



Great Swamp Watershed Association

The Passaic River **WATERKEEPER®** ALLIANCE Affiliate



Across the Watershed

Fall-Winter 2023-2024



Protecting our Waters and our Land for More Than 40 Years

Volunteerism: Empowering Positive Change at GSWA

By Nancy Rago, Membership and Social Media Manager

At the heart of the Great Swamp Watershed Association (GSWA) lies an extraordinary force that propels our mission forward — volunteerism. Year after year, we witness the remarkable dedication and boundless generosity of individuals who invest their time and talents to create a lasting impact. These volunteers are the lifeblood of GSWA; they are the foundation upon which our organization's mission initiatives stand and play an integral role in the success of our fundraising endeavors.



Sandra LaVigne, GSWA's Director of Water Quality Programs, trained 48 potential stream team volunteers at last fall's stream assessment training session in Parsippany.



Hazel England, GSWA's Director of Education & Outreach - Land Steward and program leader, partners with our 'Plants for Pollinators' volunteers to prepare orders for native plant gardens in our communities.

Diverse Opportunities, Enduring Impact

Within the course of a typical year, over 2,500 hours of volunteer work come to life within GSWA. Their unwavering dedication redefines the concept of contributing to a cause greater than oneself. The volunteer opportunities at GSWA are diverse. Groups and individuals can immerse themselves (swamp waders supplied 😊) in the stewardship activities at our Conservation Management Area (CMA) or participate in projects that resonate with their unique skills and personal interests, such as our

(continued on page 32)

Insects of the Swamp

By Sarah Hunt, Education, Land Steward, and Water Quality Associate

When people think of the swamp in the summer, one of the first things that comes to mind is the mosquitos. But what about some of the other insects that thrive in the marshes, wetlands, and streambanks of the Great Swamp Watershed?

Once a year, the GSWA water quality team collects insects and other macroinvertebrates from points along the Passaic River and its headwaters.

This type of sampling helps to give us a long-term picture of the water quality, since the things that live in the water must be tolerant of the conditions year-round. Many of the insects collected in these samples are aquatic larvae that emerge from the water during their adult phase. Dragonflies, for example, may live in the water for up to five years before emerging as the flying insects we tend to picture. Based on how diverse the sample is, and how many pollution-tolerant or intolerant species we find, we are able to see how healthy a stream or river is at a given point.

We often see butterflies heralded as mascots for native plants, but at GSWA's Conservation Management Area, there are many other insects that pollinate our native plants. Often overlooked because of their nighttime activity, moths actually make up over 90% of the species in the order Lepidoptera, with butterflies and skippers comprising the other 10%. While not as popular as bird watching, moth watching has become a niche hob-

by of naturalists around the world. "National Moth Week", founded by New Jersey's Dave Moskowitz and Liti Haramaty in 2012, encourages citizen science through monitoring events and education. These diverse insects depend on, and are vital to, many of our native plants.

Moths, dragonflies, and other swamp-loving insects are not just interesting in their own right; they also make up an important part of the food chain. Many aquatic macroinvertebrates will consume algae and other insect larvae. One of the reasons we love dragonflies so much at GSWA is because of their ability to eat hundreds of mosquitos in a day, both during their larval stage in the water and as adults. Frogs and fish will consume dragonfly larvae, while birds and bats appreciate eating these insects on the wing.

Next time you're on a hike, take an extra minute to observe the moths, bees, dragonflies, and other insects in the area. You might be surprised by how charismatic and interesting these organisms can be! 🌿



A Blue Emperor Dragonfly (Anax imperator) found during 2022 PFAS sampling.



This July, GSWA staff set up a moth sheet at the marsh of the Conservation Management Area to join in on Moth Week monitoring.



This Ash Leafroller Moth (Palpita magniferalis) must be adaptable to other tree species, as the population of Ash trees is declining due to the invasive emerald ash borer.

Across the Watershed

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GSWA is a member-supported non-profit organization that protects the waters and the land of the Great Swamp Watershed and Passaic River region.

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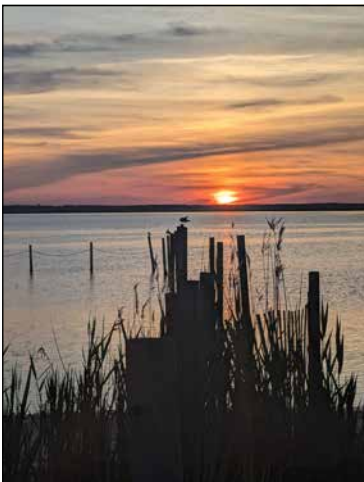
**The Great Swamp Watershed
Association protects and
improves the health of the
Passaic River through science,
education, land preservation and
stewardship, and advocacy.**

From the Desk of the Executive Director

By Sally Rubin, Executive Director

It seems these days, many of us are busy and so stressed about politics, the economy, work, family, and the environment. Sometimes we just need to take a moment and appreciate how lucky we are - or at least I do. I was recently scrolling through the pictures on my phone (they are mostly of my dog!) and these photos made me smile. Whether it's appreciating one of the many beautiful trees at my house last fall, and fall is coming again all too quickly, the peony farm

I visited with my daughter early this summer, the gorgeous dark pink hibiscus I saw at the refuge, or the beautiful sunset over the bay on Long Beach Island, I am grateful for the beauty that surrounds me. Take a minute to look around you and remember how lucky you are. Send me a photo of something that makes you smile to srubin@greatswamp.org. Take care, enjoy the last few days of the summer and the beginning of fall! 🌳



Upcoming Programs and Events



Scan to
Register

Hidden Colors UV Hike

Wed., September 13, 7:00 - 9:00 pm

*GSWA's Conservation Management Area (CMA)
1 Tiger Lily Ln., Harding Twp., NJ*

Explore the hidden colors of fungus, plants, and insects as we explore the Conservation Management Area with new eyes. UV lights allow us to see colorful, fluorescent organisms that the human eye cannot normally detect. GSWA will provide the UV lights for this short hike over our boardwalked vernal pools. Nature enthusiasts of all ages are encouraged to join this cool and easy hike! Adult: \$15; Child: \$8. Register at GreatSwamp.org or call 973-538-3500.

Climate Proof Your Garden

Wed., September 20, 7:00 - 8:30 pm

Free Zoom Webinar

As extreme weather events and warmer temperatures become more frequent, it's time to start thinking about ways to fortify your outdoor space. Learn how to climate proof your garden with strategies like "Xeriscaping" water conservation strategies (designing landscapes to reduce or eliminate the need for irrigation.) We will also discuss plant choices to help your garden weather the storms and droughts and attract more pollinators like bees, birds and butterflies! Register for this free Zoom webinar at GreatSwamp.org or call 973-538-3500.

Harvest Full Moon Paddle

Fri., September 22, 6:00 - 8:00 pm

*Essex County Environmental Center
621 Eagle Rock Ave, Roseland, NJ*

Delight in an evening paddle on the Passaic River to celebrate the beginning of Autumn as the sun sets. Children 8 and up are welcome. All participants 15 and under must

be accompanied by a parent. All participants must be able to swim, be comfortable on the water, and wear clothes and footwear that can (and will) get wet and muddy. Life vests will be provided. GSWA Member: \$30, Non-member: \$40 (all ages). This paddle is limited to 7 people in total, so register today at GreatSwamp.org or call 973-538-3500.

Stream Assessment Training - Free Sun., September 24, 1:00 - 4:00 pm

*The Morristown & Morris Township Library
1 Miller Rd., Morristown, NJ*

With all that's going on with our planet, now is the time to tune in to our environment a little better. Join us for this free training workshop and learn how to monitor a stream or simply gain a better understanding of stream health. The first half of the program is indoors at Morristown/Morris Township Library; the second half is streamside along Loantaka Brook. By 4 pm, you will be fully trained and ready to conduct your own visual stream assessments! Register for this free training session at GreatSwamp.org or call 973-538-3500.

Water Quality in Loantaka Brook - Free Tue., September 26, 6:00 - 7:00 pm

*The Morristown & Morris Township Library
1 Miller Rd., Morristown, NJ*

Great Swamp Watershed Association has been monitoring the water quality of our local streams for over 40 years. In this presentation by Director of Water Quality, Sandra LaVigne, we will focus on the water quality in Loantaka Brook, how it has changed over the years and what we can do in the future to help improve it. Register for this free program at GreatSwamp.org or call 973-538-3500.

Please be sure to let us know if you change your e-mail address. Send a note with your name, address, and old e-mail address to Nancy at nrago@GreatSwamp.org so you don't miss out on our e-newsletters.

**Town-Wide Yard Sale -
Madison and The Chathams
Sat., September 30, 9:00 am - 2:00 pm
(Rain date - October 1)**

With summer winding down and more time spent indoors, it's the perfect time to declutter your house by hosting a yard sale through this community event. Your tax-deductible \$10 registration fee, benefiting GSWA, gets your address and a list of your sale items on a digital, printable map. The map will be publicized on the GSWA website and shared throughout the communities for potential shoppers to view and print. You must be a resident of Chatham Township, Chatham Borough, or Madison to list your sale. **Everyone else**, mark your calendar for **September 30** to get out and shop sustainably at this amazing three-town-wide yard sale! Registration is required to appear on the map at GreatSwamp.org or call 973-538-3500.

**GSWA Gala Celebration & Silent Auction
Thu., October 5, 6:00 - 9:00 pm**

Brooklake Country Club, Florham Park, NJ

The GSWA Gala is a lively evening of good food and drink, spirited mingling with like-minded eco-conscious friends, and browsing and bidding on our popular Silent Auction. The evening will include environmental-themed commentary from Keynote Speaker, Congresswoman Mikie Sherrill (NJ-11) and a special tribute to Jay DeLaney, former Morristown mayor and longtime GSWA supporter. New this year, magician and illusionist Simon Mandal will engage and delight attendees throughout the event. More information and purchase your ticket(s) at GreatSwamp.org or call 973-538-3500.

**Geocaching 101
Mon., October 16, 6:00 - 7:30 PM**

*Harding Library, 19 Blue Mill Rd
New Vernon, NJ*

What is geocaching? Geocaching is a "location-based game" that combines the internet and satellite technology by using any smart phone or GPS to locate hidden containers called "geocaches" which are marked by GPS coordinates. Once you open the app and see what's around, you'll soon be outside enjoying the fun! This outdoor adventure combines nature, history, and education, it's a great way to discover and explore new places. Join John Neale, President of the Northern New Jersey Geocaching Club (NNJC.org), as he guides you through the fascinating and popular world of geocaching. This program is offered through a partnership with The Harding Library. Register at GreatSwamp.org or call 973-538-3500.

**Halloween Full Moon Hike
Mon., October 30, 6:00 - 7:30 pm**

*GSWA's Conservation Management Area (CMA)
1 Tiger Lily Ln., Harding Twp., NJ*

When the Hunter's full moon (named because it was the ideal time for hunting in the olden days) and Halloween collide, what's better than a nighttime hike around the darkness of the swamp? Since trick or treating isn't just for kids, we encourage you to dress up, if you dare, and come with some candy you'd like to share with your fellow hikers as we traverse the trails of the CMA. From ethereal haunting calls to howling - and that's just the owls and coyotes - who knows what we will encounter? This is an

easy, 2–3-mile hike across boardwalks and flat trails. GSWA member: \$5, Non-member adult: \$15, non-member child: \$5. Register at GreatSwamp.org or call 973-538-3500.

Fall Colors Paddle

Fri., November 10, Two options:

2:00 – 3:30 pm & 4:00 – 5:30 pm

Somerset County Park Commission

Fisherman's Parking Lot, Long Hill, NJ

Come out and enjoy the beautiful fall foliage along the banks of the Passaic River as we paddle the headwaters region of the Great Swamp. This area is full of wildlife, native vegetation and beautiful views. Children 8 and up are welcome. All participants 15 and under must be accompanied by a parent. All participants must be able to swim, be comfortable on the water, and wear clothes and footwear that can (and will) get wet and muddy. Life vests will be provided. GSWA Member: \$30, Non-member: \$40 (all ages). Each paddle is limited to 7 people, so register today at GreatSwamp.org or call 973-538-3500.

Sip 'n Paint Holiday Ornament Workshop

Tuesday, November 14, 6:00 – 7:30 pm

GSWA Headquarters, 568 Tempe Wick Rd., Morristown, NJ

Jump into the holidays with an instructor-led DIY project workshop and some wine. Led by local artist Alice Schwartz, you will learn glass painting tips and techniques to decorate and bring home your own winter/holiday-themed glass ornament! Once you have learned some tricks of the trade, you will have the skills and the know-how to make more of

these hand-crafted ornaments to give as gifts to your friends and family. GSWA member: \$30, Non-member: \$35. All supplies will be included in the price, just bring your creativity. Wine and light snacks will be provided. Space is limited, so register today at GreatSwamp.org or call 973-538-3500.

Fall Community Clean-up at the CMA

Sunday, November 19, 9:00 am – 1:00 pm

GSWA's Conservation Management Area (CMA)

1 Tiger Lily Ln., Harding Twp., NJ

Earn some bonus points and pre-work off your Thanksgiving calories. We could use some help sprucing up the CMA for the winter. We spent a lot of time this summer building and replacing boardwalks and now the scrap wood needs to be hauled back out of the woods. Additionally, we need to clean up the trails and prepare them for winter hiking! We will reward our hard work with a gentle sightseeing hike before heading out. This is a fun workday that will leave you feeling satisfied that you have earned that extra piece of Thanksgiving pie! Register at GreatSwamp.org or call 973-538-3500.

Winter Foliage Wreath Making Workshop

Thurs., November 30, 5:00 - 6:30 pm & 7:00 - 8:30 pm

GSWA Headquarters, 568 Tempe Wick Rd., Morristown, NJ

Grab your warm clothes and kick off the holiday season with a homemade winter wreath made from native evergreens and other native plants. You'll decorate your masterpiece with pinecones, berries, and other items found in nature. While your creativity blossoms, you'll

For more information on upcoming events and to register, visit **GreatSwamp.org** or call **973-538-3500**.

Most events are free or a reduced rate for GSWA members.

Registration is required for all GSWA events.

learn more about the natural items being used in this craft. Hot cider and cookies will be served. GSWA member: \$35, Non-member: \$40. Price covers everything you need to leave with a finished piece that's ready to hang on your door or give as a gift. Space is limited, so register today at GreatSwamp.org or call 973-538-3500.

A Winter Wander Hike

Sat., December 9, 10:00 am – 12:00 noon

South Mountain Reservation

Cherry Lane, West Orange, NJ 07052

Step outside on a crisp, December morning and enjoy some fresh air on this winter wander through South Mountain Reservation. As we hike, you will learn about how the Lenape braved the cold winters as well as some geologic history. Along the way, we will see a waterfall (or two) and depending on the temperatures, they may or may not be frozen! GSWA member: Free, Non-member adult: \$15, Non-member child: \$5. Register at GreatSwamp.org or call 973-538-3500.

Members Only Winter Solstice Hike

Thurs., December 21, 6:00 – 7:30 PM

GSNWR Wildlife Observation Center

Long Hill Road, Harding Township, NJ

Thank you for being a GSWA member! We invite you to bundle-up and come celebrate the first day of winter (winter solstice) with a crisp, invigorating hike at the Refuge. Winter solstice is the day with the fewest hours of sunlight in the whole year, making it the shortest day of the year. It's a great time of year to look and listen for owls and other nightlife. This is one of our most popular hikes with three highly experienced and knowledgeable GSWA naturalists. Be sure to dress for the weather and wear your warm socks for this hike. **This is a free hike available to GSWA members only! Space is limited.** Register at GreatSwamp.org or call 973-538-3500.

Scat & Tracks Hike

Sun., January 7, 2024, 10:00 am – 12:00 noon

Location: To be announced

Ever wondered how to sleuth what animals are visiting an area - even when you are not rewarded with a sighting of the creature itself? As we enjoy a leisurely paced hike in the refuge, learn more about the scat (poop), tracks, and other markers our native wildlife leave to clue us into their presence. We will provide binoculars and poking sticks to help us get up close to these fascinating clues that enable you to become great wildlife detectives. Conditions can be wet or muddy. Wear appropriate footwear and dress warmly. \$15/person suggested donation. Register at GreatSwamp.org or call 973-538-3500.

Evening Briefing

Why We Love NJ's Open Spaces –

Dave Robinson, NJ State Climatologist

Tuesday, January 16, 2024, 6:00 – 7:30 pm

GSWA Headquarters, 568 Tempe Wick Rd., Morristown, NJ

There's a lot of news about climate change and the devastating effects it has and will continue to have on the state of New Jersey. Now, who's ready for some good news? Join Dave Robinson, NJ State Climatologist and distinguished professor of geography at Rutgers University (and GSWA board member!) and discover why we are fortunate to live in the great state of New Jersey, thanks in part to our many scenic open spaces. From the Pine Barrens to the Great Swamp National Wildlife Refuge, Dave will talk about how these geologic gems are more than just beautiful places to hike and relax, they also serve a valuable function in our ecosystem, helping to mitigate the effects of climate change. GSWA member: Free, Non-member: \$15. Register at GreatSwamp.org or call 973-538-3500. 🌲

Paddling on the Passaic

By Hazel England, Director of Education and Outreach, Land Steward

If you haven't yet been lucky enough to join us on one of our many sold-out staff-led paddles along the Passaic River over the last couple of years (watch out for some additional programming opportunities this fall), never fear, we've got some great area paddling possibilities for you. The Passaic is a great New Jersey River to paddle, though it is only 81 miles long from source to sea. Along its twisting, erratic course winding around the Watchung ridges, it offers up countless wildlife watching opportunities and gives paddlers a surprisingly tranquil paddling experience amidst urban and suburban New Jersey. Paddlers can experience firsthand the river's role as a wildlife biodiversity corridor, and its unique cultural history, and even learn more about its role in the development



Camp Lane Rutherford launch

Native American Lenape language, and for a good portion of its length the river really lives up to its ancient name.

There are many great spots to paddle along the length of the river. We've focused on highlighting a few launch spots that offer good and safe parking and launch conditions, great wildlife watching, tranquil paddling and are within easy reach for many area inhabitants. Since more than two million plus New Jersey residents get their daily drinking water from the river, as you paddle the river you can learn firsthand about its health!

Why not beg, borrow, or buy a canoe or kayak and take a trip on one of these great stretches of the river this fall. Check weather conditions and water levels before you head out. Given our summer of frequent rain, water levels have remained high for the last few months, but it's always a good idea to check



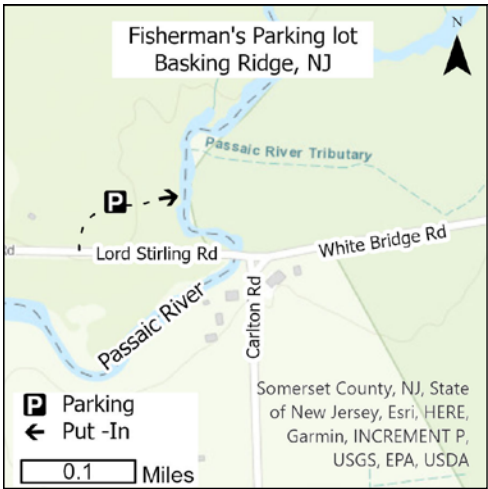
A twilight paddle through the tranquil woodland floodplain forest of Great Piece Meadows

of the state. The river flows from above Great Swamp National Wildlife Refuge, starting behind Mendham High school, flowing down through Summit, passing glacial remnant swamps, then over the Little and Great Falls and south down the urban corridor of Eastern New Jersey before uniting with the Hackensack River to form Newark Bay. The name Passaic means 'peaceful valley' in the



Paddling through Great Swamp National Wildlife Refuge

both put in and take out, and you can even check water levels at the USGS website for the Passaic at <https://waterdata.usgs.gov>. For additional resources on where to launch, river mileages and other useful paddling information, nothing can beat Ed Gertler's *Garden State Canoeing—A paddlers guide to New Jersey* by Seneca Press. This informative guide offers every put in with road access for all New Jersey rivers including the Passaic and its tributaries. For more Passaic specific information, an annotated google map created by David Alexander, naturalist extraordinaire at Essex Environmental Center offers launch site information and some other helpful resources. <https://natureintoaction.com/2021/10/19/the-upper-passaic-river-water-trail/>.



Fisherman's Parking Lot launch, off Whitebridge/Lord Stirling Road, Basking Ridge, NJ

This well-loved launch site allows paddlers, dependent on water level, to paddle upstream or downstream. With a river mat to ease access and reduce muddy feet, it's a great stretch to see kingfisher, red-headed woodpecker, beaver lodges, otter discard piles known as middens and tons of other amaz-

ing wildlife. **Upstream-** with Great Swamp National Wildlife Refuge on the right-hand side and Somerset County Park Commission Lord Stirling Park on the other, you will know within a few hundred yards when you paddle upstream if the water level is high enough to support your trip! If it's not, then you can almost always head downstream. **Downstream-** from the Fisherman's lot launch you can paddle with mostly Somerset County land and a few riverside homes just under two miles to South Maple Avenue, or beyond for a longer trip to the steep-sided evergreen covered slopes of Millington gorge. At high water, Millington gorge has riffles that can be fast and, if strainer trees are present, can prove dangerous. Take care paddling through the gorge in high water or after heavy rains. This is the river's exit from Great Swamp watershed to become the Passaic River proper.



Shepard Kollock Park, Chatham

This is easy access for an out and back trip with a concrete launch and ample parking off Parrot Mill Road. Shepard Kollock Park was named for the publisher of the New Jersey Journal during the revolutionary war. The park has trails for hiking and multiple use areas, including (continued on page 20)

Welcome Our Newest Trustees

By Sally Rubin, Executive Director

Lydia Chambers is the Co-Chair of Friends of the Drew Forest and joined the board in March 2023. With a BA in Earth Science from Dartmouth College and an MS in Geological Sciences from the University of Colorado, Lydia worked in the oil industry for nine years as a geological engineer and hydrogeologist. For over 20 years, Lydia has worked as an environmental organizer in the Chatham-Madison area and is a familiar face

at many GSWA events. Her involvement with GSWA began at her children's school where she organized the watershed demonstration for third graders. She also initiated GSWA's



Lydia Chambers

successful native plant sale and has assisted since its inception in 2021. Lydia served on the Chatham Township Planning Board and Open Space Committee for over a decade. In conjunction with the Environmental Commission, she led several environmental campaigns that were later used as models for communities around NJ. In 2008, Lydia co-founded a social business called Back-2Tap working with schools, non-profits, and corporations nation-wide to raise awareness about bottled water and promoting reusable bottles.

Susan Kessel is the owner of Chatham Print and Design in Chatham and joined the GSWA board in March 2023. Susan and her husband, Scott, are regulars at most of GSWA's programs and frequent volun-

teers! A graduate of Cook College, Rutgers University (now known as the School of Environmental and Biological Sciences), Susan's personal passions include the environment, gardening, and animals. She is a member of the North American Butterfly Association and the Native Plant Society of NJ and is knowledgeable about planting vegetables and native flowers, using organic growing methods for the health of her family and the environment. As a personal creative outlet, Susan is a knitter and handweaver.



Susan Kessel

Charlie Apt joined the board in May 2023. He graduated from Haverford College where he received a BA in Economics and Political Science. He earned his MBA at Columbia University. Charlie spent five years working in corporate finance for Irving Trust and then The Bank of New York. Throughout his career and personal development Charlie fostered his interest in small business and becoming an entrepreneur. Subsequently, he was a founder of Ciao Bella Gelato Company which was a frozen dessert company. He is now CEO of Sarahbeth's Kitchen, a small retail food business



Charlie Apt

with over 18 restaurants and a wholesale business that serves customers in the United States, Asia, and the Middle East. Charlie's interests outside of the food space include mentorships with several small food startups and now a growing commitment to helping improve the environment and educating the younger generation about the importance of issues that include sustainability, regenerative farming and generally a balance that preserves global resources and nature for the future. Charlie and his wife, Kathleen, recently moved to Morristown from Bernardsville. Kathleen works passionately with the Somerset County Parks Commission at Leonard J. Buck Garden. Charlie looks forward to supporting the tremendously important efforts of GSWA.

Carolyn Dempsey also joined our board in May 2023. Raised in Nebraska, Carolyn graduated from the College of William & Mary with a degree in Russian/Soviet Studies and Spanish. She turned down an opportunity for a career in covert operations for the CIA for a career in the performing arts, a lifelong passion, based in NYC. She later attended the Bank Street Graduate School of Education pursuing a master's degree in early childhood education. She and her husband moved their young family to Chatham in 2001 where she works teaching music and Spanish. She is an active volunteer in Chatham through the public schools in various roles, and in her church, serving as Assistant Minister, and she was elected to serve two terms on the church council. Carolyn served on the His-



Carolyn Dempsey

toric Preservation Commission and in 2018 was elected to the Chatham Borough Council, winning re-election in 2021. Two of her most rewarding efforts on Borough Council are co-founding the Chatham Community Food Distribution in April 2020, which serves 50-60 families weekly, and her work on the Passaic Riverside Trail, which she is working to expand and enhance. Carolyn looks forward to serving the GSWA and expanding our reach and environmental missions all along the Passaic and beyond.

Adam Psichos joined the GSWA board in May 2023, after serving on our Advisory Council for several years. He is currently Director of Strategic Initiatives and a Relationship Manager for Glenmede. Adam has a BA degree in English literature from Franklin & Marshall College, a BA degree in creative writing studies from Brown University, and a Master of Arts degree in liberal studies and economics from New York University. Adam is an active participant in several community and charitable organizations. He serves as a trustee and former president of the board for SAGE Eldercare and is a member of the Strategic Planning Committee and former Trustee of The Discovery Orchestra. He is also an active member of Vistage. Adam and his wife, Celia, recently moved from Summit to Far Hills.



Adam Psichos

We feel truly fortunate to welcome these exceptional individuals to our board. We also extend our heartfelt gratitude to our entire board and advisory council members for their "work, wealth, and wisdom!" 🌱

How a Rapidly Warming Climate Affects our Water Systems

By Marina Chiafullo, GSWA college intern

I have been interested in the global warming crisis since I was about eight years old, in the second grade. In sixth grade, we were assigned a project about a “current issue” for my English class. I chose coral bleaching, and it opened my eyes to the destructive and harrowing effects our warming climate can have on the environment– it is fascinating how just 1°C of change can impact so many things in nature. I have dedicated my undergraduate studies to oceanography, and after volunteering with GSWA, I have a wider understanding of how this warming climate affects marine and freshwater bodies of water.

From the streams of the Passaic watershed to the coastal shallows of Florida, the steadily warming global climate impacts our aquatic ecosystems in various ways. Although freshwater and saltwater bodies have different qualities, rising temperatures influence organism behaviors, change the way the water moves and flows, and even increase the strength of storms.

Examples of freshwater bodies include streams, rivers, lakes, ponds, and wetlands. These systems are very important sources for our drinking water, and have great recreational value in terms of fishing, swimming, and other activities. So, *how is a warming climate impacting the safety of our freshwater bodies?*

First, we must discuss how climate change impacts the overall water cycle– warmer atmospheric temperatures warm up the ocean. Due to the increased temperature of the ocean, higher levels of evaporation take place, thus sending more moisture into the atmosphere. When this moisture-filled air coincides with a storm system, for example, the storm intensifies.

So, back to our freshwater bodies. Intense storms erode away the banks of rivers and streams– these banks are important habitats for macroinvertebrates and spawning areas for various species. The banks also host vegetation, which helps maintain water quality and acts as a buffer for pollutants entering the waterways. In addition to erosion, increased rainfall also facilitates a higher transmission of bacteria via runoff. In areas of high human activity and animal feces, bacteria from pet and wild animal waste can more readily enter the streams of the area. The presence of such coliform bacteria, like *E. coli*, increases the risk of diseases like dysentery and cholera. On the flip side, longer periods of drought can decrease the overall levels of water in our streams, leaving less water to dilute said pollutants and bacteria.

Higher temperatures are not only affecting our freshwater systems, *but our oceanic systems as well*. Near the end of July 2023, a coral reef off the Florida Keys, called the Sombrero Reef, experienced a total bleaching event– 100% of the corals in this reef died due to abnormally high ocean temperatures. Water heat levels in the area have been soaring, reaching temperatures of 94°F. The symbiotic algae within the coral, known as zooxanthellae, have a strict threshold for temperature. When it gets too warm, they eject from the coral tissue, leaving the coral white, bare, and dead. Not only are coral reefs a large source of economic gain considering their aesthetic appeal for snorkelers, divers, and tourists, coral reefs also protect the shoreline from erosion and are home to a variety of marine species. The fact that this reef bleached in such a short time (continued on page 15)

Pledge to Build a Healthier Environment *One Yard at a Time*

By Thelma Achenbach, GSWA Advisory Council member and
Morris Township Environmental Commission member

In April 2022 Morris Township passed a **Do Not Plant Resolution** which strongly encourages everyone in Morris Township to avoid planting any species appearing on the New Jersey Invasive Species Strike Team's **Do Not Plant List** and to use native plants whenever possible in order to lessen the negative economic, social, and ecological impact of invasives.

Since the negative impacts of invasives do not obey municipal boundaries, Morris Township's Environmental Commission is inviting EVERYONE, in Morris Township and beyond, to join those in the community who have already committed to protecting the places they love by avoiding invasives and planting natives *One Yard at a Time*.

I will Join my Neighbors and Avoid Invasives and Plant Natives in my yard to

- Reduce the spread of the invasive plants that are harming our public parks and natural areas.
- Provide native plants required for a healthy regional ecosystem of insects, birds and other wildlife. 🌱



How a Rapidly Warming Climate Affects our Water Systems *(continued from page 14)*

span speaks volumes to how our climate crisis directly impacts our oceans. Additionally with this increasing temperature, we are seeing a decrease in pH due to higher levels of carbon dioxide being dissolved in the ocean. This is otherwise known as ocean acidification. Because corals are composed of calcium carbonate, acidified conditions prevent corals from building and fixing their skeletal bodies.

In my marine biology course last Fall, we learned about geographic truncation and expansion— another way the warming climate affects our oceans. Many organisms, like the zooxanthellae, have temperature thresholds they must keep for survival. For this reason, scientists are noticing geographic truncation or expansion— a limitation or extension of the range a species can inhabit. An example

of this phenomenon is how Eastern Oysters are slowly moving northward, reaching the Canadian coasts. Historically found in the Chesapeake and Tri-State area, the oysters must creep up the northern coast in order to “keep their cool”.

Freshwater and saltwater systems are both affected by our warming climate, in ways that scientists are still discovering day by day. Climate change itself is indeed a natural phenomenon, but the rate at which it is changing is quite the opposite. This is why environmental education is so important; knowing the facts may convince someone to take steps to lower their carbon footprint. I mean, to be fair, a single English project I worked on nine years ago was my motivation to save the planet! 🌱

Update on Spanish Language Lessons for GSWA Staff/ *Actualización sobre las lecciones de español para el personal de GSWA*

By Ginger Van Ryzin, Education, Land Steward, and Water Quality Associate, and
Lynne Applebaum, Director of Institutional Relations

Durante los últimos meses, el personal de programación ha estado aprendiendo español con clases de Babble. Las clases fueron muy difíciles porque las clases eran individuales con un profesor de español, pero es muy importante que el personal de programación aprenda. Muchos estudiantes de Paterson, Newark y otras comunidades río abajo solo hablan español y creemos que esos estudiantes deberían poder aprender sobre la importancia del agua y sus ciclos al igual que los estudiantes de inglés. Con los documentos de actividades convertidos al español, estamos casi listos para enseñar en español esto otoño. ¡Estamos muy emocionados (y nerviosos!) de comenzar a enseñar!

As part of our mission, Great Swamp Watershed Association provides STEM environmental education to middle and high school students in the Passaic River region. Over the years, it had become clear that we needed to find a way to be more inclusive and reach the Spanish-speaking students. The objective was to be able to teach lessons and provide program material in Spanish so that all the students could comprehend what was being taught.

The question was how to fund this initiative. That's where Workforce Development Board of Morris-Sussex-Warren comes in, whose main purpose is to fund, plan and oversee services provided by the One-Stop Career Center system in Morris, Sussex and Warren Counties in New Jersey. We found

out about reimbursement funding available through their Incumbent Worker Training program, which gives employees in many different industries an opportunity to receive training that increases their work skills.

As a result of our expanded reach, we can more effectively teach students whose first language is Spanish. After significant research, we discovered a great language learning app called Babbel for Business. They understood our needs such as the ability to convey specific scientific concepts to the student program participants. This self-paced training provided anytime access to the platform along with one-on-one intensive learning. We determined that this would be the quickest way to get a working knowledge of the language in about six months' time.

Thanks to Workforce Development Board of Morris-Sussex-Warren and Babbel for Business, six GSWA staff members now have a working knowledge of Spanish (as seen in the opening paragraph, written by Ginger) that can now be incorporated into lessons, social media, and more so that we can better serve more individuals in our watershed communities.

With fall programming coming up, our team is ready to utilize their newly acquired Spanish speaking skills. To echo Ginger's statement above: ¡Estamos muy emocionados (y nerviosos!) de comenzar a enseñar! 🇪🇸

Judith Hazlewood, Member, GSWA Advisory Council

By Wade Kirby, Director of Development

Judith Hazlewood was born and raised in the United Kingdom. In late 1999 she relocated to the United States for work and found herself in a house on Myersville Road in Green Village. Shortly thereafter she moved to Village Road in Harding Township where she has been ever since. Before her recent retirement, Judith was with McKinsey & Company in both London and New Jersey for over 30 years. As a Senior Partner in their New Jersey Office, first in Florham Park and then in Summit, Judith was responsible for McKinsey's client service to several large, global healthcare organizations. Judith served as a member of McKinsey's Shareholder's Council (Board) and, after becoming term limited from the board, took responsibility for their global talent operations including recruiting, development, deployment, performance evaluation and human resources.

Judith moved to New Jersey during Thanksgiving when everything was closed! She went exploring on a bicycle and found an entrance to the Great Swamp at the end of Myersville Road. She found the swamp to be "just beautiful...magical." There was signage about the boardwalk, maps, and information about the Great Swamp Watershed Association. Judith was intrigued and, at that point, began her support.

Since retirement, Judith has more time to devote to GSWA as she currently serves on the Advisory Council and Development Committee. She feels there is an inherent connection between the Great Swamp National Wildlife Refuge and GSWA. She would like to see GSWA leverage that con-

nection and put more emphasis on the refuge as we are an essential part of its maintenance as a wildlife preserve. Judith has observed that a whole segment of people are just too busy to become active members but would be interested in the impact of the work that the GSWA does and the science that backs that up. She cites the recent flooding disasters and how people in the watershed should be more aware of how good water management helps avert an even greater problem.

Judith has enjoyed the programs in which she has participated. She loves the mix of real science, along with practical interventions. She once entered the office and saw the interns who had been working in our Conservation Management Area's monitoring station. That combination felt very energizing! Everyone in the area should know about the education offered by GSWA. Judith recognizes the education provided to schools and she feels that could be repurposed to include adults. Much of what GSWA does is not known by many people in the area, and it should be!

At McKinsey, Judith spent time with many clients who were leaders of major institutions around the world and she finds Executive Director Sally Rubin to be a very inspiring and effective leader; low-key and humble. Sally is a big part of the attraction for getting involved in GSWA.

Judith is deeply concerned about some of the biggest environmental challenges we face today, but GSWA gives her hope. We so appreciate Judith's service on our Advisory Council, and her support. 🌱

2023 Gala Celebration

Our Gala Celebration and Silent Auction will be held on **Thursday, October 5**, at the **Brooklake Country Club** in **Florham Park, NJ**. This annual event is our biggest and most exciting fundraising event of the year!

The evening will include a lively cocktail hour, a delicious dinner banquet, our expansive and renowned silent auction, and a keynote presentation by Congresswoman Mikie Sherrill. We will also pay special tribute to Jay DeLaney, former mayor of Morristown and longtime GSWA supporter.

Gala guests are in for a special experience this year with entertainment from Simon Mandal, a national touring professional magician, comedian, and more.

We hope you will join us for an eventful evening sprinkled with fun and excitement.



OCTOBER 5, 2023 - BROOKLAKE COUNTRY CLUB
5 PM VIP RECEPTION | 6 PM COCKTAILS & SILENT AUCTION

For Tickets, Wine Packages & Advertising, and Un

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Gala Celebration



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Scan for tickets
and more information



led with some magic!

COUNTRY CLUB, FLORHAM PARK, NJ

AUCTION | 7:30 PM DINNER & KEYNOTE SPEAKER

underwriting Opportunities, visit GreatSwamp.org

Paddling on the Passaic *(continued from page 11)*

restrooms. Paddling downstream, you travel along the back of Chatham, under route 24 and along the back of the Short Hills mall, getting a totally different and much more tranquil perspective on territory more frequently traversed by car.



Essex County Environmental Center, access at rear of Garibaldi Hall, off Eagle Rock Ave, Roseland

You can paddle upstream or downstream on this tranquil section of the Passaic, using the launch site behind the Essex County Environmental Center. There are porta-johns and parking in the lot (do not park to block the launch) to make for an easy journey. Paddling upstream to a turnaround under the Route 10 bridge, which is just over 2.5 miles one way, you can paddle upstream against the current and float down again to the start. Paddling downstream, on a similar out and back paddle you may be rewarded with sightings of beaver, muskrat, mink, or otter along with herons of many species.



Camp Lane Boat Ramp, Great Piece Meadows, Rutherford

Driving into the DEP owned launch site at the end of Camp Lane, you might be forgiven for lowering your expectations of what you might encounter on a paddling trip in this urban area of New Jersey, but by paddling upstream, you will travel through the tranquility of Great Piece Meadows. This twisting, turning section of the river flows through wetland relic areas of ancient glacial lake Passaic and is protected as a floodwater protection area. The river is wide and calm here, and will delight with frequent turtles, muskrat, beaver, kingfisher and more. Once you leave the noise of Route 80 highway behind at the start of the trip, you can paddle upstream for a couple of hours and forget you are in the most densely populated state in the nation. Limited parking at the launch site, owned and managed by the New Jersey Natural Lands Trust. 🌲

A Look Back in Time: The Geologic History of the Great Swamp and Passaic River

By Ginger VanRyzin, Education, Land Steward, and Water Quality Associate

Throughout geologic history, what we now know today as the Great Swamp has not always been a swamp. During the Early Jurassic Epoch, while dinosaurs were roaming Earth, the area was in a tumultuous state and had been experiencing large lava flows, turning the Great Swamp into a molten wasteland. On the other hand, later during the Pleistocene Epoch, the swamp was an icy frozen tundra, and even later the area was submerged in under 300ft of water during the Holocene Epoch.

About 225 million years ago, during the breakup of the supercontinent Pangea, the tectonic plates were breaking apart and drifting, causing large amounts of lava to spill out of Earth's crust. During this time, the three Watchung Mountains were formed. These hook shaped mountains are the reason why we have the Great Swamp Watershed today. The mountains act as a dam, holding back water in the Great Swamp and slowly draining through Millington Gorge.

Fast forwarding ahead to 90,000 years ago, during the Wisconsinian Glaciation, much of Earth was either buried in ice or a freezing tundra. At the time, sea level was so low that the Bering Land Bridge allowed people to travel from North America to Siberia. Here in New Jersey, the Laurentide ice sheet that stretched over all of Canada and the northern parts of the United States had its southern most limit right here in the Great Swamp. The Laurentide ice sheet stayed for over 70,000 years, but by around 20,000 years ago, Earth was coming to the end of the ice age. The climate soon began to warm, and the ice began to retreat. Large amounts of melt water soon flooded streams and rivers,

rushing its way to the ocean and raising sea level 300 feet over a period of about 10,000 years. In northern New Jersey, the melt water was trapped by the Watchung Mountains and pooled at the inner hook around what is Basking Ridge today.

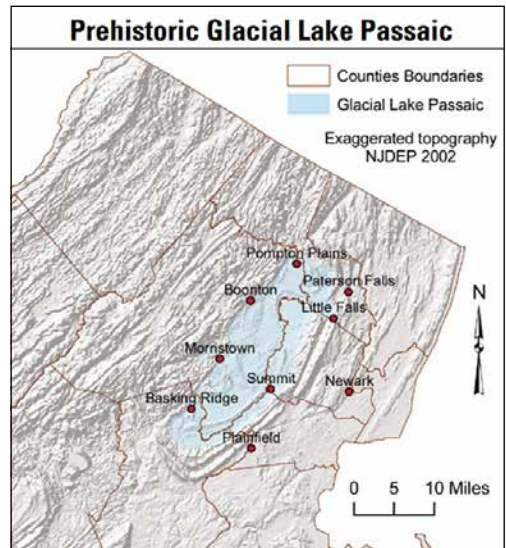


Photo Credit: US Fish & Wildlife Service

While the glacier continued to retreat over millennia, the Watchung Mountains stood firm and the small pool began to swell. Eventually, a large body of water, called Lake Passaic, was formed. Lake Passaic reached its largest around 12,000 years ago, where it spanned from Millington to as far north as Pompton Plains. After the ice age, the climate dried and Lake Passaic gradually drained through a break in the mountains that were once plugged with ice. The route carved the path of the Passaic River we know today.

With each rainfall today, water continues to pool in the inner hook of the Watchung Mountains; however, *(continued on page 29)*

Updates and Changes to the Important Laws that Protect our Waters

By Sandra LaVigne, Director of Water Quality Programs

Just over fifty years ago the Clean Water Act was put into place to preserve and protect the waters of the United States. Water is a basic need on which every living creature depends, and these laws are in place to ensure continued access to safe, clean water for everyone. Over the last fifty years, many changes have been made to the original set of laws that made up the Clean Water Act both at the federal and state levels.



*Flooding, Summer 2023 in Morris County
Photo Credit: Sandra LaVigne*

At the state level, I want to cover two new changes of note and one proposed change:

In July of 2023, The Inland Flood Protection Rule (IFPR) was adopted. The new rule amends both the NJ Flood Hazard Area Control Act and the Stormwater Management Rules (N.J.A.C. 7:13 and 7:8 respectively.) The main goal of the rule is to update the rainfall data used to make determinations on flood mapping and construction. Previous to the adoption of the rule, the rainfall data being used had been collected between 1970 and 1999. With the increased intensity of precipitation events due to climate change, this data did not properly reflect what was actually happening in the state. The new rule

works to not only update the data and flood maps but also put in place a mechanism to ensure that the data used moving forward is scientifically collected and kept current.

The key points to the IFPR (dep.nj.gov/inland-flood-protection-rule):

- Raises the non-tidal (fluvial) flood elevation (100 year storm line) mapped by DEP by two feet
- Requires the use of future projected precipitation when calculating flood elevation - this is used to designate the 100 year (and other) storm level
- Ensures that DEP's Flood Hazard Area permits conform to the NJ Uniform Construction Code standards and meet or exceed minimum FEMA National Flood Insurance Program requirements
- Requires stormwater Best Management Practices to be designated to manage runoff for both current and future levels of storms

One of the key points is to help protect sensitive areas that act as buffers against flood damage from the impacts of new construction. Another aim of the rule is to ensure that property damage due to flooding is reduced in new construction. The rule requires that the elevation of habitable first floors must be two feet higher than the flood line on state maps and three feet higher than the indicated flood line on FEMA maps. This will apply to new and reconstructed properties moving forward.

Next, NJDEP is proposing changes to the NJ Surface Water Quality Standards (SWQS N.J.A.C. 7:9B). These standards establish the accepted designated uses for the waters of NJ. They classify streams based on cur-

rent uses and antidegradation categories as set forth in the Clean Water Act protecting our freshwater resources. Categories include drinking water, fish consumption, propagation of fish and wildlife, recreation, and agricultural and industrial water supplies (*dep.nj.gov/standards*.) The NJ SWQS sets general and technical policies pertaining to what can be released into our waters through effluent from wastewater treatment plants and industry. These policies are put in place to prevent the degradation of our waters and the people and environment that they sustain.

Policy of the NJ Surface Water Quality Standards (N.J.A.C. 7:9B-1.5) “Toxic substance in water of the State shall not be at the level that are toxic to humans or the aquatic biota, or that bioaccumulate in the aquatic biota so as to render them unfit for human consumption.”

The key points to the proposed changes to NJ SWQS:

- Redefine the definition of “toxic substances” to align with the Federal Clean Water Act (CWA) – the changes include using the most up-to-date data to determine the toxicity of a substance in both fresh and saline waters and the use of this data to set limits to discharges into the waters
- In fresh water – the addition of 7 new substances and changes to the levels of 85 others that will have set limits on maximum levels in surface waters. Of these, 72 substance levels will be more stringent than current NJ standards. Compared to the USEPA standards, 27 are more stringent and 57 are the same.
 - This will bring surface waters in closer alignment with drinking water standards
 - This will impact the permitting of effluent discharge requiring these collective substances to be monitored

and reported including the 7 new substances

- PFAS will be added to the SWQS in line with the drinking water standards
 - PFOA 14ng/L, PFOS and PFNA 13ng/L
 - This will require effluent discharge to be monitored and reported to NJDEP
 - Ultimate maximum contaminant level (MCL) goal of zero due to the upgraded EPA status to likely human carcinogens
- Addition of 1,4 Dioxane to SWQS recommended at MCL .33µg/L

The changes to the NJ SWQS are based on the most current scientific data available. By bringing the surface water standards more in line with the drinking water standards NJDEP will have the ability to better regulate the inputs through effluent into our waters. This will help to protect both humans and the wildlife that depend on these resources for healthy lives. The proposal is expected to be put forth before the end of 2023 and voted on early in 2024.

Finally, in 2022, changes were adopted and put into place to the NJ Surface Water Quality Standards (SWQS). These changes addressed differences in standards between the NJDEP and the USEPA for a number of biological and chemical standards.

Key points to the 2022 adopted changes to the NJ SWQS –

- Bacterial quality criteria for water used for primary contact recreation will be based on a statistical threshold value over a 90 day period.
 - This extends the old criteria which was based on a 30 day collection period
 - This changes the determination from a geometric mean to a set statistical value (continued on page 24)

Updates and Changes to the Important Laws that Protect our Waters *(continued from page 23)*

based on a 90th percentile of samples taken.

- This is based on the potential for illness caused by exposure to *E. coli* bacteria in 32 cases out of 1000 people potentially exposed
- Adjusting the total ammonia both acute and chronic exposure criteria for aquatic biota
 - The criteria were updated to reflect the most recent scientific data available decreasing, on a sliding scale based on pH and water temperature, the acceptable levels of ammonia

These changes were adopted to help further protect the integrity of the surface waters and bring the state standards more in-line with the USEPA standards as set by the Clean Water Act.

At the Federal level there are two recent changes of note –

First, the US EPA is proposing a National Primary Drinking Water Regulation to establish a MCL for 6 PFAS compounds to the drinking water standards. PFAS are persistent chemicals that have been identified as potential carcinogens and are ubiquitous in our environment due to long-time use in a variety of industries. These chemicals, due to their persistent nature, bioaccumulate in living organisms including humans. Setting a drinking water standard is the first step in protecting the country from this potential health threat.

Key points to the US EPA PFAS regulation –

- Six different PFAS compounds are being addressed
 - PFOA and PFOS – 4ng/L
 - This standard is more strin-

gent than the current NJDEP standard and if adopted will supersede the NJDEP standard

- PFNA, PFHxS, PFBS, and HFPO-DA (GenX chemicals) 1.0 hazard index
 - This is a combined quantity that measures many newer chemicals together setting an overall limit
- Rule will require the compounds to be regularly monitored by drinking water suppliers
 - Also requiring public to be notified of all results
- Will work to reduce the levels of these compounds in drinking water if it is found to exceed the set standards

As more data is made available about the PFAS family of chemicals it has become apparent that they pose a significant health risk to the population. If these new regulations are established it will help to reduce exposure from a primary source, our drinking water.

Finally, the EPA following the SCOTUS ruling on *Sackett v EPA*, has released new rules regarding the wetlands of the U.S. In May of 2023 the SCOTUS ruled in favor of *Sackett* in a case that stated the wetlands on the property in question were not protected under the Clean Water Act (CWA) and therefore *Sackett* had the right to develop the property. The crux of the case was once again the definition of which waters were protected under the CWA. EPA administrator Michael Regan was quoted by NPR as stating, “While I am disappointed by the Supreme Court’s decision in the *Sackett* case, EPA and Army have an obligation to apply this decision alongside our state co-regulators, Tribes and partners.” *(continued on page 25)*

GSWA Environmental Education Programs Get Boost from New Partner, Blue Foundry Bank Charitable Foundation

By Lynne Applebaum, Director of Institutional Relations

Cultivating new business relationships can sometimes be a daunting task. Thanks to new board member Carolyn Dempsey, who facilitated the introduction, GSWA has begun a promising relationship with Blue Foundry Bank, located in Chatham. Following a recommendation from Blue Foundry Bank Assistant Vice President and Business Acquisition Manager Stephanie LiCausi, GSWA applied for a grant through the Blue Foundry Bank Charitable Foundation. The foundation awarded GSWA with generous funding for our impactful environmental education programs, which we received in July.

Blue Foundry Charitable Foundation was

established to support philanthropic efforts in the New Jersey communities where its employees work and live, and education is one of the foundation's key giving pillars.

GSWA's environmental education programs provide young people with information about the environmental issues of their communities, and the impact these issues might have on the water they drink. Engaging the next generation of environmental stewards encourages current and future protection and improvement of the natural resources of the Passaic River region.

GSWA is very grateful for this new partnership with the Blue Foundry Bank Charitable Foundation. 🌲

Updates and Changes to the Important Laws that Protect our Waters *(continued from page 24)*

Key points to the amended regulation relating to the wetlands of the U.S. –

- Changes the 2006 decision that stated wetlands were protected if they had a “significant nexus” to major waterways and changes it to waterways that have a “continuous surface connection”
- Removes, at the federal level, protected status from a significant portion of wetlands and headwater streams across

the U.S.

- Puts the onus on states to protect these sensitive areas from pollution and development
- May cause an upswell in permitting requests within these sensitive areas as seen during the rollback of the CWA under the Trump Administration. (PBS.org) 🌲

Have You Considered Including GSWA in Your Estate Plans?

Designating the Great Swamp Watershed Association as a beneficiary in your will is a sure way to continue your support for our work and sustain it long into the future.

Specific language in your will should of course be reviewed with your attorney. For more information on GSWA's Planned Giving program, please contact Sally Rubin, Executive Director at (973) 538-3500 or srubin@greatswamp.org.

Marta Heflin Foundation Supports CMA Upgrades

By Lynne Applebaum, Director of Institutional Relations

GSWA's Conservation Management Area (CMA) is a special property for so many reasons. It serves as a stormwater retention area, floodplain forest, native habitat regeneration, and offers over three miles of trails for bird-watching, plant and animal species identification and a bucolic walk in the woods.

In order to keep the property ecologically sound and accessible, constant maintenance and improvement is required. Staff and volunteers remove invasive plants and replace them with native plants in their place. Boardwalks are built and repaired for the many students and public who visit the property from all over the watershed.

This year's projects include creating safety steps into the Silver Brook to accommodate the anticipated increase in student visitors who go into the stream to sample for macroinvertebrates, purchase equipment to maintain trails, new signage, along with planned boardwalk improvements and invasive species removal.

With the constant threat of development looming,

maintaining, and protecting the special environment of the CMA is more critical than ever. GSWA is working with more students from urban communities every year, for whom access to and immersion in nature is so important. Water quality sampling experience, ecological and environmental science education these students receive at our CMA provide unmatched, exceptional learning opportunities.

That's where the Marta Heflin Foundation comes in. Interestingly, Marta Heflin was an American actress who appeared in several Robert Altman films, Broadway plays and on television as well. After her death, the foundation was set up in her name and supports theater, animal organizations and environmental organizations, by invitation only. Paul Katz, Vice-President, and Director of the Marta Heflin Foundation, grew up in the area and has fond memories of visiting the Great Swamp with his mother.

GSWA is very grateful to the Marta Heflin Foundation for its ongoing support. 🌿



Students from Paterson STEAM High School getting a water quality lesson at the CMA.



Thanks to support from the Marta Heflin Foundation and our awesome volunteers, the bridge over Silver Brook was constructed.

My GSWA Journey

By John Neale, former GSWA Board Member and current Advisory Council Member

My connection with GSWA is part of my lifelong love of the outdoors. I grew up in the shadow of the Great Swamp and Jockey Hollow, which provided many opportunities to explore the outdoors both environmentally and historically. This instilled an ongoing passion for outdoor adventures.

These adventures started in early childhood. My mom was passionate about the environment, and actually attended “Saving the Great Swamp” meetings. She was an outdoor education teacher for Union County’s Watchung Reservation, teaching survival in the woods among other subjects. Together we enjoyed many trips exploring New Jersey’s outdoors with Audubon and Summit Nature Club, paddling down the Passaic River and discovering many historic sites.

Fast forward to 2005, when I found a new way to enjoy the outdoors through an activity called geocaching. Using the internet and GPS coordinates, geocaching combines outdoor adventure, history and education. It’s a great way to discover and explore new places. As current President of the Northern New Jersey Geocaching Club (NNJC.org), I’ve now been running this non-profit organization for many years. Our goal is to work with individual counties, the State of New Jersey, National Park Service, and many non-profit land managers to help promote their properties with educational geocaching programs.

It wasn’t long before my involvement with geocaching led to a connection with GSWA. My GSWA journey started in 2008 when I visited the Conservation Management Area (CMA) while seeking a geocache called

“Wear Your Boots.” It was a few years later, in 2011, when I decided to explore the CMA trail and met Dot Stillinger and her daughter, Connie, during the hike. Dot envisioned a good partnership between my geocaching group and GSWA and introduced me to Hazel England. A few weeks later, I volunteered with a small team of geocachers to help finish the CMA’s much-needed elevated marsh boardwalk.

Shortly after that, I met Sally Rubin and my rewarding partnership with GSWA really took off. Since then, I’ve worked with Hazel, helped create and expand the CMA trail system, assisted with corporate workdays, built the seating area, and constructed the large kiosk with the Northern New Jersey Geocaching Club. I’ve enjoyed helping Sally and her wonderful staff at many events, including meetings on environmental and business issues. Over the years, I became a GSWA Board member and Vice Chairman of the Board, and currently serve on the Advisory Council. I also continue to maintain a series of geocaches at the CMA.

Since I also enjoy exploring the outdoors through the lens of American history, I joined the Sons of the American Revolution (SAR) in 2019. I easily qualified for membership since I have eight Patriot ancestors who served in the American Revolution! Combining history and geocaching, I recently created the *NJ American Revolution Geo-trail*. This involved partnering with many organizations including Crossroads of NJ, National Park Service, the State of New Jersey, and several county parks to showcase New Jersey’s most important American Revolution historical locations, from Fort (continued on page 29)

Great Swamp Great Music Festival – The Good, the Bad, and the Ugly *Gratitude and a New Plan*

By Val Thorpe, Director of Communications & Membership

The Good

June 25, 2023, began with a brilliant, blue sky and puffy white clouds. Our 6th annual music festival, GSWA's second largest annual fundraiser, was nicely set up at a charming new venue, the historic Brook Valley Farm in Chatham Twp, owned by the Platt family, and generously lent to us. This spot was smaller than our previous festival locations, bringing the audience closer to the music and providing a more intimate experience.

We even brought back the big tent! Two, in fact, which really gave it that festival feel. New to the event this year was the "Swamp Sprouts" kids' corner. This included a professional face painter, a flowerpot painting station, two life-sized "your face here" photo ops (crafted by GSWA's office manager, Melanie Hertgen) games, a ball crawl, and more. The non-profit *Home for Good Dogs* even

brought some adorable, live dogs for a puppy photo booth.

As festival goers arrived and settled into their spaces, the food trucks and merchandise vendors started getting busy. Newcomers, *HighRidge Runners*, kicked off the festival at noon, warming up the crowd with their 3-piece band playing Americana Bluegrass. Next, the fabulous Refugee Dogs took the stage playing original rock/Americana music. The festival was in full swing! Smiles and sunshine led us to believe Mother Nature was going to grace us with a spectacular day, sparing us from the daily threat of rain we experienced for weeks leading up to the event.

The Bad

A black cloud arrived unannounced and began dropping rain. The *Refugee Dogs* played on, which was an incredible sight to see. If not for the eventual lightning strike, it could have been a cool, mini-Woodstock moment. For everyone's safety, we stopped the music and prompted attendees, vendors, and volunteers to take shelter in their cars. The plan was to start back up when the storm had safely passed.

The Ugly

Every lightning strike reset the clock to resume the festival. Over an hour later, with yet another strike, we made the heart-breaking decision to cancel the event for everyone's safety.

Gratitude and a Revised Plan

As the festival organizer, I wish to express my sincere appreciation to everyone involved in the planning, setup, execution, and sloggy breakdown of this



GSWA's office manager, Melanie Hertgen

festival in the name of clean water (that includes rain) and a healthy environment. Thank you to the **bands** who donated their time and talent: HighRidge Runners, Refugee Dogs, The Tones, The Cold Hill Band, Lenox Underground, and Not Enough Jeffs. Additional thanks to: the **attendees** (some of whom helped with breakdown), all the **food and merch vendors**, **Pulse Stage Lighting**, the Great Swamp National Wildlife Refuge, our incredible **volunteers**, and my spirited and very capable **GSWA co-workers** and **board/advisory council** members. We are currently working on a plan going forward to assure the show will go on re-

A Look Back in Time: The Geologic History of the Great Swamp and Passaic River

(continued from page 21)

the amount of runoff is not nearly enough to make such a lake as Lake Passaic. Instead, the water slowly filters through the Great Swamp and drains through Millington Gorge. The once great Laurentide Ice Sheet persists today, under the name Barnes Ice Cap in northern Canada. 🌲

McKenna, Terry. "Paterson Geology: A Step Back in Time". NPS. <https://www.nps.gov/pagr/learn/nature/paterson-geology.htm>

"New Jersey's Central Passaic Basin". U.S. Fish and Wildlife Service. <https://rucore.libraries.rutgers.edu/rutgers-lib/28287/pdf/1/>

Interested in Volunteering?

If you are interested in getting actively involved in efforts to protect and preserve the watershed, GSWA has a number of volunteer opportunities (see GreatSwamp.org/volunteer/). Please send an email to info@GreatSwamp.org if you would like to volunteer.

gardless of the weather. Stay tuned!

Special thanks to our **event sponsors**: Kathleen & Charlie Apt, S. Dillard and Adrienne T. Kirby Family Philanthropic Fund, Atlantic Health System, Eagle Cliff Real Estate Partners, Peapack Private Wealth Management, Adrienne & Reed Auerbach, Community Foundation of New Jersey, Delta Dental of New Jersey, Lynn & Ralph Jones, Agi & Matt Krauser, New Jersey American Water, Pipe Works Home Services, Valley Bank, Lisa and David Welsh, Citizen's Bank, Gwenn & Tony DellaPelle, A.M. Higley, Debra & John Apruzzese, New York Life of New Jersey, and PSEG. 🌲

My GSWA Journey *(continued from page 27)*

Lee to the Trenton Barracks. See njpatriots.org for more information and take the plunge into NJ's heritage.

I look forward to ongoing volunteering with environmental organizations like GSWA, visiting historical sites, and having more outdoor adventures. 🌲



John Neale - Sons of the American Revolution (SAR)

Deepening our 'Plants for Pollinators' Roots

By Hazel England, Director of Education and Outreach, Land Steward

Just like the myriad, tiny native perennial plant plugs we sell by the thousand each April at our 'Plants for Pollinators' sale, our native plant program grows bigger and stronger with deeper community roots each passing year! We feel the program fits so squarely into GSWA's educational mission. Native plant gardens attract pollinators and conserve native biodiversity, adding pollination pathways between larger open space areas. Homeowners in our region have a great thirst for knowledge on the subject, as evidenced by the fantastic response to the program this year. We view this as primarily an education program, and to this end we focused this year on helping homeowners to understand both the need to include native plants in their plantings, their value as nectar, pollen, and larval food centers for feeding and supplying resources for pollinators, and as the foundation of a healthy ecosystem within the watershed. We also want gardeners, experts or beginners, to know how to take care of native plants, grow their gardens healthily and plan for their eventual expansion!

To bolster the educational aspect of the sale, which takes place over three weeks online in April each year, we have worked hard to expand the educational portion of the program year-round. This year we increased the number of speaker sessions to four, beginning in January, and including three nationally recognized speakers who could talk about pollinators in the most relatable ways. Desiree Narongo, from Vermont Ecostudies Center, spoke on her work on the importance of native species in backyard biodiversity as the foundation of healthy native food webs. Her Ph.D. research included work on the importance of pollinator larvae as food

for our native birds, including oft-quoted research on the number of native caterpillars a pair of chickadees needs to eat in order to raise a healthy clutch of eggs (hint, the answer is 9,600!) Nationally acclaimed writer Eric Eaton, an author of several works on native insects, spoke on the amazing diversity of native wasps, and what homeowners can do to support and encourage these valuable and often misunderstood pollinators. Rachel Jordan, of the Xerces Society, spoke on the importance of considering pollinator needs year-round, including how to manage plants and native gardens and encourage solitary pollinators to lay their eggs and complete their generational cycle in your yard. These biologists, whose talks are available by registering with us [send an email to Nrago@greatswamp.org to get added to our listserv], help us to garden with more understanding as to what exactly native pollinators need to be successful. It is more than just planting nectar sources, and our pollinator purchasers are growing and building their knowledge of gardening successfully to the benefit of bees, butterflies, and other beneficial insects. We are now hard at work planning the speakers for next year's fourth program.

And now for some numbers! We can chalk our third Plants for Pollinators sale up as a huge success despite some website provider glitches at the start of the sale. More than 700 attendees over the four educational zoom programs, along with others on our 1,700 strong native plant database email list, went on to purchase more than 23,000 native plugs.

This year we offered 37 individual native plants and six different kits for sale, including kits for shade, wet conditions, two full sun



Some of the 600 orders waiting for collection and distribution to our 13 pick up sites.



Our amazing volunteers working to sort the plants through good weather and bad.



Sporting the new 2023 Plants for Pollinators hat, the unfailing driving crew of Hazel England, Ginger VanRyzin, and Emile DeVito getting ready to load the plants.

kits as well as a best behaved and container adapted kits. We have broadened the offerings in direct response to the feedback we get from our purchasers.

As the plant sales have grown each year, our need for volunteers, extended resources and increased staff time has also grown. We were fortunate to receive funding from the Garden Club of Somerset Hills to allow us to purchase fencing and other materials that enable us to protect our plants while we process the orders and maximize our efficiency in dealing with this overwhelming number of plants. With military precision, we laid out the plant storage area for the hundreds of flats of plugs we use to fill each customer's order. We rented not one but two trucks in an epic day of driving to collect our plant material, which was loaded, unloaded, and labelled in a 12 hour marathon day. This set us up for a great start to processing week.

As previously, this year our plant processing week was a great community bonding time, with every partner providing volunteers for our two hour shifts all week to process the plants. Fueled by home-made cookies and treats each day, more than 75 individuals helped create the hundreds of kits, cut flats apart, pull orders and fill, check and double check the 600 orders. From a single row of five plant plugs to a 500-plant strong order, all were put together with care, humor, and love. If you helped out – thank you. We truly couldn't undertake a program of this magnitude without you! Thanks too, to the

22 partner organizations who publicized the programs and the sale and supplied volunteers and sites for residents to collect their plants.

New this year, we expanded the background information about the plants to focus on the specific pollinator species they were benefiting from and included this information in the kit information packets sent home with every order. As the palette of plants we supply to area residents has grown in complexity, so has the need to understand how best to take care of specific species and what ongoing maintenance they need to thrive. We re-organized our website resources to provide an easier to navigate and searchable resource section, adding pollinator identification guides to help homeowners identify just who is visiting their blooming natives! You can check these guides and all the other resources out at the greatswamp.org website-hit the native plants button and look for the guides in the resources section.

If you missed out on this year's plant sale - never fear, we have already pre-ordered more than 26,000 plants for pick up for next year's program, which will run April 1-19 with pick up the weekend of May 4th. Our offerings will include kits for dry and wet shade, dry and wet sunny conditions, as well as best behaved and the often-requested deer resistant plant kit. We'll have old faithfuls back but look out for some great new perennials available individually and as kits. 🌲

Volunteerism: Empowering Positive Change at GSWA *(continued from page 1)*

native plant program and music festival. For those inclined towards communication and event coordination, a multitude of avenues for contribution await. From stream teams to event planning, our volunteers play a pivotal role in the success of our outreach and engagement efforts.

Corporate and Community Engagement: Bridging Communities

The act of volunteering brings people together and fosters a deep sense of collective duty. We like to think GSWA acts as a bridge, connecting corporate entities with the community and offering enriching corporate workdays. These collaborations go beyond office walls, providing employees with team-building experiences that foster camaraderie and a collective sense of purpose as employees complete our ambitious stewardship tasks each season.

Whether it is a school-wide community service day or a scout group or club building

birdhouses and clearing trails, civic and community organizations are equally attracted to these volunteer opportunities. Their contributions help execute our vision and strengthen our community connections.



In May 2023, Columbia Bank employees came from branches in Morristown, North Haledon, and Newark...all along the Passaic River!



Columbia Bank employees at the CMA helped continue our work creating new, raised boardwalk across the connecting trails.



Wells Fargo employees helped create wildlife habitats along Silver Brook at the CMA last June, with Hazel sharing Passaic River insights during a break.



The stones and native aquatic plants required effort, but the Wells Fargo team demonstrated exceptional commitment to environmental stewardship.

Empowering the Future Generation

Our commitment to nurturing the next generation is displayed through partnerships with local Scouts. These young leaders undertake Eagle and Gold Award projects that enrich our environment and educate the public. Their initiatives, including the creation of signage, wildlife housing, boardwalks, and interpretive materials, significantly contribute



Drew University students installed a local Girl Scout's owl box during last fall's Community Stewardship Day.

to the educational and experiential facets of our conservation efforts.



Selena Bahl, a Gold Award Girl Scout, sold butterfly-friendly herbs and donated the proceeds to GSWA.

Catalyst for Positive Change

In a world where change commences with action, your commitment as a volunteer serves as the catalyst for a brighter future. By joining us, you are actively participating in shaping a more sustainable, interconnected, and vibrant world for all. Whether you are an individual seeking personal growth, a company aiming to engage your employees, or a community group dedicated to giving back, your participation holds immeasurable value. The fulfillment of our diverse program and



Hazel England has a core volunteer crew she can always count on for Community Stewardship Days.

event needs hinges on the dedication of volunteers, enabling us to tackle these challenges together.



In April 2023, Geoffrey Peters meticulously built and installed screech owl and sparrow hawk boxes at the CMA.

Simplified Engagement

Engaging with us has never been easier. It does not matter if you only have a few hours a year or want to become a regular; we can match you with suitable opportunities. Discover possibilities that match your schedule and skills by simply visiting our website at greatswamp.org/volunteer. You will readily find details about the different volunteer roles and their time commitments.

Moreover, enrolling in our volunteer email list is a breeze. Simply scan the QR code here and complete the fields so you can stay informed about upcoming monthly opportunities in a timely manner. Alternatively, feel free to contact Nancy Rago by phone at (973) 358-3500 Ext 11 or via email at nra-go@greatswamp.org. Your participation will truly mean a lot. 🌲

**Scan to join
Volunteer
Email List**



Know Someone Who Would Like to Become a Member?

GSWA relies on members like you to help protect our watershed's natural resources. Please pass this newsletter along, and encourage your friends and neighbors to join us! visit GreatSwamp.org for more information.

GSWA 2022–23 Water Quality Data Report

By Sandra LaVigne, Director of Water Quality Programs

GSWA works throughout each year to monitor the water quality of the Passaic River Region. In 2022, we collected various data from over 30 sites including our historic “Ten Towns” area which includes the Great Swamp Sub-Watershed as well as sites along the main stem of the Passaic River down through Little Falls. Starting in February of 2023, GSWA expanded our data collection along the Passaic down through Dundee Dam in Garfield.

What stands out most about all our data and the state of our streams is the impact the changing climate conditions are having. The summer (June – Aug) of 2022 was the 4th driest on record with total rainfall being over five and a half inches below the average (NJ State Climatologist). This was paired with one of the warmest summers as well and caused some of our streams, including Black Brook near the National Wildlife Refuge, to dry up completely. This trend continued into 2023 as we saw the warmest January on record and the second warmest winter. Early in the spring we also once again experienced

drought and extreme dry conditions which resulted in multiple forest fires in NJ. When the rain did come it brought flooding and erosion, and carried with it sediment, nutrients, and chemicals. This evolving pattern of high heat and drought followed by extremely heavy rain events creates ecological problems in our sensitive stream habitats.

Overall, we saw fairly consistent data from 2021 to 2022. Data that stood out included extremely elevated results for total dissolved solids (TDS) at Foote’s Pond, Great Brook, during our winter sampling. This is a representation of road salt in the surface waters. Elevated road salt can impact the overall health of the stream biota. Though the macroinvertebrate population did improve slightly in 2022 when compared to 2021, it is still overall low in quality with minimal diversity.

In Loantaka Brook, in the summer of 2022, there was an oil spill. Local residents alerted GSWA and we reached out to the proper authorities who immediately addressed the situation. GSWA conducted regular follow-up sampling to track the clean-up

Stream	Macro-invertebrates	Visual Stream Assessment	Bacteria	Dissolved Oxygen	Water Temperature	pH	Road Salt	Water Clarity	Nitrogen	Phosphorus
Black Brook	Poor	Good	Very Poor ↑	Good ↓	Excellent ↓	Excellent	Good ↓	Excellent ↑	Very Poor ↓	Poor
Great Brook (main stem)	Poor ↑	Good	Very Poor ↓	Excellent ↓	Excellent ↓	Excellent	Good ↑	Poor	Poor ↑	Good ↓
Silver Brook	Poor ↑	Good ↑	Very Poor ↑	Excellent ↓	Good ↓	Excellent	Very Poor ↓	Excellent ↑	Very Poor ↑	Good ↓
Loantaka Brook	Poor ↑	Poor	Very Poor ↓	Excellent ↑	Excellent	Excellent	Poor	Good	Very Poor ↓	Poor
Primrose Brook (main stem)	Good	Excellent	Good ↓	Excellent ↓	Excellent ↓	Excellent	Good ↓	Excellent ↑	Excellent ↓	Excellent
Passaic River (Headwaters)	Poor ↑	Excellent	Poor ↓	Excellent	Excellent	Excellent	Good ↑	Excellent ↑	Good	Excellent
Passaic River Watershed Outlet	Good ↑	Excellent	Very Poor ↓	Excellent	Excellent	Excellent	Good ↓	Poor	Excellent ↑	Good
Passaic River (Upper Passaic)	Good	Poor	Very Poor ↑	Excellent	Excellent	Excellent	Good ↑	Good ↑	Very Poor ↓	Good ↑
Passaic River (through Little Falls)	Poor ↑	Good	Very Poor ↓	Excellent ↑	Excellent ↓	Excellent	Good ↓	Poor	Poor ↓	Poor


KEY				
Arrows indicate a >.5 change from the 2021 data and correspond with the grade not the measurement				
Excellent	Good	Poor	Very Poor	No Data

efforts. This data indicates that the oil has been fully cleaned from the area. Results from the first half of 2023 show that chemical parameters have stabilized. Though Loantaka continues to be our most impaired stream in the watershed, no further impacts from the oil spill remain.

In 2022, GSWA completed the first full three-year round of chemical sampling along the Passaic River between Livingston and Little Falls. As we begin to understand the issues impacting this stretch of the Passaic, we look forward to working with the communities in this region to improve water quality. The nutrient data from this region indicates elevated levels of nutrients such as nitrogen and phosphorus which coincides with the effluent inputs from the numerous wastewater treatment plants along the river. These treatment plants are not exceeding the permitted levels of nutrients they are allowed to release, however, the impacts of climate change such as drought, play a part in the balance of nu-

trients in the water. The established permitting parameters are based on a dilution factor which is dependent, especially in the more downstream regions, from the input of stormwater runoff into the system from the surrounding areas.

In 2022, during the summer drought, our bacteria sampling indicated higher than average *E. coli* in the downstream region. With the heavy rains during our bacteria sampling in 2023, these downstream sampling locations had much lower levels of bacteria overall.


Finally, in 2022, GSWA conducted our first round of PFAS sampling. Detecting these forever chemicals in our surface waters is an important first step in making sound decisions for how to address the potential input sources moving forward. In 2023, we are conducting follow-up sampling in key areas including sites within the Rolling Knolls Superfund site and upstream and downstream locations. 

From the Financial Corner

By Sue Levine, Director of Finance

Our fiscal year ended on June 30, 2023, and although we had a slow start at the annual gala, we successfully off set the short fall thanks to the fabulous individuals who support the organization, an amazing Native Pollinator Plant Program, and slightly better than budgeted support from a committed group of corporations and foundations. We are grateful for the support which ended the year with operational revenues of \$1.1 million (M). Our operational expenses were also just over \$1.1M resulting in breakeven results, which were in line with our annual budget.

Our Board Designed Reserve was up for

the year by \$0.3M. We have an incredible Finance Committee that oversees our investment portfolio and they have continued the trend to invest in funds that are ESG (environmental, social, and governance), provided the funds track with market. The Committee has also reviewed funds that are more mission based with the same investment strategy and requirements as other holdings. The team identified a fund at the end of the fiscal year and after considerable discussion and review, we have added to the investment portfolio First Trust Water ETF; FTW focuses on water and water infrastructure. 



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GSWA Experts Available to Speak to Area Groups

Do you wonder, “What is in my water?” or “What can I do to keep water clean for my children?” These and other questions about water quality, land preservation, and local efforts to protect the environment can be answered by the Great Swamp Watershed Association (GSWA). GSWA speakers give interesting, hands-on presentations that will educate and inspire members of your local club or group. Please contact Hazel England, Director of Education & Outreach at (973) 538-3500 or hazele@greatswamp.org.