve improvements in the Indices of Biotic Integrity (IBI) scores for selected aquatic insect taxa, or maintain satisfactory IBI scores in protected stream areas.**

Green Valleys has a comprehensive monitoring program in place which is collecting much of this data now, with more metrics to be added in the near future. With all this evidence, we can in time quantify the benefits from specific investments made in watershed conservation. This knowledge, in turn, is essential to the process of increasing the amount of investments being made to protect and restore our precious watersheds. *—Mike Bullard*



*One probable cause of the dramatic improvements seen in aquatic insect scores for the French Creek since the 1970s (when testing began) is the widespread conversion of marginal agricultural fields to passive forest, as shown in these photographs from 1937 (left) and recently (right). Conserving forested streamside lands like these and adding new protected buffers are top priorities in the DRWI.*



## Photogrammetry: Tracking Streambank Erosion

As stream channels change over time, their banks are often eroded, releasing sediment into the watershed. Once in the stream, these sediments causes numerous problems. In order to accurately and efficiently monitor the rate of erosion, GVWA is creating precise, 3D models of local streambanks at several areas of interest using *photogrammetry*. Photogrammetry is a relatively new tool used in fields such as topographic mapping, architecture, engineering, geology, and hydrology.

The process begins with images gathered using an aerial drone, and/or handheld cameras equipped with GPS. Photogrammetry software then creates an accurate 3D surface model by: reading the GPS coordinates of each photograph, identifying common points within the images, and using geometry to map the position of each point and assemble the images. Surface models developed so far are accurate to within less than 1 cm. GVWA will continue to model the same sites over time—yielding essential information about erosion rates. -- *Max Black, science intern*

*Photogrammetry tests so far have generated high-resolution, highly accurate 3D surface models of features at GVWA headquarters, including the Barn Ruins garden (below left). With this technology, GVWA will measure changes in streambanks over time to estimate the amount of sediment lost to erosion (below right and top).*



## Bioacoustics & Bird Migrations



*Credit: Eric Hughes*

### *Are you interested in learning more about the issues facing local streams?*

We are looking for volunteers to join a new **Schuylkill Water Stewards (SWS) training class this October and November.**

The SWS training program will prepare you to monitor the impacts of issues specific to our watersheds. Schuylkill Water Stewards assist local water quality monitoring efforts in the French, Pigeon, and Pickering Creeks and Stony Run. They are trained in collecting data important to understanding the benefits of land conservation on water quality & quantity and the impacts of land conversion. Schuylkill Water Stewards are also informed citizens and advocates of protecting water quality & quantity within their communities.

Training will include hands-on learning in both the field and in the classroom. Volunteers will study watershed-specific issues at representative stream sites centered in northern Chester County. At the end of the training program, stewards will “adopt” a stream site to conduct quarterly monitoring. Every effort will be made to choose accessible sites convenient to the volunteers’ home or work locations. Stewards will be expected to complete at least 20 hours of monitoring and sampling work. In addition, stewards will participate in annual meetings, watershed tours, and have the opportunity to join other volunteer efforts.

To learn more about the program, contact [gva@greenvalleys.org](mailto:gva@greenvalleys.org) or call 610-469-4900. Register at [www.schuylkillwaterstewards.org](http://www.schuylkillwaterstewards.org).

Throughout the year, wildlife of all kinds bring movement and color around our homes and into our lives. Perhaps the most animated of the wildlife are the birds, which are difficult to ignore with their vibrant plumage and melodious vocalizations. Our cardinals, chickadees, doves, finches and many other common species can be found here in every season. Other species, like our flycatchers, orioles, warblers, tanagers, buntings, and cuckoos (*like the Black-billed Cuckoo at left*), all arrive in the spring to breed and then make their way south in the fall. Still others are only present briefly as they migrate through our region on their way to breeding grounds farther north.

In order to improve our knowledge of migratory birds at Welkinweir, we have started pilot projects utilizing citizen science, bioacoustics, and bird walks. Through the analysis of preexisting bird-sighting data available on observation aggregators such as eBird ([www.ebird.org](http://www.ebird.org)), we are able to predict when we should begin to see certain migrating species in our region and then approximate how long we will be able to see them on the property. This provides us with the base for our studies, because we can choose which migrants we want to study and when we want to study them.

The next step in monitoring migrant birds is deploying our network of *bioacoustic recorders*. The recorders capture any nearby bird sounds; then, using computer software, we are developing the ability to automatically identify what birds are present on the property – even when nobody is here to watch for them. Finally, we will combine the automated identification of the bioacoustics with the expertise of real, in-field bird watchers during our migration bird walks. The birders on the ground provide traditional observational data that is so crucial to understanding the movement and numbers of the migrants on the local level -- and we strongly encourage anyone who is interested to attend these walks (for more information, please see the Calendar on page 7)! Combining each of the above-mentioned strategies will provide us with a comprehensive picture of what bird migration through Welkinweir looks like, and it will give us one more piece to the infinitely large puzzle that is bird migration.

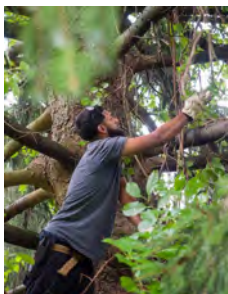
Understanding their migration allows you to look at birds in a new way. Next time you see a hummingbird in your garden, take note of how small it is. Then, picture something that small flying over the Gulf of Mexico – non-stop. The hummingbirds do make that trip. In fact, each year, they make that trip *twice*. Bird migration is incredible, and it should be appreciated. It is our goal to help spread the understanding and appreciation of the journey of birds to as many people as possible.

*--Eric Hughes, intern*

# WELKINWEIR

## Interns Make a Difference During Regional Work Day

Nearly 100 interns from public gardens throughout the Philadelphia region gathered at Welkinweir to network and learn while improving the arboretum gardens. Six work groups, each led by one of our staff, interns, or volunteers, tidied garden beds, removed invasive plants, painted fences, and more as part of the Regional Intern Outreach Day. We are grateful to our partners for providing logistical and planning assistance, and for the hard work of their staff and interns: Longwood Gardens; Morris Arboretum of the University of Pennsylvania; Jenkins Arboretum; Tyler Arboretum; Chanticleer; Awbury Arboretum; Winterthur; Mt. Cuba Center; Temple University's Ambler Arboretum; and Rutgers Gardens (who also donated \$800 in equipment!). We also extend heartfelt thanks to our Welkinweir volunteers, Frank Hultslander and PA Master Gardener Jane Helm, for their leadership and hard work. To learn more about each of the gardens that participated in this year's Intern Day, and about the American Public Gardens Association, please visit [publicgardens.org](http://publicgardens.org). -Kelsey Stanton



## Expanding Nature Walks

We are excited to offer a wider variety of nature programs that feature more of Welkinweir's wonderful biodiversity! This summer featured two new programs that we look forward to continuing next year:

- Over 30 people attended our **Butterfly ID Workshop & Walk** events on June 25 and August 21, during which they learned more about the butterflies of our area and how to support them during a presentation and walk around the gardens and meadows.
- Families and individuals could experience Welkinweir after hours with a picnic and evening nature walks during our **Summer Nature Nights** series - many thanks to Shannon Cleveland for leading this series!

Thank you to all of our program attendees! If you missed either of these series, don't worry: Welkinweir's free, Saturday morning bird walks begin again on September 10, and please be sure to join us for our **Wildflower Walk on Saturday, September 24!** All dates and times can be found in the calendar on page 7 as well as online at [www.greenvalleys.org/events/](http://www.greenvalleys.org/events/).

## Organ Historical Society Visits Welkinweir

The Rodebaughs' 1928 Skinner Opus 724 player organ-with its newly restored pipes and accompanying instruments-gave a performance for over 120 pipe organ enthusiasts this summer, as part of the conclusion of the Organ Historical Society's 2016 annual convention in the Philadelphia region. In addition to the concert performed on our Skinner organ, OHS members were also treated to a talk on the rare instrument's history and ongoing restoration work by Sean O'Donnell, of the American Institute of Organbuilders. After the concert, the attendees enjoyed lunch on the estate house terrace overlooking the pond. Currently, restoration work is continuing, with a focus on the organ's console and player mechanism.

## Visiting Welkinweir

The grounds are open to visitors during regular business hours (**Monday-Friday, 9 a.m. to 4:30 p.m.**). The estate house is open during special events (see calendar), or for group tours which may be scheduled in advance. Dogs are allowed, but we ask that owners respect fellow visitors and wildlife by keeping them on a leash and cleaning up after them so that our policy of allowing dogs can continue. We often have special programs or events on weekends, and we ask GVWA members who want to visit then, to call during business hours to inquire. **We offer Saturday morning walks (see calendar) that are open to all**, and we encourage visitors to the property at this time.

# ENVIRONMENTAL EDUCATION

## Outdoor Adventures Enjoyed by All at Summer Nature Day Camp



*Clockwise from top left: "Ready...set...!" Counselors line up their groups' craft boats for the annual Boat Race during our water-themed week; Heron group (6th and 7th grade students) is ready to climb!; Meeting a new, furry acquaintance; Dissecting owl pellets; "I caught a fish!"*

**Thank you** to the Camp Counselors, volunteers, and families for another great Summer Nature Day Camp! We all had a blast welcoming **over 235 children** to camp-the highest number of campers we have had in the past few years!

Campers enjoyed fort-building, stream-stomping, pond exploration, fishing, catching (and releasing!) frogs, visits with live animals from our wonderful presenters, nature hikes, games, and making new friends!

Please join us next year for another adventurous summer of Nature Day Camp! Look for the brochure online and in your mailboxes late January, 2017.



"Green Valleys' Summer Nature Day Camp is a wonderful place for children to learn about nature and play in it. It's a joyful environment for our kids and the very best summer experience they have every year."

--Chip Farnham, father of Helen & Ned

## Boy and Girl Scout Programs at Welkinweir

### **Attention all Scout leaders!**

If you have badges to complete that relate to the natural environment and conservation, consider booking a program with Green Valleys Watershed Association. From water study to birding, forest ecology, and tree planting, we provide fun and creative educational programs that are designed to assist Scouts in fulfilling badge requirements.

For details, please visit our website for the Girl and Boy Scout Nature Programs flier; or, contact Dawn White at [dwhite@greenvalleys.org](mailto:dwhite@greenvalleys.org) or 610-469-8646.

# Education Calendar

## SEPTEMBER - DECEMBER 2016

### COMMUNITY PROGRAMS AT WELKINWEIR

Ages 6 to adult. Refreshments are provided. Fees per person, per program: **GVWA Members \$6; Nonmembers \$8**. Spaces are limited and advance registration is required: contact 610-469-8646 or [dwhite@greenvalleys.org](mailto:dwhite@greenvalleys.org).



#### Owl Prowl

**Friday / Saturday, November 4 & 5  
7:30-9:00 p.m.**

**Sponsored by Wilmington Savings Fund Society Bank**

Bring binoculars and join us for an evening with owls! A night walk with owl calls and visits with live owls will fill the evening with wonder as we learn how owls' senses & adaptations help them survive. *Please indicate which day you would like to attend when registering.*

#### Nature at Night Hike and Campfire

**Friday, December 2 7:00-8:30 p.m.**

Gather 'round the campfire after a leisurely walk to listen for owls, search for elusive beaver, and discover the wonders of nature at night.

### WELKINWEIR NATURE WALKS

Start a new hobby or hone your naturalist skills during these *free* Saturday morning nature walks. All walks meet in the visitor parking lot along Prizer Road. Bring binoculars or a camera, water, and field guides if you have them. For more information, contact 610-469-4900 or [kelsey@greenvalleys.org](mailto:kelsey@greenvalleys.org).

#### Wildflower Walk with Link Davis

**September 24 - 9:30 - 11:30 a.m.**

#### Bird Walks with Valley Forge Audubon Society

**October 8, October 22, November 5, November 19**

*All bird walks begin at 9:00 a.m.*

### LITTLE WONDERS NATURE CLASSES

Young children can learn about the natural world at Welkinweir through age-tailored, themed activities. Discovery walks, stories, art projects and snacks are included in each class. Fees per child: **GVWA Members \$8; Nonmembers \$10**. Spaces are limited and advance registration is required: contact [dwhite@greenvalleys.org](mailto:dwhite@greenvalleys.org).

**Classes are held on Tuesdays for both age groups:**

**Ages 2-3: 10:00-11:00 a.m.**

**Ages 3-5: 12:45-1:45 p.m.**

**October 4: "Water Safari"**

**November 1: "Amazing Owls"**

**Oct. 11: "Wiggly Worms"**

**Nov. 8\*: "Animal Hide-'n'-Seek"**

**Oct. 18: "Oh, Deer!"**

**Nov. 15: "Nature's Artwork"**

**Oct. 25: "Tracks and Traces"**

**Nov. 15: "Nature's Artwork"**

\*Non-participating, school-aged siblings are welcome at no fee; however, class materials are for participating age groups.

### LITTLE SPROUTS LIBRARY NATURE CLASSES

Children ages 3 - 5 and their caregivers can learn about nature together at their area library, through stories, interactive demonstrations, animal biofacts, and a take-home craft. FREE. Spaces are limited and advance, online registration is required at <http://www.ccls.org>.

Henrietta Hankin Library Mondays 10:30-11:15 a.m.	Chester Springs Library Tuesdays 11:00-11:45 a.m.	Phoenixville Public Library Fridays 10:00-10:45 a.m.
September 12: "Eyes on Owls"*		September 16: "Bugs in our Backyard"
October 17: "Making Sense of our Senses"		October 21: "Making Sense of our Senses"
November 14: "Bugs in our Backyard"	September 20: "Eyes on Owls"*	November 18: "Animals in Winter"
December 12: "Animals in Winter"		December 16: "Eyes on Owls"*

\*This program does not include live owls.

*Invest in clean water and healthy watersheds, for today and for future generations.*

Learn about the benefits of Green Valleys Watershed Association membership and join today at

[www.greenvalleys.org](http://www.greenvalleys.org).



*Credit: Peter van Bennekom*